Cynara makrisii (Asteraceae, Cardueae), a new artichoke species in Cyprus

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**Abstract**


The population of a wild artichoke discovered in 1997 in the western part of Cyprus proved to be a new species, *Cynara makrisii*. Morphologically it is similar to *C. cyrenaica*, known to occur in Libya and Crete.

Additional key words: *Compositae, Cynara cyrenaica*, taxonomy, endemism, East Mediterranean

**Introduction**

Two species of wild artichoke were known to occur in Cyprus, *Cynara cardunculus* L. and *C. cornigera* Lindl. (Meikle 1985; Wiklund 1992). Since the publication of Meikle’s standard flora for the island and Wiklund’s monograph, the situation has become somewhat more complicated. A paper by Robba & al. (2005), which discusses the phylogeny of the genus, mentions the occurrence of *C. cyrenaica* Maire & Weiller in Cyprus but gives no specific details. This proved to be an error (L. Robba, pers. comm. to R. Hand; see also Makris 2007).

On 16 June 1997, Christodoulos Makris asked G. Hadjikyriakou to examine a specimen of a *Cynara* species from the Vretsia area (western Cyprus). Although it appeared at first to be *C. cardunculus*, Makris was unconvinced. Indeed, further studies revealed that the specimen differed considerably from the two indigenous taxa mentioned above, and the finding was published as a first record of *C. syriaca* Boiss. in Cyprus (Makris & Hadjikyriakou 2006). However, further examination and comparison led to the conclusion that the plants are not conspecific with *C. syriaca*, but are morphologically much closer to *C. cyrenaica*. Consequently, it was recommended that the plant be included in the Cypriot Red Data Book under that name (Makris 2007).

When more samples of the rarely collected “*Cynara cyrenaica*” from Cyprus became available, examination revealed that the plants actually differ from all known *Cynara* taxa through a combination of characters, some of which are discontinuous. In our opinion this variation merits recognition of a new taxon at species rank.

**Material and methods**

In addition to studies in the field, the investigation is based on herbarium specimens preserved at the B, K and MPU (abbreviations after Holmgren & Holmgren 1998+) as well as on the material of the new taxon cited below. Material of the Cypriot plant has been compared to specimens of all accepted *Cynara* species (i.e., the specimens at K cited by Wiklund 1992 and the complete material at B). Plants have been raised from fruits collected at the type locality and cultivated at both the Botanic Garden Berlin-Dahlem and at the Athalassa Environmental Centre in Cyprus.

Chromosomes were counted in root-tip metaphases following the technique described by Vogt & Aparicio (2000).

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Results and discussion

*Cynara makrisii* Hand & Hadjik., sp. nov.
Holotype: Cyprus, Division 3 (sensu Meikle 1977), Pafos district, Argaki tou Kourellou southeast of Vretsia, slope with *Sarcopoterium spinosum* phrygana, c. 350 m, 24.5.2007, Hadjikyriakou 6969 (CYP; isotypes: B, STU, herb. Hadjikyriakou).

[– *Cynara cyrenaica* auct. cypr. non Maire & Weiller]
[ – *Cynara syriaca* auct. cypr. non Boiss.]

*Cynara cyrenaicae* aemulans, praecipue differt rhachidis foliorum et lobularum latioiribus (5.5-9 mm, non 1.5-5 mm) et antheris longioribus (8.5-10 mm, non 6.7-7.7 mm).

Perennial up to 80 cm high. Taproot unbranched, occasionally 2-3-branched apically, more than 50 cm long. Stems 5-12 mm wide at base, sulcate, 14-21 ribbed, thinly to densely floccose-woolly, glandular, branched in the upper part, flushed purple upwards. Juvenile leaves (leaves of seedlings) undivided; lamina ovate, dark green above and marbled with white venation, densely woolly beneath, with reticulate venation; margins dentate to obscurely serrate; apex acute, base wedge-shaped; petiole not spiny, flushed purple. Leaves of mature plants basally rosulate, usually sparsely set along stem, almost to the capitulum, green and glabrescent above, slightly glandular, sometimes slightly scabrid, thinly to densely woolly and glandular below,
triangular-lanceolate in outline, 15-60 × 10-30 cm, deeply pinnatisect, slightly folded along the midrib and along the main vein of the segments, rachis of leaves 5.5-9 mm wide; segments 12-20, lanceolate (ovate to broadly lanceolate in outline), 2-15 × 1-1.5 cm, apex acuminate, rarely shortly caudate, spine 3-6 mm long, yellow, rachis of segments 6-9 mm wide; margins with deltoid, yellow spine-tipped lobes, the margins of the lobes entire or with a single basal spine-tipped lobules at one side of the base, very rarely on both sides. Basal leaves petiolate, the lower part of the petiole not spiny, the upper with few-spined clusters or spine-tipped lobules. Cauline leaves not decurrent; the lower part of the petiole in the lower cauline leaves usually not spiny, the upper part with few-spined clusters or spine-tipped lobules, or occasionally spiny to base; the middle and uppermost cauline leaves progressively smaller upwards, the lower part of the petiole in the middle cauline leaves spiny to the base, or occasionally not spiny, the upper part with few-spined clusters or spine-tipped lobules; the uppermost cauline leaves usually sessile or obscurely petiolate, spiny to the base. Capitula terminal, solitary or by few in sparsely branched corymbs, pedunculate to subsessile. Involucr e ovoid to conical, constricted at apex. Involucral bracts greenish purple, closely imbricate, in 9-12 series; the outer 2 series small, triangular to ovate, with acuminete, spine-tipped apex; the median 4-5 series progressively larger, up to 55 mm long, the lower part broad, incurred and somewhat concave, ovate to broadly ovate, 8-21 × 8-20 mm, abruptly constricted above into a rigid terminal reflexed spine, 6-37 mm long; the middle involucral bracts protruding 6-30 mm on either side. Involucral bracts greenish purple, closely imbricate, in 9-12 series; the outer 2 series small, triangular to ovate, with acuminete, spine-tipped apex; the median 4-5 series progressively larger, up to 55 mm long, the lower part broad, incurred and somewhat concave, ovate to broadly ovate, 8-21 × 8-20 mm, abruptly constricted above into a rigid terminal reflexed spine, 6-37 mm long; the inner 2-3 series up to 50 mm long, the lower part oblong to narrowly ovate, 16-20 × 10-16 mm, incurred, flattish, with a broadly ovate to circular apical appendage up to 13 mm long, which is constricted apically into an acuminete suberect spine, 5-20 mm long, glabrous inter-
of the genus counted so far have the same number (see Goldblatt & Johnson 1979+).

Illustrations. — Fig. 1; Makris 2007: 192, 193 sub Cyna-
ra cyrenaica.

Eponymy. — The new species is dedicated to Christo-
doulos Makris (Lemesos, Cyprus), investigator of the
flora and insect fauna of Cyprus, who discovered the
plant.

Relationship. — The new taxon is morphologically
close to Cynara cyrenaica but differs in several charac-
ters (Table 1). Two other taxa can be superficially simi-
lar: (1) delicate, relatively tall specimens of the E
Mediterranean C. cornigera (see Wiklund 1992: 103)
but differing clearly by, e.g., leaf colouration and cy-
athiform involucres; (2) plants of the W Mediterranean
C. algarbiensis Mariz, which have, e.g., shorter florets
and a differing leaf structure. Consequently, compara-
tive studies concentrated on C. cyrenaica (see Table 1),
which is only rarely found in European collections
(search at G, JE, Z without success; one specimen from
FI could be that taxon). Our analysis is based on few
but additional specimens compared to Wiklund’s
(1992) monograph. Her measurements could be con-
firmed; only in a few cases new maxima or minima
could be added. It is significant that measurements of
plants from the isolated Cretan population do not differ
from those of Libyan occurrences of C. cyrenaica.

Even considering the somewhat broader base of data,
the Cynara population from Cyprus does not represent
merely an extreme of the variation of C. cyrenaica but
a different taxon. Because of the existing discontinuities
(see Table 1) the rank of species seems appropriate.

Both taxa, Cynara makrisii and C. cyrenaica, may
have had a common ancestor. There are certain floristic
affinities between Libya, especially the Cyrenaica, and
Cyprus. The situation is characterized by several disjunc-
tions either at population level or concerning closely re-
lated taxa (e.g., Erica sicula Guss., Ononis reclinata
var. monophylla, Teucrium sect. Polium, see Meikle 1977,

Further phylogenetic studies using molecular tech-
niques to clarify the position of Cynara makrisii are un-
der way (Gemeinholzer & al., in prep.).

Distribution and ecology. — Cynara makrisii was first
located at Argaki tou Kouroulou, about 2 km SE of
Vretsia village (western slopes of Xeros River) at an al-
titude of about 350 m. Later on, a smaller patch
has been located on the eastern slopes of the river. The
whole population covers an area of about six hectares.
The surrounding area is characterized by even ground
to steep slopes, dissected by streams. The geological
substratum belongs in part to Kathikas formation (vari-
ably coloured, poorly sorted debris with angular clasts
up to boulder size in a sand and clay matrix; most clasts
are derived from the Mamonia Complex but some are
of Troodos ophiolite lithologies), and in part to
Kanaviou formation (Bentonitic clays interbedded
with off-white volcaniclastic sandstones; see Xenophontos 1997). During the dry period the soil of
the area is characterized by deep cracks, whereas in
winter and spring small-scale landslides occur on the
steep slopes. Due to these latter characteristics the land
is treeless, covered with phrygana or herbaceous vege-
tation. The dominant plants are: Sarcopoterium spinos-
sum Spach., Asphodelus aestival Rchbh., Eryngium
creticum Lam., Vicia bithynica L., Hordeum bulbosum
L., Dactylis glomerata L., Piptatherum milaceum (L.)
Cass., Avena sp., Daucus carota L., Serapias sp.

The unique geographical situation that prevents the
colonisation of trees may be the reason that Cynara
makrisii is one of the few Cypriot micro-endemics that
is not found on cliffs or in rocky habitats. The search
for additional sites in Cyprus has not been successful so far.

Conservation. — The species is included in the Red
Data Book of the Flora of Cyprus (Makris 2007, sub
Cynara cyrenaica). Potential threats are fires, over-
grazing and land reclamtion. The plant is possibly
also affected by landslides, particularly in periods with
prolonged rainfall and large soil cracks in prolonged
drought. C. makrisii seems to be a rare endemic species
of Cyprus and according to the IUCN criteria it is cate-
gorized as “vulnerable” (VU D2, see Makris 2007 for
further details). It should be noted that only a small per-
centage of achenes may reach maturity (only 2-5 per
head, often none). They are destroyed by an unknown
insect species, which attacks the capitula as soon as the
florets start to wither.

Specimens seen. — Cynara makrisii (additional mate-
rial from the type locality): 16.6.1997, Makris in Had-
jiyriakou 2743; 31.5.2004, Hadjiyriakou 6092 &
Makris; 28.4.2007, Hadjiyriakou 6955 & Hand; 31.5.
2004, Hadjiyriakou 6092 (all B, herb. Hadjikyriakou);
16.1.2007, Hadjiyriakou 6947 (plant raised from seeds
collected by C. Christodoulou at the type locality
and cultivated at the Athalassa Environmental Centre).

Cynara cyrenaica (* = digital image): LIBYA: CYRENAICA:
Road to Talonota, 1500’, 24.5.1958, B. C. Park 572 (K);
20 km west of Benghazi, 25 m, 8.4.1961, Khalifa el Ka-
lifa 1498 (K); el-Hgebeg a sud est di Cirene, steppa a
Poterium, 28.4.1934, R. Pampanini & R. Pichi-Sermolli
(K); in humus supra Appolionam, 200-300 m, solo
calcarea, 22.4.1938, Maire & Weiller, Iter Libycum 1938,
n. 908 (lectotype of C. cyrenaica, designated by Wiklund
1992: 94; MPU*); prope Bir Gariba, solo calcarea, 400 m,
23.4.1938, Maire & Weiller, Iter Libycum 1938, no. 909
(MPU*); in humus inter Tauchiram [sic?]; Maire &
Weiller 1939: “Tocra”] et Barcem, solo calcarea, 350 m,
20.4.1938, Maire & Weiller, Iter Libycum 1938, no. 906 (MPU*); in dumetis supra Barcem, 21.4.1938, Maire & Weiller, Iter Libycum 1938, no. 907 (MPU*).

Greece: Crete: Prov. Lassithi about 22 km from Ag Nick [Agios Nikolaos] near Meseleri on Kalamafka road, 1000', 24.6.1974, C. Barclay 3208 (K); Eparchía Iera - pétras, Shinavria Ko [label cut] (Mesa Kefala), 35°05'N 25°43'E, phrygana, 520 m, 25.6.1994, R. Jahn (B).

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