

**A NEGLECTED *DAPHNE* [SECT. *DAPHNANTHES* SUBSECT. *GNIDIUM*]
FROM NORTHERN AFRICA: *D. MAURITANICA*, SP. NOV. (*THYMELAEACEAE*)***

by
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Resumen

NIETO FELINER, G. (1995). Una especie olvidada de *Daphne* [sect. *Daphnanthes* subsect. *Gnidium*] del norte de África: *D. mauritanica*, sp. nov. (*Thymelaeaceae*). *Anales Jard. Bot. Madrid* 53(2): 191-197 (en inglés).

Se describe una nueva especie de *Daphne* [sect. *Daphnanthes* subsect. *Gnidium*] de las montañas del norte de África: *D. mauritanica*. La nueva especie, que se había confundido con *D. gnidium* o se había reconocido como una mera variedad *-lanata-* de aquélla, se diferencia por varios caracteres morfológicos y anatómicos, entre los que destacan la persistencia del hipanto, la glabrescencia de los tallos del año, el indumento de los órganos reproductivos y la disposición de los estomas. En este artículo se comentan, e ilustran —con M.E.B.—, estos caracteres y se ofrece un mapa de distribución de ambas especies en el norte de África.

Palabras clave: *Thymelaeaceae*, *Daphne* subsect. *Gnidium*, taxonomía, norte de África.

Abstract

NIETO FELINER, G. (1995). A neglected *Daphne* [sect. *Daphnanthes* subsect. *Gnidium*] from Northern Africa: *D. mauritanica*, sp. nov. (*Thymelaeaceae*). *Anales Jard. Bot. Madrid* 53(2): 191-197.

A new species of *Daphne* [sect. *Daphnanthes* subsect. *Gnidium*] from Northern Africa is described: *D. mauritanica*. This taxon has often been misidentified as *D. gnidium* or subordinated to it as a mere variety *-lanata-*. It differs from *D. gnidium* in various relevant morphological and anatomical characters such as persistent hypanthium, glabrous shoots, indument of reproductive organs and arrangement of the stomata, among others. All the differences detected are commented upon and illustrated with S.E.M. micrographs. A map with the distribution of both species in Northern Africa is also provided.

Key words: *Thymelaeaceae*, *Daphne* subsect. *Gnidium*, taxonomy, Northern Africa.

INTRODUCTION

Daphne [sect. *Daphnanthes* C. A. Meyer] subsect. *Gnidium* (Spach) Keissler is known to include a single, taxonomically well established species —*D. gnidium* L.— distributed in southern Europe, northern Africa and the Canary Islands (MEISNER, 1857; KEISSLER,

1898; BRICKELL & MATHEW, 1976). A poorly known species described from cultivated material apparently of Chinese origin (in the Calcutta Botanic Garden), *D. roumea* Meisn., was placed by the first two authors in subsect. *Gnidium*. However, both its taxonomic status as well as its placement are unclear and will not be treated here.

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In preparing an account of the genus for *Flora iberica*, I have had the opportunity to study a considerable amount of North African material. Among the material identified and referred to as *D. gnidium* from that continent, I have been able to recognize two species. One is *D. gnidium*, s.str., common in southern Europe and the other is described in the present paper. Two infraspecific names have sometimes been applied to the latter, but the taxonomic significance of the characters distinguishing the new entity, together with its large distribution area, clearly make infraspecific ranks inappropriate.

When KEISSLER (1898: 72) described his *D. gnidium* f. *latifolia* he cited several European specimens in addition to one from Tunisia, the latter actually belonging to the new species. Such a form lacks any taxonomic significance.

The Algerian type material of the second infraspecific taxon—*D. gnidium* var. *lanata* Faure & Maire (in MAIRE, 1931, 1937; JAHANDIEZ & MAIRE, 1931, 1934)—fully corresponds with the new species. This variety was diagnosed exclusively by the longer woolly hairs on the inflorescence. The failure to detect other important distinguishing characters probably explains the low rank attributed to this taxon which, after a detailed study, I propose to accord specific status.

MATERIAL AND METHODS

Specimens from the following herbaria have been examined: BCF, G, GDAC, JACA, MA, MAF, MGC, SALA. For the epidermal study, fresh specimens were fixed in a mixture of 50% ethanol, 40% distilled water, 5% formaldehyde and 5% glycerol; desiccated specimens were rehydrated in ethanol (70%). The epidermis was peeled-off with a razor for observation with light microscopy or critical-point dried for S.E.M. examination. Other organs from desiccated samples were directly gold-coated and observed with a JEOL JSM-T330A S.E.M.

RESULTS

Daphne mauritanica Nieto Feliner, sp. nov.

D. gnidium var. *lanata* Faure & Maire in Maire, Bull. Soc. Hist. Nat. Afrique N. 22: 314 (1931)

D. gnidium sensu Batt. & Trabut, Fl. Algérie 1: 783 (1890); sensu Quezel & Santa, Nouv. Fl. Algérie 2: 631 (1963), non L.

Speciei Daphne gnidium affinis, a qua praecipue differt caulibus annotinis glabris, inflorescentia palam exserta cooperativa—hypanthiis pedicellisque non exceptis—pilis potius longis (0.3-0.6 mm), densis atque valde applicatis, foliis insuper subtus glaucis nec manifeste punctatis cum stomata superficialia sint nec in cavis imis veniant—ut in D. gnidium accidit—, bracteis pubescentibus, demumque atque singulariter hypanthiis persistentibus latisque (fructiferis, plerumque 3.7 mm latis).

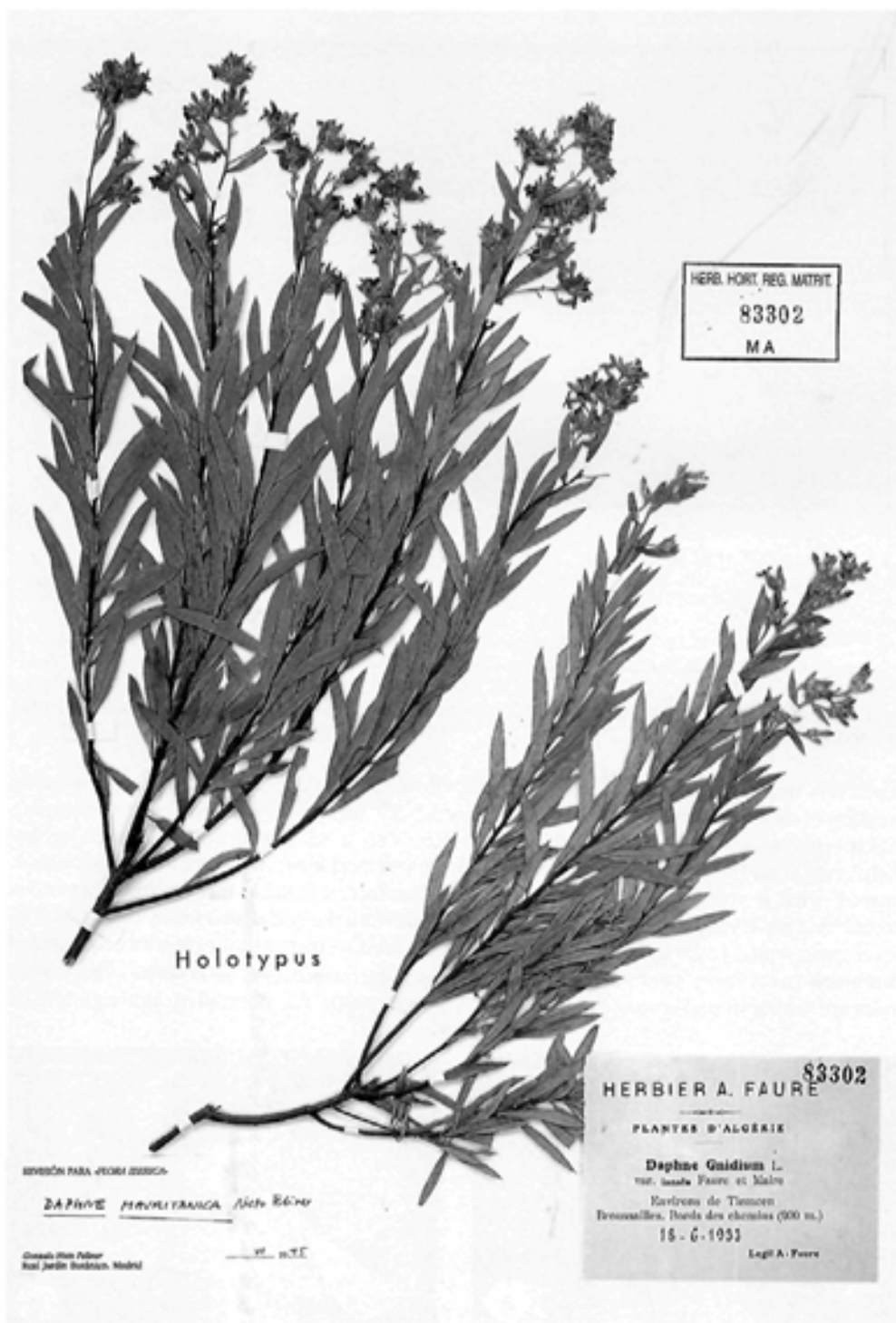
Habitat in montosis Africae borealis, ab alto Atlante usque in Regnum Tunetanum.

Typus: Algérie, environs de Tlemcen, broussailles, bords de chemins, 900 m, 18-VI-1933, A. Faure. *Holotypus:* MA 83302 (fig. 1); *Isotypus:* G.

Distribution: The new species is distributed along a narrow but long (c. 2000 km) longitudinal range, from the Western High Atlas near Marrakesh to the Zaghuan Mountain in Tunisia (fig. 2). It occurs at more continental sites and at higher elevations (700-2500 m) than *D. gnidium*. In North Africa, the latter species is apparently restricted to an even narrower belt almost as long as that of *D. mauritanica* along the Mediterranean coast.

DISCUSSION

Hypanthium.—Despite the opinion expressed by KEISSLER (1898: 73, footnote) when discussing the differences between *D. gnidium* and the Anatolian *D. gnidioides* Jaub. & Spach [subsect. *Oleooides* Keissler], I think that the degree of persistence of the hypanthium is taxonomically relevant. In *D. gni-*

Fig. 1.—Holotypus of *Daphne mauritanica*.

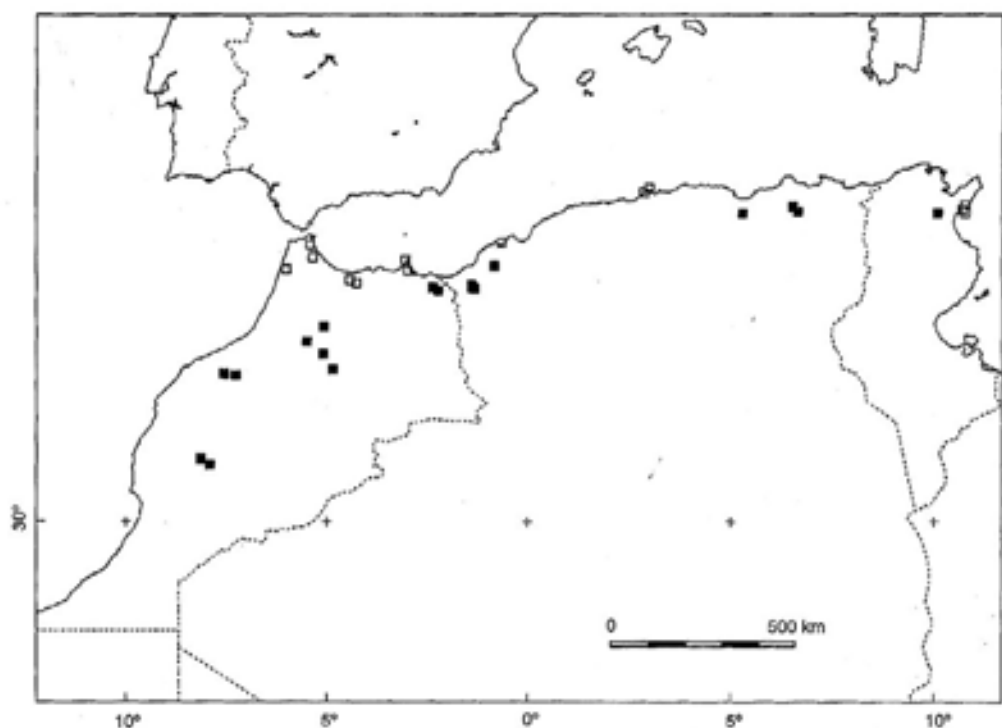


Fig. 2.—Distribution of *Daphne mauritanica* (solid squares) and *D. gnidium* (empty squares) in Northern Africa, based on herbarium material.

dium, it is quickly ruptured and shed by the pressure of the developing fruit (fig. 3b), such that specimens never contain hypanthia more than 3 mm wide (usually only up to 2.5 mm). Instead, what is commonly seen in every inflorescence are several naked, black, pyriform developing fruits. In *D. mauritanica* the hypanthium is far more persistent and naked fruits are seldom found among the herbarium

material (fig. 3a). In this species, hypanthia 3.5–3.7 mm wide with enclosed developing fruits are usually seen. I have not seen any incipient fleshiness in fruits of *D. mauritanica*. Therefore, it is likely that the fruits never develop into the sort of red fleshy ones found in *D. gnidium*. Instead, they probably remain dry as apparently occurs in *D. arbuscula* Čelak. (TAN, 1980). An alternative, although less li-

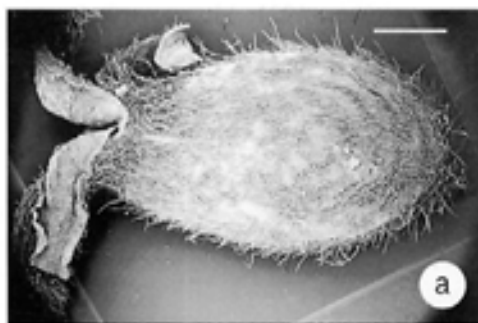


Fig. 3.—Hypanthium in the fruiting stage: a, *Daphne mauritanica* (persistent); b, *D. gnidium* (already shed). (Scale 1 mm.)

kely, explanation for the lack of fleshy fruits could be that similar or even lower levels of fruit-set than the ones detected in *D. gnidium* (HERRERA, 1987) are shown by *D. mauritanica*; this would make difficult the observation of mature fruits in herbarium material.

Pubescence.—The easiest way to distinguish the new species from *D. gnidium* is to observe shoot pubescence. In *D. gnidium*, new shoots are covered with short (< 0.25 mm) appressed hairs, which extend to the inflorescence axis and pedicels. *D. mauritanica*, in contrast, presents glabrous shoots from the starting point of the year's growth to the base of the inflorescence, so that pubescence is restricted to the reproductive structures (inflorescence axes, pedicels, hypanthia and sepals). In the lower part of the inflorescence, hairs tend to disappear along longitudinal lines descending from point of leaf insertion. Among hundreds of European and African specimens, I have seen four (2 from Almería, Spain and 2 from Oran, Algeria) which, although belonging to *D. gnidium*, present glabrous shoots. Therefore, despite being a useful and easily observed character, pubescence should be considered together with others.

In those organs where both species present hairs (inflorescence axes, pedicels, hypanthia and sepals) these may be clearly distinguished both with and without the aid of a lens. In *D. gnidium* (fig. 5 a,b), they are relatively short (< 0.3 mm), whereas in *D. mauritanica*, they are longer 0.3-0.6 mm and denser (fig. 4 a,b).

Inflorescence.—The structure of the inflorescence is similar in both species. It is usually referred to as a terminal panicle (WEBB & FERGUSON, 1968; BRICKELL & MATHEW, 1976; TALAVERA, 1987). But the German school of morphologists reserves the term panicle for monotelic inflorescences, i.e., determinate ones (WEBERLING, 1981: 209), and describes the inflorescence in *D. gnidium* as heterothetic compound racemes (WEBERLING & HERKOMMER, 1989: 60, fig. 27). Heterothetic indicates that in addition to lateral there are also terminal racemes. However, the overall appearance differs to some extent in the two related species. In *D. mauritanica*, the whole inflorescence

usually overtops the apical leaves so that it is clearly exerted. The greater exposure of the inflorescence is due to the faster elongation of the raceme axis, to the longer raceme peduncle (hypopodium cf. WEBERLING, 1981: 12) and to the fact that most racemes develop in the axils of bracts (which are more or less hairy) instead of in the leaf axils. By contrast, in *D. gnidium* most racemes develop in the axils of fully developed leaves which conceal the slow growing raceme axes.

Architecture.—Shoot architecture is the same in both species. Innovation shoots arise more or less crowded in leaf-axils at the base of the inflorescence, such that when leaves are shed during the following season shoot division appears to be multi-forked as indicated by WEBERLING & HERKOMMER (1989: 60).

Epidermis.—Two more distinguishing characters are found on the abaxial leaf surface. This surface is glaucous in *D. mauritanica*, probably because of the tight imbrication of the epidermal cells (fig. 4c) as compared to those in *D. gnidium* and probably also because of the cuticle. In the latter species, cells are not so tightly arranged (fig. 5c) and the abaxial surface is green. In addition to the colour, the abaxial leaf surface provides an additional relevant difference in the arrangement of stomata. WEBB & FERGUSON (1968) describe the leaves in *D. gnidium* as "glandular beneath". Actually, observation of epidermal peels under the light microscope reveals that the shining dots are epidermal receptacles in which stomata are slightly sunken (fig. 5c,d). This type of stomata were also reported for *D. cneorum* L. (HILL, 1931; METCALFE & CHALK, 1950: 1170) and for *D. gnidium* by TAN (1980, fig. 1M) but they are absent in *D. mauritanica*, which has superficial stomata (fig. 4c,d). Moreover, we have observed scattered stomata on the adaxial surface of *D. mauritanica*, while in *D. gnidium* the stomata are apparently confined to the abaxial side.

All these characters considered in conjunction with the wide, apparently allopatric distribution areas constitute firm evidence for recognition of the two taxa at the specific level.

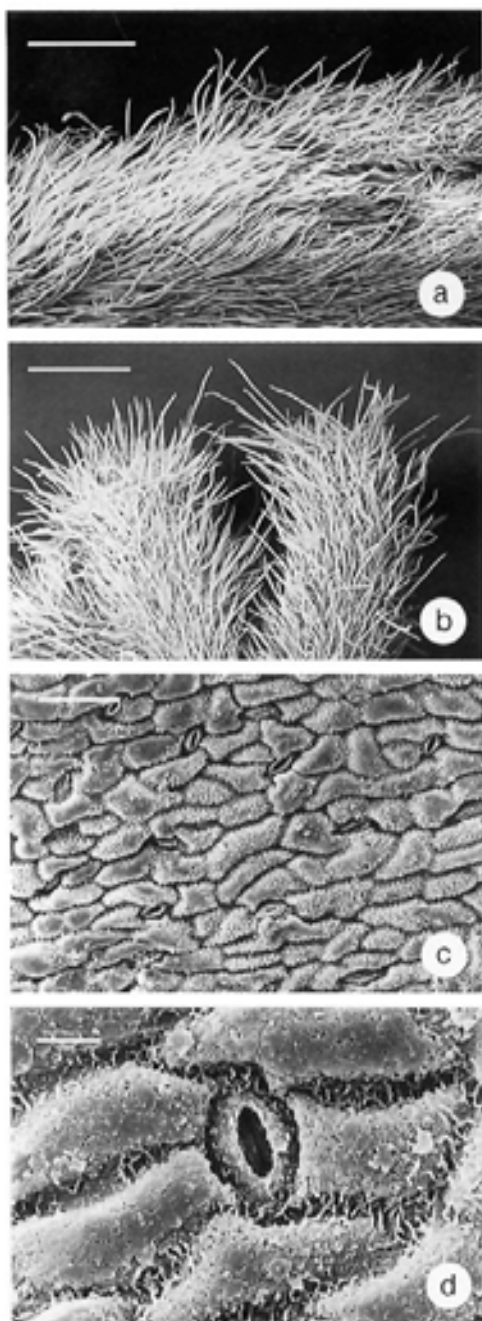


Fig. 4.—S.E.M. micrographs of *Daphne mauritanica*: a, hypanthium (500 μ m); b, pedicels (500 μ m); c, abaxial epidermis of leaf (scale 50 μ m); d, stoma from abaxial surface of leaf (scale 10 μ m) [Algeria, Tlemcen, A. Faure, MA 83302; a & b: critical point dried material].

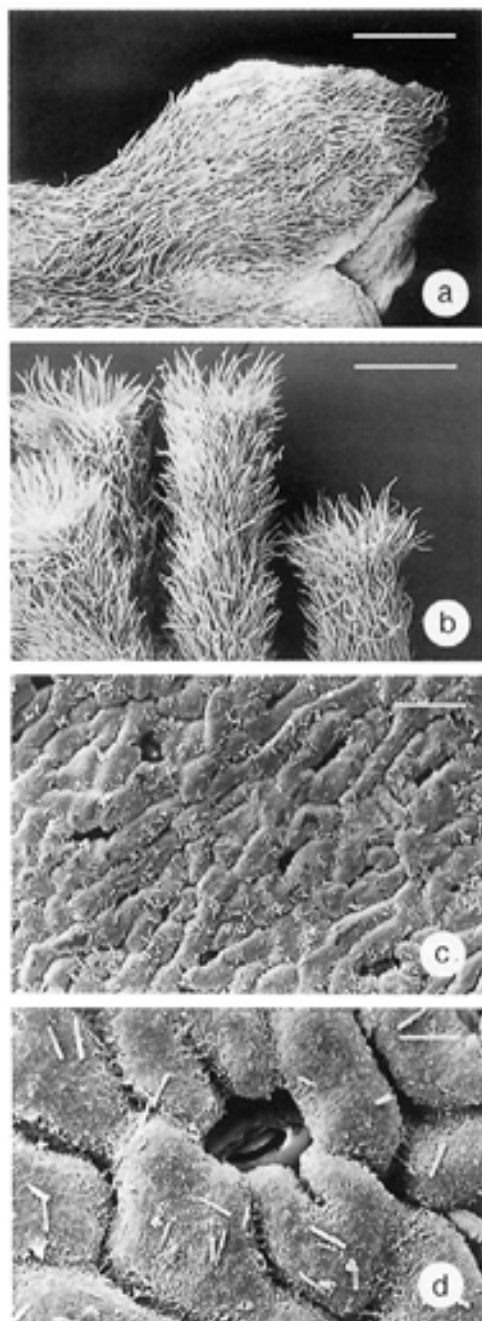


Fig. 5.—S.E.M. micrographs of *Daphne gnidium*: a, hypanthium (500 μ m); b, pedicels (500 μ m); c, abaxial epidermis of leaf (scale 50 μ m); d, stoma from leaf abaxial face (scale 10 μ m) [a & b: Spain, Girona, la Jonquera, E. Monasterio 776 & al.—critical point dried material; c & d: Morocco, Rif, pr. Targuist, Font Quer, MA 83299].

KEY TO SPECIES IN *DAPHNE* [SECT. *DAPHNANTHES*]
SUBSECT. *GNIDIUM*

1. Hypanthium persistent in fruit, up to 3.7 mm wide; innovation shoots (excluding inflorescence) glabrous; inflorescence, pedicels and hypanthium densely covered with hairs 0.3-0.6 mm long; bracts usually present, pubescent; leaves glaucous underneath, without shining dots –stomata superficial–; panicle soon overtopping the upper leaves *D. mauritanica*
- Hypanthium promptly deciduous, up to 2.5(-3) mm wide in fruit; innovation shoots with short appressed hairs; inflorescence, pedicels and hypanthium covered with hairs < 0.3 mm long; bracts rare, usually glabrous; leaves not glaucous underneath, with shining dots (stomata slightly sunken in receptacles); panicle usually not overtopping the upper leaves until fruiting stage *D. gnidium*

Specimens seen of D. mauritanica

MOROCCO: Marrakesh, prox. de Ait Lekak, subida a Oukaïmedene, 1520 m, sobre litosuelos en areniscas rojizas, 11-VII-1984, G. López 8942 & F. Muñoz Garmendia (MA 399007). Moyen Atlas: Timhadit, cretes calcaires de l'Ari Benij, 2450 m, 3-VII-1924, J. Jahan-diez 887 (G; MA 83300). Oujda, Mt. Beni Snassen, bords de la piste, ca. 700 m, 15-VI-1980, A. Charpin, F. Jacquemoud & D. Jeanmonod (G; MA 309266). 2 km SE of Ifrane on road to Mischlifien, 33°31'N 5°6' W, 1660 m, open area in soil between limestone rocks, 14-VII-1987, S. L. Jury 9356, M. Rejdali & M. F. Watson (MA 392188). Chaouïa: Oued Tamdrost, in aridis, 27-V-1912, C.-J. Pitard 1445 (G). Chaouïa; Kasbah ben Ahmed, in aridis, 8-VI-1912, C.-J. Pitard 1447 (G). Berkane: massif de Beni Snassen, Djebel Tamedjout, garigues, rocheurs, 1000 m, 20-IV-1928, E. Wilczek, J. Briquet, D. Dutoit & L. Emberger (G). Région de Amizmiz, rocher, au bord de l'oued, 2-III-1978, M. Desroches (G). Prov. Fes, Dj. Trhat, 770 m, 18-XI-1980, Alyafi (G). Moyen Sebou Sud, env. de Boufekrane, 20-V-1955, Ch. Sauvage 12675 (G).

ALGERIA: Env. d'Oued-Imbert, lieux incultes, 10-VIII-1930, A. Faure (K, MA 83303). Tlemcen: Ruines de Mansourah, lieux incultes, broussailles, 1800 m, 24-VI-1906, A. Faure (G). Environs de Tlemcen, broussailles, bords de chemins, 900 m, 20-IX-1929, A. Faure (G); ibidem, 18-VI-1933, A. Faure (G; MA 83302). Kabylie, Kerrata, lieux arides, sur le calcaire, 800 m, VII-1897, E. Reverchon 220 (G). Constantine, XI-1887, Girod (G). Wilaya Constantine: 17 km NNW von Constantine an der Strasse nach Jijel. 6°33'E 36°28'N, 400 m, Brachäcker, 17-VI-1984, D. Podlech 39444 (G).

TUNISIA: Djebel Zaghuan, in fruticetis montosis, 6-VII-1854, L. Kralik 384 (G).

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