

Notes on the Genus Umbilicus DC. (Crassulaceae) in the Canary Islands

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RESUMEN

Notas sobre el Género Umbilicus DC. en las Islas Canarias: Según citaciones de diferentes autores tratando la flora canaria, nombres de varias especies de este género aparecen, como *Umbilicus* o (su sinónimo) *Cotyledon*. De acuerdo con investigaciones modernas el número de especies citadas alcanza a ocho, mientras que probablemente sólo dos especies ocurren de verdad en la flora del archipiélago: *Umbilicus horizontalis* (Guss.) DC., *U. heylandianus* W et B. En los demás casos, generalmente, se trata de errores en la determinación de especies. Para facilitar la clasificación de *Umbilicus* en Canarias, una tabla-clave es presentado en la pág. 16.

When studying the botanical literature on the Canary Islands one will discover that quite a lot of different species of the genus *Umbilicus* have been reported from the archipelago. Very often, however, each author only mentions one single or two species in his treatise. Obviously the various names have been used with different meanings by the various authors. From herbarium material it will be seen that erroneous identifications of specimens of the genus are frequent, and older literature records obviously must be used with great care. The problem thus arises over which species of the genus really do occur in the Canary Islands (cp. Lems 1960: 40).

During phytosociological field work in Gran Canaria in 1965, 1966, and 1967 the genus was studied and collected eagerly. Later collections of the genus from the Canary Islands and other parts of Macaronesia in several European herbaria (using the Standard abbreviations of Index Herbariorum [1964], the herbaria of O, GB, C, K, HAMU, B, and HEID)

were studied. Living plants were transplanted to the Botanical Garden, University of Oslo and studied in cultivation.

Besides the recent treatment of the genus *Umbilicus* in Webb (1964 a), the descriptions and keys provided in Berger (1930) and Jacobsen (1954) have been used for species delimitation.

1. *U. horizontalis* (Guss.) DC.

Syn. *U. vulgaris* Knoche p.p., *Cotyledon horizontalis* Guss., *C.umbilicus-veneris* L. p.p.

Of the herbarium collections from the Canary Islands of the above mentioned herbaria all specimens except two were found to be *U. horizontalis*. About half of this material of *U. horizontalis* was correctly determined as that species (or to *U. gaditanus* Boiss., see below). The remaining half of the material of *U. horizontalis* was determined as *U. rupestris*, a species that is probably not present in the Canary Islands at all. Specimens of *U. horizontalis* were seen from the islands of Gran Canaria, Tenerife, Hierro, and La Palma. However, plants of the genus have been recorded from all of the seven larger islands of the archipelago (Pitard & Proust 1908: 186, Lems 1960: 40) and records from the other islands probably also pertain to this particular species. Pitard & Proust (l.c.) recognize three varieties within their *U. pendulinus*, with "Fa. *U. horizontalis*" as the most common.

In Gran Canaria where I have had opportunity to study wild growing species, *U. horizontalis* is rather frequent, both in the higher part of the basal region and in the montane region. It grows in crevices in steep, more or less moss covered rocks or in stable soil on steep slopes, often also in shady habitats in wood land. *U. horizontalis* occurs here as a characteristic species of plant communities belonging to the vegetation class *Asplenietea rupestris*, like *U. rupestris* in southern Europe (Rivas Goday & Borja Carbonell 1961, Rigual et al. 1962, Braun - Blanquet 1966, etc). In Yugoslavia *U. horizontalis* is reported to occur in similar rock wall communities of the class *Asplenietea* (Horvatic 1963). The most frequent associated species of vascular plants are *Aichryson dichotomum*, *A. punctatum*, *Monanthes brachycaulon*, *Polypodium* spp.

(Kunkel 1965 and 1966), *Habenaria tridactylites*, *Selaginella denticulata*, etc., and in the montane region *Aeonium caespitosum*, *Greenovia aurea*, *Babcockia platylepis*, etc.

2. *U. gaditanus* Boiss.

Syn. *Cotyledon gaditana* (Boiss.) Boiss. et Reut., *C. umbilicus - veneris* L. ssp. *gaditana* (Boiss.) Emb. et Maire.

This species has been reported from the Canary Islands by several authors instead of, or besides *U. horizontalis* (see for instance Bornmüller 1903 and 1904, Pitard & Proust 1908, Lindinger 1926). In the above mentioned herbaria some of the *U. horizontalis* collections were also determined as *U. gaditanus*. From the diagnosis of *U. gaditanus* (see Boissier & Reuter 1852: 45, cp. also the data provided in Bornmüller 1903) it is not possible to find clear differences to *U. horizontalis*. I fully agree with Webb (1961: 24 and 1964 a), who has also studied the type material of *U. gaditanus*, in that this taxon is not separable from *U. horizontalis*.

3. *U. rupestris* (Salisb.) Dandy.

Syn. *U. pendulinus* DC., *U. vulgaris* Knoche p.p., *Cotyledon rupestris* Salisb., *C. pendulina* (DC.) Batt., *C. tuberosa* L., *C. umbilicus-veneris* L. p.p.

In one herbarium sheet belonging to the herbarium of the Botanical Museum of Copenhagen (C) is found a specimen of *U. rupestris* (as *Cotyledon umbilicus*) supposed to have been collected in the Canary Islands. The specimen originates from the collections of Christen Smith, the Norwegian botanist who together with the German geologist Leopold von Buch visited the Canary Islands in 1815. As usual with the collections of Christen Smith no data are given as to from which particular island the specimen originates (only "e Canariis — C. Smith", in his own hand - writing). The specimen is mounted on a herbarium sheet with two other collections (also of *U. rupestris*), originating from Portugal and from the botanical garden in Copenhagen respectively. It seems highly probable that the claimed Canary Islands specimen must have been erroneously labelled, especially as *U. rupestris* is not found in any other collection from the archipelago. On his way to the Canary Islands Smith also stopped in Madeira

and made botanical collections there (Kiaer 1889). In all likelihood the above mentioned specimen of *U. rupestris* originates from Madeira where this species is common. In the lists of plants collected in the Canary Islands (Buch 1819 and 1825) the only species of *Umbilicus* mentioned is *U. rupestris* (as *Cotyledon umbilicus*). However, the collections of Smith from the Canary Islands (among others in C) also contain typical *U. horizontalis*.

U. rupestris (*U. pendulinus*) is a name often used in works on the Canary flora (Webb & Berthelot 1836-41, Knoche 1923, Burchard 1929, etc), and for wild seed material in the seed list of the Jardin de Aclimatación de La Orotava in Tenerife. This confusion may be due to the wide use of *U. pendulinus* including *U. horizontalis*. As mentioned above all specimens seen, except for the dubious one of Smith, have been misidentified *U. horizontalis*. Probably the real *U. rupestris* is not present in the archipelago. Already in Berger (1930: 417) and Jacobsen (1954: 1117) its occurrence in the Canary Islands is questioned, and in the distribution records of *U. rupestris* in Palhinha (1966: 47) the Canary Islands are omitted. In Madeira on the contrary the species is rather common, judging from herbarium material examined. Also in the Azores the species occurs commonly as does *U. horizontalis* (Webb 1964 a, Palhinha 1966).

4. *U. heylandianus* Webb et Berth.

Syn. *U. praealtus* (Brot.) Mariz, *U. erectus* Willk., non DC., *U. strangulatus* (Font Quer) Berg., *Cotyledon praealta* (Brot.) Samp., *C. umbilicus* L. var *praealtus* Brot., *C. strangulata* Font Quer, *C. coutinhoi* Cout., *Grammanthes heylandiana* (Webb et Berth.) Webb, in Christ (1888).

In the herbarium material examined one specimen of this species was found (K): *La Palma*: Cumbre de Tirajafe (without date of collecting), Dr. Elías Santos. Dr. Santos correctly named it *U. heylandianus*, the specimen later (obviously with some hesitation) had been redetermined in the herbarium as *U. pendulinus*.

The easily recognizable *U. heylandianus* (not *heynaldianus*, as in Webb 1961), see illustrations and description in Webb &

Berthelot (1836-41, Pl. 26, and p. 176)¹, only has for the Canary Islands, been recorded definitely from La Palma where it grows in the highlands among *Cistus* and *Hypericum* shrubs (Webb & Berthelot l.c., Burchard 1929: 146). It has not been possible to verify the records of the species from Gran Canaria from herbarium material (Font Quer 1957, and in seed list of 1949/50 of the Jardín de Aclimatación de La Orotava) nor have I ever seen this species wild in Gran Canaria.

5. *U. luteus* Webb et Berth.

The species, in Index Kewensis (1895) erroneously presumed to originate from the Canary Islands, is not mentioned from the archipelago in the original diagnosis (Webb & Berthelot 1836-41 p. 177). The taxonomic position of this taxon seems somewhat unclear, but judging from the description and the distribution as given in Webb & Berthelot (l.c.) it probably is a synonym to the East Mediterranean *U. erectus* DC., which is not known from the Canary Islands either (cp. below).

6. *U. erectus* DC.

The dubious record of Sauer (1880) and Bolle (1892) of *U. erectus* DC. from the eastern island Lanzarote clearly does not refer to what is now meant by this name, i.e. a rather large species of an East Mediterranean distribution (Webb 1964 a). The name *U. erectus* (sensu Willk.) has also been used for *U. heylandianus* (cp. synonymy under that species), and Lindinger (1926) indicates that the Lanzarote plant might have been that species. However, it seems highly unlikely that *U. heylandianus* could possibly survive under the arid and unfavourable conditions of that island. Probably it is another misidentification of the ecologically variable *U. horizontalis*.

7. *U. schmidtii* Bolle.

Syn. *U. horizontalis* J. A. Schmidt, non (Guss.) DC., *Cotyledon horizontale* Henriq., non Guss.

¹ According to Stearn (1937) the year of publication of the pages containing the original description of *U. heylandianus* is 1840. The illustration in Pl. 26, however, was already published in 1836.

U. schmidtii is a taxon described from and confined to the Cape Verde Islands (Bolle 1859, Pettersson 1960). Reports of this species from the Canary Islands (Index Kewensis 1895 erroneously, cp. diagnosis in Bolle l.c.), Berger 1930, Jacobsen 1954) pertain to *U. horizontalis* (Guss.) DC.

8. *U. hispidus* (Lam.) DC.

Annual species, now generally placed in the genus *Mucizonia* as *M. hispida* (Lam.) Berg. (Berger 1930: 419, Webb 1964 b). Reported in older times from Tenerife (Webb & Berthelot 1836-41: 178).

C O N C L U S I O N

From the results of studies of the genus *Umbilicus* in the field in the Canary Islands and in herbaria it is presumed that only two species, viz. *U. horizontalis* and *U. heylandianus* (besides *Mucizonia hispida*) are known for sure from the archipelago. Other names mentioned in works on the flora of the Canary Islands are due either to a different use of the various names in older times or to misidentifications of the plants. For the Canarian species (and including *U. rupestris* which is probably not present in the Canary Islands, but which has rather often been mentioned in flora lists of the archipelago) the following characteristics might be used in species separation (cp. also Webb 1964 a):

	<i>U. horizontalis</i>	<i>U. rupestris</i>	<i>U. heylandianus</i>
Height of plant	10 - 40 cm	10 - 50 cm.	60 - 100 cm
Position of flowers	horizontal	pendent	± pendent
Corolla colour	yellow - slightly brownish	yellowish green - reddish or brownish	bright yellow
Corolla length	ca. 7 mm	7 - 10 mm	10 - 12 mm
Corolla mouth	open	open	constricted
Corolla lobes	lanceolate — triangular, acuminate	ovate, mucronate	ovate - lanceolate, longly acuminate
Stamens	10	10	usually 5
Length of inflorescence bracts	≈ pedicels	≈ pedicels	twice of that of the pedicels or much longer
Ecology	rock-wall plant	rock-wall plant	in shrubland

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