

Neotypification of the name *Centaurea crassifolia* Bertol. (Asteraceae)

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Neotypification of the name *Centaurea crassifolia* Bertol. (Asteraceae)

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KEY WORDS

Malta,
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neotypification.

ABSTRACT

The typification of the name *Centaurea crassifolia* Bertol. is discussed. The specimens of *C. crassifolia* collected by Bertoloni were lost during the Second World War and have never been found. Therefore, according to the article of ICN a neotype for this species is designated using a specimen kept in CAT herbarium.

RÉSUMÉ

Néotypification du nom Centaurea crassifolia Bertol. (Asteraceae).

La typification du nom *Centaurea crassifolia* Bertol. est discutée. Les spécimens de *C. crassifolia* collectés par Bertoloni ont été perdus pendant la seconde guerre mondiale et n'ont jamais été retrouvés. Par conséquent, selon l'article de l'ICN, un néotype pour cette espèce est désigné avec un spécimen conservé dans l'herbier de CAT.

MOTS CLÉS

Malte,
Bertoloni,
Cheirolophus,
Palaeocyamus,
néotypification.

INTRODUCTION

Centaurea L. s.l., is a polyphyletic genus according to molecular studies (Susanna *et al.* 2006; Hilpold *et al.* 2014). Currently, this genus is represented by c. 770 species, mainly distributed in the Euro-Mediterranean territory and South-Western Asia (POWO 2024). It comprises three subgenera namely *C.* subg. *Centaurea*, *C.* subg. *Lopholoma*, and *C.* subg. *Cyanus*, each of which is represented by several sections and subsections (Hilpold *et al.* 2014). *Centaurea* is a taxonomically complex genus, with many species confined to well-circumscribed areas and sometimes with a local distribution. Many of them belong to critical species groups, which need further in-depth investigations (Brullo *et al.* 2021). The genus is typified with the conserved type *C. paniculata* L. (Greuter *et al.* 2001). In the Mediterranean basin, among the species belonging to this genus there is *Centaurea crassifolia* Bertol. a narrow endemic species for Maltese Archipelago. According to Susanna *et al.* (1999), which investigated the delimitation of the genus *Cheirolophus* Cass. and its exclusion from the genus *Centaurea*, *C. crassifolia* must be included in *Cheirolophus* genus. Cassini (1817) described the genus *Cheirolophus* based on species previously identified under the *Centaurea* L. genus (Garnatje *et al.* 2007). Since then, various authors have recognized it as a distinct genus (Dostál 1976). In fact, based on phylogenetic results *Cheirolophus*, including *C. crassifolius*, is monophyletic. Currently, the genus comprises 27 accepted species found across Macaronesia and the western and central Mediterranean (POWO 2024). After conducting a literature review, it appears that the name *C. crassifolia* has not been typified yet. Therefore, this paper aims to typify it according to the *Shenzhen code* (Turland *et al.* 2018, hereafter ICN).

MATERIAL AND METHODS

HERBARIUM ABBREVIATIONS (Thiers 2024)

ARG	Argotti Botanic Garden, University of Malta;
BOLO	University of Bologna;
CAT	University of Catania;
K	Royal Botanic Gardens, Kew;
MPU	Université de Montpellier;
P	Herbarium of the Muséum national d'Histoire naturelle, Paris.

TAXONOMY

Family ASTERACEAE Bercht. & J.Presl

Subfamily CARDUOIDEAE Cass.

Genus *Cheirolophus* Cass.

Centaurea crassifolia Bertol.

Annali di Storia Naturale, Vol. 2: 359 (Bertoloni 1829). — *Palaeocyanus crassifolius* (Bertol.) Dostál, *Acta Botanica Academiae Scientiarum Hungaricae* 19 (1-4): 74 (Dostál 1973); Dostál, *Botanical Journal of the Linnean Society* 71 (3): 192 (Dostál 1976). — *Cheirolophus crassifolius* (Bertol.) Susanna, *Plant Systematics and Evolution* 214 (1-4): 157 (Susanna *et al.* 1999).

Centaurea spathulata Zerafa (sic), *Flora Melitensis Thesaurus* 1: 11 non Ten. (Zerapha 1827). *nom. illeg.*

TYPE MATERIAL. — **Malta** • Wied Babu; 27.VI.1973; S. Brullo & G. Ronsisvalle 006836; neo-, CAT! [Fig. 1]), here designated.

TYPIFICATION REMARKS

Bertoloni (1829) validly published the name *Centaurea crassifolia*. In fact, Zerapha (1827-1831) first discovered and reported the plant as a new species for Malta. He described it as *Centaurea spathulata* in his *Flora Melitensis Thesaurus* (1831). However, this name had been previously used by Tenore (1811), making Zerapha's name illegitimate. Bertoloni validly described the species, providing a detailed diagnosis, and also mentioned that he had a specimen of the plant collected by Zerapha in his herbarium ["il cui esemplare proveniente dallo stesso Sig. Zeraffa sta nel mio erbario"] (specimen coming from Mr. Zeraffa [sic] himself is in my herbarium). Subsequently, Dostál (1973) proposed *Palaeocyanus* as a new name, indicating as basionym *Centaurea* sect. *Palaeotypus* Nyman and as type *C. crassifolia* Bertol.; he provided also a new combination for the species, i.e., *Palaeocyanus crassifolius*. Later, Dostál (1975) published *Palaeocyanus* as a new genus, including a detailed description and reproposing the combination *Palaeocyanus crassifolius* (Bertol.) Dostál. In addition, he reported a lectotype for this species with the following label: "*insula Melita: in littoris meridionalis faucis Wued-Babu prope Hildzurik in rupibus calcareis 1874 leg. Janka (K)*". However, this attempt of lectotypification is not correct. The collector Janka is indicated as "leg." in the reference and the specimen is dated to 1874. In the protologue, Bertoloni (1829) does not mention Janka. Furthermore, the date reported is after the publication of Bertolini's protologue. According to Stafleu & Cowan (1976), the Bertoloni's types are currently found in the BOLO herbarium. During the World War II, Bertoloni's herbarium and library were moved to Villa Salina to protect them in case of any attacks on Bologna. Unfortunately, the villa was later occupied by the German army and some soldiers used packets of plants as firewood during the winter, causing severe damage to the herbarium (Duncan 1983). It is still unclear how many specimens were lost during the move. Although the entire *Centaurea* genus is still present in Antonio Bertoloni's collections, the specimens of *Centaurea crassifolia* are among those lost during the Second World War and have never been found. (U. Mossetti, pers. comm.). As a result, it is not currently possible to trace the original material and establish a lectotype for the species. Based on the Arts. 9.8 and 9.13 of the ICN, a neotype may be chosen for a taxon if the holotype is absent and other original material is no longer available. It should be noted that *C. crassifolia* is a protected species in Malta, and it cannot be collected without authorisation, and for valid reasons. It is also classified as EN under the IUCN criteria (Mifsud 2013). Therefore, we have chosen a sample that is already deposited in a herbarium as a neotype. Since Bertoloni's protologue cites "Reperitur locis collinis ad mare in insula Melita" [It is found in hilly places by the sea in the island of Malta] as the *locus classicus*, any sample collected on the island of Malta can be chosen as a neotype, as no precise



Fig. 1. — Neotype of *Centaurea crassifolia* Bertol. at CAT (S. Brullo & G. Ronsisvalle 006836). Image from CAT with acknowledgement.

location is indicated. Unfortunately, exsiccata of this species are extremely rare in herbaria. According to our investigations, two samples are deposited at P (P02828203, P02828204), while one is at MPU (MPU1056321). These collections examined online. In the ARG herbarium, a herbarium sheet of *Centaurea crassifolia* collected in the Wied Babu locality was found. It is part of the A. Caruana Gatto-Plantae Melitensis herbarium, and the label bearing the number 373 (collection personally viewed). However, in our opinion, this specimen cannot be considered as possible neotype as it is in very poor condition. Additionally, Brullo *et al.* (2020) collected and studied this species mainly from a phytosociological point of view. After personally examining these sheets herbarium, we found a good collection of specimens at CAT. We analysed the herbarium specimens and selected a complete sample deposited at CAT as a neotype, which is in accordance with the traditional concept and current application of the name (Pignatti 2018).

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REFERENCES

- BERTOLONI A. 1829. — *Florae Melitensis Thesaurus sive plantarum enumeratio, quae in Melitae Gaulosque insulis aut indigene aut vulgatissimae occurrunt ecc.* Curante Stephano Zerapha Med. Doct. Fasc. 1°. *Annali di Storia Naturale* 2: 358-364. <https://www.biodiversitylibrary.org/page/9290998>
- BRULLO S., BRULLO C., CAMBRIA S. & GIUSSO DEL GALDO G. 2020. — *The Vegetation of the Maltese Islands*. Springer Nature, Switzerland, 286 p.
- BRULLO S., CAMBRIA S., CRISAFULLI A., TAVILLA G. & SCIANDRELLO S. 2021. — Taxonomic remarks on the *Centaurea aeolica* (Asteraceae) species complex. *Phytotaxa* 483: 9-24. <https://doi.org/10.11646/phytotaxa.483.1.2>
- CASSINI H. 1817. — *Cheirolophus*, in CUVIER F. (ed.), *Dictionnaire de Sciences naturelles*, 50, ed. 2. Strasbourg, F.G. Levrault, Paris: 250. <https://doi.org/10.5962/bhl.title.42219>
- DOSTÁL J. 1973. — Preliminary notes in the subtribe *Centaureineae*. *Acta Botanica Academiae Scientiarum Hungaricae* 19: 73-79.
- DOSTÁL J. 1975 (publ. 1976). — New nomenclatural combinations and taxa of the Compositae subtribe *Centaureineae* in Europe, in HEYWOOD V. H. (ed.), *Flora Europaea. Notulae Systematicae ad Floram Europaeam spectantes n.18*. *Botanical Journal of the Linnean Society* 71 (3): 191-210. <https://doi.org/10.1111/j.1095-8339.1975.tb02535.x>
- DUNCAN T. 1983. — Antonio Bertoloni's Herbarium and the Florula Guatimalensis Types. *Taxon* 32: 299-301. <https://doi.org/10.2307/1221990>
- GARNATJE T., GARCIA S. & CANELA M. Á. 2007. — Genome size variation from a phylogenetic perspective in the genus *Cheirolophus* Cass. (Asteraceae): biogeographic implications. *Plant Systematics and Evolution* 264: 117-134. <https://doi.org/10.1007/s00606-006-0489-7>
- GREUTER W., WAGENITZ G., AGABABIAN M. & HELLWIG F. H. 2001. — Proposal to conserve the name *Centaurea* (Compositae) with a conserved type. *Taxon* 50: 1201-1205. <https://doi.org/10.2307/1224746>
- HILPOLD A., VILATERSANA R., SUSANNA A., ANDREA S., MESEGUER A. S., BORŠIĆ I., CONSTANTINIDIS T., FILIGHEDDU R., ROMASCHENKO K., SUAREZ-SANTIAGO V. N., TUGAY O., UYSAL T., PFEIL B. E. & GARCIA-JACAS N. 2014. — Phylogeny of the *Centaurea* group (*Centaurea*, Compositae) – geography is a better predictor than morphology. *Molecular Phylogenetics and Evolution* 77: 195-215. <https://doi.org/10.1016/j.ympev.2014.04.022>
- MIFSUD S. 2013. — Distribution of some rare or endemic chasmophytic and rupestral species growing along the coastal cliffs of the Maltese Islands. *Webbia* 68 (1): 35-50. <https://doi.org/10.1080/00837792.2013.807451>
- PIGNATTI S. 2018. — *Flora d'Italia, seconda edizione*. Vol. 3. Edagricole, Milano, 1312 p.
- POWO 2024. — *Plants of the World Online*. The Royal Botanic Gardens, Kew. <https://powo.science.kew.org/> [accessed 04 April 2023].
- STAFLEU F. A. & COWAN R. S. 1976. — *Taxonomic Literature*. Ed. 2. Vol. 1. Bohn, Scheltema & Holkema, Utrecht, 1136 p. <https://doi.org/10.5962/bhl.title.48631>
- SUSANNA A., GARNATJE T. & GARCIA-JACAS N. 1999. — Molecular phylogeny of *Cheirolophus* (Asteraceae: Cardueae – Centaureinae) based on ITS sequences of nuclear ribosomal DNA. *Plant Systematics and Evolution* 214 (1-4): 147-160. <https://doi.org/10.1007/BF00985736>
- SUSANNA A., GARCIA-JACAS N., HIDALGO O., VILATERSANA R. & GARNATJE T. 2006. — The Cardueae (Compositae) revisited: insights from ITS, trnL-trnF, and matK nuclear and chloroplast DNA analysis. *Annals of the Missouri Botanical Garden* 93: 150-171. [https://doi.org/10.3417/0026-6493\(2006\)93\[150:TCCRIF\]2.0.CO;2](https://doi.org/10.3417/0026-6493(2006)93[150:TCCRIF]2.0.CO;2)
- TENORE M. 1811. — *Flora Napolitana*. Vol. 1 (2). Stamperia Reale, Napoli, 398 p.
- THIERS B. 2024. — *Index Herbariorum: a Global Directory of Public Herbaria and Associated Staff*. New York Botanical Garden's Virtual Herbarium. <https://sweetgum.nybg.org/science/ih/> [accessed 04 April 2024]
- TURLAND N. J., WIERSEMA J. H., BARRIE F. R., GREUTER W., HAWKSWORTH D. L., HERENDEN P. S., KNAPP S., KUSBER W.-H., LI D.-Z., MARHOLD K., MAY T. W., MCNEILL J., MONRO A. M., PRADO J., PRICE M. J. & SMITH G. F. (eds) 2018. — International Code of Nomenclature for algae, fungi and plants (Shenzhen Code) adopted by the Nineteenth International Botanical Congress Shenzhen, China, July 2017. *Regnum Vegetabile* 1-254. Glashütten: Koeltz Botanical Books. <https://doi.org/10.12705/Code.2018>
- ZERAPHA S. 1827-1831. — *Flora Melitensis Thesaurus, sive plantarum enumeratio quae in Melitae Gaulosque insulis aut indigene aut vulgatissimae*. Fasc. 1, 2. Regia Typographia, Melitae [Malta], 54 p. https://archive.org/embed/bub_gb_fs0NAAAAQAAJ

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