Department of **Agriculture and Fisheries**
Biosecurity Queensland

Invasive plant risk assessment

Blue morning glory

Ipomoea indica

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Queensland Government

Contents

Identity and taxonomy

Species: *Ipomoea indica* (Burm.) Merrill

Synonyms: 77 synonyms listed by the Missouri Botanical Gardens w[3] Tropicos nomenclatural database (2003) and 20 synonyms listed by Randall (2002), including *Ipomoea congesta* R.Br., *Convolvulus indicus* Burm.; *Ipomoea learii* Paxton; *I. acuminata* (Vahl) Roemer and J.A. Schultes

Common names: Blue morning glory, purple morning glory, morning glory

Family: Convolvulaceae

Description

Ipomoea indica is a vigorous, rapidly growing, perennial vine climbing up to 12 m in trees or spreading across the ground. The leaves are variable in shape, from 'heart-shaped' to three-lobed (i.e. the leaf margins vary from entire to shallowly or deeply three-lobed). Leaves are alternate, 5–17 cm long and 3.5–16 cm wide with petioles 2–18 cm long. Upper leaf surfaces are covered with dense, soft, appressed hairs (lower surfaces are often silky tomentose).

The inflorescences are axillary and several-flowered. Peduncles are 4–20 cm long; pedicels are 2–8 mm long; bracts linear, occasionally broader, 1–1.5 cm long; outer sepals narrowly ovate to ovate, inner ones narrower at base, all acuminate, 1.4–2.2 cm long, with soft, appressed hairs or nearly glabrous. There are five sepals.

The corolla is actinomorphic, funnelform (tubular); five–lobed; limb bright blue or bluish purple becoming reddish; tube pink to whitish; up to 10 cm in diameter; whole corolla 5–8 cm long; stamens and style included; ovary glabrous. There are five stamens per flower. Seed capsules are globular, papery, *ca*. 1 cm in diameter (Stanley & Ross 1986). There may be up to six dark brown to black seeds per capsule. Seeds are 3–4 mm in diameter.

Biology/ecology

I. indica is an opportunistic coloniser of open, disturbed habitats. Under favourable conditions of full sun, ample moisture and fertile soil it can grow very rapidly, smothering all other vegetation. Its climbing habit enables it to compete successfully with trees and shrubs on the edges of forests and along riparian zones. Its rapidly growing stolons can form dense mats over the ground. Once established, it produces large numbers of flowers for most of the year. New flowers open each day fading to pink by late afternoon. Specimens may live for up to 25 years (Muyt 2001). *I. indica* does not appear to suffer any significant damage from native insects or pathogens.

Reproduction, seed dispersal and longevity

I. indica reproduces primarily from broken fragments of stems that produce new roots at the nodes. Hence, the most common mode of dispersal is believed to be as a consequence of gardeners dumping unwanted vegetative material. Muyt (2001) notes that *I. indica* does not produce viable seeds in Australia. Similarly, Roy et al. (1998) state that seed production in New Zealand is rare (Roy et al. 1998). The few seeds that are produced are mainly spread by water (Auckland Regional Council 1998).

Distribution—overseas

I. indica is widespread in the tropical Pacific, the Americas, Asia and Africa (see Figures 1–4).

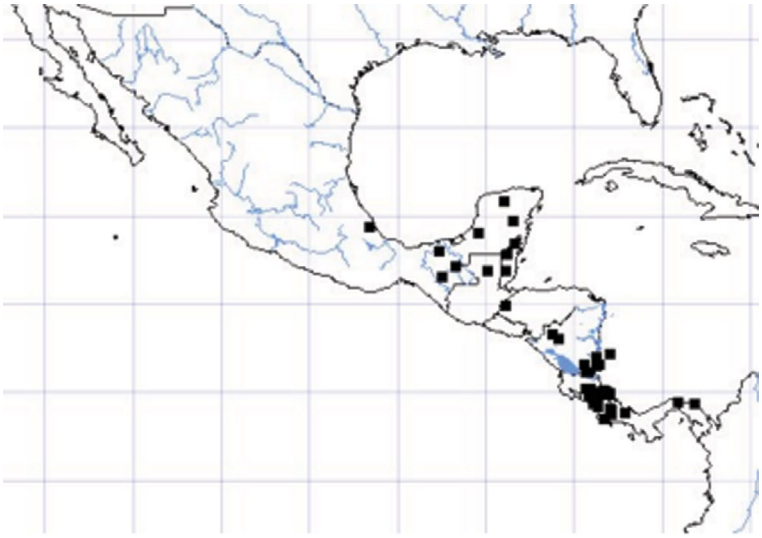

Figure 1. Distribution of *I. indica* in Central America (Missouri Botanical Gardens w³ Tropicos database 2003).

Figure 2. Distribution of *Ipomoea indica* in South America (Missouri Botanic Gardens w[3] Tropicos database 2003).

Figure 3. Distribution of *Ipomoea indica* in Africa (Missouri Botanic Gardens w[3] Tropicos database 2003).

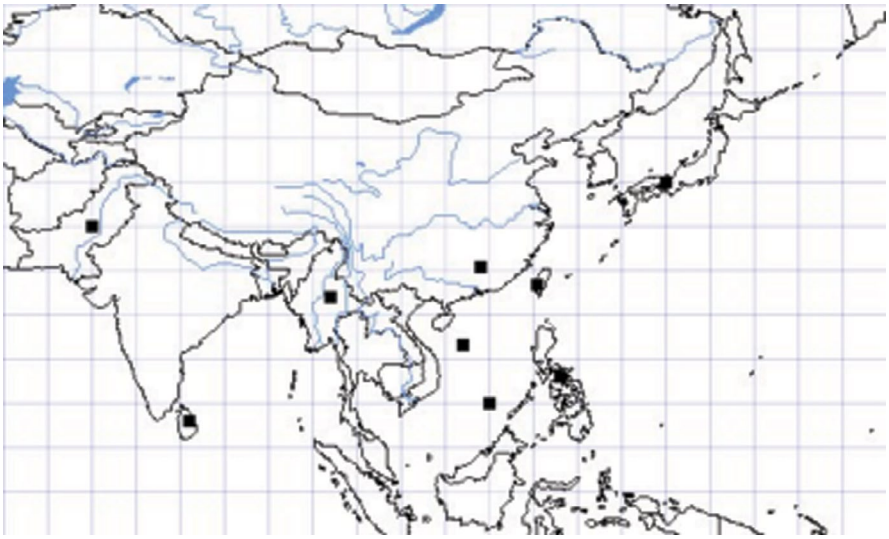

Figure 4. Distribution of *Ipomoea indica* in Indo-China (Missouri Botanic Gardens w[3] Tropicos database 2003).

Distribution—Queensland

I. indica has been recorded from the Cook, North Kennedy, South Kennedy, Port Curtis, Wide Bay and Moreton pastoral districts (Queensland Herbarium 1994). These records are scattered along most of the east coast of Queensland.

Origin

The origin of *I. indica* is unclear as it appears to be pan-tropical. However, Swarbrick and Skarratt (1994) state that its origin is 'tropical Asia'.

Preferred habitat and climate

I. indica prefers moist, fertile sites in full sun. These conditions tend to occur along watercourses and areas that were once covered by rainforest. In virtually all cases, heavy growth of *I. indica* occurs in areas where the original forest cover has been destroyed or fragmented by human activity. It appears to be rare in areas that are subject to constant grazing by cattle but can thrive soon after stock are removed from a pasture. Preferred climate ranges from tropical to warm temperate (Auckland Regional Council 1998). It is quite susceptible to frosts.

Current impact in Queensland

I. indica exists as isolated, small populations scattered along the east coast of Queensland. One of the largest infestations exists on a hillside near Montville/Maleny in coastal south-east Queensland. There is no evidence that *I. indica* is having an impact on primary production and suggestions that is poses a significant threat to native vegetation are largely speculative. *I. indica* prefers highly disturbed habitats where the original native vegetation has been fragmented or totally destroyed. For this reason, its environmental impact is probably limited. At some locations, it might be hindering regeneration of native plants and there is little doubt that it can smother native plants on the edges of rainforests. Perhaps most importantly, large areas of *I. indica* have dramatic visual impact, particularly in the Maleny region which is heavily promoted as a tourist destination. During summer, when the plant is in full flower, the department receives numerous complaints and requests for control action.

Status as a weed in other states

I. indica is considered to be a significant environmental weed in New South Wales where it invades riparian areas and degraded forest areas along the coast (Muyt 2001). In Victoria, it has been recorded around Melbourne and Mornington Peninsula (Swarbrick & Skarratt 1994). In South Australia, it has been found in higher rainfall districts, primarily near habitation (Muyt 2001). In Western Australia, it has been recorded around Perth and Kings Park) (Swarbrick & Skarratt 1994).

History as a weed overseas

I. indica is a weed in New Zealand and Hawaii. Its congener, *I. congesta*, is listed as a weed in Taiwan, Hawaii, New Zealand, West Polynesia and the USA (Holm et al. 1979). In New Zealand, *I. indica* it is subject to Pest Plant Management Strategies in several regions of the North Island (Roy et al. 1998).

Invasive congeners

Of some 500 species of *Ipomoea*, recorded across tropical and subtropical regions of the world, Holm et al. (1979) listed 55 species of *Ipomoea* as weeds. Thirteen invasive congeners recorded in Queensland are *I. alba, I. batatas, I. cairica, I. carnea* subsp. *fistulosa, I. hederaceae, I. hederifolia, I. nil, I. ochracea, I. pestigridis, I. purpurea, I. quamoclit, I. triloba* (Queensland Herbarium 1994). Csurhes and Edwards (1998) listed *I. alba* (moon flower) and *I. quamoclit* (cypress vine or morning glory) as potential environmental weeds in Australia.

Pest potential in Queensland

I. indica has several attributes that confer invasive potential in Queensland (see attachment). Perhaps most importantly, it has a history as a weed overseas in tropical and subtropical climates. While its impact overseas appears to be relatively minor, it can be troublesome in specific habitat types within coastal Queensland, namely open (disturbed) riparian and rainforest sites.

Climatically, the plant is well suited to coastal Queensland, particularly moist sites in south-east Queensland. In tropical areas, such as Central America, this species tends to occur at higher altitudes where the climate is cooler than on the lowlands. Of concern is the plant's demonstrated capacity to form pure stands in Queensland, even through spread can be quite slow compared to other weed species.

I. indica appears to have been present in Queensland for some time and over this time its total impact on Queensland has been negligible. However, it may continue to form locally significant infestations wherever suitable habitat exists (comparable to that which exists near Maleny). Habitat at risk of invasion is generally restricted to fertile soils, where annual rainfall is at least 1000 mm per annum on sites where there is little competition from native trees and shrubs (i.e. open sites in full sun). This habitat type tends to occur along the banks of creeks and rivers (riparian areas) and areas that once supported rainforest.

References

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