

STYLIDIUM DARWINII (STYLIDIACEAE),
A NEW TRIGGER PLANT FROM WESTERN GHATS OF KARNATAKA, INDIA

Sachin A. Punekar

*Paleobiology Group
Agharkar Research Institute
G.G. Agarkar Road
Pune 411 004, Maharashtra, INDIA
sachinpunekar@gmail.com*

P. Lakshminarasimhan

*Central National Herbarium
Botanical Survey of India
P.O. Botanic Garden
Howrah 711 103, West Bengal, INDIA
lakshminarasimhanp@yahoo.co.in*

ABSTRACT

A new species of Stylidiaceae viz., **Stylidium darwinii** Punekar & Lakshmin. is described from Western Ghats of Karnataka, India with illustrations, photographs, and a key to the Indian species of *Stylidium* provided.

RESUMEN

Se describe una nueva especie para la ciencia de la familia Stylidiaceae viz., **Stylidium darwinii** Punekar & Lakshmin. colectada en la parte occidental de Ghats Karnataka, India, así mismo se proporcionan ilustraciones, fotografías y una clave para la identificación de las especies del género *Stylidium*.

INTRODUCTION

The genus *Stylidium* Sw. consists of ca. 300 species distributed in Southeast Asia, Australia and New Zealand (Juliet Wege pers. comm. 2009). In India, the genus comprises two species (Santapau & Henry 1973; Mitra et al. 1998) viz., *S. kunthii* Wall. ex DC. and *S. tenellum* Sw. of which the former is distributed in India (Uttarakhand, Assam, West Bengal, Orissa, Bihar, Madhya Pradesh), Bangladesh, Myanmar, Vietnam, Thailand and Java, and the latter in India (Uttar Pradesh, Bihar, West Bengal, Orissa, Madhya Pradesh, Maharashtra, Karnataka, Tamil Nadu), Bangladesh, Laos, Myanmar, Kampuchia, Thailand, Vietnam, Sumatra and Malaysia (Mitra et al. 1998).

During the course of botanical exploration of Anshi National Park in Karnataka (Punekar ined. 2007), interesting specimens of *Stylidium* were collected. After a perusal of the literature and comparison with herbarium collections at BSI & CAL as well as our own field observations, the specimens were found to be quite distinct from other known species of *Stylidium* and hence are described herein as a new species. The new species belongs to subgenus *Andersonia* (R.Br. ex G. Don) Mildbr. A key to the Indian species of *Stylidium* is also provided for easy identification.

Stylidium darwinii Punekar & Lakshmin., sp. nov. (**Figs. 1, 2A–E**). TYPE: INDIA. KARNATAKA. Uttara Kannada District: Anshi-Ulvi road near Nature Camp, Anshi National Park, 15°00.67 N, 74°23.68 E, 530 m, 24 Sep 2003, *Punekar 187782* (HOLOTYPE: CAL; ISOTYPES: BSI).

Stylidium darwinii Punekar & Lakshmin. sp. nov. *S. kunthii*, *S. inconspicuo* & *S. tenello* affinis. A *S. kunthii* caule glabro (non sparsim glanduloso-pubescenti), foliis omnibus caulinis atque secus caulem dispersis (non vulgo foliis rosulis terminalibus, aliquot caulem dispersis), corolla violaceo-rosea (non alba vel rosea), segmentis corollae anticis ovatis vel deltoideis (non oblongis nec lanceolatis), segmentis corollae posticis ad apicem retusis vel subretusis (non emarginatis) differt. A *S. inconspicuo* foliis minoribus 2–3 × 1.5–1.8 mm (non 4–8 × 2–5 mm), corolla parce glanduloso-hirsuta (non glabra), appendicibus faucis manifestis (nec vix manifestis), segmentis corollae anticis ad apicem subacutis vel acutis (non bilobatis vel integris, obtusis ad apicem), segmentis corollae posticis ad apicem retusis vel subretusis (non bifidis) differt. A *S. tenello*, segmentis corollae anticis ovatis vel deltoideis (non lanceolatis nec oblongo-lanceolatis), segmentis corollae posticis minoribus 0.8–1 × 0.5–0.7 mm (non 2.1–3.3 × 1–1.3 mm) ad apicem retusis vel subretusis (non profunde bifidis), columna ca. 2.5 mm longa (non 4–5 mm longa), timida ad medium (non latiduinis uniformis omnino) differt.

Small, erect annual, herbs, up to 4.5 cm high. Stem simple, glabrous, dark brown to copper brown with few leaves. Leaves scattered, alternate, subsessile, 2–3 × 1.5–1.8 mm, elliptic-oblong or obovate to orbicular,

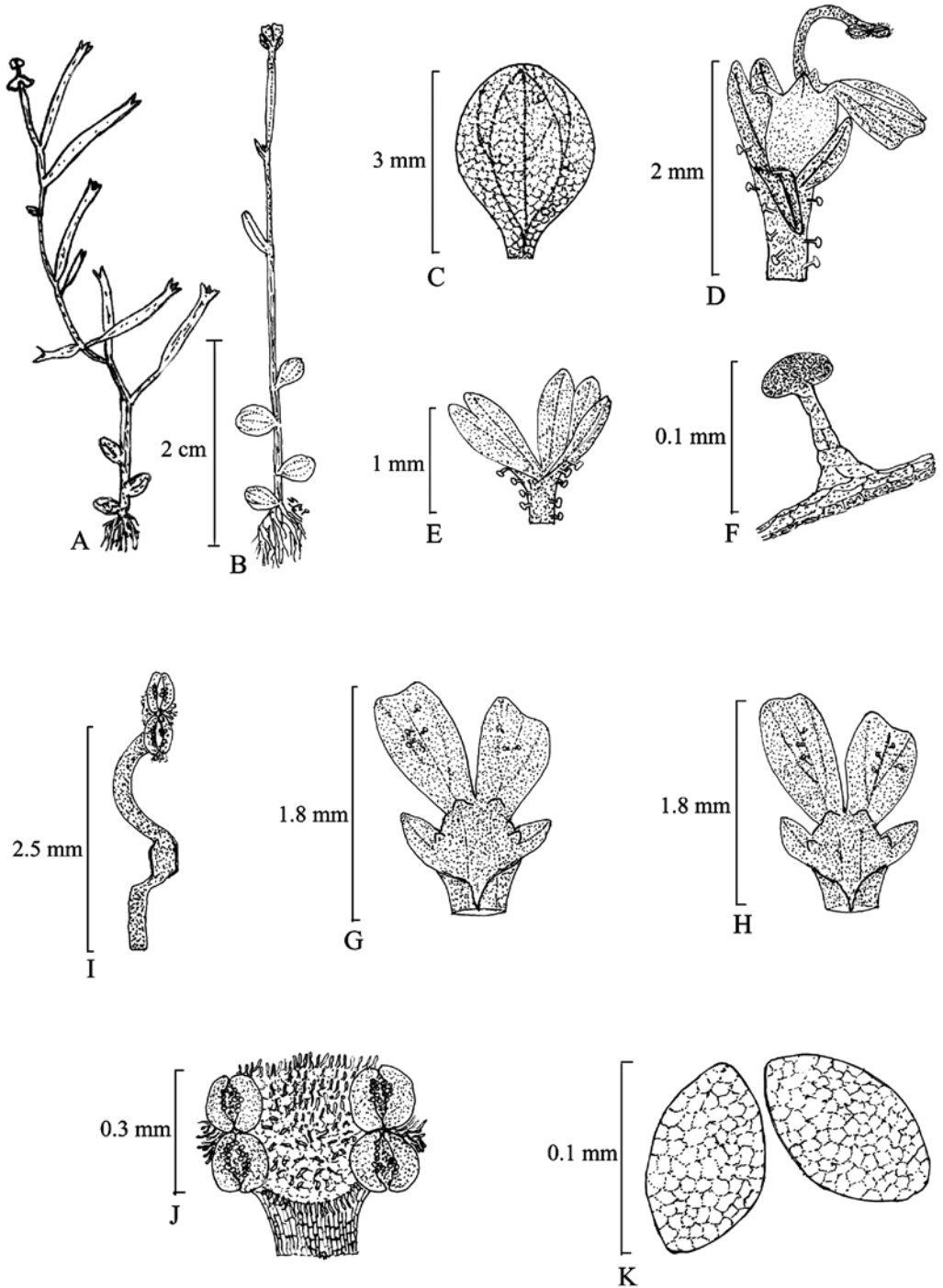


FIG. 1. *Styloidium darwinii* Punekar & Lakshmin. A–B. Habit; C. Leaf; D. Flower; E. Calyx; F. Glandular hair on calyx; G–H. Corolla; I. Column (lateral view); J. Part enlarged of column showing stamens and stigma; K. Seeds. (Drawn by Sachin A. Punekar). Voucher no. Punekar 187782 & 698.



FIG. 2. *Stylidium darwinii* Punekar & Lakshmin. A–C. Flowering and fruiting habit. D. Flower – upper view. E. Insect caterpillar feeding on plant (Photos by Sachin A. Punekar). Voucher nos. Punekar 187782 & 698.

greenish-red, fleshy, apex obtuse-rounded, 3-nerved. Inflorescence 1-many-flowered; bracts ca. 1.6×0.6 mm, oblong, green, fleshy, obtuse and red at apex, 1-nerved. Flowers very small, sessile. Calyx tube (hypanthium) with glandular hairs distally; lobes 5, elliptic, 1-nerved, green, obtuse and red at apex, the 2 anterior ones connate into bifid lobe, ca. 1.4×0.5 mm, posterior 3 free, ca. 1×0.5 mm. Corolla violet-pink, sparingly glandular hairy; tube short, hyaline, ca. 1 mm long, with appendages on the throat; appendages 4, small, deltoid (one at the base of each corolla segment); segments free, posterior ones $0.8\text{--}1 \times 0.5\text{--}0.7$ mm,

obovate, retuse to subretuse at apex, glandular hairy, usually 1–3-nerved; anterior segments much smaller, 0.4×0.15 – 0.2 mm, ovate to deltoid, subacute to acute at apex, 1-nerved; labellum very small, hyaline, usually 0.2 – 0.3 mm, rarely 0.5 mm long, subulate or subdeltoid, acuminate to subacute at apex, 1-nerved. Column much exerted ca. 2.5 mm long, geniculate, swollen and pink in middle, rest hyaline. Stamens 2, lateral, sessile, connate with style; anthers 2-celled, extrorse, anther thecae ca. 0.3×0.15 mm, ovoid, pale yellow, dehiscing apically by a slit, pollen grains ovoid. Ovary inferior, ca. 5 mm long, 2-celled, with many ovules; stigma entire, greenish, hairy. Capsules linear, up to 1 cm long, dehiscent. Seeds very small, ca. 0.1 mm long, ovoid, brownish.

Stylidium darwinii Puneekar & Lakshmin. is allied to *S. kunthii* Wall. ex DC., *S. inconspicuum* Slooten, a species endemic to Java (Slooten 1954; Bean 2000), and *S. tenellum* Sw. *Stylidium darwinii* differs from *S. kunthii* in having glabrous stem (vs. sparsely glandular pubescent), leaves cauline and scattered all over the stem (vs. leaves mostly in terminal rosette, with some scattered along stems), corolla violet-pink (vs. white or pink), anterior corolla segments ovate to deltoid (vs. oblong to lanceolate) and posterior corolla segments retuse to subretuse at apex (vs. emarginate). *Stylidium darwinii* differs from *S. inconspicuum* in having smaller leaves, 2 – 3×1.5 – 1.8 mm (vs. bigger leaves 4 – 8×2 – 5 mm), corolla sparingly glandular hairy (vs. corolla glabrous), appendages clear on the throat (vs. appendages on the throat hardly visible), posterior corolla segments retuse to subretuse at apex (vs. bifid) and anterior corolla segments subacute to acute at apex (vs. bilobed or entire, obtuse at apex). *Stylidium darwinii* differs from a most akin species *S. tenellum* in having anterior corolla segments ovate to deltoid (vs. lanceolate to oblong-lanceolate), posterior corolla segments smaller, 0.8 – 1×0.5 – 0.7 mm (vs. longer, 2.1 – 3.3×1.1 – 1.3 mm), retuse to subretuse at apex (vs. deeply bifid), column ca. 2.5 mm long, swollen in the middle (vs. 4 – 5 mm long, of uniform width throughout).

Bean (2000)—in the revision on the *Stylidium* subg. *Andersonia* (R.Br. ex G. Don) Mildbr.—treated many taxa as synonyms under *Stylidium tenellum* such as *Stylidium roseum* Kurz (Type: Chittagong, Bangladesh), *S. tenellum* var. *minimum* C.B. Clarke (Type: Chota Nagpur at Hazaribagh) and *Epilobium tonkinense* H. Lévl. (Type: Tonkin near Quang-Yen, Vietnam). These synonyms are nothing but a size variant of *S. tenellum* especially considering the height of the plant and number of flowers, but none of them differ in floral morphology. The newly proposed species *S. darwinii* is compared with that of Bean's description for *S. tenellum* which covers the entire length of variation of *S. tenellum* and its synonyms. Mildbraed (1908), Erickson (1958) and Mitra et al. (1998) also treated *S. roseum* as a synonym of *S. tenellum*, while Mitra et al. (1998) in their treatise on the genus *Stylidium* of India for the first time considered *S. tenellum* var. *minimum* as a synonym of *S. tenellum*.

The only available classification of *Stylidium* is that of the German botanist Mildbraed (1908). On the basis of habit and floral morphology *S. darwinii* is currently best placed in subgenus *Andersonia* (R.Br. ex G. Don) Mildbr. until a formal revision of the infrageneric taxonomy of *Stylidium* is completed.

Distribution.—This species is known only from Anshi National Park, Uttara Kannada (North Kanara) District of Karnataka State, India.

Habitat and Ecology.—Rare in the outskirts of evergreen forest near roadsides at an elevation of 530 m above mean sea level in moist gravelly soil near monsoon puddles in association with *Drosera burmannii*, *D. indica*, *Eriocaulon achiotum*, *E. lanceolatum*, *E. truncatum*, *E. xeranthemum*, *Fimbristylus* spp., *Lindernia crustacea*, *L. hyssopioides*, *Lobelia alsinoides*, *Utricularia caerulea*, *U. minutissima* and *U. naikii*. Insect caterpillar probably a Lepidopteran was observed feeding the flower parts.

Flowering and Fruiting.—September–November.

Etymology.—The specific epithet “*darwinii*” is after Charles Robert Darwin, who is well known for his publication of *Origin of Species by Means of Natural Selection*.

PARATYPES: **INDIA. Maharashtra. Uttara Kannada District:** Anshi National Park, $15^{\circ}00.67$ N, $074^{\circ}23.68$ E, 530 m, 28 Sep 2004, Puneekar 388 (MACSG); same locality, 24 Nov 2009, Puneekar 698 (AHMA, MACSG).

KEY TO THE INDIAN SPECIES OF *STYLIDIUM*

1. Leaves strictly cauline, scattered all over stems.
2. Posterior corolla segment retuse to subretuse at apex; anterior corolla segments ovate to deltoid _____ ***S. darwinii***

2. Posterior corolla segment deeply bifid at apex; anterior corolla segments lanceolate to oblong-lanceolate

S. tenellum

1. Leaves mostly in terminal rosette, with some scattered along stems

S. kunthii

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