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Utricularia caerulea L.: a carnivorous plant of Odisha

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ABSTRACT

Utricularia is a cosmopolitan carnivorous genus with more than 38 species in India, of which 14 occur in Odisha, commonly known as Golden Bladderwort and is distributed throughout the world. *Utricularia* species exhibit a range of habits including free-floating or affixed aquatic, semi-aquatic, terrestrial, lithophytic or epiphytic. It is reportedly nutritious, mildly astringent and diuretic, preadapted to nutrient-poor, waterlogged soils. The present study highlights the morphology, habitat and distribution of *Utricularia caerulea*, bladderworts of Odisha.

Utricularia shows the presence of flat bladders or utricles of varied shape and size with bristle, so named as Bladderworts (Gordon & Pacheco 2007), represents the most derived genus of carnivorous family Lentibulariaceae (Peroutka et al. 2008, Mishra & Kumar 2021). It is divided into three monophyletic subgenera, *Polypompholyx*, *Bivalvaria* and *Utricularia* (Müller and Borsch 2005; Fleischmann 2012a; Jobson 2012a). So far 275 species have been described from this genus with an

unique body plan characterized by carnivorous bladders, 2-lipped calyx, personate corolla and they have no true roots, the rudimentary anchoring rhizoids lack a root cap (Rahman 2005; Chew & Haron 2011). It is cosmopolitan, found in all continents from subarctic landscapes to tropical rain forest including wet grounds, ponds, lakes and other marshy areas, epiphytic conditions and seasonal deserts (Brummit 2007; Rahman 2005) and generally absent from arid areas and oceanic

islands (Taylor 1989). The traps of terrestrial species occupy saturated interstitial spaces; those of epiphytes are surrounded by a film of moisture. Traps are attached to other organs by stalks whose length and thickness varies. In most species the bladder wall is two cells thick except at the threshold and vascular bundle (Compton 1909; Reifenrath et al. 2006). It can be classified as rootless free-submerged, free-floating or soil binding root-like organs (rhizoids), and emergent; and according to their life cycle, as annual or perennial (Cook 1996). In India it is represented by about 38 species (Mishra & Kumar 2019; Kumar et al. 2019). In Odisha the genus represented by about 14 species (Mishra & Kumar 2019). Among these *Utricularia caerulea* is an important bladderworts distributed from Madagascar to Australia and Japan through India and Malaysia. In India it was reported from Maharashtra: Raigad, Ratnagiri, Satara, Sindhudurg, Karnataka: Belgaum, Hassan, N. Kanara, Shimoga, Kerala, Tamil Nadu, Odisha. Kamble et al. and Bhowmik & Dutta in 2012 reported this species from Andaman and Nicobar Island and from Tripura respectively.

***Utricularia caerulea* L. (Figure 1)**

Synonyms: *U. albino* Ridl., *U. capillaris* D. Don, *U. racemosa* Wall.

Botany: An annual, marshy terrestrial herb, Rhizoids arising from the base of the inflorescence stalk, numerous, capillary, glandular, rarely branched up to 3 cm long, Stolons sparsely glandular, branches hyaline, 1 – 2 cm long, Leaves 4.0-8.0 x 1.0-1.4 mm, spatulate, rounded to obtuse at apex petiolate, 1- nerved, 1- 6 per stolons, Traps ovoid, dimorphic, short- stalked on vegetative organs, beaked, oblique at mouth, glandular. Larger ones 1-2 mm long surrounded by a funnel shaped rim with

radiating rows of long stalked glands on the inner surface. Smaller one 0.2 -0.4mm long, Racemes 3 -4 cm long, simple or rarely branched, terete or flattened, glabrous, Inflorescence stalk erect 15 -30 cm long , flowers clustered at apex, 4 or 5-flowered, Bracts elliptic to rhomboid, basisolute, sparsely papillose without. Bracteoles linear, papillose up to 1.5 mm long, Flowers 4 – 6 mm long, Pedicels up to 2 x 0.4 mm, erect, papillose, often recurved in fruit, Calyx lobes subequal, hooded, papillose, upper lobe broadly ovate to orbicular, apex rounded; lower sepal broader, 2 – 3 mm long, Corolla purple, pink, blue or violet, papillose, upper lip narrowly ovate-oblong, truncate at apex, inferior part broadly deltoid; lower semi orbicular to broadly ovate, yellow in throat, rounded or shallowly 3-lobed at apex, Spur horizontally projected, often curved upwards, concave-subulate, Stamens c. 1 mm long; filaments strap-shaped, curved, anther theca distinct. Pistil 1 mm long, ovary ovoid, attached to upper calyx-lobe at base, style distinct; stigma lower lip orbicular, semiorbicular, hairy; upper lip filiform, glabrous. Capsule subglobose to obliquely ovoid, papillose, Capsules globose, c. 2 mm, dehisce vertically by a ventral slit, Seeds ovoid, ellipsoid to obovoid (Kamble et al. 2012; Bhowmik & Dutta in 2012; Rahman 2005; Subramanyam and Kamble 1968).

Flowering and Fruiting period: August to April with a peak during November to February.

Chromosome number: $n = 20$ (Subramanyam and Kamble 1968).

Habitat: In wet or marshy sandy soil, mud, on hill top and slopes amidst grasses.

Distribution: Africa, Australia, Malaysia, New Zealand, Northern Asia, including the USSR.

Associate flora: *Utricularia polygaloides*,
Drosera burmannii, *Drosera indica*,

Eriocaulon quinquangulare, *Rotala indica*,
Xyris indica etc.



Figure 1: *Utricularia caerulea*

FUTURE ASPECTS

The present study could provide a framework for increasing progress in understanding carnivorous plants. Field survey as well as experimental works will provide a new sight in to the physiology, medicinal uses, ecological status and the evolutionary biology. All of these will leads to better conservation efforts to these meat eating plants.

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