

# The genus *Acanthus* (*Acanthaceae*) in Greece

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**Abstract.** An account of the genus *Acanthus* in Greece is presented. Descriptions of the species with notes on ecology and geographical distribution, illustrations, maps and a key to the taxa are provided. *Acanthus greuterianus* is reduced to synonymy of *A. caroli-alexandri*.

**Key words:** *Acanthus*, Greek flora, taxonomy, distribution, Balkan Peninsula

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## Introduction

The family *Acanthaceae* comprises *ca.* 190 genera and 4750 species sensu Daniel & McDade (2014) *vs* 212 genera and *ca.* 3175 species (Mabberley 2008). It is largely pantropical in the Old and New World, extending to the Mediterranean region, North America and Australia. The commonest basic number in the family is  $x = 16$ ;  $x = 8$  is assumed to be an original basic number of the family and  $x = 16$  is derived by polyploidy. Evolution of an aneuploid series ( $x = 10, 12, 13, 14, 15, 17, 18, 20, 21, 24$  and 40) from the original number  $x = 8$ , followed by polyploidy might have given rise to the wide range of basic numbers now observed in the family (Govindarajan & Subramanian 1985).

In Greece, the family is represented by the genus *Acanthus* L. which comprises four species, all insect-pollinated, and by *Justicia adhatoda* L., a shrubby plant with entire basal leaves, a five-lobed calyx, two-lipped corolla and two stamens that occurs in Crete as an introduced alien from tropical Asia but is hardly naturalized.

## Material and methods

A comparison of *Acanthus* species was carried out based on literature and herbarium material as well as studies on living material in their natural habitat. In

the species descriptions diagnostic characters are italicized. The general range within and without Greece is also indicated. For external distribution, reference is made to Floras of the neighbouring countries and Plants of the World online (Kew Science). Descriptive terminology is as used in English language Floras, e.g., *Flora Europaea* (Tutin & al. 1972).

### Taxonomic account

*Acanthus* L., Sp. Pl.: 639 (1753) — Type: *Acanthus mollis* L.

From Greek ‘*akantha*’, referring mainly to plants of the genus *Acanthus* with spiny bracts, derived from ‘*aké*’ meaning point, needle and ‘*ánthos*’ meaning flower. ‘*Akantha*’ has also been used for thorny species of the genus *Acacia* in Egypt and Arabia. In Greek mythology, ‘*Akantha*’ was a nymph Apollo desired but she rejected him and scratched him on the face. As a punishment, she was transformed into a spiny *Acanthus*.

### Description of genus

Robust biennial or perennial herbs. Stem erect, simple, terete. Leaves cauline or mostly basal, simple, opposite, exstipulate, pinnatifid to pinnatisect, without cystoliths. Flowers hermaphrodite, zygomorphic, in dense, terminal, erect, cylindrical spikes. Bracts conspicuous, leaf-like, spinose-dentate, often coloured, enclosing flowers. Bracteoles smaller, lanceolate to linear. Calyx 4-lobed; upper and lower sepals large, lateral sepals smaller and shorter. Corolla tube short; lower lip 3- or 5-lobed, upper lip absent. Stamens 4, epipetalous, not extending beyond lower lip of corolla; anthers connate in pairs. Ovary superior, ovoid, bilocular with axile placentation. Style single, longer than stamens, stigma unequally 2-lobed. Capsule ovoid to ellipsoid, coriaceous, with hardened funicles (retinacula) which propel the seeds when the capsule dehisces explosively. Seeds 2–4, smooth and glabrous, non-endospermous; embryo large.

The genus includes ca. 30 species distributed in S Europe to Australia and Africa. It is introduced in W Europe, New Zealand, California and C America, and is considered monophyletic (McDade & al. 2005, 2008). Linnaeus (1753, 1756) published five names un-

der *Acanthus* [*A. dioscoridis* L. (1756: 23), *A. ilicifolius* L. (1753: 639), *A. maderaspatensis* L. (1753: 639), *A. mollis* L. (1753: 639), *A. spinosus* L. (1753: 639)] of which two (*A. ilicifolius* and *A. maderaspatensis*) are currently referred to other genera.

### Key to species

1. Basal leaves strongly spinose-dentate...**3. spinosus**
- Basal leaves weakly or not spinose-dentate .....**2**
2. Leaf segments narrowed at base; lower sepal pubescent at apex.....**2. hungaricus**
- Leaf segments not narrowed at base; lower sepal pubescent at base.....**3**
3. Basal leaves pinnatifid; corolla lip 3.5–5 cm ...**1. mollis**
- Basal leaves pinnatisect; corolla lip 5.5–8 cm .....**4. caroli-alexandri**

The species are presented in the order adopted in *Flora Europaea* (Tutin & al. 1972).

**1. *Acanthus mollis*** L., Sp. Pl.: 639 [as 939] (1753). — “Habitat in Italiae, Siciliae humentibus, duris.” Lectotype (designated by Brummitt in Jarvis & al. 1993: 14): Herb. Clifford: 326, *Acanthus* 1 (BM BM000646246). Ic.: Sibth. & Sm., Fl. Graec. 7, tab. 610 (1831).

= *Acanthus longifolius* Poir. in Lam., Encycl. Suppl. 1: 88 (1810) — described from a plant collected in the East Indies by M. de Labillardière (specimen in P-herb. Desfont.).

= *Acanthus hispanicus* G. Don in J.C. Loudon, Hort. Brit.: 244 [nec 256] (1830) — described from Spain.

= *Acanthus spinosissimus* Host, Fl. Austriaca 2: 218 (1831) non Pers. (1807) *nom. illeg.*

= *Acanthus platyphyllus* Murb. in Acta Univ. Lund. 2, 1(4): 64, tab. 16 (1905) — described from Spain, Portugal and N Africa.

Perennial 30–120 cm tall, hairy or glabrous. *Basal leaves long-petiolate*, ovate to elliptic, 20–100 × 5–30 cm, *pinnatifid*, dark green, glabrous on upper surface, puberulent on veins below; *segments not narrowed or constricted at base, incised-dentate*, not spiny; *upper cauline leaves* 1–4 cm long, ovate-lanceolate, spinose-dentate at apex, ± *sessile*. Spike



**Fig. 1.** a & b, *Acanthus mollis* (photo G. Kofinas); c, *Acanthus mollis* leaves carved on Corinthian capital from the tholos of Epidaurus, 380-375 BC, archaeological site of Epidaurus, Greece (from Wikimedia Commons, the free media repository).

erect, dense, 25–100 cm long. Bracts ovate, 2.5–4 cm long, 7-veined, dentate, glabrous or pubescent, pale green tipped purple. Bracteoles linear-lanceolate. Upper and lower sepals (3–)4–5 cm long, glabrous, reddish-purplish. *Corolla lip* 3.5–5 cm long, creamy-white, veined and suffused purple, pubescent. Filaments 3–3.5 cm long, glabrous; anthers 10–12 mm long, hairy on inner side. Capsule ovoid, 2–3.5 cm long, smooth, reddish-brown; seeds reniform-oblong, 10–14 × ca. 8 mm, smooth, reddish-brown. —  $2n = 56$  (material from Spain) and 80 (material from S India). — Fig. 1.

Distribution: Native to C and E Mediterranean, naturalized in W Mediterranean (Iberian Peninsula and Balearic Islands), NW Africa and other areas, invasive in Australia and New Zealand. Cultivated worldwide in warm regions. Introduced as an ornamental in Greece, often escaping from cultivation and becoming naturalized. All floristic regions in Greece except Kiklades, North Central, North East, North and South Pindos. — Fig. 5.

Ecology: Shady nitrophilous places, roadsides, damp ruderal habitats, on limestone, sea level to 370 m. Flowering February to June, fruiting June to August.

As a herbaceous perennial, *Acanthus* symbolizes both resurrection and regeneration, dying down in late summer, growing back in late winter and flowering in spring. Although *A. mollis* is an introduced species, it is widely cultivated and its decorative foliage has long been considered for art and architecture, as an ideal stylized ornamental motif carved in stone on ancient Greek temple roofs, wall friezes, Doric and Corinthian columns (Fig. 1c).

**2. *Acanthus hungaricus*** (Borbás) Baen., Herbarium Europaeum no. 9138 (1896) — Described from the Lower Danube area [Romania] (Szvinica, Orsova), 17 Jun 1896, Adamović (BM, K).

— *Acanthus longifolius* Host var. *hungaricus* Borbás in Pallas, *Lexicon* 1: 239 (1893). — Type *n.v.*; topotypes from Szvinica and Orsova collected by Degen, available at Kew (*vide* Brummitt 1980).

= *Acanthus balcanicus* Heywood & I. Richardson in Bot. J. Linn. Soc. 65: 357 (1972) *nom. nov.* for *Acanthus longifolius* Host, Fl. Austriaca 2: 217 (1831) non

Poiret in Lam., *Encycl. Meth. Bot. Suppl.* 1: 88 (1810). — Type as for *A. longifolius* Host.

Perennial to 100 cm tall. Resembling the widely cultivated *A. mollis* with its dark green leaves but basal leaves *shortly petiolate*, usually pinnatisect; *leaf segments narrowed or constricted at base*; upper cauline leaves ± petiolate; bracts pale green to whitish; *lower sepal pubescent at apex*. Upper sepal greenish-white or suffused purplish-pink. Corolla white or suffused pale pink. Capsule smooth, reddish-brown — Fig. 2.

Distribution: Balkan Peninsula, extending to SW Romania and Croatia; introduced in Belgium, Germany and the Czech Republic. Native in northeastern Greece (North Central, North and South Pindos). — Fig. 5.

Ecology: Woodland, scrub and stony hill slopes, on limestone, 300–1100 m. Flowering June to August, fruiting August to September.

As pointed out by Brummitt (1980), although published on a herbarium label the name *A. hungaricus* is effectively published since it was printed and distributed before 1 Jan. 1953 and is valid since it was based on the earlier varietal name *A. longifolius* Host var. *hungaricus* Borb. The exsiccata label validating the name is represented at the British Museum (Nat. Hist.), and applies to a collection from Yugoslavia made by Adamović on 17 June 1896 (Fig. 2c). Despite the species epithet it is absent from present-day Hungary.

**3. *Acanthus spinosus*** L., Sp. Pl.: 639 (1753). — “Habitat in Italiae humentibus.” Lectotype (designated by Iamónico & Peruzzi (2012): Herb. Clifford: 327, *Acanthus* 2 (BM BM000646247). = *A. spinosissimus* Pers., Syn. Pl. 2: 179 (1807). — Type *n.v.*

Perennial 20–80 cm tall, whole plant glabrous or hairy; *rhizome short*. Basal leaves long-petiolate, oblong, 20–60 × 5–30 cm, (1–)2–3-pinnatisect, dark green, *strongly spinose-dentate*, glabrous or sparsely pilose on white veins beneath; *upper cauline leaves ± sessile*, 4–7 cm long, spinose-dentate. Spike 10–25 cm long. Bracts 3.5–5 cm long, 3–5-veined, *spinose-dentate*, usually glabrous, green tipped purple. Upper sepals (3–) 4–5 cm long, usually dark purplish-pink.



Fig. 2. a, *Acanthus hungaricus* (photo G. Kofinas); b, part of inflorescence (photo A. Strid); c, *Acanthus hungaricus* specimen collected by Adamović on 17 June 1896 (The Natural History Museum, London BM013732981).



**Fig. 3.** a, *Acanthus spinosus* (photo M. Panitsa); b, part of inflorescence (photo A. Strid); c, white-flowered variant from the island of Rodos, 26 May 2014 (photo S. Rätzel).

Lower sepals (3–) 4–5 cm long. *Corolla lip* 3–5 cm long, suffused creamy white and veined purple. Capsule 1.5–2.5 cm long, reddish-brown, smooth; seeds 6–14 × 4–8 mm, reddish- to dark brown. —  $2n = 56$ , material from Andros (*Snogerup* 11601) and Naxos (*Runemark & Snogerup* R-1488). — Fig. 3.

Distribution: Mediterranean region from SE Europe to Anatolia, possibly introduced in Algeria and elsewhere. Native in Greece and widespread in all floristic regions (Fig. 5).

Ecology: Open woodland and scrub, meadows, agricultural and ruderal habitats, on limestone and schist, sea level to 1600 m. Flowering April to August, fruiting June to November (–December).

*Acanthus spinosus* is the most common and widespread *Acanthus* species in Greece and easily recognized by its dark purplish-pink bracts and upper sepals and dark green, (1–) 2–3-pinnatisect leaves white-veined beneath, always with strong conspicuous spines. A form with pale green bracts, sepals and pure white corolla occurs on Rodos (Fig. 3c) and has possibly given rise to the report of *A. hirsutus* Boiss. in Greece (cited in *Snogerup & al.* 2006), a record however, so far, unconfirmed. An *Acanthus* found by Pascale Servais and Pierre Seba in 2021 on the East Aegean island of Tilos has glabrous, non-spiny, deeply pinnatifid leaves with narrow, obtuse segments. The bracts are 5–7-veined, greenish-white and sparsely pubescent; the corolla is pure white. It is possibly a mutant form of *A. spinosus*, but more material is needed for further study. Attempts to locate it again in 2022 were unsuccessful.

**4. *Acanthus caroli-alexandri*** Hausskn. in *Gartenflora* 35: 626 (1886). — [Greece, S Pindos] “Agrapha (Dolopia veterum): in regione infer. m. Pindi circa monasterium Koróna, in nemorosis quercinis alt. 3500–3700’, substratu schistoso”, 20–28 Jun 1885, *Haussknecht* (holotype JE).

= *A. greuterianus* *Snogerup & al.* in *Willdenowia* 36: 324 (2006) — Nomos Kozanis, Eparchia Eordeas, near the village of Pirgi, (SE of Limni Vegoritis), 600 m, rocky limestone hill, edge of a cultivated field, 40°40’N, 21°51’E, 31.5.1989, *Strid & al.* 29920 (holotype C; isotypes ATH, G, LD, UPA).

Biennial or short-lived perennial 30–50 cm tall. *Rhizome* oblique, long-creeping, fibrous. Stem terete, ridged, glabrous to sparsely crispate-villous. *Leaves* basal and sub-basal, long-petiolate, ca. 40 × 6–8 cm, herbaceous, pinnatisect; segments 5–10-paired, narrowly triangular, dentate, with spines, sparsely pubescent, mid-vein whitish green beneath. Inflorescence an 8–20-flowered spike 20 cm long, pubescent, usually with 1 or 2 sterile bracts at base. Pedicels very short or absent. Bracts ovate, 4–6 × 2–3 cm, pubescent, pale green or purplish, with 5 or 6 long spines. Bracteoles lanceolate, ca. 35 × 2–3 mm, pale green. Upper and lower sepals 5–8 cm long; upper slightly longer, obovate-spathulate, exceeding bract, pale greenish-yellow to dark or suffused purple, with 1–4 slender apical spines, lower sepal pubescent at base; lateral sepals broadly ovate, 9–12 × 5–7 mm, sparsely pilose, with weak apical spine. *Corolla* tube 5–8 mm long, sparsely villous; lower lip 5.5–8 cm long, white or suffused pink. Filaments 3–4 cm long; anthers 7–8 mm long, yellow. Ovules 2 per locule (often 1 developing), with funicle 4–5 mm long. Capsule ellipsoid-cylindric, 25–35 × 10–15 mm, glabrous, smooth, reddish-brown. Seeds 7–8.5 × 5.5–6.5 mm, smooth, reddish-brown. — Fig. 4.

Distribution: Native to N Greece and S Albania: North Central (Kozanis, Vourinos, Siniatsiko, Prespa), North Pindos (Grevenon), South Pindos (Agrafa, Tringia) and the Albanian side of Lake Prespa. — Fig. 5.

Ecology: Woodland, scrub, stony slopes, meadows, field margins, ruderal habitats, on limestone or schist, 500–1500 m. Flowering May to June, fruiting June to August.

Resembling *Acanthus spinosus* but with long-creeping rhizome, narrower and weakly or less spiny basal leaves and relatively shorter inflorescence. *Haussknecht* (1886) described *Acanthus caroli-alexandri* (as “*Caroli Alexandri*”) based on his own collections in 1885 from nomos (province) Karditsis in the S Pindos Mts, “Agrapha (Dolopia veterum): in reg. infer. m. Pindi circa monasterium Koróna, in nemorosis quercinis alt. 3500–3700’ substratu schistoso” [39°19’N, 21°47’E]. In the original description *Haussknecht* stated why his new species was distinct from *A. spinosus*, which occurs at lower altitudes in the same area.



Fig. 4. *Acanthus caroli-alexandri* inflorescences: a, from Metsovo; b, from Lake Prespa, as *A. greuterianus*; c, from Lake Plastiras; d, mature seeds from Siniatsiko (photo G. Kofinas).



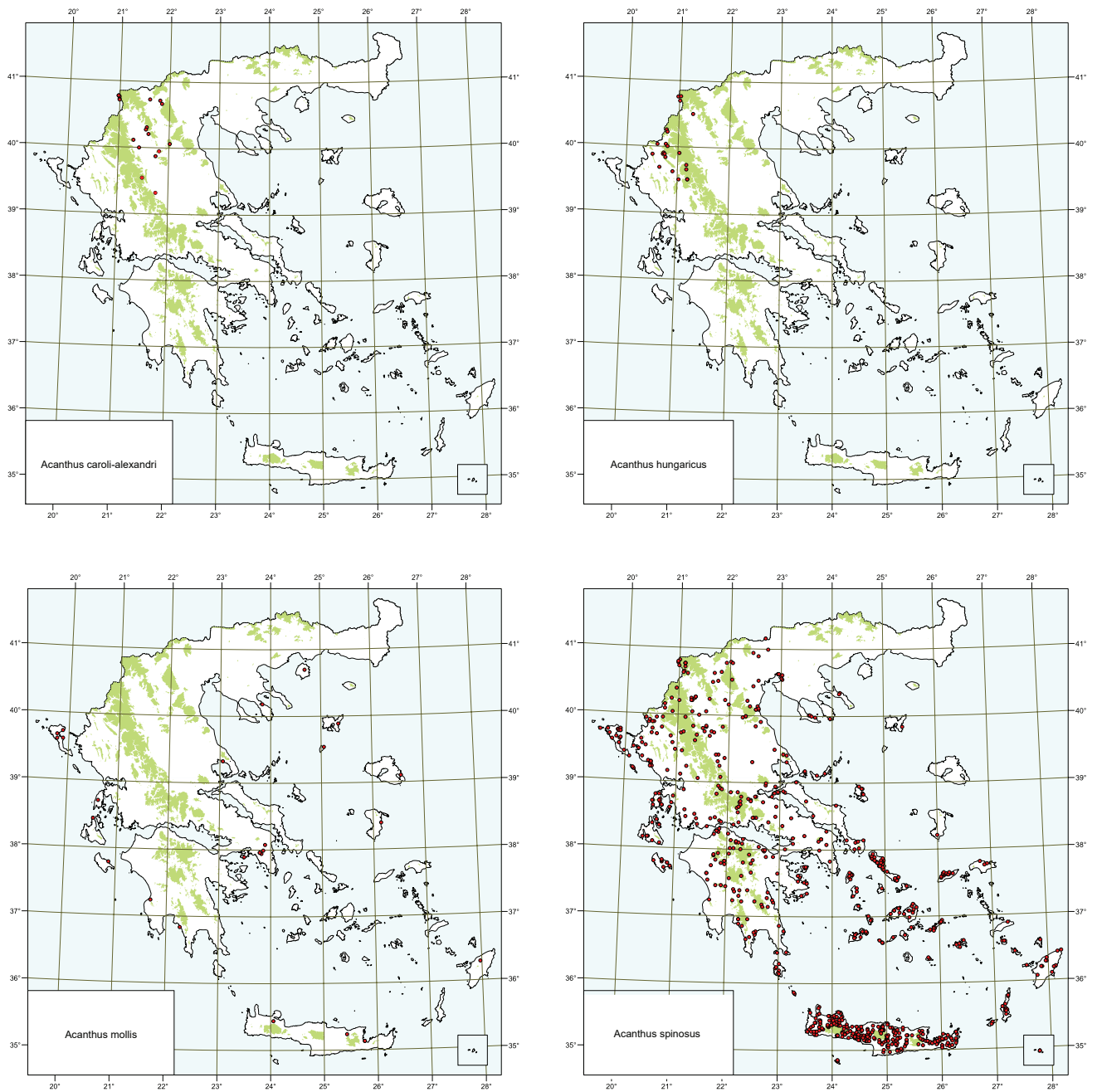


Fig. 5. Distribution maps of *Acanthus* species in Greece.

Collections by Heldreich in 1891 from Mt Parnitha and by Sintenis in 1896 from Kalampaka which were distributed under the name *A. caroli-alexandri*, are of *A. spinosus*.

*Acanthus greuterianus* Snogerup & al. (2006) was described as with a short, oblique rhizome. However, we have dug it up and it actually has a long slender rhizome creeping to a length of ca. 1 m, as displayed also in *A. caroli-alexandri*. It is locally invasive, spreading vegetatively in ruderal habitats. It has somewhat less spiny and broader basal leaves, and a short inflorescence with pale greenish or purplish bracts and sepals. The type collection of *A. greuterianus* is from SE of Lake Vegoritis (Nomos Kozanis, Eparchia Eordea), and has greenish-yellow bracts and upper sepals. Plants from the lower slopes of Mt Vourinos and Mt Siniatsiko (Nomos Kozanis, Eparchia Voiou) have purple-coloured upper sepals with an often denser indumentum. Flower colour in *A. greuterianus*, as in *A. spinosus*, is an unreliable character. *Acanthus greuterianus* was previously considered endemic to Greece but has recently been found in S Albania. It is here treated as a synonym of *A. caroli-alexandri*.

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