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(Article begins on next page)

Nanorrhinum roseiflorum (Scrophulariaceae), a new species from Dhofar, Southern Oman

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Nanorrhinum roseiflorum, (Scrophulariaceae), una specie nuova dal Dhofar, Oman meridionale – Viene descritto *Nanorrhinum roseiflorum*, una nuova specie a fiori completamente rosa, a portamento di piccolo arbusto e a foglie estremamente ridotte, trovata sulle montagne fra Qaftwat e Wanat (versanti occidentali di Jabel Qara) e nell'area predesertica di Wadi Andur, alle spalle di Jabal Samhan.

Key words: Dhofar, Oman, *Nanorrhinum roseiflorum*, Scrophulariaceae, taxonomy.

According to the recent revision of Ghebrehiwet (2002) the species of *Kickxia* from Oman have been transferred to *Nanorrhinum* Betsche. Following this new treatment, in Oman there are the species: *Nanorrhinum hastatum* (R. Br. ex Benth.) Ghebrehiwet, *N. ramosissimum* (Wall.) Betsche and *N. heterophyllum* (Shousb.) Ghebrehiwet, in which Ghebrehiwet (2002) encloses also *K. qaraica* Sutton, endemic to Dhofar (Miller & Morris, 1988; Sutton, 1988; Ghazanfar, 1992).

However the genus *Nanorrhinum* in Oman is far from well-known, and, as evidence of this, other poorly-known and undescribed species are reported by Ghazanfar (1992), under the previous name of *Kickxia*: i.e. *Kickxia*. sp. nov. cf. *hastata* (C. Oman, Dhofar), *K.* sp. nov. (N. Oman, based on *Collenette 8066*), and *K.* sp. nov. (Dhofar, Miller: Checklist, 1988). The first two are yellow-flowered, the third, according to Ghazanfar (1992), is blue-flowered, but it is cited with purple flowers in Miller & Morris (1988), the original source.

Field research in Dhofar

During our investigations in Dhofar, we collected numerous *Nanorrhinum* plants, the majority of which refer to *K. qaraica* (under *Nanorrhinum heterophyllum* according to Ghebrehiwet), with yellow flowers, perennial habit, and deltate-sagittate leaves. *K. qaraica* is characterized by yellow flowers; however some purple-violet flowered plants are occasionally found, but the purple-violet colour is present only on the lips of the corolla, never on the tube or on the spur. According to field-observations, these rare plants with purple-violet flowers grow mixed among the yellow-flowered plants or in their proximity, and show the same herbaceous habit and leaf morphology. For this reason, they represent a particular phenogeno type of *K. (Nanorrhinum) qaraica* that cannot be taxonomically separated from it; in support of this, in October 2000 we collected a violet-flowered plant growing among yellow-flowered plants on the rocky plateau of Ashanhaib.

In some sites of Dhofar, however, we found pink-flowered plants. The entire flower is pink, with shrubby habit and small leaves. In February 2006, a pink-flowered *Nanorrhinum* was collected in an unexplored area of Wadi Andur, behind Jabal Samhan. Successively, in March 2007, we found two pink-flowered *Nanorrhinum* populations (10-15 plants) along the ridgeway between Qaftwat and Wanat, on the mountains behind Wadi Adownib and Al Mugh-sayl, at an altitude of 900-1150 m.

Discussion

According to the pink colour of the flowers, the shrubby habit of the plant, the extremely small leaves and other peculiar morphological features (see also Table 1), the *Nanorrhinum* plants - on the mountains between Qaftwat and Wanat and in the pre-desert area of Wadi Andur - represent a new species: *Nanorrhinum roseiflorum*, quite different from *K. (Nanorrhinum) qaraica* or *N. heterophyllum*. The populations of *N. roseiflorum* all possess pink-flowered

plants, and in the areas where they thrive we did not record the presence of *K. (Nanorrhinum) qaraica*.

It is likely that *N. roseiflorum* corresponds to the purple-flowered undescribed species of Miller & Morris (1988: 262) for the Mirbat hills and the northern slopes of the coastal chain; in fact the specimens cited by Miller & Morris are described as "twiggy shrubs" like the specimens of our species. Therefore, the treatment of Miller & Morris (1988) is little confusing, because in the text they refer to a probable undescribed purple-flowered species (arguably the same of *N. roseiflorum*), whereas in the figure caption they mention a purple-flowered form which is purple-violet only on the corolla lips, but greenish-yellow on the tube and spur, so that it could better represent the violet-colour variant of *K. (Nanorrhinum) qaraica*.

In any case, the most representative character of *Nanorrhinum roseiflorum* consists of the colour of the corolla that is entirely pink (pale-purple); up to now entirely pink flowers had never been found neither in *Nanorrhinum* nor in *Kickxia* and therefore this character is greatly diagnostic

Table 1 - Morphological diagnostic characters between *Nanorrhinum roseiflorum* sp. nov and *Kickxia (Nanorrhinum) qaraica*.

Characters	<i>Nanorrhinum roseiflorum</i>	<i>Kickxia (Nanorrhinum) qaraica</i>
Habit	twiggy shrub; stems erect	perennial herb, woody-based; stems erect or ascending
Corolla colour	entirely pink (-pale purple)	yellow (purple-violet only on the corolla lips in some rare specimens)
Corolla length (mm)	(12-)17-20	(14-)17-24
Spur length (mm)	6-12	(11-)13-16
Pedicels length (mm)	(10-)12-18(-24)	(10-)14-37
Calyx length (mm)	2.5 x 0.4-0.8	3-4.5 x 0.7-1.5
Petiole length (mm)	0.5	1-7

Nanorrhinum roseiflorum Mosti, Raffaelli & Tardelli, sp. nov.

TYPUS - *Holotypus*: "Strada di crinale Qaftawt-Wanat: qualche Km prima di Wanat scendendo per 4 Km ca. in direzione della costa, Alt. 1129 m, 17°00.704' N, 53°44.767' E, 01.03. 2007. M. Raffaelli, M. Tardelli, S. Mosti" (FT).

DIAGNOSIS - *A Kickxia (Nanorrhinum) qaraica* D. A. Sutton floribus roseis, corollis minoribus (12-)17-20 mm, habitu fruticante, foliis minoribus (1.5-3 x 0.5-1 mm) differt. *A Nanorrhinum heterophyllum* (Schusb.) Ghebrehewet floribus roseis differt.

ICONOGRAPHY - (Fig. 1, drawn by A. Maury; Fig. 2, photo).

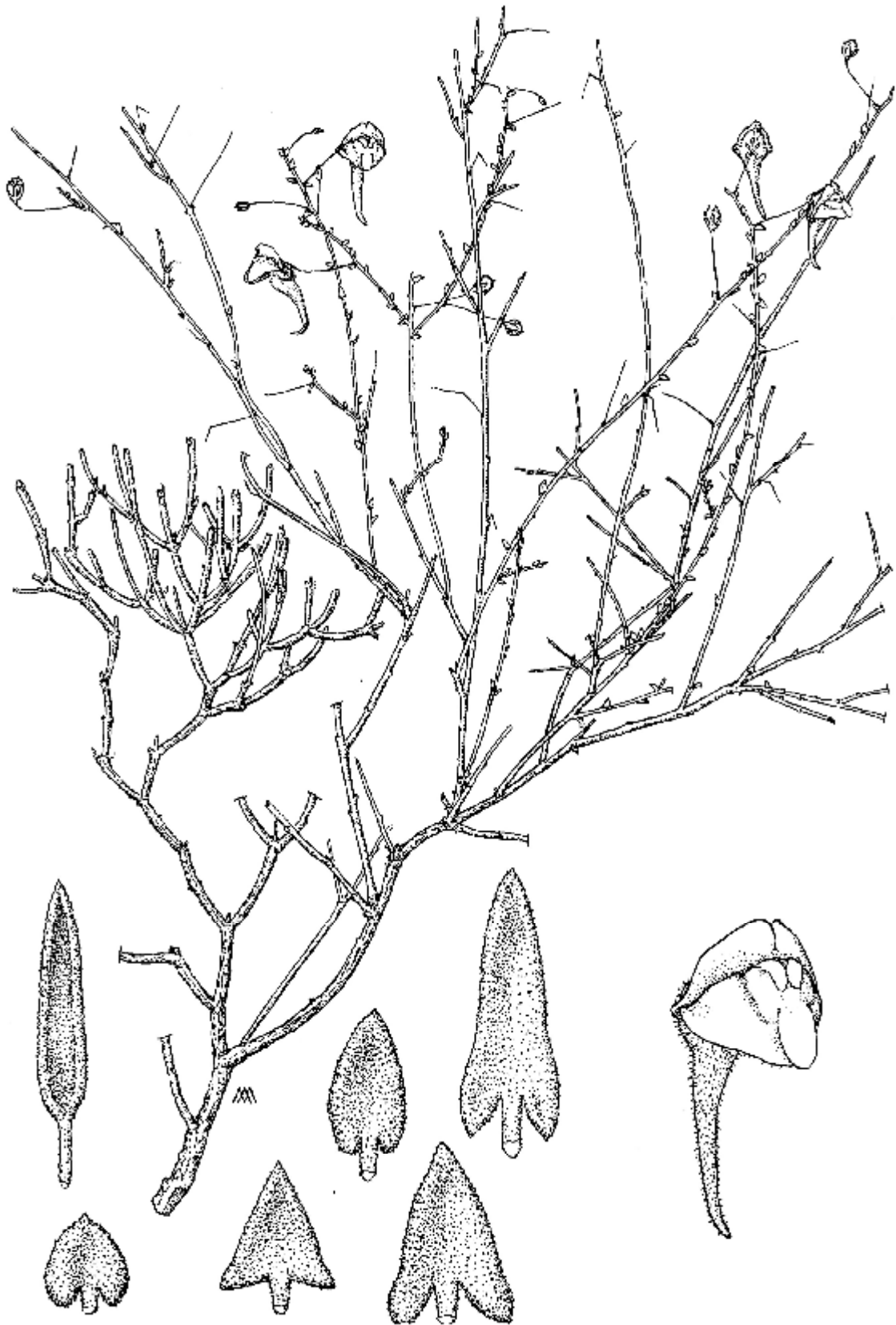


Fig. 1 - *Nanorrhinum roseiflorum*: habit (x1); leaves (x15); flower (x3).



Fig. 2 - Pink flowers and habit of *Nanorrhinum roseiflorum*.

DESCRIPTION - Twiggy open shrub; stems 12-25(-35) cm, erect, papillose-glandular, sparsely branched. Leaves 1.5-3 x 0.5-1 mm, alternate, deltate-sagittate, sometimes linear-lanceolate, sparsely papillose-glandular, soon dropping near the base of the stem; petiole 0.5 mm long. Flowers axillary; pedicels (10-)12-

18(-24) mm long, reddish or yellowish, sparsely glandular, straight or curved at the top. Calyx 2.5 x 0.4-0.8 mm, with 5 triangular lobes, green and scabrous in the margins, sparsely glandular near the base. Corolla including spur (12-)17-20 mm long, 2-lipped, entirely pink pale-purple, glandular-pubes-

cent externally; tube 5-6 mm, broad at mouth; lower lip internally pubescent with branched hairs; spur 6-12 mm long, curved. Fruit 2-3 mm in diameter, a capsule globular-ovoid, dark-brown to violet, with glandular violet hyaline hairs (when unripe), then light brown and sparsely pubescent (when ripe), many-seeded. Seeds 0.5-0.6 x 0.4 mm, oblong, tuberculate, reddish (sometime yellowish).

FLOWERING AND FRUITING PERIODS: February-March.

DISTRIBUTION (FIG. 3) AND ECOLOGY - Dhofar: Western mountain slopes of Jabal Qara, from Qaftawt to Wanat, at an altitude of 900-1150 m, on gravelly and rocky soils - Dry plateau behind Jabal Samhan, in the area of Wadi Andur, at an altitude of about. 600 m, among the stones of the wadi bed.

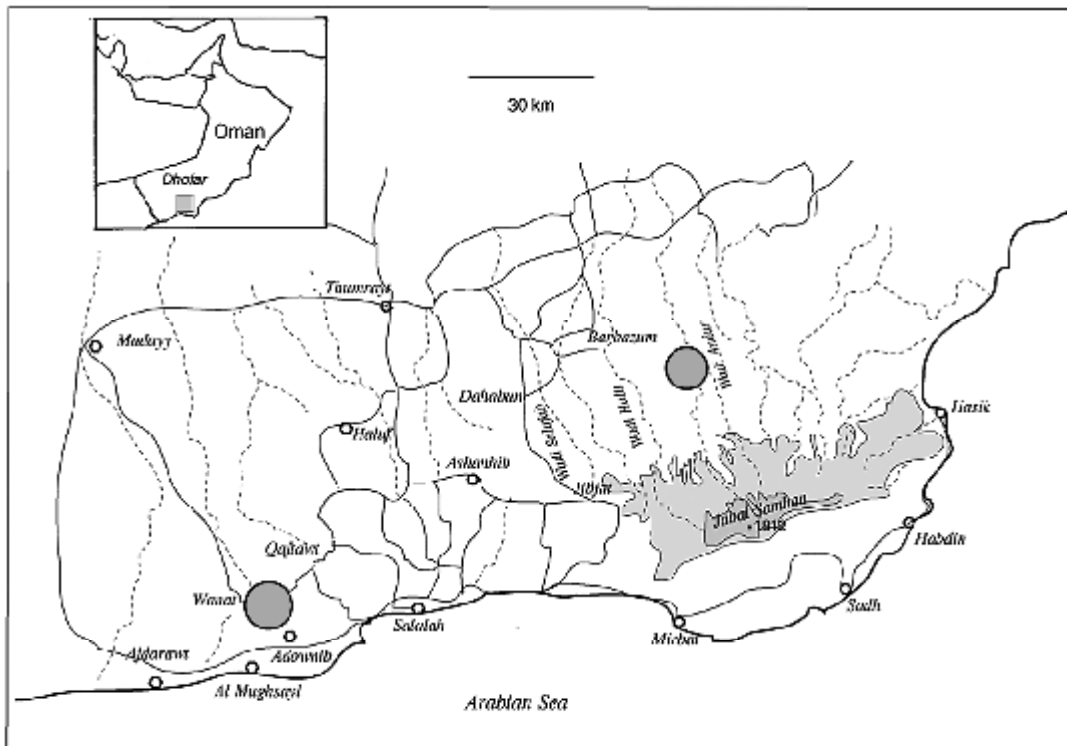


Fig. 3 - Distribution area of *Nanorrhinum roseiflorum* in Dhofar.

Specimens seen

Dhofar: Strada di crinale Qaftawt-Wanat: qualche Km prima di Wanat scendendo per 4 Km ca. in direzione della costa, Alt. 1129 m, 17°00.704' N, 53°44.767' E, 01.03.2007. *M. Raffaelli, M. Tardelli, S. Mosti* (FT).

(10-15 specimens found in the area)

Dhofar: Strada di crinale Qaftawt-Wanat qualche Km prima di Wanat scendendo per 600-700 m in direzione della costa (1° stazione Kickxia), Alt. 1063 m, 17°01.990' N, 53°45.385' E, 01.03.2007. *M. Raffaelli; M. Tardelli, S. Mosti* (FT).

(5 specimens found in the area)

Dhofar: Wadi Andur. Dalla pozza permanente dello wadi verso sud per circa 20 Km, Alt. 558 m. 17°34.224'N, 54°42.171'E - 17°31.085'N, 54°45.050'E, 14.02.2006. *M. Raffaelli, M. Tardelli, S. Mosti* (FT).

(only 1 specimen)

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Abstract: *Nanorrhinum roseiflorum*, characterized by pink flowers, a twiggy shrub habit and very small leaves, is described as a new species from Dhofar (Oman). It is distributed on the mountain rocky slopes of Jabal Qara, from Qaftwat to Wanat, at an altitude of 900-1150 m, and in the dry area of Wadi Andur, behind Jabal Samhan, at an altitude of 600 m.