

# *Narcissus* × *caramulensis* (Amaryllidaceae), a new hybrid for the portuguese flora

by

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## Abstract

Ribeiro, P., Paiva, J. & Freitas, H. 2007. *Narcissus* × *caramulensis* (Amaryllidaceae), a new hybrid for the portuguese flora. *Anales Jard. Bot. Madrid* 64(1): 43-46.

We describe *Narcissus* × *caramulensis* P. Ribeiro, Paiva & Freitas, a new natural hybrid of *Narcissus cyclamineus* DC. and *N. bulbocodium* L. subsp. *bulbocodium*, collected in the Caramulo Mountains (Beira Alta, Central Portugal), is described. Morphological characters of the new species are analysed and its distribution and ecology are discussed.

**Keywords:** Amaryllidaceae, *Narcissus*, hybrid, taxonomy, Portugal.

## Resumen

Ribeiro, P., Paiva, J. & Freitas, H. 2007. *Narcissus* × *caramulensis* (Amaryllidaceae), un nuevo híbrido para la flora portuguesa. *Anales Jard. Bot. Madrid* 64(1): 43-46 (en inglés).

Se describe *Narcissus* × *caramulensis* P. Ribeiro, Paiva & Freitas, un nuevo híbrido entre *Narcissus cyclamineus* DC. y *N. bulbocodium* L. subsp. *bulbocodium*, colectado en la Sierra de Caramulo (Beira Alta, Centro de Portugal). Se analizan los caracteres morfológicos de la nueva especie y se discuten distintos detalles de su distribución y hábitat.

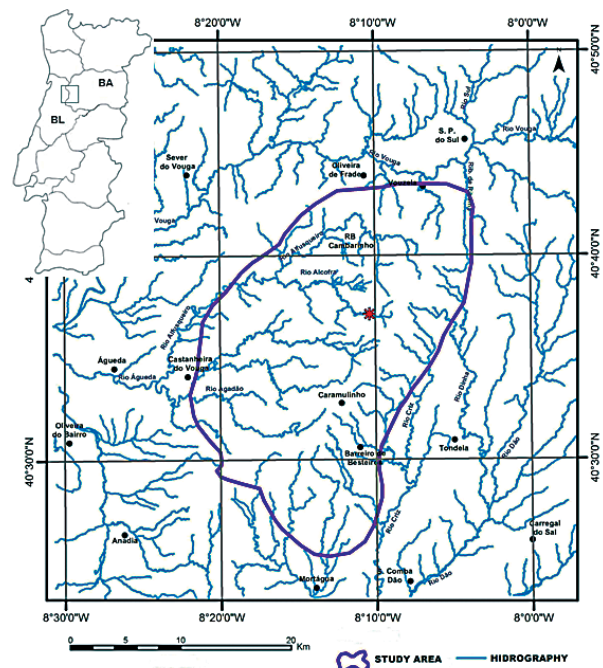
**Palabras clave:** Amaryllidaceae, *Narcissus*, híbrido, taxonomía, Portugal.

## Introduction

Between 2002 and 2005, as part of an assessment of the vascular flora diversity of the Caramulo Mountain (Beira Alta, Central Portugal) and an evaluation of the conservation status of the vascular flora priority taxa, we have conducted a regular survey of the *Narcissus cyclamineus* populations, and collected a new hybrid in an area where the distribution of *Narcissus cyclamineus* and *Narcissus bulbocodium* subsp. *bulbocodium* overlaps (Fig. 1).

Although *N. bulbocodium* subsp. *bulbocodium* occurs in an area between Northern Africa (Algeria & Morocco) and SW Europe (Portugal, Spain & France), *N. cyclamineus* is an Iberian endemism, restricted to the NW Portugal and NW Spain (Fernandes, 1953; Fernandes, 1968; Moreno Saiz & Sainz Ollero, 1992).

In the Herbarium of the Botany Department of the University of Coimbra (COI), we found samples of *N. bulbocodium* subsp. *bulbocodium* collected in the Caramulo Mountain, in 1886, by Júlio Henriques.



**Fig. 1.** Hybrid location (red spot) in the study area (Caramulo Mountain). BA – Beira Alta, BL – Beira Litoral.

*N. cyclamineus* was first reported from these Mountains in 1952, when Abílio Fernandes prospected the area (Fernandes, 1953).

Both taxa are considered of importance for conservation by Portuguese and EU legislation. *N. bulbocodium* belongs to the Annex V of the EU Directive 92/43/EEC which lists the plants that should be subjected to specific management measures due to threats as excessive gathering and exploitation. *N. cyclamineus*, classified as “Endangered” (E) after the preliminary list of a future Red Book of Vascular Plants from Portugal (Lopes & Carvalho, 1990), belongs to the list of plant species of community importance, whose conservation requires strict protection, including the designation of protected areas (Annex II & IV of the EU Directive 92/43/EEC).

## Materials and methods

The specimens of *N. bulbocodium* and *N. cyclamineus* from the COI herbarium were consulted, however, the morphological analysis (Table 1) was based on living material of the hybrid and its parents, collected during field work.

We studied and measured 10 randomly selected specimens of each parental population in the locality where the hybrid was found. Attending to the rarity of the hybrid, we have only collected one specimen for the COI herbarium. The description of the hybrid was based on that specimen and on direct examination of 4 living specimens in the field.

Pollen was collected from plants in the field and from the herbarium specimen and stained with acetic carmine for counting. Five microscopic slides were analysed and the percentage of well stained red grains was used as an indication of viable pollen production.

## Results

The new hybrid presents intermediate characters between the two parental species, as following:

### Descriptio

***Narcissus* × *caramulensis*** P. Ribeiro, Paiva & Freitas, **hybr. nov.** (Figs. 2, 3)

*N. bulbocodium* L. subsp. *bulbocodium* × *N. cyclamineus* DC.

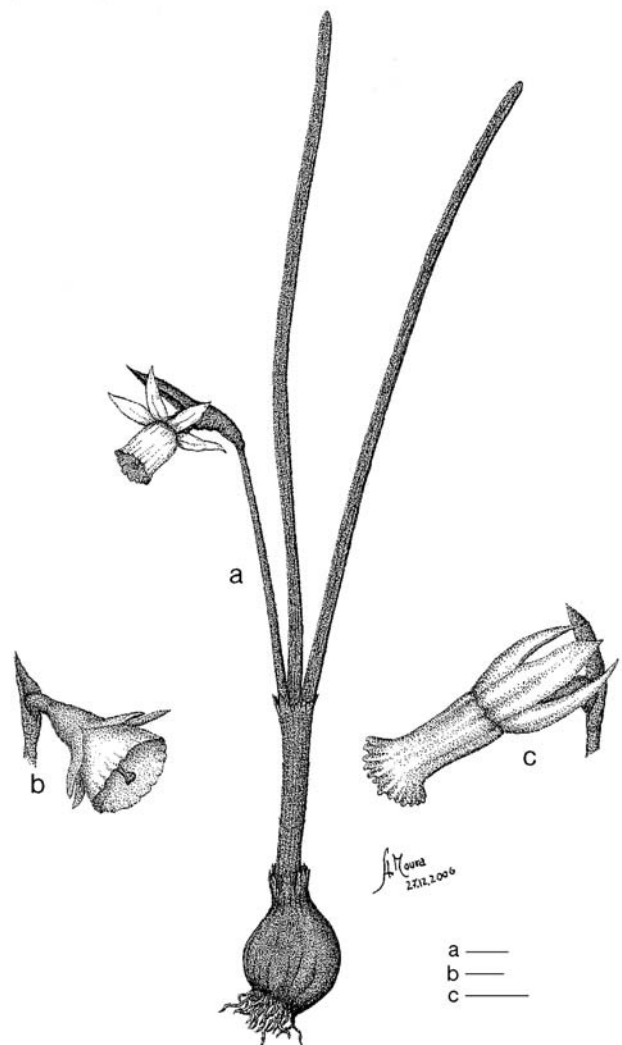
**Holotypus:** PORTUGAL. **Beira Alta:** Caramulo Mont., Alcofra, ad 590 m, margine rivulus Bouça, NE7096, 11-III-2005, P. Ribeiro 1341 (COI).

**Folia** 2-3, *erecta*. **Scapus** *uniflorus*, 6-8 cm *longus*, *subcylindricus*. **Pedicellus** 7-10 mm *longus*, *in tubulosa*

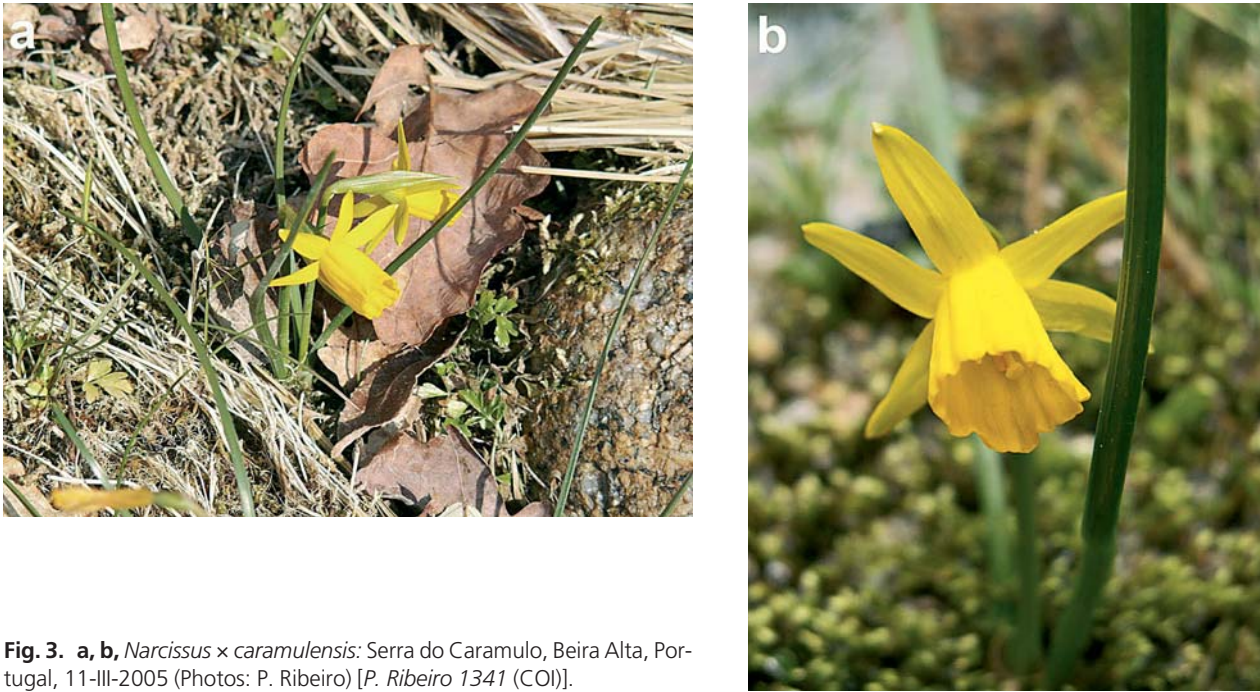
*spathae parte inclusus*. **Perianthi tubus** 5-6 mm *longus*; **tepala** *patentia*, 10-12 × 3-5 mm; **corona** 11-13 × 6-7 mm, *subcylindrica*, *marginē leviter crenata*.

### Description

Perennial. Bulb 1, subglobose, 1,2-1,4 cm in diameter with whitish external tunics. Leaves linear, erect, ca. 15-18 cm long and 2,5-3,5 mm wide, green, obtuse, channelled down the inner face and striate on the outer side, two or three per bulb. Scape erect, 1-flowered, ca. 6-8 cm long and 1,5-2 mm in diam., subterete, glaucescent. Spathe 1-flowered, ca. 2,6 cm long, scarious, longer than the pedicel. Pedicel 7-10 mm long. Perianth tube 5-6 mm long, subcylindrical; perianth segments and corona bright yellow; segments as long as the corona, spreading (patent), not reflexed, 10-12 mm long and 3-5 mm wide, oblong-



**Fig. 2.** **a**, *Narcissus* × *caramulensis*: Habit (holotype, P. Ribeiro 1341, COI); **b**, *N. bulbocodium* subsp. *bulbocodium*: flower (P. Ribeiro 1380, COI); **c**, *N. cyclamineus*: flower (P. Ribeiro 1381, COI). Scale: 1 cm.



**Fig. 3. a, b,** *Narcissus* × *caramulensis*: Serra do Caramulo, Beira Alta, Portugal, 11-III-2005 (Photos: P. Ribeiro) [*P. Ribeiro 1341* (COI)].

lanceolate, acute, conspicuously-veined; corona sub-cylindrical, 11-13 mm long and 6-7 mm in diam. with slightly crenate margin. Stamens 6, inserted low down in the tube; filaments ca. 1 cm long; anthers 3-4 mm long, incurved (3 dorsifixed and 3 subbasifixed), not surrounding the style. Ovary 8-10 mm long and 3 mm wide, ellipsoid; style 13-15 mm long; stigma 3-lobed. Stigma at a higher level than the top of the anthers.

*Etymology*: The epithet refers to the name of the Mountains where the hybrid was found.

The main differences between *Narcissus* × *caramulensis* and its parents are shown in Table 1.

The anthers are incurved, not surrounding the style and the scape is subterete. According to the identification key of *Narcissus* L. sections (Fernandes, 1968), these characters place the hybrid in the *Bulbocodium* × *Pseudonarcissus* section. In the *Pseudonarcissus* section, to which *N. cyclamineus* belongs, the scape is compressed and the anthers are straight, surrounding the styles.

The hybrid presents short 1-flowered scapes, shorter than the leaves and patent tepals, characters acquired from the parental species *N. bulbocodium* subsp. *bulbocodium*. The corona is tubular, just as long as or slightly longer than the segments and these ones are oblong-lanceolate, with 3-5 mm wide, characters acquired from the parental species *N. cyclamineus*.

The leaves are erect, resembling *N. cyclamineus*, with an intermediate width between the two parental

species. Another intermediate character is the perianth tube length.

As expected from parental species of different sections, the study of the pollen shows a high percentage (95%) of sterile pollen (Fig. 4).

#### KEY TO THE THREE TAXA

1. Corona funnel-shaped; perianth segments narrowly lanceolate, golden yellow broadly keeled with green ..... **N. bulbocodium** subsp. **bulbocodium**
1. Corona campanulate or tubular; perianth segments oblong-lanceolate, golden yellow not keeled with green ..... 2
2. Anthers straight, subbasifixed, surrounding the style; perianth segments reflexed ..... **N. cyclamineus**
2. Anthers incurved (3 dorsifixed and 3 subbasifixed), not surrounding the style; perianth segments patent ..... **N. × caramulensis**

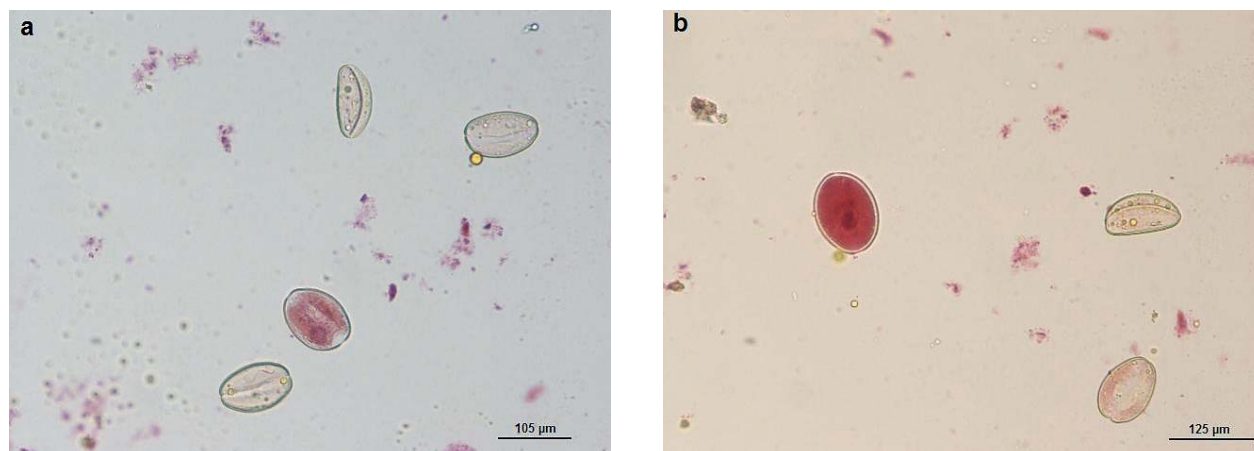
#### *Distribution, habitat and phenology*

The distribution of *Narcissus* × *caramulensis* seems to be restricted to the population found in the Bouça stream, a tributary of the Alcofra river, where 10 individuals appear in an area of about 3 × 2 m.

*Narcissus* × *caramulensis* grows along the water margins, the preferential habitat of one parental species, *N. cyclamineus*. We found the hybrid in an area where the population of *N. bulbocodium* spreads itself to the water margin and overlaps with the population of *N. cyclamineus*.

We have not been able to find any other population in the vicinity of this specific location. However, the distri-





**Fig. 4. a, b,** Optical photomicrographs showing pollen grains of *Narcissus* × *caramulensis*. The smaller, clear pollen grains are sterile [*P. Ribeiro* 1341 (COI)].

**Table 1.** Comparison of morphological characters of *Narcissus* × *caramulensis* and the parental species.

	<i>N. bulbocodium</i> subsp. <i>bulbocodium</i>	<i>N. × caramulensis</i>	<i>N. cyclamineus</i>
Habit	Low, scape 4-8 cm long	Low, scape 6-8 cm long	Taller, scape 12-20 cm long
Leaves width	1,5-3 mm	2,5-3,5 mm	3,5-7 mm
Perianth segments	Ascending, ± spreading	Patent	Reflexed
Perianth tube	7-9 mm long	5-6 mm long	1-2 mm long
Anthers	Incurved (dorsifixed), not surrounding the style	Incurved (3 dorsifixed and 3 subbasifixed), not surrounding the style	Straight, subbasifixed, surrounding the style

bution and habitat described above suggest that the hybrid probably can also be found along the water streams of the Iberian NW, where *N. cyclamineus* occurs.

In 2006, flowering started in mid February, two weeks after the anthesis of *N. cyclamineus* first individuals and one week before *N. bulbocodium*.

The intermediate characters between *N. bulbocodium* subsp. *bulbocodium* and *N. cyclamineus*, the infertility of the pollen, the rarity of the taxon and its occurrence among the two parental species support the hybrid origin of the taxon.

## Acknowledgements

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