



About the circumscription of *Celosia argentea* (Amaranthaceae) and the related Linnaean taxa

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As part of the revision of the genus *Celosia* Linnaeus (1753: 205) for the treatment of *Amaranthaceae* for the Euro+Med plantbase project and the New Flora of Italy (Iamonico, in prep.), it has been necessary to establish the identity of *C. argentea* Linnaeus (1753: 205) in comparison with the related taxa *C. cristata* Linnaeus (1753: 205), *C. castrensis* Linnaeus (1762: 297) and *C. margaritacea* Linnaeus (1762: 297) (Feng *et al.* 2009). A first step was the typification of the names (Iamonico & Jarvis 2012). Here the current circumscription of *C. argentea* in comparison with *C. cristata*, *C. castrensis* and *C. margaritacea* are discussed using relevant literature and morphological data of collections (70 specimens from the Herbaria B, BAR, FI, K, KUFS, PE, RO, LINN and TROY were examined).

At present, the name *C. argentea* is accepted for a species widely distributed on all continents by the most authors (e.g., Townsend 1974, Bao *et al.* 2003, Robertson 2003, DAISIE 2008), but the relationship with other *Celosia* taxa appears controversial, especially with *C. cristata*: some authors considered this taxon as synonym of *C. argentea* [e.g. DAISIE (2008) for the recent non-native European flora or APNI (2012) for Australia], others as a variety of *C. argentea* [var. *cristata* (L.) Kuntze (1891: 541), e.g., Townsend (1974) for south-western Asia or Akeroyd (1993) for Europe], or even as a separate species [e. g. Bao *et al.* (2003) for Eastern Asia (included Indo-China) and Robertson (2003) for North America]. However, recent biometric (Grant 1962, Chaturvedi *et al.* 1993), cytological (Grant 1961, Khoshoo & Pal 1973), electrophoretic (Nath *et al.* 1997) and molecular studies (Nath *et al.* 1992, Feng *et al.* 2009) clearly showed that *C. argentea* and *C. cristata* can be separated at species level, with the first taxon being the direct progenitor of the second one. The names *C. castrensis* and *C. margaritacea* were however rarely cited.

Linnaeus, in the second edition of *Species Plantarum* (1762), described *C. margaritacea* citing a synonym from Martyn (1728) that was also cited under *C. argentea* in the first edition of *Species Plantarum* (1753). The annotation “*margaritacea* L” on the sheet no. 288.2 at LINN [the lectotype of the name *C. margaritacea* (see Iamonico & Jarvis 2012)] suggests that Linnaeus originally (in 1753) identified it with his *C. argentea* (as proven by the script “L”) but subsequently decided to recognize it as a new species (script “*margaritacea*”). Moreover, he pointed out the similarity between the two species, also supposing a different rank (variety) for *C. margaritacea* («*Simillina C. argenteae, ut fere varietas, sed folia fere ovata, stamina purpurea*»). On the basis of the present studies, plants with elongated inflorescence (*C. argentea* and *C. margaritacea*) can be distinguished into two morphotypes: a first one characterized in having lanceolate to linear-lanceolate leaves (blades about 4.5–6.5 times longer than wide), the second one with ovate to ovate-lanceolate leaves [blades about 2.0–4.0(–4.5) times longer than wide]. This appears to be the only diagnostic character (Fig. 1). These taxa could therefore be ascribed to one species, and variety rank for *C. margaritacea* is proposed here [the name *C. argentea* has priority according to Art. 11.4 of the ICN (McNeill *et al.* 2012)].

Celosia argentea Linnaeus (1753: 205) var. *argentea*

Lectotype (designated by Townsend 1974):—ORIGIN UNKNOWN. “*Habitat in America*”, *Herb. Linnaeanum* no. 288.1 (LINN!).