

Plantago benisnassenii (Plantaginaceae), a new species from Morocco

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Plantago benisnassenii Romo, Stübing & Peris *sp. nova* (Plantaginaceae) of the section *Hymenopsyllium* Pilger is described from Morocco and compared with related species of the section. An identification key to the species of sect. *Hymenopsyllium* is provided.

Key words: *Plantago*, taxonomy

The sect. *Hymenopsyllium* Pilger of *Plantago* includes annuals with leaves in rosettes and keels of bracts and sepals with distinct veins. The anthers have a broad, thin and membranous appendage, equalling approximately half-length of the anther, although the original description (Pilger 1922) indicates that the length of the appendage has the same length as the anther. The capsules contain two seeds; the hilum side of seeds is sulcate.

Three species have been described in this section. *Plantago cretica* L. is an eastern Mediterranean plant, which (Feinbrun-Dothan 1978, Tutel 1982) is not present in North Africa. *Plantago cyneraica* Durand & Barratte is an endemic in Libya. The third species, *P. bellardii* All., is a Mediterranean plant occurring also in

Egypt and in the Magreb countries (Morocco, Tunisia and Algeria).

During an expedition to the Riff Mountains, as part of the European Union project *Floristic Biodiversity of Northern Morocco*, in which the authors of this paper have collaborated, we collected a specimen of *Plantago*, which belongs in the section *Hymenopsyllium*. However, it cannot be placed in any of the previously described taxa.

***Plantago benisnassenii* Romo, Stübing & Peris, *sp. nova* (Fig. 1)**

Annuae, 3–5 cm, albo-tomentosa. *Foliis caespitosis, lineari-lanceolatis, acutis, 3-nerviis, hispidae*, 25–30 × 2–3 mm. *Caule herbaceo tomen-*

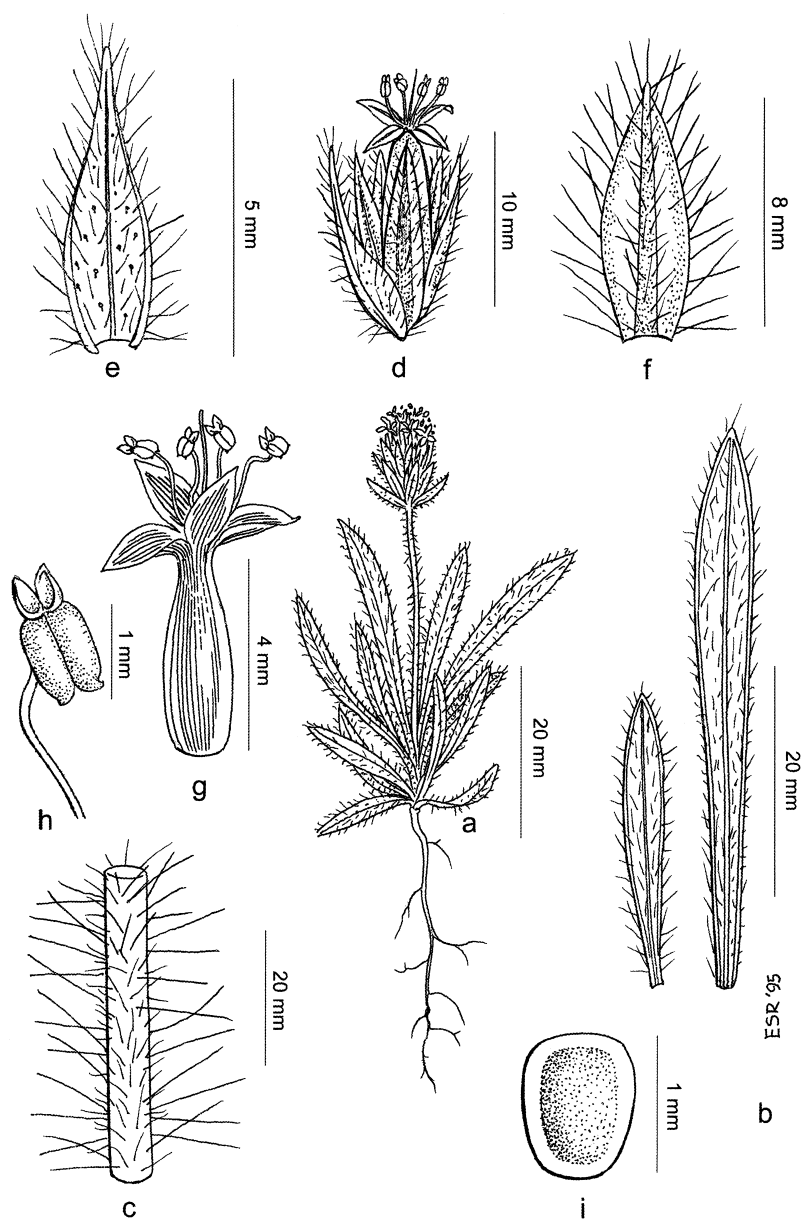


Fig. 1. *Plantago benisnassenii* (drawn from the holotype). — **a:** Habit. — **b:** Leaves. — **c:** Spike peduncle. — **d:** Flower. — **e:** Bract. — **f:** Sepal. — **g:** Corolla with stamens. — **h:** Stamen. — **i:** Seed.

tosso, heterotrichii (duplicato-pilosis), piliis longi 1–2 mm molliter patentis; piliis brevioribus 0.1–0.2 mm glandulosi. Bracteis ovato-acuminati, hyalino-marginatis, basi 3–6 × 1.6–1.9(–2) mm, heterotrichii (duplicato pilosis), pilis longi 1–2 mm; pilis brevioribus 0.1–0.2 mm. Segmentis calycinis 40–50 × 20–25 mm; hyalinus, cum piliis longis nervii intermedi et margine. Antherae 10–11 mm, cum appendix membranaceo-hyalinus 3–4 mm. Corolla glabra, cum petali

1.5 × 1 mm, margine hyalinus. Semina ferruginea 0.8–1 × 0.4–0.7 mm.

HOLOTYPE: Morocco. Beni Snassen, collado de Taforal, 34°47' 2°26', 950 m, R 6577, 10.IV.1994 *M. Bouhmadi, J.B. Peris, A.M. Romo & G. Stübing* (BC-832518). Isotypes: R, RABAT, RGN, SEV.

Annual, 3–5 cm, whitish tomentose. Leaves 25–30 × 2–3 mm, in a basal rosette, linear-lanceolate, acute and 3-veined, hispid on both

faces. Scapes densely tomentose with eglandular, patent (sometimes reflexed), 1–2 mm long trichomes, and with glandular, to 0.1–0.2 mm long trichomes. Bracts 3–6 × 1.6–1.9(–2) mm, ovate-acuminate with hyaline margins, tomentose with long (1–2 mm) and short (0.1–0.2 mm) trichomes. Sepals 40–50 × 20–25 mm, wide hyaline, with long cilia on margins and on central vein. Corolla lobes 1.5 × 1 mm, glabrous and with hyaline margins. Anthers 10–11 mm with a 3–4 mm long, whitish membranous appendage.

Comparison with other taxa

Plantago benisnassenii can be compared with the other taxa of the section *Hymenopsyllium* present in the North African territories and surrounding areas, specifically with *P. cyrenaica* and *P. bellardii*. Table 1 provides this comparison and summarizes our observations based on the examined herbarium material.

Identification key to species of *Plantago* sect. *Hymenopsyllium*

- 1 Plants covered with whitish hairs; leaves 25–30 × 2–3 mm; sepals ciliate on margins and dorsally *P. benisnassenii*
- 1 Plants covered with brownish hairs; leaves 35–65 × 3–5 mm; sepals ciliate dorsally, but not on margins 2
- 2 Inflorescence 1–2 cm long and 0.5 cm wide ... *P. bellardii*
- 2 Inflorescence more than 0.7 cm wide 3
- 3 Leaves 35–45 × 3–4 mm; inflorescence peduncle 1–1.5 cm long; spikes 0.7–0.9 cm, ovate *P. cyrenaica*
- 3 Leaves 50–65 × 4–7 mm; inflorescence peduncle 0.5–1 cm long; spikes 0.5–0.8 cm, ovoid *P. cretica*

SPECIMENS EXAMINED. — *Plantago bellardii*. **Algerie.** L'Arba, *Battandier*, s/d (MPU). Mostagem, dans les clairières broussailles, IV.1851 *Balansa* (MPU). In siccis Boujaean, Alger, IV.1852 *Munby* (MPU). Entre Pointe Pescadores et le Cap Camine, M. Tardieu, V.1862 *Come* (MPU). Azazga, clairières des subéraies sur grès, 500 m, VI.1939 *Maire* (MPU). In arenosis, pr. pagum Alma, VII.1935 *Maire* (MPU). Telemly, Alger, III.1987 *Joly* (MPU). Bou Ismael, V.1859 *Clauson* (MPU, ex herbario H. de la Perrudière). Monticule du canon au Philippeville, IV.1853 *Choulette fils* (MPU, ex herb. Pomel). In pascuis montis Ouach, supra Constantinam, solo arenaceo, 900–1000 m, IV.1934 *Maire* (MPU). **Morocco.** Tanger, *Salzmann*, s/d (MPU, herb. Maire). Chefchaouen, carretera de Chefchaouen a Oued Laou, 1.5 km N del embalse, 340

m, palmital sobre calizas, *Mateos, Pina & Silvestre* (SEV). Tetouan, Ksar-es-Srhir, Ed Diki, areniscas cercanas a la playa, *silvestre*, IV.1988 *Silvestre, Rowe & Vilches* (SEV). Larache, cercanías de Engarja, alcornocales sobre arenas, *silvestre*, IV.1988 *Silvestre, Rowe & Vilches* (SEV). Cap Spartel, areniscas, 100 m, IV.1984 *Aparicio, Rowe & Silvestre* (SEV). Zaio, margues, VII.1934 *Sennen & Mauricio* (BC-137572). Targuist, V.1927 *Font Quer* (BC-810543). Kerman, III.1930 *Font Quer* (BC-810547). Ksar-el-Kbir, III.1930 *Font Quer* (BC-810585). Habitat in arenosis circa emporium Sok-et-Tnin (Beni Hadifa), 900 m alt., III.1927 Iter Marocc. 1927: 590 (BC-54762). Mazura, V.1932 *Sennen* (MPU, herb. Maire). Mogador forêts littorelles de Callitrix, S de l'Hotel Palmera, IV.1921 *Maire* (MPU). Mzirt, rocaïles et pelouses du Taralft, IV.1915 *Maire* (MPU). In ditone Gharb: Chetouan, in Querceto subero, IV.1927 *Maire*, Iter Marocc. XIII (MPU). — *Plantago cyrenaica*. **Libye.** Cyrenaica; in humidosis circa lacusculum ad occid. urbis Barces, 390 m, solo calcareo, IV.1938 *Maire & Weiller* (MPU, herb. Maire). Iter Lybicum 1284. Cyrenaica: in dumetis supra Barcem, 400 m, solo calcareo, IV.1938 *Maire & Weiller* (MPU, herb. Maire). Iter Lybicum 1286. Cyrenaica; in humosis montis Abid supra Barcem, 400 m, solo calcareo, IV.1938 *Maire & Weiller* (MPU). Iter Lybicum 1285 (MPU, herb. Maire). Presso Tolmeta, III.1974 *Brullo* (G-151182). Tocra, III.1974 *Brullo* (G-123283). P. Taubert, Iter Cyrenaicum 1887/auspice W. Barbey/sub n. 293 *Plantago bellardi*/ Derna in humidis planitieis orientalis, IV. (G, herb. Barbey-Boissier). — *P. cretica*. **Cyprus.** Périvolía (Larnaca), 0 á 5 m; sables maritimes et décombres sableux, Iter Mediterraneum IV (Chypre) 23, IV.1991 (MA 495528). Cape Greco (Larnaca), 10–20 m, calcaires coralliens du Miocène inférieur et sables, Iter Mediterraneum IV (Chypre) 174, IV.1991 (MA 495796). Distr. Paphos (div. 1 sec. Meikle), Peninsula Akamas, in monte Hag. Georgios prope Drousha, 500–650 m, V.1986 *K. H. Re-chinger*, Iter Cypricum (MA 418857). Peyia, route de Polis (Paphos), 250–300 m, bois ouvert de *Pinus brutia*, *Juniperus phoenicea*, *Pist. lentiscus* et clairières rocheuses à pelouse et *Cistus monspeliensis*, calcaire, Iter Mediterraneum IV (Chypre) 1303, IV.1991 (MA 495834). Prés de Droushia et Inia, à l'ouest du mont Lara (Paphos), 550 m, gros rochers de grès du Trias et paturages, lande à *Cistus monspeliensis* repoussé après incendie, Iter Mediterraneum IV (Chypre) 1367, IV.1991 (MA 495794). Kourion (Chypre, district Limassol, div. géobot. n. 3, à l'ouest de Limassol), ruines archéologiques du sanctuaire d'Apollon, alt. env. 140 m, pelouse à annuelles sur terre rouge calcaire, entre des fourrés de *Juniperus phoenicea*, *Pistacia lentiscus*, *Ceratonia siliqua*, *Olea europaea* var. *sylvestris*, *Cistus salviifolius*, IV.1992 *J. Lambinon* n. 92/175 & *G. Van Den Sande* (MA 563722). **Greece.** *Plantae* a Th. Pichler in insula Karpatos, Pigardia in aridis, auspice W. Barbey lectae, aprili 1883 (G-BOISS). *Plantae* a Th. Pichler in insula Karpatos, Monte lasto in aridis declivibus, auspice W. Barbey lectae, 13 maio 1883 (G-BOISS) *Plantae* a Th. Pichler in insula Karpatos, auspice W.

Table 1. Comparison between *Plantago benisnassenii* (BC-832518), *P. bellardii* (BC-54762), *P. cyneraica* (Libya, Cyneraica, IV.1938 R. Maire & M. Weiller 1284, MPU Herb. Maire) and *P. cretica* (MA-116374).

	<i>Plantago benisnassenii</i>	<i>Plantago bellardii</i>	<i>Plantago cyneraica</i>	<i>Plantago cretica</i>
Plant height	3–5 cm	4–8(–11) cm	4–5(–7) cm	4–6 cm
Hair covering	Whitish	Brownish	Brownish	Brownish
Leaves size	25–30(–40) × 2–3 mm	50–65 × 3–4(–5) mm	35–45 × 3–4 mm	50–60(–65) × 4–6(–7) mm
Stems	Densely hairy with long (1–2 mm) eglandulose trichomes and short (0.1–0.2 mm) glandulose trichomes	Densely hairy with long (2–2.5 mm) and short (0.2 mm), trichomes both eglandulose	Sparsely hispid with long (1–1.25 mm) and short (> 0.2 mm) trichomes, both glandulose	Densely hairy with long (5–7 mm) eglandulose trichomes
Spike size	1–1.3 × 0.6–0.8 cm	(1–)5.2 × 0.5–0.6 cm	1.5(–2) × 0.8–0.9 cm	0.7–0.9 × 0.6–0.9 cm
Bracts size	5.5–6 × 1.8–2 mm	3–6 × 1.6–1.9(–2) mm	6–7 × 3.5–4 mm	5–6 × 3–4 mm
Bracts shape	Ovate-acuminate, with hyaline base and margins	Ovate-acuminate, with hyaline margins	Ovate-acuminate	Ovate-acuminate
Bracts trichomes	1–2 mm	up to 2 mm	0.1 mm	3–4 mm
Sepals size	40–50 × 20–25 mm	30–40 × 14–16 mm	40–55(–60) × 20–26 mm	45–55(–60) × 25–30 mm
Sepals shape	Ovate, hyaline, long-ciliate on the margins and dorsally	Ovate, hyaline, long-ciliate dorsally	Ovate, hyaline, short-ciliate dorsally	Ovate, long-ciliate dorsally
Corolla	1.5 × 1 mm	1.25–1.5 × 0.5–0.6 mm	1.5 × 0.5 mm	2–2.5(–3) × 1.7–2 mm
Seeds	0.8–1 × 0.4–0.7 mm, ovate, brownish	1.5–1.7 × 1–1.1 mm, ovate, brownish	2–2.25 × 1–1.2 mm, ovate, brownish	1.5 × 0.5 mm, ovate, dark brown

Barbey lectae, in aridis insulae Karpatos ubique, 28 aprili 1883 (G-BOISS). G. Kassos: In campis incultis montis Kóraka, ad 500 circ., Forsyth Mayor, 2–4 maj. 1887. Insula Naxos, in monte Koroni, Chr. Leonis 12-V-1898, Flora Aegaea n° 85 (MA 116375). Distr. Hierapetra, Prope Anatoli, IV.1900 Chr. Leonis, Flora Aegaea n° 19 (MA 116374). Agios Georgios 3 km südl. von Arkassa, Brachfläche über Neogenmergel, 70 m ü.NN, Th. Raus, IV.1984 (MA 540654). 3 km südwestl. Pigadia an der Strasse nach Menetes, Getreidefeld und Ackerrain, tiefgründiger Braunlehm, teilweise oberflächenvernässt, 120 m ü. NN, IV.1984 Th. Raus (MA 540665). Creta, Nanos Lassithi, presque Ile de Sidero, ca. 4.5 km N de Vai, sables littoraux, 0–3 m, V.1998 A Charpin 25269 (G 467595). L'Akroteri, lieux arides, V.–VI.1883 E. Reverchon (G-BOISS). **Israel.** Ramath-Gan, near Tel-Aviv, sandy soil, III.1928 M. Zohary & D. Soltchansky (MA 116376). **Jordania.** Jebel Austra, East of Jordan, 1873 J.A. Paine (G-BOISS). **Syria.** Syria borealis, in graminis

format Narstieur, c. Aleppo, III.1865 Ch Haussknecht (G-BOISS). Cap d'Alaya, près du Chateau, IV.1845 E. Boissier (G-BOISS). In saxosis apricis ad Alaya, IV.1845 Pamphylice de Hetdreich (G-BOISS). Smyrna, Aucher-Eloy, Herbier d'Orient, 2706 (G-BOISS). Mersina, IV.1855 M. Balansa (G-BOISS). **Turkey.** Constantinople, 1845 Noé (G-BOISS).

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