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# ACANTHACEAE

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Monophyletic sensu McDade & al. (2008). 190 genera and 4750 species (Daniel & McDade 2014) vs 212 genera and c. 3175 species (Mabberley 2008). In Greece, one genus with four species.

**Description:** Herbs, shrubs, rarely trees. Leaves usually opposite, sometimes with cystoliths. Bracts and bracteoles often coloured and enclosing flowers. Flowers hermaphrodite, usually zygomorphic or 2-lipped. Calyx usually 4- or 5-lobed. Corolla 3- or 5-lobed. Stamens 2–5, epipetalous; connective expanded. Ovary superior, bilocular with axile placentation. Fruit usually an explosive capsule with seeds on funicular jaculators. Seeds usually non-endospermous; embryo large.

**Distribution:** Largely pantropical in New and Old World, extending to Mediterranean region, North America and Australia.

**Karyology:** Potential ancestral base numbers in the family include  $x = 7, 8$  and  $9$ ;  $x = 7$  is regarded as the most likely ancestral base number (Daniel & Chuang 1993; Daniel 2000).

**Literature:** Brummitt (1980), Enayet Hossain (1982), McDade & al. (2005, 2008), Snogerup & al. (2006), Iamónico & Peruzzi (2012), Daniel & McDade (2014), Tan & al. (2023).

**General comments:** *Justicia adhatoda* L. has been reported from Kriti as an introduced alien from tropical Asia but is hardly naturalized. It is a shrubby plant with entire basal leaves, a 5-lobed calyx, 2-lipped corolla and 2 stamens.

## 1. *Acanthus* L.

Sp. Pl.: 639. 1753. Type: *Acanthus mollis* L. About 30 species and monophyletic sensu McDade & al. (2005).

**Description:** Robust biennial or perennial herbs. Stem erect, simple, terete, scapose. Leaves cauline or frequently basal, simple, opposite, exstipulate, pinnatifid to pinnatisect. Flowers zygomorphic, in dense, terminal, erect cylindrical spikes. Bracts conspicuous, leaf-like, spinose-dentate. Bracteoles lanceolate to linear. Calyx 4-lobed; upper and lower sepals large, lateral sepals smaller. Corolla tube short; lower lip 3- or 5-lobed, upper lip absent. Stamens 4, not extending beyond lower corolla lip; anthers connate in pairs. Style single, stigma unequally 2-lobed. Capsule ovoid to ellipsoid, with hardened funicles (retinacula) which propel seeds when capsule dehisces explosively. Seeds 2–4, glabrous.

**Distribution:** Africa, S Europe, S Asia, and Australasia (McDade & al. 2005).

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**Karyology:**  $2n = 56$  has been counted in *Acanthus spinosus* (Snogerup 11601, Runemark & Snogerup R-1488) and  $2n = 80$  in *A. mollis* (material from S India); several additional counts cited in Daniel & Chuang (1989).

**General comments:** A report of *Acanthus hirsutus* Boiss. from Rodos has not been confirmed. 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 form of *A. spinosus*, but more material is needed for further study.

### Key to species

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

#### 1. *Acanthus caroli-alexandri* Hausskn.

Gartenflora 35: 626. 1886. Holotype: [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* (JE). [Heterotypic synonym: *A. greuterianus* Snogerup & al.].

**Description:** 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**, c. 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, c. 35 × 2–3 mm, pale green. Upper and lower sepals 5–8 cm long; upper slightly longer, obovate-spathulate, exceeding bract, pale green 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.

**Distribution:** Native to N Greece and S Albania: NC (Kozanis, Vourinos, Siniatsiko, Prespa), NPi (Grevenon), SPi (Agrafa, Tringia) and Albanian side of Lake Prespa.

**Ecology:** Woodland, scrub, stony slopes, meadows, field margins, ruderal habitats.

Status	Conservation status		Legal status	
N, r	NE		–	
Life form	Functional trait	Chorology	Distribution in Greece	
H	Entomophilous	Bk	NC, NPi, SPi	
Habitat	Geology	Altitude	Flowering	Fruiting
G, R, W	Limestone, schist	500–1500 m	V–VI	VI–VIII

**General comments:** Resembling *Acanthus spinosus* L. but with narrower and weakly or less spiny basal leaves and relatively shorter inflorescence. Affinities with the E Mediterranean *A. hirsutus* Boiss. and *A. syriacus* Boiss.

*Acanthus greuterianus* was described as having a short, oblique rhizome (Snogerup & al. 2006). However, we have dug it up and found it actually has a slender, long-creeping rhizome to a length of c. 1 m as also displayed in *A. caroli-alexandri*. It has somewhat less spiny and broader basal leaves and a short inflorescence with pale greenish or purplish bracts and sepals. It is locally invasive, spreading vegetatively in ruderal habitats. The type collection of *A. greuterianus* is from SE of Lake Vegoritis (Nomos Kozanis, Eparchia Eordeas), and has greenish-yellow bracts and upper sepals. Plants from the lower slopes of Mt Vourinos and Mt Siniatsiko (Nomos Kozanis, Eparchia Voïou) 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 also been found in S Albania where it is common. It is here treated as a synonym of *A. caroli-alexandri*.

## 2. *Acanthus mollis* L.

Sp. Pl.: 639. 1753. Lectotype (designated by Brummitt in Jarvis & al. 1993: 14): Herb. Clifford: 326, *Acanthus* 1 (BM BM000646246). [Heterotypic synonym: *A. mollis* subsp. *platyphyllus* Murb.].

**Description:** 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 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, 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 cm long, reddish-brown, smooth; seeds reniform-oblong, 10–14 × c. 8 mm, reddish-brown, smooth.

**Distribution:** C Mediterranean, naturalized in W Mediterranean, NW Africa and other areas, invasive in Australia and New Zealand. Cultivated worldwide in warm regions. Introduced and naturalized in Greece, often escaping from cultivation as an ornamental.

**Ecology:** Shady places, roadsides, damp ruderal habitats.

Status	Conservation status		Legal status	
A	NE		–	
Life form	Functional trait	Chorology	Distribution in Greece	
H	Entomophilous	[C Med.]	All except Kik, NC, NE, NPi, SPi	
Habitat	Geology	Altitude	Flowering	Fruiting
R	Limestone	0–370 m	II–VI	VI–VIII

### 3. *Acanthus hungaricus* (Borbás) Baen.

Herbarium Europaeum no. 9138. 1896. Basionym: *Acanthus longifolius* var. *hungaricus* Borbás. Described from the Lower Danube area [Romania] (Szvinica, Orsova), 17 Jun 1896, Adamović (BM, K). [Heterotypic synonym: *A. balcanicus* Heywood & I. Richardson].

**Description:** Perennial to 100 cm tall. Resembling *A. mollis* with shiny dark green leaves but basal leaves 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 reddish-brown, smooth.

**Distribution:** Balkan Peninsula, extending to SW Romania and Croatia, absent from present-day Hungary; introduced in the Czech Republic.

**Ecology:** Woodland, scrub and stony hill slopes.

Status	Conservation status		Legal status	
N	NE		–	
Life form	Functional trait	Chorology	Distribution in Greece	
H	Entomophilous	Bk	NC, NPi, SPi	
Habitat	Geology	Altitude	Flowering	Fruiting
W	Limestone	300–1100 m	VI–VIII	VIII–IX

### 4. *Acanthus spinosus* L.

Sp. Pl.: 639. 1753. Lectotype (designated by Iamónico & Peruzzi 2012: 12): Herb. Clifford: 327, *Acanthus* 2 (BM BM000646247). [Heterotypic synonym: *A. spinosissimus* Desf.].

**Description:** 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. 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 and Naxos).

**Distribution:** Mediterranean region from SE Europe to Anatolia, possibly introduced in Algeria and elsewhere.

**Ecology:** Open woodland and scrub, meadows, agricultural and ruderal habitats.

Status	Conservation status		Legal status	
N	NE		–	
Life form	Functional trait	Chorology	Distribution in Greece	
H	Entomophilous	Me	Widespread in all regions	
Habitat	Geology	Altitude	Flowering	Fruiting
G, R, W	Limestone, schist	0–1600 m	IV–VIII	VI–XI (–XII)

**General comments:** *Acanthus spinosus* is the most common *Acanthus* species in Greece and easily recognized by its dark purplish-pink upper sepals and dark green, (1–)2–3-pinnatisect leaves white-veined beneath, always with strong, conspicuous spines. A form with pale green bracts and sepals and pure white corolla occurs on Rodos, and has possibly given rise to the erroneous report of *A. hirsutus* from Greece.

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