

A revision of geophytic *Euphorbia* species from India

by Soumen Aditya



Fig. 1: *Euphorbia fusiformis* with its root stock partially exposed

A revision of three *Euphorbia* species in the succulent rich north western to south western parts of India is a voyage of discovery for the enthusiast. One of the most diverse taxa of flowering plants is the genus *Euphorbia*. Of approximately 195 species of *Euphorbia* found in India, only a few show succulence, however. For convenience these can be divided into two groups: dendroid (tree like) species, and geophytic species. At present all known geophytic euphorbias in India are endemic. I shall discuss here only three geophytic succulent *Euphorbia* species from India.

The first description of a geophytic *Euphorbia* species from India was published in 1825 by D. Don. He adopted the manuscript name of *Euphorbia fusiformis*,

given to a specimen collected by F. Buchanan-Hamilton in Nepal. Seven years later, in 1832, W. Roxburgh described *Euphorbia acaulis*, based on a plant collected by B. Smith from northeast India at Purnea in the eastern Himalayan foot hills. Again a few years later, in 1836, *Euphorbia nana* and *Euphorbia humilis* were added by J. F. Royle based on his own collections from the Himalayan foothills near the Nepalese border. J. D. Hooker, in his "Flora of British India" in 1887, considered *E. humilis* and *E. nana* as well as *E. acaulis* to be synonymous with *E. fusiformis*.

In 1906, Cooke collected some specimens from the Western Ghats in the Maharashtra State and named all of them *E. acaulis*. However, in 1921, Blatter & Hallberg, recognizing many differences between the



Fig. 2: *Euphorbia fusiformis* in habitat



Fig. 3 Another specimen of *Euphorbia fusiformis* in habitat



Fig. 4: Leaf details of *Euphorbia fusiformis*



Fig. 5: Flowering *Euphorbia fusiformis* (photo: Daphe & Albert Pritchard)



Fig. 6: *Euphorbia fusiformis* – the tuber branching at its apex



Fig. 7: A fully exposed tuber of *Euphorbia fusiformis*

Himalayan collections and those of the Western Ghats, established a new species, *Euphorbia khandalensis*. Finally, in 1931, Blatter & McCann described a new geophytic *Euphorbia* from the south-western plateau of Maharashtra State, near Panchgani and Mahabaleshwar, as *Euphorbia panchganiensis*.

Another interesting note is that N. P. Balakrishnan and T. Chakrabarty in 2007, in “The Family Euphorbiaceae in India” (p. 280) treated the name *E. panchganiensis* as a synonym of *E. nana* Royle, which was published almost a century earlier. To my knowledge this is not justified, since *E. nana* was described from the Himalayan region, while *E. panchganiensis* is from the southwestern plateau. I shall discuss the species as they are presently known keeping the name *Euphorbia panchganiensis*.

I travelled extensively in the field and studied the Indian geophytic euphorbias in great detail. I have pointed out a major weakness in the capacity of people to compare what is written with what is seen, and also to compare plants and illustrations. I think, apart from the problem of variation in a population, there is a problem of different habitat conditions which will cause some phenotypic differences. There is still a very large area that remains unexplored. I hope further detailed studies will solve this enigma once and for all.

Euphorbia fusiformis Buch.-Ham. ex D. Don 1825, Prodr. Fl. Nepal.: 62

Synonyms: *E. acaulis* Roxb., 1832, Flora Indica 2: 472; *E. nana* Royle, 1836, Illustr. Bot. Himal. 329, t. 82; *E. humilis* Royle, 1836, Illustr. Bot. Himal. 329, t. 82, f. 2

Description: Succulent herb, rootstock cylindrical-fusiform, buried in the ground, 12 to 85 cm long (sometimes even 100 cm long) and 3 to 5.5 cm in diameter, with 5 to 8 roots emanating in all directions over the rootstock, which is sometimes branched near the apex, with 2 to 3 growing points produced below soil level. Leaves glabrous, appearing after flowers, fleshy, numerous, arching, mostly irregular in shape, broadly to narrowly lanceolate-oblong, 12 to 25 cm long and 1.5 to 5 cm broad, obtuse, with a reddish prominent midrib on the lower surface, mostly green, with sharp reddish, slightly crispate or undulate margins; petiole to 5 cm long. Cymes yellow green, 3.5 to 4.5 cm long, glabrous, peduncle three times branched, cyathia bisexual, yellow, bracts green, cyathial glands oblong, yellow, male flowers appear before female, stamens 3 mm long, pollen yellow, female flower with

styles 3, connate to the middle for 1.5 to 2.0 mm, then free for 2.0 mm, bifid. Gynophore erect to 12 mm, capsule 7.5 to 8 mm in diameter, cocci compressed, slightly rounded, glabrous, greenish in colour; seeds ovate, smooth, very dark grey in colour.

Type Locality: NE of Himalayan foothills, Nepal, Buchanan-Hamilton, ex D. Don, 1825

Distribution: Tropical Himalayan range to lower Siwalik range, West Bengal, U. P., Uttaranchal, also present in Nepal.

Habitat: In open or semi-shady places, amongst grasses, present only on hill slopes.

Soil: Sandy, pale yellowish, clay-loamy, quartzite soil.

Euphorbia fusiformis has one of the largest tuberous root stocks in this genus. The species epithet refers to its fusiform root. Locally it is called “Ban-Muli” by the tribal people. It is said to be of medicinal value, its latex being used as an antidote for snake and scorpion bites. The tuber pulp is used as a cure for arthritic pains in some regions of the Himalaya.

I could not find up to date any plants from B. Smith's locality near Purnea in Bengal (presently Bihar State). During my effort to relocate it in October of 2007 near the village of Mohand on the way to Dehradun on the western lower slopes, I found several populations in the surrounding hills, about 25 km on the way to Dehradun. Also a few plants were found near “Shastradhara”. In this locality the plants are threatened by pressure from human activities.

Euphorbia panchganiensis, Blatt. & McCann 1931 (1930, publ. 1931), Proc. Asiat. Soc. Bengal 26: 353

Description: Succulent herb, with irregular tuberous to cylindrical root stock. Tuber with many or few upward and downward oriented long fleshy roots. Tuber size depends on soil structure. Sometimes it is branched at the apex, with a slightly brownish, papery bark on the tuber. Stems 5 to 25 cm long and 3 to 5 cm in diameter, not well developed above ground. Leaves appear after flowering in May and June, 5 to 8, in a rosette, glabrous, fleshy, 5 to 12 cm long, 2.5 to 3.5 cm broad, narrowly elliptical, lanceolate, oblong or oblanceolate, apex obtuse, green in colour, margin slightly wavy,

reddish; sometimes deep red patches present when the climatic condition is very dry, with a prominent single rib on the lower surface, glabrous; petiole very short, only 8 to 10 mm long (very much shorter than those of *E. khandallensis*), red in colour. Cymes up to 6 to 8 cm long, stout, fleshy, dichotomously branched, red with purplish to pinkish colour. Bracts purple to pinkish to whitish, variable in size, margin wavy, lobes involucre pinkish; involucre with 5 glands, broadly oblong male flowers with anthers purple yellow. Female flower appears after male flowers, styles 1.5 to 2.0 mm long, connate to the middle, with stigmas 3, greenish, bifid for 1.2 to 1.5 mm long. Capsule sessile, 3 cocci, 3.5 × 7 mm, compressed, rounded. Seeds very smooth, gray. Flowering time early in February to March, fruiting in March to July.

Type locality: South western plateau, near Panchgani and Mahabaleshwar, Satara District, Maharashtra State.

Distribution: Satara District, southwestern plateau, Panchgani, Mahabaleshwar, Pune District, Purandhar hills and Sindhudurg District

Habitat: Open flat grassland and rocky gravelly stone cracks on the plateau. Not found on lower slopes.

Soil: Very hard, stony lateritic soil.

Specimens examined: Pune, Purandhar, Santapau 6168, May, 1945. Panchgani plateau, Kanodia 87068, 19.02.1970, B.S.I., re-examined as *E. panchganiensis* on Panchgani Table Land, and Purandhar. Soumen Aditya 22.08.2008

Euphorbia panchganiensis is an endemic geophytic *Euphorbia* from Maharashtra State. It is the only one that lives at very high altitude (1,334 m). The species was found on the flat igneous rock plateau of Panchgani, locally called "Table Land", (an alternative, descriptive name for a plateau). Panchgani is a Marathian



Fig. 8: *Euphorbia panchganiensis* in habitat at the Panchgani Plateau



Fig. 9: *Euphorbia panchganiensis* in habitat at the same locality



Fig. 10: Flowering *Euphorbia panchganiensis* in habitat at the Panchgani Plateau

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