

A NEW SPECIES OF *RHYNCHOSPORA*
(CYPERACEAE) FROM SOUTHWESTERN
GEORGIA

ROBERT KRAL

Department of Biology, Vanderbilt University

Nashville, Tenn. 37235

In 1947, during his extensive floristic survey of southwestern Georgia, Dr. Robert Thorne (now at RSA) discovered in Baker County what appeared to him to be a new species of *Rhynchospora* (see Castanea 16: 35, 1951). Specimens from this collection, together with some other Cyperaceae, have been sent to me by Dr. Thorne for definitive study. The *Rhynchospora* is indeed a novelty, and is described as follows:

Rhynchospora thornei Kral, sp. nov.

Planta perennis glabra. Rhizoma squamulosa breve ramosissima implexa. Culmi plures caespitosi filiformes 10–15 cm alt., 0.2–0.3 mm lati, infime teretiusculi vel obtusanguli sursum trigoni, scabridiusculi. Folia culmo breviora filiformia 10–13 cm longa, laminis basibus planis superne trigonis vel canaliculatis scabridiusculis. Cymae 2–3 valde distantes per laxi, anguste-turbinatae, simplices vel semicompositae, pauciramosae, paucispiculosae. Pedunculi filiformi scabridiusculi vel laevi. Spiculae lanceolato-ovoideae vel fusiformes acuminatae, 2.5–3.0 mm longae, 1–2-nucigerae. Squamae ovatae subscariosae ca. 1.5 mm longae, anguste-acutae, integrae vel minute erosae, breve mucronatae, lampro-aureo-ferrugineae. Setae 6 minute-antrorsae scabrae subtiles usque ad $\frac{1}{2}$ – $\frac{2}{3}$ nucis aequantes. Stamina 1–2, anthera ca. 0.2 mm longa. Achenium (cum tuberculo) ca. 1 mm longum subobovato-ellipticum, biconvexum, reticulatum, marginatum, cancellatum, cancellis verticalis rectangularis. Tuberculum breviconicum, acutum, ca. 0.15 mm longum.

Type. U.S.A. Georgia. Baker Co.: damp sand of Emory University Field Station Experimental Area near Mossy Pond, 23 June 1947, *Robert F. Thorne 4881*. Holotype RSA. Isotype VDB.

This species, still known only from the type locality, is named after its discoverer, whose extensive field work during the 1940's, particularly in southwestern Georgia, has contributed much to our present knowledge of the southeastern flora.

As the description indicates, *R. thornei* is a low, very slender-leaved and -culmed sedge superficially very much resembling either *R. pusilla* (*R. intermixta*) or *R. divergens*. Like them it has quite small spikelets, of similar coloration. However, it has a definite perianth of bristles and a smaller number of florets per spikelet and therefore belongs in the Section "Eurhyn-

chospora" Griseb. rather than in the Section *Psilocarya* (Torr.) Clarke to which *R. pusilla* and *R. divergens* belong (see G. Kükenthal, Vorarbeiten zu einer Monographie der Rhynchosporideae, Botanische Jahrbücher 74: Heft 3, 1949 and subsequent numbers for treatment of these!). If the excellent key to series of Eurhynchospora done by S. Gale (1944) is applied to the problem, the new beak-rush is found to belong to series "Rariflorae" Gale. This series contains, in Gale's treatment, but 2 species, namely *R. rariflora* (Michx.) Ell. and *R. stenophylla* Chapm. The former is widespread in the southeastern United States, the Caribbean and Central America; the latter is rare and local from N.C. south into S.C. with disjunctions in northwest Florida and southern Alabama. While *R. thornei* is a lower, more slender plant than either of these, the vegetative characters agree rather well, particularly those of scape and leaf and those of the formation of dense mats through the close interweavings of short, scaly-rhizomatous offshoots.

However the case, there is wide divergence of opinion between Gale, Kükenthal and many other cyperologists when it comes to placement of species in sections or series of the subgenus "Diplostylae" Bentham, particularly when it is realized that almost all authors concentrate mainly on akene and perianth bristle characters. In light of this difficulty and because of my own inexperience with the genus on a broad scale, I shall present below a small treatment of those few North American *Rhynchospora* that most closely resemble the new species.

1. Perianth bristles present; plants forming mats of tufts by short, branching, scaly rhizomes; akene, including tubercle, 1 mm long or more.
 2. Akene and tubercle ca. 1 mm long; akene body distinctly margined; plants not more than 1.5 dm tall; spikelets not longer than 3 mm 1. *R. thornei* Kral
 2. Akene and tubercle mostly 2-3 mm long; akene body not distinctly margined; plants rarely as low as 2 dm; spikelets 3.5-5.0 mm long.
 3. Perianth bristles rarely exceeding middle of akene body, never reaching to tubercle base; spikelets 3.5-4.5 mm long; tubercle short-triangular, ca. 0.3 mm high 2. *R. rariflora* Ell.
 3. Perianth bristles mostly reaching at least the tubercle base; spikelets ca. 5 mm long; tubercle narrowly triangular-acuminate, 1.0-1.5 mm long 3. *R. stenophylla* Chapm.
1. Perianth bristles absent; plants lacking short, branching scaly rhizomes; akene including tubercle not longer than 0.6 mm long.
 4. Akene body nearly smooth, finely reticulate 4. *R. divergens* M. A. Curtis
 4. Akene body transversely rugose and finely vertically lined 5. *R. pusilla* M. A. Curtis

1. RHYNCHOSPORA THORNEI Kral, Fig. 1.

The plant densely tufted, perennial, glabrous, forming mats by means of short, ascending, scaly-rhizomatous offshoots. Lowest leaves shortest, mostly sheath; longest leaves 10-13 cm long, 0.2-0.3 mm broad, with blades spreading-ascending, proximally flat, then grading upward from involute to semiterete or channelled, then trigonous except for the somewhat flattened

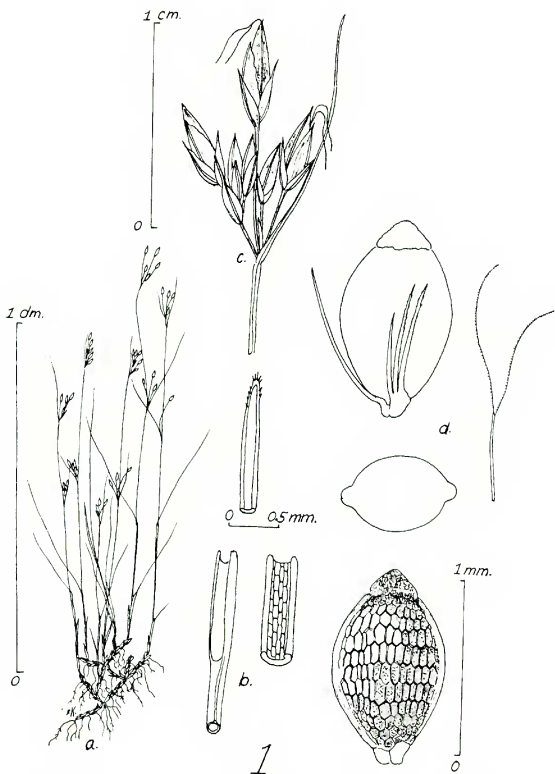


Figure 1. *Rhynchospora thornei*. a. Habit sketch. b. Inner surface of cauline leaf at sheath orifice, mid-blade, and apex. c. Inflorescence. d. Akene, showing perianth bristles, cross-section of body, and body with surface markings. From Thorne 4881.

narrow apex, there scabrous-edged. Culms mostly 10–15 cm long, somewhat flexuous, filiform, mostly 0.2–0.3 mm broad, proximally obtusangulate, multicostate, becoming mostly sharply trigonous distally. Cymes mostly 1–2, if 2, distant, each subtended by at least 1 foliaceous, setaceous bract, narrowly turbinate, open and with few spikelets, the peduncles few and of varying lengths, these simple or with 2 or 3 spikelets each. Spikelets lance-ovoid or fusiform, 2.5–3.0 mm long, acuminate, usually 2-flowered, each subtended by 2–3 lanceolate, barren bractlets shorter than the fertile scales. Fertile scales ovate, subscarios, ca. 1.5 mm long, acute, entire or slightly erose, 1-nerved and slightly keeled, the mid-nerve excurrent as a short mucro, the surfaces smooth, lustrous golden-brown. Perianth bristles 4–6, antrorsely minutely barbellate, the shortest vestigial, the longest shorter than the akene body. Stamens 1, (–2), the anthers ca. 0.2 mm long, short-linear. Akene (including tubercle) ca. 1 mm long, the body ellipsoidal, biconvex, a lustrous pale brown, produced along the edge into an evident though narrow, wirelike margin, the surface minutely but evidently cancellate, the cancellae narrowly to broadly rectangular, vertically oriented in wavy horizontal rows (more isodiametric and irregularly arranged proximally and distally!) and also transversely rugulose; tubercle short-conic, barely 0.15 mm long.

2. RHYNCHOSPORA RARIFLORA (Michx.) Ell., Sk. Bot. S. Car. & Ga. i., p. 58. 1816. Fig. 2.

Schoenus rariflorus Michx., Fl. Bor.-Am. I. 35. 1803.

Phaeocephalum rariflorum House, Am. Midl. Nat. 6. 202. 1902.

Perennial, glabrous, densely tufted from closely forking scaly compact rhizomes. Leaves linear-filiform, the lowest mostly sheathing, the longest with blades mostly 10–15 cm long, between 0.7 and 1.0 mm broad, proximally flattish, the backs with several raised nerves, often becoming strongly revolute upward and triangular, acute-angled and sulcate toward the apex, there with the margins finely scabrid. Culms (1.5–) 2.0–5.0 (–6.0) dm tall, wiry-filiform, rather weak, terete and multicostate proximally, distally with a strong sulcus below the nodes. Inflorescences mostly 2, distant, each cyme open, simple or compound the (usually) few spikelets divaricate-ascending on peduncles of various lengths, each prophyllate; lowermost cymes subtended by a foliaceous bract that is longer, the uppermost by a similar bract but this equalling or shorter, and each cyme if compound with smaller bracts subtending each cymule. Spikelets 3.5–4.5 mm long, narrowly ovoid or fusiform, acuminate, mostly with (–3) 2 fertile scales these subtended by 2–3 (–4) smaller, barren bracts. Fertile scales smooth, ovate to oblong, 2–3 mm long, obtuse to broadly acute, subentire, scarios, a rich golden-reddish-brown, the backs rounded, with 1 prominent medial nerve, this excurrent as a short mucro. Perianth bristles mostly 6, dark reddish-brown, upwardly scabrous, unequal, the longest rarely longer than mid-akene. Stamens usually 2, anthers ca. 2 mm long, narrowly linear. Akene with tubercle ca. 2 mm long, ellipsoidal to obovoid, biconvex to somewhat plano-convex (the side

facing inward often flattish), the body yellowish or reddish-brown, transversely wavy-rugose, with several irregular rows of vertically oriented, nearly linear, fine cancellae. Tubercle grayish-crustose, blunt-triangular, ca. 0.3 mm high, somewhat dorsiventrally flattened.

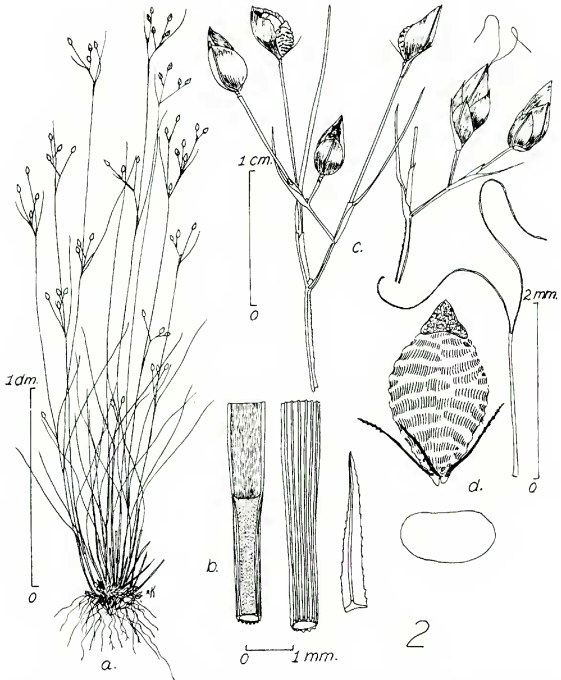


Figure 2. *Rhynchospora variiflora*. a. Habit sketch. b. Inner surface of leaf at sheath orifice; back of leaf at same level; leaf blade apex. c. Two views of inflorescence, that on left at fruiting stage, that on right showing a portion of a younger inflorescence (slightly enlarged above scale!). d. Akene and stylar apparatus, cross-section through body. From Kral 24154.

Moist to wet sands or sandy peats of low savanna, bogs, seeps, Coastal Plain from New Jersey and southeast Virginia southward into peninsular Florida and westward into Texas with isolated stations inland as far as northern Georgia and Middle Tennessee, scattered in Caribbean and Central America.

R. rariflora, together with the much more local *R. stenophylla* both tend to form small "sods" of densely caespitose tufts and thus in habit are very similar to *R. thornei*.

3. RHYNCHOSPORA STENOPHYLLA Chapm., Fl. S.U.S. p. 525. 1860.

Similar in almost all ways to *R. rariflora* but taller, the culms often from 6 to 9 dm tall. Spikelets narrower, more narrowly lanceolate in outline, longer, ca. 5 mm long, usually with but 1 fertile floret. Akene with tubercle longer; akene body ca. 1.5 mm long, narrowly biconvex, sculptured as in *R. rariflora*; tubercle ca. 1.5 mm long, narrowly triangular-acuminate, somewhat dorsiventrally flattened. Perianth bristles usually 6, unequal, antrorsely barbellate, arising from a lobed short-hairy basal joint and some nearly reaching or exceeding the tubercle tip.

In habitats similar to those of *R. rariflora* but with known range restricted to the eastern parts of the Carolinas, northwestern Florida and southern Alabama. Fig. 3.

4. RHYNCHOSPORA DIVERGENS Chapm. ex., M.A. Curtis, Amer. Journ. Sc., Ser. 2, 7, p. 409. 1849. Fig. 4.

R. divergens Chapm., Fl. S.U.S. p. 528. 1860.

Phaeocephalum divergens House, Am. Midl. Nat. 6, p. 201. 1920.

Perennial, glabrous, densely tufted through close-set, thick-based offshoots. Leaves linear-filiform, the lowest sheathing, the sheaths tubular, multicostate, scarious on side opposite the blade, the blades 5–15 cm long, 0.3–0.5 mm wide ascending or spreading, flat just above the sheath, upwardly becoming strongly involute, then channelled, then sharply trigonous toward the narrowly acute apex, there scabrous on the angles and on the slightly flattened tip. Culms linear-filiform, (1.5–) 2.0–5.0 (–6.0) dm tall, erect or spreading and arching from the clump, proximally terete, multicostate, upwardly becoming channelled below the sheaths on the side opposite the leaf blades. Inflorescences (1–) 2–3 (–4) narrowly to broadly turbinate, each subtended by a long-linear-filiform-bladed bract this exceeding the cyme. Cymes compound, paniculiform, the spikelets numerous, the peduncles scabrid, of varying length, a few primary peduncles simple, most zig-zag, with each node producing a lanceolate bract, a chaffy-tubular prophyll, as a short-stalked spikelet and a prolongation of the primary peduncle. Spikelets asymmetrically lance-ovoid or fusiform, ca. 3 mm long, acuminate, usually subtended by 2–3 lanceolate sterile scales shorter than the 4 or more fertile scales, the lowermost sterile scales abscising, then progressively the fertile abscising (akenes often persisting after) as the spikelet elongates, thus the spikelets producing several fruits but keeping their original length and

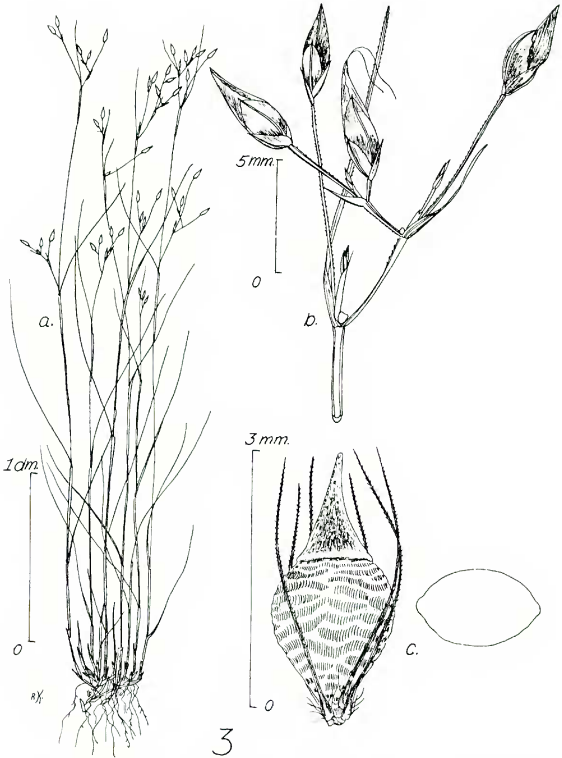


Figure 3. *Rhynchospora stenophylla*. a. Habit sketch. b. Inflorescence. c. Akene and cross section through body. From Godfrey 56716.

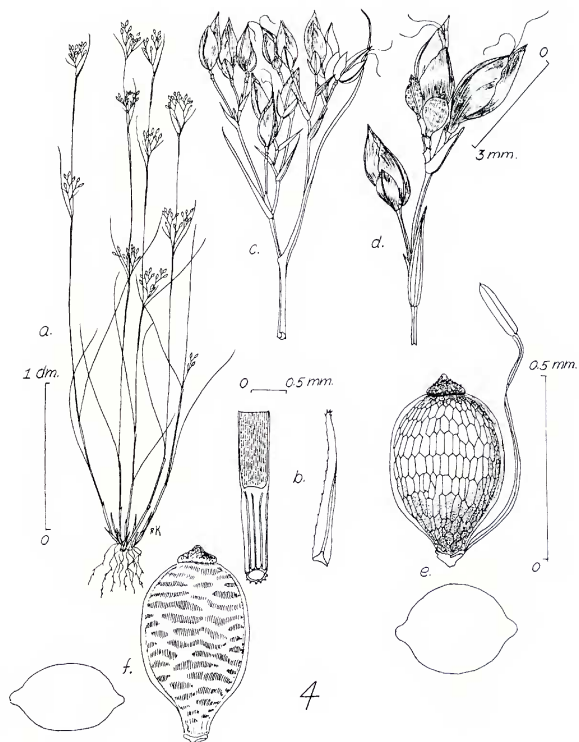


Figure 4. *Rhynchospora divergens*. a. Habit sketch. b. Inner surface of leaf at sheath orifice; blade apex. c. Inflorescence. d. Inflorescence branch, slightly enlarged. e. Akene and cross section through body. From Kral 47024. f. *R. pusilla*—akene and cross section through akene body. From Kral 17578.

shape. Fertile bracts ovate, ca. 1.5–2.0 mm long, acute, entire, all scales a lustrous reddish-brown, with the single mid-nerve excurrent as a short mucro. Perianth bristles absent. Stamens 1, ca. 1 mm long, the anther narrowly linear, ca. 0.2 mm long. Akene including tubercle 0.7–0.8 mm long, obovoid, short-stipitate, strongly biconvex, with a low but evident, rounded margin, a lustrous pale brown, finely but evidently reticulate, the areoles mostly rectangular, vertically oriented in irregular rows. Tubercle depressed-conic, apiculate, ca. 0.1 mm long.

Sands, sandy-peats and silts of swales in savannas, ditchbanks, seeps, bogs and pondshores in the Coastal plain of the U.S. from S.C. southward through peninsular Florida and west with decreasing frequency into Texas; in the Bahamas, Cuba, Santo Domingo. Flowering and fruiting from June to frost, all year south.

5. RHYNCHOSPORA PUSILLA Chapm. ex. M. A. Curtis, Amer. Journ. Sc. ser. 2. No. 7, p. 409. 1849. Fig. 4.
R. pusilla Chapm., Fl. S.U.S. p. 528. 1860.
R. intermixta C. Wright in Sauv., Fl. Cub. p. 184. 1873.
Phaeocephalum pusillum House, Am. Midl. Nat. 6, p. 201. 1920.

Similar to *R. divergens* Curtis in all ways except the fruit. Akene ca. 0.5 mm long, oblong-obovate, short-stipitate, biconvex, narrowly margined, pale brown to nearly white, lustrous, strongly transversely wavy-rugose, the concavities between the ridges minutely longitudinally striate.

Moist sands, sandy-peats and silts of low meadows, savannas, bogs, seeps and damp shores, mostly in the Coastal Plain from N.C. southward into peninsular Florida, westward into eastern Texas, with localities scattered inland to northern Alabama: Caribbean. Flowering from June to frost, all year in frost-free climates.

Curtis (l.c.) appears to have been sent a manuscript description by Chapman, from which he extracted a mere diagnosis, but the identification is unmistakable. Chapman, (l.c.), subsequently published this and *R. divergens* without reference to the Curtis publication. Most authors have treated *R. pusilla* as *R. intermixta*.

REFERENCES

- CHAPMAN, A. W. 1860. Flora of the southern United States. New York.
 CURTIS, M. A. 1849. New and rare plants, chiefly of the Carolinas. Amer. J. Sci. Arts ser. 2, vol. 7. XXXVII.
 GALE, SHIRLEY. 1944. *Rhynchospora*, section *Eurhynchospora* in Canada, the United States and the West Indies. Contr. Gray Herb. CLI.
 HOUSE, H. D. 1920. A consideration of certain genera proposed by Ehrhart. Am. Midl. Nat. 6: 200-207.
 KUEKENTHAL, G. 1949-1952. Vorarbeiten zu einer Monographie der Rhynchosporideae., Bot. Jahrb. Syst. Band 74, 75.
 THORNE, ROBERT F. 1951. Vascular plants previously unreported from Georgia. Castanea 16: 29-48.