A NEW SPECIES OF UTRICULARIA LINN., LENTIBULARIACEAE FROM BANGALORE DISTRICT, KARNATAKA^{1,2}

K. SUBRAMANYAM AND S. N. YOGANARASIMHAN

Department of Botany, Central College, Bangalore and Regional Research Centre, Jayanagar, Bangalore

ABSTRACT

Utricularia sampathii, a new species of Lentibularizceae, collected near Bannerghatta, Bangalore district, Karnataka has been described and illustrated.

During field studies on various species of Utricularia occurring in Karnataka state, a species was observed during October-November, 1976 near Bannerghatta, behind Dhyan Ashram, about 10 kms from Bangalore on an open semimarshy area on either side of a very small stream. Further collections which were extended during the years 1977 and 1978 respectively from the same locality during October and November revealed that it was a new species closely allied to U. caerulea Linn.

Urticularia sampathii Subr. et Yog. sp. nov.

Urticularia caerulea Linn. affinis, tamen differt foliis 2-6 in rosulis, stolonibus, dispositis; scapis brevioribus; floribus 2, raro 3 ad apicem congestis, flavidis ad fere albis, maculis 2 rotundatis flavisque ad basin palati; calcari recto, apice incisurato; palato calcari breviore; pedunculis fructuum suberectis; seminibus, hyalinis distincteque reticulatis.

Utricularia sampathii Subr. et Yog. sp. nov.

Allied to Utricularia caerulea Linn., but differing in leaves arranged in rosettes

1. Accepted for publication on July 15, 1980.

of 2 to 6 on stolons; scapes shorter; flowers 2 or rarely 3, congested towards apex, pale yellow to almost white with 2 rounded yellow spots at the base of the palate; spur straight, apex notched; palate shorter than spur; fruiting pedicels suberect and seeds smooth, transparent, distinctly reticulate.

Terrestrial herbs, inhabiting wet marshy places; roots few, capillary, at base of scape during anthesis; stolons many from base of scape, capillary, branched. Leaves gradually passing into an indistinct petiole and including petiole up to 1 cm long, scattered in clusters of 2 to 6 on the stolons, opposed to branches ; lamina upper portion linear spathulate, 1-nerved ; apex rounded, margin entire, base tapering gradually into a filiform petiole. Traps dimorphic, many, scattered all along stolons and on abaxial surface of laminae and on petioles, rounded or flask-shaped, continued into a short neck, stalked ; stalk eccentrically attached ; mouth terminal, funnel-shaped, oblique, the upper rim produced into a carinate beak, as long as or sometimes longer than body of trap whose margin and surface covered with rows of gland-tipped hairs; large traps including stalks up

Our sincere thanks are due to Dr. Rev. Father K. M. Matthew for the latin diagnosis, Professor M. Nagaraj, Director, CCRAS and Assistant Director, RRC, Bangalore for facilities and Miss D. Lalita for pollen preparations; one of us (K. S.) is thankful to the University Grants Commission for financial assistance.

^{2.} Studies on Indian Utricularia Linn. 6.



to 2.5 mm long, carinate beak prominent; small traps similar in shape to large traps, including stalks 1 mm long, carinate beak in the form of a minute projection. Inflorescence 3.2 to 5 cm long, erect, straight, rarely once-branched in the middle; scape filiform, glabrous; scales on scape few, medifixed, similar to bracts; flowers 2 to 3, congested towards apex of scape ; bracts green, medifixed, elliptic, broad in the middle, acuminate at both ends, 1-nerved; bracteoles similar to bracts, smaller, broader towards middle. 1-nerved, submedifixed; pedicels very short, 1 mm long, minute, filiform, suberect in flower and fruit; calyx lobes slightly unequal, minutely papillose without; upper lobe enclosed by lower lobe basally, accrescent; upper lobe 2×1.5 mm at anthesis, ovate, obtuse at apex, radially 5-6-nerved, some nerves dichotomously branched ; lower calyx lobe $2 \times$ 2.2 mm, obovate, slightly large, inrolled towards the base and enclosing the upper, obovate, notched at apex, radially 6-7-nerved ; corolla pale yellow to white with 2 distinct yellow spots at base of palate, densely and minutely pipillose without; upper lip slightly longer than upper calyx lobe, 2.3×1.5 mm, broadly obovate, retuse at apex, open and sparselyveined; lower lip 2.5×1.5 mm, much shorter than spur, broadly orbicular, gibbous towards centre, open and sparsely reticulately-veined ; spur 4×1.5 mm long, almost straight, horizontal, longer than palate, apex notched; stamens 2; filaments less than 1 mm long, slightly flattened ; anther-thecae subdistinct ; ovary

globose, slightly adnate to base of upper calyx lobe; style short; stigma with lower lip semi-orbicular, upper lip reduced to a small deltoid tooth. Capsules 2 mm in diameter, globose, enclosed by enlarged persistent calyx lobes; upper calyx lobe 2×2 mm and lower calyx lobe 2×2.5 mm; placenta globose, orbicular, shallowly dimpled; dehiscence by vertical slit; seeds numerous, minute, ellipsoid; testa reticulate; testa cells distinct, longer than broad (Figs. 1-42).

Holotype (Subramanyam and Yoganarasimhan 123) and Isotypes (Subramanyam Yoganarasimhan 123A-B) collected and behind Dhyan Ashram, by the side of a small stream near Bannerghatta (12°50'N and 77°45'E) about 10 kms from Bangalore at 900 m on 3.11.1976 in flowering and fruiting conditions. The paratypes (Subramanyam and Yoganarasimhan 127) were also collected from the same locality on 9.11.1977. The Holotype is deposited in CAL, the isotypes and paratypes are deposited at the herbarium of the Regional Research Centre (Ay.), Jayanagar, Bangalore 560 011, (RRCBI).

The authors wish to dedicate this species to the late Dr. M. A. Sampathkumaran, University Professor of Botany, University of Mysore, for his great and sustained interest in the Flora and vegetation of peninsular India.

Glands: Short-stalked unicellular glands are distributed all over the surface of the dimorphic traps (Figs. 11, 12, 13). In addition, on both the large-sized and small-sized traps, multicellular glandular hairs or trichomes are distributed on

Figs. 1—18. Utricularia sampathii sp. nov. Fig. 1. Base of flowering plant showing roots, stolons, leaves, traps and scape-base. Fig. 2, 3. Single and two leaves arising together on stolon. Fig. 4. Leaf bearing dimorphic traps. Fig. 5. Rosette of five leaves on the stolon bearing traps. Fig. 6. Flowering scape. Fig. 7. Infructescence. Fig. 8. Scale leaf on scape. Fig. 9. Abaxial and adaxial view of scale leaves. Fig. 10. A part of stolon bearing dimorphic traps. Figs. 11, 12. Lateral views of large and small traps. Fig. 13. Gland on outer wall of trap. Figs. 14, 15, 16. Multicellular glands on the carinate beak and mouth of trap. Figs. 17, 18. Quadrifids and bifds on inner wall of trap.

















4.0 MM

23

0.2 MM

MM I-O

27

MM 1-0

3

30

their various parts. Along the outer surface of the carinate lip, overarching the oblique mouth, these trichomes are sparsely distributed ; each such trichome or glandular hair is short-stalked, consisting usually of two unequal cells, supporting a rounded glandular head, containing dense granular cytoplasm (Figs. 14, 15). The trichomes along the margin of the carinate lip however are longer with a long unicellular stalk followed by a smaller rectangular penultimate cell supporting the glandular head (Fig. 16). Similar type of trichomes are also distributed along the rim of the oblique mouth. but these have comparatively shorter stalks than those along the inner margin of the carinate lip (Fig. 11). Lining the inner wall and facing the cavity of the trap are found digestive glands which are four in number (quadrifids) or two in number (bifids) ; these are clavate, radiately arranged and enclose granular contents (Figs. 17, 18).

Field observations: It was observed that populations of this taxon inhabit a semi-marshy locality and grow on gravelley wet soil associated with other species of Utricularia like U. bifida Linn., U. caerulea Linn., U. hirta Klein ex Link, U. scandens Benj. subsp. scandens P. Taylor and other marsh loving plants like Carex sp., Cassia mimosoides Linn., Drosera burmanni Vahl, Eriocaulon sp., Habenaria crinitera Lindl., Hoppea dichotoma Willd., Lindernia anagallis (Burm. f.) Penn., Xyris paucitlora Willd., and grasses. Further, our observations in the field during 1976, 1977 and 1978 consistently showed that the present species appeared first during mid September along with U. caerulea which have long scapes and continued up to mid November ; then U. bifida appeared during October followed next by a few plants of U. hirta and U. scandens subsp. scandens during late October. All these taxa of Utricularia occur more or less sympatrically.

Palynology: Symmetry and form: Pollen isopolar, tricolporate, 3-lobed in polar view, ovate-elliptic in equatorial view (Figs. 41, 42).

Dimensions : Polar axis : $28-30\mu m$; equatorial axis $26-28\mu m$.

Exine: Scabrous, tectate ; tectum : 2 μ m ; columella : 0.6 μ m ; endexine : 1.8 μ m.

Aperture : Ectoaperture : furrow narrow, elongated, $16 \ \mu m \times 3 \mu m$.

Endoaperture : at right angles to ectoaperture, faint, circular, 9 μ m \times 5 μ m.

Figs. 19—42. Utricularia sampathii sp. nov. Figs. 19,20. Abaxial views of bracts and bracteoles. Fig. 21. Attachment of bract and bracteoles near base of pedicel. Fig. 22. Calyx from flower. Fig. 23. Calyx from fruit. Fig. 24. Papillae on abaxial surface of calyx. Fig. 25. Flower, lateral view. Fig. 26. Corolla, lateral view. Fig. 27. Upper corolla lip. Fig. 28. Flower, abaxial view. Fig. 29. Spur-apex, enlarged. Figs. 30, 31, 32. Front, back and lateral views of stamens. Fig. 33. Pistil. Fig. 34. Stigma enlarged. Fig. 35. Placenta from capsule. Fig. 36. T. s. placenta. Fig. 37. Capsule, lateral view, with pedicel, bract and bracteoles. Fig. 38. Capsule, abaxial view. Fig. 39. Seeds. Fig. 40. Testa-cells. Figs. 41, 42. Pollen grains, polar and equatorial views, x 1600. (Subramanyam and Yoganarasimhan 123).