

A New Species of *Hexastylis* From North Carolina

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Two species of *Hexastylis* Raf. (*Asarum* L. in part) are of fairly frequent occurrence in the vicinity of Durham, North Carolina. These have generally been assigned to *H. virginica* (L.) Small and *H. arifolia* (Michx.) Small respectively. The former is somewhat restricted to steep stream and river bluffs and flowers as early as March 1. The latter is the more common of the two and grows in more exposed situations, commonly on wooded slopes adjacent to streams. This flowers about two weeks later than *H. virginica*. Occasionally the two are found growing together on the brow of certain bluffs.

On May 12 of this year (1945), on a field excursion to a boggy area located about 2 miles northwest of the city limits of Durham, near what is known as the Bennett Memorial¹, we found a heartleaf which attracted our attention by its conspicuously long-hairy calyx lobes and by its frequently scattered, solitary leaves. After studying the characteristics of this plant and comparing it with all known species of *Hexastylis* from the eastern states, we have concluded that it represents a distinct new species.

In going over the available herbarium material of the genus *Hexastylis*, two other collections of what is evidently the same plant were uncovered. One of these is in the W. W. Ashe Herbarium of The University of North Carolina. This was collected in Bladen County, N. C. in 1929 by J. F. Cole and bears the significant determination "*Asarum* n. sp." Evidently W. W. Ashe, who at one time worked on this group and described some new species², also was of the opinion that this plant represents an undescribed species. The other collection is in the Duke University Herbarium. It was collected in Granville County, N. C. in 1936 by Ruth McLean and, not being assigned to any species, was evidently left for further study.

HEXASTYLIS pilosiflora n. sp. Rhizomata duorum generum, alia praelonga internodiis longis et foliis multis redactis ad vestigia petiolorum, alia brevia et vulgo florifera. Folia sparsa aut quaedam bina propinqua; petioli usque ad 18 cm. longi, puberulenti in lateribus; laminae 3.5 ad 8 cm. latae, reniformes-orbiculares ad cordatas, apex obtusus ad retusum, sinus latus; supra nitidus et fusco-viridis, secundum venas autem subviridibus maculis, infra subviridis; mmargo recurvatus

¹ A new species of *Panicum* (*P. bennettense* Brown) was described from this general locality in 1942 (Bull. Torr. Bot. Club 29: 539-540).

² Journ. Elisha Mitch. Sci. Soc. 14: 31-36. 1897.

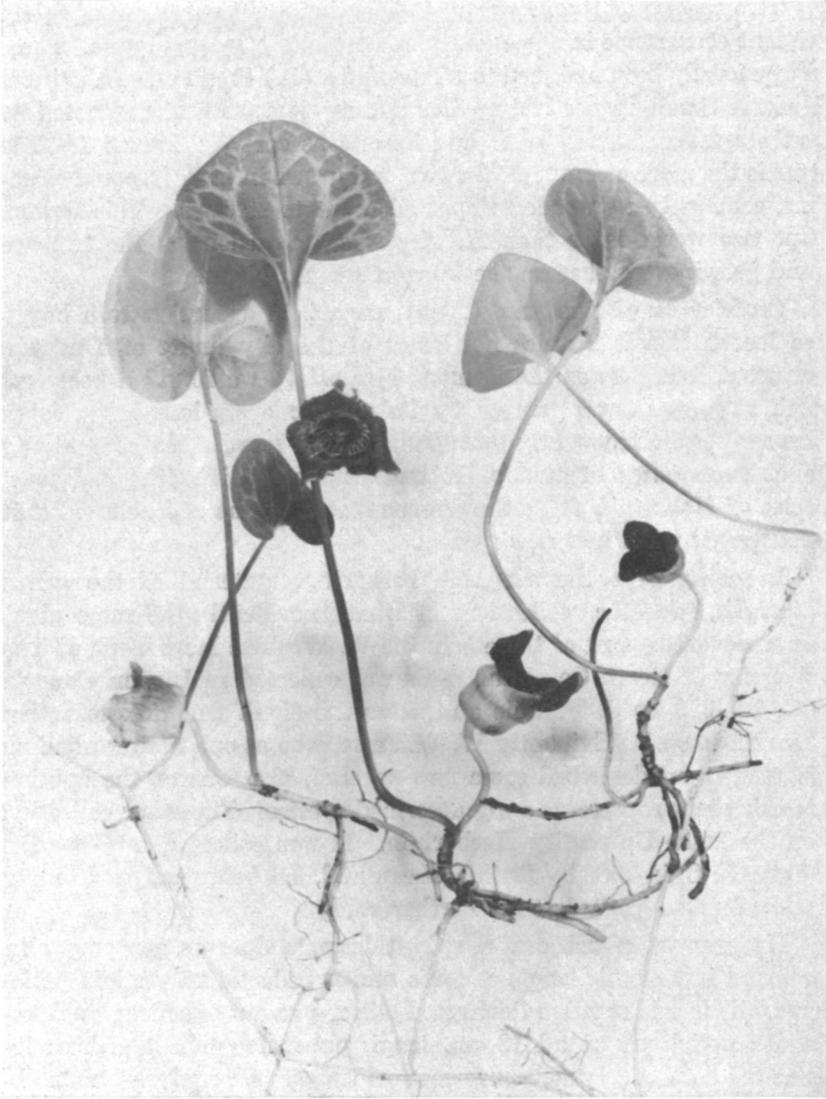


Fig. 1. *Hexastylis pilosiflora* Blomquist. Habit of plant showing two types of rhizomes and three forms of flowers.

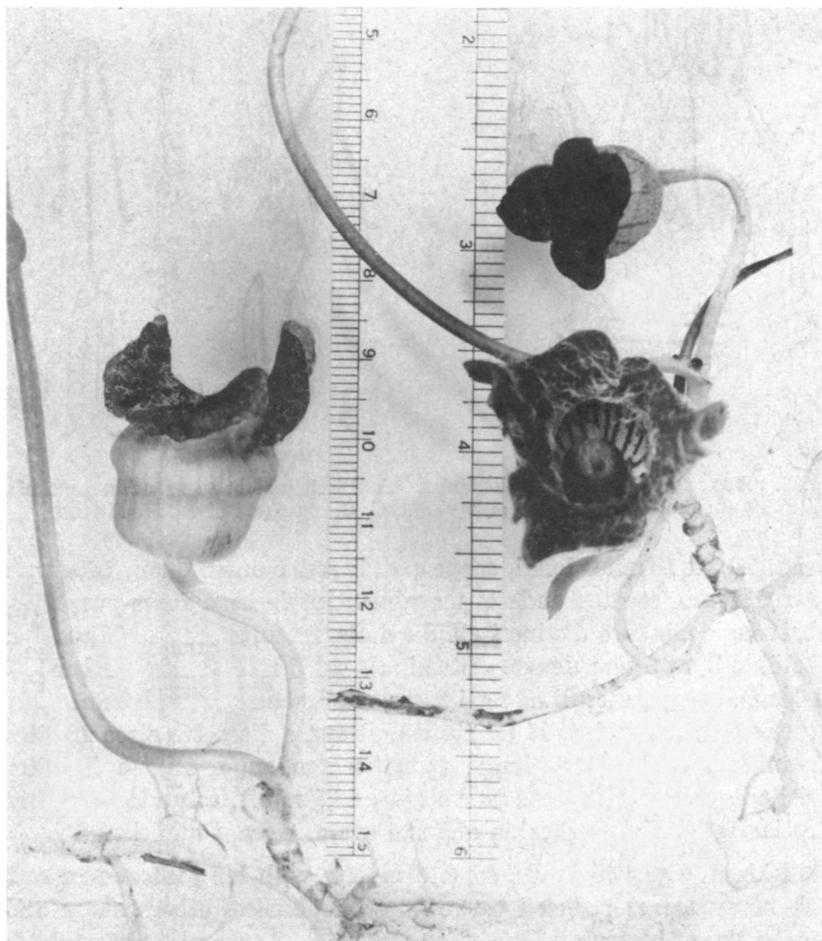


Fig. 2. *Hexastylis pilosiflora* Blomquist. Details of flowers.

et ciliatus ad basim; glaber praeter venas positas infra ad basim. Pedunculi 1 ad 5 1/2 cm. longi, plerumque curvati et subito flexi prope florem. Tubulus calycis cylindratus, paries tenuis (1/2 ad 3/4 mm.), longus 15 ad 23 (vulgo 20) mm., infra 15 ad 18 (vulgo 17) mm. e diametro, dilatatus per medium e 16 ad 21 mm., leniter artus supra. Calyx extrinsecus viridiglaucus ferens purpureas maculas et circa 18 purpureas virgas extensas in longitudinem; intrinsecus ferens infra circa 30 purpureo-rubra iuga extensa in longitudinem; supra fusco-purpureo-ruber et parce distinctus albidis notis et ferens pilosa fila subalbida. Lobi calycis deltoideo-rotundati, 10 ad 17 mm. lati ad

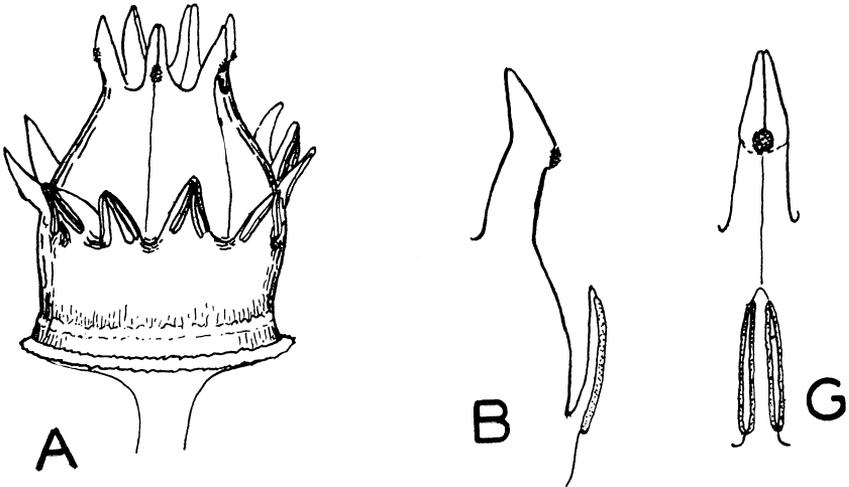


Fig. 3. *Hexastylis pilosiflora* Blomquist. A. Pistil and stamens after anthesis. B. Stamen and style, side view. C. Stamen and style, front view.

basim, 10 ad 18 mm. longi, saepe patuli sed nonnumquam incurvati aut recurvati ferentes undatos margines; intrinsecus fusco-purpureo-rubri magis minusve distincti albidis notis, ferentes quoque pilosa fila subalbida 3 ad 5 mm. longa. Stamina 4 ad 5 mm. longa; antherae 3 ad 4 mm. longae, sacculi adversi foras, coniunctio parce extenta. Pistillum omnino superius, 14 ad 20 mm. altum, e diametro circa 10 mm. ad anthesim; stili 4 mm. longi, exserti 2 mm. super stigma, breviter divisi ad apicem. Stigmata parva ($\frac{1}{2}$ ad $\frac{3}{4}$ mm.), rotunda ad leviter elliptica verticaliter. Semina anguste ovata, circa 4 mm. longa.

Rhizomes of two kinds, some elongiate with long internodes and with many leaves reduced to vestiges of petioles, others short and usually flower-bearing. Leaves scattered or 2-several approximate; petioles up to 18 cm. long, puberulent on sides: blades 3.5 to 8 cm. wide, reniform-orbicular to cordate, apex obtuse to retuse, sinus wide; on upper side, dark lustrous green, mottled with light green along veins; on under side, light green; margin recurved and ciliate at base; glabrous except on veins on the under side at base. Peduncles 1 to $5\frac{1}{2}$ cm. long, commonly curved and abruptly bent near flower. Calyx tube cylindric, wall thin ($\frac{1}{2}$ to $\frac{3}{4}$ mm.), 15 to 23 (usually 20) mm. long, in lower portion 15 to 18 (usually 17) mm. in diameter, expanded in middle to 16 to 21 mm., slightly contracted above. Calyx, on outside, greenish-grey with purplish specks and about 18 purplish longitudinal stripes; on inside, in lower portion, with about 30 purplish-red longitudinal ridges; in upper portion, dark purplish-red and sparingly

light-spotted, with colorless filamentous hairs. Calyx lobes rounded-deltoid, 10 to 17 mm. wide at base, 10 to 18 mm. long, commonly spreading but sometimes incurved or recurved with wavy margins; on inside, dark purplish-red more or less light-spotted with colorless filamentous hairs 3 to 5 mm. long. Stamens 4 to 5 mm. long; anthers 3 to 4 mm. long, sacs facing outward, the connective slightly prolonged. Pistil wholly superior, 14 to 20 mm. high, about 10 mm. in diameter at anthesis; styles 4 mm. long, extending 2 mm. above stigma, shallowly divided at apex. Stigmas small ($\frac{1}{2}$ to $\frac{3}{4}$ mm.), circular to slightly elliptic vertically. Seeds narrowly ovate, about 4 mm. long. Blomquist's specimen no. 13656 is designated as the type and is deposited in the Herbarum of Duke University. A duplicate of the type is in the National Herbarium.

North Carolina: White Oak, Bladen County, *J. F. Cole*, May 24, 1929; in woods, Oxford Experiment Station, Granville County, *Ruth McLean*, April 26, 1936; in dry, boggy ground in woods, $\frac{1}{4}$ mile northwest of Bennett Memorial, on new Hillsboro highway No. 70, about 2 miles northwest of the city limits of Durham, Durham County, *H. L. Blomquist* no. 13656; dry, peaty soil, open woods in pasture, Oxford Experiment Station, Granville Co., *F. A. Wolf*, June 7, 1945.

On the basis of shape and coloration of leaves and the form of flower, including details of pistil and stamens (fig. 3, A,B,C.) it is obvious that the new species falls in the group of heartleaves which includes *H. virginica*, *H. Shuttleworthii* (J. Britten) Small, *H. heterophylla* (Ashe) Small and *H. Memmingeri* (Ashe) Small. Its most distinctive characteristics are the long colorless hairs borne inside the calyx lobes, the longitudinal ridges inside the lower portion of the tube, and the elongate rhizomes.

While all other species of this group have hairs inside the calyx lobes, in no one are they as long and as uniformly colorless as in this one. Owing to the conspicuous nature of these hairs (shown in the lower flower on the right in figure 2), it seems appropriate to express this characteristic in its name. The longitudinal ridges inside the lower portion of the calyx tube (also shown in fig. 2) differ from those of all related species in that they are not joined by anastomosing ridges. This feature of relief inside the calyx tube seems to be a character of fundamental taxonomic importance, which apparently has been overlooked in the past. In *H. arifolia* such ridges are absent.

The presence of elongate rhizomes is a unique feature which gives a distinctive aspect to the habit of the plant (fig. 1). Owing to the long internodes and the abortion of some of the leaves on them, soli-

tary leaves frequently appear over the ground among the grouped leaves borne on the short rhizomes. Such elongate rhizomes have not been noted in any other species of *Hexastylis* except in an Alabama plant discussed by Roland Harper³ which he concluded belongs to *H. Shuttleworthii*. From the excellent description of this plant in Harper's paper, it seems unlikely that it represents *H. Shuttleworthii*, which commonly shows no evidence of having elongate rhizomes. The presence of these rhizomes in the Alabama plant as well as some of its other characteristics would indicate that it may be closely related to *H. pilosiflora* and possibly represents another undescribed species.

Another characteristic which helps to distinguish this plant from other species is the long peduncles. However, since the length of peduncles is quite variable, apparently depending somewhat upon the depth of leaf litter, it cannot be considered of major importance. Of more significance perhaps is its relatively thin calyx tube. In this it differs markedly from all other species except from *H. heterophylla* which also has a thin calyx tube.

In the two localities for which we have data on habitat, the new species grows in open to dense woods, in dry, shallow, peaty soil in the vicinity of boggy ground. Plants typical of such habitats are sweet gum (*Liquidambar styraciflua* L.), black gum (*Nyssa sylvatica* Marsh), loblolly pine (*Pinus Taeda* L.), greenbrier (*Smilax rotundifolia* L.), black huckleberry (*Gaylussacia baccata* (Wang.) K. Koch) dryland blueberry (*Vaccinium vacillans* Kalm), narrow-leaved uniola (*Uniola laxa* (L.) BSP.), bracken fern (*Pteridium latiusculum* (DC.) Hieron.), bog mosses, and certain species of *Sphagnum*. From its apparent rarity it seems that the plant may be adapted to a special habitat which typically is uncommon. According to its present known distribution, it is evidently a coastal plain species with a southern range.

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³ Journ. Sc. Appal. Bot. Club 1: 69-76. 1956.