

# Typification of six Linnaean names in *Cistus* L. (*Cistaceae*)

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**Abstract** Nomenclatural types are designated for the names of six taxa of *Cistus* (*Cistaceae*) described by Linnaeus, *C. albidus*, *C. crispus*, *C. ladanifer*, *C. monspeliensis*, *C. populifolius*, and *C. salviifolius*. Original material from LINN and UPS was critically examined, as well as other information in the protologues. Data relevant for typification are discussed, and lectotypes are selected to maintain traditional or current use of the concerned names.

**Keywords** *Cistaceae*; *Cistus*; nomenclature; lectotypification; Linnaean names

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## ■ INTRODUCTION

*Cistus* L. includes about 20 species from the Mediterranean basin, reaching the Caucasus mountains to the east and the Canary Islands to the west (cf. Arrington & Kubitzki, 2003). However, its highest diversity is found in the western Mediterranean, with about 14 species occurring in the Iberian Peninsula and northwestern Africa (Guzmán & Vargas, 2005). Taxa of this genus are well characterized morphologically and they are usually easy to identify. This is likely the reason that most species were described in Linnaean times and types have been designated only for some of them (see Greuter & Rechinger, 1967; Heywood, 1968; Carazo & Jiménez, 1989). Conversely, taxa first described by Linnaeus in *Cistus* but currently included in related genera, such as *Helianthemum* Mill. (see Burt & Lewis, 1949; Jafri, 1977; López González, 1986, 1992), *Fumana* (Dunal) Spach (Molero & Rovira, 1987) and *Tuberaria* (Dunal) Spach (cf. Jafri, 1977), are taxonomically more complex, and have already been typified.

Species of *Cistus* have been in cultivation for centuries in renowned collections (see Sweet, 1825–1830), due to their spectacular blooming and wide variation of hybrid forms that are grown successfully (see Demoly, 1996). Linnaeus based many of his descriptions on cultivated material from European botanic gardens, the origin of which was usually uncertain, and their morphology being sometimes anomalous due to cultivation or in situ hybridization processes. Furthermore, many type localities mentioned in the protologues came from pre-Linnaean literature and they are sometimes imprecise or incorrect.

In the present contribution, six western Mediterranean species currently accepted in the genus *Cistus* are lectotypified. Original material of all those species (see Jarvis, 2007: 419–422) is conserved at BM (Herbarium Clifford), LINN, and UPS (Herbarium Joachim Burser), and relevant information is also found in pre-Linnaean works dealing mostly with Mediterranean floras.

## ■ TYPIFICATIONS

1. *Cistus albidus* L., Sp. Pl.: 524. 1753 (“*albida*”). Ind. loc.: “*Habitat in G[allia]. Narbonensi, Hispania*” – **Lectotype (designated here)**: Herb. Burser, XXIV: 49 (UPS [digital image!]).

Among the original material cited by Jarvis, 2007: 419), the sheet LINN No. 689.11 is to be discarded as it corresponds to *C. salviifolius*, and very likely was mentioned by error. Similarly, LINN No. 689.15 (image available at <http://www.linnean-online.org/6425/>) is not convenient for typification, since it includes a specimen grown at Uppsala, lacking flowers and fruits, and with morphological characters (e.g., subpetiolate, 3-ribbed, discolourous leaves without the typical greyish indumentum) not fitting the current concept of *C. albidus*.

Conversely, the sheet Burser XXIV: 49 (UPS) is labelled “*Cistus mas folio oblongo incano* Bauh.” (Bauhin, 1623: 464), a polynomial cited in the protologue, and it includes two fragments that are a good match to the Linnaean diagnosis (CISTUS arborescens, foliis oblongis tomentosus incanis sessilibus supra aveniis, alis nudis). Those fragments also fit the illustrations in Clusius (1601: 68, as “*Cistus mas* 1.”) and Bauhin & Chérel (1651: 3, as “CISTUS MAS IV. MONSP. FOLIO oblongo, albido.”), both cited by Linnaeus. Therefore, Burser’s sheet is designated here as lectotype, as it allows maintaining the traditional, current application of the name.

2. *Cistus crispus* L., Sp. Pl.: 524. 1753 (“*crispa*”). Ind. loc.: “*Habitat in Lusitania*” – **Lectotype (designated here)**: Herb. Burser, XXIV: 53 (UPS [digital image!]).

This species is the type of the generic name (see Green in Hitchcock & Green, 1929: 162). Among the original material (see Jarvis, 2007: 420), two sheets are relevant for typification. First, a specimen at LINN (No. 689.19; image available at <http://www.linnean-online.org/6429/>) includes a short branch with only few, small leaves and bearing some calyces, which makes it not the best choice for lectotype. Secondly, the sheet

Burser XXIV: 53 (UPS), however, bears two well-conserved and clearly identifiable fragments that match the illustrations in Clusius (1601: 69, as “*Cistus mas v.*”) and Bauhin & Cherler (1651: 4, “*CISTUS MAS V. FOLIIS CRISPIS & quodammodo sinuosis.*”). Designation of the latter as the lectotype of *C. crispus* will preserve current usage of this name.

3. *Cistus ladanifer* L., Sp. Pl.: 523. 1753 (“*ladanifera*”). Ind. loc.: “*Habitat in Hispania, Lusitaniae collibus*” – **Lectotype (designated here)**: illustration “*Cistus Ledon i. angustifolium*” in Clusius, Rar. Pl. Hist. 1: 77. 1601.

Carazo & Jiménez (1989: 111) selected LINN No. 689.6 as the lectotype, it being apparently the most representative specimen in Linnaeus’s collection. However, as pointed out by Jarvis (2007: 421) that sheet was annotated by Linnaeus fil. and is not original material. Therefore, lectotype designation by those authors is to be superseded, since they actually effected a neotypification (Art. 9.9; McNeill & al., 2012).

Among other original elements in the protologue, the sheet LINN No. 689.5 (image available at <http://www.linnean-online.org/4945/>) includes an incomplete fragment, not well conserved, which is not a good choice for type. Similarly, the fragment in Burser XXIV: 76 (UPS) corresponds to *C. ladanifer*, though it is labelled with Bauhin’s “*Cistus ladanifera Monspeliensium*”, a synonym that was connected by Linnaeus to *C. monspeliensis* and not to the former species.

Two sheets exist in the Herb. Clifford at BM (images: <http://www.nhm.ac.uk/resources/research-curation/projects/clifford-herbarium/lgimages/BM000628733.JPG>; <http://www.nhm.ac.uk/resources/research-curation/projects/clifford-herbarium/lgimages/BM000628734.JPG>) that correspond to *C. ladanifer*: p. 205-2, 1, sheet A (BM 000628733) and p. 205-2, 2, sheet B (BM 000628734). Both specimens show long petiolate, ovate-lanceolate leaves with slightly revolute margins, the former bearing maculate petals and the latter immaculate ones. Those morphological features fit better *C. ladanifer* subsp. *mauritanus* Pau & Sennen (= *C. l.* subsp. *africanus* Dans.), a plant growing in northwestern Africa and southern Iberian Peninsula (see García Murillo & Palacios, 1998; Soriano, 2002, 2008; Morales, 2009), which is the southern vicariant of the typical *C. ladanifer* subsp. *ladanifer* from central and western Iberian Peninsula. Although Linnaeus’s original concept would cover both subspecies, some authors of regional Floras accept them as independent taxa (e.g., Greuter & al., 1984; Demoly & Montserrat, 1993; Soriano, 2002; Morales, 2009), and hence typification should warrant further use of both names. The illustration in Clusius (1601: 77, as “*Cistus Ledon i. angustifolium.*”), also cited by Linnaeus in the protologue, matches the current concept of *C. ladanifer* subsp. *ladanifer*, and its designation as lectotype will best serve nomenclatural stability of this sub-specific aggregate.

4. *Cistus monspeliensis* L., Sp. Pl.: 524. 1753. Ind. loc.: “*Habitat in Narbonensi & Regno Valentino*” – **Lectotype (designated here)**: Herb. Burser, XXIV: 79 (UPS [digital image!]).

Among the original herbarium materials (see Jarvis, 2007:

421), the sheet Burser XXIV: 76 (UPS) is labelled with Bauhin’s “*Cistus ladanifera Monspeliensium*” (Bauhin, 1623: 467), the first synonym cited by Linnaeus in the protologue. However, it came from the Botanic Gardens in Florence and bears two fragments with petiolate leaves, therefore not matching the diagnostic phrases “... foliis lanceolatis sessilibus ...” Also in that herbarium, the sheet Burser XXIV: 79 (UPS) includes two fragments that fit well the protologue, and bears a label with the names “*Cistus ledon foliis Oleae, sed angustioribus* Bauh.” and “*Cistus ledon Narbonense* Tab.”, together with the indication “*Monspeli sponte*”. These phrase-names are synonymised to var.  $\beta$  in the protologue, which is also connected with “*Ledon v.*” of Clusius (1601: 79), a plant said to be common in “*Valentino regno, & Narbonensi Gallia*” and the illustration of which fits the current concept of *C. monspeliensis*. The latter Burser’s sheet is hence a good choice for lectotype. The sheet Herb. Clifford: p. 205-3, 12 (BM 000628735; image: <http://www.nhm.ac.uk/resources/research-curation/projects/clifford-herbarium/lgimages/BM000628735.JPG>), also regarded by Jarvis (2007: 421) as original material, includes fragments not fitting *C. monspeliensis*, but likely corresponding to a hybrid with *C. salvifolius* that was named *C.  $\times$ florentinus* Lam.

5. *Cistus populifolius* L., Sp. Pl.: 523. 1753 (“*populifolia*”). Ind. loc.: “*Habitat in Lusitania*” – **Lectotype (designated here)**: Herb. Clifford: p. 205-1 (BM No. 000628732 [digital image!]).

Linnaeus (1753) recognised two varieties in his concept of *C. populifolius*. First, the typical one was synonymised to “*Cistus Ledon, foliis populi nigrae, major* Bauh. pin. 467”, which corresponds to the plant depicted as “*Ledon latifolium n. majus.*” by Clusius (1601: 78). The second variety, “ $\beta$ . *Cistus Ledon, foliis populi nigrae, minor* Bauh. pin. 467”, was connected to the illustration “*Ledon n. latifolium minus.*” of Clusius (1601: 78).

In the current concept of *C. populifolius* these two taxa are usually accepted at the rank of subspecies (see Warburg, 1968: 284; Greuter & al., 1984: 83; Demoly & Montserrat, 1993: 325–327). *Cistus populifolius* subsp. *populifolius* is applied to plants growing in the Iberian Peninsula and southern France, which produce leaves about twice longer than wide, with smooth margins, and sepals and pedicels almost glabrous. *Cistus populifolius* subsp. *major* (Dunal) Heywood occurs in southern Iberian Peninsula and northern Africa, and has leaves about as long as wide, with distinctly undulate margins, and sepals and pedicels densely white-hirsute. According to the information in the protologue, both Linnaean varieties can be included in the typical subspecies.

The sheet LINN No. 689.2 (image: <http://www.linnean-online.org/4942/>) is labelled “*I populifolius*” and corresponds to collection num. 115 of Alstroemer’s Spanish list, which is a post-1753 addition to the herbarium and is ineligible as type. It, however, fits well the current concept of *C. populifolius* subsp. *major*, and in any case would not have been a good choice as lectotype.

Among the original herbarium material cited by Jarvis (2007: 421), the sheet Herb. Clifford: 205-1, 4 (BM 000628732;

image: <http://www.nhm.ac.uk/resources/research-curation/projects/clifford-herbarium/lgimages/BM000628732.JPG>) includes a fragment labelled “*Cistus Ledon foliis populi nigrae major C.B.P. Cistus populifolius*”. Similarly, two sheets are found in Burser’s herbarium that came from the Botanic Gardens of Montpellier, and are labelled according to both varietal names in the protologue. On the one hand, the sheet Burser XXIV: 77 (UPS) bears Bauhin’s phrase-name “*Cistus Ledon, foliis populi nigrae, major*” together with Clusius’s one “*Ledon latifolium II. majus*”. On the other, the sheet Burser XXIV: 78 (UPS) corresponds to Linnaeus’s var.  $\beta$ , and is labelled “*Cistus Ledon, foliis populi nigrae, minor Bauh.*” and “*Ledon latifolium II. minor Clus.*” All those materials match the current concept of *C. populifolius* subsp. *populifolius* and are suitable for typification. Accordingly, we are designating here the sheet in Clifford’s herbarium as the lectotype of this name.

6. *Cistus salvifolius* L., Sp. Pl.: 524. 1753 (“*salvifolia*”). Ind. loc.: “*Habitat in Italia, Sicilia, Narbona*” – **Lectotype (designated here)**: Herb. Burser, XXIV: 54, the fragment on the left side of the sheet (UPS [digital image!]).

Jafri (1977: 8) designated the sheet No. 689.11 (LINN; image: <http://www.linnean-online.org/6421/>) as the lectotype of this name. However, as pointed out by Jarvis (2007: 419), it includes the specimen “A 117”, which was sent to Linnaeus by Alstroemer after 1753 and is, therefore, not original material. Consequently, lectotypification by the former authors is to be superseded since they effected a neotypification (Art. 9.9, McNeill & al., 2012).

The original material of *C. salvifolius* is in two sheets, which match the traditional concept of the species and are suitable for typification. First, Herb. Clifford: p. 205-5, 11 (BM000628737; <http://www.nhm.ac.uk/resources/research-curation/projects/clifford-herbarium/lgimages/BM000628737.JPG>) bears a fragment labelled “*Cistus foemina folio Salviae. C.B.P. salvifolius*”, which corresponds to the polynomial of Bauhin (1623: 464–465) and is connected to Clusius’s (1601: 70) “*Cistus femina*.” Secondly, the sheet Burser XXIV: 54 (UPS) bears two morphologically different fragments (plus the remains of a third one, currently lost), each one likely coming from each locality cited in the protologue: Florence and Montpellier. Although all those cited materials fit well the current concept of *C. salvifolius*, the fragment on the left side of the sheet Burser XXIV: 54 is the only one that shows 1-flowered pedicels, a character matching the final sentence in the Linnaean protologue: “*Pedunculi uniflori, diphylli ...*” Therefore, it is selected here as the lectotype of that name.

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