



**CRASSOCEPHALUM MOENCH (ASTERACEAE) AN INVASIVE ALIEN GENUS: A NEW RECORD FOR THE STATE OF ODISHA, INDIA**

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**ABSTRACT**

The genus *Crassocephalum* Moench of family Asteraceae (tribe Senecioneae) is first time reported for the flora of Odisha from Koraput district. *Crassocephalum crepidioides* (Benth.) Moore and *Crassocephalum rubens* (Juss. ex Jacq.) S. Moore var. *sarcobasis* (DC.) C. Jeffrey & Beentje have been reported first time growing as problematic weeds in the grassland, crop field and summit of the hill. Detailed descriptions with illustrations, geographic distribution, and economic importance of both species are described.

**Key words:**

Odisha, Koraput, grassland, geographic distribution

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**INTRODUCTION**

Odisha a state of primitive culture and nourished sculpture is widely endowed with many cryptogamic and phanerogamic diversified flora. Among them many are economically as well as medicinally important plants and some are rare, endemic and endangered also. It lies between 81°37' and 87°53' East longitudes and 17°78' and 22°73' North longitudes and covers an area of 155, 820 sq. km. The average rainfall is 1482 mm and average humidity is 45-50%. Climate follows a typical seasonal weather pattern. The peak temperatures are usually reached in May-June and can be as high as 45°- 48 °C. The mean maximum temperature is 32.8 °C and the mean minimum temperature of 22.8°C. The onset of monsoon is usually from July to September, with monsoon peak during July to August. It is by and large underlain by Precambrian rock. A little less than 25% of the total area is constituted by phanerozoic rocks. Six types of soils like costal alluvium, river alluvium, lateritic, red, black cotton are found along with Tropical semi evergreen, Tropical moist deciduous, Tropical dry deciduous, sub-tropical broad-leaved and littoral as well as swampy forest. Senecioneae is the largest tribe of the Asteraceae comprising of about 150 genera and 3,000 species (Pelser et al., 2007). Its members exhibit probably the widest possible range of form to be found in the entire plant kingdom, and include annuals, minute creeping alpiners, perennial herbs,

shrubs, climbers, succulents, trees, and semi-aquatic plants (Barkley, T.D. 2008).

**MATERIALS AND METHODS**

Specimens of *Crassocephalum crepidioides* (Benth.) Moore and *Crassocephalum rubens* (Juss. ex Jacq.) S. Moore var. *sarcobasis* (DC.) C. Jeffrey & Beentje were collected from different areas of Koraput during field surveys in 2015-2016. After collection necessary measurements and photographs of plants specimens were taken at each site in the field. Then the specimens of both plant species were brought back to the Bio Systematic Research Laboratory where morphological characters (both vegetative and reproductive) were thoroughly studied for each species. For accurate identification and study of the minute details (corolla, style, stamens, achenes, trichomes etc.), specimens were studied under the Stereo zoom microscope. The identity of the plant specimens were verified by following the 'Flora of China' (Shi et al., 2011) and the 'Flora of North America' (Barkley, 2008). A thorough scrutiny of literature (Botany of Bihar and Orissa, Haines 1921- 1925; Supplement to the Botany of Bihar and Orissa, Mooney 1950; The Flora of Orissa, Saxena and Bramham, 1994-1996) revealed that these two species has not yet been reported from within the geographical boundary of Odisha state and thus, turned out to be a new plant record for Odisha. The specimens of both species were preserved and submitted to the Post Graduate Department of Botany, Utkal University Vani Vihar, Bhubaneswar, Odisha.

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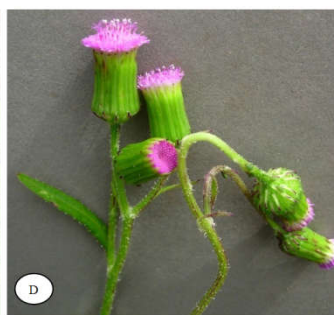
A. *Crassocephalum crepidioides*  
individual plant with inflorescence



B. *C. crepidioides* whole plant  
inflorescence.



C. *Crassocephalum rubens*  
var. *sarcobasis* whole plant



D. *C. rubens* var. *sarcobasis*  
individual plant with  
inflorescence

### Taxonomic Enumeration

The genus **Crassocephalum** Moench, Methodus. 516. 1794 is mainly from tropical Africa which contains about 24 species.

*Crassocephalum* species are herbaceous, annual or perennial. Leaves alternate. Capitula discoid or rarely radiate, often pendulous by anthesis, when discoid oogamous; florets numerous, bisexual. Involucre cylindric, calyculate; phyllaries uniseriate, subequal, linear-lanceolate, with narrow scarious margins, erect at anthesis, later spreading and reflexed; receptacle flat, glabrous, areolate. Corolla finely tubular, upper part gradually expanded into a short limb; lobes 5. Anthers obtuse or auriculate at base. Style branches slender, papillose, with a short to long appendage of fused papillae. Achenes narrowly cylindric, ribbed, with gray-white ring at apex. Pappus hairs fine, numerous, white, early deciduous.

### Key to the species

1. Capitula several to numerous in terminal corymbiform cymes, shortly pedunculate, corolla brick red or buff.....*Crassocephalum crepidioides*
  1. Capitula 1-9, solitary on long peduncles, corolla purple or pink.....*Crassocephalum rubens* var. *sarcobasis*

**Crassocephalum crepidioides** (Benth.) Moore, J. Bot. 50: 211. 1912; *Gynura crepidioides* Benth. in Hook., Niger Fl. 438.1849. Family: Asteraceae.

**Local name:** Sthulasheershaa; English: Ebolo, Fireweed, Thickhead

**Habit:** Annual herb, 40-120 cm tall. **Habitat:** Terrestrial mesophyte. **Stem:** Erect, striate, soft ribbed, apically with short thick hairs, lower down glabrescent; branches densely pubescent, sparingly branched aromatic, angular, greenish.

**Leaf:** Alternate, petiolate, petiole 2-2.5 cm; blade elliptic or oblong-elliptic, 7-17 × 2.5-5 cm, membranous, very thinly pubescent or both surfaces glabrous or sub-glabrous, base often long, decurrent into the petiole; uppermost leaves smaller, sessile, margin irregularly serrate or double-serrate, sometimes pinnately lobed at base, apex acuminate. **Inflorescence:** A capitulum. **Flower:** Capitula several to numerous in terminal corymbiform cymes, homogamous, shortly pedunculate, 3-5 mm in diam. **Involucres** cylindric, 1-1.2 cm, basally truncate, with few unequal linear bracteoles; bracts linear, 0.5-10 cm long, calyculus 6-21 × 2-6 mm, bracts peduncles densely pubescent; outer involucral bracts free, linear, 1-4 mm long. **Pappus:** 7-13 mm, early deciduous, hairs fine, numerous, white, early deciduous. **Phyllaries:** Uniseriate, linear-lanceolate, equal, ca.1.5 mm wide, margin narrowly scarious, apically puberulent, green with dark-brown, acute, papillose tops, lanceolate, 8-12 mm long, thinly hairy, erect during anthesis, pellucid-marginate, cohering into a cylindrical tube, ultimately spreading, reflexed; **Florets** finely tubular, upper part gradually expanded into a short limb; lobes 5, bisexual; corolla red-brownish or orange red, rarely yellow, 8-10 mm; lobes 5, ca. 1 mm. **Androecium:** Stamen 5, with entire or shallowly incised base, purple, apex acute, inserted within corolla tube; filaments adnate to proximal part of corolla; basifixed, coalescent into a tube, base caudate or not, apex with (rarely without) a sterile, ovate or lanceolate appendage; pollen grains usually tricolporate, echinate or sometimes lophate, caveate, anthers obtuse or auriculate at base. **Gynoecium:** Style apically bifid, arms long, thin, truncate, more or less penicilliate top tipped by a subulate appendix, branches acute, papillose; ovary inferior, 1-loculed; ovule 1, basal, anatropous. **Fruit:** Achenes brownish with paler base and apex, narrowly oblong, 1.8-2.3 mm, ribbed, cylindric-linear, thinly pubescent, 2 mm long; pappus hairs numerous, thin, silky, minutely toothed, white, caducous, 9-10 mm long. **Flowering & Fruiting:** July-December.

**Distribution:** Throughout tropical Africa, from Senegal east to Ethiopia and south to South Africa, Madagascar and Mauritius. It was introduced and naturalized throughout tropical and subtropical Asia, Australia, the New Hebrides, Fiji, Tonga and Samoa, and locally in the Americas.

**Nature:** An invasive alien species for India (Reddy *et al.*, 2008) as well as for Odisha (Nayak *et al.*, 2015).

**Specimen examined:** Koraput, Tayaput, Panchpatmalli hill range, 27.6.2015, RM 3445 (Herbarium, Utkal University, Vani Vihar, Bhubaneswar), 955m.

**GPS Reading:** N 18° 53' 115" & E 83° 03' 905"

**Native therapeutic uses:** The leaves are used to treat indigestion. Leaf lotion is used against headache.

**Associated species:** Plant is found among the common grasses like *Bothriochloa bladhii*, *Cynodon dactylon*, *Desmodium triflorum*, *Oxalis corniculata* etc.

**Crassocephalum rubens** (Juss. ex Jacq.) S. Moore, J. Bot. 50: 212. 1912. var. *sarcobasis* comb. nov., *Gynura sarcobasis* DC. Prodr. 6: 300.1838., *Crassocephalum sarcobasis* (DC.) S. Moore. in J.B. 50: 211.1912.

**Local name:** Mansi sthulasheershaa, English: Yoruban bologi.

**Habit:** Annual herb, 20-100(-150) cm tall. **Habitat:** Terrestrial mesophyte. **Stem:** Erect, usually repent at base, striate, simple

or few branched, pubescent or subglabrous, angular, greenish. Leaf: Alternate, sessile; blade obovate, oblanceolate, elliptic, lanceolate, or ovate, 1-20 × 0.5-7.5 cm, pubescent at least abaxially on veins, cuneate or attenuate into petaloid base, margin sinuate-dentate to sinuate-serrate, unlobed or lyrate-pinnately or pinnately lobed, apex rounded to acute. Inflorescence: A capitulum. Flower: Capitula 1-12, solitary on long peduncles. Involucres cylindric, 2.5-7 mm in diameter; with 5-22 calycular bracts. Pappus: 7-12 mm, early deciduous, hairs fine, numerous, white, early deciduous. Phyllaries: Uniseriate, linear-lanceolate, equal, ca. 1.5 mm wide, 13-25, commonly 13; often tinged purple below apex, glabrous or sparsely pubescent, apex purple. Florets tubular, bisexual; corollas blue, purple, magenta or mauve, sometimes pink or red; lobes 5. Androecium: Stamen 5, inserted within corolla tube; filaments adnate to proximal part of corolla; anthers basifixed, coalescent into a tube, base caudate or not, apex with (rarely without) a sterile, ovate or lanceolate appendage; pollen grains usually tricolporate, echinate or sometimes lophate, caveate, anthers obtuse or auriculate at base. Gynoecium: Style apically bifid, branches acute, papillose. Ovary inferior, 1-loculed; ovule 1, basal, anatropous. Fruit: Achenes brownish, 2-2.5 mm, ribbed, hairy in grooves.

Flowering and Fruiting: December - April

**Distribution:** West Africa from Liberia to Cameroon, Sudan, Ethiopia and southwards to South Africa; Madagascar, Comoro and Mascarene Islands.

**Nature:** An invasive alien species for Odisha.

**Specimen examined:** Koraput, Tayaput, Panchpatmali hill range, 27. 6. 2015, RM 3445 (Herbarium, Utkal University, Vani Vihar, Bhubaneswar), 955m.

**GPS Reading:** N 18° 40' 229" and E 082° 59' 175".

**Native therapeutic uses:** They are given to women after child birth for their laxative properties. They are made into poultices to treat burns.

**Associated species:** Plant is often found to be associated with *Oxalis corniculata*, *Cynodon dactylon*, *Bothriochloa pertusa*, *Bothriochloa bladhii* and *Hypericum japonicum* etc.

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