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# A *Cerastium* (Caryophyllaceae) new hybrid near the Argentine shore of the Rio de la Plata

CAROLA REGINA VOLPONI<sup>1</sup>

## RESUMEN

VOLPONI, C. R. (1995). Un híbrido nuevo del género *Cerastium* (Caryophyllaceae) próximo a la costa argentina del Río de la Plata. *Candollea* 50: 225-229. En inglés, resúmenes en español y en inglés.

Se describe e ilustra un híbrido nuevo, *Cerastium glomeratum* Thuill. × *C. humifusum* Cambess., de la costa argentina del Río de la Plata. Se lo compara con *C. humifusum* y *C. glomeratum*. La hibridación es comprobada por los granos polínicos anormales, por los frutos siempre incompletamente desarrollados y la ausencia de semillas viables.

## ABSTRACT

VOLPONI, C. R. (1995). A *Cerastium* (Caryophyllaceae) new hybrid near the Argentine shore of the Rio de la Plata. *Candollea* 50: 225-229. In English, English and Spanish abstracts.

A new hybrid, *Cerastium glomeratum* Thuill. × *C. humifusum* Cambess. from the Rio de la Plata shore, Argentina, is described and illustrated. It is compared with *C. humifusum* and *C. glomeratum*. Evidence that hybridization occurs is obvious in the presence of abnormal pollen grains, in the constant recurrence of not fully developed fruit and in the absence of growing seeds.

**KEY-WORDS:** Argentina — Taxonomy — *Cerastium* — CARYOPHYLLACEAE — Hybrid.

*Cerastium humifusum* Cambess. was found living in a small sunny open prairie, near the Rio de la Plata shore, about 30 km South of La Plata city, Argentina. The place was visited every 15 days to follow the phenology of the species, known only through herbarium material (VOLPONI, in preparation).

During one of these visits it was noticed that another kind of *Cerastium* was blooming beside *C. humifusum*, sometimes mixed with it, but in some more shadowy places than *C. humifusum* did.

The morphological characteristics of this novel plant were compared with those of *C. humifusum* and *C. glomeratum* Thuill. in Table 1.

While *C. humifusum* has a latitudinal restricted geographic distribution (VOLPONI, 1990), *C. glomeratum* was found all over Argentina, from Jujuy to Santa Cruz provinces. The first one is a native hemicryptophytous species from East-south of South America (VOLPONI, 1990), collected in non saline wet places, whereas the second one is an European annual, introduced in South America, which grows in modified soils. The novel kind of *Cerastium* had been seen by the author living beside *C. humifusum* and sometimes mixed with it, as mentioned before; on the other hand, *C. glomeratum* grew up in the same area but some meters apart from the other two. All these features suggested that this different *Cerastium* could be a hybrid between those allopatric species. The three

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| Character                          | Species                    |                              |                                         |
|------------------------------------|----------------------------|------------------------------|-----------------------------------------|
|                                    | <i>C. humifusum</i>        | <i>C. glomeratum</i>         | <i>C. glo</i> × <i>C. hu</i>            |
| Habitat . . . . .                  | sunny and exposed          | sunny and exposed            | rather protected and shading            |
| Soil . . . . .                     | saturated, sweet water     | modified                     | saturated sweet water and not saturated |
| Habit . . . . .                    | annual? hemicryptophyte    | annual                       | annual? hemicryptophyte                 |
| Leaf colour . . . . .              | green yellowish            | intense dark green           | intense dark green                      |
| Inflorescence . . . . .            | solitary flowers axillary  | dichotomous cyme             | solitary flowers axillary               |
| Sepals: shape . . . . .            | ovate                      | lanceolate                   | ovate                                   |
| Sepals: insertion . . . . .        | large                      | large                        | sharp                                   |
| Sepals: middle nerve . . . . .     | hyaline                    | green                        | green                                   |
| Sepals: apex . . . . .             | glabrous                   | pubescent                    | glabrous                                |
| Petals . . . . .                   | present                    | generally absent             | present                                 |
| Petals: apex . . . . .             | sharpened                  | sharpen-rounded              | rounded                                 |
| Petals: incision . . . . .         | quite near the half length | a quarter length             | a third length                          |
| Stamens: anther's shape            | near elliptic              | globe-shaped                 | globe-elliptic                          |
| Stamens: anther's colour           | light yellow               | hyaline                      | yellow                                  |
| Pollen grains . . . . .            | yellow                     | yellow                       | light yellow                            |
| Nectariferous gland . . . . .      | evident                    | evident                      | evident                                 |
| Ovary: shape . . . . .             | egg-shaped                 | ellipsoid                    | globe-shaped                            |
| Styles: length . . . . .           | 4 mm                       | 1-2 mm                       | 3.5 mm                                  |
| Styles: stigma's papilla . . . . . | in the apex                | lengthwise of the upper half | in the apex                             |
| Capsule . . . . .                  | 9 mm length<br>4 mm width  | 8 mm length<br>1.5 mm width  | undeveloped                             |
| Seeds . . . . .                    | present                    | present                      | absent                                  |

Table 1. — Morphological comparison within *Cerastium humifusum*, *C. glomeratum* and *C. glomeratum* × *C. humifusum*

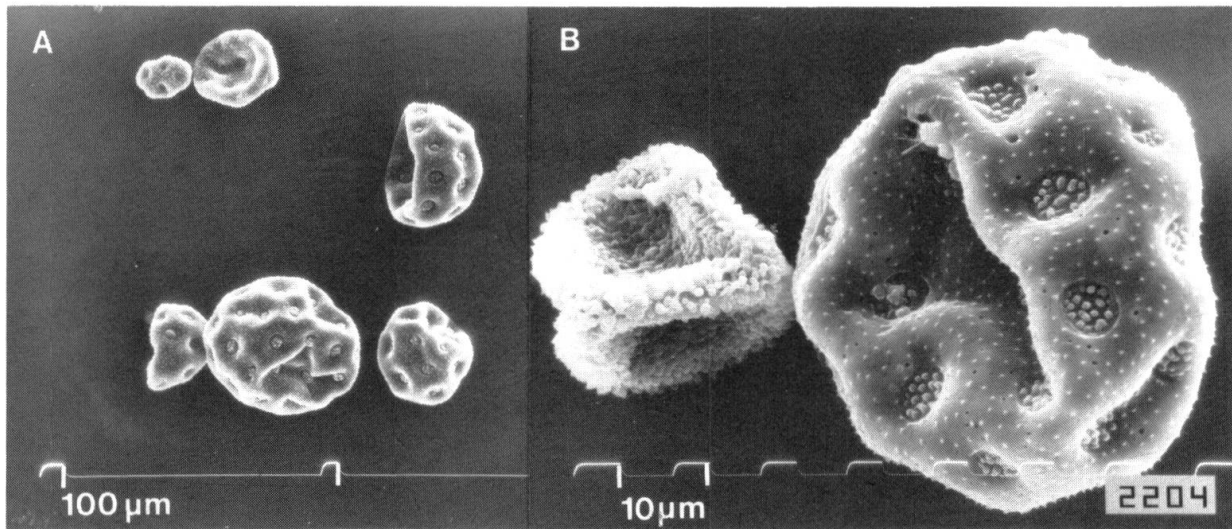


Fig. 1. — SEM pollen grain microphotographs of *Cerastium glomeratum* × *C. humifusum*. **A**, view of many pollen grains from an alive flower, showing differences in shape, size and exine design; **B**, detail of two pollen grains. (**A-B** from *Volponi 954*, holotype).

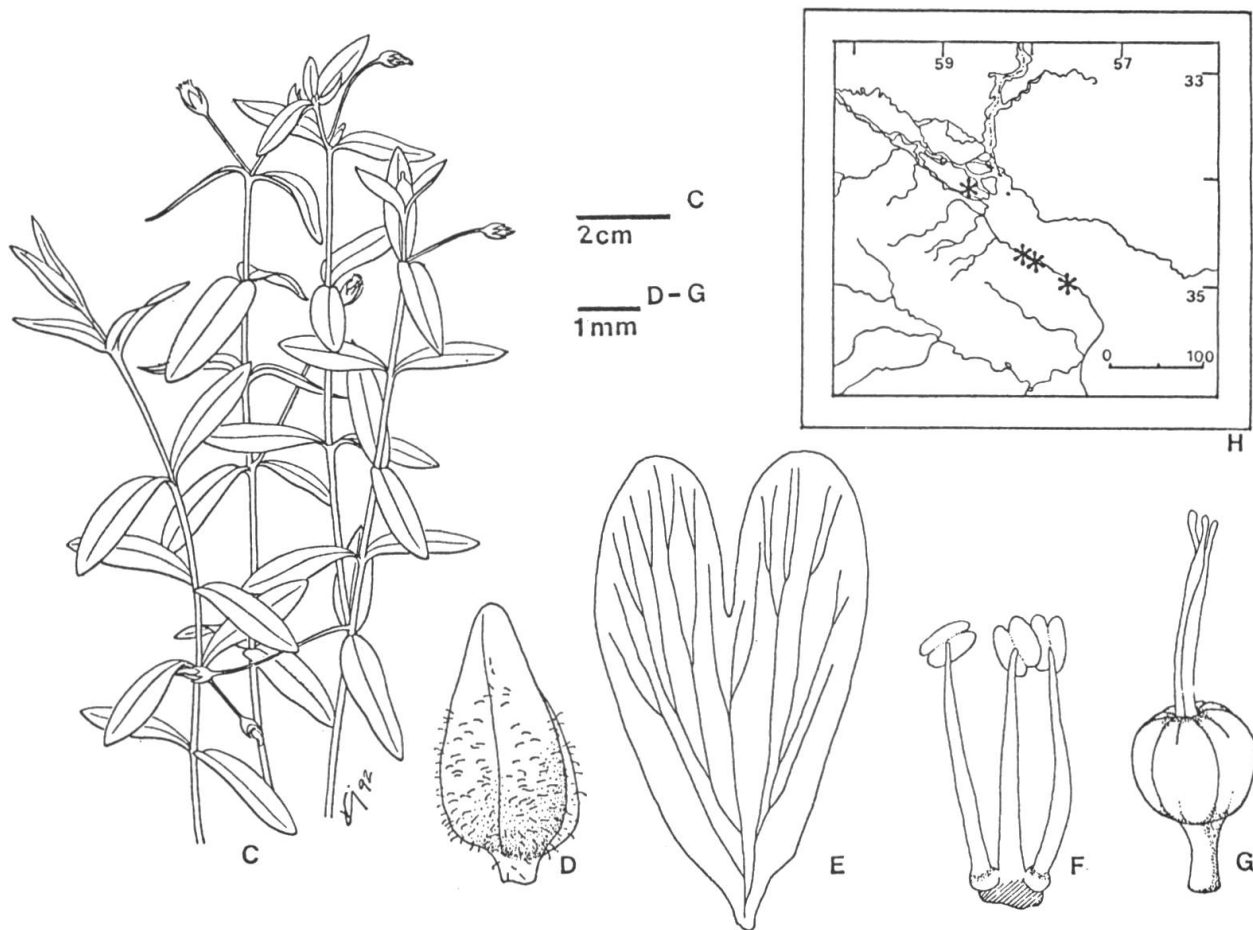


Fig. 2. — *Cerastium glomeratum* × *C. humifusum*. **C**, habit; **D**, sepal; **E**, petal; **F**, stamens with nectariferous gland in the filament basis; **G**, gynoecium; **H**, geographical points where *C. glomeratum* × *C. humifusum*, *C. glomeratum* and *C. humifusum* were seen growing up together in the same area by the author. (**C-E** from *Volponi 954*, holotype).

*Cerastium* were seen growing up in the same area and blooming at the same time in four Argentine localities: Rio Sarmiento (Tigre), Punta Lara (Ensenada), La Balandra (Berisso) and Estancia San Isidro (Magdalena), all of them in Buenos Aires province (Fig. 2H).

The probable *Cerastium* hybrid has deformed and irregular pollen grains (see Fig. 1A-B); the pollen viability, as determined using the double stain technique of GURR (1965: 295) was under the 40%. Pollen grains from flowers collected by the author were observed usually with scanning electron microscope; they always appeared with noticeable differences in shape, size and exine design (Fig. 1A).

Under the light microscope, differences also in shape, size and cellular contents were observed (Table 1). On the other hand, the fruit always was incompletely developed and there were no seeds growing up. Such feature could indicate that the fecundity was very low.

The differences mentioned above allowed a description of the hybrid as follows:

***Cerastium glomeratum* Thuill. × *C. humifusum* Cambess.** TYPE: Argentina, Prov. Buenos Aires, Partido Berisso, Balneario La Balandra, 30-Sept-1990, *Volponi 954* (Holotype LP). Fig. 2C-G.

Herba annua? hemicryptophyta?, laxa, decumbens, acclinans, ramosa. Rami ad 5-50 cm, vel ultra longi. Caules fragiles, 1-1,5 mm crassi, teretes, latere lineam pilorum simplicium ad 0,5 mm longorum ostendentes, internodiis 8-30 mm longis. Folia 8-28 mm longa, 4-8 mm lata, inferiora et superiora sessilia, leviter spathulata, glabra. Flores solitarii, axilarii, pedunculi in anthesi (9)10-40 mm longi, demum accrescentes, saepe deflexi; sepala quinque herbacea, marginibus interioribus scarioso hyalinis, 4,5-5 mm longa, 2-2,5 mm lata, ovata, apice obtuso, dorso parce piloso, ad apicem glabro plerumque solum pilis glandulosis; petala quinque membranacea quam sepala subduplo longiora, 8 mm longa, 4,5 mm lata, bilobulata, ad 1/2 longitudinis incisa, ad apicem rotunda, glabra; stamina decem, quam sepala paulo longiora, 4,5 mm longa; pollinis granuli inaequabiles, deformes; ovarium globosum, ad 1,7-2 mm longum, 2 mm latum, styli quinque, ad 3,2 mm longi. Capsula et semina desunt.

Annual? hemicryptophyte? herb, loosely tufted, decumbent, ramose, branches 5-50 cm long, sometimes longer. Stalk fragile, cylindrical, 1-1,5 mm in diameter, with a thin row of hairs arranged in helicoidal form very expanded, following the helico-decussate rotation of the phyllotaxis; simple hairs 0,5 mm long; internodes 8-30 mm long. Leaves 8-28 mm long and 4-8 mm wide, every one of them sessile, slightly spatulated, glabrous. Solitary flowers, axillary; flower-stalk (9)10-40 mm long, accrescent after the floescence, some times deflexed with a thin row of simple hairs, and glandular hairs uniformly distributed. Sepals 5, 4,5-5 mm long and 2-2,5 mm wide, ovate, herbaceous, with scarious inner margins, hyaline, obtuse apex, dorsally hairy, but the upper third glabrous, in general only glandular hairs. Petals 5, membranaceous, twice longer than the sepals, 8 mm long and 4,5 mm wide, bilobate till the half length, lobules apex rounded; glabrous. Stamens 10, 4,5 mm long; irregular, misshapen, pantopored pollen grains. Ovary 1,7-2 mm long, 2 mm wide, globe-shaped; styles 5, 3,2 mm long. Capsule and seeds unknown.

**Paratypes:** ARGENTINA. Prov. Buenos Aires, Partido Berisso, Balneario La Balandra, 1 Sept. 1991, *Volponi 956* (LP); 31 Oct. 1992, *Volponi 974* (LP); Partido Magdalena, Estancia San Isidro, 29 Oct. 1991, *Volponi 958* (LP).

These inter specific hybrids are one of the speciation ways (CAIN, 1951: 419) which begin with very low fertility plants but which can produce large colonies because of a high vegetative capacity. Subsequently, the chromosome number could be duplicate (amphidiploidy) with an increase in the fertility (CAIN, l.c.). This type of hybridizing frequently conclude in a loss of native genotypes, mainly when the amphidiploidy had taken place; then, the new species is "stronger" than its parents, it competes with them and, sometimes, those parent species disappear. This is one way to delete the special characteristics of a regional flora (RAPOPORT, 1991).

### Conclusions

- 1) **Cerastium glomeratum** Thuill. × **C. humifusum** Cambess. is an inter specific hybrid.
- 2) The hybrid spreads throughout vegetative multiplication.
- 3) The fecundity is low in alive observed specimens.
- 4) The published key related to Argentine species of *Cerastium* (VOLPONI, 1990), should be modified in the following way:
  1. Annual plants. Scanty ramified from the base.
  2. Scanty pubescent plants. Solitary flowers.
    3. Plants growing up in open, sunny places. Petal lobules with sharpened apex  
**C. humifusum**
    - 3'. Plants growing up in more protected places, not so sunny. Petal lobules with rounded apex ..... **C. glomeratum** × **C. humifusum**

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