

***Mimosa diplotricha* (Fabaceae): A New Report of Invasive Weed from Eastern Tarai of Nepal**

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Abstract

Mimosa diplotricha C. Wright (Fabaceae), an invasive weed is recorded for the first time in Nepal from South-eastern lowland of Tarai. A key to the Nepalese species of *Mimosa*, taxonomic description of *M. diplotricha*, notes on its habit, habitat, and distribution is provided. A variety *M. diplotricha* var. *inermis* (Adelb.) Veldkamlis also reported from the same area.

Introduction

Mimosa L. belongs to the sub family Caesalpinioideae in the family Fabaceae (The Legume Phylogeny Working Group [LPWG], 2017). The genus is one of the largest genera in the Fabaceae with more than 500 species mainly native to the New World (Barneby, 1991; Simon et al., 2011; Gehlot et al., 2013). The genus is much diverse in Americas (from United States to Argentina) with 496 species reported, less diverse in Madagascar with 34 species, and only few species are reported from east Africa and Asia (Simon et al., 2011). The genus is represented by only three species in China (Wu & Nielsen, 2010), eight species in India (Gamble, 1920; Debnath et al., 2017), and two in Nepal (Rajbhandari & Rai, 2019). The report of *M. diplotricha* from Eastern Tarai, hence, brings the total number of species of *Mimosa* in Nepal to three.

The genus *Mimosa* grows in wide range of habitats from lowland tropical regions to subtropical forests in different types of soil conditions. It thrives well in soils with low level of nutrients and organic matter with low pH (Gehlot et al., 2013). Because of its ability to grow in different soil conditions, few species have become the pantropical weeds, and *M. diplotricha* is one of them. Other well-known invasive weeds are *M. pigra* L. and *M. pudica* L., *M. pigra* is among 100 of the world's worst invasive alien species (Lowe et al., 2000). *M. pigra* has not been reported from Nepal yet but *M. pudica* is among

the 26 most problematic invasive weeds of Nepal (Tiwari et al. 2005; Shrestha, 2019).

The genus is usually characterized by the armed stem, pinnate and often sensitive leaves, globose inflorescence arising from the axils of leaves, and compressed flat pods divided transversely into one-seeded segments.

The specimens of *Mimosa* were collected and photographed during the field work in Eastern Tarai from August to November 2019. The specimens were identified as *M. diplotricha* and reported here for the first time of its presence in Nepal. A key to distinguish it from other species of *Mimosa* in Nepal is given below. Moreover, a variety *M. diplotricha* var. *inermis* (Adelb.) Veldkamlis also recorded.

Materials and Methods

This study is based on the field studies of populations of *M. diplotricha* in eastern Nepal in Jhapa and Morang districts (Figure 1), and herbarium studies of specimens (including the types) deposited at National Herbarium and Plant Laboratories (KATH), Tribhuvan University Central Herbarium (TUCH), Royal Botanic Garden Edinburgh (E), and Royal Botanic Gardens Kew (K) (online images). The specimens were checked against the relevant floras and checklists (Gamble, 1920; Ohashi, 1979; Gierson & Long, 1987; Press et al., 2000; Nielsen & Wu, 2010; Rajbhandari & Rai, 2019) to confirm its identification. The photographs were studied and

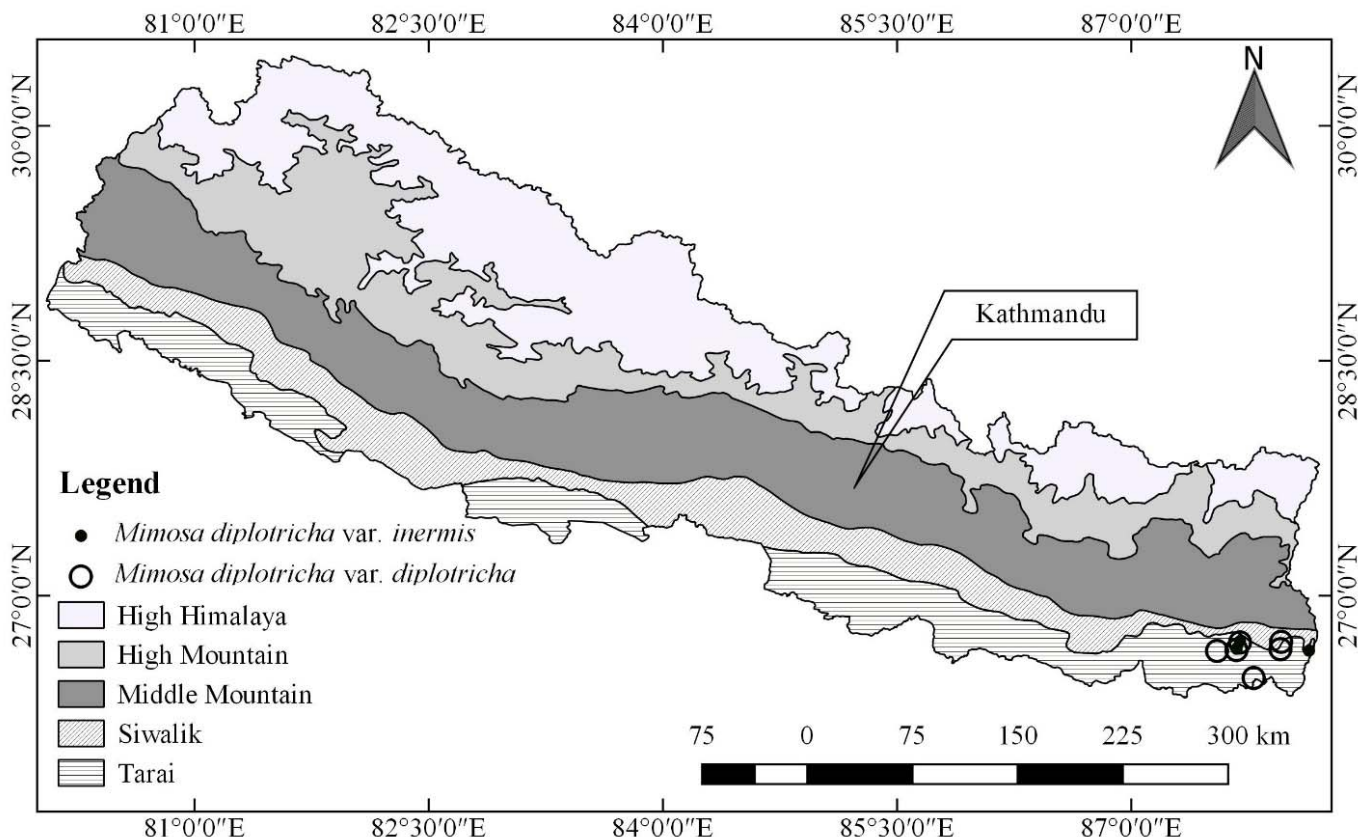


Figure 1: Physiographic map of Nepal showing collection locations

the identification was further confirmed by the expert of invasion ecology (pers.comm. K.V. Sankaran, Kerala Forest Research Institute, India; 4 December 2019). All the specimens collected during the field work were deposited at TUCH and KATH herbarium.

Taxonomic treatment

Key to the species of *Mimosa* of Nepal

- 1a. Leaves pinnae 2-4 (1-2 pairs) *M. pudica*
 1b. Leaves pinnae 12-20 (6-10 pairs) 2
 2a. Pods 7-11 cm long *M. himalayana*
 2b. Pods 1.5-3 cm long *M. diplotricha*

Mimosa diplotricha C. Wright, Anales Acad. Ci. Med. Habana 5: 405. 1868. Nepali name: Aarakande (आराकाँडे), Thulolajjawatijhar (ठूलो लज्जावती झार)

English name: creeping sensitive plant, giant false sensitive plant; giant sensitive plant (Centre for Agriculture and Bioscience International [CABI], 2019)

Annual or perennial gregarious subshrub. Stem scrambling or prostrate, ascending stems up to 5 m long, profusely branched, 4-angled, hirsute, with or without prickles. Leaves bipinnate, 10–18 cm long, stipulate, stipules linear upto 4 mm, hirsute. Petiole 3-7 cm, with or without prickles; pinnae 6-8 pairs, 3–5 cm. Leaflets 20–28 pairs per pinnae, linear-oblong, 4–7 × 2–3 mm, base obtuse, margin entire, apex mucronate, white villous both sides. Inflorescence, axillary, solitary or in pairs, heads globose up to 1.5 cm in diameter; peduncles 0.5–1.0 cm, hirsute. Flowers sessile, bisexual. Calyx small, ca. 3 mm. Corolla narrowly infundibuliform, ca. 2 mm, 4-lobed, outside slightly pubescent. Stamens 8, filaments up to 8 mm long, unequal, hairy, anthers ca. 2 mm. Pods in clusters up to 30, slightly curved, 1.5–3 × 0.4–0.6 cm, 2-5 seeded, compressed, hirsute, suture with bristles up to 3 mm. Seeds yellow-brown, upto 3 mm.

Flowering: October-November

Fruiting-November-January

Habitat: Grows in flood plains, riverbanks, roadsides, abandoned fields and forest fringes

Distribution: It is native of neotropics and Caribbean, invasive in wet tropics and subtropics including south and south EastAsia, Africa and Pacific islands (Sankaran & Suresh 2013).

Key to the varieties

- 1a. Stems with downward facing prickles
 *M. diplotricha* var. *diplotricha*
 1b. Stems without prickles
 *M. diplotricha* var. *inermis*

Mimosa diplotricha* var. *diplotricha (Figure 2).

Synonym: *Mimosa invisa* Mart.

Specimens examined:



Figure 2: *Mimosa diplotricha* var. *diplotricha*. a. Dense mat of the species in open habitat, b. Stem showing inflorescence, c. Flower head close up, d. Pods in clusture, e. Single pod

Eastern Nepal. Jhapa District: Arjundhara-3, Kaidale, 26.714018° N, 87.960224° E, 159 m, 7 Nov 2019, M.R. Bist & L.N. Sharma J03 (TUCH, KATH); Arjundhara-4, Bering khola, 26.667144° N, 87.955622° E, 122 m, 7 Nov 2019, M.R. Bist & L.N. Sharma J04 (TUCH, KATH); Gauriganj-1, Punjibari, 26.483205° N, 87.784154° E, 66 m, 8 Nov 2019, M.R. Bist & L.N. Sharma J05 (TUCH, KATH); Damak-9, 26.661229° N, 87.673891° E, 116 m, 8 Nov 2019, M.R. Bist & L.N. Sharma J06 (TUCH, KATH); Damak-2, Beldangi, 26.710273° N, 87.696780° E, 146 m, 8 Nov 2019, M.R. Bist & L.N. Sharma J09 (TUCH, KATH). Morang District: Pathari-10, Bhutanese refugee camp, 26.655846° N, 87.549441° E, 126m, 8 Nov 2019, M.R. Bist & L.N. Sharma J08 (TUCH, KATH).

Mimosa diplotricha* var. *inermis (Adelb.) Veldkamp, Fl. Males. Bull. 9(4): 416 (1987) (Figure 3).



Figure 3: *Mimosa diplotricha* var. *inermis*. a. Dense mat of the species in open habitat, b. Stem showing fruits, c. Stem showing inflorescence, d. Pods in a clusture

Specimens examined:

Eastern Nepal. Jhapa District: Mechi-7, new bus park Kakadvitta, 26.649609°N, 88.138704° E, 109 m, 6 Nov 2019, M.R. Bist & L.N. Sharma J02 (TUCH, KATH); Damak-9, 26.661229° N, 87.673891° E, 116 m, 8 Nov 2019, M.R. Bist & L.N. Sharma J07 (TUCH, KATH); Damak-2, Beldangi, 26.710273° N, 87.696780° E, 146 m, 8 Nov 2019, M.R. Bist & L.N. Sharma J10 (TUCH, KATH).

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