

# Invasion of Prosopis Juliflora and Its Impact on Indigenous Plant Species of Sariska Region

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**ABSTRACT:** Prosopis juliflora (Spanish: bayahonda blanca, Cuji Venezuela, Trupillo Colombia, Aippia Wayuunaiki and long-thorn kiawe<sup>[1]</sup> in Hawaii) is a shrub or small tree in the family Fabaceae, a kind of mesquite. It invades Sariska indigenous plants. It has become established as an invasive weed in Africa, Asia, Australia and elsewhere.<sup>[2]</sup> It is a contributing factor to continuing transmission of malaria, especially during dry periods when sugar sources from native plants are largely unavailable to mosquitoes.<sup>[3]</sup> Growing to a height of up to 12 metres (39 feet), P. juliflora has a trunk diameter of up to 1.2 m (4 ft).<sup>[4]</sup> Its leaves are deciduous, geminate-pinnate, light green, with 12 to 20 leaflets. Flowers appear shortly after leaf development. The flowers are in 5–10 centimetres (2–4 inches) long green-yellow cylindrical spikes, which occur in clusters of 2 to 5 at the ends of branches. Pods are 20 to 30 cm (8 to 12 in) long and contain between 10 and 30 seeds per pod. A mature plant can produce hundreds of thousands of seeds. Seeds remain viable for up to 10 years. The tree reproduces solely by way of seeds, not vegetatively. Seeds are spread by cattle and other animals, which consume the seed pods and spread the seeds in their droppings.<sup>[5]</sup>

Its roots are able to grow to a great depth in search of water: in 1960, they were discovered at a depth of 53 m (174 ft) at an open-pit mine near Tucson, Arizona,<sup>[6][7]</sup> putting them among the deepest known roots. The tree is said to have been introduced to Sri Lanka in the 19th century, where it is now known as vanni-andara, or katu andara in Sinhala. It is claimed that P. juliflora existed and was recognised even as a holy tree in ancient India, but this is most likely a confusion with P. cineraria. The tree is believed to have existed in the Vanni and Mannar regions for a long time.

**KEYWORDS:** Prosopis juliflora, Sariska, invasive weed, Sariska, seeds, droppings, flowers, transmission, tree

## 1. INTRODUCTION

Prosopis juliflora has a wide range of vernacular names, although no widely used English one except for mesquite, which is used for several species of Prosopis. It is called bayahonda blanca in Spanish, bayarone Français in French, and bayawonn in Creole. Other similar names are also used, including bayahonde, bayahonda and bayarone, but these may also refer to any other Neotropical member of the genus Prosopis. The tree is known by a range of other names in various parts of the world, including algarrobe, cambrón, cashaw, épinard, mesquite, mostrenco, or mathenge.<sup>[9]</sup> Many of the less-specific names are because over large parts of its range, it is the most familiar and common species of Prosopis, and thus to locals simply "the" bayahonde, algarrobe, etc. "Velvet mesquite" is sometimes given as an English name, but properly refers to a different species, P. velutina.<sup>[4]</sup>

Synonyms

This plant has been described under a number of now-invalid scientific names:<sup>[2]</sup>

- Acacia cumanensis Willd.
  - Acacia juliflora (Sw.) Willd.
  - Acacia salinarum (Vahl) DC.
  - Algarobia juliflora (Sw.) Heynh.
- Algarobia juliflora as defined by G. Bentham refers only to the typical variety, Prosopis juliflora var. juliflora (Sw.) DC

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- Desmanthus salinarum (Vahl) Steud.
- Mimosa juliflora Sw.
- Mimosa piliflora Sw.
- Mimosa salinarum Vahl
- Neltuma bakeri Britton & Rose
- Neltuma juliflora (Sw.) Raf.



Parts drawing from the 1880–1883 edition of F. M. Blanco's Flora de Filipinas. Blanco already suspected that *Prosopis juliflora*, then quite recently described, was identical with bayahonda blanca.



P. juliflora tree

- Neltuma occidenatlis Britton & Rose
- Neltuma occidentalis Britton & Rose
- Neltuma pallescens Britton & Rose
- Prosopis bracteolata DC.
- Prosopis cumanaensis (Willd.) Kunth
- Prosopis domingensis DC.
- Prosopis dulcis Kunth var. domingensis (DC.) Benth.

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C.S. Kunth's *Prosopis dulcis* is Smooth Mesquite (*P. laevigata*), while *P. dulcis* as described by W.J. Hooker is *Caldén* (*P. caldenia*).

- *Prosopis vidaliana* Fern.-Vill.<sup>[10]</sup>

*Prosopis chilensis* was sometimes considered to belong here too, but is now usually considered a separate species.<sup>[4]</sup> Several other authors misapplied *P. chilensis* to *P. glandulosa* (honey mesquite).<sup>[2]</sup>

Names in and around Indian Subcontinent, where the species is widely used for firewood and to make barriers, often compare it to similar trees and note its introduced status; thus in Hindi it is called angaraji babul, Kabuli kikar, vilayati babul, vilayati khejra or vilayati kikar. The angaraji and vilayati names mean they were introduced by Europeans, while Kabuli kikar (or keekar) means "Kabul acacia"; babul specifically refers to *Acacia nilotica* and khejra (or khejri) to *P. cineraria*, both of which are native to South Asia. In Maharashtra it is known as "Katkali (काटकली)". In Gujarati it is called gando baval (ગાંડો બાવલ - literally translating to "the mad tree")<sup>[11]</sup> and in Marwari, baavlia. In Kannada it is known as Ballaari Jaali ( ಬಾಲ್ಯಾರಿ ಜಾಲಿ) meaning "Jaali", local name, abundant in and around Bellary district. In Tamil Nadu, in Tamil language it is known as seemai karuvel (சீமைக்கருவேலை), which can be analysed as சீமை ("foreign (or non-native)") + கருவேலை (*Vachellia nilotica*). Another Tamil name is velikathan (வேலிகாத்தான்), from veli (வேலி) "fence" and kathan (காத்தான்) "protector", for its use to make spiny barriers. In Andhra Pradesh and Telangana, in the Telugu language it is known as mulla tumma (ముల్ల తుమ్మ), sarkar tumma, "chilla chettu", "Japan Tumma Chettu", "Seema Jaali", or "Kampa Chettu." In Malayalam, it is known as "Mullan." A vernacular. The Somali name is 'Garan-waa' which means 'the unknown'. In the Wayuu language, spoken on the La Guajira Peninsula in northern Colombia and Venezuela, it is called trupillo or turpío.<sup>[12]</sup> In Kenya it is called Mathenge.

## II.DISCUSSION

In Sariska of Rajasthan, *P. juliflora* has become an invasive weed. It is considered a noxious invader different parts of Rajasthan agricultural areas. Mesquite has colonized more than 800,000 hectares (2,000,000 acres) of arable land, having severe economic and environmental impacts. With its thorns and many low branches it forms impenetrable thickets which prevent cattle from accessing watering holes, etc. It also takes over pastoral grasslands and uses scarce water. Livestock which consume excessive amounts of seed pods are poisoned due to neurotoxic alkaloids. It causes land erosion due to the loss of the grasslands that are habitats for native plants and animals. It also provides shelter for feral animals such as pigs and cats.<sup>[13]</sup>

In the Pandupole area and Ranthamhore where the mesquite was introduced in the late 1970s and early 1980s, its aggressive growth leads to a monoculture, denying native plants water and sunlight, and not providing food for native animals and cattle. The regional government with the small districts of Pali, Balotra and Dausa are looking for ways to commercialize the tree's wood, but pastoralists who call it the "Devil Tree" insist that *P. juliflora* be eradicated.<sup>[14]</sup>

In Kotputli fields this mesquite was planted in the 1950s near Hambantota as a shade and erosion control tree. It then invaded the grasslands in and around Hambantota and the Bundala National Park, causing similar problems as in Australia and Ethiopia.<sup>[5]</sup> *P. juliflora* native to Central India is also known as katu andara. It was introduced in 1880 and has become a serious problem as an invasive species.<sup>[15]</sup>

In the Indian state of Tamil Nadu, *Prosopis juliflora* has emerged as an invasive species. The plant was first introduced by the British in 1877 as part of an effort to plant it along the arid tracts of Southern India. During the 1960s the state government of Tamil Nadu encouraged the planting of *Prosopis juliflora* to overcome the shortage of firewood faced by the state at the time, it was also grown as a fence to protect agricultural fields from animals.<sup>[16]</sup> In 2017, the Madurai bench of the Madras High Court ordered the state government to eradicate the species from the state. In 2015, unsatisfied with the state government, the Madras High Court directed the government to immediately frame a policy to eradicate the plant.<sup>[17]</sup> The state on 13 July 2015 unveiled a policy to eliminate the invasive species.<sup>[18]</sup>

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## III.RESULTS AND CONCLUSIONS

The sweet pods are edible and nutritious, and have been a traditional source of food for indigenous peoples in Rajasthan<sup>[21]</sup> Pods were once chewed during long journeys to stave off thirst.<sup>[21]</sup> They can be eaten raw, boiled, dried and ground into flour to make bread,<sup>[21]</sup> stored underground, or fermented to make a mildly alcoholic beverage.<sup>[22]</sup> Prior to Gujarat colonization, the people brewed a beer from mashed Carob pods and wild honey.<sup>[23]</sup> The species' uses also include forage, wood and environmental management. The plant possesses an unusual amount of the flavanol (-)-mesquitol in its heartwood.<sup>[24]</sup> P. juliflora can be found in dry forests where it is one of the species most frequently harvested for multiple forest products.<sup>[25]</sup>

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