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Questa è la Versione finale referata (Post print/Accepted manuscript) della seguente pubblicazione:

Original Citation:

Apocynaceae of Oman: Orbea nardii, sp. nov. and Pentatrpis bentii, first finding / M. Raffaelli; S. Mosti; M. Tardelli. - In: WEBBIA. - ISSN 0083-7792. - STAMPA. - 63(2)(2008), pp. 161-167.

Availability:

This version is available at: 2158/326257 since:

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63 parte 2

Apocynaceae of Oman: *Orbea nardii*, sp. nov. and *Pentatropis bentii*, first finding

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Accettato il 30 Luglio 2008

Apocynaceae dell'Oman: Orbea nardii, sp. nov. e *Pentatropis bentii*, prima segnalazione – Viene descritta *Orbea nardii*, una nuova specie trovata sulle montagne di Al Mughsayl (Dhofar centrale, Oman). Viene confermata la presenza in Dhofar di *Orbea luntii* rinvenuta sul versante meridionale di Jabal Samhan e viene segnalato il primo ritrovamento di *Pentatropis bentii* sulle montagne di Hasik, Dhofar orientale.

Key words: *Apocynaceae*, distribution, Dhofar, Oman, *Orbea nardii*, *Pentatropis bentii*, taxonomy.

***Orbea nardii* sp. nov.**

About 56 species belong to *Orbea* Haw. (1812), a genus distributed across subdahanian Africa to tropical Arabia (Bruyns, 2002; Lavranos, 2006). *Orbea* has been segregated from *Caralluma* on the basis of its distinctive conical stem teeth (tubercles) and the flowers opening in succession along the side of the stems (Gilbert, 1990; Lavranos, 2006); moreover *Orbea* differs from *Ballyanthus* Bruyns having a more or less campanulate corolla and the inner corona lobes without dorsal projections (Bruyns, 2002).

Among the species so far found in Yemen and Oman there is *Orbea luntii* (N.E. Br.) M. Gilbert (syn. *Caralluma luntii* N.E. Br.), described in 1894 on specimens collected by T. Lunt in the hills near Dobaibah, South Yemen (Hadrmaut). Many years later Miller & Morris (1988) notified the finding of the species in Dhofar, South Oman: “in one of the north draining wadis east of the Salalah to Thumrit road”. These au-

thors, sagaciously, pointed out that the Omani specimens of *Caralluma luntii* found by them show some morphological differences with the original description in N.E. Brown; at page 54 of their book, they wrote: “the corolla lobes... are a rich brownish red in colour unlike the colour of the plant collected by Lunt which was reported as yellowish green below the middle, purple above and along the margins”.

Field research in Dhofar

During our investigations in Dhofar we found two *Orbea* populations: one on the west-south slope of Jabal Samham, the specimens were growing on a rocky-dusty soil, exposed to full sunlight; another located on the mountains behind Al Mughsayl, the specimens were found hidden under two *Commiphora habessinica* shrubs.

At the moment of the collection, the specimens of the two populations could not be surely identified be-

cause they were not in flower, even though they showed a few morphological differences in the vegetative stems (see also Table 1). In July 2007, luckily, some specimens of the two populations, which were transplanted in the Botanical Garden of Florence, flowered, giving us the possibility to identify and separate them. Flowers of the plants from Jabal Samhan completely agree with the flowers of *Caralluma luntii* N.E. Br., as they are described in the protologue: “*floribus 1-3 prope apicem ramorum fasciculatis longe pedicellatis... lobis elongatis linearibus incurvato-erectis conniventibus... infra medium viridi-flavescentibus parte superiore marginibusque purpureis... corona cum columna staminea tota purpurea*”.

By contrast the flowers of the specimens from Al Mughsayl have the same morphology of the flowers of the plant described and figured in Miller & Morris (1988, fig. 2B) and incorrectly identified by them as *C. luntii*.

Discussion

According to their morphological distinctive characters (Table 1), the specimens of *Orbea* from Jabal Samhan are to be referred to *Orbea luntii* (N.E. Br.) Bruyns (syn. *Caralluma luntii* N.E. Br.); they represent the first true finding of this species in Oman. The

specimens of *Orbea* from Al Mughsayl, which agree in flowers morphology with the plant of Miller & Morris (1988) represent a new species for Oman, named by us *Orbea nardii*.

The most remarkable differences between the flowers and the stems of the two *Orbea* species are reported in Tab. 1 and Fig. 1).

Orbea nardii Raffaelli, Mosti et Tardelli, sp. nov.

TYPUS - *Holotypus*: “Strada costiera oltre Al Mughsayl, prima del posto di blocco. Altipiano erboso, versante a mare. Alt. 650 m, 16°50.640' N, 53°41.650' E, 10.09.2002. M. Raffaelli, M. Tardelli, S. Mosti” (FT).

DIAGNOSIS - *Herba succulenta, caulibus erecto-ascendentibus, dentis (0.5-)0.8-1.1(-1.3) cm praeditis. Flores 2-6, pedunculati, pedunculis 3 mm longis. Corolla campanulata, quinquepartita; tubo brevibus pilis albidis intus induto; lobis vinosis, 11-12 mm longis, lineari-lanceolatis, longistrorsum replicatis, in dimidio inferiore iisdem ac in tubo pilosis. Corona 2.5-2.6 mm alta, 2.7-2.9 mm diametro, lobata; lobis albis bifariam, exterioribus leviter saccatis, interioribus complanatis, appendicem dorsalem singulam trinosque denticulos apicales ferentibus, imminetibus antheris convergentibusque ad columnam staminalem centalem.*

Table 1 - Distinctive morphological characters between *Orbea nardii* sp. nov. and *Orbea luntii*.

Characters	<i>Orbea nardii</i> sp. nov.	<i>Orbea luntii</i>
Stems size (cm)	3.5-12(-16) x 0.7-1.5	1.5-5.5 x 0.5-1.0
Stems colour	grey-greenish (purple-shaded), mottled with dark-green	bright green, mottled with purple-brown
Teeth length (cm)	(0.5-)0.8-1.1(-1.3)	(0.3-)0.6-0.8
Pedicels length and width (mm)	2.9-3.1 x 1.4-1.5	10.5-10.7 x 1.2 ca.
Calyx lobes	dark-green (1.5 mm)	red-wine (1 mm)
Corolla lobes: length and width (mm)	11.2-11.9 x 0.7-2.2	13.4-13.7 x 0.5-1.8
Corolla lobes: colour	entirely red-wine	yellow greenish below the middle, red-wine above and along the margins
Papillae on the corolla lobes	only in the half lower part	in all the surface of each lobe
Corona: height (mm)	2.5-2.6	3.0-3.1
Corona: width (mm)	2.7-2.9	1.6-1.9
Corona outer lobes: colour	white	red-wine



Fig. 1 - *Orbea nardii*: a) flowered stem (x 1); b) flower (x 4) - *Orbea luntii*: c) flowered stems (x 1); d) flowers (x 2,8) - Length of pedicel and corolla lobes in: e) *Orbea nardii*, f) *Orbea luntii*.

ETYMOLOGIA – Dedicated to Prof. Enio Nardi, notable taxonomist of the Italian Flora.

DESCRIPTION - Succulent herb; stems ascending-erect, 3.5-12(-16) x 0.7-1.5 cm, grey-green, mottled with purple and green-brown, sometimes branched at base and forming small clumps with 4-6 tubercles; teeth (0.5-)0.8-1.1(-1.3) cm long. Flowers 2-6 together, opening in sequence, placed on the axils or among the teeth; pedicels 2.9-3.1 mm long, 1.4-1.5 mm wide. Sepals dark-green, ca. 1.5 mm long. Corolla campanulate, deeply 5-lobed with a very shallow tube, covered with short, whitish hairs in the inner surface of the tube and the half lower part of the lobes; lobes linear-lanceolate, 11.2-11.9 x 0.7-2.2 mm, red-wine with backwards folded (revolute) margins. Corona, 2.5-2.6 mm high, 2.7-2.9 mm wide; outer lobes white, slightly pouched; inner lobes flattened, white, incumbent on the anthers, with the tips connivent over the central staminal column, each lobe with a dorsal appendage and small teeth at apex.

FLOWERING PERIOD – Observed in June-July in cultivation at the Botanical Garden of Florence.

ICONOGRAPHY – Fig. 1 (Nostra, Photo); Miller & Morris (1988, Fig. 2 a-f, sub *Caralluma luntii*).

DISTRIBUTION (FIG. 2) AND ECOLOGY – *Orbea nardii* is endemic to Dhofar. Five-six specimens were collected under two *Commiphora habessinica* shrubs, partially hidden by the fallen leaves of the commiphoras. In the collection locality, near Al Mughsayl, *O. nardii* was growing together with some other species as *Adenium obesum* (Forssk.) Roem. & Schult., *Commiphora habessinica* (Berg.) Engl. and the succulent *Aloe inermis* Forssk., *Euphorbia shimperi* Presl, *Dorstenia foetida* (Forssk.) Schweinf. and the rare *Euphorbia orbiculifolia* S. Carter (probably the second record for Oman).

Taxonomic remarks

Orbea nardii is closely related to three other species: *O. baldratii* (White & Sloane) Bruyns (from Ethiopia and Somalia), *O. wismannii* (O. Schwartz) Bruyns (from Yemen) and *O. laikipiensis* (M. G. Gilbert) Bruyns (from Kenya). Compared with *Orbea nardii*, the main differences among these species can be summarized as follows: *O. baldratii* is characterized by a taller corona (3-4 mm) with purple-black outer lobes; *O. wismannii* shows longer pedicels (ca. 9 mm), a glabrous corolla with red-yellow lobes, a corona with yellow(-reddish) lobes and shorter stem tubercles (3-5

mm); *O. laikipiensis* differs having a glabrous corolla, wider lobes (3-3.3 mm), a yellow-bright corona and outer lobes much pouched.

Specimens seen

Orbea nardii: type locality: Strada costiera oltre Al Mughsayl, prima del posto di blocco. Altipiano erboso, versante a mare. Alt. 650 m, 16°50.640'N, 53°41.650'E, 10.09.2002. M. Raffaelli, M. Tardelli, S. Mosti (FT). – Living plants (from the type-locality) in the Botanical Garden of Florence.

Orbea luntii: Altipiano roccioso di Jabal Samhan. Alt. 1.400 m, 17°07.860'N, 54°44'E, 25.09.2001. M. Raffaelli, M. Tardelli, S. Mosti (FT). – Living plants (from the same locality) in the Botanical Garden of Florence.

DATA FROM LITERATURE – *Orbea nardii* (sub *Caralluma luntii*) in Miller & Morris (1988): "... in one of the north draining wadis east of the Salalah to Thumrit road." The "question mark" in Fig. 2 suggests a probable location of the species inside the vast area mentioned by the preceding authors.

Pentatropis bentii (N.E. Br.) Liede

Pentatropis bentii (N.E. Br.) Liede, found for the first time in Yemen (N.E. Br., 1894) is a creeping plant characterized by fleshy leaves and inflorescences formed by 2-4 flowers cream or yellowish in colour, with a narrow tube obscuring the gymnostegium. This rare species, up till now known only from Yemen (Brown, 1894; Goyder, 2006) and Somalia (Goyder, 2006), has been recently found in Dhofar (southern Oman), along a coastal area at the foot hills 3-4 km west of Hasik, at an altitude of 10-60 m. It has been observed in two adjacent localities, during the years 2006 and 2007; some flowering plants (3-4 specimens) were growing with their long creeping stems on a rocky and pebbly soil; Fig. 3 shows the fleshy habit and the bright green colour of the leaves that disappear in the dried specimens.

Specimens seen

Oman (Dhofar)

– Hasik, salendo verso l'area dell'incenso poco prima di Hasik; alt. 56-400 m. 17°24.870' - 17°24.710'N, 55°16.530' - 55°15.900'E, Raffaelli, Tardelli, Mosti. n° 381. Stazione 28 - 16.02.2006 (FT!).

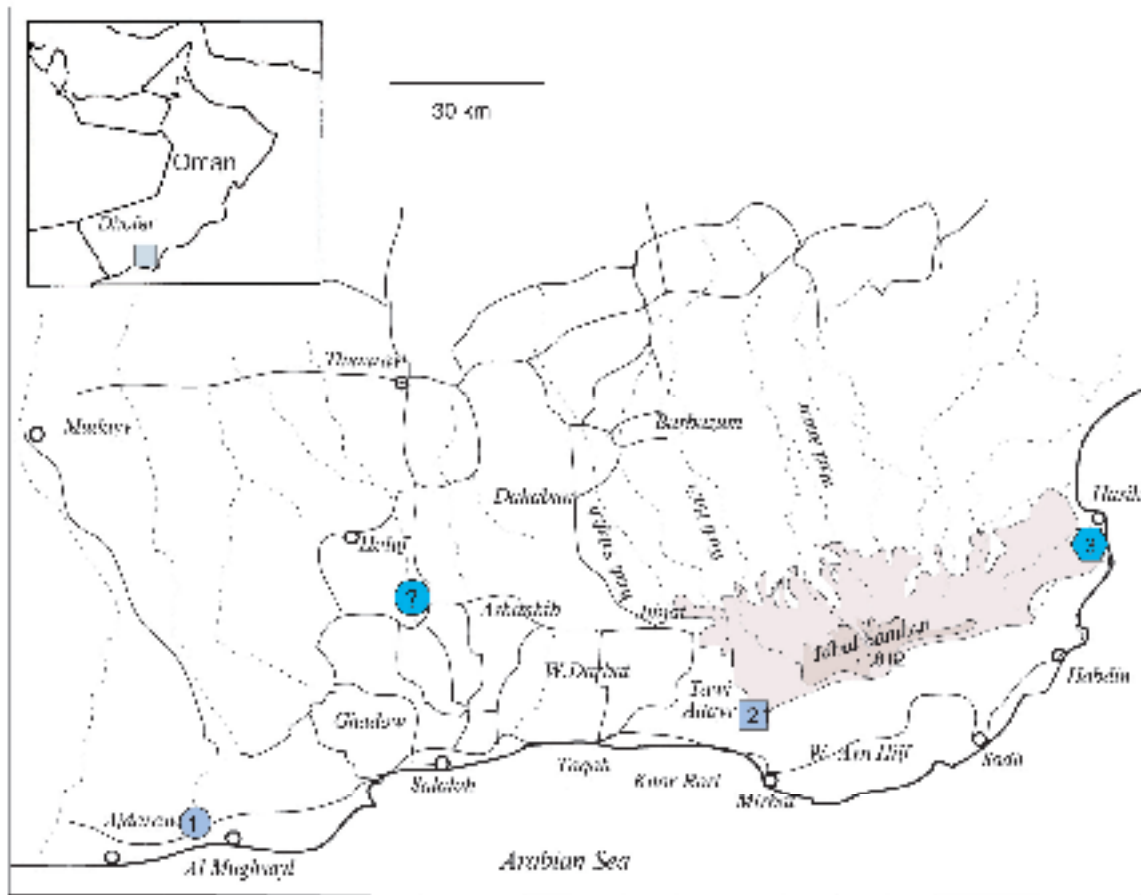


Fig. 2 - Circles: locations of *Orbea nardii*, for the “question mark”, see the text. – Square: location of *Orbea luntii*– Hexagon, location of *Pentatropis bentii*.

– Strada Habdin-Hasik. Colline rocciose qualche km prima di Hasik (area incenso). Alt. 0-350 m. 17°24.870' - 17°24.710' N, 55°16.530' - 55°15.940' E, *Raffaelli, Tardelli, Mosti*. n° 191, 192, 193. Stazione 23. - 05.03.2007 (FT!).

Yemen

– *Strobopetalum bentii* N.E. Br. Theodore Bent's Hadramaut Expedition, 1893-94 n° 229. Climbing plant, flowers dull indistinct yellowish colour, growing up the rocky sides of the dry bed of a stream at Chail-bawazis. Altitude 250 feet. 1-2-1894. Type specimen (K!).

– *Strobopetalum bentii* N.E. Br. Yemen, Hadramaut: 19 km from Burum on road from Al Mukalla towards Aden. Sandy ground near the shore. Flowers cream. Lat/long: 14:18N 48:53E. Alt. 0005-0010 m. *Thulin, Eriksson, Gifri et Langstrom* n° 8197. 8.X.1992 (K!, UPS!).

Somalia

– *Strobopetalum bentii* N.E. Br. (syn. *S. carnosum* N:E. Br.). Elayn, Britusch Somaliland. *E.F. Peck*. 17/03/37 (K!).

– *Pentatropis bentii* (N.E. Br.) *Liede*. Somaliland Prot., 15 miles W. of Baran 2000' appr. climbing over bush in small ravine, leaves fleshy, no latex. Only young inflorescences collected. *Bally*, 23.10.54 (K!).

– *Pentatropis bentii* (N.E. Br.) *Liede* (syn. *S. bentii* N:E. Br., syn. *Pentatropis spiralis* (Forssk.) Decne). Eastern Somaliland, betw. Bosaso and Elayn coast, riverbed on creek, on brackish soil, climber with very fleshy leaves, flowers pale buff, lobes filiform, no latex. *Bally*, n° 1124. 24.10.1956 (K!).

Pentatropis bentii (N.E. Br.) *Liede*. Somalia, Bari: 12 km E of Bosaso. Lat/long 11:19N 49:16E. Alt.: 0005 m. Sandy coastal plain. Plant fleshy. Flowers yellowish white. *M. Thulin, Abdi Dahir et Ahmed Osman*, n°10222. 10.1.2000 (UPS!).



Fig. 3 - *Pentatropis bentii*: a) whole plant (x 0,7); b) flowers (x 1,3).

Acknowledgments

Thanks are due to the Office of the Adviser for Cultural Affairs, Sultanate of Oman, for technical and logistic assistance during our visit to Dhofar. We are also grateful Dr. Cristina Bellini for reading the manuscript.

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Summary: *Orbea nardii*, a new species found in the mountains of Al Mughsayl (central Dhofar, Oman) is here described and compared with some other closely related species of *Orbea*. Moreover the presence of *Orbea luntii* in Dhofar is confirmed on the basis of its finding on the southern slope of Jabal Samham and, finally *Pentatropis bentii*, found in the mountains of Hasik, eastern Dhofar, is recorded for the first time.

