

STUDIES IN THE GUTTIFERAE. I.
A SYNOPSIS OF *HYPERICUM* SECTION *MYRIANDRA*¹

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Hypericum L. is an easily recognized cosmopolitan genus with more than three hundred species classified among eighteen sections (Keller, 1925). One of these sections, Sect. *Myriandra* (Spach) Endl. (as delimited in the present work), is restricted to eastern North America. The thirty species of this group have never been studied as a sectional unit. Coulter (1886, 1897), in his treatments of the family, recognized many of the species involved but assigned them to the Linnaean genera *Ascyrum* and *Hypericum*. Subsequent studies have been regional and floristic (e.g. Fernald, 1950; Gleason, 1952; Small, 1933) or else they were concerned with special groups (Svenson, 1940; Adams, 1957). Nomenclatural notes on several species were contributed by Lott (1938).

A new approach to the systematics of *Hypericum* was initiated by Robson (1956) who surveyed the patterns of floral vascularization present in *Hypericum* and related genera. Information from his anatomical studies aided him in understanding the taxonomy of *Hypericum* in tropical and southern Africa (Robson, 1957). His work stimulated my interest in pursuing studies in the systematics of *Hypericum*, especially on the group of species here included within Sect. *Myriandra*. Through the kindness of Dr. Robson (now at Kew) and the Edinburgh University Library, I obtained a microfilm of his vascularization study which had been presented to that institution as a doctoral dissertation and is not yet published. Data from his manuscript supplemented by my morphological and cytological studies (Adams, 1959a) furnished the basis for a re-evaluation and re-assignment of *Ascyrum* L. and *Crookea* Small to the larger genus *Hypericum* (Adams & Robson, 1961).

Information derived from anatomy, morphology, cytology, and phytogeography has been used to construct this synopsis of the systematics of *Hypericum* Sect. *Myriandra*.

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A key to the species is accompanied by brief synonymy, citations of type and representative specimens, habitat information, statements of geographical ranges, and comments on interspecific relationships. Much more study of the group remains to be done although the main outlines of the taxonomy are clear. Detailed investigations of variation, both within and among species, and the anatomy of the leaves, sepals, and bark are in progress.

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Specimens from the following herbaria have been used in this study (abbreviations according to Lanjouw & Stafleu, 1959): Arnold Arboretum (A); Brooklyn Botanic Garden (BKL); Canadian Department of Agriculture (DAO); Charleston Museum (CHALR); Duke University (DUKE); Chicago Natural History Museum (F); University of Florida (FLAS); Florida State University (FSU); University of Georgia (GA); Gray Herbarium (GH); State University of Iowa (IA); Indiana University (IND); Louisiana State University (LSU); University of Michigan (MICH); Mississippi State College (MISSA); Missouri Botanical Garden (MO); Michigan State University (MSC); North Carolina State College (NCSC); University of North Carolina (NCU); New England Botanical Club (NEBC); Tulane University (NO); New York Botanical Garden (NY); University of Oklahoma (OKL); Oklahoma State University (OKLA); Ohio State University (OS); University of Pennsylvania (PENN); Academy of Natural Sciences (PH); Purdue University (PUR); Southern Methodist University (SMU); U. S. National Herbarium (US); University of Tennessee (TENN); University of Texas (TEX); University of Arkansas (UARK); Virginia Polytechnic Institute (VPI); University of Wisconsin (WIS); and West Virginia University (WVA).

THE COLLECTING OF HYPERICUM

The ultimate writing of a definitive monograph on *Hyperic-*

cum Sect. *Myriandra* will be greatly aided if collectors will pay close attention to the following suggestions. Probably the most important is that samples of the stem and bark (of the woody species) be included with the usual herbarium specimens. Bark features are of paramount importance in showing definitive characteristics of several species, especially the *H. fasciculatum* complex. Fruiting specimens are not available for *H. densiflorum* from the Coastal Plain of the Carolinas, apparently having been overlooked by collectors even though the species has been known from that region for at least one hundred years. Specimens of *H. apocynifolium* and *H. sphaerocarpum* in mature fruit are needed. Carefully prepared plants (with accompanying rhizomes) of *H. ellipticum* would be most useful; the majority of the herbarium specimens I have seen appear to have been yanked from the soil! Observations (with specimens) of the winter and early spring aspect of *H. ellipticum*, *H. sphaerocarpum*, and *H. dolabriforme* are greatly needed. Collections of the *Hypericum* species growing in Alabama and Mississippi would be most useful in compilation of accurate distribution maps. Specimens and observations on sympatric occurrences of the following pairs of species would be of utmost value. *H. frondosum* and *H. prolificum*, *H. lobocarpum* and *H. prolificum*, *H. lobocarpum* and *H. densiflorum*, *H. ellipticum* and *H. adpressum*, and *H. stragulum* (= *Ascyrum multicaule*) and *H. hypericoides*.

CHROMOSOME NUMBERS

Meiotic chromosome counts are available for twenty-four of the thirty species in *Hypericum* Sect. *Myriandra* (Nielsen, 1924; Hoar & Haertl, 1932; Adams, 1959a; H. L. Striplin, personal communication). All species studied possess a haploid number of nine. Haploid chromosome numbers of eight, twelve, and sixteen are known in other *Hypericum* species native in eastern North America (but not in members of Sect. *Myriandra*). The number nine is not confined to this section, being present in several extra-North American species also.

HYPERICUM L., Gen. Pl. ed. 5, 341. 1754

Sect. MYRIANDRA (Spach) Endl., Gen. Pl. 1033. 1840. Based on *Myriandra* Spach, Hist. Nat. Vég. 5:434. 1836, as a genus.

Shrubs and perennial herbs. Leaves with or without an articulation at base; lamina expanded, or much reduced and the leaves needlelike; translucent secretory glands present as dots or elongate sacs, black ones absent. Trichomes absent. Sepals 5 or 4 (rarely 3 or 6), persistent long after fruit maturity, or deciduous at capsule dehiscence, with

or without an articulation at base. Petals 5 or 4 (rarely 3 or 6), yellow, deciduous soon after anthesis. Androecium of numerous stamens arranged in a ring or narrow band (i.e. not fasciculate), deciduous or persistent. Gynoecium of 5, 4, 3, or 2 fused carpels; placentation pseudo-axile to parietal; styles same number as carpels, closely appressed to each other their entire length at anthesis, afterwards often separating slightly; stigmas minute; ovules numerous to few. Seed coats finely to coarsely reticulate, occasionally obscurely striated, raphe inconspicuous, or forming a keel.

TYPE SPECIES (of section *Myriandra*): *H. prolificum* L.

The circumscription of Endlicher's Sect. *Myriandra* is enlarged here in accordance with information yielded by recent investigations. Robson (1956), from intensive studies of the floral vascularization, concluded that the species formerly classified within the genera *Ascyrum* L., *Crookea* Small, and the sections *Myriandra* (Spach) Endl. and *Brathydium* (Spach) Endl. of the genus *Hypericum* L. are closely related. This idea was strengthened by subsequent morphological, geographical, and cytological investigations (Adams, 1959a). Recently Adams & Robson (1961) transferred to *Hypericum* the species formerly placed in the genera *Ascyrum* and *Crookea*. Additional nomenclatural changes involving Endlicher's sections are proposed here.

Within *Hypericum* Sect. *Myriandra* there are two groups of species which are distinguished by the presence or absence of an articulation at the base of the leaves and sepals and, to a lesser extent, by the degree of persistence of the withered stamens after anthesis. The rank of subsection is used for each of these groupings. The species of each subsection are closely allied although several evolutionary lines are discernible within each.

The relationships of Sect. *Myriandra* are with Sect. *Webbii* (Canary Islands and Madeira) and Sect. *Campylosporus* (of northeastern and tropical Africa). Studies of floral anatomy (Robson, 1956) and comparative morphology (Robson, 1956; Adams, 1959a) support this idea. These three sections share some or all of the following characteristics: quadrangular or winged stems, translucent glands, articulated leaves, persistent sepals and stamens, and a shrubby habit. Sect. *Myriandra* is also related to the cosmopolitan Sect. *Brathus* although less closely (Robson, personal communication). Features common to both include presence of pale glands, lack of black glands, persistent sepals and stamens, androecium composed of a ring or narrow band of numerous stamens, and parietal placentation.

Plants belonging to species of *Hypericum* Sect. *Myriandra* can be recognized by a combination of the following characteristics: woody stems (except four species); styles which are closely appressed their entire length at anthesis; minute stigmas (i.e. not capitate); presence of translucent or pellucid-punctate secretory glands (dots and/or elongate sacs) in the stems, leaves, sepals, and petals; and the absence of black glands. In addition, the leaves and sepals of the plants of sixteen species (Subsect. *Centrosperma*) possess a small groove or articulation at the base (see Fig. 1). Articulated leaves occur in other species of *Hypericum* but the combination of grooved leaves and sepals is known to me in only one of these, *H. styphelioides* A. Rich., a plant of Cuba and British Honduras.

KEY TO THE SPECIES

- A. Leaves clasping.
 - B. Flowers with 5 sepals and 5 petals; inflorescence a compound dichasium; bark becoming corky, especially on older stems 15. *H. myrtifolium*.
 - B. Flowers with 4 sepals and 4 petals; flowers solitary; bark thin, not corky 27. *H. tetrapetalum*.
- A. Leaves sessile, not clasping.
 - C. Perianth tetramerous (except in occasional flowers); flowers solitary.
 - D. Gynoecium 2-carpellate, 2-styled.
 - E. Pedicels elongate, reflexed soon after anthesis; subtending bractlets at the base of the pedicel 30. *H. suffruticosum*.
 - E. Pedicels short, erect even at fruit maturity; subtending bractlets approximate to the sepals.
 - F. Plants erect, usually with a single stem, freely branched well above the ground level, often becoming 1.0-1.5 m tall (Fig. 3) 28. *H. hypericoides*.
 - F. Plants decumbent, with several prostrate stems arising from a primary rootstock near ground level, each with numerous erect branchlets and forming low compact mats, rarely over 0.3 m tall (Fig. 3) 29. *H. stragulum*.
 - D. Gynoecium 3-carpellate, 3-styled (infrequently 2 or 4 carpels and styles, especially in *H. microsepalum*).
 - G. Outer pair of sepals only slightly larger than the inner; leaves linear to broadly oblong or oblanceolate, usually less than 1.2 cm long and 0.5 cm wide; margins of the leaf and sepal rounded, not hyaline 24. *H. microsepalum*.
 - G. Outer pair of sepals much larger than the inner; leaves elliptic-oblong or ovate-cordate, usually more than 1.0 cm long and 0.5 cm wide; margins of the leaf and sepal abruptly thin and hyaline, the edge thus like a honed knife.
 - H. Outer pair of sepals cordate and acuminate, 5-9 mm wide; stems usually much branched, producing a bushy aspect;

- adventitious shoots from horizontal roots often present. (Glades, Highlands, and DeSoto counties, Florida)..... 26. *H. edisonianum*.
- H. Outer pair of sepals broadly ovate or suborbicular, 10-15 mm wide; stems usually simple, or sparingly branched; adventitious shoots lacking. (Eastern Texas to Kentucky, Florida, and New Jersey) 25. *H. stans*.
- C. Perianth pentamerous (except in occasional flowers); inflorescence a 3-many-flowered dichasium (except *H. frondosum* and *H. buckleyi* which often have solitary flowers).
- I. Gynoecium 5-carpellate, 5-styled (often 3, 4, or 6 carpels and styles present also).
- J. Capsules deeply lobed; inflorescence a many-flowered (usually 15 or more) terminal compound dichasium and with similar dichasia in upper 2-4 leaf axils, producing a panicle-like aspect. (Mississippi Embayment region, especially Arkansas, Louisiana, Mississippi, and Tennessee) 2. *H. lobocarpum*.
- J. Capsules unlobed or only slightly so; inflorescence a few-flowered (3 or 7, rarely more) terminal, simple or compound dichasium, rarely with similar dichasia in upper 1 or 2 leaf axils. (Dune areas on the shores of the Great Lakes; inland occasionally, especially in central Wisconsin and the Ottawa River of Quebec) 1. *H. kalmianum*.
- I. Gynoecium 3-carpellate, 3-styled (rarely 2, 4, or 5 present also).
- K. Mature leaf with an expanded blade, not needlelike, usually over 2 mm wide; sepals usually broadened, i.e. linear-elliptic, oblong-ovate, or spatulate.
- L. Flowers terminal and solitary, or occasionally in 3-flowered dichasia.
- M. Leaves without an articulation at base (see Fig. 2), elliptic, elliptic-obovate, or obovate, usually less than 2.5 cm long and 1.2 cm wide; plants decumbent, stems prostrate, each with numerous erect branches, forming low compact mats. (Endemic to the Blue Ridge Mountains of North Carolina and Georgia) 18. *H. buckleyi*.
- M. Leaves with an articulation or groove at base (see Fig. 1), oblong-elliptic or ovate-lanceolate, usually well over 3 cm long and 1 cm wide; plants erect, stems not prostrate. (Calcareous soils, especially in the cedar glades of central Tennessee and adjacent northern Alabama) .. 5. *H. frondosum*.
- L. Flowers in 3-many-flowered terminal and/or subterminal dichasia.
- N. Shrubs, stems often 1-2 m tall.
- O. Leaves and sepals without a basal articulation or groove (see Fig. 2); inflorescence appearing naked due to the much reduced bracts.
- P. Leaves linear-oblong or oblong-lanceolate, usually less than 1.0 cm wide; stamens fewer than 55, usually persistent long after fruit maturity; seeds less

- than 0.8 mm long; placentation parietal 19. *H. cistifolium*.
- P. Leaves elliptic to ovate-lanceolate, usually well over 1.0 cm wide; stamens more than 75, usually deciduous before fruit maturity; seeds over 1.2 mm long; placentation pseudo-axile, i.e. the placentae project inwardly toward the ovary axis, especially in the lower half.
- Q. Inflorescence a many-flowered (rarely 3) dichasium; mature capsules 3.5-7 mm long, 3-4.5 mm wide; raphe of seeds well-developed, forming a conspicuous keel 16. *H. nudiflorum*.
- Q. Inflorescence a 3-flowered dichasium, occasionally with 6 flowers, or reduced to 1; mature capsules 6-14 mm long, 4.5-7 mm wide; raphe of seeds only slightly developed, forming a low ridge, but not a conspicuous keel 17. *H. apocynifolium*.
- O. Leaves and sepals with a basal articulation or groove (see Fig. 1); inflorescence appearing leafy due to the foliaceous bracts.
- R. Largest leaves 1.5-3.0 cm long (rarely over 3.2 cm); seeds 0.7-0.8 mm long; placentation parietal. (Coastal Plain, North Carolina to northern Florida, westward to southeastern Texas) 6. *H. galioides*.
- R. Largest leaves 3.0-7.5 cm long (rarely as short as 2 cm); seeds 0.9-1.6 mm long; placentation pseudo-axile, i.e. the placentae project inwardly toward the ovary axis, touching in the center but not united except at ovary base.
- S. Mature capsules less than 6 mm long and 3 mm wide, slender-conic; flowers in 7-many-flowered terminal and subterminal compound dichasia, the inflorescence presenting an obpyramidal aspect; seeds reddish-brown, 0.8-1.3 mm long and 0.27-0.35 mm wide 3. *H. densiflorum*.
- S. Mature capsules exceeding 7 mm in length and 3.5 mm wide, lance-ovoid; flowers in 3-7- (rarely 1-) flowered terminal and 1-7-flowered subterminal dichasia, the inflorescence usually narrow and compactly thyrsoïd; seeds dark brown or black, 1.0-1.7 mm long and 0.32-0.50 mm wide 4. *H. prolificum*.
- N. Perennial herbs, usually less than 1 m tall.
- T. Plants with prominent and definite rhizomes, the bases herbaceous; young stems nearly terete, the 2 primary wings poorly developed; placentae project inwardly slightly or to one-half the distance to the ovary axis; seeds less than 0.8 mm long; seed coat finely reticulate; raphe poorly developed, forming a low ridge.
- U. Leaves oval, short-elliptic to broadly elliptic, or

- somewhat spatulate; larger leaves 1.5-3.5 cm long; plants short and slender, rarely becoming 0.5 m tall 23. *H. ellipticum*.
- U. Leaves elliptic below, gradually becoming linear-oblong to linear-lanceolate above; larger leaves 3.5-7.5 cm long; plants tall and stout, commonly becoming 0.8 m tall 22. *H. adpressum*.
- T. Plants without rhizomes, but often bearing adventitious shoots from horizontal roots, bases often woody; young stems obviously flattened, the 2 primary wings well-developed; placentation parietal; seeds over 1.5 mm long; seed coat coarsely reticulate; raphe well-developed, forming a conspicuous keel.
- V. Sepals equal or nearly so; stamens 45-85; seeds 2.0-2.7 mm long; seed coat very coarsely reticulate, the transverse striae much more prominent than the longitudinal 20. *H. sphaerocarpum*.
- V. Sepals very unequal, the exterior pair larger; stamens 120-200; seeds 1.5-1.8 mm long; seed coat moderately reticulate, the longitudinal striae much more prominent than the transverse 21. *H. dolabriforme*.
- K. Mature leaves and sepals linear-subulate or needle-like.
- W. Largest leaves usually less than 11 mm long; sepals 4.5 mm long or less (occasionally to 5.5 mm).
- X. Mature capsules 5.7-9.5 mm long (rarely less than 5.5 mm); plants often with decumbent stems, producing a low matted form, usually less than 0.5 m tall; nodes of youngest stems with 4 vertically-aligned, auriculate structures, 1 on each side of leaf base, each tapering into a low ridge extending downward to next node below (stem 6-angled in cross section); seed coat coarsely reticulate, the alveolae square-hexagonal (100X magnification) and in longitudinal rows, the longitudinal ridges imparting an obscure striated appearance; fresh leaves usually dull green above, hardly glossy, if at all 12. *H. reductum*.
- X. Mature capsules 3.5-5.5 mm long; plants almost invariably erect, often reaching 1.5 m in height; stem without auriculate structures at leaf base (stems 2-winged and flattened in cross-section); seed coat finely reticulate, the alveolae circular-hexagonal (100X), and irregularly arranged, ridges about equally developed; fresh leaves shiny-green above 11. *H. brachyphyllum*.
- W. Largest leaves usually more than 13 mm long; sepals more than 4.5 mm long (occasionally only 4 mm).
- Y. Bark smooth, metallic-silvery, exfoliating in large thin curled plates; leaves, sepals, and young stems heavily glaucous; seeds over 1 mm long; seed coat coarsely reticulate but the longitudinal striae much more prom-

inent than the transverse, thus the surface appearing furrowed. (Bay and Washington counties, Florida)
..... 7. *H. lissophloeus*.

Y. Bark variously roughened, usually exfoliating in irregular strips or flakes; leaves, sepals, and young stems scarcely or not at all glaucous; seeds less than 1 mm long; seed coat finely and evenly reticulate.

Z. Plants with decumbent stems, often forming low mats (rarely over 0.5 m tall), or at least reclining and straggly. (Along the Fall Line, mostly in the Carolinas) 13. *H. lloydii*.

Z. Plants definitely erect. (Coastal Plain, North Carolina to Florida and Mississippi).

a. Bark soft and spongy-thickened, with conspicuous vertically-aligned, cord-like laticifers; youngest stems terete or nearly so, the primary wings poorly developed; flowers mostly in terminal and subterminal 3-flowered dichasia (or rarely with terminal and subterminal solitary flowers). (Wakulla Co., westward to Santa Rosa Co., Florida)
..... 8. *H. chapmanii*.

a. Bark usually not spongy-thickened, but if so, then the laticifers inconspicuous; youngest stems strongly flattened, the primary wings well-developed; flowers mostly in 7-32-flowered terminal dichasia, the nodes below not bearing flowers or more frequently with similar compound dichasia.

b. Plants slender, less than 1 m tall, the stem rarely over 0.8 cm thick; apices of sepals and leaves long-acuminate; resin glands in leaves and sepals often darkening upon drying; flowering during May. (Bay, Gulf, Franklin, Liberty, and Washington counties, Florida) 14. *H. exile*.

b. Plants stout, usually over 1 m tall (often to 4 m), the stem 1-5 cm thick; apices of sepals and leaves mucronate; resin glands in leaves and sepals usually remaining clear on drying; flowering throughout the summer, or all year in lower peninsular Florida.

c. Bark spongy-thickened, exfoliating in grayish-reddish tissue-thin layers; leaves with a deep longitudinal groove below on each side of midrib, numerous whitish papillae present on the concave lower surface (best observed on living leaves); mature capsules elliptic-oval; terminal dichasium usually compactly cymose, subterminal solitary flowers or 3-flowered dichasia often present in upper 1 or 2 leaf axils; leaves of axillary branchlets usually crowded, presenting a fasciculate appearance 9. *H. fasciculatum*.

- c. Bark thin, even on oldest stems, not spongy, exfoliating in flakes or narrow strips; leaves merely slightly concave below, not grooved, papillae inconspicuous, poorly developed; mature capsules oblong; terminal dichasium usually openly paniculate, subterminal many-flowered dichasia present in upper 3-7 leaf axils; leaves of axillary branchlets usually not crowded
 10. *H. nitidum*.

Sect. MYRIANDRA, subsect. CENTROSPERMA Keller, in Engler & Prantl, Pflanzenfamilien 3 (6-6a) 214. 1895.

Shrubs. Leaves and sepals with an articulation or groove at the base (Fig. 1). Sepals 5 (rarely 4), deciduous after fruit dehiscence. Petals 5 (rarely 4). Withered stamens deciduous soon after anthesis.

TYPE SPECIES: *H. prolificum* L.

Fifteen species, nine of which are distributed on the Coastal Plain of the southeastern United States, Cuba, and British Honduras, and the remaining six in the central and eastern United States and adjacent Canada.

1. ***Hypericum kalmianum* L.**, Sp. Pl. 2:783. 1753

Hypericum bartramium Miller, Gard. Dict. ed. 8, no. 10. 1768.

TYPE: LINN; photograph in A library; sketches and notes from type by H. K. Svenson, GH.

REPRESENTATIVE SPECIMENS: ONTARIO: Great Duke Island, Grassl 5554 (MICH). ILLINOIS: Lake Co., Waukegan, Gleason & Shobe 331 (DUKE). INDIANA: Starke Co., Bass Lake, Deam 20133 (IND). MICHIGAN: Alpena Co., Alpena, Fernald & Pease 3420 (GH). WISCONSIN: Jackson Co., shore of Black River, Fassett 15716 (WIS).

Dunes and rocky shores about Lakes Michigan, Huron, and Erie; inland in central Wisconsin and the Ottawa River of Quebec. Flowering late June through early August.

This species is readily distinguishable from its closest relative, *Hypericum lobocarpum*, by various features, especially of the capsule and inflorescence (see that species). An interesting phytogeographical problem involving the origin of *H. kalmianum* and its distribution during the Pleistocene is discernible (McLaughlin, 1931; Hugh H. Iltis, personal communication).

2. ***Hypericum lobocarpum* Gattinger**, Bot. Gaz. 11:275. 1886

Hypericum oklahomense Palmer, Jour. Arn. Arb. 5:128. 1924.

TYPE: TENNESSEE: Carroll Co., Hollow Rock, A. Gattinger August 1867 (Lectotype, F, with dissections and sketches by Gattinger; isotype, GH).

REPRESENTATIVE SPECIMENS: ARKANSAS: Pulaski Co., Little Rock, *Demaree* 8207 (A, BKL, GH, NY). KENTUCKY: Calhoun Co., between Murray and New Concord, *Smith & Hodgdon* 4083 (GH, US). LOUISIANA: Webster Parish, 4 miles west of Minden, *Correll & Correll* 10310 (DUKE, F, GA, MO, NY, PH). OKLAHOMA: LeFlore Co., Page, *Palmer* 22228 (GH, holotype of *H. oklahomense* Palmer; isotypes, A). TENNESSEE: Chester Co., *Sharp et al* 9410 (TENN).

Creek and river bottoms, stream banks, moist pinelands, and ditches, Arkansas and southeastern Oklahoma, southward into eastern Texas, southern Louisiana, and southern Mississippi, northward into western Tennessee and Massac Co., Illinois (Mohlenbrock & Voigt, 1959). Flowering mid-June through early August, occasionally earlier (late May) or later (September and October).

This species is distinguished from its closest relatives, *Hypericum densiflorum* and *H. kalmianum*, by several characteristics, especially the morphology of the gynoecium. Carpel number, predominantly five in the first two species, readily separates *H. lobocarpum* from *H. densiflorum* (Table 1).

TABLE 1. Comparison of carpel numbers in the gynoecia of three species of *Hypericum*

species	number of collections studied	carpel number (in %)					gynoecia counted
		2	3	4	5	6	
<i>H. lobocarpum</i>	23	0.0	1.7	19.2	79.1	0.0	2014
<i>H. densiflorum</i>	49	0.2	92.1	6.9	0.8	0.0	3197
<i>H. kalmianum</i>	25	0.0	1.0	22.1	76.2	0.7	389

Ovary lobing, best observed in the mature capsule, is pronounced in *H. lobocarpum*, present slightly in *H. densiflorum*, but virtually absent in *H. kalmianum*. The mature capsule dimensions overlap, but significantly different trends in proportion are discernible. The fruits of *H. lobocarpum*, often larger than those of *H. densiflorum*, never reach the relatively great size attained by *H. kalmianum*. Capsules 6-8 mm long and over 3 mm wide are produced by *H. lobocarpum* frequently but never occur in its eastern relative, *H. densiflorum*. Fruits of many individuals, otherwise definitely re-

ferable to *H. lobocarpum*, may be the same size as the smallest ones produced by *H. densiflorum*, a situation which has influenced the interpretation of the former as a variety of the latter (Svenson, 1940; Fernald, 1950; Gleason, 1952; Gillespie, 1959).

Nowhere does *Hypericum lobocarpum* overlap the range of *H. densiflorum*, the known stations of each being at least eighty miles apart (Winston Co., Mississippi and Tuscaloosa Co., Alabama, respectively). Further north in Tennessee the known populations of these two species are separated by some one hundred twenty miles (Carroll and Coffee counties).

3. ***Hypericum densiflorum*** Pursh, Fl. Am. Sept. 376. 1814

Hypericum foliosum Jacq., Hort. Schoenbrun. 3:299. 1797, not Aiton, Hort. Kew. ed. 1, 3:104. 1789.

Hypericum prolificum L. var. *densiflorum* (Pursh) Gray, Man. Bot. ed. 2, 50. 1856.

Hypericum glomeratum Small, Bull. N. Y. Bot. Gard. 1:281-283. 1899.

Hypericum interior Small, Bull. Torrey Club 28:359. 1901.

Hypericum revolutum Keller, Bot. Jahr. 58:194. 1923, not Vahl, Symb. Bot. 1:66. 1790.

TYPE: "On the dry ridges and savannahs of the Virginia mountains," but probably no longer extant (Svenson, 1940).

REPRESENTATIVE SPECIMENS: GEORGIA: Whitfield Co., *Harper 2032* (GH, NY, isotypes of *H. revolutum* Keller). NEW JERSEY: Cumberland Co., South Vineland, *Bassett & Long 12 August 1923* (GH, PH). NORTH CAROLINA: Avery Co., *Adams 117* (DUKE, FSU, GH, NY, US); Grandfather Mt., *Huger August 1896* (NY, type of *H. glomeratum* Small). SOUTH CAROLINA: Georgetown Co., *Adams 94* (FLAS, GA, K, MO, SMU). TENNESSEE: Jefferson Co., *Dandridge, Rugel July 1842* (NY, type of *H. interior* Small). VIRGINIA: Grayson Co., *Adams 109* (NCU).

Abundant in wet meadows, lake margins, open stream banks, moist pinelands, bogs, and roadside ditches (especially on the Coastal Plain of the Carolinas); also on dry road embankments and rocky hillsides. The Coastal Plain of New Jersey, Delaware, and Maryland, southward (except southeastern Virginia) to eastern North Carolina and adjacent South Carolina; also in the Appalachian mountain region

from extreme southwestern Pennsylvania southward to northern Georgia, eastern Tennessee, and central Alabama. Flowering late June through early September. Harper's report (1928) of *Hypericum galioides* from Jefferson, Tuscaloosa, and Bibb counties, Alabama, is probably based on plants of *H. densiflorum*. His comment that "some of the specimens [were] ten feet tall" is fairly conclusive, since plants of *H. galioides* rarely exceed 1.5 m in height. Specimens of *H. densiflorum* have been collected in Tuscaloosa County and in adjacent Jefferson County. *Hypericum galioides* does not grow in Alabama north of Geneva and Escambia counties, adjacent to the Florida border, according to Harper (1928).

Hypericum densiflorum, superficially similar to *H. galioides*, is closely related to *H. lobocarpum* (which see) and, to a lesser degree, *H. prolificum*. It may be distinguished from *H. prolificum* by narrower leaves and more floriferous inflorescences. Tricarpellate gynoecia are the rule in flowers of *H. densiflorum* plants but four, five, and even two carpels have been observed, even on the same individual. Mature seeds from the Carolina Coastal Plain populations of this species have not been available for study.

4. ***Hypericum prolificum* L., Mant. Pl. 1:106. 1767**

Myriandra spathulata Spach, Hist. Nat. Vég. 5:440. 1836.

Hypericum spathulatum (Spach) Steud., Nomencl. ed. 2, 789. 1840, not Keller, Bot. Jahr. 58:195. 1923.

TYPE: sheet number 943.20, selected by H. K. Svenson (1940), LINN; photograph, A library.

REPRESENTATIVE SPECIMENS: ARKANSAS: Drew Co., *Demaree 17648* (A, FSU, MO, NY, PH). NORTH CAROLINA: Union Co., 1.2 miles north of Sturtevant, *Fox & Whitford 3888* (NCSC, SMU, TENN). PENNSYLVANIA: Chester Co., Strafford, *Bartram 1390* (PH).

Rocky slopes, granite outcrops, dry rocky creek beds, roadside embankments, and abandoned fields. Widespread over central and eastern United States from Pennsylvania southward to northern Georgia, around the northern rim of the Mississippi Embayment to southeastern Oklahoma, northward to Iowa and Michigan. Abundant at the summit of Brasstown Bald, Union Co., Georgia, at an elevation of 4768 feet. Hardy around the Boston, Massachusetts area,

having become well established at Wellesley and in Essex County. Flowering late June (southward) through early September.

This species is very variable but still retains a distinctive facies. The ovate to lance-ovate, relatively thin-walled capsules, while varying in size, cannot be mistaken for those of any other species (except *H. frondosum*, occasionally). *Hypericum prolificum* is distinguished from the related *H. lobocarpum* by a less floriferous inflorescence and unlobed capsules. However, the separation of this species from the closely related *H. frondosum* is more difficult. *Hypericum prolificum* usually has a smaller, thicker-walled capsule, smaller petals and seeds, and a more complex inflorescence. Plants of these two species may hybridize, at least in cultivation. A putative hybrid between them has been described as *H. X VanFleetii*, according to Rehder (1940). Specimens in the herbarium of the Arnold Arboretum which bear this epithet upon their labels are readily referable to *H. prolificum*. A highly variable population possibly originating from hybridization between cultivated plants of these species grows in a pasture on the Harbison farm at Highlands, Macon Co., North Carolina. Intensive study of this population and those of both species in the Central Basin of middle Tennessee is greatly needed.

After study of a "vast amount of herbarium-material" Fernald & Schubert (1948) were unable to identify plants of this species with the type of *H. prolificum* in the Linnaean Herbarium. Consequently, they revived the relatively unused epithet *H. spathulatum* (Spach) Steud. for this species. Other investigators (Svenson, 1940, 1952; Adams, 1959b) have amply demonstrated, however, that Fernald & Schubert's name changing was unnecessary, pointing out that the "aberrant" appearance of the type specimen (i.e. its "unusually revolute leaves") is due merely to wilting prior to collecting and to insufficient pressure during the drying process. The name *H. spathulatum*, used by Fernald (1950), is a later synonym of *H. prolificum*.

5. ***Hypericum frondosum*** Michx., Fl. Bor.-Am. 2:81. 1803
Hypericum aureum Bartram, Travels 383. 1791, not Loureiro, Fl. Cochinch. 2:472. 1790.
Hypericum amoenum Pursh, Fl. Am. Sept. 2:375. 1814.

Hypericum rugelianum Kunze, *Linnaea* 24:177. 1851.

Brathydium rugelianum (Kunze) C. Koch, Hort. Dendr. 66. 1853.

Brathydium aureum (Bartram) C. Koch, Hort. Dendr. 66. 1853.

Hypericum splendens Small, Bull. Torrey Club 29:291. 1901. 291. 1901.

TYPE: "Hab. in rupibus, ad flumen *Tennasee*," Michaux (P; photograph, GH; sketches from type by H. K. Svenson, GH).

REPRESENTATIVE SPECIMENS: ALABAMA: Morgan Co., 2 miles south of Tennessee River, south of Huntsville, *Godfrey* 57520 (FSU). GEORGIA: Dade Co., Cloudland Canyon, east of Trenton, *Cronquist* 5293 (GA, GH, NY, SMU); DeKalb Co., Stone Mt., *Small* July 4, 1893 (NY, type of *H. splendens* Small). TENNESSEE: Wilson Co., 2 miles north of Lebanon, *Godfrey* 59498 (FSU).

A showy plant in flower, *Hypericum frondosum* is abundant in the cedar glades of the Central Basin in middle Tennessee. It has also been collected at widely scattered localities, especially on river bluffs, in southern Kentucky, extreme eastern Tennessee, northern Alabama, and central and southwestern Georgia. Adventive plants have been collected in Connecticut, New York, and Massachusetts. Flowering late May through early July.

When best developed, plants of *Hypericum frondosum* are readily distinguishable from the related *H. prolificum* (which see). The separation becomes difficult with non-fruitle specimens and cultivated material.

The characteristics of the large-flowered *Hypericum* which grows on the slopes of Stone Mountain, DeKalb Co., Georgia, are within the *H. frondosum* variation pattern. Small, after several visits to that famous granite exposure, became so impressed with these plants that he described them as a new species, *H. splendens*. My studies of this population at various times during the growing season strongly suggest, however, that these plants represent merely a geographically isolated stand of *H. frondosum*.

6. *Hypericum galioides* Lam., *Encyc. Méth. Bot.* 4:161.

1797, not Freyn. & Sint., Bull. Herb. Boiss. 3: 103. 1895

Hypericum axillare Lam., *Encyc. Méth. Bot.* 4:160. 1797.

Hypericum fasciculatum Michx., Fl. Bor.-Am. 2:80. 1803, not Lam., Encyc. Méth. Bot. 4:160. 1791, not Tapeyr, Hist. Abr. Pl. Pyr. 450. 1813.

Hypericum michauxii Poir., Suppl. 3:696. 1813.

Hypericum ambiguum Elliott, Sketch. 2:30. 1821.

Myriandra michauxii (Poir.) Spach, Hist. Nat. Vég. 5:437. 1836.

Hypericum galioides, var. *pallidum* Mohr, Contrib. U. S. Nat. Herb. 6:621. 1901.

Hypericum spathulatum Keller, Bot. Jahr. 58:195. 1923, not Steud., Nomencl. ed. 2, 789. 1840.

TYPE: "Caroline," *Fraser*, P-LA; sketch and notes from type by H. K. Svenson, GH.

REPRESENTATIVE SPECIMENS: FLORIDA: Gadsden Co., 3.5 miles west of Greensboro, *Adams 362* (DUKE, FSU, GA, GH, NCSC, NY, TENN, US); Liberty Co., *Adams 370* (FLAS, MO, NCU, SMU). GEORGIA: *Harper 1155* (A, GH, NY, US, isotypes of *H. spathulatum* Keller). SOUTH CAROLINA: Berkeley Co., *Adams 89* (IND).

Abundant on open stream banks, seepage areas, swampy clearings, river bottoms, floodplains, hammocks, pond shores, moist roadside ditches, edges of borrow pits, and low pine-lands on the Coastal Plain from North Carolina southward to northern Florida and westward to southeastern Texas (excepting the Delta region of Louisiana). Flowering late May through early August, occasionally to late October.

This species, equated by Lott (1938) and Svenson (1940) with the other members of the *Hypericum fasciculatum* complex, is distinguished by adult leaves with well-developed blades. The leaf margins may inroll on dried specimens, simulating the linear-subulate leaf on plants of the *H. fasciculatum* group. When best developed the lamina is 3-6 mm wide. Small (1933), Svenson (1940), and Gillespie (1959) confused *H. galioides* with the more northern *H. densiflorum*, especially with the populations of the latter in northwestern Georgia and eastern Tennessee. Superficially, the leaves are similar but the leaf length/width ratio in the Georgia-Tennessee *H. densiflorum* is different, being more narrow in proportion to the length than those of *H. galioides*. Also, the parietal placentation and shorter seeds (with a finer seed coat reticulation) of *H. galioides* contrast with these features as present in *H. densiflorum*. Furthermore, the ranges of

both species overlap on the outer Coastal Plain of the Carolinas but the two are readily identifiable, even from a moving automobile, and do not intergrade.

The reason for the usage of the name *Hypericum galioides* rather than *H. axillare* for this species (both published by Lamarck in his 1797 work) is as follows. Early American botanists, e.g. Pursh (1814) and Elliott (1824), were able to identify Lamarck's *H. galioides* fairly definitely but were unsure concerning *H. axillare*. For example, Pursh (1814) considered this name to be a synonym of *H. fasciculatum* Lam. Later authors, including Torrey & Gray (1838), Coulter (1886, 1897), Chapman (1897), Small (1903, 1913, 1933), and Svenson (1940), have employed the well-grounded *H. galioides*. I see no reason to change.

THE HYPERICUM FASCICULATUM COMPLEX

The following eight species are closely related. All have adult leaves which are linear-subulate or needle-like, the blade being poorly developed. The gynoecea are deeply lobed, 3-carpelled (rarely 2 or 4), and possess parietal placentation. With the exception of *Hypericum lissophloeus*, the seeds are remarkably similar, differing mainly in the seed coat markings. The asymmetrical, apiculate petals are also much alike in shape but differ somewhat in size. The capsules of each species exhibit a characteristic shape which is obviously related to the overall proportions of the fruit at maturity.

Taxonomic opinion regarding the *Hypericum fasciculatum* group has varied considerably. Coulter (1897), puzzled by the seeming "intergradation" of characters, recognized a single species, *H. fasciculatum* Lam. Chapman (1897), who possessed field experience with the complex, was able to distinguish two species, *H. fasciculatum* and a shorter-leaved plant which he called *H. aspalathoides* Willd. Small (1903, 1913, 1933) seems to have followed Chapman's treatment. Svenson (1940) considered these taxa as varieties of *H. galioides* Lam., a perfectly distinct although closely related species. Svenson's conception of *H. galioides* also included plants of *H. densiflorum* Pursh (Svenson, 1940, plate 587, figure 7). It is understandable, therefore, why he concluded that the plants represented by the names *H. fasciculatum* and

H. galioides "form an inseparable intergrading series." Insufficient properly prepared specimens of the *H. fasciculatum* group no doubt caused Svenson to conclude further that "some of these variations of *H. galioides* are of doubtful geographic significance and are probably not the equivalent of subspecies of zoological usage."

In recent years observant collectors in northern Florida, especially the Panhandle region, have been greatly puzzled by the *Hypericum fasciculatum* complex (R. K. Godfrey, R. Kral, and E. L. Tyson, personal communication). Their attempts to understand the group using the treatments of Small (1933) and Svenson (1940) have met with frustration; the reasons for this have now become clear (see below). I was introduced to the perplexities of *H. fasciculatum* and its relatives in June of 1958 while collecting in Florida with R. K. Godfrey. My field experience that summer combined with scrutiny of herbarium specimens led me to conclude that "the group is composed of at least four very striking variation patterns" and that "an inseparable intergrading series most probably does not exist" (Adams, 1959a). It was evident to me also that these "variation patterns" were most probably biological entities worthy of specific recognition.

Intensive field observation of the *Hypericum fasciculatum* complex by both R. K. Godfrey and myself, especially in northern Florida and southern Georgia, during the past two years, has revealed that the long-standing taxonomic confusion is due primarily to the presence of eight morphologically distinct taxa, each with a distinctive geographic range and specific habitat requirements. Close study, in the laboratory and in the field, has revealed no evidence of intergradation among these several taxa, despite their close association in the same habitats. Their flowering periods, while distinctive for each species, often overlap. Insects, chiefly bumblebees and honey bees, have been seen to visit the flowers of two or more species in succession. There is no evidence of polyploidy even though the chromosomes of only five taxa have been studied.

It is my considered opinion that each of the eight kinds of plants in the *Hypericum fasciculatum* complex represents a biological entity worthy of recognition as a species. Admittedly, they are closely related and may well be phylogenetically "young" species, compared to the other members of

Hypericum Sect. *Myriandra*. All evidence suggests that the eight species share a common ancestry and that they are related through *H. galioides* to the other members of Subsect. *Centrosperma*.

✓7. *Hypericum lissophloeus* P. Adams, sp. nov.

Arbuscula usque ad 4 m alta, trunco ad 4.5 cm in diametro. Rami juveniles, folia et sepala conspicue glauca. Cortex laevis (velut nitidus), statu juvenile castaneo-fuscus, statu adulta argenteo-metallicus, in plagulis magnis crispis decor-ticans. Folia basi articulata, lineari-subulata, lamina vix ex-pansa, valde et carnosio-marginata, 9-17 mm longa, 0.5-0.75 mm lata, subtus minute papillata. Incrementa vegetativa indeterminata, cum floribus solitariis vel subinde dichasio tribus floribus. Sepala basi articulata, lineari-subulata, 7-8 mm longa, 0.5-0.75 mm lata, ante capsulae dehiscentiam decidua. Petala flava, inaequalia, 10-12 mm longa, 5-6 mm lata. Stamina 170-221, 8-9 mm longa. Gynoecium 6-9 mm longum, 3- (vel raro 4-) carpellatum, placentatione parietale, cum 3 (vel raro 4) stylis. Capsula matura 6-7 mm longa, 2.5-3.5 mm lata. Semina fusca ad brunnea, carina aliquid humile, 1-1.6 mm longa, 0.5-0.6 mm in diametro, testa grossissime reticulata, striis longitudinalibus quam transversalibus prominentioribus, adpectu rugosa.

Shrub, to 4 m tall, with stem to 4.5 cm thick. Young stems, leaves, and sepals conspicuously glaucous. Bark smooth (as if polished), chestnut-brown when young, metallic-silvery on older stems, exfoliating in large thin curled plates. Leaves articulate at base, linear-subulate or needle-like, lamina poorly developed, edges thickened and turned abruptly downward (inrolled on drying), 9-17 mm long, 0.5-0.75 mm wide, minutely papillate beneath. Vegetative shoots often continuing growth throughout the season, producing solitary flowers (or occasionally 3-flowered dichasia) from the leaf axils. Sepals articulate at base, linear-subulate or needle-like, 7-8 mm long, 0.5-0.75 mm wide, deciduous before fruit maturity. Petals yellow, asymmetrical, 10-12 mm long, 5-6 mm wide. Stamens 170-221, 8-9 mm long. Gynoecium 6-9 mm long, carpels 3, rarely 4, placentation parietal, styles 3, rarely 4. Mature capsule 6-7 mm long, 2.5-3.5 mm wide. Seeds tan to dark brown, raphe developed into a moderately low keel, 1.0-1.6 mm long, 0.5-0.6 mm wide, seed coat very coarsely

reticulate, longitudinal striae much more prominent than transverse ones, presenting a furrowed appearance. Specific epithet from the Greek meaning "smooth bark."

TYPE: FLORIDA: Bay Co., shores of Merial Lake, ca. 10 miles north of Panama City, *Godfrey & Triplett 59844* (Holotype, GH; isotypes, DUKE, F, FLAS, FSU, GA, IA, ILL, K, MSC, MO, MT, NCU, NCSC, NY, PAM, SMU, TENN, TEX, UC, US, USF, VDB, VPI, WIS).

REPRESENTATIVE SPECIMENS: FLORIDA: Bay Co., shores of Merial Lake (exact type locality), *Adams 685* (DUKE, FLAS, GA, K, MSC, NY, SMU, US); same locality, *Adams 734* (F, GH, ILL, K, MO, NCU, TEX); Washington Co., border of Long Pond north of Redhead, *Godfrey 60793* (FSU).

Known only from Bay and Washington counties, Florida. Abundant in sandy soil on the shores of sinkhole ponds and lakes. Frequently growing in water to 1.5 m deep. Flowering sporadically from late May until October.

Hypericum lissophloeus is distinguished from its closest relatives in the *H. fasciculatum* complex by many features, including a smooth, polished, metallic-appearing bark which exfoliates like birch (on older stems); the slender, wand-like, lax or drooping younger stems; a large seed size and a furrowed seed coat; and glaucous leaves, sepals, and young stems. It grows in company with one or both of two other species of the *H. fasciculatum* group. Plants of *H. reductum*, low, much-branched, and suffrutescent, grow about the bases of *H. lissophloeus* plants on the upper pond or lake shores out of the water. It is sometimes associated with *H. fasciculatum* either in the water or on upper drier shores, in the latter situations the three occurring together. Since the three grow together and are readily identifiable, no intergradation being apparent, this is taken as additional evidence of their specific nature.

✓8. ***Hypericum chapmanii*** P. Adams, nom nov.

Based on *Hypericum arborescens* Chapman, Fl. S. U. S., ed. 2, suppl. 2, 680. 1892, not Vahl, Symb. Bot. 2:86. 1791.

TYPE: FLORIDA: presumably around Apalachicola, *Chapman*, but not yet located. Bilt. Herb. no. 5735a, apparently collected in 1893, bears the name *Hypericum arborescens* and illustrates Chapman's conception of this taxon (A, NY).

REPRESENTATIVE SPECIMENS: FLORIDA: Bay Co., northeast

of Vicksburg, *Adams 513* (FSU); Franklin Co., 8.6 miles west of Apalachicola, *Adams 508* (FLAS, FSU); Gulf Co., 3.6 miles of Wewahitchka, *Adams 340* (DUKE, GH, PAC, PUR, SMU, VDB); Liberty Co., 8 miles south of Hosford, *Adams 287* (FSU); Santa Rosa Co., *Tyson 485* (FLAS).

Abundant in flatwoods depressions, margins of cypress ponds, and borrow pits, from the Ochlocknee River (between Wakulla and Liberty counties, Florida) westward to Santa Rosa County, Florida. Not known to grow more than thirty-five miles inland from the Gulf of Mexico. Flowering early June through middle July.

Hypericum chapmanii stems are characterized by a soft bark with conspicuous, vertically-aligned, resin-filled laticifers occurring at discrete levels between layers of cork often 3 or 4 mm thick. Upon being torn apart, the layers of cork appear striated or fluted owing to the large size of the laticifers running through them. Within, the cork is reddish-brown to almost cinnamon-colored; on the surface it weathers to gray. The resin in the laticifers, clear and nearly colorless when fresh, gradually hardens, turning dark brown or almost black. As the stem grows in circumference the bark cracks externally and the cork layers disintegrate and fall away, leaving the more resistant strips of hardened, resinous laticifers, the whole presenting a stringy, ragged, unkempt appearance. Frequently the bark attains a thickness of 3 or 4 cm, especially near the bases of older stems. The soft spongy feature is evident even on young stems under 5 mm thick. The soft bark is sometimes used by mice to line their nests (E. L. Tyson, personal communication). These animals also build their nests in the branches of large plants of this species, according to Tyson.

When best developed, plants of *Hypericum chapmanii* usually have a single stem which produces a dwarf tree-like aspect, a feature which doubtless influenced Chapman in his choice of the name "arborescens." Individuals often attain a height of 3 or 4 m and a thickness of 10-15 cm, especially near the base. The strongly ascending, light green leaves have a deep channel or groove on their lower surface along each side of the midvein. Numerous tiny (but obvious under 10X magnification) white papillae cover the surface of these canalicula. The flowering season begins about June 1 and extends through late July. A second crop of flowers

is never produced in the fall, at least not during the two years I have observed these plants.

The distributional area includes or overlaps those of the following related species: *H. fasciculatum*, *H. nitidum*, *H. exile*, *H. reductum*, *H. lissophloeus*, and *H. brachyphyllum*. However, observations in the field and on specimens of fresh and dried plants in the laboratory during the past two years have revealed no evidence of intergradation.

9. ***Hypericum fasciculatum* Lam., Encyc. Méth. Bot.**
4:160. 1797

Not Michx., Fl. Bor.-Am. 2:80. 1803, not Tapeyr., Hist. Abr. Pl. Pyr. 450. 1813.

Hypericum aspalathoides Willd., Sp. Pl. 3:1451. 1803, nom. superfl.

Myriandra brathydis Spach, Hist. Nat. Vég. 436. 1836, nom. superfl.

Hypericum galioides Lam. var. *aspalathoides* (Willd.) T. & G., Fl. N. Am. 1:672. 1840.

Hypericum galioides Lam. var. *fasciculatum* (Lam.) Svenson, Rhodora 42:12. 1940.

TYPE: "Caroline," *Fraser*, P-LA; photograph, GH; sketches and notes from type by H. K. Svenson, GH.

ILLUSTRATION: Svenson, 1940, plate 587, figure 1.

REPRESENTATIVE SPECIMENS: FLORIDA: Liberty Co., 7.7 miles east of Bristol, *Adams* 357 (DUKE, FLAS, FSU, GH, NCSC, SMU, NCU, USF); Polk Co., 7 miles west of Frostproof, *Adams* 393 (FLAS, FSU, USF); Wakulla Co., 1 mile north of Panacea bridge, *Adams* 305 (FLAS, FSU, DUKE); Washington Co., Long Pond, north of Redhead, *Godfrey* 60792 (FSU).

GEORGIA: Echols Co., 8 miles west of Fargo, *Adams* 820 (FSU, GA, GH); Lee Co., 3.5 miles south of Smithville, *Adams* 3 (BH, GA, LA, IND, MSC, MT, NA, NCU, NY, SMU, US).

Common around the margins of cypress ponds and small lakes, in low pinelands and ditches, throughout Florida, southern Georgia, southeastern South Carolina, southern Alabama (Harper, 1928), and southern Mississippi. Flowering all year in southern Florida, beginning in late April-early May in northern Florida, sporadically through the summer and until November in northern Florida and Georgia.

Plants of *Hypericum fasciculatum* have a spongy-thick-

ened bark which exfoliates in tissue-thin sheets. Vertically-aligned, resin-filled laticifers occur in definite layers between strata of cork. The resin in the laticifers is liquid and nearly colorless when fresh but gradually hardens to a reddish-brown color. As the stem grows in thickness the resinous layer cracks, exposing the cork which peels away in brown or cinnamon-colored tissue-like layers. The laticifers, being more resistant to weathering, remain longer but eventually exfoliate in elongate flakes or strips.

Both *Hypericum fasciculatum* and its relative, *H. chapmanii*, possess corky barks. However, each is distinctly different, being easily recognizable, even by touch. The bark of *H. fasciculatum* never attains the softness nor the thickness of *H. chapmanii*. Anatomically, the cork strata of the former species do not become as thick (i.e. have fewer cell layers) as do those of the latter. Since the laticifers of *H. fasciculatum* are relatively small and thread-like, the intervening layers of cork are smooth, in marked contrast to the conspicuously striated or fluted aspect produced by the large resin tubules in *H. chapmanii*.

Other characteristics of *Hypericum fasciculatum* which distinguish it from *H. chapmanii* include darker green, spreading to only slightly ascending leaves, a different inflorescence (see key), strongly flattened young stems, earlier initiation of flowering, development of a second crop of flowers in the fall (see below), smaller maximum height and thickness of stems, and much more extensive geographic range.

The distributional range of *Hypericum fasciculatum* overlaps or encompasses that of six related species. In the Bay-Gulf-Franklin-Liberty county region of Florida, plants of this species grow in close association with individuals of *H. lissophloeus*, *H. chapmanii*, *H. brachyphyllum*, *H. nitidum*, *H. exile*, and *H. reductum*. No evidence of intergradation among these species has been discovered.

At fruit maturity plants of *Hypericum fasciculatum* may produce a second increment of vegetative growth, the young shoots frequently bearing flowers at their tips. In the northern portion of the range this second crop of flowers rarely matures, usually being killed by frost in November.

The seedling leaves of plants of this species possess a strikingly different shape than the adult ones. These juvenile

leaves are obovate, elliptic, or elliptic-oblong, with the blade well-developed, but gradually become modified in form and structure at successive nodes up the stem. Eventually, adult leaves with a linear-subulate or needle-like shape are formed. "Stump sprouts," originating when older stems are cut near the base (as along mowed highway right-of-way), show a similar leaf development. Occasionally, a mature plant will suddenly form juvenile leaves (see illustration in Svenson, 1940, plate 587, figure 2). Reversal to juvenility may occur also in greenhouse plants. This phenomenon has been responsible for some of the confusion concerning *H. fasciculatum* and the related *H. galioides*, the juvenile leaves of the former having been interpreted as evidence of intermediacy between these species.

10. ***Hypericum nitidum*** Lam., Encyc. Méth. Bot. 4:160. 1797
Myriandra nitida (Lam.) Spach, Hist. Nat. Vég. 5:436.
1836.

Hypericum cubense Turcz. [?], Bull. Soc. Nat. Mosc. 31:384.
1858, see discussion below. Type: *Linden 1696*, but not yet located.

Hypericum galioides Lam. var. *cubense* Griseb. [?], Cat. Pl. Cub. 39. 1866, see discussion below. Type: *Wright 2126* (GH, NY).

TYPE: P-JU; photograph, GH; fragment of type, GH.

REPRESENTATIVE SPECIMENS: FLORIDA: Bay Co., just east of Callaway, *Adams 350* (DUKE, F, FLAS, FSU, GA, GH, K, MO, NCSC, NY, SMU, US). GEORGIA: Colquitt Co., *Adams 33* (FSU, GA, GH, NA); Irwin Co., 11 miles southeast of Fitzgerald, *Adams 555* (FSU, GA); Brooks Co., 2.8 miles east of Barney, *Adams 376* (DUKE, FLAS, FSU, GH, IA, K, MO, MSC, NCSC, NCU, SMU, TEX); Thomas Co., 2 miles north of Pavo, *Adams 334* (DUKE, FSU, GA).

Moist soil along open stream banks and pond margins, low pinelands, highway fill excavations, and roadside ditches. Southern Georgia (excepting the coastal counties) nearly to the Fall Line and southward into the Panhandle of Florida from Liberty to Escambia counties. Also in Baldwin Co., Alabama, Lexington Co., South Carolina, and Brunswick Co., North Carolina. Flowering early June through early August, occasionally later.

Plants of *Hypericum nitidum* are usually very abundant

locally, often forming dense thickets. In Bay, Gulf, and Liberty counties, Florida, these plants are often 2 m or more in height and frequently 3-4 cm in diameter near the base. The bark is thin, dark brown or reddish, and exfoliates in flakes or narrow strips. Plants of this species greatly resemble those of *H. brachyphyllum*; indeed, the two species seem to differ mainly quantitatively, the latter appearing to be a "miniature" of the former. However, they seem amply distinct morphologically, being easily distinguished even when growing in the same habitats. Plants of *H. nitidum*, besides having much longer and somewhat wider leaves, are typically much taller and the stems thicker in diameter. Furthermore, those of this species usually begin to flower at least two weeks earlier than those of *H. brachyphyllum*. In addition, each of these species possesses a distinctive geographic range, although their distributions overlap throughout the Panhandle of Florida and the lowermost portion of Georgia. *Hypericum nitidum* grows farther north toward the Fall Line in Georgia but does not occur in Florida southeast of Franklin County. Further intensive study is greatly needed to establish the exact morphological limits of each of these species.

The plants of the *Hypericum fasciculatum* complex which grow in Cuba and British Honduras seem to be closest to *H. nitidum*, with the exception of Grisebach's *H. limosum* (isotype, Wright 2125, GH) which greatly resembles *H. brachyphyllum*. The external morphology of the leaves of the Cuban specimens compares readily with that of the United States *H. nitidum*. However, stem samples with bark taken from near the base of the plants are needed before the Cuban material can be definitely classified. Interestingly enough, Asa Gray, upon his last visit to Paris in 1881, concluded that Grisebach's type of *H. galioides* var. *cubense* (Wright 2126) is "exactly *H. nitidum* Lam." (notes in Gray's handwriting, GH). An isotype of this taxon (GH) is comparable to many specimens of *H. nitidum* from Florida and Georgia.

11. ***Hypericum brachyphyllum*** (Spach) Steud., Nomencl.
1:787. 1840

Based on *Myriandra brachyphylla* Spach, Hist. Nat. Vég.
5:435. 1836.

Hypericum limosum Grisebach [?], Cat. Pl. Cub. 39. 1866, see discussion below.

TYPE: FLORIDA, Apalachicola, *Drummond* (Isotypes, GH; K, two sheets, not seen).

REPRESENTATIVE SPECIMENS: ALABAMA: Covington Co., 7.4 miles south of Opp, *Shinners 27453* (FSU). FLORIDA: Calhoun Co., 2.5 miles south of Blountstown, *Godfrey 57582* (FSU); Franklin Co., west of Apalachicola, *Adams 309* (FSU); Levy Co., 14 miles south of Chiefland, *Adams 388* (FSU); Santa Rosa Co., 6 miles east of Munson, *Kral & Redfearn 2946* (FSU); Wakulla Co., 1 mile north of St. Marks, *Godfrey 57862* (FSU). GEORGIA: Coffee Co., 8 miles east of Douglas, *Adams 830* (FSU, GA); Early Co., 9 miles southeast of Blakeley, *Adams 791* (DUKE, FSU, GA, USF). MISSISSIPPI: Jackson Co., Ocean Springs, *Demaree 32846* (FSU).

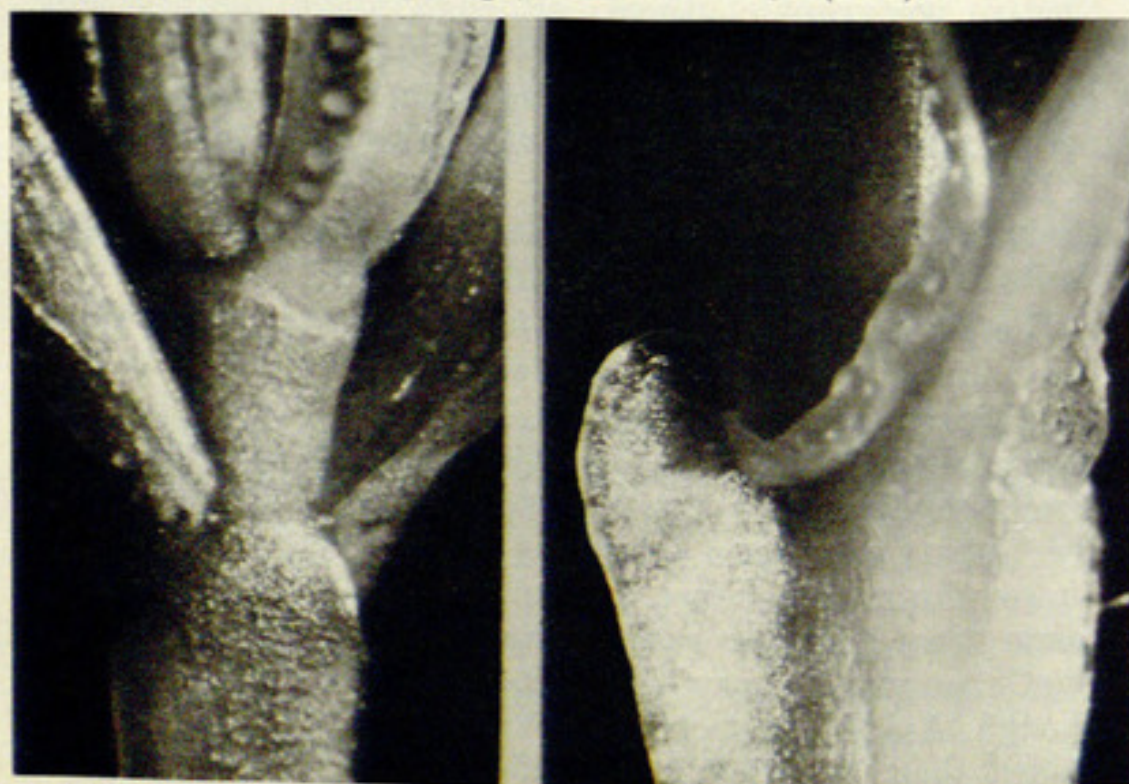


FIG. 1-2. Morphology of the leaf and sepal bases in *Hypericum* Sect. *Myriandra*. FIG. 1. Left. *Hypericum brachyphyllum* (Spach) Steud., below, bases of two opposite leaves, each with a conspicuous articulation or groove at the junction with the stem. Above, bases of the sepals (two visible), each with an articulation at the junction with the receptacle. FIG. 2. Right. *Hypericum nudiflorum* Michx., base of one leaf. Note the complete absence of an articulation. Magnification ca. 10X.

Abundant in low pine flatwoods, pond margins, borrow pits, and roadside ditches, especially in the Florida Panhandle region and scattered stations along the Florida west coast to Collier County, westward into southern Mississippi,

northward into lower Alabama and Georgia. Flowering late June through early September, occasionally sporadically to late November, or later in southern Florida.

Plants of *Hypericum brachyphyllum* characteristically possess a rounded bushy aspect due to the production and retention of numerous branches from the upper three-fourths or one-half of the stem. The height is usually about 0.5 to 1.0 m although occasional individuals may reach 1.5 m. Stem diameter near the base rarely exceeds 1.5 cm. The bark is relatively thin and tight, being composed of alternating strata of cork cells and thread-like laticifers, and exfoliates in small plates of strips, the whole presenting a dark reddish or brownish appearance.

Although plants of *Hypericum brachyphyllum* often grow in close association with individuals of *H. nitidum*, *H. exile*, *H. fasciculatum*, *H. chapmanii*, and *H. reductum*, no intergradation has been observed. Since it was described by Spach in 1836 few, if any, authors have recognized the biological distinctiveness of this species. Coulter (1897) included it within his concept of *H. fasciculatum*. Chapman (1897), who knew the species in the type region, referred it to *H. aspalathoides* Willd. I cannot be certain that Chapman also knew the related *H. reductum* which grows along the coast in the Apalachicola area. If so, then he did not distinguish between them. Small's treatments (1903, 1913, 1933) were essentially the same as that of Chapman. Svenson (1940) made no mention of the plants now referred to *H. brachyphyllum* but he did recognize *H. reductum* (as a variety of *H. galioides*, however). He demonstrated also that *H. aspalathoides* Willd. was merely a re-naming of *H. fasciculatum* Lam.

That the plants of *Hypericum brachyphyllum* are amply distinct from those of *H. reductum* has become evident to me from field observations extending over the past two years. In addition to the features listed in the key, each of these two species possesses different (although slightly overlapping) flowering periods, geographic ranges, and habitat preferences. Plants of *H. reductum* begin to flower earlier than do those of *H. brachyphyllum*. Flowers appear on plants of the former species in late April in southern peninsular Florida and early June in western Florida. However, those of the latter species do not begin to flower until the

last week of June (except for sporadic individuals, especially in the southern portion of its range). Furthermore, the length of the flowering period is different in these two species. That of *H. reductum* is usually completed by the first of July whereas that of *H. brachyphyllum* extends through August. There is a tendency for plants of both species to produce a second crop of flowers during the fall but this phenomenon is much more pronounced in the latter.

Each of these species has different habitat preferences, the plants of *Hypericum reductum* being adapted to somewhat drier sites than those of *H. brachyphyllum*. Ecology, no doubt aided by past geological events, has influenced the creation of the distinctive distributional patterns which are discernible in these species. The geographic range of *H. reductum* appears to be composed of four isolated segments (see below). In each of these, there seems to be a relationship between the present distribution and the presence of recent or fossil sand dunes. The distributional pattern presented by plants of *H. brachyphyllum* is more or less continuous instead of being fragmented. The present distribution does not show any relationship with coastal physiography, the plants growing in low wet pinelands inland from the ocean.

Additional evidence supporting my interpretation of specific status for each of these two taxa has been obtained by observations on sympatric populations. During the course of my field studies I have encountered three widely separated stations where plants of both species were growing in close association. Two of these occurrences are in southeastern Georgia, one being three miles south of Pembroke in Bryan County, and the other about four miles west of Eulonia in McIntosh County. The third sympatric association is in Franklin Co., Florida, about five miles east of Eastport. At each of these places plants of each species were immediately and easily distinguishable, even though growing within a few feet of each other. The habitat differences were maintained at each site also, with *H. reductum* plants on the slightly drier and better drained soils. Further analysis of population samples made at these stations is in progress.

Grisebach's *Hypericum limosum*, type: Wright 2125 (GH, NY), appears to be closest to *H. brachyphyllum*. However,

better specimens must be available before a definitive interpretation can be made.

12. ***Hypericum reductum*** P. Adams, stat. & nom. nov.

Based on *Hypericum fasciculatum* Lam. var. *aspalathoides* T. & G., Fl. N. Am. 1:672. 1840, not *H. aspalathoides* Willd., Sp. Pl. 3:1451. 1803, nom. superfl.

Hypericum fasciculatum Lam. var. β T. & G., Fl. N. Am. 1:160. 1838.

Hypericum galioides Lam. var. *reductum* Svenson, Rhodora 42:14. 1940, nom. superfl. for var. *aspalathoides* T. & G.

TYPE: North Carolina, Wilmington, *Curtis* (Lectotype, GH; isotype, NY, fragment). Cited by Torrey & Gray (1838) under their description of *H. fasciculatum* var. β .

ILLUSTRATION: Svenson, 1940, plate 587, figure 5.

REPRESENTATIVE SPECIMENS: FLORIDA: Bay Co., Panama City Beach, *Godfrey & Triplett* 59815 (FSU); Franklin Co., Alligator Point, *Adams* 298 (DUKE, FSU, VDB); Highlands Co., Hicoria, *Adams* 402 (DUKE, FLAS, FSU, GH, USF); Lake Co., 4 miles north of Altoona, *Adams* 599 (F, FSU, GH, MO); Marion Co., 1 mile east of Lynne, *Adams* 610 (FSU, GA, GH); Okaloosa Co., 4 miles east of Ft. Walton, *Thorne & Davidson* 17336 (FSU). GEORGIA: Bryan Co., 2.6 miles west of Pembroke, *Adams* 540 (FSU); Bulloch Co., 17 miles southeast of Statesboro, *Adams* 535 (FSU, GA, GH, NY); Evans Co., 5.2 miles west of Claxton, *Adams* 544 (FSU); Tatnall Co., 3 miles northwest of Reidsville, *Cronquist* 5342 (FLAS, GA, GH, NY, SMU, US). NORTH CAROLINA: New Hanover Co., Carolina Beach, *Godfrey* 1260 (BKL, DUKE, FLAS, GA, GH, MO, NCU, NCSC, NY, SMU, TENN, US).

The range of *Hypericum reductum* appears to be composed of four allopatric segments. In the Wilmington region of southeastern North Carolina plants of this species grow among the dunes and dune hollows along the coast. Several stations are also known further inland in that area. It is very abundant over many acres of longleaf pine, scrub-oak sand ridge between Wilmington and Southport (R. K. Godfrey, personal communication). A second segment occurs in the triangle formed by the towns of Swainsboro, Jesup, and Savannah, Georgia. Here the plants grow on the sands of fossil dunes (e.g. east side of the Canooche River, 8 miles east of Pembroke, Bryan Co.) and on the sandy soil of dry

pinelands, roadside embankments, and borrow pits. The third population occurs in central peninsular Florida from Putnam County (east of Gainesville) southward to Highlands and Charlotte counties. The fourth portion of the range is along the coast of the Gulf of Mexico from Franklin Co., Florida, westward to Escambia County. In northern Bay and southern Washington counties, Florida, *H. reductum* grows in the sandy soil on the shores of sinkhole ponds and lakes, its branches frequently touching the bases of *H. lissophloeus* plants. The former species also occurs in close association with plants of *H. fasciculatum*, *H. chapmanii*, and *H. brachyphyllum*. Flowering late April through late June in central and southern Florida, occasionally sporadically earlier in the spring or the fall; during June and occasionally July and November in western Florida; mid-June through late July in Georgia; and early June through mid-August in North Carolina.

Plants of *Hypericum reductum* possess a low, decumbent, matted aspect, especially when growing among the loose sands of dunes and dune hollows. In dense stands of grasses, palmetto, gallberry, and other plants an erect habit may be formed but a reclining and straggly tendency is still retained. Other features include the short leaves, four well-developed secondary wings on the young stems, and the straight-sided, elongated, mature capsules.

Svenson (1940), following Torrey & Gray (1838), cited *Hypericum tenuifolium* Pursh (Fl. Am. Sept. 2:377. 1814) as a synonym of *H. galioides* var. *reductum*. Pursh's description could be interpreted as fitting either *H. lloydii* or *H. reductum*. The specimen which he cited (collected "In Georgia" by Enslen) is not present in the Enslen Herbarium at Vienna (K. H. Rechinger, personal communication). A fragment of an Enslen collection of *Hypericum* is at Philadelphia but there is no indication on the sheet that it represents the same collection cited by Pursh. This specimen is definitely *H. reductum*.

✓13. ***Hypericum lloydii*** (Svenson) P. Adams comb. nov.

Based on *Hypericum galioides* Lam. var. *Lloydii* Svenson, *Rhodora* 54:207. 1952.

TYPE: SOUTH CAROLINA: Aiken Co., Graniteville, Eggert in 1898 (Holotype, NY; isotypes, MO, US).

ILLUSTRATION: Svenson, 1940, plate 587, figure 8.

REPRESENTATIVE SPECIMENS: ALABAMA: Tallapoosa Co., Harper 3691 (GH, PH, US). GEORGIA: Richmond Co., August, Cuthbert July 17, 1899 (FLAS, NY). NORTH CAROLINA: Granville Co., Oxford, Gillespie 394 (DUKE, FSU, NCSC). SOUTH CAROLINA: Lancaster Co., Elgin, House 2568 (MO, NY, US).

Abundant on the sandy soil of scrub oak-longleaf pine sandhills, dry woods borders, granite outcrops, and roadside embankments along the Fall Line in the Carolinas; also Richmond and Heard counties of Georgia and Chilton (Harper, 1928) and Tallapoosa counties, Alabama. Flowering early June through mid-July, occasionally to late August.

A low rounded or straggly growth form, fairly long and narrow leaves, and short widened mature capsules with tapering sides mark *Hypericum lloydii*. This distinctive plant is related to the other members of the *H. fasciculatum* complex but it is not known to grow in association with any of them.

The range of this species is essentially isolated from other members of the *Hypericum fasciculatum* group. In North Carolina its range approaches that of *H. reductum* within a county or two but plants of the two species have not been discovered growing together. Nevertheless, I believe that the taxonomy of the group can be best understood by recognizing *H. lloydii* as a species. Morphologically it is as distinct as any of the other members of this complex.

14. *Hypericum exile* P. Adams, sp. nov.

Frutex exilis, pauci-ramosus, usque ad 1 m altus vel raro altior, usque ad 1 cm in diametro. Cortex tenuis, in laciniis vel segmentis parvis irregularibus decorticans. Folia basi articulata, patentia, lineari-subulata, lamina vix expansa, valde et carnosio-marginata, margine siccitate maxime involuta, (10-) 16-26 mm longa, 0.5-0.8 mm lata, apice longiacuminata, subtus obscure papillata, ramulis axillaribus haud conspicuis. Incrementa determinata, plerumque dichasis similibus in 3-6 nodis superioribus; inflorescentia compacta, paniculoidea. Sepala basi articulata, lineari-subulata, 6-7 mm longa, 0.5-0.8 mm lata, apice longiacuminata, ante capsulae dehiscentiam decidua. Petala flava, asymmetrica, 6-7 mm longa, 3-4 mm lata. Stamina 80-100, 5-7 mm longa. Gynoecium 4.5-7 mm longum, 3- (raro 2 vel

4) carpellatum, placentatione parietale, cum 3 (raro 2 vel 4) stylis. Capsula matura 6-7 mm longa, 1.5-2.5 mm lata. Semina rufo-brunnea, carina minuta, 0.4-0.6 mm longa, testa subtiliter reticulata.

Slender, sparingly-branched shrub, rarely over 1 m tall and usually less than 1 cm thick. Bark thin, exfoliating in small irregular flakes or strips. Leaves articulate at base, spreading, linear-subulate or needle-like, lamina poorly developed, edges thickened and turned abruptly downward (inrolled on drying), (10-) 16-26 mm long, 0.5-0.8 mm wide, apices long-acuminate, lower surface obscurely papillate, axillary branchlets poorly developed. Shoots terminating in a 3-7 flowered dichasium, usually with similar dichasia from upper 3-6 nodes, inflorescence compact, panicle-like. Sepals articulate at base, linear-subulate or needle-like, 6-7 mm long, 0.5-0.8 mm wide, apices long-acuminate, deciduous before fruit maturity. Petals yellow, asymmetrical, 6-7 mm long, 3-4 mm wide. Stamens 80-100, 5-7 mm long. Gynoecium 4.5-7 mm long, carpels 3, rarely 2 or 4, placentation parietal, styles 3, rarely 2 or 4. Mature capsules 6-7 mm long, 1.5-2.5 mm wide. Seeds reddish-brown, raphe poorly developed, keel minute, 0.4-0.6 mm long, 0.2-0.3 mm wide, seed coat finely reticulate. Specific epithet from Latin meaning "slender."

TYPE: FLORIDA: Gulf Co., 2.5 miles east of Port St. Joe, *Adams 456* (Holotype, GH; isotypes, DUKE, FLAS, FSU, GA, K, MO, NCSC, NCU, NY, SMU, US).

REPRESENTATIVE SPECIMENS: FLORIDA: Franklin Co., 10 miles west of Apalachicola, *Adams 473* (FSU); Gulf Co., 3 miles east of Port St. Joe, *Adams 740* (FLAS, FSU, GA, GH, SMU); Liberty Co., 6 miles north of Wilma, *Adams 485* (FSU).

Known only in the sandy soil of open pinelands, Liberty, Franklin, Gulf, Bay, and Washington counties, Florida. Flowering throughout May.

Plants of *Hypericum exile*, as the epithet suggests, are slender, with a single stem which dichotomizes 25-40 cm above the ground. The inflorescence is relatively narrow and compact, with a panicle-like aspect. Leaf length, seemingly long for such a small slender plant, is strikingly reminiscent of *H. lloydii*. This hitherto undescribed species

occurs in close association with *H. fasciculatum*, *H. chapmanii*, *H. brachyphyllum*, and *H. nitidum* but they do not intergrade.

15. ***Hypericum myrtifolium*** Lam., Encyc. Méth. Bot. 4:180. 1797. Not Spach, Hist. Nat. Vég. 5:399. 1836.

Hypericum rosmarinifolium Lam., Encyc. Méth. Bot. 4:159. 1797.

Hypericum glaucum Michx., Fl. Bor.-Am. 2:78. 1803.

Hypericum sessiliflorum Willd. ex Spreng. Syst. Veg. 3:346. 1826.

Myriandra glauca (Michx.) Spach, Hist. Nat. Vég. 5:442. 1836.

TYPE: P-LA; photograph, GH.

REPRESENTATIVE SPECIMENS: FLORIDA: Duval Co., near Jacksonville, *Curtiss 265* (BKL, F, GH, NY, PH, US); Lake Co., Eustis, *Nash 708* (A, MICH); Leon Co., 4 miles south of Tallahassee, *Adams 581* (FLAS, FSU). GEORGIA: 6 miles east of Adel, *Adams 47* (GA).

Sandy and peaty soil on the margins of evanescent ponds, in moist pine flatwoods, grass-sedge bogs, and low roadside ditches on the Coastal Plain of Georgia (nearly to the Fall Line), most of peninsular Florida, and westward to Jackson Co., Mississippi. Flowering mid-May through late July, occasionally also in October.

This is the only species of Subsect. *Centrosperma* in which the plants have clasping leaves. Other distinctive features include the glaucous sepals, leaves, and young stems, gnarled and woody caudex-like rootstock, moderate development of a corky bark, subcoriaceous, ovate, elliptic-ovate, or cordate-lanceolate leaves, and pyramidal-ovoid, strongly triquetrous, black, glossy-shiny mature capsules. It is superficially similar to *H. tetrapetalum* (Subsect. *Pseudobrathydium*), both having clasping leaves, and is often confused by the casual observer. Besides its articulated leaves and sepals, *H. myrtifolium* is readily distinguished from this species by a pentamerous perianth, spongy-thickened bark, and compound dichasial inflorescences.

Usage has firmly established the epithet *Hypericum myrtifolium* over *H. rosmarinifolium* (both published by Lamarck in his 1797 work).

Sect. MYRIANDRA, subsect. PSEUDOBATHYDIUM Keller, in

Engler & Prantl, *Pflanzenfamilien*, 3 (6 - 6a) 214. 1895, excluding description.

Hypericum, Sect. *Myriandra*, Subsect. *Brathydium* (Spach) Keller, l. c., based on *Brathydium* Spach, *Hist. Nat. Vég.* 5:442. 1836, as a genus.

Hypericum, Sect. *Myriandra*, Subsect. *Suturosperma* Keller, l. c.,

Hypericum, Sect. *Isophyllum* (Spach) Coulter, *Bot. Gaz.* 11:82. 1886, based on *Isophyllum* Spach, *Hist. Nat. Vég.* 5:432. 1836, as a genus.

Ascyrum L., *Gen. Pl.* ed 5. 342. 1754 (excluding *A. filicaule* Dyer), as a genus.

Hypericoides Adanson, *Fam. Pl.* 2:443. 1763, as a genus.

Crookea Small, *Fl. Southeastern U. S.* 786, 1335. 1903, as a genus.

Shrubs and perennial herbs. Leaves and sepals without an articulation or groove at the base (Fig. 2). Sepals 5 or 4, persistent long after fruit maturity (deciduous in *H. nudiflorum*). Petals 5 or 4. Withered stamens persistent long after anthesis (except in *H. nudiflorum* and *H. apocynifolium*).

TYPE SPECIES: *H. buckleyi* M. A. Curtis.

Fifteen species distributed mostly in the central and southern United States.

16. ***Hypericum nudiflorum* Michx., *Fl. Bor.-Am.* 2:78. 1803**

Hypericum mediflorum Darby, *Man. Bot.*, part 2, 35. 1841.

TYPE: "Hab. in Carolina. Goose Creek, Berkeley Co., [South Carolina?]," P; photograph, GH.

REPRESENTATIVE SPECIMENS: ALABAMA: Etowah Co., Gadsden, *Vasey* 385 (F, GH, NY, PH, US). FLORIDA: Wakulla Co., *Godfrey* 57135 (FSU, GH). GEORGIA: Elbert Co., 11.9 miles west of Elberton, *Duncan* 11699 (GA, NCSC). NORTH CAROLINA: Ware Co., 3 miles south of Raleigh, *Godfrey* 4617 (DUKE, GH). TENNESSEE: Sequatchie Co., west of Dunlap, *Svenson* 9554 (BKL, DUKE, MO, PH, TENN). VIRGINIA: Princess Anne Co., Macon's Corner, *Fernald & Long* 4943 (A, NY, US).

Locally abundant on stream banks and in rich deciduous woods, southeastern Virginia, the inner Coastal Plain and outer Piedmont in the Carolinas, the Piedmont of Georgia,

the Cumberland Plateau of Tennessee, the Panhandle of Florida, and westward to southern Mississippi. Flowering early June through late July, occasionally in late August.

Closely related to the following species.

17. ***Hypericum apocynifolium*** Small, Bull. Torrey Club
25:616. 1898

TYPE: TEXAS, Texarkana, A. A. Heller August 1897 (Lectotype, NY).

REPRESENTATIVE SPECIMENS: LOUISIANA: DeSoto Parish, 2 miles west of Hunter, *Correll & Correll* 10178 (DUKE, GH). ARKANSAS: Drew Co., Monticello, *Demaree* 16231 (NY). GEORGIA: Decatur Co., Butler's Creek, *Thorne & Davidson* 17211 (GA).

Stream banks and moist woods, widely scattered localities, southern Arkansas, western Louisiana, extreme northeastern Texas, the Flint River drainage in extreme southwestern Georgia, and the Apalachicola River bluffs in Gadsden Co., Florida. Flowering in June.

Vegetatively, plants of *Hypericum apocynifolium* cannot be distinguished from those of *H. nudiflorum*. The differences listed in the key, i.e. simpler inflorescence, larger fruit, and better-developed keel on the seed, are constant. Pending acquisition of additional specimens and further study, I think this taxon merits continued recognition as a species.

Svenson's conception of this species included several diverse elements (Svenson, 1940). One of the collections which he cited (*R. M. Harper* 1755, NY) is referable to *H. frondosum* Michx. A second collection (*R. M. Harper* 1501, NY, US) comprises plants of *H. myrtifolium* Lam. Finally, the Leavenworth specimens (NY) cited by Small in the original description of *H. apocynifolium* belong to that species and not to *H. lobocarpum* Gattinger, as Svenson believed.

18. ***Hypericum buckleyi*** M. A. Curtis,
Am. Jour. Sci. 44:80. 1843 [as *Buckleii**]

TYPE: "In montibus Carolinae et Georgia," *S. B. Buckley*

*This species was named in honor of its discoverer, S. B. Buckley. Since classical Latin lacks the letter y, Curtis was correct in changing this letter to an i. However, later authors, including Chapman, Small, and Svenson, used the spelling adopted here. As I interpret Art. 73 of the Code, both forms are correct (see the first and second paragraphs). Majority usage seems in favor of the spelling adopted in the present study.

(Lectotype, GH; isotype, NY, in less satisfactory condition).

REPRESENTATIVE SPECIMENS: GEORGIA: Rabun Co., Rabun Bald, *Pyron & McVaugh* 895 (GA, US). NORTH CAROLINA: Haywood Co., Mt. Pisgah, Bilt. Herb. no. 1319 (A, GH, MO, NCU, US, WIS); Macon Co., Highlands, Bilt. Herb. no. 1319b (F, MICH, NCSC, NY, PH). SOUTH CAROLINA: Greenville Co., 1 mile from Caesar's Head, *Canby* June 15, 1881 (A, F, MO, NY, PH, US).

Endemic to the Blue Ridge Mountains of southwestern North Carolina and adjacent Georgia at high elevations (3,000 to 5,000 feet). Usually in seepage areas and moist crevices, sometimes along road embankments and ditches. Among the North Carolina stations are Cold Mt., Mt. Pisgah, Sassafras Mt., Satulah Mt., Standing Indian Mt., Thomas Bald, Wayah Bald, and Whitesides Mt. The only known Georgia localities are Blood Mt., Brasstown Bald, Hightower Bald, and Rabun Bald. Also near Caesar's Head in Greenville Co., South Carolina. Flowering early June through mid-July.

Hypericum buckleyi superficially resembles *H. stragulum* in its decumbent growth form, elliptic to obovate leaves, and a tendency for its flowers to be solitary. The former species is readily distinguished by its pentamerous perianths, 3-carpetted gynoecea, and much larger fruit.

19. *Hypericum cistifolium* Lam., Encyc. Méth. Bot.
4:158. 1797

Hypericum opacum T. & G., Fl. N. Am. 1:163. 1838.

Hypericum punctulosum Bertol., Misc. Bot. 13:18. 1853.

TYPE: P-LA; photograph, GH.

REPRESENTATIVE SPECIMENS: FLORIDA: Duval Co., near Jacksonville, *Curtiss* 253 (F, GH, MO, PH, US); Franklin Co., Lanark, *Gillespie* G10-55-8 (DUKE, FSU, NCSC, SMU); Lee Co., Ft. Myers, *Hitchcock* 12 (NY, US). GEORGIA: Miller Co., 1 mile west of Colquitt, *Thorne* 5873 (GA, GH, US); Sumter Co., near Leslie, *Harper* 441 (A, BKL, F). LOUISIANA: Tangipahoa Parish, 2 miles west of Robert, *Correll* 10511 (F, GH, NY, PH). MISSISSIPPI: Harrison Co., Biloxi, *Pollard* 1002 (F, GH, MO, NY, US). NORTH CAROLINA: Brunswick Co., *Godfrey* 48428 (GA, SMU). SOUTH CAROLINA: Charleston Co., 5 miles northwest of McClellanville, *Godfrey & Tryon* 1114 (DUKE, F, GH, MICH, MO, NY, PH, TENN).

Frequent in moist soil of pine flatwoods, seepage slopes, grass-sedge bogs, margins of swamps and marshes, ditches, and road embankments. Coastal Plain, North Carolina southward through peninsular Florida, and westward along the coast of the Gulf of Mexico to eastern Louisiana. Flowering early April, especially in southern Florida, through mid-September, occasionally to mid-October.

Perhaps the most distinctive feature of this species is the peculiarly lobed gynoecium. The carpel walls (between the margins) are greatly indented or depressed, nearly meeting in the center along the ovary axis to produce a trilobular appearance in cross-section. In contrast, the lobed gynoecia of other species in Sect. *Myriandra* are the result of indentation of the carpel margins (with their associated placentae) so that a multilocular aspect is produced.

20. ***Hypericum sphaerocarpum*** Michx., Fl. Bor.-Am.

2:78. 1803

Brathydium sphaerocarpum (Michx.) Spach, Hist. Nat. Vég. 5:444. 1836.

Brathydium chamaenerium Spach, Hist. Nat. Vég. 4:445. 1836.

Brathydium hyssopifolium Spach, Hist. Nat. Vég. 4:445. 1836.

Hypericum chamaenerium (Spach) C. Koch, Hort. Dendr. 66. 1853.

Hypericum turgidum Small, Fl. Southeastern U. S. 788. 1903.

Hypericum sphaerocarpum, var. *turgidum* (Small) Svenson, Rhodora 42:17. 1940.

TYPE: "Hab. in Kentucky. Route de Louisville," Michaux (P; photograph, A; sketch from type by H. K. Svenson, GH).

REPRESENTATIVE SPECIMENS: ALABAMA: Morgan Co., Valhermoso Mt., Harper 39 (A, GH, NY, US); Madison Co. Canby 14 (NY, type of *H. turgidum* Small). ARKANSAS: Logan Co., Iltis 5344 (MICH, SMU). INDIANA: Jasper Co., Friesner 14557 (GA, MO). KANSAS: Osage Co., 3 miles south of Lyndon, Horr & Franklin E323 (FLAS, IND, NCSC). MISSOURI: Oregon Co., near Thomasville, Palmer & Steyermark 41694 (A, MO, NY). TENNESSEE: Bedford Co., 5 miles northwest of Shelbyville, Adams 71 (DUKE, F, FSU, IA, IND, K, TEX, VPI).

Locally abundant on limestone outcrops, in cedar glades,

rocky woods, prairie strips along railroads, and sandy stream banks, from southern Ohio southward to the Black Belt region of central Alabama, around the northern rim of the Mississippi Embayment to southwestern Arkansas and eastern Oklahoma, northward to central Iowa, southern Wisconsin, and northern Indiana. Flowering mid-June through mid-August.

Closely related to *Hypericum dolabriforme*, this species is readily distinguished by its nearly equal sepals, smaller number of stamens, and larger seeds. The seed coats are coarsely reticulate, with the transverse striae much better developed than the longitudinal ones. Fewer than eight seeds per capsule are produced by plants of *H. sphaerocarpum* as well as *H. dolabriforme*. All other members of the section have capsules in which numerous seeds are matured.

Much variation in the mature capsule is present in this species. Typically, the fruits are about as wide as long but in some plants the width is greater than the length, producing a depressed-globular form. In others, the capsules are longer than wide. This variation does not appear to be correlated with geography, judging from herbarium specimens. Further investigation is necessary.

21. *Hypericum dolabriforme* Vent., Hort. Cels. 45,
t. 45. 1800

Hypericum procumbens Desf. ex Willd., Sp. Pl. 3:1450. 1803.

Hypericum procumbens Michx., Fl. Bor.-Am. 2:81. 1803.

Brathydium grandiflorum Spach, Hist. Nat. Vég. 5:443.
1836.

Hypericum Bissellii Robinson, Rhodora 4:135. 1902. Type:
Bissell 4025 (GH).

TYPE: "Trouvée par Michaux sur les collines très-arides du Kentucky," presumably the Delessert Herbarium, G.

REPRESENTATIVE SPECIMENS: GEORGIA: Catoosa Co., 10 miles west of Ringgold, *Cronquist 5614* (GA, GH, IND, MO, NY, PH, SMU, US). TENNESSEE: Bledsoe Co., Pikeville, *Svenson 9354* (BKL, DUKE, PH); Knox Co., *Kearney* July 9, 1894 (F, NCU). KENTUCKY: Wayne Co., Monticello, *Smith & Hodgdon 4013* (F, GH, NY, US); Nelson Co., 12 miles south of Bardstown, *McFarland 50* (IND, MO, NY, PH, TENN, WIS).

Abundant on limestone outcrops, in cedar glades, and dry rocky beds of intermittent streams from north-central Kentucky southward through eastern Tennessee to northwestern Georgia. Flowering mid-June through mid-August, occasionally in early September.

Grossly unequal sepals, a large number of stamens, smaller seeds, and a finer seed coat reticulation are among the characteristics which distinguish *Hypericum dolabriforme* from *H. sphaerocarpum*, its closest relative. While these two species occupy similar habitats and their geographic ranges overlap, especially in Kentucky, they are not known to grow in close association.

22. *Hypericum adpressum* Barton, Comp. Fl. Phila.
2:15. 1818

Hypericum bonaparteae Barton, Fl. N. Am. 3:95. 1823.

Hypericum fastigiatum Elliott, Sketches 2:31. 1821, not HBK, Nov. Sp. & Gen. 5:195. 1821.

Hypericum adpressum, var. *fastigiatum* (Elliott) T. & G., Fl. N. Am. 1:673. 1840. Type: *Elliott* (CHARL).

Brathydium fastigiatum (Elliott) C. Koch, Hort. Dendr. 66. 1853.

Hypericum adpressum, var. *spongiosum* Robinson, Rhodora 4:135-137. 1902. Type: *Kennedy et al* 15 Sept. 1901 (GH).

Hypericum adpressum, forma *spongiosum* (Robinson) Fernald, Rhodora 51:112. 1949.

TYPE: Pennsylvania, "close to the Schuylkill, and not far above Breck's Island," *Barton* (PH).

REPRESENTATIVE SPECIMENS: GEORGIA: Dougherty Co., west of Pretoria, *Thorne* 5709 (GA, IA). INDIANA: Jasper Co., 2.5 miles southeast of Tefft, *Deam* 45934 (GH, IND). MASSACHUSETTS: Barnstable Co., Flax Pond, *Kennedy, Williams & Fernald* 234 (BKL, F, MICH, NCSC, PH, TENN, US, WIS). NORTH CAROLINA: Northampton Co., near Margarettsville, *Heller* 1155 (GH, NY, PH). SOUTH CAROLINA: Jasper Co., 1.7 miles south of Tillman, *Ahles* 15675 (NCU). TENNESSEE: Coffee Co., south of Manchester, *Svenson* 8783 (DUKE, PH, WIS). VIRGINIA: Sussex Co., Stony Creek, *Fernald & Long* 10727 (BKL, DUKE, GH, MO, US).

Marshes, pond margins, and wet roadside ditches at widely scattered stations along the Atlantic coast from Cape Cod and Nantucket, Massachusetts, southward through

Long Island, New York, New Jersey, Delaware, southeastern Virginia, northeastern North Carolina, the outer Coastal Plain of South Carolina, Screven and Dougherty counties of Georgia, middle Tennessee, southeastern Missouri, northeastern Illinois, and northwestern Indiana. This distributional pattern is peculiar and unlike any other species of *Hypericum* in eastern North America. Flowering early July through early September.

Hypericum adpressum is closely related to *H. ellipticum* but differs in its much taller and more robust stems, stouter rhizomes, larger leaves, and different placentation (i.e. the placentae project inwardly much less). Spongy-thickened stems, especially in the lower portion, occur on plants growing in standing water. This condition is obviously due to the direct effects of the environment (Bicknell, 1913; Svenson, 1940).

23. ***Hypericum ellipticum*** Hooker, Fl. Bor.-Am. 1:110. 1830
Hypericum ellipticum, forma *submersum* Fassett, Rhodora 41:376. 1939.

Hypericum ellipticum, forma *foliosum* Marie-Victorin, Nat. Canad. 71:201. 1944.

TYPE: Canada, Mr. Cleghorn (Lectotype, K, not seen). The Todd and the Richardson specimens also cited by Hooker (1830) have not been located.

REPRESENTATIVE SPECIMENS: MARYLAND: Garrett Co., Mountain Lake Park, Steele 56 (GH, US). MICHIGAN: Chippewa Co., Sugar Island, McVaugh 8751 (MICH, NCSC). NEW HAMPSHIRE: Cheshire Co., Alstead, Fernald 338 (F, GH, NY, PH, US). NEWFOUNDLAND: Fernald & Wiegand 5843 (GH, NY). QUEBEC: Algoma District, Taylor et al 1349 (GH). NOVA SCOTIA: Yarmouth Co., Kemptville, Fernald & Linder 21857 (GH, MO, PH, US).

Abundant on pond and lake shores, stream banks, meadows, river flats and sand bars, and swamps, eastern Newfoundland, Nova Scotia, New England, southwestern Pennsylvania, West Virginia, northeastern Tennessee, the Lake Superior region of Wisconsin, Minnesota, and Michigan, and the Georgian Bay area of Ontario. Flowering late June through early September.

This species is closely related to *Hypericum adpressum*. Plants of both taxa have prominent rhizomes, a feature

absent in all other members of Sect. *Myriandra*. Floral morphology and the size, color, and testa marking of the seeds are similar also. Each species is easily recognizable by leaf shape and size, placentation, and growth habit.

Tetramerous perianths, red or purplish petals, leaves, and stems, and peculiar submersed aquatic forms with simple stems and round to ovate "feather-veined" leaves (forma *submersum* Fassett; type: *Fassett 19172* WIS) are seen occasionally. Following fruit maturity the axillary branchlets may resume growth, even overtopping the infructescence (forma *foliosum* Marie-Victorin; type: *Marie-Victorin et al 56602*, MT, isotypes, F, GH, MO, PH).

24. ***Hypericum microsepalum*** (T. & G.) Gray ex

S. Watson, *Biblio. Index to N. Am. botany* 1:456. 1878

Based on *Ascyrum microsepalum* T. & G., *Fl. N. Am.* 1:157. 1838.

Isophyllum drummondii Spach, *Hist. Nat. Vég.* 5:432. 1836.

Not *H. drummondii* (Grev. & Hook.) T. & G., *Fl. N. Am.* 1:165. 1838, which is based upon *Sarothra drummondii* Grev. & Hook., *Bot. Misc.* 3:236. 1833.

Crookea microsepalum (T. & G.) Small, *Fl. Southeastern U. S.* 786, 1335. 1903.

TYPE: Florida, Apalachicola, *Drummond* (GH).

REPRESENTATIVE SPECIMENS: FLORIDA: Franklin Co., *Adams 125* (FSU); Jefferson Co., *Godfrey 60629* (FSU); Taylor Co., *Adams 807* (FLAS, FSU, GH, K, SMU). Without exact locality, *Dr. Alexander* (NY).

Abundant in low pine flatwoods of the Florida Panhandle from Taylor to Bay counties and northward into southern Georgia (Calhoun and Atkinson counties). Flowering late February through late April, often sporadically in May and November.

The features which mark this distinctive species include the following: a very early spring flowering time, four nearly equal sepals, four large showy petals, a 3-carpellate gynoecium, and parietal placentation. In addition, a tendency exists for some of the flowers on many plants to be pentamerous, with five nearly equal sepals and five petals. Not infrequently other flowers (on these same plants) will show tetramery in their calyces and pentamery in their corollas. The reverse situation is often encountered also.

This phenomenon is general throughout the range of the species and can be considered another distinguishing feature. This unstable floral situation could be interpreted as indicating that the species is undergoing evolutionary transition from the presumably primitive pentamerous condition to the more advanced 4-parted one.

25. ***Hypericum stans*** (Michx.) Adams & Robson,
Rhodora 63:15. 1961

Based on *Ascyrum stans* Michx., Fl. Bor.-Am. 2:77. 1803. *Ascyrum cuneifolium* Chapman, Fl. Southeastern U. S. ed. 2, suppl. 2. 680. 1892. Type: *Chapman 1835* (NY).

TYPE: "Hab. in Va." (Presumably at P).

REPRESENTATIVE SPECIMENS: FLORIDA: Columbia Co., Lake City, *Nash 2489* (F, FLAS, GH, MICH, NCU, OS). GEORGIA: Douglas Co., 2 miles east of Villa Rica, *Cronquist 5559* (GA, NO, NY, PH, SMU, US). KENTUCKY: McCreary Co., *McFarland & James 48* (DUKE, IND, MO, PENN, TENN, WVA). MISSISSIPPI: Jackson Co., Ocean Springs, *Seymour 75* (NCU, SMU, TEX). VIRGINIA: Princess Anne Co., near Virginia Beach, *Heller 1268* (F, GH, NY, PENN, PH, US).

Dry to moist flatwoods, bogs, meadows, bottomlands, roadside ditches, and shores of ponds and lakes. Long Island, New York, southward through New Jersey, eastern Virginia, the Carolinas, to central Florida, westward to eastern Texas and central Arkansas. Also on the Cumberland Plateau through Tennessee into McCreary and Laurel counties of Kentucky (see Adams, 1957, for distribution map). Flowering late July through mid-October, occasionally in June and November.

This species is most closely related to *Hypericum edisonianum*, endemic in south peninsula Florida. The distinguishing features are those presented in the key and further discussed in the treatment of that species (which see).

26. ***Hypericum edisonianum*** (Small) Adams & Robson,
Rhodora 63:15. 1961

Based on *Ascyrum edisonianum* Small, Man. Southeastern Fl 868. 1933.

TYPE: "21 miles east of Arcadia, Florida," *Hand 118* (NY).

REPRESENTATIVE SPECIMENS: FLORIDA: Highlands Co., 21 miles east of Arcadia, *Adams & Testasecca 100* (DUKE, F,

FLAS, FSU, GA, MICH, MO, NCSC, NY, PH); same locality, *Adams 140* (GH); Glades Co., Fisheating Creek, *Brass 14824* (GH).

Locally abundant on sandy soil of low open prairies, lake and pond shores, and roadside ditches, Highlands, Glades, and DeSoto counties, Florida. The known stations are in central and southern Highlands County from Lake Josephine southward to the Venus area and westward along the Arcadia highway (Fla. 70) to about the DeSoto County line. Also collected along Fisheating Creek in adjacent Glades County. Flowering probably throughout the year.

Closely related to *Hypericum stans*, this species may be easily recognized by the characteristics listed in the key. Other features include a much better developed laticifer system in the bark of *H. edisonianum* (especially noticeable on older stems) and the larger and more numerous resin dots in the leaves of *H. stans*.

Dense thickets, often 1.5 m in height, are commonly produced by plants of *Hypericum edisonianum*. A contributing factor is the tendency for numerous vegetative shoots to be produced at frequent intervals along horizontal roots of the plants. This form of reproduction, present in several other species of the section, is not known to occur in the closely related *H. stans*.

The range of *Hypericum edisonianum* appears to be essentially allopatric from that of its relative *H. stans*. The closest known stations of the latter species are at least thirty-five miles to the south (Immokalee in Collier County) and southwest (Ft. Myers in Lee County). Northward the nearest collection of *H. stans* was made at Haines City in Polk County, some sixty miles distance.

27. *Hypericum tetrapetalum* Lam., Encyc. Méth. Bot.
4:153. 1797

Ascyrum tetrapetalum (Lam.) Vail in Small, Fl. Southeastern U. S. 1:785. 1903.

TYPE: "Hab. in Florida." P-LA; photograph, GH.

REPRESENTATIVE SPECIMENS: FLORIDA: Clay Co., 2 miles north of Orange Park, *Moldenke 160* (DUKE, MO, NY, PENN, US); Dade Co., *Small, Mosier & Small 6703* (FLAS, GH, TENN, WVA); Duval Co., near Jacksonville, *Curtiss 245* (F, PH, US); Lake Co., Eustis, *Nash 1977* (DAO, MICH, NCU, PH). GEORGIA:

Irwin Co., 4 miles north of Ocilla, *Wilbur 3074* (FSU, NCSC, SMU); McIntosh Co., Sapelo Island, *Duncan 17970* (GA).

Sandy soil of pine flatwoods, peaty lake and pond margins, marshes, and wet roadside ditches, on the outer Coastal Plain of southeastern Georgia and peninsular Florida; Pinar del Rio, Cuba. Flowering late January (in southern Florida) through late April, occasionally sporadically in July, August, and September.

This species is distinguished from the related *Hypericum stans* by ovate-cordate, clasping leaves which are similar to the sepals and by the dichotomous branching pattern. From the superficially similar *H. myrtifolium* this species can be readily separated by its tetramerous perianth, terete capsules, solitary flowers, and thin, non-corky bark.

28. *Hypericum hypericoides* (L.) Crantz, Institut. rei herbariae 2:520. 1766

Based on *Ascyrum hypericoides* L., Sp. Pl. 2:788. 1753. See Adams (1957) for complete synonymy.

TYPE: "Hab. in Jamaica," *Patrick Browne* (LINN, specimen no. 944.2, designated neotype by Adams in 1957; photograph, GH).

REPRESENTATIVE SPECIMENS: ARKANSAS: Ashley Co., Parkdale, *Demaree 16398* (DAO, NY, OS, PENN, TENN, TEX). FLORIDA: Lake Co., Eustis, *Nash 1609* (F, GH, MICH, MO, NY, US); Manatee Co., *Tracy 7543* (SMU). MISSISSIPPI: Jackson Co., Ocean Springs, *Seymour 91914* (DUKE, NCU, TEX). SOUTH CAROLINA: Berkeley Co., Moncks Corners, *Godfrey & Tryon 8217* (DUKE, GH). BAHAMA ISLANDS: New Providence, *Britton & Brace 842* (F, NY, US). BERMUDA: Paget Marsh, *Brown, Britton & Seaver 1136* (F, GH, MO, PH, US). CUBA: Pinar del Rio, *Shafer & Leon 13616* (F, MO, NY, PH, US). JAMAICA: *Maxon & Killip 1721* (F, GH, US). PUERTO RICO: *Britton, Cowell & Brown 3847* (F, GH, NY, US). GUATEMALA: Dept. of Alta Verapaz, *Tuerckheim 88* (GH, NY, PH, US). MEXICO: Vera Cruz, *Pringle 8515* (F, GH, MO, NY, PH, US).

Abundant in dry sandy soil of open pine woods and sandhills. Also pine flatwoods, creek bottoms, pond, lake, and swamp margins, and hardwood slopes. New Jersey southward through peninsular Florida, westward to southeastern Missouri, eastern Oklahoma, and eastern Texas; the eastern escarpment in Mexico from Nuevo León and Tamaulipas



FIG. 3. Left, *Hypericum stragulum* Adams & Robson (*Aseyrum multicaule* Michx.), one plant, branches decumbent. Right, *Hypericum hypericoides* (L.) Crantz (*Aseyrum hypericoides* L.), a single plant with one main stem. Branching well above ground level. Hall, Co., Ga., ca. 3 miles west of Flowery Branch. (Photograph by courtesy of Dr. Wilbur H. Duncan.)

southward to Chiapas and the mountains of Guatemala and Honduras; Bermuda, the larger Bahamas, Cuba, Jamaica, Hispaniola, and Puerto Rico (see Adams, 1957, for distribution map). Flowering late June through late October (at least in the United States).

Geographically the most widespread and occupying the most diverse range of habitats, plants of *Hypericum hypericoides* nonetheless retain the facies characteristic of the species. Considerable variation is present in the leaf and sepal dimensions but this appears to be simply a response to habitat differences (Adams, 1957). An erect bushy growth form, two large outer sepals and two minute inner ones, four pale yellow, nearly symmetrical, early-falling petals, and a 2-carpelled gynoeceium distinguish this species. Its closest relative is *H. stragulum* (*Ascyrum multicaule* Michx.), the erect growth form being the principal discernible difference (see Fig. 3).

29. ***Hypericum stragulum*** Adams & Robson, *Rhodora*
63:15. 1961

Based on *Ascyrum multicaule* Michx., Fl. Bor.-Am. 2:77. 1803, not *Hypericum multicaule* Lam., Encyc. Méth. Bot. 4:178. See Adams (1957) for complete synonymy.

TYPE: "Hab. in Va., Carolina." P; photograph, GH.

REPRESENTATIVE SPECIMENS: ARKANSAS: Cross Co., Crowley's Ridge, *Demaree* 19579 (GH, MO, OKL, TENN). ILLINOIS: Pope Co., Golconda, *Palmer* 16698 (NY, PH). KANSAS: Cherokee Co., *Hitchcock* 1012 (MICH, US). MISSOURI: Ozark Co., Tecumseh, *Palmer* 32882 (GH, MO). NORTH CAROLINA: Jackson Co., *Godfrey & O'Connell* 51631 (DUKE, NCSC). TENNESSEE: Knox Co., Knoxville, *Ruth* July 1895 (F, GH, MO). TEXAS: Henderson Co., Eustace, *Lundell & Lundell* 9574 (GH, MICH, NY, SMU). WEST VIRGINIA: Cabell Co., *Gilbert* 548 (DUKE, F, PENN, PH, SMU, TENN, WVA).

Common on dry rocky slopes, road embankments, and moist rich woods, from Nantucket Island, Massachusetts, southward on the Coastal Plain to southeastern Virginia, the Piedmont of the Carolinas and Georgia, westward into Arkansas, northeastern Texas, Oklahoma, central Missouri, and the glacial boundary in Illinois, Indiana, and Ohio (see Adams, 1957, for distribution map). Flowering early July through early August.

A decumbent, low, matted, rounded growth form distinguishes *Hypericum stragulum* from the closely related *H. hypericoides*. The two species often grow in close association but each is readily identifiable (see Fig. 3). The decumbent habit appears in the seedlings of *H. stragulum*. The erect seedling soon loses its upright position and becomes nearly prostrate. One or more axillary branchlets, usually close to the base of the stem, begin growth and become almost prostrate. However, in young plants of *H. hypericoides* the stem remains erect, eventually producing an erect habit unlike that of *H. stragulum*. These two taxa require further extensive study.

30. ***Hypericum suffruticosum*** Adams & Robson,
Rhodora 63:15. 1961

Based on *Ascyrum pumilum* Michx., Fl. Bor.-Am. 2:77. 1803, not *Hypericum pumillum* Sessé & Moc., Fl. Mexic. ed. 2, 177. 1894.

Ascyrum pauciflorum Nutt., Gen. 2:15. 1818. Not *Hypericum pauciflorum* HBK, Nov. Gen. 5:192. 1822.

TYPE: "Hab. in Georgia." Presumably at P.

REPRESENTATIVE SPECIMENS: FLORIDA: Columbia Co., Lake City, Nash 2211 (GH, MICH, MO, NY, US); Duval Co., near Jacksonville, Curtiss 246 (F, FLAS, PH). GEORGIA: Brooks Co., 3 miles northeast of Pavo, Adams 37 (GA). MISSISSIPPI: Harrison Co., Biloxi, Tracy 4489 (F, MICH, MO, NY, OS, US). SOUTH CAROLINA: Colleton Co., 11 miles northwest of Walterboro, Adams 84 (FSU).

Dry sandy soil of pinelands on the Coastal Plain of southern Georgia, northern and western Florida, southern Alabama, and southern Mississippi. Also St. Tammany Parish, Louisiana, Bladen Co., North Carolina, and Berkeley and Beaufort counties of South Carolina (see Adams, 1957, for distribution map). Flowering mid-March through mid-June.

Morphologically, plants of this species exhibit more reduction than any other member of Sect. *Myriandra*. The low, inconspicuous habit, early-falling petals, obsolete or nearly absent inner pair of sepals, bicarpellate gynoecea, and relatively small leaves are all interpreted as evidences of extreme reduction. Although morphologically a well-isolated species, *Hypericum suffruticosum* is related to *H. stragulum* (*Ascyrum multicaule*) and, to a lesser degree, *H. hypericoides*.

The elongate pedicels which become reflexed soon after anthesis and the position of the bractlets at the pedicel base are among the features which serve to distinguish *H. suffruticosum* from these two species.

DUBIOUS AND REJECTED EPITHETS

Brathys prolifica Payer, Trait. Organog. Vég. Comp. Fl. 8, t. 1, 1857. This name may refer to *Hypericum prolificum* L. It was applied by Payer to a plant which he used in studies on the ontogeny of the *Hypericum* flower. It is doubtful if he intended to provide a formal taxonomic treatment of a new species or even a new combination.

Hypericum fulgidum Raf., Fl. Ludov. 88. 1817, description; Herb. Raf. 55. 1833, name. This epithet may refer to *H. fasciculatum* Lam. but the description is insufficient for a definite determination.

Hypericum rostratum Raf., Fl. Ludov. 88. 1817. Rafinesque furnished this name and a Latin description for a *Hypericum* which Robin (1807) had seen on his travels in Louisiana. These two descriptions suggest a plant similar to *H. lobocarpum* Gattinger. Since there is no type specimen and since Rafinesque received his information indirectly, the possibility of error in transcription must be considered. The best interests of nomenclatorial stability will be served by rejecting the Rafinesque name in favor of the well-grounded *H. lobocarpum* Gattinger.

Myriandra galioides (Lam.) Spach, Hist. Nat. Vég. 5:437. 1836. Torrey & Gray (1840) listed this name as a synonym of *H. galioides* Lam. The description is too vague for a definite determination.

Myriandra ledifolia Spach, Hist. Nat. Vég. 5:441. 1836. Cited by Coulter (1897) as a synonym of *Hypericum prolificum* L. but the original description is hardly sufficient to make an exact determination.

LITERATURE CITED

- ADAMS, W. P. 1957. A revision of the genus *Ascyrum* (*Hypericaceae*). *Rhodora* 59:74-95.
- . 1959a. The taxonomy of *Hypericum* section *Myriandra* (*Hypericaceae*). Unpub. Ph.D. Thesis, Harvard University.
- . 1959b. The status of *Hypericum prolificum*. *Rhodora* 61:250-251.
- ADAMS, W. P. AND N. K. B. ROBSON. 1961. A re-evaluation of the generic status of *Ascyrum* and *Crookea* (*Guttiferae*). *Rhodora* 63:10-16.
- BICKNELL, E. P. 1913. The ferns and flowering plants of Nantucket. Bull. Torrey Club 40:609.
- CHAPMAN, A. W. 1897. *Hypericaceae*. Flora of the southern United States. Cambridge.
- COULTER, J. M. 1886. Revision of the North American *Hypericaceae*. Bot. Gaz. 11:78-88.
- . 1897. *Hypericaceae* in Gray, Synoptical Flora of North America. Vol. 1, part 1, 282-297.

- ELLIOTT, S. A sketch of the Botany of South Carolina and Georgia. 2:21-35. J. R. Schenck. Charleston.
- FERNALD, M. L. 1950. *Guttiferae* in Gray's Manual of Botany. Ed. 8. American Book Co. 1008-1015. New York.
- FERNALD, M. L. AND B. G. SCHUBERT. 1948. Studies of American types in British Herbaria. Part II. Some Linnaean Species. *Rhodora* 50:167-168.
- GILLESPIE, J. P. 1959. The *Hypericaceae* of Tennessee. *Castanea* 24:24-32.
- GLEASON, H. A. 1952. *Hypericaceae* in the New Britton and Brown Illustrated Flora. 2:538-544. New York.
- HARPER, R. M. 1928. *Hypericaceae*. Economic Botany of Alabama. II. Geological Survey of Alabama, Monograph 9. 270-273.
- HOAR, C. S. AND E. J. HAERTL. 1932. Meiosis in the genus *Hypericum*. *Bot. Gaz.* 93:197-204.
- KELLER, ROBERT. 1925. *Ascyrum* and *Hypericum* in Engler and Prantl, Pflanzenfamilien 2 Aufl. 21:154-234.
- LANJOUW, J. & F. A. STAFLEU. 1959. Index Herbariorum, Part I. The Herbaria of the World. Ed. 4.
- LOTT, H. J. 1938. Nomenclatural notes on *Hypericum*. *Jour. Arnold Arb.* 19:149-152, 279-281.
- MCLAUGHLIN, W. T. 1931. Preliminary reports on the flora of Wisconsin. XIV. *Hypericaceae*. *Trans. Wisc. Acad. Sci., Arts, and Lett.* 26:281-288.
- MOHLENBROCK, R. H. AND J. W. VOIGT. 1959. A flora of southern Illinois. Southern Illinois University Press. Carbondale.
- NIELSON, N. 1924. Chromosome numbers in the genus *Hypericum*. *Hereditas* 5:378-382.
- PURSH, F. 1814. *Flora Americae Septentrionalis*. 2:373-379. White, Cochran and Co.
- REHDER, A. 1940. *Hypericaceae*. Manual of Cultivated Trees and Shrubs. Ed. 2. New York.
- ROBIN, C. C. 1807. *Flore Louisianaise*. *Vog. Louis.* 3:88.
- ROBSON, N. K. B. 1956. Studies in the genus *Hypericum*. Unpub. Ph.D. Thesis. Edinburgh University.
- . 1957. The genus *Hypericum* in Africa south of the Sahara, Madagascar, and the Mascarenes. *Kew Bull.* No. 3, 433-446.
- SMALL, J. K. 1903. *Hypericaceae*. Flora of the southeastern United States. 784-791. New York.
- . 1913. *Hypericaceae*. Flora of the southeastern United States. 784-791. New York.
- . 1933. *Hypericaceae*. Manual of the southeastern Flora. 866-875.
- SVENSON, H. K. 1940. Plants of the southern United States. III. Woody species of *Hypericum*. *Rhodora* 42:8-19.
- . 1952. What is *Hypericum prolificum*? *Rhodora* 54:205-207.
- TORREY, J. AND ASA GRAY. 1838. *Hypericaceae*. Flora of North America. 1:155-169.



Adams, Preston. 1962. "Studies in the Guttiferae. I. A synopsis of *Hypericum* section *Myriandra*." *Contributions from the Gray Herbarium of Harvard University* (189), 3–51. <https://doi.org/10.5962/p.336399>.

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