Pest risk assessment

Brazilian jurema (*Mimosa tenuiflora*

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Queensland Government

This publication has been compiled by Steve Csurhes of Biosecurity Queensland, Department of Primary Industries.

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Photo: Barbara Waterhouse, Northern Australia Quarantine Strategy (NAQS)

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Summary

Mimosa tenuiflora (Brazilian Jurema) is native to parts of tropical America. In parts of the semi-arid tropical Caatinga shrub-lands of north-eastern Brazil, it is the dominant plant species and is a significant problem on disturbed agricultural land.

M. tenuiflora has a long history of use by people, primarily as a medicinal plant and as a hallucinogenic drug. Despite being a prohibited import in Australia, seeds of the plant are being sold in Queensland and are widely promoted by a range of international web-sites. The species' trade as a drug is its primary dispersal pathway.

M. tenuiflora was detected for the first time in Australia, by Mareeba Shire Council pest management staff, in a garden at Kuranda, north Queensland, in September 2015. About 10-15 specimens were destroyed by Council and the site monitored for seedlings. Considering the species' history of sale, and the large number of internet sites promoting its use, further surveillance is highly likely to detect specimens elsewhere in the state.

Based on the species' history as a quick-growing dominant plant in early to mid-successional habitats within its native range, it seems reasonable to predict that it could cause similar problems in comparable habitat types in Queensland. Habitats most at risk appear to be disturbed sites on floodplains in Queensland's tropical savannahs and perhaps semi-deciduous tropical vine thickets in areas where annual rainfall is 500-1000 mm. The fact that the plant forms pure stands in its native range, and is related to one of Australia's worst invasive plants, *Mimosa pigra*, is cause for concern. Potential impacts are likely to include damage to pastures (replacing more desirable pasture species), invading certain native plant communities and, like many thorny, thicket-producing weeds, hindering stock mustering and providing a refuge for feral pigs. While being palatable to livestock, the species has been reported to cause some abnormalities.

Based on the evidence collected in this assessment *M. tenuiflora* appears to be a 'high-risk' species and a worthy candidate for preventative control, wherever feasible.

*Important note: This assessment is based on the best available literature at the time of writing. It is acknowledged that new information may come to hand over time and please send any additional information, or advice on errors, to the author.

Identity and taxonomy

Species: *Mimosa tenuiflora* (Willdenow) Poiret.

Synonyms: *Mimosa hostilis* (Mart.) Benth., *M. cabrera* H. Karst., *M. limana* Rizzini, *M. nigra* Huber, *Acacia tenuiflora* Willd.

Common names: Brazilian jurema, Black jurema, calumbi, jurema preta, carbon chele, carbon negro, tepescohuite, jurema

Family: Fabaceae

The taxonomy of this species is confused with several synonyms and closely related species. The literature mentions a congener *Mimosa tenuifolia* L., presumably a separate species, also native to the Americas. The latter is synonymous with *Senegalia tenuifolia* and *Acacia tenuifolia* and has been confused with *Acacia paniculata*, *A. scandens* and *A. multipinnata* (Seigler and Ebinger 2015).

The genus *Mimosa* has 480–500 species, of which 90% occur in the Americas and 10% in Africa, Asia and Australia (Barneby 1991).

Description and Biology

Mimosa tenuiflora is a quick-growing, perennial shrub up to 8 m tall. The leaves are up to 5 cm long, compound and finely pinnate, with 15–33 pairs of leaflets, each 5–6 mm long (Photo 1). Unlike other species of *Mimosa*, the leaves are not sensitive to the touch. Flowers are white and arranged in loose cylindrical spikes (Image 1). Flowering occurs in spring and early summer (September to January). Pods are 2.5–5 cm long. Each pod contains 4–6 seeds that are oval, flat, light brown and 3–4 mm in diameter. The stems are armed with thorns (Image 2). Sa e Silva *et al* (2009) noted that the plant quickly "stump sprouts" when cut.

Image 1. Leaves, flowers and green pods of Mimosa tenuiflora growing at Kuranda, October 2015 (Photo: Barbara Waterhouse, NAQS).

Image 2. Thorns of Mimosa tenuiflora (Photo: Barbara Waterhouse, NAQS).

Reproduction and dispersal

Reproduction is from seeds, which are produced in abundance (Robbins 2004). Seeds and pods can be carried a few metres by the wind but much longer distances by flowing water and by people. The species' is used by people for livestock fodder, medicine and a source of a hallucinogenic drug, the latter being the species' primary global dispersal pathway.

The optimum temperature for seed germination is reported to be 20-25°C. Germination is greatly improved by seed-coat scarification (Camargo-Ricalde and Rosaura 1998).

This study was unable to find any information on seed longevity. However, like most *Mimosa* species, seeds are likely to be hard-coated and relatively long-lived (at least seven years).

Preferred habitat and climate

While capable of tolerating wet tropical climates, *M. tenuiflora* is best adapted to reasonably fertile alluvial soils on floodplains with tropical, seasonally dry to semi-arid climates. Climate across its native range is characterised by a strong dry-season, with periodic long and severe droughts. De Mello *et al.* (2013) noted that *M. tenuiflora* was "the most dominant plant species" at a natural Caatinga site in north-eastern Brazil, a biome characterised by xeric shrub-land and thorn-forest comprised largely of small, thorny trees that lose their leaves each dry season. The site has a mean annual temperature of 26° C and a mean annual rainfall of 550 mm. Elsewhere in its native range, annual rainfall can be up to 1000 mm. Lorenzi (2002) stated that *M. tenuiflora* is found mainly in secondary regrowth on the floodplains of rivers in deep, fertile and usually alkaline soils. Soils at a study site in Mexico, where *M. tenuiflora* is abundant, were described as a "sandy clay loam", with pH values between 6 and 6.5 and available soil phosphorus of 3.18 and 3.54 ppm (Guadarrama *et al.* 2014). The latter authors found that about 75% of roots of *M. tenuiflora* are colonised by arbuscular mycorrhizal fungi, a symbiotic relationship that enhances a plant's ability to extract nutrients from the soil.

Native range and global distribution

M. tenuiflora is considered native to parts of southern Mexico (Oaxaca and the coast of Chiapas), El Salvador, Honduras, Panama, Colombia, Venezuela (Aragua, Cojedes, Guarico, Lara and Zulia) and the north-eastern region of Brazil (Paraíba, Rio Grande do Norte, Ceará, Pernambuco, Bahia) It is most abundant at low altitudes, but can be found up to 1 000 m above sea-level. It is worth noting that Barneby (1991) commented that the species' "contemporary range falls far outside its native Brazil". Hence, this risk assessment speculates that, while it might have originally been native to Brazil, subsequent populations in Mexico, central America and elsewhere could be the result of a long history of use by people over many centuries.

The species is particularly abundant in the Caatinga dry forests of north-eastern Brazil, an area subject to intense "slash and burn" agriculture. Amariz *et al*. (2022) noted that it was "predominant in the Caatinga biome".

History as a weed overseas

Within its native range, *M. tenuiflora* is well-documented for its propensity to dominate areas of early to mid-successional seasonally dry tropical forests that have been cleared for "slash and burn" agriculture and subsequently abandoned. For example, da Silva *et al* (2010) noted that *M. tenuiflora* is "very common" in degraded areas in the Brazilian semi-arid region. Robbins (2004) noted that the species readily forms thickets in secondary regrowth "which expand along roadsides and into pasturage" and that the species has "often been considered a nuisance". De Figueiroa *et al* (2006) commented that *M. tenuiflora* "forms dense and homogenous populations" in areas that are left fallow after clearing for agriculture in north-eastern Brazil. In Mexico, Guadarrama *et al.* (2014) and Camargo-Ricalde *et al.* (2002) commented that areas of late succession secondary vegetation (plots of more than 10 years since agricultural abandonment) are "dominated by *Mimosa tenuiflora* and *M. acantholoba*" and that *M. tenuiflora* was one of several species of *Mimosa* that "rapidly spread on disturbed areas and soon become the dominant elements of the communities where they occur." Robbins (2004) commented that it "occurs in dry thorn-forests, in thickets, and in pure stands, especially in abandoned or degraded lands" and that "the species is invasive, is common along roadsides and in fields, and expands at a rapid pace. Lorenzi (2002) (in Fern 2024) commented that it is a "pioneer species" and "can rapidly invade pasture-land within its native range and is considered to be a weed by cattle ranchers". It can be found not only in Brazil but increasingly in other regions as well."

Use

For centuries, *M. tenuiflora* has been "cultivated for medicinal and culinary uses" (Robbins 2004). The plant was also traditionally brewed to produce a psychedelic substance for trance possession rituals associated with warfare. Currently, the species is widely promoted and sold on-line for its "psychoactive" properties (hallucinogen) and this appears to be the species' primary global dispersal pathway. The active ingredient, dimethyltryptamine (DMT), is extracted mainly from the roots. While *M. tenuiflora* can provide an acceptable source of fodder and protein for livestock, there is evidence that it can cause development defects in pregnant ruminants (Pimental *et al.* 2007, de Silva *et al.* 2010). Cows, goats and sheep consume its pods and leaves. Robbins (2004) noted that the species is "broadly viewed as beneficial, because it has a range of uses, including as fuel, as fencing, in healing wounds and burns, as soap, and in industrial products." Figueiroa *et al*. (2006) also noted that the species is used as a source of wood and charcoal in some places.

Current distribution and impact in Queensland

M. tenuiflora was detected for the first time in Australia, by Mareeba Shire Council pest management staff, in a garden at Kuranda, north Queensland, in October 2015 (Image 3). Fifteen specimens were destroyed by Council and the site monitored for seedlings (three specimens were about 8 m tall) (B. Waterhouse, pers. comm. 10 November 2015). The original seeds are believed to have been sold by an on-line business in Queensland. In 2025, there were no records of this species on iNaturalist. However, the seeds are being offered for sale on-line. Considering the species' history of sale and the large number of internet sites promoting its use, further surveillance is highly likely to detect specimens elsewhere in the state.

Image 3. Mimosa tenuiflora growing on a footpath at Kuranda, October 2015 (Photo: Barbara Waterhouse, NAQS).

Potential distribution and impact in Queensland

Climate-matching software called 'CLIMATCH' (BRS 2009) was applied to predict areas of Queensland where climate is similar to that experienced across the native range of *M. tenuiflora*. Much of Queensland's tropical savannahs appear suitable (Figure 1).

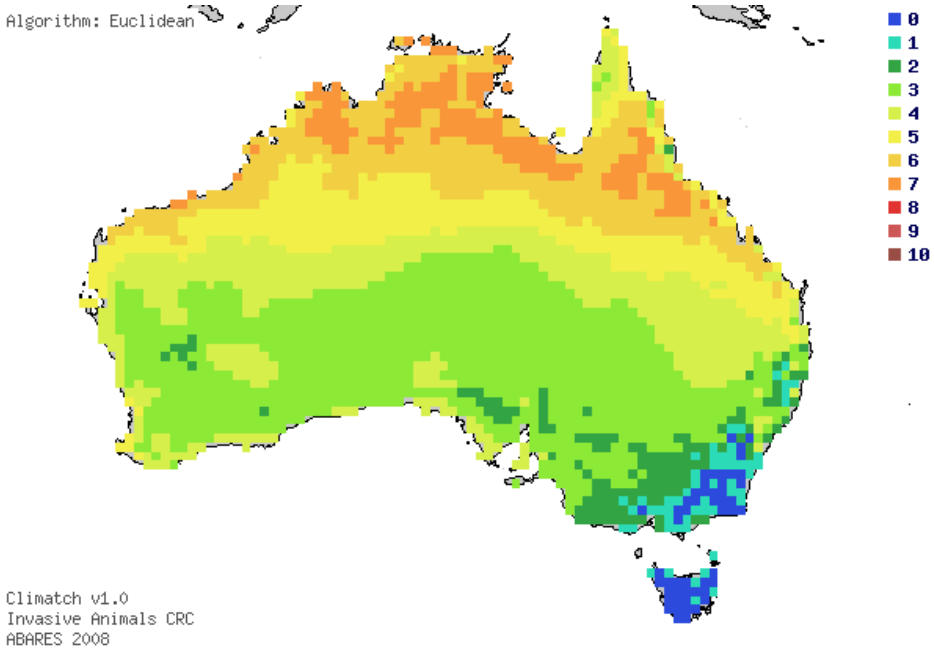

Figure 1. Area of Australia where climate appears suitable for survival of M. tenuiflora

The dark and light orange indicate areas where climate is most suitable, light orange and yellow indicate areas where climate is marginally suitable. Green, blue and white indicate areas where climate is considered unsuitable for this species.

Based on the species' history as a quick-growing dominant plant in early to mid-successional disturbed habitats, mainly on deep floodplain soils, within its native range, it seems reasonable to predict that it could cause similar problems in comparable habitats in Queensland. Habitats most at-risk are probably disturbed sites on floodplains in Queensland's tropical savannahs and perhaps semi-deciduous tropical vine thickets in areas where annual rainfall is 500-1000 mm. The fact that the plant forms pure stands in disturbed habitats within its native range, and is related to one of Australia's

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