



## A new species of *Reissantia* (Celastraceae) from coastal Karnataka, India

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*Reissantia* N. Hallé (1958: 466) is a small but widespread genus distributed in the Old World tropics of Africa and Indo-Malaya (Ramamurthy and Naithani, 2000). Members of *Reissantia* are climbing, scandent or erect shrubs with decussate leaves. They are characterised by small flowers borne in dichotomous cymes or panicles with accessory branches, small calyx and corolla with imbricate aestivation, inconspicuous disc that is mostly fused with the ovary, 3 stamens inserted at the base of the carpel, 3-locular ovary and 3-fascicled capsular fruit with seeds that have a basal membranous wing.

*Reissantia* was formerly placed under the family Hippocrateaceae but is now long considered as belonging to the major family Celastraceae as the members of Hippocrateaceae were found to be nested within Celastraceae sensu stricto (Robson *et al.*, 1994, Savolainen *et al.*, 1997, Takhtajan, 1997). Parsimony tree searches based on the taxon sampling used by Coughenour *et al.* (2010) showed all members of the tribe Hippocrateoideae to form a monophyletic group. Hippocrateaceae, as traditionally defined (e.g., Smith, 1940; Hallé, 1962; Cronquist, 1981), is supported as a clade nested within a paraphyletic Celastraceae s.s. (Simmons *et al.*, 2001a, Simmons *et al.*, 2001b). Coughenour *et al.*, (2011) established the monophyly of *Reissantia* using plastid and nuclear genes and morphological characters.

Six species of *Reissantia* are currently recognised (Coughenour *et al.*, 2011) of which three species, *R. indica* (Willd. 1797:193) N. Hallé (1958:466), *R. grahamii* (Wight 1839:139) Ding Hou (1963:33) and *R. arborea* (Roxb. 1811:4) Hara (1965:327) are reported in India. Globally, *R. indica* shows a wide distribution ranging from Africa, India, Sri Lanka to Philippines, Indonesia, Malaysia and Timor while *R. grahamii* is found in India, Vietnam, Philippines and New Guinea. *R. arborea* has been reported from India and China. Within India, *R. indica* and *R. grahamii* are distributed in South India while *R. arborea* is found in Northeast India. Here, we describe a new species of *Reissantia* that is morphologically distinct from the rest of its congeners with respect to multiple characters. Detailed comparisons of the new species with its morphologically most closely related species and genera is provided along with a key to the species of *Reissantia* reported from India (Almeida, 1996; Matthew 1982; Matthew, 1999).

### Taxonomy

#### *Reissantia sessiliflora* N. V. Page, Srivastav & Rao, *sp. nov.* (Figs. 1, 2 & 3)

*Reissantia sessiliflora* is morphologically most closely related to *R. indica* but can be distinguished from the latter by sessile flowers, entire leaf margin with coriaceous texture and larger size, terete to subterete stem and inflorescence branches and lacinate calyx margin (Almeida, 1996; Matthew, 1999).

**Type:**—INDIA. Karnataka: Honnavar, Uttara Kannada district, 14° 12' 23.22"N, 74° 27' 13.61"E, 50 m, 13 January 2016 (with flowers), Page 105 (holotype JCB!, isotype FRLH!).

Scandent shrub, glabrous at all stages. Stem with white reticulation, branchlets decussate, terete, coiled and robust, axillary buds black, circular, 2–3 in a row. Petiole up to 2 cm; leaf blade ovate-elliptical, 8–19 × 4–13 cm, base cuneate, margin entire, apex acuminate, adaxial surface glabrous, dark green, abaxial becoming glaucous, coriaceous, entire (*in vivo*); no stipules seen, secondary nerves 5–7 pairs, tertiary nerves irregularly branched, inconspicuous. Inflorescence a dichasial cyme of small, compactly-arranged flowers, 3–4 cm long and 5 cm wide, axillary, branching 4 times or more up to 6, accessory branches present; peduncle terete, slender up to 2 cm long, branches opposite to subopposite. Bracts present singly at the base of each flower and inflorescence branches, subulate-lanceolate to ovate-lanceolate, 1–1.5 × 0.5–0.8 mm, acuminate, sessile, light green with maroon tinge on margins, turning maroon with

maturity, submembranous, glabrous, incised. Flowers greenish-yellow or rust-coloured, sessile, 1.5–3 mm in diameter at anthesis. Sepals 5, pandurate to deltoid, 0.6 × 0.5 mm, apex apiculate-obtuse to rounded, light green to maroon, sub-membranous, glabrous, lacinate, aestivation quinquincially imbricate; petals 5, sometimes 6 or 7, oblong-oval to subulate-lanceolate, 1 × 0.4–0.5 mm, apex obtuse, thin carnose to sub-membranous, glabrous, erose, more so towards apex, curved inwards on sides, aestivation quinquincially imbricate; stamens 3, suberect, flattened, slightly longer than the style, filament 0.25–0.3 × 0.13 mm, white, uniform in width throughout, inserted at the base of ovary, anther lobes extrose, 0.2 × 0.4 mm, light green, rectangular-globose; gynoecium flask-shaped, 0.6 mm long, light-green, style 0.25 mm long, stigma obscure, ovary superior, trilocular, 0.4 mm in diameter; disk 0.5 mm in diameter, 0.03–0.04 mm thick, extrastaminal, annular, fleshy, inconspicuous; ovules 2 per locule. Fruits 3-fascicled capsule, usually several per inflorescence; capsules sessile, attached separately to the receptacle, divergent, flattened, striated, obovate-elliptical, 4.9 × 10–10.5 cm, base acute, apex obliquely emarginated, one half of the capsule slightly shorter than the other, green, turning yellowish to brown on maturity, pericarp chartaceous, entire, dehiscing along a median suture; seeds 2, occupying less than half of the capsule cavity when mature, oval, 4 × 2.5 cm, white when young, flattened with a conspicuous basal membranous wing, wing elliptical, falcate, 2.7 × 0.65 cm, apex obliquely ellipsoid, funicle conspicuous.

**Phenology:**—The flowering season of this species extends from December to March while fruiting from March to May.

**Etymology:**—The specific epithet refers to the sessile nature of the flowers which is the main diagnostic character of this species.

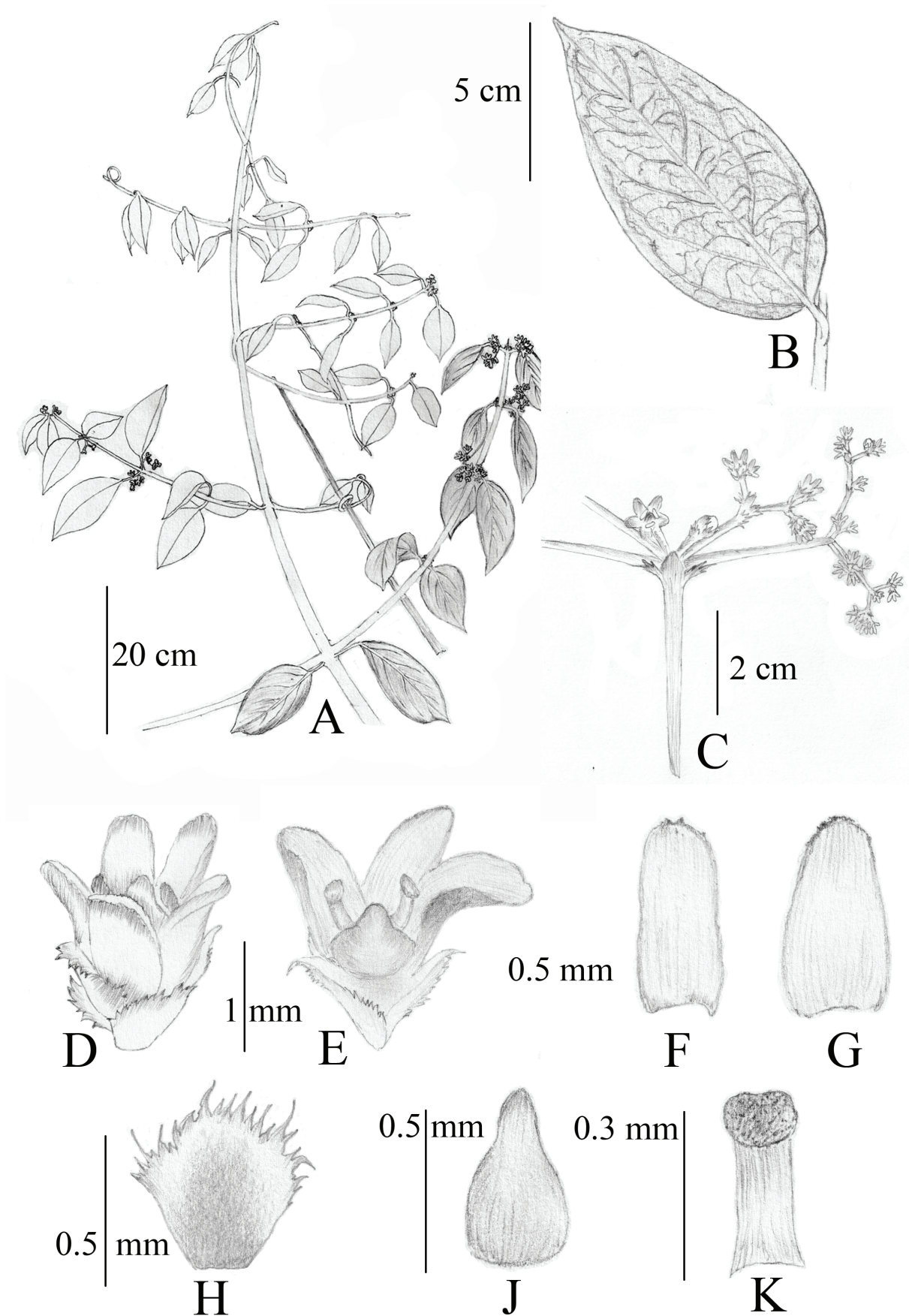
**Distribution:**—*Reissantia sessiliflora* is currently known from coastal parts of Uttar Kannada district of Karnataka. It is found in association with *Pterospermum diversifolium* Blume (1825:88), *Diospyros candolleana* Thwaites (1860:181), *Calamus thwaitesii* Beccari (1892:441) and *Premna serratifolia* Blanco (1845:342). So far, we have been able to locate only a few populations, growing sparsely in coastal sea facing-lateritic scrub and nearby fringes of semi-evergreen and moist deciduous forest. *Reissantia sessiliflora* is one of the few species that is peculiar and endemic to these highly fragmented and scattered coastal vegetation patches. These coastal habitats and forests are not part of the existing protected area network and are under tremendous pressure from anthropogenic activities. Moreover, the extent of occurrence of this species is estimated to be less than 100 sq km and therefore likely to qualify for the Critically Endangered category.

**Interrelationships and critical notes:**—Comparison of *Reissantia sessiliflora* with its morphologically closely related species *R. indica* has been provided in Table 1 and Fig. 3. When compared to other genera, *R. sessiliflora* most closely resembles *Pristimera Miers* (1872:360) but the number of ovules per locule is 2 in former while 2–8 in latter (Smith, 1940). It also resembles *Arnicratea* N. Hallé (1984:12) to some extent but can be distinguished from the latter by 2 ovules per locule, dichasial cyme type of inflorescence, glabrous and sessile flowers and 1 mm long petals as opposed to usually 6 (4–7) ovules per locule, paniculate or thyriform inflorescence, papillate and pedicellate flowers and 2.5–3.5 mm long petals of *Arnicratea*.

TABLE 1. Morphological comparison of *Reissantia sessiliflora* and *R. indica*.

Character	<i>Reissantia sessiliflora</i>	<i>Reissantia indica</i>
Leaf size	8–19 × 4–13 cm	3.5–14 × 2.5–5 cm
Leaf margin	Entire	Crenate to serrate
Leaf texture	Coriaceous	Membranous
Leaf surface	Glabrous; dark green above, glaucous beneath.	Both surfaces glabrous, light green.
Stem and Inflorescence	Terete to subterete	Quadrangular
Flower	Sessile	Pedicellate
Calyx margin	Lacinate	Erose

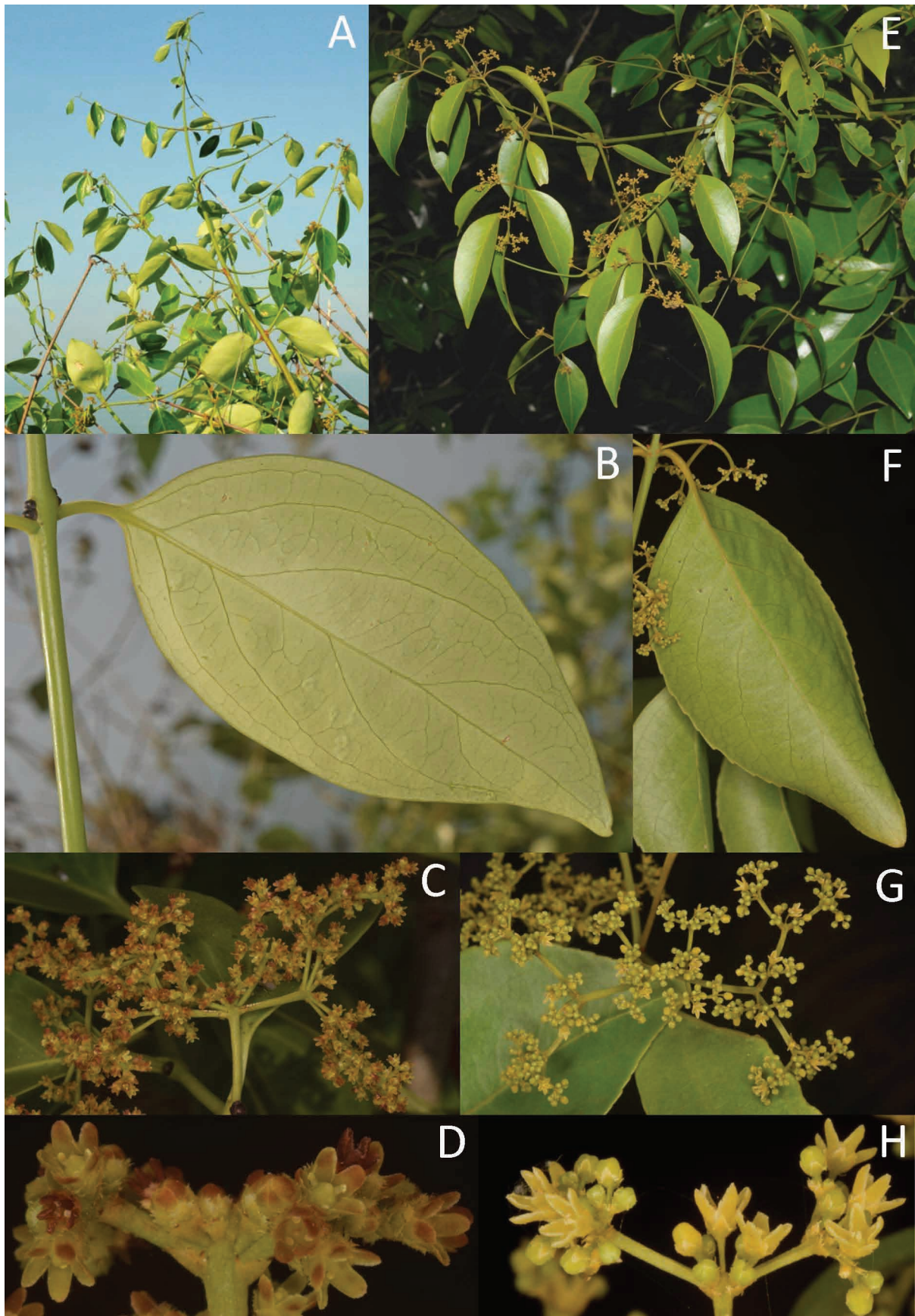
We have observed two populations of *Reissantia sessiliflora* growing in two different habitats which exhibit variation in morphological features. The coastal population has oblong-ovate petals, an average petal number of 5, more closed flowers with greater reddish tinge, larger average leaf size and many flowered, dense inflorescence as opposed to the subulate-lanceolate petals, petal numbers going up to 6–7 in most cases, more open flowers with lesser reddish tinge, smaller average leaf size and few flowered, lax inflorescence of the population found in the forest.



**FIGURE 1.** *Reissantia sessiliflora* A. Flowering twig. B. Leaf. C. Inflorescence. D. Flower. E. Longitudinal section of flower. F. Subulate-lanceolate petal. G. Oblong-oval petal. H. Sepal. J. Pistil. K. Stamen. All from Page 105. Illustration by Mansa Srivastav.



**FIGURE 2.** *Reissantia sessiliflora* A. Stem showing reticulation. B. Flowering twigs. C. Inflorescence showing sessile flowers. D. Fruit. E. Torn capsule showing seeds.



**FIGURE 3.** Morphological comparison between *Reissantia sessiliflora* (A–D) and *Reissantia indica* (E–H). A, E Flowering twig. B, F. Adaxial surface of leaf. C, G. Inflorescence D, H. Flowers.

**Additional specimens examined:**—INDIA. Karnataka: Uttara Kannada, Shirali, 14° 3' 44.89"N, 74° 34' 2.39"E, 50 m, 13 January 2016 (with flowers), *Page106* (JCB!).

### Key to the species of *Reissantia* found in India

1. Inflorescence paniculate or thyriform, longer than leaves ..... *R. grahamii*
- Inflorescence a dichotomous cyme, shorter than leaves ..... 2.
2. Leaves coriaceous, entire; flowers sessile ..... *R. sessiliflora*
- Leaves membranous, crenulate-serrulate to sparsely denticulate; flowers pedicellate ..... 3.
3. Leaf blade 3.5–14 × 2.5–5 cm; capsule 3–4 × 1–1.5 cm ..... *R. indica*
- Leaf blade 12.5–15.5 × 6–8.5 cm; capsule 6.5–8.5 (–12) × 2.5–3 (–3.8) cm ..... *R. arborea*

### Acknowledgement

We are grateful to the Forest Department of Karnataka for granting us research permits. Field work was supported by the Conservation Leadership Program. We thank Dr. T. V. Ramachandra and Dr. M. D. Subash Chandran, Center for Ecological Sciences, Indian Institute of Science, Bangalore, for their constant encouragement and logistic support. We also thank Mr. Vishnu D.M. for assistance during the field work.

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