

Two additions to the Legumes Flora of Andaman and Nicobar Islands, India

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Abstract

The present paper deals with two additions to the Angiosperm flora of Andaman and Nicobar Islands under the genus *Flemingia* Roxb. ex W.T. Aiton, and *Stylosanthes* Sw., of economically significant legume family (Fabaceae). The habitat of these plants is heterogeneous, comprises of areas with muddy and rocky soils respectively. A brief description and distribution of this two species are described below along with the photographic plates for easy identification.

Key words: *Fabaceae*, *Flemingia*, *Legumes*, *Stylosanthus*, *Taxonomy*

Introduction

Andaman and Nicobar Islands (ANI) is floristically very rich and unique phytogeographical region in India with higher number of endemism (Singh et al. 2014, 2020 a, b, 2021 a, b; Singh & Misra 2020; Singh 2021; Singh & Ranjan, 2021). Ten degree channels separate the Andaman group from the Nicobar group of Islands. The climate on ANI is tropical, with no winter season and an average humidity of 70% to 90%. With an average rainfall of between 3,000 and 3,500 mm, the islands receive precipitation from both the Southwest monsoon from May to September and the Northeast monsoon from November to January. Before moving on to the Indian mainland, the Southwest monsoon touches Indian soil in these Islands. Thunderstorms, lightning and cyclonic winds all occur frequently here. Only rain and storms constitute an extreme climate. It is quite hot from March to May in these Islands.

Flemingia Roxb. ex W.T.Aiton is an old world genus and thought to have originated in the Indo-Burmese region (Mukerjee, 1953). The genus comprises 46 taxa (44 species and 2 varieties) worldwide and as far as India is concerned there are 27 taxa (26 species and 1 variety) (modified after ILDIS, 2005; The Plant List, 2013; Gavade et al., 2019, 2020; Sanjappa, 2020). In ANI the genus is represented by three species i.e *Flemingia macrophylla*

(Willd.) Kuntze, *Flemingia strobilifera* (L.) W.T. Aiton and *Flemingia paniculata* Wall. ex Benth.

The genus *Stylosanthes* Sw. is an important tropical and subtropical forage plant genus (Chakraborty, 2004). It has a worldwide distribution which is about 40 species mainly distributed in savannas and similar areas in the eastern United States, Central America, the Antilles, South America to northern Argentina, the Galapagos Islands, central and southern Africa, Madagascar, southern India and Ceylon. In addition, *S. humilis* is adventive in Malaysia and Australia (Mohlenbrock, 1957). Till date, more than 80 *Stylosanthes* species have been described (IPNI, 2014). In India, the genus is represented by eight species, of which only one species i.e. *Stylosanthus humilis* Kunth. is so far reported from these islands.

Material and methods

During the floristic exploration in Andaman and Nicobar group of Islands, authors found two interesting specimens of legumes which belongs to genera *Flemingia* Roxb. ex W.T.Aiton and *Stylosanthes* Sw. from the two different localities of South Andaman. Although, the family Fabaceae are distributed throughout the country (Naik and Singh 2020; Sivaramakrishna et al. 2021).

To verify the identity of these specimens, authors consulted relevant literatures and also compared the



collected material with the specimen housed in the herbarium at CAL, MH, PBL. A range of specimens images were also studied from the JSTOR Global Plants (2023), China Virtual Herbarium (2023), Flora of Pakistan (2023) and other online herbaria (B, BM, BR, B-WILLD, E, FI, FOB, G-DC, K, L, LINN, NYBG, P, TUB).

After critical examination these specimens were found to represent *Flemingia lineata* (L.) Roxb. ex W.T. Aiton. and *Stylosanthus scabra* Vogel. Further which are hitherto unrecorded for legumes flora of ANI's (Vasudeva Rao., 1986; Sanjappa, 1992; Lakshminarasimhan & Rao, 1996; Hajra et al.1999; Pandey & Diwakar, 2008; Singh et al 2014, 2021b; Murugan et al., 2016; Naik et al., 2021; Singh & Ranjan 2021). Representative specimens of the species are deposited in National Repository; Herbarium (PBL) of Botanical Survey of India, Andaman and Nicobar Regional Centre. Field photographs of the species are provided for easy identification.

Result and Discussion

Taxonomic Treatment

Flemingia Roxb. ex W.T.Aiton

Flemingia lineata (L.) W.T.Aiton, Hortus Kew., ed. 2. 4: 350. 1812. *Hedysarum lineatum* L., Syst. Nat., ed. 10. 2: 1170. 1759.

Hedysarum lineatum L., Sp. Pl. 2: 1054. 1753. (Syst. Nat., ed. 10. 2: 1170. 1759. *Onobrychis lineata* Desv., J. Bot. (Paris) 3: 80. 1814. *Flemingia blancoana* Llanos, Fragm. Pl. Filip., Fragm. Pl. Filip. 80. 1851. *Lespedeza lineata* (L.) Pers., Syn. Pl. 2: 318. 1807. *Moghania lineata* (Prain) Mukerjee, Bull. Bot. Soc. Beng. 6: 15. 1952.

Erect shrub, up to 60cm tall, with profuse branching; branchlets terete, hairy. Leaves digitately trifoliolate, 4-5 cm long; stipules 2, 5-6 mm, lanceolate, acuminate, persistent, petioles 0.5mm long, hairy; leaflets 3, obovate, obtuse at apex, cuneate at base, entire on margin, mucronate at apex, sparsely hairy on both surfaces. Inflorescences a panicle; Flowers 8mm long, pedicellate, bracteate; pedicels 1 mm long, hairy; bracts 2mm, lanceolate, acuminate at apex, hairy, gland-dotted. Calyx 4mm long, hairy, gland-dotted; calyx tube 2 mm long, hairy; calyx teeth 5, 4 mm, lanceolate, subequal, gland-dotted. Corolla pinkish; standards 4.5 × 4mm, rounded, pointed at apex, glabrous, wing petals 6 × 2 mm, falcate; keel petals 6 × 2 mm, slightly falcate, fused at apex on lower side. Stamens 10, diadelphous (9+1); staminal tube 3.5 × 1 mm, anthers uniform, less than 1 mm long, basifixed; Ovary 1.5 × 0.8 mm, gland-dotted, hairy; ovules 2; style 4–4.5 mm long, glabrous, stigma globose, hairy. Pod 10 × 8 mm, beaked, densely hairy, densely gland-dotted; beak 1 mm long. Seeds 2, suborbicular, ca. 3mm in diam.

Flowering and fruiting: January - April.

Habitat and Ecology: *Flemingia lineata* grows in moist areas along roadsides and forest edges in association with *Desmodium triflorum* (L.) DC., *Sesbania sesban* (L.) Merr., *Cleome viscosa* L., *Vitex trifolia* L. and other *Ipomoea* sps.

Distribution: Australia, Burma, Malesia, Sri Lanka, Thailand. **INDIA:** Almost throughout India, **ANI** : South Andaman (present work).

Specimen examined: Andaman and Nicobar Islands: South Andaman, Caddlegunj, 42 msl, (11°41.59 N 92°38.51E) 23.01.2023, Fouziya Saleem, 35376 (PBL); Near forest check post, Ferrarganj, 107 msl, (11°43.38 N 92°39.17E) 01.04.2023, Fouziya Saleem, 35400 (PBL).



Fig. 1. Flemingia lineata: A: Habit; B: Flower; C: Fruit; D: Flower; E: Standard petal (dorsal); F: Standard petal (ventral); G: Calyx; H: Stamens; I: Wing Petal; J: Keel petal; K: Pod; L: Seeds.



Fig. 2. *Stylosanthus scabra*: A: Habit; B: Flower; C: Fruit; D: Flower with pedicel; E: Standard petal; F: Wing petal; G: Keel petal; H: Loment; I: Seed.

Stylosanthes Sw.

Stylosanthes scabra Vogel, Linnaea 12: 69. 1838.
Stylosanthes diarthra Blake, Proc. Biol. Soc. Wash. 33:49. 1920. *Stylosanthes gloiodes* Blake, loc. cit. 45. 1920. *Stylosanthes plicata* Blake, loc. cit. 46. 1920.

Suffruticose shrub, much branched, to 60 cm tall, densely hairy, viscid. Leaflets lanceolate, obtuse, densely hairy on both surface, with 4-5 pairs of veins conspicuous; Leaflet to 13-15 mm × 4-5 mm, petioles 5 mm long, scabrous with dense short hairs, stipules variable in length, the sheath usually 1.5-5.0 mm. longer than the teeth, short-hispid, 7- 9 nerved. Inflorescence of a spike, several-flowered; 5mm long, bracts unifoliolate; Calyx tube 4 mm long, 5-lobed, lobes more or less acute, 4 mm long. Standard broadly obovate, 5 mm×4mm, glabrous, wings clawed, 4mm, auriculate, glabrous; keel petals auriculate, 4mm long glabrous. Loment about 3 mm broad; upper articulation 2 mm. long, densely hairy, the lower 2 mm long, evenly pilose throughout; beak uncinat, hairy, 1-2 mm long, one-half to one-third as long as the upper articulation. Seeds 2, 1mm in diam, brown.

Flowering and Fruiting: October-March.

Habitat and Ecology: *Stylosanthes scabra* grows on shallow rocky surfaces with little amount of soil in open grasslands in association with *Cleome viscosa* L., *Phyllanthus amarus* Schumach. & Thonn., *Tridax procumbens* (L.) L. and *Cyperus* sps.

Distribution: South America, Brazil, Hawaii, Marquesas, Northern Territory, Queensland, Western Australia. **INDIA:** Andhra Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Tamil Nadu. **ANI:** South Andaman (present work).

Specimen examined: Andaman and Nicobar Islands: South Andaman, Kodiaghat, 24 msl, (11°34.55 N 92°44.09 E), 03.10.2021, *Fouziya Saleem*, 33438 (PBL); Burmanallah, 29 msl, (11°31.50 N 92°43.24 E), 10.03.2022, *Fouziya Saleem*, 33473 (PBL).

These species possesses habitats with distinct soil texture in the tropical zone of Islands. Their growth is usually in patches or secluded populations. Further,

extensive floristic surveys are essential for spotting the new localities for assessment of conservation measures.

Acknowledgements

Authors are grateful to the Director, Botanical Survey of India, Kolkata for constant support and facilities. The authors are thankful to Dr. Debasis Bhattacharya, Editor-in-Chief, Journal of Andaman Science Association, and anonymous reviewers for critical comments and suggestions that helped to improve the manuscript. We are also thankful to the Department of Environment and Forests, Andaman and Nicobar Islands, for necessary permission and logistic support in conducting field studies and to scientists and staff of Botanical Survey of India, teaching faculties of Department of Botany, Mansarovar Global University, who have always shown readiness for help.

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Received : 02nd July 2023

Accepted : 26th July 2023
