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## *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* (Schub.) Ghebrehewet floribus roseis differt.

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

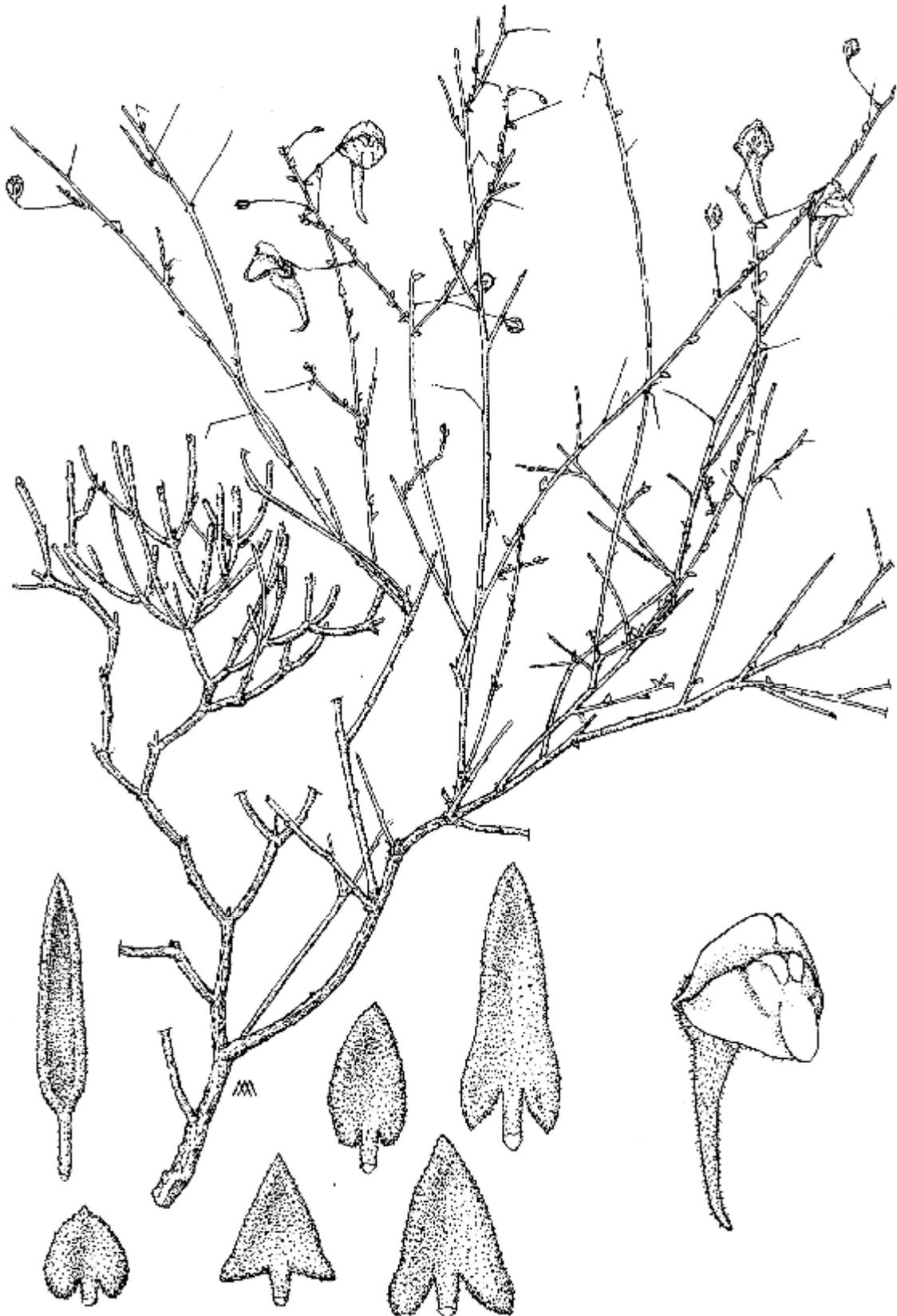


Fig. 1 - *Nanorrhinum roseiflorum*: habit (x1); leaves (x15); flower (x3).



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.

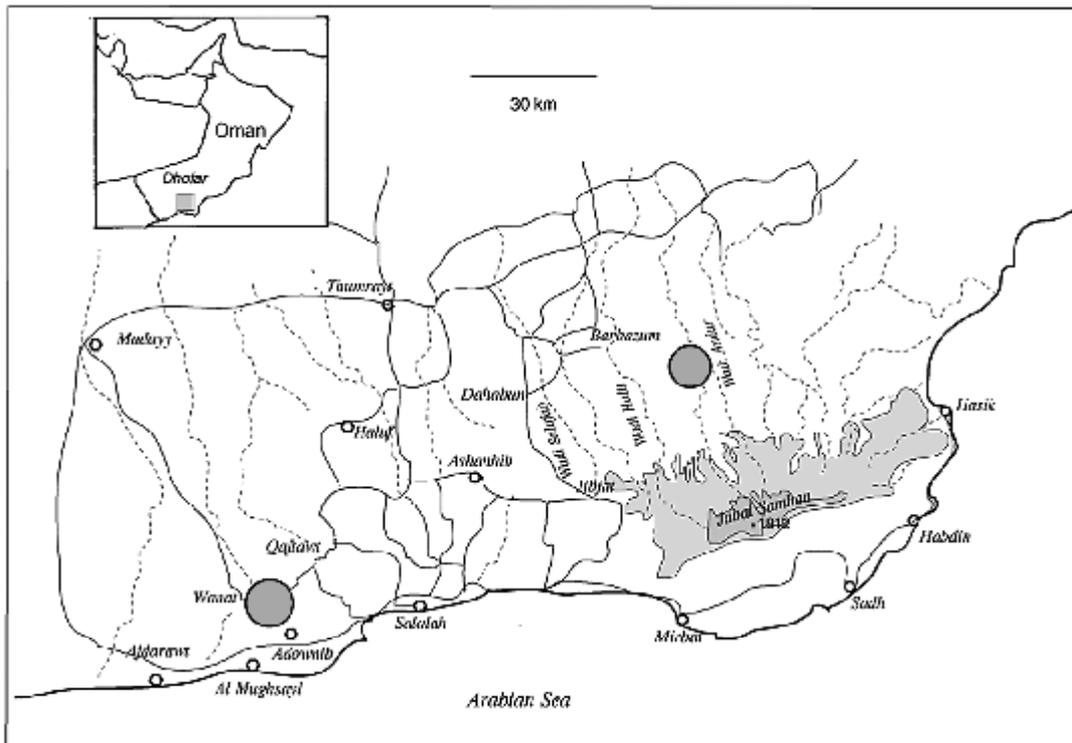


Fig. 3 - Distribution area of *Nanorrhinum roseiflorum* in Dhofar.

**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.