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Scurrula paramjitii L. J. Singh: A New Species (Loranthaceae) from the Andaman and Nicobar Islands, India

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ABSTRACT: *Scurrula paramjitii* L. J. Singh (Loranthaceae) is described and illustrated here as a new species from the Andaman and Nicobar Islands, India along with an inventory of host species. This is the second species of the genus known to be endemic to the Andaman and Nicobar Islands as previously only *Scurrula parasitica* L. was known from this region. *Scurrula paramjitii* is distinguished from all other species of the genus by its morphology of vegetative and floral characters. However, it appears apparently close to *Scurrula parasitica* L.

KEY WORDS: Andaman and Nicobar Islands, India, Loranthaceae, new species, *Scurrula paramjitii*

INTRODUCTION

The earliest detailed description of *Scurrula* was made by Linnaeus (1753) and subsequently by various authors. *Scurrula* is the genus of hemiparasitic flowering plants of the mistletoe family Loranthaceae with the highest species diversity. It presents much taxonomic difficulty at the species level and even in a family Loranthaceae where such difficulty is common due to uniformity in growth, habit, leaf morphology and fruit structure (Barlow, 2002). Danser (1935) stated that it is impossible to suppose all *Scurrulae* might be forms of a single species. More recently, Singh (2013a) stated that many Indian mistletoes species are distinct with the morphological variations in vegetative and floral characters. This genus presents a very interesting form of diversity and unusual geographic distribution in India.

The genus *Scurrula* L. comprises *ca*. 23 species distributed in South-east Asia (Rajsekaran, 2012), which may be Afro-Asian in origin (Wilson and Calvin, 2006; Vidal-Russell and Nickrent, 2008). Of these, 11 species are found in India and only 2 species have been recorded from the Andaman and Nicobar Islands, including *Scurrula paramjitii sp. nov.*

MATERIAL AND METHODS

During floristic explorations in the forest areas around the Andaman Islands, the author has collected some interesting specimens of mistletoes. After critical examination, consultation of herbarium specimens deposited at CAL , PBL, BSD, DD and perusal of literatures (Roxburgh, 1832; Hooker, 1890; Duthie, 1903; Parkinson, 1923; Ridley and Hutchinson, 1924; Fischer, 1926; Danser, 1935, 1938; Barlow, 1966, 1974, 1984, 1991, 1997, 2002; Gamble, 1967; Wiens, 1987; Polhill and Wiens, 1998; Wilson and Calvin, 2006; Watson, 2011; Rajsekaran, 2012; Singh & Murugan 2014), the author concluded that the species could be described as a novelty. A detailed description along with illustrations, photographs and relevant notes are provided for easy identification and further collection.

TAXONOMIC TREATMENT

Scurrula paramjitii L. J. Singh**, *sp. nov.*** Fig. 1 & 2.

Type: INDIA: Andaman and Nicobar Islands, Middle Andaman, Rangat, APWD Guest House, 12°30′26″N, 092°54′32″E, 105 m alt., 28 October 2012, *Lal Ji Singh 29539* (holotype: CAL!; isotype: PBL!).

Hemi-parasitic *shrubs*. Young parts with a dense cream to purple indumentum of stellate hairs, becoming sparse on old stems, leaf upper surfaces and flowers. *Leaves* opposite; petiole 1.2–2.0 cm long; lamina lanceolate or elliptic, 2–12 × 1.5–5.5 cm, base attenuate or cuneate, apex broadly acuminate or acute; venation obscure except for the mid- rib and 6–9 pairs of major lateral veins visible adaxially. *Inflorescence* several at leafless nodes, 2–10 flowered pseudo raceme; axis 0.3–1.0 cm long, slender; pedicels 0.8–1.5 cm long slender; bract deltoid, concave, errect, 3–4 mm long. *Flowers* yellowish green, bisexual, zygomorphic, sympetalous, 4-merous, calyculus obsolete. *Corolla* in mature bud 1.6–2.8 cm long, yellowish green, internally reddish violet, slender, straight or slightly curved, inflated, narrowly clavate and acute at the apex; tube 0.9–1.8 cm long, ventricose at base, deeply split at above the middle, extending up to two-third the length; lobes 5–7 mm long, narrowly elliptic. *Stamens* 4, erect; anther c. 2–4 mm long, about as long as the free part of the filament; filament subterete, mostly adnate to the

Table 1. Comparison of morphological characters between *Scurrula parasitica* L. and *Scurrula paramjitii* L. J. Singh

Characters	*Scurrula parasitica* L.	*Scurrula paramjitii* L. J. Singh
Leaves	Narrowly ovate or obovate, 3–7(–9) × 1.5–3.5(–4.5) cm, cuneate or truncate at the base, acute, obtuse or rounded at apex	Elliptic or lanceolate, 2–12×1.5–5.5cm, attenuate or cuneate at the base, broadly acuminate or acute at apex
Petiole	0.3–1.0 cm long	1.2–2.0 cm long
Inflorescence	2–6 flowered raceme	2–10 flowered pseudo raceme
Pedicel	0.1–0.5 cm long	0.8 – 1.5cm long
Bract	Narrow, erect, 1–3 mm long	Concave, erect, 3–4 mm long
Flower	Reddish brown	Yellowish green
Corolla	In mature bud 0.8–1.6 cm long, red, slender, weakly clavate and acute at the apex	In mature bud 1.6–2.8cm long, yellowish green, internally reddish violet, straight or slightly curved, inflated, weakly clavate, obtuse to truncate at the apex
Corolla tube	0.6–1.2cm long, split to the middle or lower	0.9–1.8 cm long, split to at above the middle
Anther	0.7–1.5 mm long	2–4 mm long
Fruit	0.8–1.0cm long, including a stipe 0.4–0.8 cm long, rounded at the apex, reddish yellow	1.2–1.6 cm long, including a thick stipe 0.8–1.2 cm long, contracted at the apex, yellowish green

corolla. *Ovary* inferior, 2.5–3 mm long, unilocular; placentation basal; style red, filiform, tetragonous; stigma subglobose. *Fruit* 1.2–1.6 cm long including a thick stipe 0.8-1.2cm long, contracted at the apex with single seed in the widest part of the fruit, pubescent, yellowish green; exocarp leathery; endocarp viscous.

Distribution**:** India, Andaman and Nicobar Islands, Middle Andaman, Rangat, APWD Guest House, Sabari Gram Panchayat, Urmilapur, South Andaman, Port Blair, Shadipur. Endemic.

Paratypes**:** **INDIA**: Andaman and Nicobar Islands, Middle Andaman, Rangat, Sabari, 12°29′18″N, 092°54′30″E, 60 m alt., 27 October 2012, *Lal Ji Singh 29540* (PBL), India, Andaman and Nicobar Islands, Middle Andaman, Rangat, Urmilapur, 12°32′41″N, 092°51′41″E, 86 m alt., 31 October 2012, *Lal Ji Singh 29551* (PBL), India, Andaman and Nicobar Islands, South Andaman, Port Blair**,** Shadipur, 11°39′33″N, 092°44′39″E, 90 m alt., 22 November 2012, *Lal Ji Singh 29561*(PBL).

Habitat and Ecology**:** Humid, open forest, along road sides; altitude: 60–105 m.

Phenology**:** Mature flowers collected from the end of September to November and mature and immature fruits collected from November to January.

Etymology**:** This species is named in honour of Dr. Paramjit Singh, a great scientist and Director, Botanical Survey of India, Kolkata for his significant contributions to Indian Flora.

Conservation status**:** The species has a restricted distribution known from the Middle and South Andaman Islands. Therefore, the species can be scored using the IUCN Categories and Criteria (IUCN, 2001) as vulnerable (VU).

DISCUSSION

Scurrula genus of the Loranthaceae family has always been recognized as complex and different from other loranths in terms of taxonomy. It shows the highest number of species, the highest number of host species, and the widest altitudinal distribution. At the species level loranths have presented much taxonomic difficulty (Barlow, 1997).The taxonomic difficulties in *Scurrula* are probably due to recent rapid diversification, as the genus has occupied new territory towards the east and also, because of some of the species have often been misinterpreted and transferred to the sympatric and closely related genus *Taxillus* (Barlow, 1991, 1997). In the Andaman and Nicobar Islands, except for few notable exceptions, there has never been a comprehensive attempt to establish a systematic documentation of mistletoes by taxonomists (Singh, 2013a,b; Singh and Murugan, 2013; Singh and Ranjan, 2013). However, islands are hotspots of biodiversity with remarkable diversity of mistletoes. *S. paramjitii* L. J. Singh is described and illustrated here as a new species from the Andaman and Nicobar Islands, India, for the first time. It is found only in the open and humid forests of Middle and South Andaman Islands. The main center of distribution of *S. paramjitii* L. J. Singh is in the Middle Andaman. However, one specimen has been identified from the South Andaman. This new species shows a disjunctive pattern of distribution. This disjunctive distribution indicates that it may also be found in other areas of the Andaman and Nicobar Islands. Marginal, fragmented, humid and open forests along road sides are the most suitable habitat.

The Andaman and Nicobar Islands lays in the proximity of various adjoining biogeographical regions viz., Eastern coast of South Asia, Medagascar, Sri Lanka, Burma, Thailand, Peninsular Malaysia, Myanmar, Sumatra and Java. The phytodiversity of these islands is one of the unique and richest in the country with remarkable degree of genetic variations. As indicated in the diagnosis the new taxon is markedly distinct from other known species by its eco-taxo and morpho-logical characters. *Scurrula paramjitii* L. J. Singh appears apparently close to the species of *Scurrula parasitica* L. but it is highly distinct in respect

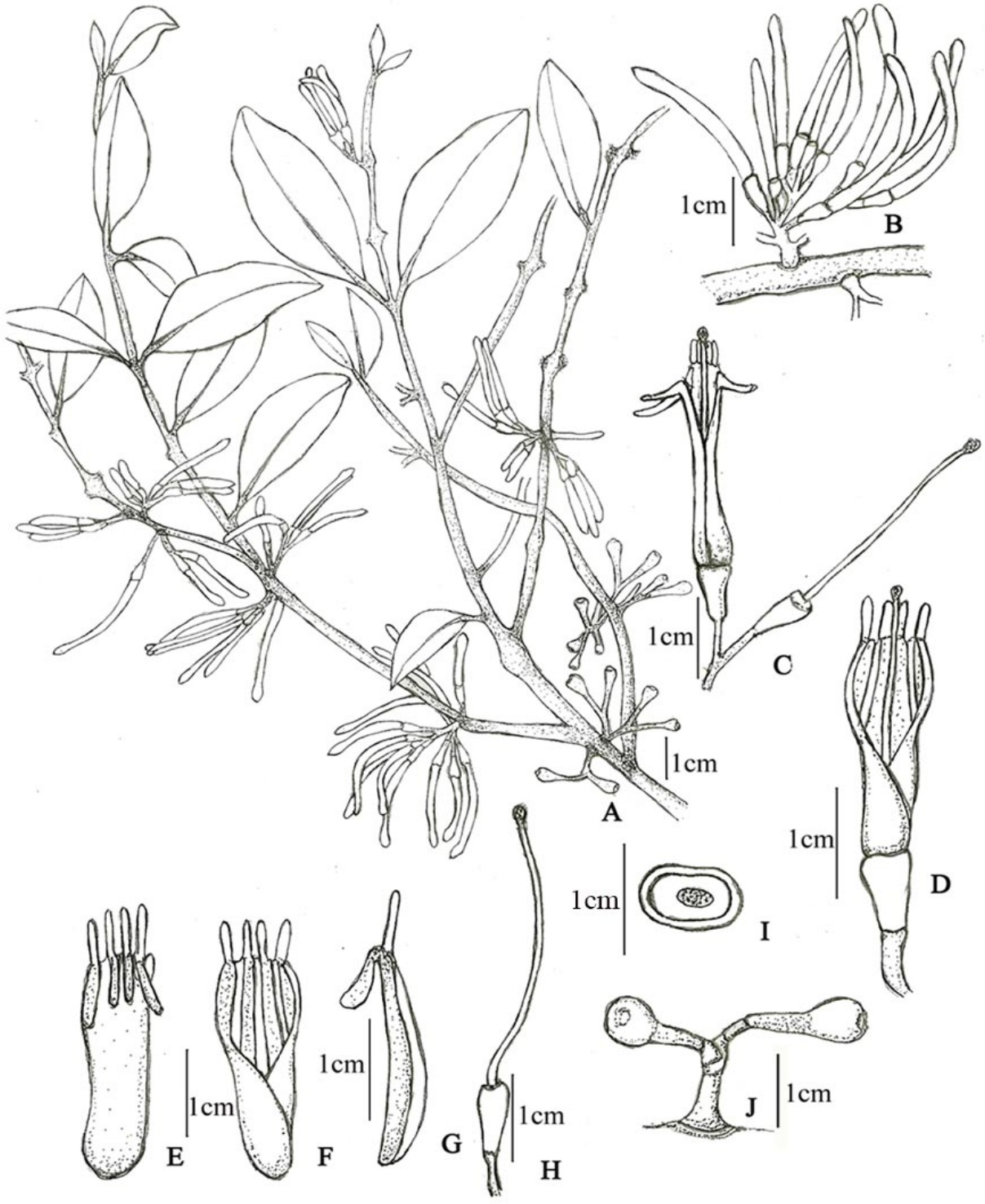

Fig. 1. *Scurrula paramjitii* L. J. Singh. A: Habit. B: Inflorescence. C-D: Open flowers and indumentum. E: Petals and stamens, dorsal view. F: Petals and stamens, ventral view. G: Petal with single stamen. H: Pistil. I: Ovary, in c.s. J: Fruits.

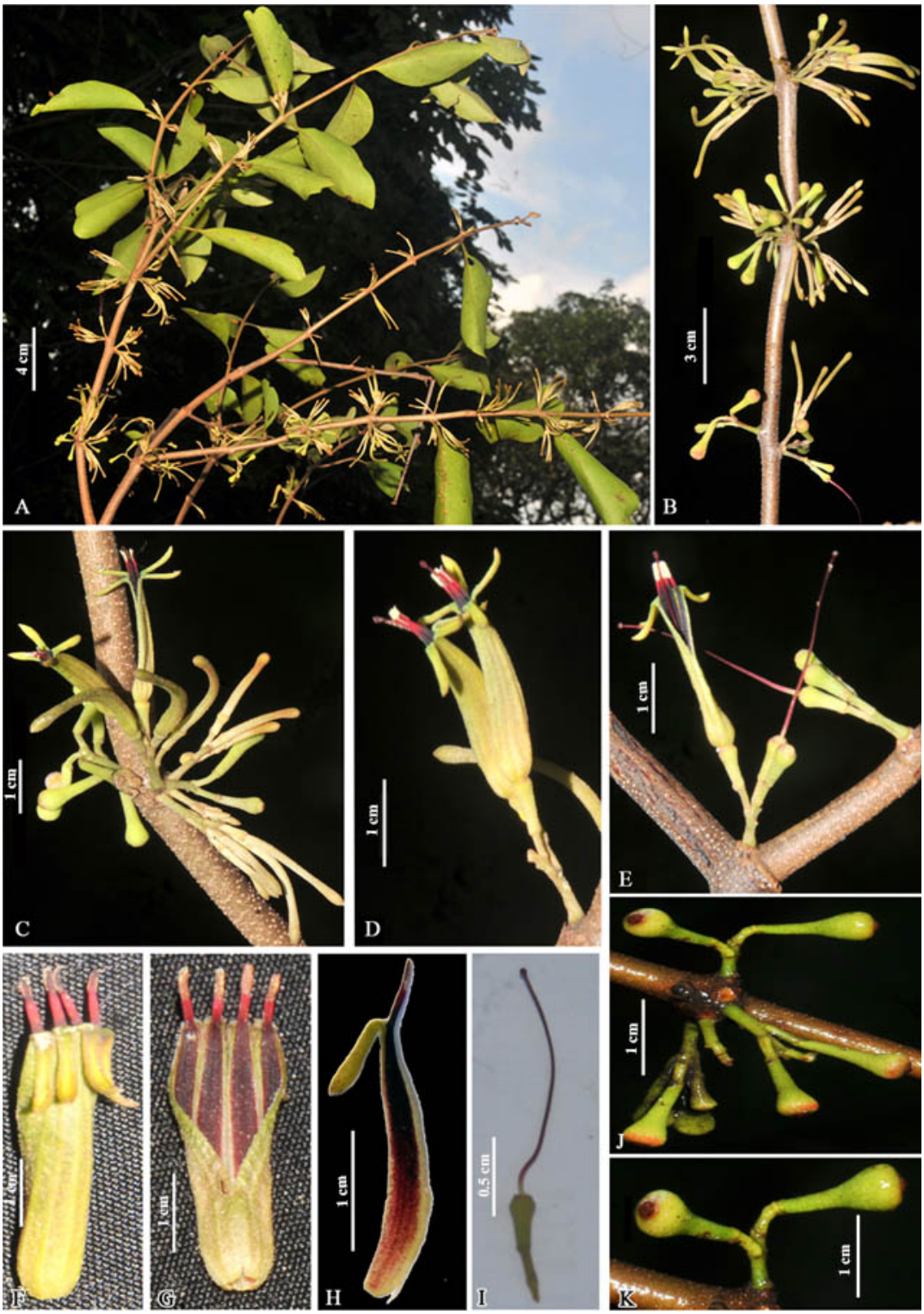

Fig.2. ***Scurrula paramjitii*** **L. J. Singh. A: Habit. B: Twig with inflorescences. C: Inflorescence. D-E: Flowers and indumentums. F: Petals and stamens, dorsal view. G: Petals and stamens, ventral view. H: Petal with single stamen. I: Pistil. J-K: Fruits.**

to its morphology of vegetative and floral characters as mention in Table 1.

Apart from the issue of taxonomic exploration in India, only few attempts have been made to establish an inventory of host species for mistletoes (Singh, 2013a, b; Singh and Murugan, 2013,). However, several attempts have been made to establish an inventory of host species for mistletoes in various phytogeographical regions of the world (Kuijit, 1964, 1969, 1981; Hawksworth, 1983; Bernys and Graham, 1988; Dean *et al.* 1994; Shaw, 1994; Downy, 1998; Norton and Carpentor, 1998; Watson; 2011). According to Howksworth (1983) the species parasitism may be attributable to the presence of both mistletoe and host species. It may be physiological interaction between host and mistletoes (Hoffman *et al*., 1986). The species of mistletoes exhibit a high degree of mimicry and sometimes it is so close that they are almost impossible to detect (Barlow and Weins, 1977). During the survey of host inventory, the observations led the author to conclude that the parasitization is diversified on host plant species and there is great variation in host preference with each mistletoe. Except in *Scurrula*, several taxonomically close Indian mistletoes species share many similar host genera for parasitization like the genus *Mangifera* (Anacardiaceae) is the common host among hemiparasitic mistletoes. While, Indian species of *Scurrula* grow on trees with high host specificity and sometimes show a visual resemblance to their preferred host. Author found that *S. paramjitii* L. J. Singh is growing only on *Tetrameles nudiflora* R. Br. (Tetramelaceae) where it forms a network of epicortical roots as haustorial system. The observations led the author to conclude that the parasitization and selection of host species is either an opportunistic phenomenon or an availability of host through time and space.

A key to the species of *Scurrula* from the Andaman and Nicobar Islands is given below to facilitate identification.

A key to *Scurrula* species in the Andaman and Nicobar Islands

1a. Leaves narrowly ovate to obovate, cuneate to truncate at the base, obtuse or rounded at apex; inflorescence 2–6 flowered pseudoraceme; corolla in mature bud 8–16 mm long ; fruits 8–10 mm long.....……..……***S. parasitica***

1b. Leaves elliptic or lanceolate, attenuate or cuneate at the base, broadly acuminate or acute at apex; inflorescence 2–10 flowered pseudoraceme; corolla in mature bud 16–28 mm long; fruits 12–16 mm long.....……..……..……..……..……..……***S. paramjitii***

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