

B. obliquum Muhl. Old fields and pastures; occasional, and locally abundant.

Var. **elongatum** Gilbert & Haberer. Georgetown (*Mrs. C. S. N. Horner*, specimen in hb. N. E. Bot. Club, also in the Davenport Collection).

Var. **dissectum** (Spreng.) Clute. Old fields and pastures, frequent.

B. ternatum (Thunb.) Sw., var. **intermedium** D. C. Eaton. Old fields, pastures, and rarely in woods; frequent.

B. virginianum (L.) Sw. Rich woods, occasional.

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PRELIMINARY LISTS OF NEW ENGLAND PLANTS,—XX. SPARGANIACEAE.¹

M. L. FERNALD and A. J. EAMES.

[The sign + indicates that an herbarium specimen has been seen; the sign — that a reliable printed record has been found.]

	Me.	N. H.	Vt.	Mass.	R. I.	Conn.
Sparganium americanum Nutt.	+	—	+	+	+	+
“ “ var. androcladum (Engelm.) Fernald & Eames	+	+	+	+	+	+
“ angustifolium Michx.	+	+	+	+		+
“ diversifolium Graebner	+	+	+	+		+
“ “ var. acaule (Beeby) Fernald & Eames	+	+	+			+
“ eurycarpum Engelm.	+	—	+	+	+	+
“ fluctuans (Morong) Robinson . . .	+	+	+	+		+
“ lucidum Fernald & Eames . . .				+		
“ minimum Fries	+		+	+		+
“ simplex Hudson	+		+			

¹ Printed in RHODORA as supplementary material.

NOTES UPON THE ABOVE LIST.

Sparganium fluctuans (Morong) Robinson. For detailed discussion see RHODORA, vii. 60 (1905).

Sparganium simplex Hudson has been reported from all the New England states, but it is very doubtful if it occurs as far south as Massachusetts. Most of the plants of southern New England so reported have proved to be either *S. americanum*, *S. diversifolium* or its var. *acaule*, or *S. lucidum*. The New England plants which have been passing as *S. simplex* may be distinguished as follows.

SPARGANIUM SIMPLEX AND ITS NEW ENGLAND ALLIES.

* Pistillate heads or branches of the inflorescence strictly axillary.

+ Mature fruits dull: stigma 1-2 mm. long.

S. AMERICANUM Nutt. Stoutish, 3-7 dm. high: leaves deep green, dorsally carinate, 6-12 mm. broad: bracts divaricate or arcuate-ascending, the lowest 0.8-2.2 dm. long: inflorescence simple: pistillate heads 2 to 5, all axillary, sessile or nearly so, in fruit 1.8-2.6 cm. in diameter: tepals with dilated and rounded erose summits; their bases closely investing the stipe of the carpel: mature fruits brownish, fusiform; the narrowly ellipsoid or subcylindric body 5-6 mm. long, 2-3 mm. thick; the beak (including the stigma) 2.5-4 mm. long, about equalling the slender stipe.—Gen. ii. 203 (1818). *S. simplex*, var. *Nuttallii* Engelm. in Gray, Man., ed. 5, 481 (1867); Morong, Bull. Torr. Cl. xv. 79 (1888). *S. simplex* of many Am. auth., not Hudson. *S. angustifolium* Graebner in Engler., Pflanzenr. iv. no. 10, 16, in part (1900), not Michx. *S. Nuttallii* Engelm. according to Graebner, l. c. (1900). *S. americanum*, var. *Nuttallii* Graebner, l. c. (1900). *S. simplex*, var. *americanum* Farwell, Ann. Rep. Mich. Acad. Sci., vi. 202 (1904).—Bogs and muddy shores, New Brunswick to Iowa and Virginia; also in eastern Asia.

Var. *androcladum* (Engelm.), n. comb. Inflorescence bearing from its lower axils 1 to 3 weak branches: leaves often broader (rarely 2 cm. broad): lowest bract 1.5-5 dm. long.—*S. simplex*, var. *androcladum* Engelm. in Gray, Man., ed. 5, 481 (1867). *S. ramosum* Chapm. Fl. 443 (1860), not Huds. *S. androcladum* Morong, Bull. Torr. Cl. xv. 78 (1888); Graebner in Engler, Pflanzenr. iv. no. 10, 15 (1900).—Similar places, more common, Newfoundland to Minnesota, south to Florida and Missouri.

+ + Mature fruits lustrous: stigma 2.5-4 mm. long.

S. lucidum, n. sp. Planta 7.5-9 dm. alta; foliis 5-12 mm. latis, erectis, firmis et haud pellucidis, valde carinatis, inflorescentiam sim-

plicem vel ramosam multo supereminentibus, capitibus vel ramis plane axillaribus; bracteis patente ascendentibus, infima 2.5–4 dm. longa; capitibus femineis sessilibus vel infimis pedunculatis, ad maturitatem circiter 3 cm. diametro; tepalis ad stipitem affixis, ligulatis, apice dilatatis et rotundis, subintegris vel erosis; costa media prominente et in apice suo incrassata; fructubus maturis lucidis, olivaceo-brunneis, breviter stipitatis, corpore subterete, 5–6 mm. longo, 2–3 mm. crasso; stylo subulato-filiforme, 5–7 mm. longo, parte lineare stigmatica adunca, 2.5–4 mm. longa.

Plant 7.5–9 dm. high: leaves 5–12 mm. broad, erect, firm and opaque, strongly carinate, much overtopping the simple or forking inflorescence: the heads or branches strictly axillary: bracts spreading-ascending, the lowest 2.5–4 dm. long: pistillate heads sessile, or the lowest peduncled, in fruit about 3 cm. in diameter: tepals attached to the stipe, ligulate, with dilated and rounded sub-entire or erose tips; the midrib prominent and thickened at its apex: mature fruits lustrous, olive-brown, short-stipitate; the subterete body 5–6 mm. long, 2–3 mm. thick: style subulate-filiform, 5–7 mm. long; the linear stigmatic portion hooked, 2.5–4 mm. long. — MASSACHUSETTS, small pond, Medford, July 29, 1860 (*Wm. Boott*); muddy shore of Half-way Pond, Barnstable, August 23, 1888 (*W. Deane*): PENNSYLVANIA, ditches, Philadelphia, September, 1876 (*I. C. Martindale*): ILLINOIS, without station (*S. B. Mead*): MISSOURI, Springfield, September 1, 1893 (*J. W. Blankinship* in hb. Deane).

* * One or more of the pistillate heads supra-axillary.

— Erect plants of shores and swamps: leaf-blades of uniform texture, somewhat translucent and reticulated under a lens.

S. DIVERSIFOLIUM Graebner. Erect, stoutish, 3–6 dm. high: leaves delicate, cellular-reticulated on both sides, 4–9 mm. wide, with a broad scarious margin toward the base: bracts strongly ascending, the lowest 2–5 dm. long: inflorescence mostly simple, rarely with 1 or 2 weak branches: pistillate heads 2 to 4, chiefly sessile, the lower remote and supra-axillary, in fruit 2–2.5 cm. in diameter. — Graebner in *Schrift. naturf. Ges. Danzig*, N. F., ix. (1895) 335, t. 8, fig. 1, and in *Engler, Pflanzenr.* iv. no. 10, 21, fig. 4 F. (1900). *S. simplex* in great part of Am. auth., not Hudson. — Eastern Quebec to South Dakota, Connecticut and Illinois and probably southward; also in Europe. Passing to

Var. *acaule* (Beeby), n. comb. Dwarf, 1–3 dm. high: leaves and bracts comparatively narrow; the lowest strongly ascending bract 1–3 dm. long: pistillate heads 1.5–2 cm. in diameter, usually crowded. — *S. simplex*, var. *acaule* Beeby in *Macoun, Cat. Can. Pl.* ii. 367 (1890). *S. diversifolium*, proles *nanum* Graebner in *Engler, Pflanzenr.* iv. no. 10, 21 (1900). *S. nanum* Fries according to Graebner, l. c. (1900). — Newfoundland to Iowa and West Virginia.

+ + Strictly aquatic: leaf-blades reticulated beneath, opaque above.

++ Fruits rather abruptly slender-beaked: leaf-blades 1.5–4 mm. broad: stigma rarely over 1.2 mm. long.

S. ANGUSTIFOLIUM Michx. Slender aquatic: stems 3–12 dm. long: leaves exceedingly long and narrow, opaque: bracts comparatively short, slightly dilated at base, the lowest 0.5–3 dm. long: inflorescence simple, at the surface of the water: pistillate heads 1 to 3, sessile or peduncled (the lowest peduncle rarely 9 cm. long), in fruit 1.3–2 cm. in diameter: fruits 1.5–2 mm. thick, drab, with reddish-brown bases.—Fl. ii. 189 (1803); Graebner in Engler, Pflanzenr. iv. no. 10, 16, in part (1900). *S. simplex*, var. *angustifolium* Engelm. in Gray, Man., ed. 5, 481, (1867). *S. affine* Macoun, Cat. Can. Pl. ii. 71 (1888), perhaps also of Schnitzlein, Nat. Pfl. Typh. 27 (1845).—Ponds and slow streams, Newfoundland to Alaska, south, especially among the mountains, to Connecticut, New York, Colorado and California; ascending in alpine ponds to an altitude of 1140 m. on Table-top Mountain, Gaspé, and to 3500 m. in Colorado. Perhaps also in Eurasia (*S. affine* Schnitzlein).

++ ++ Fruits gradually acuminate: leaf-blades 4–9 mm. broad: stigma 1.5–2 mm. long.

S. SIMPLEX Hudson. Coarser, and in our region strictly aquatic: stems 3–10 dm. long: bracts somewhat dilated at base, the lowest 1–4 dm. long: inflorescence usually simple, elongated: pistillate heads 2 to 4, mostly supra-axillary, the lowermost long-peduncled, in fruit 2–2.5 cm. in diameter: fruit 1.5–2.5 mm. thick.—Fl. Angl. ed. 2, 401 (1778); Am. auth. in small part only; Graebner in Engler, Pflanzenr. iv. no. 10, 16 (1900).—Newfoundland to British Columbia, south to Maine, northern Vermont, Lake Superior region, Colorado, Utah, and California; also Eurasia.

Var. *MULTIPEDUNCULATUM* Morong. Heads aggregated, mostly pedunculate, subcorymbose.—Bull. Torr. Cl. xv. 79 (1888); Graebner in Engler, Pflanzenr. iv. no. 10, 17 (1900). *S. multipedunculatum* Rydberg, Bull. Torr. Cl. xxxii. 598 (1905).—From the Mackenzie River to Colorado and California; to be expected in northern New England and adjacent Canada.

SUGGESTIONS FOR SPECIAL OBSERVATIONS.

Sparganium angustifolium Michx. should be sought in the ponds and lakes of northwestern Rhode Island.

S. diversifolium Graebner may be sought in northwestern Rhode Island, and its var. *acaule* should be looked for there and in central and western Massachusetts.

S. fluctuans (Morong) Robinson may be expected in the larger ponds and lakes of northwestern Rhode Island.

S. lucidum Fernald & Eames, as yet known only from eastern Massachusetts, Pennsylvania, Illinois and Missouri, is probably in Rhode Island and Connecticut.

S. minimum Fries may be confidently sought in clear cold streams of northern New Hampshire.

S. simplex Huds. is apparently rare in northern and central Maine and northern Vermont, but it should be sought in all the larger lakes of northern New England.

GRAY HERBARIUM.

CAUSES OF VARIATION IN COLOR IN SOME RED ALGAE.

WILLIAM A. TERRY.

FOR many years past I have noticed a marked difference in color in specimens of red algae from different localities; this is specially noticeable in *Dasya elegans* (Mart.) Ag.; plants from South Beach, a mile or more east of the entrance to New Haven harbor, always drying a sepia brown, while those from below Woodmont, some miles west, dry a dark purple, and those from Fort Hale, inside the harbor, show a bright crimson pink color. These differences are constant, and have shown themselves so for many years. My specimens are taken, when possible, directly from the rocks on which they grow; they are generally procured by wading at lowest tide, but sometimes from a boat by means of a sharp-edged scraper with a long handle. Such specimens are much deeper in color than those from shallow water. When broken from their holdfasts they change rapidly in color, in a few hours showing a decided tinge of brown. All these fine red seaweeds, if mounted in salt water, lose their characteristic color from the concentration of the salt, and become more or less black. To obviate this as much as possible, I lay out and cleanse the plant in a dish of salt water, then transfer on the cardboard to a mounting board in fresh water, rapidly place and lift out of the water, drain slightly and place in driers which are changed frequently until dry. In this



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