

***Euphorbia falcata* L. (Euphorbiaceae): a new plant record for India from Jammu & Kashmir**

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Abstract

Euphorbia falcata L. (Euphorbiaceae) is reported as a new plant record for the flora of India from the state of Jammu & Kashmir. The species is presented here along with detailed description and photographs of diagnostic characters to authenticate its identity and for easy recognition in the field.

Key words: *Euphorbia falcata*, New record, India, Kashmir Himalaya, Taxonomy

INTRODUCTION

The genus *Euphorbia* L. of Euphorbiaceae globally comprises of about 2000 species (Shi & Jia 1997). The genus is also widely distributed in India represented by 82 species, of which 31 are endemic to India (Balakrishnan & Chakrabarty 2007). Previously, Hooker (1897) had reported 36 species of *Euphorbia* from the Indian Subcontinent, 17 of which were from the present boundary of India. From the Indian Himalayan state of Jammu and Kashmir (J & K), Stewart (1972) reported 16 species of *Euphorbia*: *E. cornigera* Boiss., *E. geniculata* Ortega [= *E. heterophylla* L.], *E. helioscopia* L. (Plate I, Figure B), *E. hirta* L., *E. hispida* Boiss., *E. indica* Lam., *E. kanaorica* Boiss., *E. maddenii* Boiss., *E. micractina* Boiss., *E. pepplus* L. (Plate I, Figure A), *E. prolifera* Buch.-Ham. ex D. Don, *E. royleana* Boiss., *E. stracheyi* Boiss., *E. thomsoniana* Boiss., *E. tibetica* Boiss. and *E. wallichii* Hook.f. However, Kachroo *et al.* (1977) reported 4 species from cold-arid region of Ladakh, and Sharma and Kachroo (1981) reported 10 species from the sub-tropical region of Jammu in the state.

While conducting floristic studies on the flora of Srinagar (J & K), the authors collected few specimens of hitherto unknown species of *Euphorbia* from the study area. On further examination of these specimens using relevant taxonomic literature [Balakrishnan & Chakrabarty 2007; Flora of Pakistan (http://www.efloras.org/florataxon.aspx?flora_id=5&taxon_id=250090951); Flora of North America (http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=250090951)], it was identified as *Euphorbia falcata* L. The species has been earlier reported from the Indian sub-continent in the neighbouring cold-arid dry regions of Pakistan (Gilgit, Peshwar, Quetta, etc) (Stewart 1972; Balakrishnan & Chakrabarty 2007). However, there is no previous report of this species from any place within the present territory of India. It is in this backdrop that the present paper for the first time reports *E. falcata* L. as an addition to the flora of India from the northernmost state of

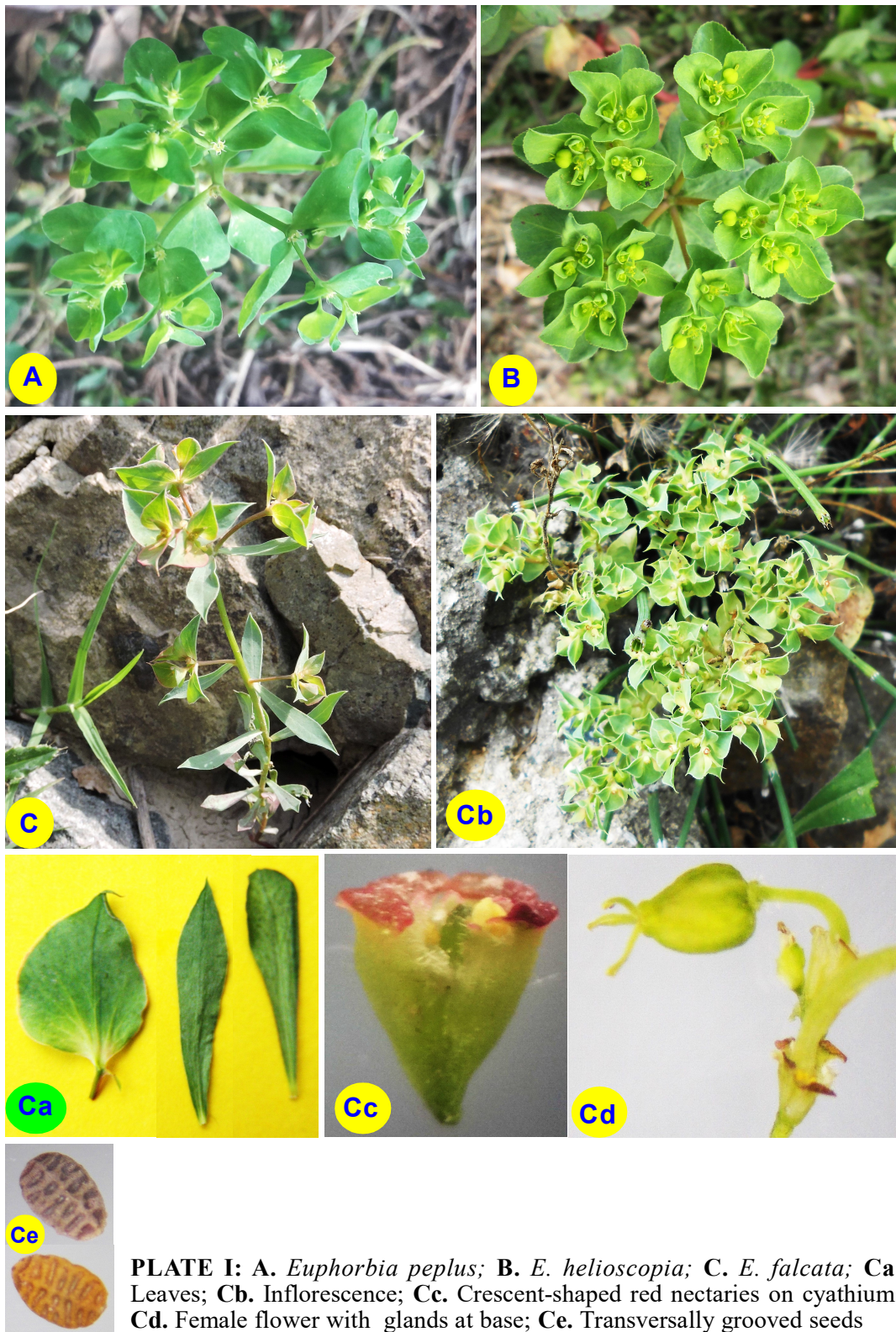


PLATE I: **A.** *Euphorbia peplus*; **B.** *E. helioscopia*; **C.** *E. falcata*; **Ca.** Leaves; **Cb.** Inflorescence; **Cc.** Crescent-shaped red nectaries on cyathium; **Cd.** Female flower with glands at base; **Ce.** Transversally grooved seeds

Jammu & Kashmir. A detailed taxonomic description, supplemented with the photographs of diagnostic characters (Plate-I) and a comparison of the diagnostic characters of this species with other commonly co-occurring species of *Euphorbia* [*E. helioscopia*, *E. peplus*] in the study area (Table 1) is provided to validate the new plant record and to facilitate its easy identification in the field.

Table 1. Comparison of diagnostic characters of *Euphorbia falcata* with its co-occurring *E. helioscopia*, *E. peplus* in the study area

Character	<i>E. falcata</i>	<i>E. helioscopia</i>	<i>E. peplus</i>
Root	Tap root	Fibrous roots	Tap root
Height	5-20 cm	10-50 cm	10-30 cm
Stem	Glaucous	Smooth	Smooth
Leaves			
Shape	Oblanceolate to linear-ob lanceolate	Obovate	Obovate
Margin	Entire - Finely dentate	Dentate	Serrulate
Apex	Cuspidately acuminate	Round	Round
Cyathium			
Gland shape	Semi-lunar	Discoid	Crescent-shaped
Gland number	4	4	4
Gland colour	Reddish	Light brown	Green
Horns	2	Absent	2
Capsule			
Ridges	Absent	Present	Absent
Pubescence	Present	Absent	Absent
Seeds			
Colour	Dark brown	Dark brown	Pale gray
Shape	Ovoid	Ovoid	Angulate ovoid
Surface structure	Furrowed	Reticulately wrinkled	Pitted
Caruncle	Caducous	Persistent	Persistent

Taxonomic treatment:

Euphorbia falcata L., Sp. Pl. 456. 1753; Hook. f., Fl. Brit. Ind. 5: 263. 1887; Stewart, Ann. Cat. Vasc. Pl. W. Pak. & Kashm. 448. 1972. (**Plate-I, Figure C**)

Common names: Crescent spurge, Sickie spurge

Annual herb with tap root, 4–20 cm tall. Stem erect, glabrous, slightly glaucous, dichotomously and divaricately branched at top. Leaves alternate, exstipulate; lower leaves spatulate-lanceolate, finely dentate, 0.2-0.7 cm wide and 1–3 cm long, shortly-petiolate, with clinoid base; upper leaves lanceolate, shortly acuminate; ray leaves (bracts) ovate-deltate, reddish along margins, cuspidate. Peduncle repeatedly bipartite at top, with triangular to oval bracts at the base. Cyathia borne on pseudo-umbellate rays, greenish-yellow, subsessile, 3–5 in each cluster; involucre bracts with four semi-lunar truncate glands at tip. Flowers monoecious, inconspicuous; male flowers with single stamen, mature males protrude out from the involucre; female flower one in each cyathium, central, long pedicellate, come out of involucre and become pendulous, ovary, green; styles 3, pellucid, free, 0.1–0.2 cm long, bifid. Fruit capsule, ovoid, green, 0.2–0.3 cm long, 0.1–0.2 cm wide, deeply three-furrowed and smooth.

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Seeds, yellow-brown, oval, compressed, 1 – 2 mm long, 0.1 – 0.2cm wide, with transversally furrowed surface; caruncle caducous.

Specimens examined: INDIA, J & K, Kashmir, Srinagar, 23.05.2014, 1607 m, *Insha & Khuroo*, 258 (KASH); 23.04.2015, 1607 m, *Insha & Khuroo*, 501 (KASH).

Habitat: Dry sun-facing slopes among rocks along roadside. During the present study, on average, 18 individuals per 1m² quadrat were recorded.

Raunkiaer's life-form: Therophyte

Flowering & Fruiting period: May – August

Associated species: *Convolvulus arvensis* L., *Medicago sativa* L. and *Equisetum arvense* L.

Global Distribution: Africa, Asia Temperate, Asia Tropical and Europe

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