Notes on the taxonomy and nomenclature of *Teline pallida* (Poir.) G. Kunkel

Marcelino del Arco Aguilar[1]

Summary

Del Arco Aguilar, M.: Notes on the taxonomy and nomenclature of *Teline pallida* (Poir.) G. Kunkel. – Taxon 49: 17-25. 2000. – ISSN 0040-0262.

The *Teline pallida* complex is studied from a nomenclatural and taxonomic viewpoint, and some comments about chorological and ecological aspects are included. *Teline pallida* subsp. *silensis* subsp. nov. is described. A synoptic table of the differences between it and its nearest relatives, identification key, illustrations, and distribution map are shown.

Introduction

Teline pallida is a Canary Island endemic closely related to the Mediterranean *Teline linifolia* (L.) Webb & Berthel., in which it was formerly included by several authors (see synonymy below). Diagnostic features differing from *T. linifolia* are the presence of stipules, longer bracteoles (0.6-2.3 mm long in *T. linifolia* according to Gibbs & Dingwall, 1972) and a different chorology. Its populations are few and relegated to salic rocky habitats located in the oldest massifs of the island of Tenerife (Anaga and Teno) and La Gomera. Its subspecific taxa provide a good example of divergence in the Islands due to populational isolation. The discovery several years ago in the Teno Massif of an isolated population of *Teline pallida*, showing intermediate morphological features between subsp. *pallida* and subsp. *gomerae*, has led to the revision of the species and to the description of subspecies *silensis*, which shows marked differential characters.

Teline pallida (Poir.) G. Kunkel, Cuad. Bot. Canar. 25: 40. 1975 ≡ *Cytisus pallidus* Poir., Encycl. Méth. Bot. Suppl. 1: 442. 1811. – Holotype: "Canaries," *Broussonet* (041189 FI-Webb!). Comment below.

= *Genista nitens* Willd. ex Buch, Allg. Vebers. Fl. Can. Ins. 376. 1819 ≡ *Spartium nitens* Willd. ex Spreng., Syst. Veg. (ed. 16) 3: 177. 1826. – Holotype: "*Genista linifolia*, Teneriff," *Broussonet 13145* (B-Willdenow!).

= *Teline linifolia* (L.) Webb & Berthel. var. *α angustifolia* Webb & Berthel., Phyt. Canar. 3(2): 42. 1842. *p.p.*

= *Cytisus linifolius* (L.) Lam. var. *β platyphyllus* Briq., Cyt. Alp. Marit.: 140. 1894. *p.p.*

= *Teline linifoli*a (L.) Webb & Berthel. subsp. *teneriffae* P. E. Gibbs & Dingwall, Lagascalia 4(1): 37. 1974 [et in Bol. Soc. Brot. 45 (2 sér.): 299. 1972. *nom. inval.*] ≡ *Teline teneriffae* (P. E. Gibbs & Dingwall) Bramw., Fl. Silv. I. Canar.: 160.

[1] Departamento de Biología Vegetal (Botánica), Universidad de La Laguna, 38071 La Laguna, Tenerife, Spain.

1990. *nom. inval.* – Holotype: Tenerife, Taganana, "in rupestribus altioribus sylvae," 28 Mar 1855, *Bourgeau 1303* (K!).

Nano- or microphanerophyte, much-branched. Stem and old branches striate-fibrous, grey-yellow to dark brown; old branches leafless, with highly marked leaf scars. Young twigs erect to erect-patent, finely striate, silvery-sericeous. Leaves trifoliolate, stipulate, subsessile or petiolate, with petiolulate leaflets. Leaflets similar to each other, 13-60 × 2-19 mm, linear-oblong, linear-lanceolate, oblanceolate or widely oblanceolate, sometimes revolute; apex obtuse (very rarely truncate or emarginate), apiculate or mucronate, with a mucro 0.2-1 mm long; base attenuate; green and smoothly applicate-sericeous above; densely silvery-sericeous beneath and with a prominent central nerve. Petiolule 0.5-2 mm long, sericeous. Petiole 0-9 mm long, sericeous. Stipules 0.5-2.5(3.8) × 0.3-1 mm, linear to linear-deltoid or triangular-ovate, densely sericeous; apex acute or rounded. Inflorescence 16-63 mm long, axis 2-53 mm long, in dense terminal leafless racemes of 6-60 flowers, sometimes strongly contracted and ± corymbose, surrounded by the upper leaves of the flowering twigs which can overtop the flowers. Pedicels 2-8.5 mm long, densely sericeous. Calyx 6.8-10.9 mm long, tubular-campanulate, marcrescent, densely applicate-sericeous, divided at below half its length; tube 2-4.4 mm long; upper lip 2.8-5.3 mm long, bipartite, with triangular-lanceolate and acuminate teeth whose central division reaches or shortly exceeds the interlip sinus; lower lip 4.3-7.4 mm long, tridentate, with triangular-acute lateral teeth, 0.7-2.5 mm long, and linear central tooth, 1.8-4.2 mm long, always longer than the lateral ones. Two calyx bracteoles 2.5-8.5 × 0.2-0.8(1.2) mm, longilinear or linear-lanceolate, deciduous on fructification, sericeous. One bract 3.5-9 × 0.3-1.5 mm, linear, linear-lanceolate or lanceolate-acute, sericeous, attached near the calyx base in the highest flowers and sometimes on the middle or even at below the middle of the pedicel in the lowest flowers. Corolla yellow. Standard 9.7-14 × 7.5-10 mm, ovate, elliptical or suborbicular, with emarginate apex, and truncate, rounded or slightly cordate base; dorsum densely sericeous. Wings 8-12.5 × 2.5-4 mm, oblong, with obtuse rounded apex, margins slightly convex and ± lobate at the adaxial basal end, and with narrow claw; glabrous. Keel 10-14 × 2.6-3.8 mm, shorter or longer than wings and standard, oblong, with obtuse or rounded apex; lower margins welded, arcuate at the apex and more or less straight to the base and attenuate into a claw; upper margins slightly curved at the apex, straight at the middle and ending in a clear lobe next to the claw; sericeous outside but subglabrous near the basal lobe. Ovary with 3-5 ovules; half or more than half the style length; densely hairy on the ventral suture, weakly on the dorsal one; hairs extending along the style could reach up to more or less half way. Style straight, with somewhat upturned arcuate extreme; stigma extrorse. Stamens with filaments united 2/3-3/4 of their length into a tube. Legume 13-22 × 3.5-8 mm, oblong, with somewhat undulate margins, rather compressed, somewhat swollen next to the seeds, erect, ending in a straight or upwards curved beak; densely sericeous-villous outside, with whitish hairs. Seeds 2.3-0.6 × 0.4-1.1 mm, 1-4(5) per legume, lentiform, cordiform or ± angulate-oblong, black; aril 0.2-0.6 × 0.4-1.1 mm, whitish or light-yellow. Table 1.

Note. – The finding of the holotype of *Cytisus pallidus* in 1980 (Del Arco Aguilar, unpubl. Ph.D. thesis) made clear that *Cytisus pallidus* Poir. was an erroneous

Table 1. Comparison of morphological features of subspecies of *Teline pallida*. All measurements in mm.

T. pallida	subsp. *gomerae*	subsp. *pallida*	subsp. *silensis*
Leaflets	26-60 × 8-19	13-44 × 2-10	(15)27-60 × 5-11
Mucro length	0-1	0.2-0.8	0.3-0.7
Petiolule length	1-2	0.5-2	0.5-1(2)
Petiole length	3.5-9	0-2	(1)2-4
Stipules	0.8-1.8 × 0.5-1	0.5-2 × 0.3-0.7	1-2.5(3.8) × 0.4-0.8
Inflorescence length	29-63	16-25	27-35
axis length	15-53	2-6	10-15(17)
Flower no.	16-60	6-23	24-34
Floral pedicel length	5-8.5	2-6.5	3-7
Calyx length	6.8-10.2	7-10.9	7.5-10.5
tube length	2.5-3.9	2-4.4	2.7-4
upper lip length	3-4.8	3-5.3	2.8-4.6
Lower lip length	4.3-6.3	4.7-7.4	4.8-6.2
lateral teeth length	1.2-1.8, straight or curved towards the centre	0.7-2.5, divergent	1-1.5, divergent, rarely straight
central tooth length	2-2.4	2-4.2	1.8-2.8
Bracteoles	2.5-6 × 0.3-0.7	(3.2)3.5-7 × 0.2-0.7	4-8.5 × 0.4-0.8(1.2)
Bract	3.5-7 × 0.6-1	3.5-7.5 × 0.3-1	4.5-9 × 0.5-1.5
Standard	10.8-13.2 × 7.5-9.6	9.7-13.4 × 7.7-10	11-14 × 7.5-10
Wings	10.5-12.5 × 2.7-3.5	8-12 × 2.5-4	10-12 × 2.8-3.8
Keel	10.3-12 × 2.6-3.3, ≤ wings, ≥ standard	10-14 × 2.6-3.8, > wings, ≥ standard	11-14 × 3-3.8, > wings, ≥ standard
Ovule no.	3-4	3-4	4-5
Fruit	14-22 × 5-7.5	15-22 × 4.5-8	(13)17-22 × 3.5-7
Seed	3-4 × 2.7-3.4	2.3-3.3 × 2-3.3	2.3-2.5 × 2.2-2.5
Aril	0.2-0.3 × 0.4-0.5	0.4-0.5 × 0.5-1	0.5-0.6 × 0.8-1.1

synonym of *Teline linifolia* (L.) Webb & Berthel. var. *latifolia* Webb & Berthel. This erroneous synonym (Webb & Berthelot, 1842) has originated later unfortunate nomenclatural combinations made by authors who did not check the identity of *Cytisus pallidus* Poir. Thus, the combinations *Cytisus linifolius* (L.) Lam. var. *pallidus* (Poir.) Briq. (Briquet, 1894), and *Teline linifolia* (L.) Webb & Berthel. subsp. *pallida* (Poir.) P. E. Gibbs & Dingwall (Gibbs & Dingwall, 1972) were conceived by their authors in a different sense to the type of their basionyms and refer to the species currently considered to be *Teline splendens* (Webb & Berthel.) del Arco. The same occurred with the combination *Teline pallida* (Poir.) G. Kunkel but in accordance with Art. 7.4 of ICBN (Greuter & al., 1994), if we consider the taxon at the specific rank in the genus *Teline* this combination must be retained, despite the name being clearly referred by Kunkel (1975) to *Teline splendens* (Webb & Berthel.) del Arco (Del Arco Aguilar, 1993).

Distribution. – Canary Island endemic. Northern Tenerife (Anaga and Teno) and Northern Gomera (Vallehermoso, Agulo, and Hermigua). Fig. 1.

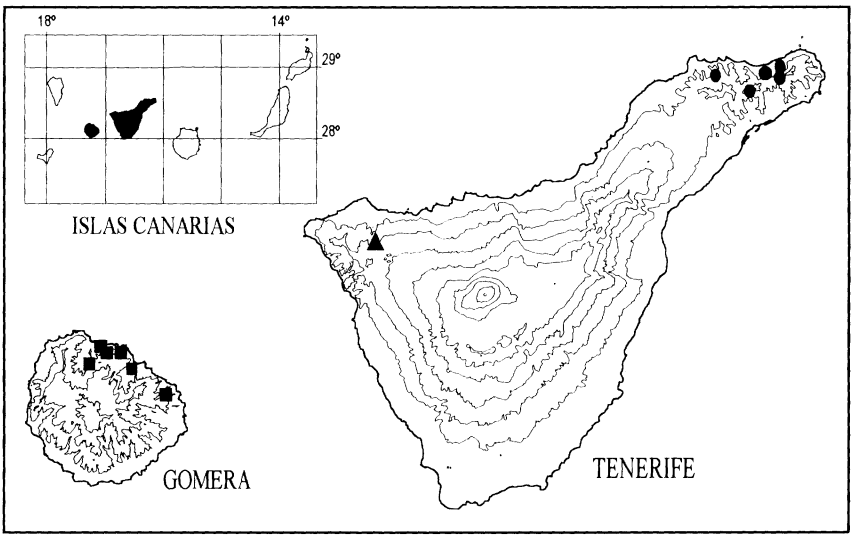

Fig. 1. Distribution of *Teline pallida*: ■ subsp. *gomerae*; ● subsp. *pallida*; ▲ subsp. *silensis*.

Key to the subspecies

1. Petiole 0-2 mm long. Inflorescence 16-25 mm long, axis 2-6 mm long, with 6-23 flowers (normally 4-10). Tenerife. ..... subsp. *pallida*
1. Petiole (1)2-9 mm long. Inflorescence 27-63 mm long, axis 10-53 mm long, with 16-60 flowers. **2**
2. Petiole (1)2-4 mm long. Keel equal or longer than standard and longer than wings. Calyx lower lip lateral teeth divergent, rarely straight. Inflorescence axis 10-15(17) mm long. Aril 0.5-0.6 × 0.8-1.1 mm. Tenerife. ..... subsp. *silensis*
2. Petiole 3.5-9 mm long. Keel equal or shorter than standard and wings. Calyx lower lip lateral teeth curved to the central tooth. Inflorescence axis 15-53 mm long. Aril 0.2-0.3 × 0.4-0.5 mm. La Gomera. ..... subsp. *gomerae*

Teline pallida subsp. ***pallida***

Old branches dark brown. Young twigs erect. Petiole 0-2 mm long. Leaflets 13-44 mm long, mostly linear-oblong to linear-lanceolate, revolute. Inflorescence 16-25 mm long, axis 2-6 mm long, in dense terminal corymbose racemes with 6-23 flowers. Calyx lower lip lateral teeth divergent. Calyx bract attached over the pedicel in the lowest flowers and near the calyx base in the highest. Keel longer than wings and equal or longer than standard. Seeds 2.3-3.3 × 2-3.3 mm, mostly oblong; aril 0.4-0.5 × 0.5-1 mm, yellowish. Fl. Mar-Jun; Fr. until Aug. Table 1.

Exsiccata. – **Tenerife, Anaga: Roque de las Ánimas**, 29 May 1976, *Acebes & León 9000-9006* (TFC), 25 Mar 1977, *Montesinos & León 6621-6626* (TFC), 25 Mar 1977, *Montesinos & Rodríguez 6620* (TFC), 30 Feb 1972, *Pérez 9305* (TFC), 19 May 1971, *Santos 605* (TFC), 15 Apr 1972, *Wildpret, Beltrán & Pérez 915* (TFC); **Roque de Enmedio**, 12 Apr 1975, *Acebes & Del Arco Aguilar 9024* (TFC), 29 May 1976, *Acebes & León 9025-9026* (TFC), NE, 325 m, 17 Jun 1979, *Del Arco Aguilar 9018* (TFC), SE, 385 m, *Del Arco Aguilar 9019-9020* (TFC), 220 SW, 375 m, *Del Arco Aguilar 9021* (TFC), 325 m, 17 Jun 1979, *Del Arco Aguilar 9023* (TFC), 12 Apr 1975, *Del Arco Aguilar & Acebes 9028-9033* (TFC), Jul 1975, *Del Arco Aguilar, León & La Serna 9027* (TFC), 18 May 1974, *Pérez 9017* (TFC), N, 17 Apr 1980, *Rodríguez 9298-9303* (TFC), 8 Feb 1972, *Wildpret, Gallo & Pérez 830, 9304* (TFC); **Roque Negro**, 25 May 1974, *Acebes 9007* (TFC), 25 May 1974, *Acebes & Pérez 4067* (TFC), SE, 650 m, 12 May 1979, *Del Arco Aguilar 9008-9013* (TFC); **Roque de los Pinos**, 5 Jun 1976, *Barquín, Acebes & León 9014-9016* (TFC); **Taganana**, in rupe excelsa, Jun 1846, *Bourgeau*, Plantae Canariensis *572* (041190-041191 FI-Webb); *Bourgeau 1303* (Plantae Canariensis ex itin. secundo), (041188 FI-Webb).

Distribution and ecology. – Endemic to Tenerife, relegated to the northern slopes of Anaga peninsula in the extreme East of the island, one of its oldest geological zones. Local populations at altitudes between (50)300-600 m, on salic "roques," pitons or plugs (phonolite and trachyphonolite): Roque de Enmedio, Roque de las Ánimas, Roque Negro, Roque de los Pinos, rocks near Los Naranjos, above Taganana. Characteristic inhabitant of *Telino canariensis-Adenocarpion foliolosi*, i.e. xerophytic preforest communities of laurel forest established on ridges, rocky slopes, ledges, etc. Felling of the laurel forest (*Ixantho-Laurion azoricae*), as well as the thermophilous forest at a lower altitude (*Mayteno-Juniperion canariensis*), has allowed the penetration of this heliophilous plant in some shrubby substitutional stages (*Myrico fayae-Ericetum arboreae*, *Rhamno crenulatae-Hypericetum canariensis*, *Artemisio thusculae-Rumicetum lunariae*). Fig. 1.

Teline pallida subsp. ***silensis*** del Arco, **subsp. nov.** – Holotype: Tenerife: Los Silos, Los Cortes, 450 m, 4 Jun 1994, *Del Arco Aguilar & Hernández 41654* (TFC!); isotypes: B, BM, G, K, MO, ORT, TFC.

Differt a typo inflorescentiis longioribus (27-35 mm) cum axibus longioribus (10-17 mm) et floribus maiore numero, generatim foliolis maioribus et petiolis attingentibus usque ad 4 mm longis. Differt a subsp. *gomera* petiolis brevioribus (2-4 mm), generatim cum inflorescentiis brevioribus (27-35 mm) et axibus minoribus [10-15(17)] mm. Praeterea, carina, sicut in subsp. *pallida,* est alis longior et vexillis similis vel longior, et arillus clare grandior. Figs. 2 and 3, Table 1.

Old branches dark brown. Young twigs erect. Leaves with petiole (1)2-4 mm long. Leaflets (15)27-60 mm long, linear-oblanceolate to elliptical-lanceolate, not revolute or somewhat so. Inflorescences 27-35 mm, with axis 10-15(17) mm, in dense terminal corymbose racemes bearing 24-34 flowers. Calyx lower lip lateral teeth divergent, rarely straight. Calyx bracts attached near calyx base in all flowers. Keel longer than wings and equal or longer than standard. Seeds 2.3-2.5 × 2.2-2.5 mm, mostly oblong;

aril 0.5-0.6 × 0.8-1.1 mm, white-yellowish. Fl. Apr-Jul; Fr. until Sep. Table 1. Figs. 2 and 3.

This subspecies differs from the type because of its longer inflorescences (27-35 mm) with longer axis (10-17 mm) and more numerous flowers, and by its generally larger leaflets with petiole reaching 4 mm. From subsp. *gomerae* it differs in having shorter petioles (2-4 mm), generally shorter inflorescences (27-35 mm), and a shorter axis [10-15(17) mm]; furthermore, like subsp. *pallida*, the keel is longer than the wings and equal or longer than the standard, and the aril is clearly larger.

Fig. 2. Teline pallida subsp. *silensis*.

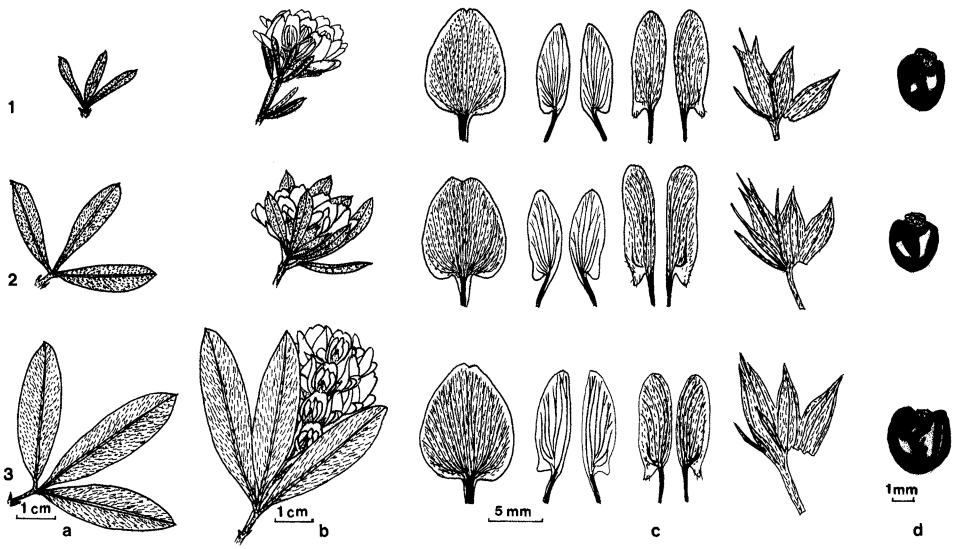

Fig. 3. Differential characters. – 1, *Teline pallida* subsp. *pallida*; 2, subsp. *silensis*; 3, subsp. *gomerae*. a, leaf; b, inflorescence; c, corolla and calyx; d, seed.

Exsiccata. – **Tenerife: Los Silos, Los Cortes**, 450 m, 4 Jun 1994, *Del Arco Aguilar & Hernández 41648-41653* (TFC), 3 May 1991, *Hernández 2888* (TFMC), 21 May 1994, *Hernández 36477-36481* (TFC), 6 Jul 1997, *Lucía, Acosta & Reyes 40862-40863* (TFC).

Distribution and ecology. – Tenerife endemic, confined to a single known locality in "Barranco de Los Cochinos," in Teno Massif (Hernández, 1995). This unique population occurs between 400-550 m on the eastern slope of the ravine, isolated or in patches in almost inaccessible cornices and sunny ledges. Like subsp. *pallida*, its ecology corresponds to a heliophilous plant of *Telino canariensis-Adenocarpion foliolosi*, although one of its accessible denser colonies occurs in shrubby vegetation of *Rhamno crenulatae-Hypericetum canariensis*, a substitutional or mantle community of the dry laurel forest (*Visneo mocanerae-Arbutetum canariensis*). In the surrounding vegetation noteworthy species such as *Heberdenia excelsa* (Ait.) Banks ex DC. ("aderno"), *Sideroxylon marmulano* Banks ex Lowe ("marmolán"), *Visnea mocanera* L. fil. ("mocán"), and *Osyris quadripartita* Salzm. ex Decne., are found among other laurel forest representatives. The acidophilous affinity of the plant is marked by the trachybasalt substrate (Bellido & Gómez, 1988), which has a high silica content, intermediate between basalts and phonolites (Fuster & al., 1968). Utilizing conservation categories of IUCN (1994), this taxon can be classified as endangered (EN). It fits criterion D because its estimated population is less than 250 adult individuals. Fig. 1.

Teline pallida subsp. ***gomerae*** (P. E. Gibbs & Dingwall) del Arco, Itin. Geobot. 7: 521. 1993 ≡ *Teline linifolia* (L.) Webb & Berthel. subsp. *gomerae* P. E. Gibbs &

Dingwall, Lagascalia 4(1): 37. 1974 [et in Bol. Soc. Brot. 45 (2 sér.): 301. 1972. *nom. inval.*] ≡ *Teline gomerae* (P. E. Gibbs & Dingwall) G. Kunkel, Cuad. Bot. Canar. 25: 40. 1975. – Holotype: "Gomera, El Cumbre Hermigua," 19 Apr 1861, *Lowe 183G* (K!).

Old branches brown-yellowish. Young twigs erect-patent. Petiole 3.5-9 mm long. Leaflets 26-60 mm long, oblanceolate to broadly oblanceolate, non or somewhat revolute. Inflorescence 29-63 mm long, axis 15-53 mm long, in dense terminal racemes with 16-60 flowers. Calyx lower lip lateral teeth straight or curved towards the central one. Calyx bract attached over the pedicel in the lowest flowers and near the calyx base in the highest. Keel equal or shorter than wings and standard. Seeds 3-4 × 2.7-3.4 mm, mostly lenticular or cordiform; aril 0.2-0.3 × 0.4-0.5 mm, whitish. Fl. Apr-Jun; Fr. until Aug. Table 1.

Exsiccata. – **La Gomera, Agulo:** Cañada de la Cabrera, 400 m, 30 Sep 1996, *García & Reyes 40231* (TFC), Banda de la Tora, 400 m, 17 Feb 1997, *Wildpret, Reyes & Romero 40408* (TFC); **Hermigua**, Risco de Juel, above El Palmar, *Del Arco Aguilar, Pérez & Lucía 27484* (TFC), Entre Tunel de Agulo y Las Rosas, 5 Apr 1991, *Pérez de Paz 41655* (TFC); **Vallehermoso**, Barranco de la Culata, *Emerson 29554* (TFC); Roque Cano, 375-500 m, 30 Jul 1977, *Del Arco Aguilar, León, La Serna & Metlesics 9040-9045* (TFC), May 1976, *Pérez 9039* (TFC), 30 Apr 1972, *Pérez & Fernández Galván 4815* (TFC), Sabinar de la Culata, 6 Apr 1994, *Pérez 36875* (TFC).

Distribution and ecology. – Gomera endemic, very local and scarce in the N-NE slope, over salic outcrops and plutonic steep rocks belonging to the basal complex of the island. The phonolitic Roque Cano (Vallehermoso) is the locality where it is most abundant. There, between 350-500 m, it grows mainly on the flanks of the rock among fallen rubble fragments together with *Teline stenopetala* (Webb & Berthel.) Webb & Berthel. subsp. *microphylla* (Pit. & Proust) del Arco. Besides, it is found dispersed on the steep coastal cliffs of Agulo, at about 400 m, and at Riscos de Juel (Hermigua). Kunkel (1975), due to an erroneous identification of *Teline* taxa, records it on the steep cliffs of middle-south and middle-east sectors of the island. These localities correspond to that of *Teline stenopetala* (Webb & Berthel.) subsp. *pauciovulata* (del Arco) del Arco. *Teline pallida* subsp. *gomerae* is a rupicolous, sun-loving, mesophilous plant found on acid substrate, which grows in the potential domains of the Gomera juniper woodland (*Brachypodio arbusculae-Juniperetum canariensis, Mayteno-Juniperion canariensis*), preferentially within the *Rhamno crenulatae-Hypericetum canariensis* scrub (syntaxonomical nomenclature according to Rodríguez-Delgado & al., 1998). Fig. 1.

Acknowledgements

To Efrain Hernández Yanes, from the "Viceconsejería de Medio Ambiente" (Dept. of Environment) of the Canary Island Government, who first discovered the population of *Teline pallida* subsp. *silensis* and kindly informed us. To Dr. Juan Coello, from the Department of Geology, University of La Laguna, for providing some geological information. To Dr. Francisco González Luis, from the Department of Classical Languages, for his help with the Latin diagnosis.

Literature cited

Bellido, F. & Gómez, J. A. 1988. Mapa geológico de España 1:25000. Icod de los Vinos (2ª ser., 1ª ed.). Instituto Geológico y Minero de España. Ed. Servicio de Publicaciones del Ministerio de Industria y Energía.

Briquet, J. 1894. *Étude sur les Cytises des Alpes Maritimes*. Paul Lechevalier. Paris.

Del Arco Aguilar, M. 1993. New combinations in the genus *Teline* Medicus. Typification of *Cytisus pallidus* Poiret. *Itin. Geobot.* 7: 519-523.

Fuster, J. M., Araña, V., Blandle J. L., Navarro, M., Alonso, U. & Aparicio, A. 1968. *Geología y vulcanología de las Islas Canarias*. Tenerife. Inst. Lucas Mallada. C.S.I.C. Madrid.

Gibbs, P. E. & Dingwall, I. 1972. A revision of the genus *Teline*. *Bol. Soc. Brot.* 45 (2 sér.): 269-316.

Greuter, W., Barrie, F. R., Burdet, H. M., Chaloner, W. G., Demoulin, V., Hawksworth, D. L., Jørgensen, P. M., Nicolson, D. H., Silva, P. C., Trehane, P. & McNeill, J. 1994. International code of botanical nomenclature (Tokyo Code). *Regnum Veg.* 131: 1-389.

Hernández, E. 1995. *Teline pallida* (Poiret) Kunkel (*Fabaceae*) en el Macizo de Teno (Tenerife, Islas Canarias). *Vieraea* 24: 188-189.

IUCN (The World Conservation Union). 1994. Categorías de las listas rojas de la IUCN. Gland. Suiza.

Kunkel, G. 1975. Novedades y taxones críticos en la flora de La Gomera. *Cuad. Bot. Canaria* 25: 17-49.

Rodríguez Delgado, O., Del Arco Aguilar, M., García Gallo, A., Acebes Ginovés, J. R., Pérez de Paz, P. L. & Wildpret de la Torre, W. 1998. *Catálogo sintaxonómico de las comunidades vegetales de plantas vasculares de la Subregión Canaria: Islas Canarias e Islas Salvajes.* Servicio de Publicaciones de la Universidad de La Laguna. Materiales Didácticos Universitarios, Biología I.

Webb, P. B. & Berthelot, S. 1842. Histoire naturelle des Iles Canaries. *Phytogr. Canar.* 2: 34-48.