

Black River Bog, near West Lake Ainslie, where it is very common and conspicuous.

Calcareous bogs and swamps; Nfld. St. Pierre and the Magdalens to Eastern Que. and N.S.

83. *C. demissa* Hornem.

Boggy and peaty acid soils; rare or the distribution not well known; collections are reported by Raymond from near the coast in Annapolis and Halifax Cos. and from St. Paul Island. The plants of this group are quite variable and difficult and it may be that intergrading occurs.

Nfld., the Magdalens, eastern Que. and south to N.S. and Maine.

84. *C. viridula* Michx. Fig. 41, c.

Sphagnum swales, gravelly and rocky shores, low pastures near the sea, often at the borders of rather brackish ponds or inlets; scattered to rather common around the Province. A long-spiked form has been collected at Margaretsville, Annapolis Co., along the Bay of Fundy, and by Macoun at Baddeck (Fernald, 1921).

N.E. North America; Eu.

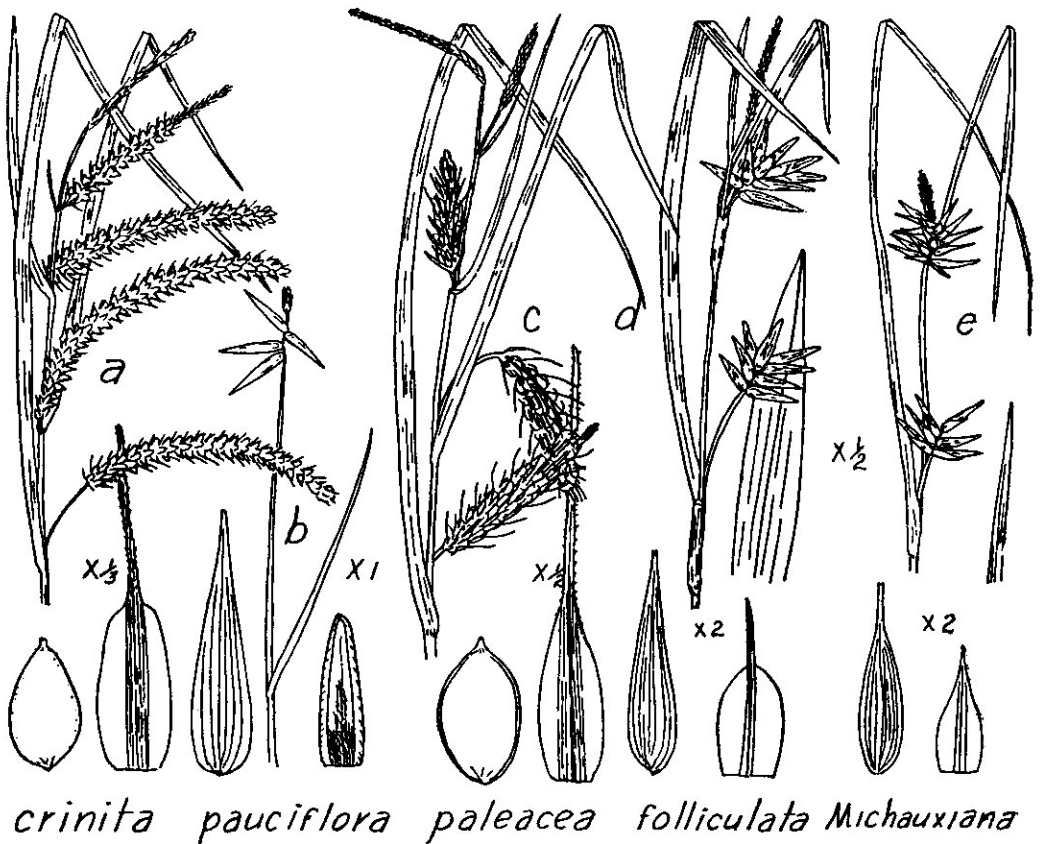


Fig. 43.—*Carex*: inflorescences; perigynia and scales, x 5 and x 2.

## SECT. 32. ORTHOCERATES

85. *C. pauciflora* Lightf. Fig. 43, b. Map 156.

Common throughout in its habitat; characteristic of sphagnum bogs, especially near the coast; common in northern C.B. in bogs, or even out on dryish heaths and barrens.

Nfld. to Alaska south to Penn. and Wash.; Eurasia.

## SECT. 33. PALUDOSAE

86. *C. lacustris* Willd. Fig. 44.

Local, growing between the brackish marshes and the cat-tail zone bordering the upland; border of brackish marsh near Yarmouth; often growing in large pure colonies around the estuaries at the head of the Bay of Fundy.

N.S. to Man. south to D.C. and Iowa.

## SECT. 34. PSEUDO-CYPEREAE

Rather coarse plants of wet meadows and swales; with the perigynia having rather conspicuous toothed beaks and the scales in the pistillate spikes with long, rough or barbed awns.

a. Perigynia leathery in texture, reflexed and very numerous in long, pendulous cylindrical spikes (Fig. 44, a).

b. Perigynia 3-5 mm long; the teeth nearly straight and parallel, 0.5-1 mm long.

87. *C. Pseudo-Cyperus*

b. Perigynia 5-7 mm long; the teeth curved-divergent, 1.3-2 mm long.

88. *C. comosa*

a. Perigynia relatively thin in texture, spreading or ascending at maturity, inflated (Fig. 45, b).

c. Culms scabrous; perigynia 15-20-nerved, but slightly inflated, 1.5-2 mm thick.

89. *C. hystericina*

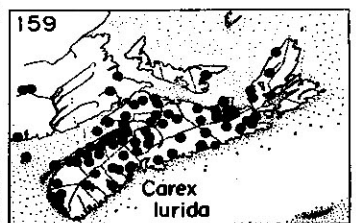
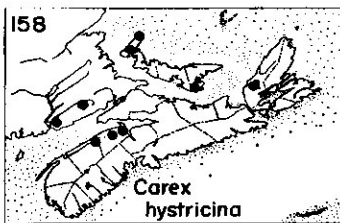
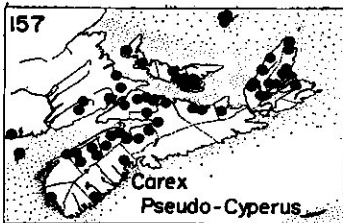
c. Culms smooth; perigynia 8-10-nerved, strongly inflated, 2.5-4 mm thick.

90. *C. lurida*

87. *C. Pseudo-Cyperus* L. Fig. 44, a. Map 157.

Rare in the southwestern counties (Fernald, 1921); scattered from Annapolis and Queens Cos. to C.B., never abundant; wet meadows, around undrained ponds, swampy thickets and grassy swales. Conspicuous and readily identified by its long rather spiny heads with reflexed perigynia.

Nfld. to Sask. south to Penn. and Minn.



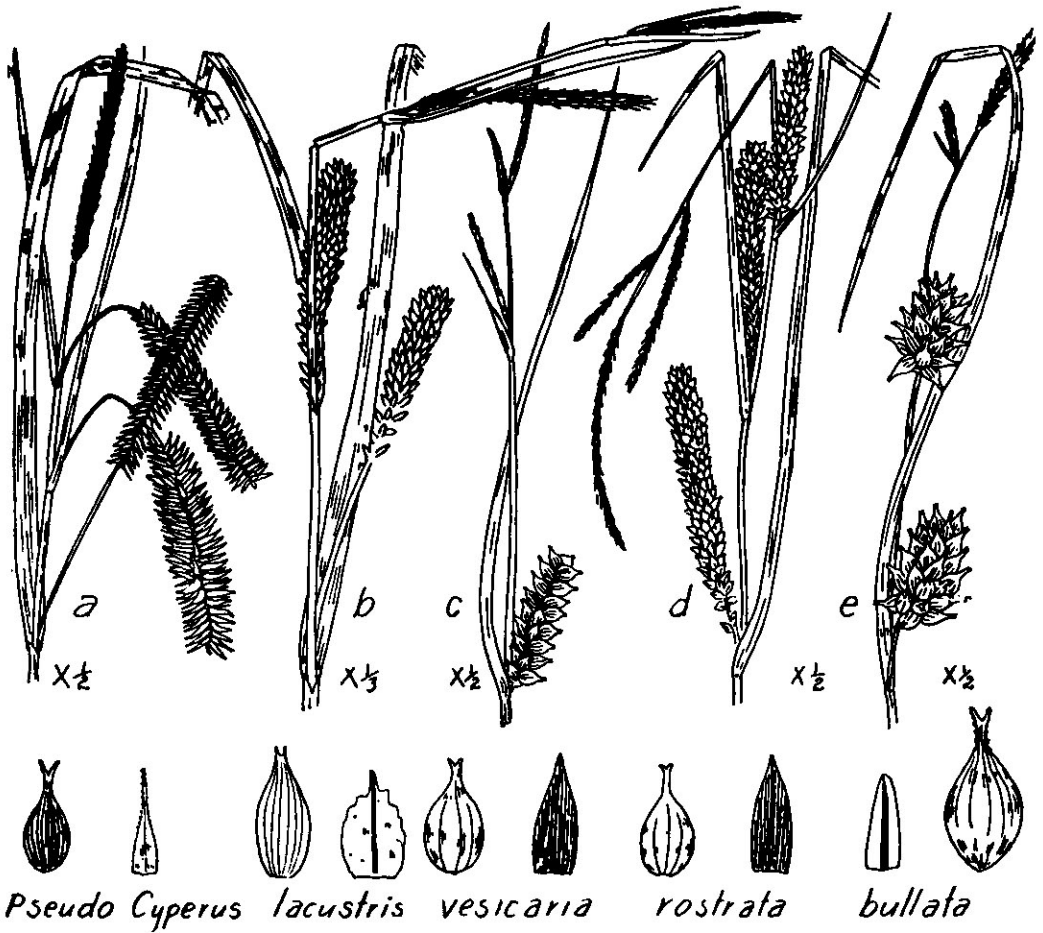


Fig. 44.—*Carex*: inflorescences; perigynia and scales, x 2.

88. *C. comosa* Boott

An examination of some specimens of *C. Pseudo-Cyperus* collected in swales east of Aylesford near the Caribou Bog showed one plant of the closely allied *C. comosa*. This plant has also been collected in other parts of the Valley by David Erskine. Cumberland Co.; behind dyke, Advocate; abundant in clumps in swamp, Truemanville (Schofield, 1955).

N.S. to Nebr. south to Fla. and La.; Wash. to Calif.

89. *C. hystricina* Muhl. Map 158.

Rather similar in appearance to the next; Kings Co., swale along brook, North Mountain above Delhaven; Arlington; abundant in swamp north of the Cornwallis River, Cambridge (Erskine, 1951); one station at the south end of Lake Ainslie in C.B.

Gaspe south to N.S. and Tenn. west to Alta. and Calif.

90. *C. lurida* Wahlenb. Fig. 45, b. Map 159.

Common throughout, especially from Annapolis east; swamps, wet meadows, ditches and damp thickets.

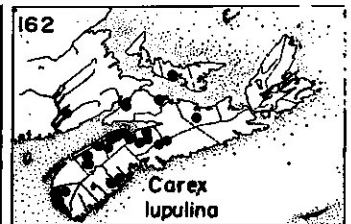
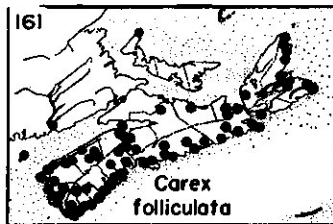
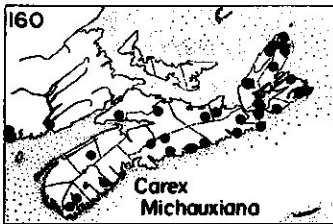
N.S. to Minn. south to Fla. and Tex.

## SECT. 35. FOLLICULATAE

Plants of swales or shaded wet areas, with perigynia 10-15 mm long loosely arranged in short spikes.

a. Leaves 2-4 mm wide; bract-sheaths concave at the mouth; staminate spikes 5-15 mm long, sessile or very short-stalked. 91. *C. Michauxiana*

a. Leaves 3.5-16 mm wide; upper or all bract-sheaths prolonged at the mouth; staminate spikes 12-30 mm long, long-stalked. 92. *C. folliculata*

91. *C. Michauxiana* Boeckl. Fig. 43, e. Map 160.

Rare in the southwestern counties, becoming commoner east to C.B.; boggy savannah, Sable R., Shelburne Co. and swale bordering Grand Lake, Halifax Co. (Fernald, 1921); characteristic of mountain swamps, sandy or rocky beaches and in poorly-drained swamps in C.B.

Nfld. to Ont. south to Penn.; Asia.

92. *C. folliculata* L. Fig. 43, d. Map 161.

Throughout; wet woods, swales and damp thickets; scattered in Kings Co.; common on the quartzitic or granitic areas; characteristic of wooded swamps in C.B.

Nfld. to Wisc. south to N.C.

## SECT. 36. LUPULINAE

a. Pistillate spikes globose with 1-15 perigynia; perigynia spreading to reflexed the sides of the beak usually smooth, the teeth hispid within.

b. Achenes ellipsoid, broadest near the middle and tapering to the beak; perigynia ovoid and distended, 5-8 mm wide. 93. *C. intumescens*

b. Achenes obovoid, broadest near the summit and gradually tapering to broadly rounded to the beak. *C. intumescens* var. *Fernaldii*

a. Pistillate spikes oblong to cylindrical with 20-75 perigynia; perigynia closely appressed, the teeth smooth within. 94. *C. lupulina*

93. *C. intumescens* Rudge Fig. 45, c.

Scattered to frequent throughout; wet, usually deciduous, woods, in swamps and at the edges of intervalles. Var. *Fernaldii* Bailey is



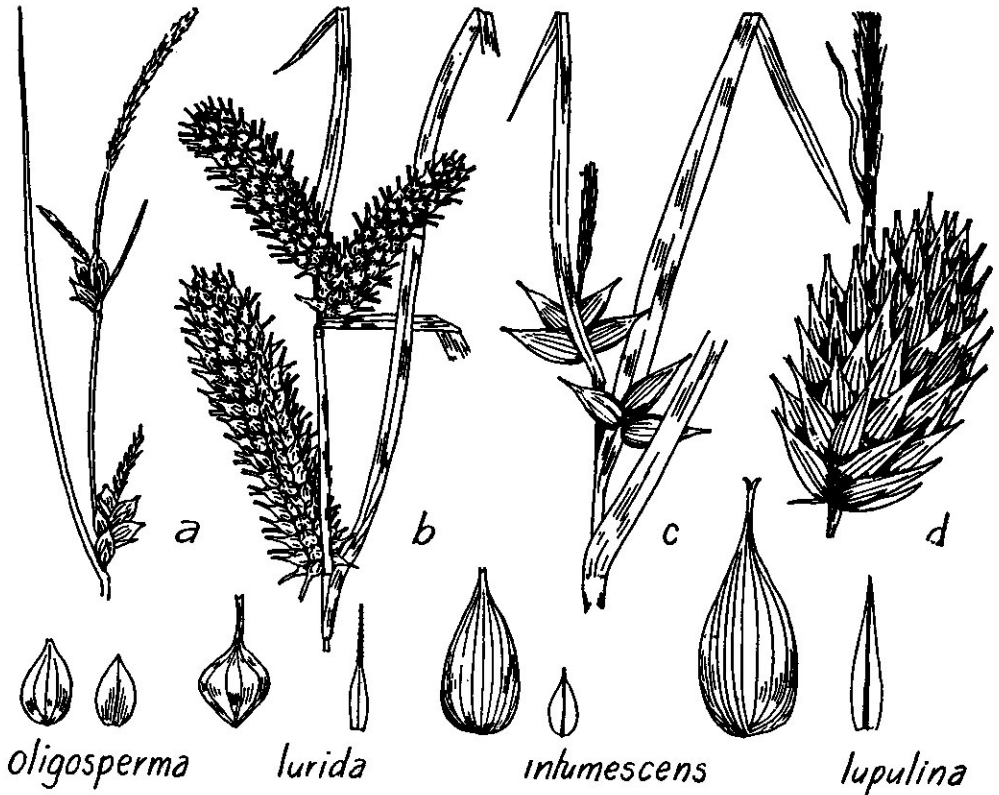


Fig. 45.—*Carex*: inflorescences, x 1; perigynia and scales, x 2.

doubtfully distinct and seems more common than the species. This is also occasionally found with inflated perigynia and this variation is called *forma ventriosa* Fern.

Nfld. to Wisc. south to N.C. with the species ranging south to Fla. and Tex.

94. *C. lupulina* Muhl. Fig. 45, d. Map 162.

Scattered to local; local in Yarmouth Co.; occasional in Kings and Cumberland Cos.; Musquodoboit Valley and in central Pictou Co.; mucky meadows, along intervalles and in rich swales.

N.S. to Ont. and Minn. south to Fla. and Tex.

### SECT. 37. VESICARIAE

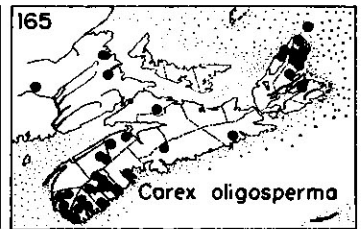
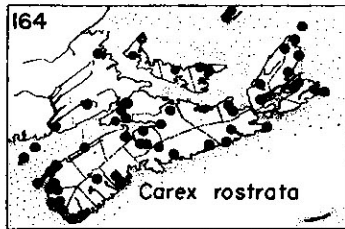
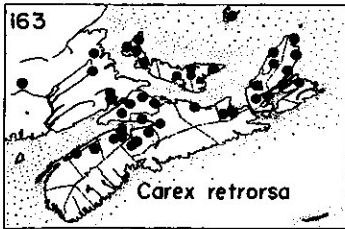
Coarse plants with mostly cylindrical spikes with numerous perigynia, the scales blunt or with short smooth awns.

a. Perigynia reflexed to widely spreading; culms in clumps, without long horizontal stolons; pistillate spikes thick-cylindric, to 2 cm thick; bracts of inflorescence several times the length of the inflorescence.

95. *C. retrorsa*

a. Perigynia very rarely reflexed; plants with creeping stolons.

- b. Culms thick and spongy at base, scattered from long running rootstocks; leaves prominently marked with cross-lines and nodulations when dry, 3-12 mm wide (Fig. 44, d).
- c. Plant 3-6 dm high; leaves channelled, 3-4 mm wide; pistillate spikes 6-8 mm thick; scales short, blunt acute; perigynia 3-5 mm long. 96. *C. rostrata*
- c. Plant 4-12 dm high; leaves flat, 4-12 mm wide; pistillate spikes denser, 10-20 mm thick, the scales acuminate to aristate; perigynia 4-10 mm long.  
*C. rostrata* var. *utriculata*
- b. Culms slender and usually not spongy at the base; leaves not prominently marked.
- d. Lowest bract several times longer than the inflorescence; perigynia 5-7 mm thick; achene deeply indented in the middle of one angle. 97. *C. Tuckermanni*
- d. Lowest bract usually not much longer than the inflorescence; achenes not deeply indented.
- e. Pistillate spikes widely separated, small and very short with only 3-15 perigynia; leaves filiform and rolled; culms tall and very slender (Fig. 45). 98. *C. oligosperma*
- e. Pistillate spikes oval to cylindrical with many perigynia; leaves flat when fresh.
- f. Perigynia with rough beaks, 20-40 in a short, oval spike, with sharp, prominent teeth (Fig. 44, e). 99. *C. bullata*
- f. Perigynia with beaks smooth; spikes usually long cylindrical.
- g. Stigmas three; achenes trigonous.
- h. Spikes long-cylindrical; teeth of perigynia 0.5-1 mm long, scales two-thirds the length of the perigynia. 100. *C. vesicaria*
- h. Spikes oval; beak of perigynium short with teeth less than 0.25 mm long; scales about half the length of the perigynia.
- X *C. mainensis*
- g. Stigmas two, achenes lenticular; plant slender with pistillate spikes to 3 cm long and 6 mm thick, dark; scales about half the length of the perigynia. 101. *C. millaris*



95. *C. retrorsa* Schwein. Map 163.

Annapolis and Cumberland Cos. to C.B., scattered to rather rare; forming clumps in swales, on mucky stream banks and in wet meadows. N.S. to B.C. south to N.J., Ohio and Ore.

96. *C. rostrata* Stokes Fig. 44, d. Map 164.

Rare; swamp on St. Paul Is., northern C.B. (Perry, 1931). This is the northern plant which barely reaches south to N.S.

Var. *utriculata* (Boott)Bailey is common throughout; wet meadows, open wet pastures, in ditches and swales and around boggy pond margins, a rather coarse rough sedge.

Lab. to B.C. south to N.S., Tenn. and Calif.; Eurasia.

97. *C. Tuckermani* Boott

Rather similar in appearance to Fig. 44, e; and with thick loose perigynia. This was first discovered in Hants Co.: small swale by woods road northeast of Sweet's Corner (Smith and Erskine, 1954); local in meadow swale, Wallace River, Wentworth, Cumberland Co. (Schofield, 1955).

N.S. to Minn. south to Penn. and Iowa.

98. *C. oligosperma* Michx. Fig. 45, a. Map 165.

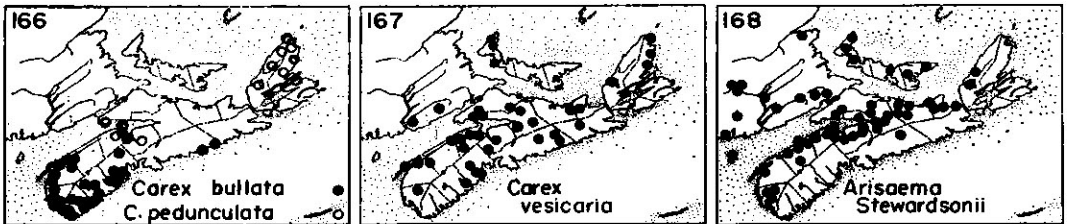
Common near the coast from Yarmouth to northern C.B.; scattered inland, and abundant in northern C.B.; boggy swales, barrens, swamps, and occasionally in peat bogs.

Nfld. to the Mackenzie south to Mass., Penn. and Ind.

99. *C. bullata* Schkuhr Fig. 44, e. Map 166.

Abundant in the southwestern counties and scattered east to Annapolis and Luenenburg Cos.; swales, boggy meadows, wet woods and edges of streams and lake shores. Plants with the perigynia approaching the maximum size have been named var. *Greeni* (Boeckl.) Fern.

Georgia north to Me.; N.S.

100. *C. vesicaria* L. Fig. 44, c. Map 167.

This plant is found throughout, although it is rather rare in southwestern N.S.; meadows, intervalles, along streams and ditches and the edges of swales. The plants are very variable in the width of the leaves and the dimensions and shape of the perigynia.

- a. Perigynia slenderly ovoid, gradually tapering to the beak; pistillate spikes 1-1.5 cm thick. *C. vesicaria*
- a. Perigynia with sub-globose to globose-ovoid bodies, obviously inflated, abruptly rounded to the beak.
- b. Spikes 1-1.5 cm thick.
- c. Spikes cylindrical, 2-7 cm long. var. *monile*
- c. Spikes elliptical, 1-2 cm long. var. *distensa*
- b. Spikes 5-8 mm thick; perigynia smaller, only 3-5 mm long. var. *jejuna*

The typical Eurasian species seems to be rare in the Maritime Provinces; plants with the slender tapering perigynia, are shown in collections from Wellington, P.E.I. and James River, Antigonish Co., N.S. Most of our plants show the globose, inflated perigynia abruptly contracted to the beak, and with the smaller size of perigynia and spikes belonging

to var. *jejuna* Fern. Var. *monile* (Tuckerm.) Fern. are the large forms of this and occasionally is found; while the short-spiked var. *distensa* Fries is European and northern, ranging south to N.S., rare.

Nfld. to B.C. south to Penn., Wisc. and Calif.; Eurasia.

#### 101. *C. miliaris* Michx.

Only one location has been found; collections by Smith et al. were made from a wet beach at Warren Lake, Victoria Co. in northern Cape Breton, and from along Warren Brook near its mouth.

Nfld. and Lab. south to central Maine and N.S.

#### X *C. mainensis* Porter

This is a hybrid between *C. vesicaria* and the last species. The small oval spikes have a conspicuous green and purplish pattern; sterile and not developing achenes. It was found associated with the last species at Warren Lake and along Warren Brook.

Frequently found where the two parents are growing together.

## 20. ARACEAE ARUM FAMILY

A small family of four distinctive plants growing in bogs, swamps or wet woods. The flowers are in a thick fleshy spike called a spadix, partly enclosed or subtended by a leafy bract called the spathe.

- a. Leaves compound, with three leaflets; spadix with the upper part not flowering; spathe longitudinally striped with white, hooded. 1. *Arisaema*
- a. Leaves simple.
  - b. Stem short or trailing; leaves wide and heart-shaped; spathe wide and protecting the flowers.
    - c. Spathe shining white, behind the flowers; leaves almost orbicular, glossy green. 2. *Calla*
    - c. Spathe greenish-purple, almost enclosing the spadix, present in early spring as the leaves appear; leaves large and rugose, basal. 3. *Symplocarpus*
  - b. Stem tall, erect, the spathe appearing like a continuation of the stem; spadix cylindrical, borne on the side of the two-edged stem; leaves narrow and sword-like. 4. *Acorus*

### 1. ARISAEMA MART.

1. *A. Stewardsonii* Britt. JACK-IN-THE-PULPIT Fig. 46, a. Map 168.

Rich low woods, mucky areas usually in thickets or along the edges of intervalles; rather common from Yarmouth east along the northern half of the Province to the Margaree Valley. Early June.

N.S. and P.E.I. to Minn. south to N.J. & N.C.

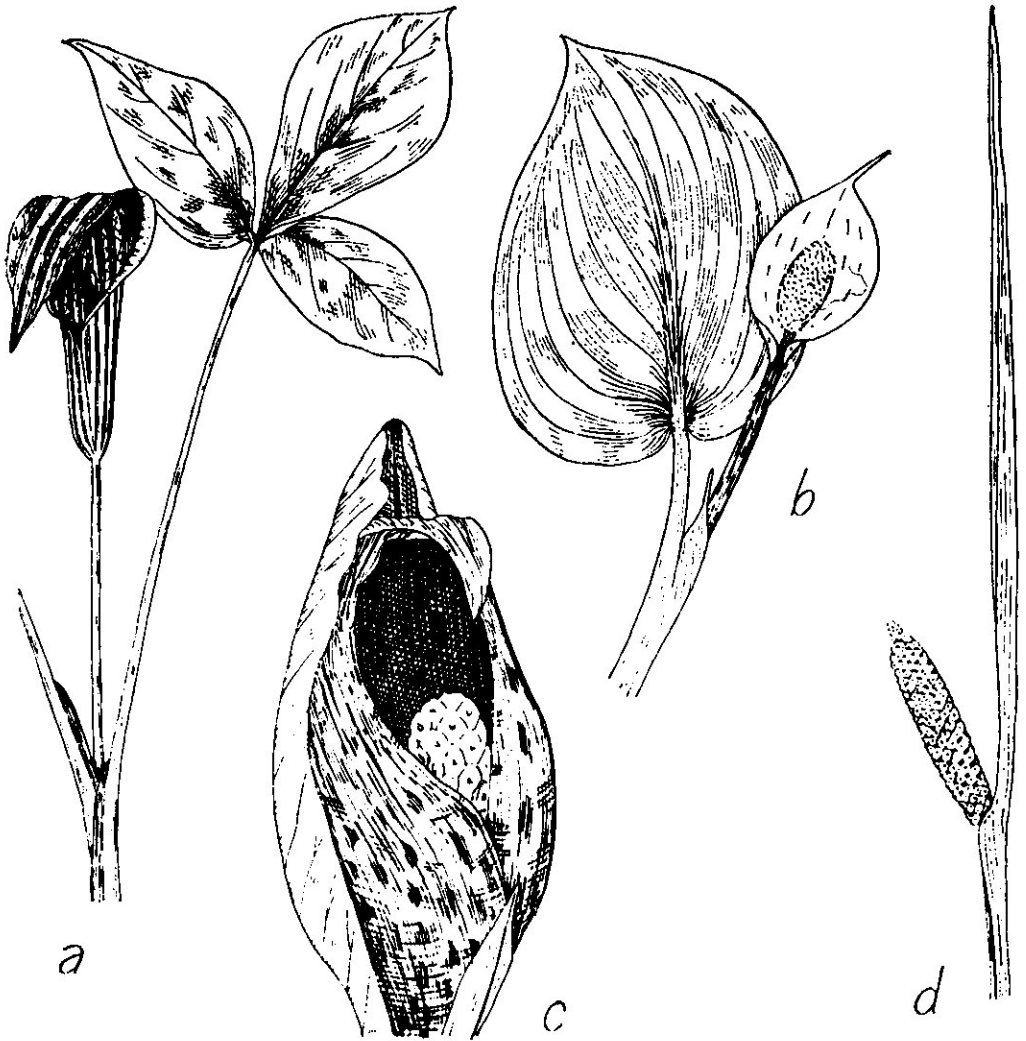


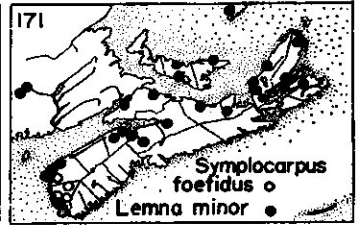
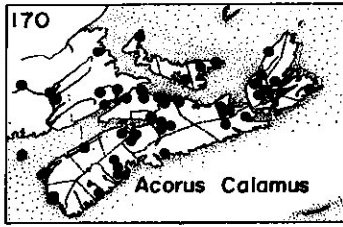
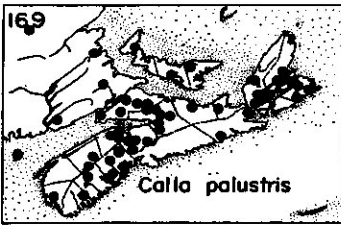
Fig. 46.—*Arisaema*. a, plant,  $\times \frac{1}{2}$ . *Calla*. b, plant,  $\times \frac{1}{2}$ . *Symplocarpus*. c, flowering plant,  $\times \frac{1}{2}$ . *Acorus*. d, upper third of plant,  $\times \frac{1}{2}$ .

## 2. CALLA L.

1. *C. palustris* L. WATER ARUM, WILD CALLA. Fig. 46, b. Map 169.

Rare in the southwestern counties; becoming more common from Yarmouth Co. east; scattered in bogs in the Annapolis Valley and in Cumberland Co.; scattered to north-central C.B. It is found in cold bogs and swampy pond, lake and stream edges, usually localized in small areas and can easily escape detection. (Smith, 1959). June 15-July.

Nfld. to Alaska south to N.J., Wisc. and Minn.; Eurasia.



### 3. SYMPLOCARPUS Salisb.

#### 1. *S. foetidus* (L.)Nutt. Fig. 46, c. Map 171. SKUNK CABBAGE

Found only in the southwest from Digby Neck, southern Digby and Yarmouth Cos.; springy swales, open bogs, mossy sphagnum woods and wet thickets. Early May.

N.S. to Man. south to Ga. and Iowa.

#### 4. ACORUS L.

#### 1. *A. Calamus* L. Fig. 46, d. Map 170. SWEET FLAG, CALAMUS.

Throughout; most abundant in the northern counties; often abundant in marshes, along rivers, shallow edges of ponds and wet meadows where the bases of the plants are continually submersed; always in open sunlight, often mixed with a growth of cat-tails, which prefer much the same habitats. It is often abundant in marshes just above high tides. July-Aug.

N.S. to Ore. south to Fla. and Tex.; intro. into Eu.

## 21. LEMNACEAE DUCKWEED FAMILY

Minute plants floating on or in the water, not differentiated into stems and leaves but flattened and reproducing by budding; flowers consisting of a single anther or pistil, usually not present.

a. Plants with several roots, reddish beneath, almost round, 3-8 mm long.

1. *Spirodela*

a. Plants with a single root, oval or elongated, green beneath.

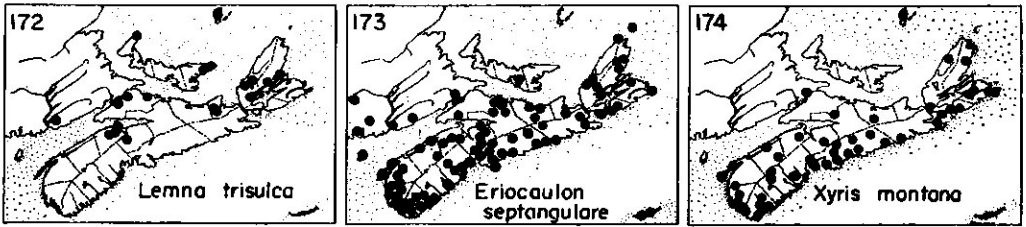
2. *Lemna*

### 1. SPIRODELA Schleid.

#### 1. *S. polyrhiza* (L.)Schleid. Fig. 46, d. Map 175.

Common on the surface of water in streams and in ponds, in Kings and Cumberland Cos., scattered elsewhere through northern N.S. to Mabou and Baddeck Forks.

N.S. to B.C. south to Fla. and Mex.; tropical America and Eurasia.



## 2. LEMNA L. DUCKWEED

a. Plants long and narrow, with the new plants stalked, 6-10 mm long, forming tangled masses and often sinking beneath the surface of the water.

1. *L. trisulca*

a. Plants oval, 2-5 mm long, floating on the surface.

2. *L. minor*

### 1. *L. trisulca* L. Fig. 47, f. Map 172. SUBMERSED DUCKWEED

Often abundant in ponds, lake shallows and slow-moving rivers in the more alkaline regions: Kings and Cumberland Cos., rather common in Antigonish Co. and through Inverness and Victoria Cos. to central C.B.

N.S. and M.I. to B.C. south to Fla. and Calif.; Eu. to Australia.

### 2. *L. minor* L. Fig. 47, e. Map 171. LESSER DUCKWEED

Common in stagnant pools, running brooks and ponds, often forming a greenish cover over the surface of the water; Kings Co. to northern C.B., often found until late October.

Throughout the world except in the colder regions.

## 22. XYRIDACEAE YELLOW-EYED GRASS FAMILY

Plants with stiff, erect, grass-like leaves; flowers yellow, appearing at intervals from between the stiff scales of the small, oval spikes.

### 1. XYRIS L. YELLOW-EYED GRASS

a. Plants 0.5-3 dm high; leaves to 2 dm long and 4 mm wide, more than half the length of the flowering scape; fruiting heads 8-10 mm thick, with the scales having a greenish area in the center.

1. *X. caroliniana*

a. Plants rarely as much as 3 dm high; leaves 2-6 cm long and 1-2 mm wide, one-third the length of the flowering scape; scales of the head dark brown; fruiting heads 3-6 mm thick.

2. *X. montana*

#### 1. *X. caroliniana* Walt. Map 175.

Common from Annapolis south to Shelburne Co., scattered east to southern Kings Co. and Musquodoboit Harbour in Halifax Co.; wet, sandy, gravelly or peaty lake-margins, and sloughs in peaty barrens, often growing with the following species. Aug.

Fla. to La. north to N.S. and central Me., west to Wisc.

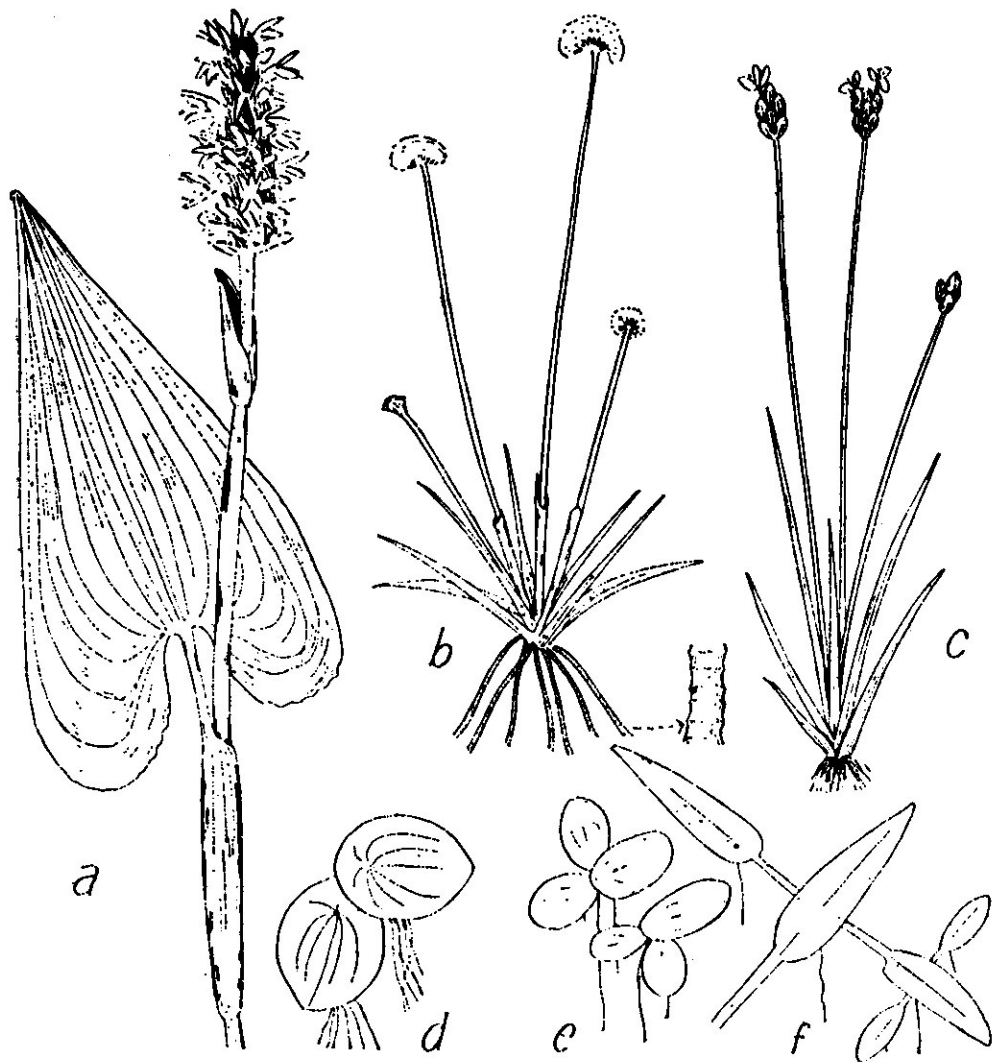


Fig. 47.—*Pontederia*. a, plant  $\times \frac{1}{2}$ . *Eriocaulon*. b, plant,  $\times 1$ . *Xyris*. c. *X. montana*,  $\times \frac{1}{2}$ . *Spirodela*. d, plants,  $\times 2$ . *Lemna*. e, *L. minor*,  $\times 2$ . f, *L. trisulca*,  $\times 2$ .

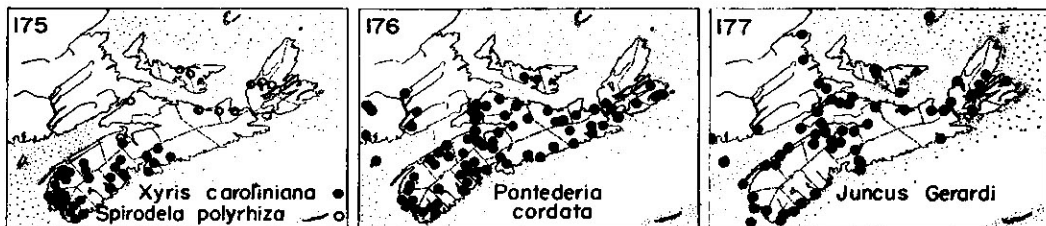
2. *X. montana* Ries Fig. 47, c. Map 174. **YELLOW-EYED GRASS**

Characteristic of peaty hollows, boggy barrens, and flats and lake margins; common in the southwestern areas and east along the coast to Scatari Island in C.B.; scattered and becoming rare northward and inland; bog between Amherst and Sackville. July-Aug.

Forma *albiflora* Boivin has its type station in a bog in Shelburne Co., where it was first collected by W. G. Dore. Flowers white instead of yellow.

Nfld. to Ont. south to Penn. and Mich.





## 23. ERIOCAULACEAE PIPEWORT FAMILY

Tufted plant with thin, sharp-pointed leaves; flowers in a lead-colored button, at the top of a naked scape which varies in length according to the depth of the water.

### 1. ERIOCAULON L. PIPEWORT

#### 1. *E. septangulare* With. Fig. 47, b. Map 173.

Throughout on sandy lake shores, rarely in running water; common in the southwestern and Atlantic regions. Sterile plants often form a green growth on the bottoms of lakes, as much as 2 meters below the surface. The plant may be readily identified by its whitish, banded roots. July 15-Sept.

Nfld. to Minn. south to N.J. and Ind.; western Scotland and Ireland.

## 24. PONTEDERIACEAE PICKEREL-WEED FAMILY

Vigorous perennial of shallow water, with cordate bright glossy leaves and thick spikes of bright blue flowers.

### 1. PONTEDERIA L. PICKEREL-WEED

#### 1. *P. cordata* L. Fig. 47, a. Map 176.

Abundant in the southwestern area, frequent in lakes on the mainland and southern C.B.; absent from northern C.B. It usually grows in large pure colonies around the mucky margins of ponds and lakes, along slow-moving streams or at the edge of pond-holes. Forma *angustifolia* (Pursh)Solms is a narrow-leaved form which is found throughout the range of the species. July-Sept.

Forma *albiflora* (Raf.)House is a white-flowered form found among typical plants at the edge of a runnel west of the Lequille R. in Annapolis Co. A clump of plants with pale flowers was found at Beaver Dam Lake, Guys. Co.

N.S. to Minn. south to the Gulf of Mexico.

## 25. JUNCACEAE RUSH FAMILY

Annual or perennial sedge-like plants with grass-like leaves, but distinguished from these two groups by having flowers with 6 perianth parts and forming a capsule. Two genera are found in our region.

- a. Capsule many-seeded; plants never hairy; plants characteristically of damp or wet areas; rushes. 1. *Juncus*
- a. Capsule 3-seeded; plants more or less hairy, usually of woodlands and open fields; woodrushes. 2. *Luzula*

## 1. JUNCUS L. RUSH

These plants should be collected in mature fruit, when the persistent stamens are still present. Many kinds have two extra bracts at the very base of the perianth. These should not be confused with the bract at the base of each pedicel, or flower stalk.

- a. Individual flowers with two tiny bracts at their base; leaves, when present, without cross-partitions.
- b. Inflorescence appearing lateral, the involucre leaf like a continuation of the stem (Fig. 48); sheaths at base of the stem without blades.
- c. Stems in dense clumps, with fine longitudinal lines; stamens 3; plant 0.5-2 meters high. 11. *J. effusus*
- c. Stems in rows from underground rootstocks; stamens 6.
- d. Stem with the part above the inflorescence about equalling that below; flowers greenish to light-brown, 2-3 mm long; anthers shorter than the filaments; seeds about 0.5 mm long. 10. *J. filiformis*
- d. Stem with the part above the inflorescence much shorter than that below; flowers with bands of dark-brown, 3.5-5 mm long; anthers several times the length of their filaments; seeds about 1 mm long (Fig. 48). 12. *J. balticus*
- b. Inflorescence terminal, subtended by an involucre leaf which may or may not exceed the inflorescence. Leaf-blade flat, or round and channeled; never hollow nor partitioned by cross-walls.
- f. Plant annual, low and spreading; inflorescence about one-half the total height.
- g. Sepals and petals long-attenuate, exceeding the greenish or pale capsule; flowers scattered singly along the branches (Fig. 48). 1. *J. bufonius*
- g. Sepals and petals rather blunt and about the length of the brownish capsule; flowers often in 2's or 3's; plants of halophytic habitat, usually more fleshy. Var. *halophilus*
- f. Plants perennial; inflorescence less than one-quarter the total height of the plant.
- h. Inflorescence 1-4-flowered; plants densely tufted, the bases surrounded by dry stems; the stems filiform with very narrow leaves; arctic-alpine. 2. *J. trifidus*
- h. Inflorescence many-flowered.
- i. Stems from a horizontal root-stock, with leaves on the upper part; sepals blunt, green with lateral bands.
- j. Plants of halophytic habitats; anthers twice as long as the filaments or more; capsule equalling or but slightly exceeding the perianth. 3. *J. Gerardi*

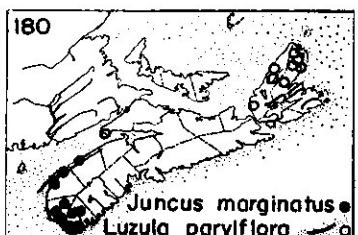
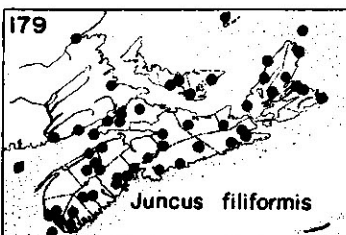
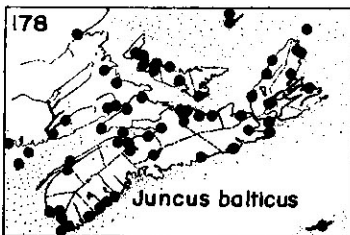
- j. Plants not halophytic; anthers about as long as the filaments; capsule rather globose, distinctly longer than the perianth.
4. *J. compressus*
- i. Stems tufted, with no leaves on the upper part; sepals without lateral dark brown bands; leaves all basal or nearly so with sheaths covering one-quarter of the stem at most.
- k. Leaf blades terete, channeled on the upper side.
- l. Inflorescence and capsule greenish; sepals 3.5-4.5 mm long; seeds with long white tails. 8. *J. Vaseyi*
- l. Inflorescence and capsule brownish; sepals 2.5-3.5 mm long; seeds with only short projections. 9. *J. Greenei*
- k. Leaf blades flat.
- m. Lobe or auricle at the base of the leaf-blade whitish and delicate, prolonged 1-4 mm beyond the base of the blade. 6. *J. tenuis*
- m. Auricles at the top of the leaf-sheath rounded, firm, and not prolonged beyond the base of the blade.
- n. Involucral leaf shorter than the inflorescence; inflorescence dense with the flowers crowded on the upper sides of the widely-arching branches. 5. *J. secundus*
- n. Involucral leaf stronger than the inflorescence; flowers chiefly clustered at the tips of the branches of the inflorescence. 7. *J. Dudleyi*
- a. Individual flowers without tiny bracts at their base.
- o. Leaf-blades flat, never cross-septate.
- p. Leaves filiform, 1-3; heads 1 or 2, 1-4-flowered; capsule 6-7 mm long, much exceeding the perianth; bogs. 13. *J. styglus*
- p. Leaves 1-4 mm wide; capsule rounded, 3.5 mm long, barely exceeding the perianth; heads more than 2, many-flowered. 14. *J. marginatus*
- o. Leaf-blades terete and hollow, partitioned by cross-walls (to show this, dissection may be necessary in the two distinctive species, *J. bulbosus* and *pelocarpus*).
- q. Stems creeping, densely matted, forming several capillary leaves and a flowering branch from each slightly bulbous node; Sable Island. 20. *J. bulbosus*
- q. Stems erect and coarse
- r. Flowers solitary or in pairs along the branches of the inflorescence; inflorescence much branched and diffuse.
- s. Stem erect; inflorescence often bearing tufts of reduced leaves (Fig. 49). 24. *J. pelocarpus*
- s. Stem prostrate; plant much reduced in all parts; inflorescence not bearing tufts of reduced leaves. Var. *sabulonensis*
- r. Flowers grouped in heads or glomerules.
- t. Seeds 0.7-2.0 mm long, with definite white appendages on each end; stamens 3.
- u. Capsule little if at all exerted; seeds 1.2-2 mm long, with long white tails two-thirds to fully as long as the body. 16. *J. canadensis*
- u. Capsule much exerted and brownish; seeds 0.7-1.2 mm long, with the tails one-half or less the length of the body.
- v. Inflorescence with erect branches, 3-6 times longer than wide; heads 2-7-flowered; seeds with tails half as long as the body. 18. *J. brevicaudatus*

- v. Inflorescence with spreading branches, forming an open or diffuse cyme; sepals and petals lance-linear, pointed; heads 5-20-flowered; seeds with tails one-third the length of the body. 17. *J. subcaudatus*
- t. Seeds 0.3-0.6 mm long, without whitish tails.
- w. Stamens 3; seeds very small, 0.3-0.4 mm long; plant erect, 2-8 dm high with hemispherical heads on ascending branches. 19. *J. acuminatus*
- w. Stamens 6; seeds 0.5-0.6 mm long.
- x. Heads mostly spherical, many-flowered; root-stock often bearing tubers; capsule subulate, exceeding the perianth (Fig. 49). 15. *J. nodosus*
- x. Heads not spherical; tubers absent.
- y. Stem stout, to 1 m high; elongate thread-like leaves sometimes borne in dense tufts on the root-stocks; lower stem-leaf large and erect, overtopping the rather narrow inflorescence; capsule equalling the sepals, anthers longer than the filaments. 21. *J. militaris*
- y. Stem to 5 dm high; leaves not over-topping the inflorescence.
- z. Branches of the inflorescence spreading; heads compact.  
Capsule tapering, shiny, dark brown to nearly black, 3-4 mm long; flowers brown, 2.5-3.0 mm long (Fig. 49). 22. *J. articulatus*  
Capsule abruptly mucronate, 2.5-3.0 mm long, often duller and paler; flowers often greenish, smaller. *Var. obtusatus*
- z. Branches of the inflorescence 1-4, slender and strongly ascending; some flowers of the head often raised above the others on slender pedicels; northern and rare. 23. *J. alpinus*

### 1. *J. bufonius* L. Fig. 48. TOAD-RUSH

Common throughout; open areas, especially along road-sides, farm yards and beaten paths; scattered in wet land, lake-margins or boggy places. Widely distributed.

*Var. halophilus* Buchenau & Fern. is scattered near the coast from the Gulf of St. Lawrence around C.B. and along the Atlantic Coast south to Mass.; James Bay and western N.A.



2. *J. trifidus* L. Map 181.

The first collections for the Province of this arctic-montane species are from cliff faces overhanging the Northeast Margaree River; rare on cliff ledges near the mouth of the Cheticamp River; dry crevices of north-facing cliff, Lockhart Brook, Salmon River; and dry cliff crevices, Gray Glen near Cape North Village in Victoria Co. (Smith and Erskine 1954).

Arctic regions south to the bare mts. of Nfld., Que., New England and n. N.Y.

3. *J. Gerardi* Loisel. Fig. 48. Map 177.

Common around the coast; on the upper limits of the salt marshes, often forming darker pure colonies on the flat brackish dykelands or in fields overflowed by the sea; forming a narrow band just below the area occupied by cultivated grasses and legumes.

Salt marshes from Nfld. and Gaspé to Fla.; more rarely inland around the Great Lakes; Pacific Coast, Eurasia and Africa.

4. *J. compressus* Jacq.

Recorded by Rousseau (1938); brackish meadow at Guysborough. Other collections probably should be considered as collections of *J. Gerardi* from drier soils and more inland locations. This is a European species occasionally introduced at various places in North America.

5. *J. secundus* Beauv.

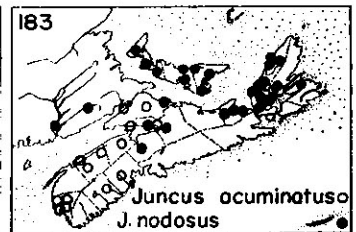
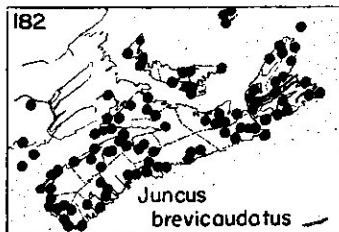
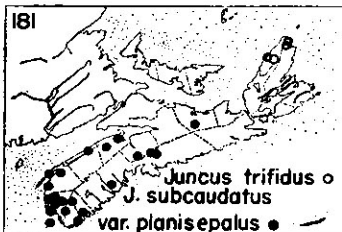
Two collections with crowded flowers secund, or placed strongly along one side, along the branches of the inflorescence are placed in this species. The first collection is from a ditch, Brookfield Mines, Queens Co.; the second is a collection by W. B. Schofield from a damp area in a field, Cambridge, Kings Co.

Maine to Indiana south to N.C.

6. *S. tenuis* Willd. Fig. 48.

Abundant throughout; fields, roadsides, open thickets and moist places. Most, if not all, of the plants may be considered to be the typical variety and the forms found here may be considered merely variations.

Throughout N.A.; widely adventive elsewhere.



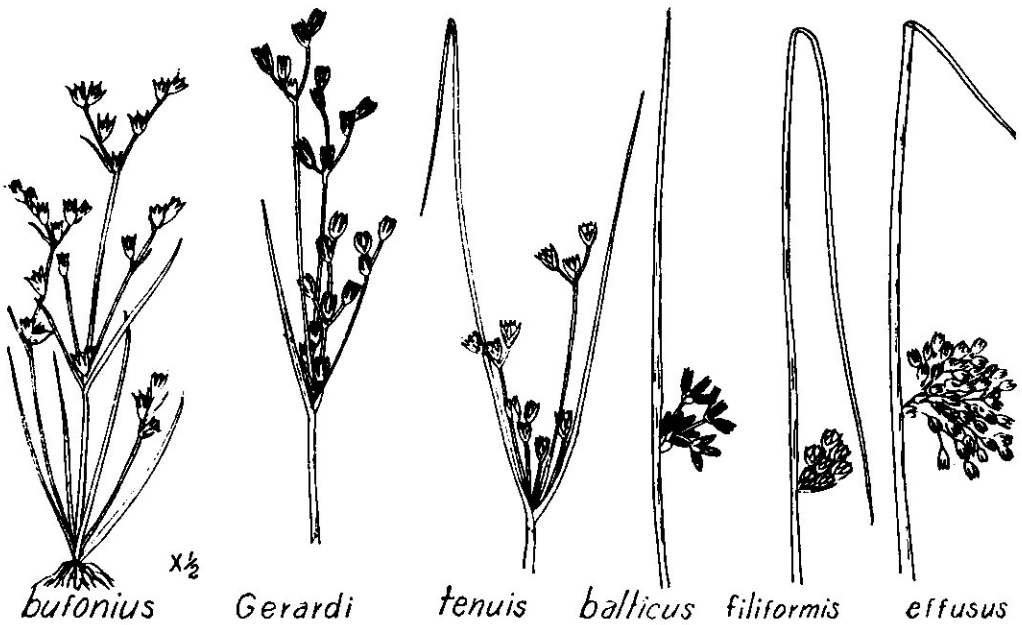


Fig. 48.—*Juncus*. Inflorescences,  $\times \frac{1}{2}$ .

### 7. *J. Dudleyi* Wieg.

Rare; swale at the southern base of the North Mt., Middleton, Annapolis Co. (Fernald, 1921). Scattered other collections have been made from Hants, Lunenburg and central Cape Breton. The plant is not easily distinguished from the common *J. tenuis* but nevertheless seems to be rare. Scattered also in N.B. and throughout P.E.I.

Nfld. to B.C. south to Va., Kans. and Mexico.

### 8. *J. Vaseyi* Engelm.

Cespitose clumps in cranberry bog at Linden, Cumberland Co. (Schofield, 1955); also near Pugwash. This is an extension of range southward from New Brunswick.

Northern Que. to Alberta south to N.S., N.Y. and Utah.

### 9. *J. Greenei* Oakes & Tuckerm.

Reported by Fernald (1921) from but one station: dunes at Village-dale, Shelburne Co. It is more widely distributed since it has now been found on sandy soils near Halifax, east to Pomquet in Antigonish Co. where it was frequent in hollows among the dunes; also from near Pugwash in Cumberland Co.

N.S. to northern Ont. south to N.J., Ohio and Minn.

### 10. *J. filiformis* L. Fig. 48. Map 179.

Scattered throughout; swales, bogs, edges of lakes, low meadows and sandy-shores.

Lab. to Alaska south to Penn., Wisc. and Colo.

11. *J. effusus* L. Fig. 48. SOFT RUSH

Abundant throughout, marshes, wet meadows, around ponds and in ditches; it is a common weed in wet grazed pastures. The plant is highly variable and seven varieties have been reported from N.S. but their ranges here and elsewhere are largely confluent. They are here placed in two groups, each of which is common throughout.

a. Inflorescence compact with the flowers crowded; flowers small, 2-2.7 mm long, with the perianth segments relatively soft in texture and about the length of the capsule. Var. *compactus*

a. Inflorescence open and diffuse; flowers larger, 2.2-4.3 mm long, with the perianth relatively firm and longer than the capsule. Var. *solutus*

Var. *compactus* Lej. & Court. is common throughout but perhaps more abundant in the northern and eastern parts of the Province. This includes var. *conglomeratus*, a variation which in Europe is often maintained as a species but here does not seem to be too clearly marked.

Var. *solutus* Fern. & Wieg. is also common throughout, sometimes growing two meters high in swales and swamps. This includes varieties *decipiens*, *Pylaei* and *costulatus*, which may appear perfectly distinct at times but which have many intergrading forms. Var. *Pylaei* (Laharpe) Fern. & Wieg., a form with firm, non-wrinkling sepals and the perianth 3-4.3 mm long, may possibly be distinct since its range is more northern and it is found in the cooler parts of the Province.

The species is very variable and is almost cosmopolitan.

12. *J. balticus* Willd., var. *littoralis* Engelm. Fig. 48. Map 178.

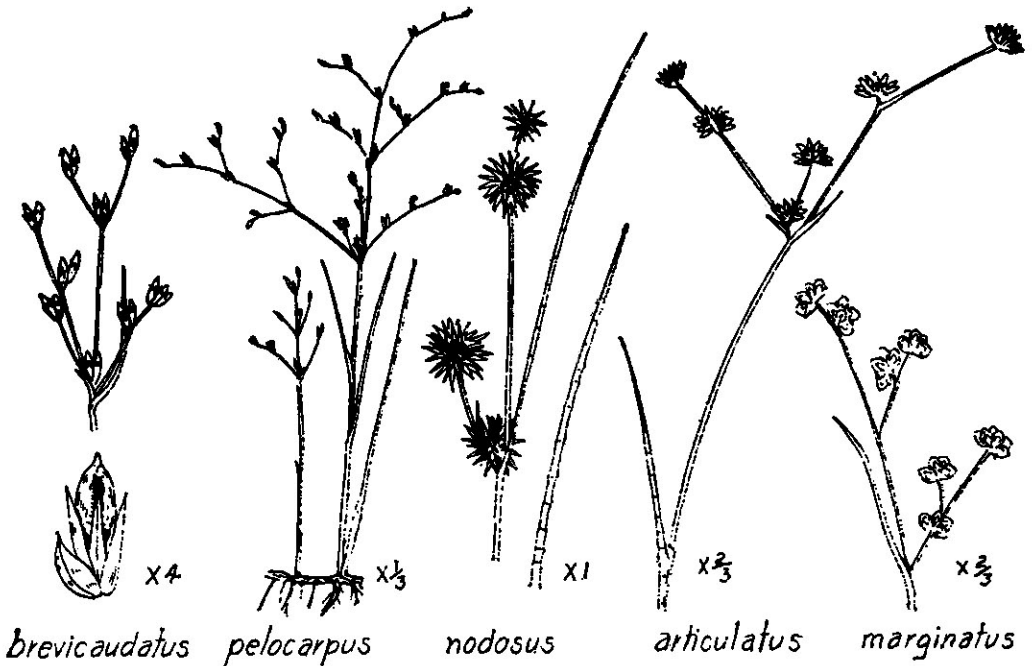
Common around the coast, dominant sometimes in the shoreward reaches of the salt marshes; occasionally found in wet meadows or dykelands near the coast, and rarely in bogs in the same zone. Forma *dissitiflorus* Engelm. has the flowers remotely scattered to make an inflorescence 5-10 cm long. This has been reported from a sphagnous hill-side at Truro (Rhodora 25: 208. 1923). The American variety.

Lab. to B.C. south to Penn. and Mo.

13. *J. stygius* L., var. *americana* Buchenau

First collected by J. A. Allen in 1882 from a bog thicket, Isle Madame, Richmond Co. It was next found in a bog at the head of MacGregor Brook, North Aspy River, Inverness Co.; and later found to be abundant at the edge of bog-pools on French Mt.; in shallow thickets through bog near Fort Louisburg and occasional in damp hummocks and hollows of bog at Gracieville in Richmond Co. (D. S. Erskine, 1951; Smith and Schofield, 1952). The variety is the American variant of the Eurasian plant.

Lab. south to C.B., N.Y. and Minn. west to Sask.

Fig. 49.—*Juncus*.14. *J. marginatus* Rostk. Fig. 49. Map 180.

Local in Yarmouth and Shelburne Cos., north to Belle Isle on the North Mt.; clayey brooksides, spring ditches, wet roadsides and damp fields.

N.S.; central Maine to Fla. and Tex. west to Kans.

15. *J. nodosus* L. Fig. 49. Map 183.

Swales near Wentworth gypsum quarries; scattered and rather rare from Windsor and Cumberland Co. to northern Cape Breton.

Bogs, swales and wet shores; Nfld. to Alaska south to Va. and N.M.

16. *J. canadensis* J. Gay Fig. 50.

Common to abundant throughout; wet, sandy or peaty soils, marshy places and shallow water. Two varieties have been named (Fernald, *Rhodora* 47: 127-131. 1945).

a. Perianth 2.5-3.3 mm long; cyme with spreading-ascending branches, to 3 dm high. *J. canadensis*

a. Perianth 3.5-4 mm long; cyme with stiffly erect branches, to 1.5 dm high.

Var. *sparsiflorus*

The typical variety has the heads densely flowered with 8-20 flowers in a sub-globose head. Forma *apertus* Fern. has only 2-7 flowers more erect in the head: Windsor and probably scattered. Forma *conglobatus* Fern. has the heads, or many of them, densely crowded into irregular masses. Mira, C.B. County. N.S. to Minn. south to Ga. and La.



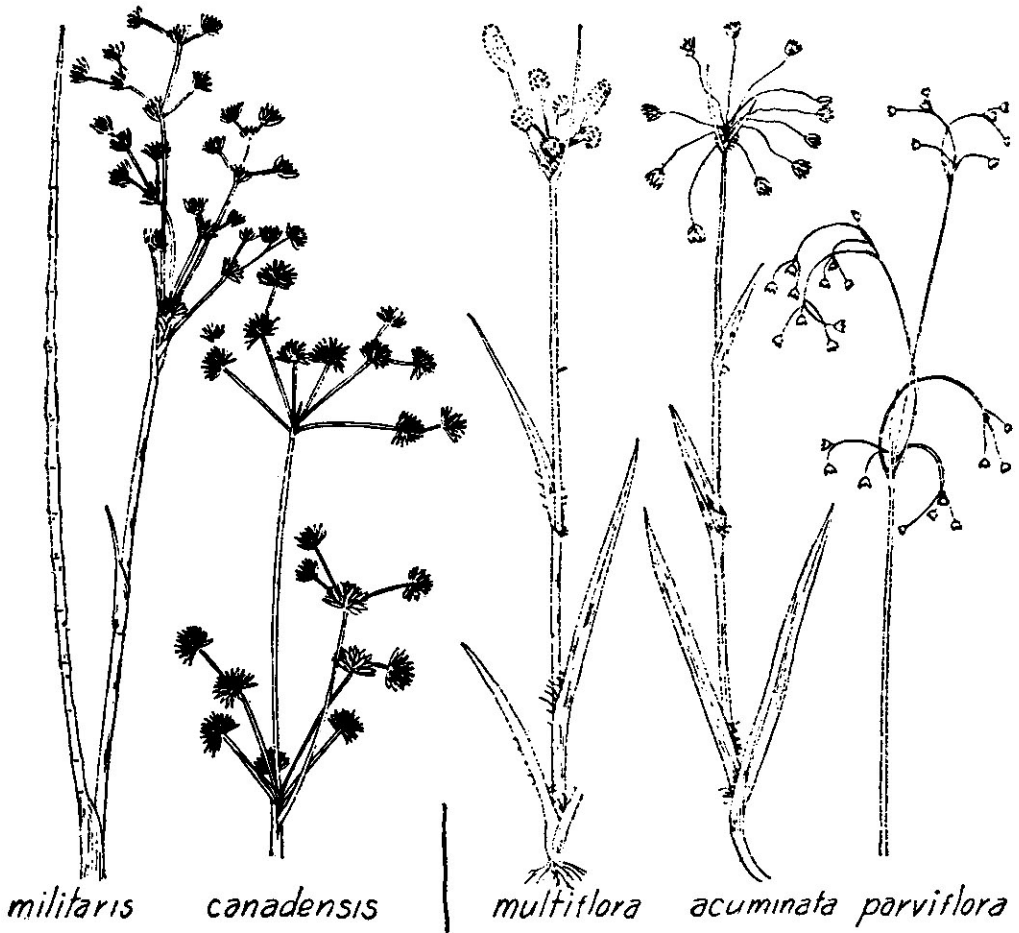


Fig. 50.—*Juncus*,  $\times \frac{1}{2}$ , *Luzula*;  $\times \frac{1}{2}$ .

Var. *sparsiflorus* Fern. is found around some of the lakes in the Tusket River Valley, sparingly elsewhere in the southwestern counties and scattered through Kings to Hants Co. Nfld. to N.S.; eastern Me. and Mass.

17. *J. subcaudatus* (Engelm.) Coville & Blake, var. *planisepalus* Fern. Map 181.

Characteristic of wet boggy woods and openings in spruce swamps in southwestern N.S.; found east to Kings and Halifax Cos., with one collection known from Pictou. This is an endemic N.S. variety of the southern species which ranges northward to Cape Cod.

18. *J. brevicaudatus* (Engelm.) Fern. Fig. 49. Map 182.

Common in damp places throughout; ditches, periodic ponds, swamps, estuaries and sandy or rocky lake and pond beaches.

Lab. to Alberta south to N.C. and Minn.

19. *J. acuminatus* Michx. Map 183.

Local in Yarmouth Co. as on the sandy and muddy flats of the Tusket R.; wet clayey soils, sterile meadows and in ditches, scattered eastward to Lunenburg and Kings Cos., rare north to Cumberland Co.; and at Baddeck.

N.S. and central Me. to Minn. south to Ga. and Mex.; B.C.

20. *J. bulbosus* L.

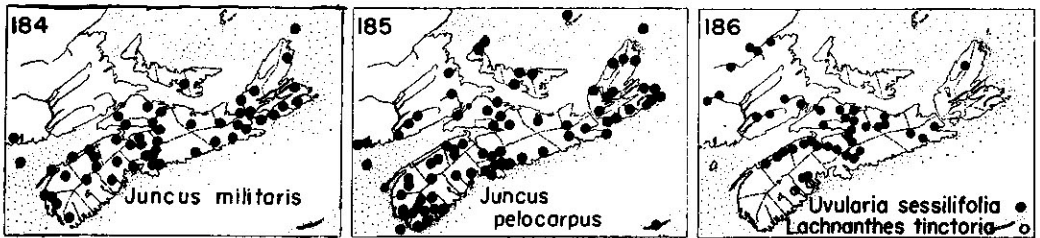
Common along the marshy borders of fresh-water ponds on Sable Island: not known on the mainland.

Southeastern Nfld.; St. P. and Miq.; Sable I.; Eu. and northern Africa.

21. *J. militaris* Bigel. Fig. 50. Map 184.

Sandy and peaty lake-margins in the siliceous region from Yarmouth to northern C.B.; rather rare in the northern counties; common at Shortt's Lake, Brookfield, Colchester Co.; and along many rivers in eastern N.S. Two minor forms of little significance have been described. Forma *bifrons* Fern. has two leaf-blades on the culm, with no upper bladeless leaf-sheath; forma *subnudus* Fern. has one leaf-blade and no bladeless sheath; while the typical form has one leaf-blade near the middle of the culm and a bladeless sheath nearer the top.

Nfld. to N.Y. and Dela., west to Ont. and Mich.

22. *J. articulatus* L. Fig. 49.

One of the commonest species throughout; wet ditches and muddy shores, low areas in fields, swamps and boggy land. Nfld. to B.C. south to N.J., Ind. and Ore.; Eurasia.

Hybrids with *J. brevicaudatus* (X.*J. fulvescens* Fern, Rhodora 35: 236. 1933) are abundant in peaty swales at Yarmouth, at Argyle and on a savannah near Tiddville, in every place failing to set fruit (Fernald, 1921). Hybrids with *J. nodosus* were noticed in a brackish swale at Baddeck; and with *J. canadensis* at Tiddville, Digby Co. and at Lower Argyle, Yarmouth Co. (Fernald, 1921).

Var. *obtusatus* Engelm. is rarer throughout, and in brackish soil it may largely replace the typical variety. Nfld. to Mich. south to N.J.

23. *J. alpinus* Vill., var. *rariflorus* Hartm.

Rare; plants found in a bog on the plateau near the coast north of Cheticamp, Inverness Co. may belong to this species. In P.E.I. (Erskine, 1960) it is found in damp open sites and fresh marsh, often bordering on brackish marsh in the eastern half of the Island but not on the sides bordering N.S.

Greenland to Alaska south to N.Y., Minn. and Wash.

24. *J. pelocarpus* Mey. Fig. 49. Map 185.

Sandy and muddy shores, bogs and wet areas; common to abundant in the western counties, scattered elsewhere to northern C.B. Nfld. to Dela. west to northern Ont. and Wisc.

Var. *sabulonensis* St. John is a much reduced, prostrate variety that is known only from Sable Island: shallow ponds and wet dune hollows.

## 2. LUZULA DC. WOODRUSH

Fernald, M.L. Notes on eastern American *Luzula*. *Rhodora* 47: 265-271. 1945. Fernald and Wiegand. The variations of *Luzula campestris* in North America. *Rhodora* 15: 38-43. 1913.

- a. Flowers solitary at the tips of the ultimate branches of the inflorescence.
- b. Inflorescence an umbel, the rays unbranched; spikelets 3-4.5 mm long; plants 2-4 dm high; seeds appendaged (Fig. 50).
  - 1. *L. acuminata*
- b. Inflorescence compound, with many of the branches again branched; plants 6-12 dm high; seeds not appendaged.
  - 2. *L. parviflora*
- a. Flowers aggregated into heads or spikes.
  - c. Flowers 3-6 in each cluster; perianth whitish; inflorescence open and diffuse.
    - 3. *L. luzuloides*
  - c. Flowers several to many in each cluster; perianth straw-colored to blackish-brown; inflorescence often crowded.
  - d. Perianth 2.5-3.5 mm long, equalling or usually shorter than the mature capsule; seeds 1.5-2.0 mm long, with a round-tipped bulbous caruncle; inflorescence more or less open with rays of varying lengths.
  - e. Leaves longer and flexuous, to 5 mm wide; sepals and capsules pale or straw-colored.
    - 4. *L. multiflora*
  - e. Leaves stiff and narrow; sepals dark brown to fulvous; capsules dark chestnut to blackish; plant low, found near the coast.
    - Var. *fuscinigra*
  - d. Perianth 3-4 mm long, exceeding the capsule; seeds 1.5-1.7 mm long, with a conically tapering caruncle; inflorescence more condensed with the spikes sessile or subsessile.
    - Var. *acadiensis*

1. *L. acuminata* Raf. Fig. 50.

Scattered to common throughout; banks, thickets and in deciduous or mixed woods. This is one of the first plants flowering in the spring; and the young flowering shoots are conspicuous in early May.

Nfld. to Sask. south to N.J., Ga. Ind. and Minn.

2. *L. parviflora* (Ehrh.) Desv., var. *melanocarpa* (Michx.) Buchenau  
Fig. 50. Map 180.

Scattered in intervale forests and along rocky stream-banks in northern C.B. where it has been widely collected; rare on the mainland, known only from the western tip of Cumberland County: damp edge of McGahey Brook, West Advocate; banks of Soldier's Brook (Schofield, 1955); and woods road, Three Sisters (Erskine, 1951). Our variety is the more southern extreme of the species.

Lab. to Alaska south to N.S., the mts. of New Eng. and south in the Rockies; Eurasia.

3. *L. luzuloides* (Lam.) Dandy & Wilmott

The only record is from Pictou where it was collected by Fernald and St. John; forming mats in a lawn, sterile but with typical base and foliage.

A weedy species from Eu. scattered westward to Ont. and Minn. and south to Penn.

4. *L. multiflora* (Retz.) Lejeune. Fig. 50. COMMON WOODRUSH

Abundant throughout; fields, thickets, barrens and open woods; along practically every roadside and in every field or pasture in the Province. Nfld to Alaska south to Penn., Ill. and Calif.

Var. *fusconigra* Celak is a more dwarf, stiffer form with blackish inflorescence and capsules; common, usually near the coast. From the coast along the Strait of Belle Isle to Mass. and inland on the mts. of N.Y.

Var. *acadiensis* Fern. was originally described from P.E.I. (*Rhodora* 19: 39. 1917). This plant is common and the only variety on Sable Island; rather rare in the northern part of the Province, scattered throughout P.E.I. A collection from St. Paul Island, originally referred to var. *comosa*, is considered to belong here.

Nfld. and Gaspé south to southeastern Maine.

## 26. LILIACEAE LILY FAMILY

The lily family comprises over 200 genera and 3500 species. The flowers are mostly regular, with 6 stamens, 3 petals, 3 sepals and a superior ovary. *Trillium* is the only plant without parallel-veined leaves; and *Smilax* is our only woody species. The tulip, hyacinth, lily and aloe are common ornamental plants. The Narcissus, or daffodil, belongs to the closely-related *Amaryllis* family.

a. Leaves all basal or nearly so, or absent at flowering time.

b. Flowers 8-11 cm long, orange; leaves linear, 5-20 dm long (Fig. 51, d).

5. *Hemerocallis*

b. Flowers much smaller, not orange; leaves less than 3 dm long.

c. Flowers solitary, yellow, 2-3 cm long; leaves elliptical, mottled with purple (Fig. 51, f).

7. *Erythronium*

- c. Flowers several to many, less than 2 cm long; leaves not mottled.
- d. Leaves linear or else absent at flowering time.
- e. Plants with a strong onion-like odor and taste; leaves fleshy; flowers numerous, in umbels. 4. *Allium*
- e. Plants without a strong odor or taste; leaves grass-like; flowers not in umbels.
- f. Flowers crowded in a short narrow raceme; top of the scape glutinous with dark glands. 1. *Tofieldia*
- f. Flowers 3-8 in an open corymb; top of the scape smooth. 8. *Ornithogalum*
- d. Leaves oval to elliptical, present at flowering time.
- g. Flowers yellow, in a 3-6-flowered umbel; perianth parts separate (Fig. 51, e). 10. *Clintonia*
- g. Flowers white, several in a one-sided raceme; perianth parts united (Fig. 53, c). 15. *Convallaria*
- a. Leaves whorled or alternate upon the stem.
- h. Plants herbaceous, not trailing or climbing.



Fig. 51.—*Uvularia*. a, plant, x 1/3. *Streptopus*. c, *S. roseus* x 1/3. b, *S. amplexifolius*, x 1. *Hemerocallis*. d, flower, x 1/4. *Clintonia*. e, plant, x 1/3. *Erythronium*. f, plant, x 1/3.

- i. Leaves in one or more whorls upon the stem.
- j. Whorls numerous; flowers 4-10 cm in diameter, orange spotted with brown (Fig. 52, a). 6. *Lilium*
- j. Whorls one or two; flowers much smaller.
- k. Leaves in two whorls, each whorl with 5-9 leaves; flowers yellow, incurved beneath the upper leaves (Fig. 52, b). 16. *Medeola*
- k. Leaves 3, in a single whorl; flowers white to purple (Fig. 52, d-f). 17. *Trillium*
- i. Leaves alternate upon the stem.
  - l. Flowers numerous, in a terminal inflorescence.
    - m. Flowers green; inflorescence 1-4 dm long; leaves oval, 1-3 dm long, plaited, clasping the stem; rare. 2. *Veratrum*
    - m. Flowers white; inflorescence rarely to 1 dm long; leaves much smaller, not plaited; common.
    - n. Perianth parts 6; leaves tapering to the base, 3-many (Fig. 52, c; 53, b). 11. *Smilacina*
    - n. Perianth parts 4; leaves heart-shaped at the base, 1-3 (Fig. 53, b). 12. *Maianthemum*
  - l. Flowers solitary or in 2's, terminal or scattered.
    - o. Flowers solitary to few on each plant, 15-45 mm long, yellowish, at first terminal then becoming lateral (Fig. 51, a). 3. *Uvularia*
    - o. Flowers numerous, much smaller.
    - p. Plants erect, 1-2 m high; stem finely branched, the smaller branches thread-like; leaves scales; flowers small, greenish-white. 9. *Asparagus*
    - p. Plants arching, 2-8 dm high; stem unbranched or forking; leaves lanceolate to oval, over 10 mm wide.
    - q. Flowers bell-like, borne singly on a jointed stalk or rarely in pairs from just below each leaf; root-stock without prominent scars (Fig. 51, b, c). 13. *Streptopus*
    - q. Flowers cylindrical, the parts joined, in pairs upon a forked peduncle from the leaf axils; root-stocks with prominent oval scars (Fig. 53, a). 14. *Polygonatum*
- h. Plants trailing or climbing, woody and spiny; southwest N.S. only (Fig. 54, f). 18. *Smilax*

## 1. TOFIELDIA Huds.

### 1. *T. glutinosa* (Michx.)Pers. FALSE ASPHODEL

Collected but once, by W. G. Dore in peaty and boggy soil from the region of Cheticamp, Inverness Co.

Nfld. to Man. south to N.Y. & Ga.

## 2. VERATRUM L.

### 1. *V. viride* Ait. GREEN HELLEBORE

Reported but once, no specimen seen: west Halifax Co. (MacKay. N.S. Inst. Sci. 1904: 287).

Swamps, wet woods and low pastures; N.B. to Minn. south to Ga.

## 3. UVULARIA L.

1. *U. sessilifolia* L. Fig. 51, a. Map 186. BELLWORT

Rich woodland or alluvial soils, usually in shade but often growing out into open meadows and hay-fields in the center of the Province; Annapolis and Cumberland Cos. to Guysborough; not collected in C.B. in recent years. May 20-June 15.

N.S. to N.D. south to Ga.

## 4. ALLIUM L.

a. Flowers rose-colored; leaves linear and hollow, present at flowering time.

1. *A. Schoenoprasum*

a. Flowers white; leaves elliptic, 2-5 cm wide, appearing early and disappearing before flowering time.

2. *A. tricoccum*

1. *A. Schoenoprasum* L., var. *laurentianum* Fern. CHIVES

Prest reports it along wet, low land near the sea-shore or rivers; Macoun found it in meadows near the sea at Yarmouth. It is now rare and our specimens are from the shores of the Bay of Fundy and northern Inverness Co.: DeLap Cove on Brier Island, and Cap Rouge and Corney Brook. The garden plant is the introduced Eurasian species.

Var. *laurentianum* occurs from Nfld. to northern Ont. south to northern N.Y., on the West Coast, and in eastern Asia.

2. *A. tricoccum* Ait. WILD LEEK

Very local; luxuriant in large crowded beds in sugar maple woods on the top of Cape Blomidon and on intervalles at Cambridge and Brooklyn Corner in Kings Co.; in a rich sugar maple intervalle at Kemp-town, Colchester Co.

N.S. to Minn. south to Ga.

## 5. HEMEROCALLIS L.

1. *H. fulva* L. Fig. 51, d. TAWNY DAY-LILY

An occasional escape from gardens; it is found in large clumps along rocky roadsides, especially in the Annapolis Valley; scattered throughout. It does not appear to be spreading by seed.

Intro. from Eurasia; N.S. to Ont. south to N.C.

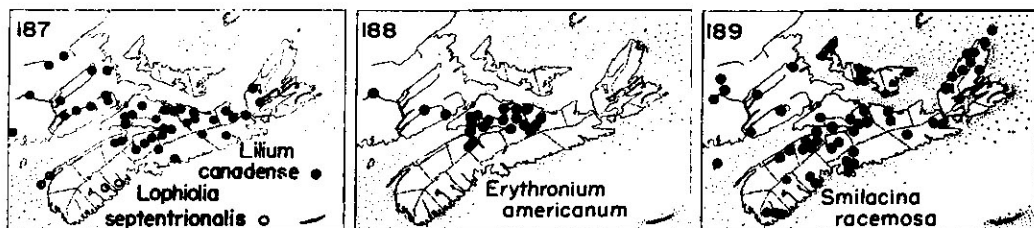
## 6. LILIUM L.

1. *L. canadense* L. Fig. 52, a. Map 187. CANADA LILY

Meadows and stream-banks from Kings and Cumberland Cos. to around Mabou in Inverness Co. This plant is now rare in most

parts of its range but may be common locally on some of the richer, less disturbed intervals.

N.S. to Minn. south to Ga.



## 7. ERYTHRONIUM L.

1. *E. americanum* Ker Fig. 51, f. Map 188. DOG'S-TOOTH VIOLET

Upland woods of beech and maple and along the edges of the intervals: Kings and Cumberland Cos. to the intervals of Pictou Co.; not yet found further east. It is local in eastern Kings Co. where it is best known around the Gaspereau Valley and on the North Mt.; very abundant on most of the intervals in north-central N.S. Mid May.

N.S. to Minn. south to Ga.

## 8. ORNITHOGALUM L.

1. *O. umbellatum* L. STAR-OF-BETHLEHEM

This slender garden perennial shows a tendency to escape around Yarmouth and neighboring regions; scattered around old dwellings. Early July.

Native of Eu.

## 9. ASPARAGUS L.

1. *A. officinalis* L. ASPARAGUS

Occasionally escaping to roadsides. In the Annapolis Valley it will persist for years in fields or orchards where it was once cultivated.

Native of Eu. and widely introduced.

## 10. CLINTONIA Raf.

1. *C. borealis* (Ait.)Raf. Fig. 51, e. CLINTONIA

Common throughout; deciduous or mixed woods. Early June. This is one of the most distinctive and best known plants of our spring flora.

Lab. to Man. south to Ga.





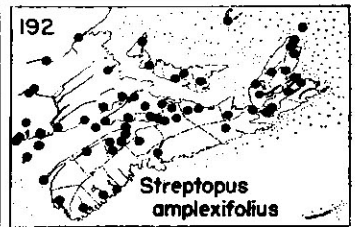
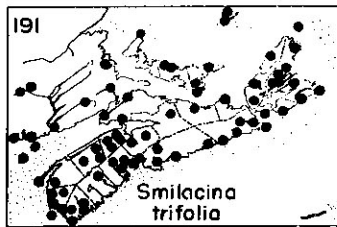
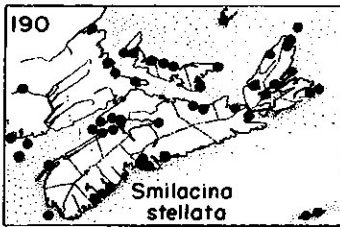
Fig. 52.—*Lilium*. a, top of plant,  $\times \frac{1}{4}$ . *Medeola*. b, top of plant,  $\times \frac{1}{2}$ . *Smilacina*. c, *S. racemosa*,  $\times \frac{1}{4}$ . *Trillium*. d, *T. erectum*,  $\times \frac{1}{4}$ . e, *T. cernuum*,  $\times \frac{1}{4}$ . f, *T. undulatum*,  $\times \frac{1}{4}$ .

## 11. SMILACINA Desf.

- a. Flowers numerous, minute, in a panicle; divisions of the perianth 1-2 mm long; plants 4-8 dm high, arching from stout rootstocks; leaves numerous.
1. *S. racemosa*
- a. Flowers few, larger, in a raceme; divisions of the perianth 3.5-5.5 mm long; plants 2-5 dm high, erect, from slender rootstocks.
- b. Leaves 7-12, glaucous, broad and sub-clasping at the base, raceme sessile or nearly so.
2. *S. stellata*
- b. Leaves 2-4, not glaucous, tapering to a sheathing base; raceme stalked.
3. *S. trifolia*

1. *S. racemosa* (L.)Desf. Fig. 52, c. Map 189. FALSE SOLOMON'S SEAL

Scattered in open deciduous woods, along the edges of thickets and in clearing; rare in southwestern N.S., frequent northward. Forma *foliosa* Vict., Contrib. Inst. Bot. Univ. Montreal 14: 15. 1929, is a minor form with the lower branch of the panicle in the axil of the upper leaf. Bridgewater, and probably throughout the range of the species. N.S. to B.C. south to Tenn. & Ariz.



2. *S. stellata* (L.)Desf. Map 190. STARRY FALSE SOLOMON'S SEAL

Rather rare around the coast on headlands or in marshes and wet meadows. Early July.

Var. *crassa* Vict. is a stiff plant 1-4 dm high with very thick, heavy, more or less oval leaves closely crowded upon the stem. Occasional from Sable Is. and Queens Co.; northern C.B. on exposed headlands and slopes near the sea; around Bay St. Lawrence; at N. E. Cove on Scatari Island it grows on an exposed headland with the typical variety (Smith and Schofield, 1952). This variety is found from Southern Lab. and the lower St. Lawrence to Long Island Sound.

Lab. to B.C. south to Va. & Calif.; Eu.

3. *S. trifolia* (L.)Desf. Fig. 53, b. Map 191. THREE-LEAVED FALSE SOLOMON'S SEAL

Common in sphagnum bogs or wet meadows throughout; swamps, wet bogs and sphagnum mats in northern C.B., usually with the base of the plant buried in Sphagnum moss. June-July 15.

Lab. to B.C. south to N.J. & s. Alta.; Siberia.

12. MAIANTHEMUM Weber

1. *M. canadense* Desf. Fig. 53, d. WILD LILY-OF-THE-VALLEY

Common throughout in a great variety of habitats, one of the first plants to appear under conifers. Early June.

Lab. to Minn. south to the mts. of N.C. & Ga.

13. STREPTOPUS Michx.

Fassett, Norman C. A study of *Streptopus*. *Rhodora* 37: 88-113. 1935.

a. Nodes glabrous; leaves clasping at the base, the margin of the blade smooth; flowers greenish-white; peduncles and pedicels smooth.

1. *S. amplexifolius*

a. Nodes fringed; leaves not clasping, the margins finely ciliate; flowers rose-purple; peduncles and pedicels ciliate.

2. *S. roseus*



Fig. 53.—*Polygonatum*. a, top of plant, and rootstock,  $\times \frac{1}{2}$ . *Smilacina*. b, *S. trifolia*,  $\times \frac{1}{2}$ . *Convallaria*. c, plant,  $\times \frac{1}{2}$ . *Maianthemum*. d, plant,  $\times \frac{1}{2}$ .

1. *S. amplexifolius* (L.)DC., var. *americanus* Schultes Fig. 51, b. Map 192. GREEN TWISTED-STALK

Scattered in moist deciduous or mixed woods, in ravines or on wooded intervals; rare in the southwestern counties, common from Annapolis to northern C.B. June. This is a variety of the southern European plant.

Greenland to N.Y. west to the Great Lakes; Alaska to N.M.

2. *S. roseus* Michx., var. *perspectus* Fassett Fig. 51, c. Map 193.

Scattered to common throughout; acid soils, coniferous and mixed woods and thickets. June. This is the northern variety.

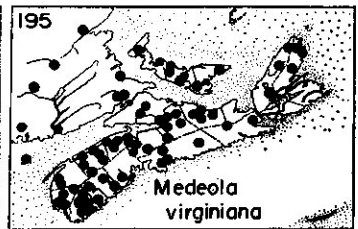
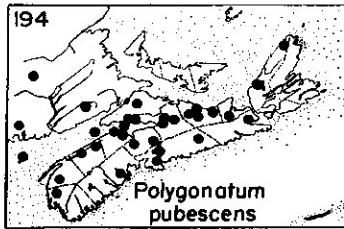
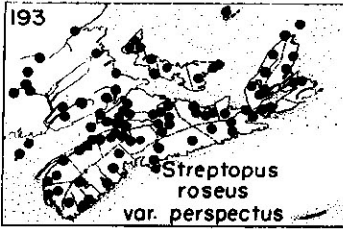
Lab. and Nfld. to Mich. south to Penn. & N.C.

#### 14. POLYGONATUM Mill.

1. *P. pubescens* (Willd.)Pursh SOLOMON'S SEAL. Fig. 53, a. Map 194.

Rich deciduous wood; common from Annapolis to northern C.B. where two stations are known in Inverness Co.; absent in southern C.B. and rare in the southwestern counties, scattered elsewhere. It is found only in the richest woods, along the margins of intervals or in ravines. June.

N.S. to Man. south to S.C. & Ga.



## 15. CONVALLARIA L.

### 1. *C. majalis* L. Fig. 53, c. LILY-OF-THE-VALLEY

This introduced garden plant persists or spreads in patches near old houses, cemeteries, or occasionally along the roadsides in the southern parts of the Province. May.

Naturalized from Eu.

## 16. MEDEOLA L.

### 1. *M. virginiana* L. Fig. 52, b. INDIAN CUCUMBER-ROOT. Map 195.

Open deciduous woods, usually scattered and on well-drained slopes but areas have been seen with thousands of plants. It is common from Annapolis and Cumberland Cos. to northern C.B.; characteristic of rocky woods in the southwestern counties, rare from Halifax to Guysborough, and absent from southern Cape Breton Island.

N.S. to Minn. south to Fla.

## 17. TRILLIUM L.

a. Leaflets tapering to the base and sessile, rounded at the tip and abruptly short-pointed.

b. Flowers erect; dark-purple; ovary and fruit purplish.

2. *T. erectum*

b. Flowers recurved down under the leaves on a short stalk, pale pinkish; ovary and fruit pale.

1. *T. cernuum*

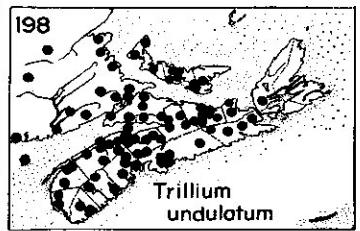
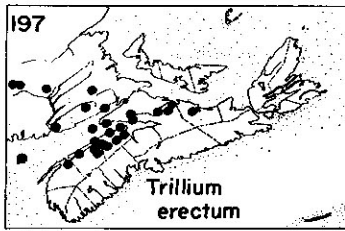
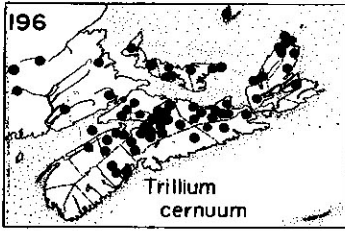
a. Leaflets with definite petioles about 1 cm long, rounded at the base and tapering to a slender tip; flowers erect, the petals white with pink-striped bases.

3. *T. undulatum*

### 1. *T. cernuum* L. Fig. 52, e. Map 196. NODDING TRILLIUM

Alluvial soils, flood plains and deciduous climax forest; Annapolis and Lunenburg Cos. to Cumberland Co. and northern C.B. It is common on the rich intervalles of Colchester and Pictou Cos., rare on the Atlantic side of the Province, and absent from the four southwestern counties. May 20-June 15.

Nfld. to Wisc. south to Ga.



2. *T. erectum* L. Fig. 52, d. Map 197. PURPLE TRILLIUM

Common along the hardwood slopes of the Annapolis Valley and east at least to Pictou Co. It is not found west of Digby nor has it been seen east of Pictou Co.

Forma *albiflorum* R. Hoffm. with whitish petals was reported by Macoun from the North Mt., Annapolis. Occasional among typical plants, alder thicket, North Side, Isle Haute (Schofield, 1955); and collected by J. S. Erskine at White Rock, Kings Co. A Halifax station is probably introduced.

N.S. to Ont. south to Ga.

3. *T. undulatum* Willd. Fig. 52, f. Map 198. PAINTED TRILLIUM

Open dryish to rather rich woods and intervalles, often found on cut-over land. This plant is scattered throughout peninsular N.S. but there is only one collection from C.B.; hardwood forest north of Melford. May 20-June 20.

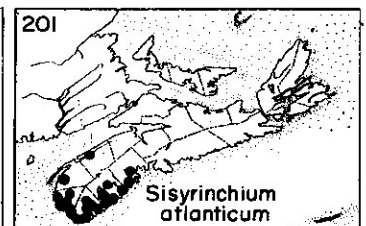
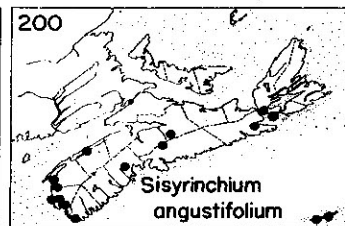
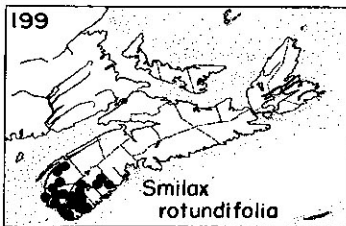
N.S. to Man. south to Ga.

## 18. SMILAX L.

1. *S. rotundifolia* L. Fig. 54, f. Map 199. GREEN or CAT BRIER

Thickets, bordering lakes and rivers, often growing in dense tangles over shrubs; frequent from Weymouth south through Yarmouth Co.; around the lakes and rivers of Shelburne County and along the Medway River in Queens. Var. *quandangularis* (Muhl.) Wood has the margins of the leaf minutely ciliate-spinulose, but this variety is probably not well-enough marked to recognize. Late June.

Fla. to Tex. north to N.S. and southern Mo.



## 27. HAEMODORACEAE BLOODWORT FAMILY

A small group of the southern hemisphere with only two species in the northern one; marsh plants to 8 dm high, with leaves long and narrow and flowers dingy-yellow, small and woolly, in a terminal repeatedly branched inflorescence.

- a. Stamens 3, exserted; ovary inferior; inflorescence crowded, hemispherical, 3-6 cm wide. 1. *Lachnanthes*  
 a. Stamens 6, included; ovary mostly superior; inflorescence loosely cymose, 5-10 cm wide, usually longer than wide. 2. *Lophiola*

## 1. LACHNANTHES ELL.

1. *L. tinctoria* (Walt.)Ell. Map 186. Fig. 54. e. REDROOT

Very local; known only from the shores of Ponhook and Bear-trap Lakes, Queens Co., where it was discovered by Weatherby (*Rhodora* 44: 233. 1942). On the peaty shores or lake-side marshes on the

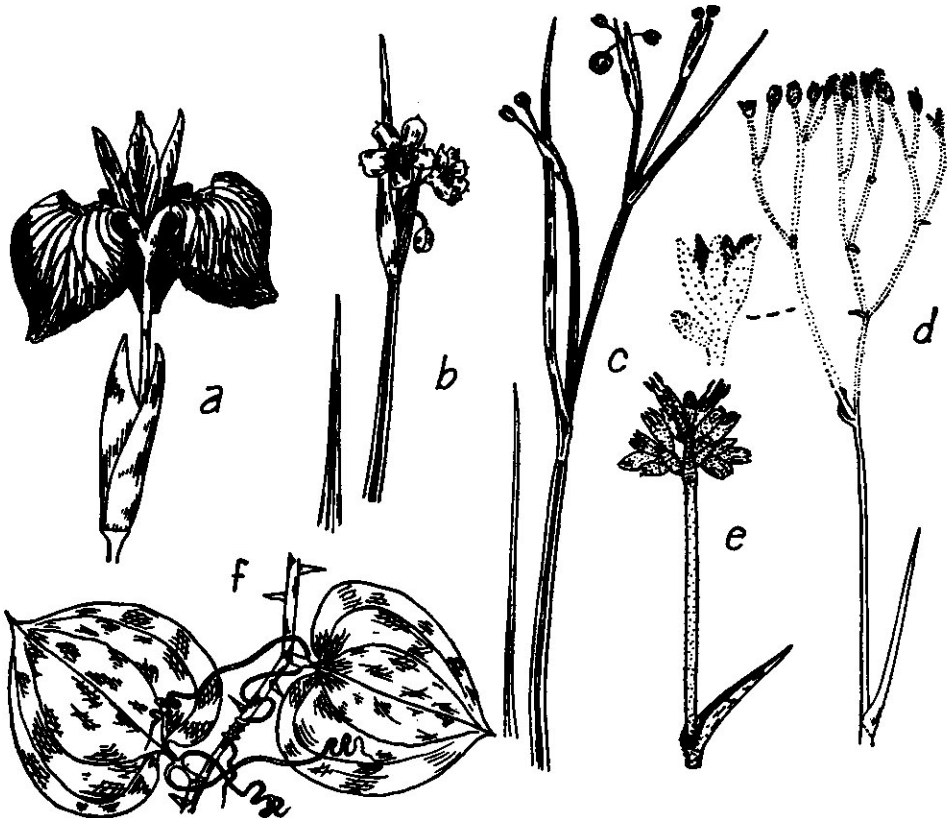


Fig. 54.—Iris. a, *I. versicolor*, flower,  $\times 1/3$ . *Sisyrrinchium*. b, *S. montanum*, top of plant,  $\times 1/2$ . c, *S. atlanticum*,  $\times 1/2$ . *Lachnanthes*. e, top of plant,  $\times 1/2$ . *Lophiola*. d, top half,  $\times 1/4$ . *Smilax*. f, part of plant,  $\times 1/2$ .

north side of Ponhook Lake it grows associated with *Scirpus Longii*. July-Sept.

Near the coast; N.S. and Mass. south to Fla., La. and Cuba.

## 2. LOPHIOLA Ker

### 1. *L. americana* (Pursh) Wood Map 187. Fig. 54, d. GOLDEN CREST

Rare and known from but four stations: common in wet savannahs along Little River, west of Tiddville, Digby Neck; scattered in a meadow, southern end of Brier Is.; scattered for miles along the shore of Ponhook L. in Queens Co.; and common in a sphagnous boggy swale bordering Fancy Lake in Lunenburg Co. Aug.-early Sept. The plant of Nova Scotia is sometimes considered a separate species under the name *L. septentrionalis* Fern. (See *Rhodora* **24**: 167. 1922; and **45**: 512. 1943).

N.S. and bogs in the pine barrens of N.J.

## 28. IRIDACEAE IRIS FAMILY

About 60 genera and 1400 species; widely distributed and best developed in South Africa. The cultivated Iris, Crocus and Gladiolus are members of this family. The showy flowers are regular and differ from those of the lily family in having an inferior ovary. The flowers of our species, except for the Yellow Iris, are a clear blue, although other colors prevail elsewhere.

- a. Stem 1-5 dm high, winged; flowers less than 1 cm wide; plants with fibrous roots only. 1. *Sisyrinchium*
- a. Stems 4-10 dm high, terete or nearly so; flowers 6-12 cm wide; plants with thick rootstocks. 2. *Iris*

### 1. SISYRINCHIUM L. BLUE-EYED GRASS

- a. Spathe generally solitary and sessile on the culm; bracts composing the spathe unequal, the outer 2-6.5 cm long, the inner 1-3 cm long; stem 1.5-3 mm wide; pedicels the length of the inner bract or shorter (Fig. 54, b). 1. *S. montanum*
- a. Spathes generally 2 or more, peduncled from the axil of a leafy bract; bracts of the spathe nearly equal; pedicels longer than the inner bract.
- b. Old leaf-bases persisting as tufts of brownish, fibrous bristles; plant stiff, usually blackening on drying; stem 1-3 mm wide. 2. *S. arenicola*
- b. Old leaf-bases, if persistent, not forming tufts of fibrous bristles; plants not so stiff, not blackening on drying.
- c. Inner bract of the spathe 15-30 mm long; stem 2-4 mm wide, broadly winged; capsule 4-6 mm long. 3. *S. angustifolium*
- c. Inner bract of the spathe 10-15 mm long; stem slender and narrowly winged, 1-3 mm wide, tall, flexuous and usually branched; capsule 2-4 mm long. 4. *S. atlanticum*

1. *S. montanum* Greene, var. *crebrum* Fern., *Rhodora* 48: 159-160. Fig. 54, b. BLUE-EYED GRASS

Very common throughout; fields, meadows, roadsides and open woods. The stem may be occasionally branched. Late May-June. (*S. angustifolium* Mill. of earlier authors). The species is dubiously present in N.S.; this variety is more southern.

N.S. to Ont. and Minn. south to W. Va.

2. *S. arenicola* Bickn.

Rare; sandy plains or banks; Yarmouth, on sandy areas near Middleton and collected by J. S. Erskine at Parker's Cove in Annapolis Co.; on the shore of Grand Lake, Halifax Co.

Sandy areas near the coast; Fla. north to Mass. & N.S., rarely inland.

3. *S. angustifolium* Mill. Map 200.

Common from Yarmouth and Shelburne Cos. and scattered eastward in moist areas to Annapolis Co. and to southwestern C.B. It is abundant and the only member of the genus on Sable Is. Occasionally the plant may have quite simple scapes, thus appearing like *S. montanum*, but with paler blue flowers. (*S. gramineum* of earlier authors; *S. graminoides* Bickn.).

Tex. to Fla. and north to southeastern Nfld.; inland to Que. and Kans.

4. *S. atlanticum* Bickn. Fig. 54, c. Map 201.

Damp peaty, sandy or gravelly soil in grassy woods or in the open; common from Yarmouth and Shelburne Cos. and scattered eastward in moist areas to Annapolis Co.: North Mt., Belle Isle. This plant is often common in its area and is most easily recognized by its tall, branching, flexuous habit.

Miss. to Fla. and north to N.S. and southern Me.; rarely inland to Ohio.

## 2. IRIS L. IRIS

Some 200 species occur in the northern hemisphere; most abundant in Asia. The common garden bearded Iris is *Iris germanica* L.

a. Flowers blue; plant 1-8 dm high; capsule about 50 cm long.

b. Capsule and ovary sharply angled; leaves long and linear, 3-7 mm wide; stem very slender, terete. 1. *I. prismatica*

b. Capsule and ovary obtusely angled; leaves 5-30 mm wide; stem stout.

c. Leaves 5-10 mm wide; stem slender, terete; petals tubular-pointed and one-quarter as long as the sepals; capsule blunt or barely tipped; seeds 2-3.5 mm wide, plump, with a prominent raphe or line up one side. 2. *I. Hookeri*



c. Leaves 5-30 mm wide; stem stout, angled on one side; petals flat, half as long as the sepals; capsule stout-beaked; seeds 4-6 mm wide, flattened on the side, the raphe not apparent. 3. *I. versicolor*

a. Flowers yellow; plant 10-15 dm high; capsules 50-70 mm long.

4. *I. Pseudacorus*

### 1. *I. prismatica* Pursh SLENDER BLUE FLAG

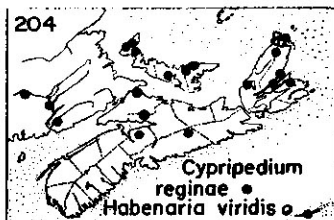
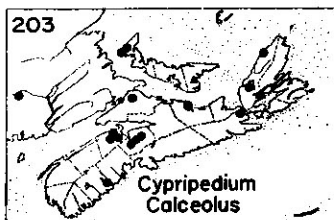
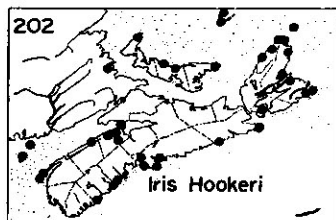
Reported by Macoun as abundant in meadows at Louisburg; not collected there in recent years and unknown elsewhere.

Wet ground near the coast: N.S.; southern Me. to Ga.

### 2. *I. Hookeri* Penny Map 202.

Found around the coast on beaches, exposed headlands and cliffs; common around C.B. and along the Bay of Fundy; scattered along the South Shore; very rare or absent on sandy shores as from the Strait of Canso to the N.B. border. (*I. setosa* Pall., var. *canadensis* Foster).

Lab. and Nfld. to the St. Lawrence R. and along the coast to Knox Co., Maine.



### 3. *I. versicolor* L. Fig. 54, a. BLUE FLAG

Common throughout; meadows, swamps, along streams and especially common in wet grazed pastures where it is a weed.

White-flowered plants are rare and are known as forma *Murrayana* Fern.: growing with typical plants in a swale at Auld's Cove, Guysborough Co. (Schofield and Smith, 1953); collected also by J. S. Erskine on Seal Island off southwestern N.S. June-July.

Lab. to Man. south to W. Va.

### 4. *I. Pseudacorus* L. YELLOW IRIS

Well naturalized about pools and ditches near Yarmouth; found at Arcadia about 50 years ago; Brier Island; and N.E. Margaree in Inverness Co.; to be expected elsewhere as a casual introduction. Late June-July.

Intro. from Europe; Nfld. to Minn. southward.

## 29. ORCHIDACEAE ORCHID FAMILY

This is a family of about 15,000 species widely distributed throughout the world. It is distinguished by the irregular flowers and inferior ovary. The three outer sepals are usually of the same texture as the

petals. One petal differs from the rest in shape and is termed the lip; this may also be prolonged behind as a spur.

- a. Flowers showy with the lip moccasin-shaped, 2-5 cm long; fertile anthers 2 (Fig. 55, a). 1. *Cypripedium*
- a. Flowers smaller; lip not moccasin-shaped, often fringed; fertile anther 1.
- b. Flowers with spurs more than 2 mm long, numerous in erect loose or dense racemes (Fig. 55, b-d). 2. *Habenaria*
- b. Flowers without conspicuous spurs.
- c. Flowers showy, pink or rarely whitish, 1.5-4.5 cm long, 1-several on a stem.
- d. Leaves elliptical or oval; flowers solitary and terminal (Fig. 56, e). 3. *Pogonia*
- d. Leaves linear or reduced to sheaths only.
- e. Flowers several in a raceme; perianth-parts separate; leaf solitary, linear (Fig. 56, d). 4. *Calapogon*
- e. Flower solitary, terminal; perianth-parts joined at the base; leaves reduced to scales (Fig. 56, c). 5. *Arethusa*
- c. Flowers less than 1 cm long, few to many, not normally solitary.
- f. Leaves reduced to bracts; plant reddish or yellowish, without chlorophyll (Fig. 56, a, b). 9. *Corallorhiza*
- f. Leaves linear to oval; plant with green chlorophyll.
- g. Flowers in a narrow, spiral or one-sided raceme, greenish or white; sepals and petals, except for the lip, erect and forming a tube.
- h. Lip not sac-shaped; leaves not variegated, oval and basal or linear and on the stem (Fig. 57, a, b). 6. *Spiranthes*
- h. Lip sac-shaped; leaves basal, ovate to elliptical, variegated with white and green (Fig. 57, c). 7. *Goodyera*
- g. Flowers very small, greenish to pale purplish, in a short open raceme; sepals and petals separate, usually spreading.
- i. Leaves two, opposite and conspicuous.
- j. Leaves near the top of the stem (Fig. 57, f, g). 8. *Listera*
- j. Leaves basal, sheathing the stem (Fig. 57, e). 11. *Liparis*
- i. Leaves solitary on the stem, ovate-elliptical (Fig. 57, d). 10. *Malaxis*

## 1. CYPRIPEDIUM L. LADY'S-SLIPPER

- a. Plants leafy-stemmed; flowers 1-2, rarely several; lip of slipper with a roundish opening at the top.
- b. The three sepals separate; lip almost triangular in side view, strongly netted with pink. 1. *C. arietinum*
- b. The lower two sepals united; lip oval, not strongly netted.
- c. Lip yellow, shorter than the sepals; sepals and petals linear-lanceolate, brownish and acute.
- d. Lip 2-3 cm long; sepals purplish-brown. 2. *C. Calceolus* var. *parviflorum*
- d. Lip 3.5-5 cm long; sepals paler and shorter. *C. Calceolus* var. *pubescens*
- c. Lip white, flushed with purple; sepals and petals greenish-white, broad and obtuse. 3. *C. reginae*
- a. Plant with two basal leaves only; flowers solitary; lip white or pink, split along the top. 4. *C. acaule*

### 1. *C. arietinum* R. Br. RAM'S-HEAD LADY'S-SLIPPER

Discovered by J. S. Erskine growing in clumps in broken country of gypsum sinkholes and thin poplar scrub one-quarter mile south of

the gypsum quarries at Wentworth, Hants Co. (Erskine, J. S., 1954). Later found by J. S. and D. S. Erskine on the shaded top of a gypsum cliff at Ste. Croix. In full bloom May 24.

N.S. and s. Que. to Man. south to Mass. & Wisc.

2. *C. Calceolus* L., var. *parviflorum* (Salisb.) Fern. Map 203. YELLOW LADY'S-SLIPPER

This is an Eurasian plant with three eastern N.A. varieties. Var. *parviflorum* is rather rare: rich or calcareous soil, often near outcrops of gypsum or limestone in the Windsor-Brooklyn area, sparingly east to C.B. and west to Kings Co., occasionally in rich woods. Nfld. to B.C. south to Ga. & N.M.

Var. *pubescens* (Willd.) Correll is a larger extreme scarcely separable from the species. Most of the specimens seen seem to belong to the smaller variety but collections from Gore and Sweet's Corner, Hants Co. and Chipman Brook in King's Co. are placed here. June 1-June 20.

N.S.; Me. to Minn. south to Ga.

3. *C. reginae* Walt. Map 204. SHOWY LADY'S-SLIPPER

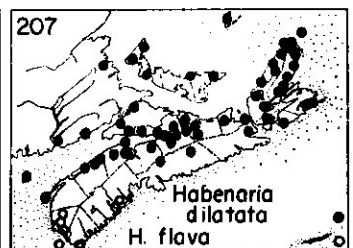
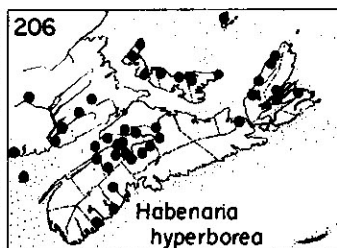
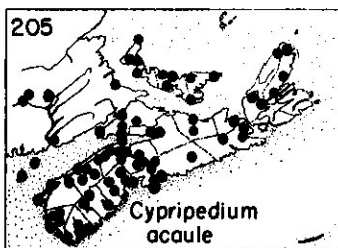
Rare and local but widely scattered from Hants Co. to northern C.B.; reported by MacKay as often abundant in tamarack swamps, Pictou; swamps and alkaline bogs in western and central C.B. where it is occasionally very abundant (Smith and Erskine, 1954); occasionally found or said to occur elsewhere in alkaline areas in central N.S. and C.B.

Nfld. to Man. south to Ga. and Mo.

4. *C. acaule* Aito. Map 205. Fig. 55, a. COMMON LADY'S-SLIPPER

Scattered throughout; often abundant in acid soil in dry or moist woods. It is characteristic of the pine woods in the Annapolis Valley where scattered individuals are usually present. The white-flowered form has been named forma *albiflorum* Rand & Redfield. This is often found growing with the pink-flowered plants. Early June.

Nfld. to n. Alta. south in the mts. to N.C. & Tenn.



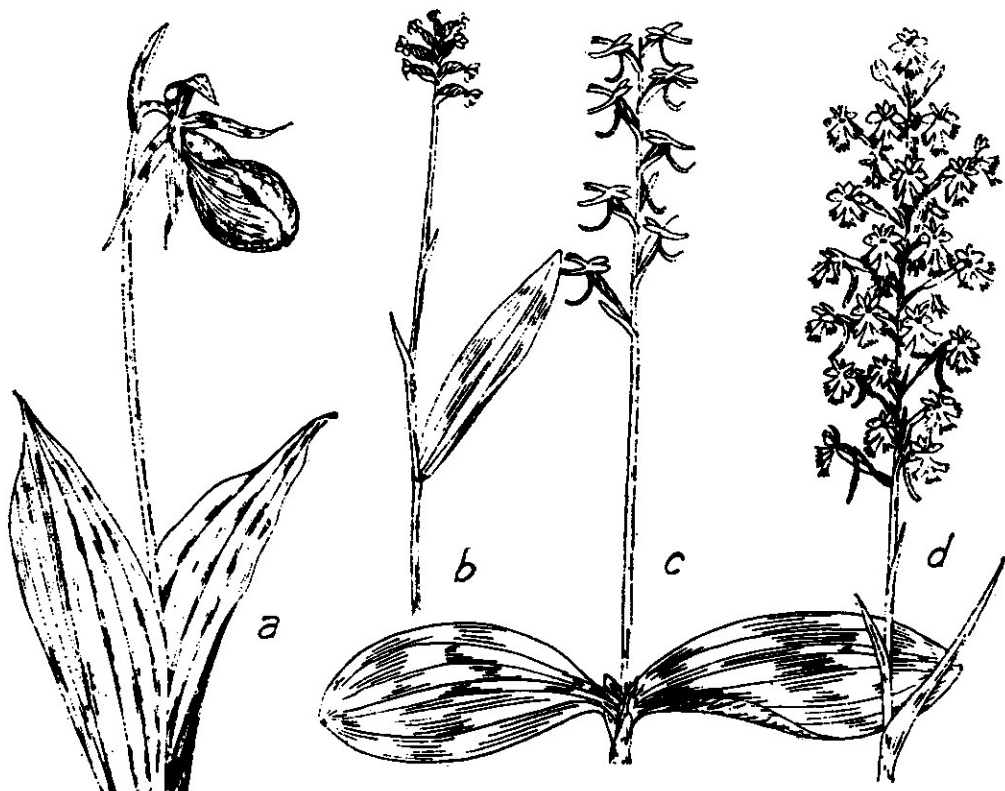


Fig. 55.—*Cypripedium*. a, *C. acaule*, x 1/3. *Habenaria*. b, *H. clavellata*, x 1/3. c, *H. Hookeri*, x 1/3. d, *H. psycodes*, x 1/3.

## 2. HABENARIA Willd. FRINGED ORCHID

This is a nearly world-wide genus with some 400 species. The erect, unbranched plants with the racemes of numerous greenish, white or purple flowers are common during the summer in a variety of habitats.

- a. Lip not fringed.
- b. Leaves scattered on the stem.
- c. Leaves several to numerous, at least more than 2.
- d. Lip oblong, truncate, the apex with 2 or 3 terminal teeth or smooth.
- e. Lip 3-toothed at the apex; spur 1-3 mm long, shorter than the lip; lower bracts of the inflorescence greenish and much longer than the flowers.
  - 1. *H. viridis*
- e. Lip truncate; spur slender, 4-6 mm long, longer than the lip.
- f. Leaves narrow and mostly elliptic, rapidly reduced in size upwards on the stem; raceme rather open with only the lowest bracts exceeding the flowers.
  - 3. *H. flava*
- f. Leaves wider and stouter, scarcely attenuate, gradually reduced in size up the stem; raceme more compact with the floral bracts longer, the lower often much exceeding the flowers.
  - H. flava* var. *herbiola*
- d. Lip lanceolate to linear, the apex entire, subacute or rounded; bracts little, if at all, longer than the flowers.

- g. Flowers greenish-white, scarcely fragrant; lip not dilated at the base. 4. *H. hyperborea*
- g. Flowers white, fragrant; lip widened at the base abruptly. 5. *H. dilatata*
- c. Stem-leaves 1 or 2; lip truncate, 2-3-toothed at the apex; bracts shorter than the 3-16 flowers; raceme short and cylindrical with yellowish-white flowers. 2. *H. clavellata*
- b. Leaves basal, oblong to orbicular, spread flat on the ground or rising from the base of the plant.
- h. Leaves 2, oval or orbicular; spur nearly twice as long as the lip.
- i. Lip lanceolate, 1 cm long; spur 18-20 mm long; scape bractless. 6. *H. Hookeri*
- i. Lip linear, 1.5-2 cm long; spur 18-40 mm long; scape bracted; leaves large.
- j. Spur 1.8-2.5 cm long; leaves orbicular, 6-19 cm broad. 7. *H. orbiculata*
- j. Spur 2.5-4 cm long; leaves larger and more elliptical, the whole plant generally larger. 8. *H. macrophylla*
- h. Leaf solitary, obovate or oblong, erect with the base clasping the stem; spur about 6 mm long, equal in length to the lip. 9. *H. obtusata*
- a. Lip fringed.
- k. Body of the lip oblong and fringed along the sides and apex; flowers pure white. 10. *H. blephariglottis*
- k. Body of the lip 3-parted.
- l. Flowers greenish or whitish, rarely with a tinge of purple; divisions of the lip cut into capillary segments or finely fringed. 11. *H. lacera*
- l. Flowers purple or lilac; divisions of the lip fan-shaped, fringed at the truncate ends.
- m. Inflorescence 2.5-4 cm wide; lip 1-1.3 cm wide; flowers deep purple; lip cut less than one-third their depth 12. *H. psycodes*
- m. Inflorescence 5-8 cm wide; lip 1.8-2.5 cm wide, more deeply fringed; flowers paler, lilac. 13. *H. fimbriata*

1. *H. viridis* (L.)R.Br., var. **bracteata** (Muhl.)Gray Map 204.

Rare, found in boggy spots on Sable Is.; characteristic of only the richest hardwoods on the mainland and on C.B. Island where it is rarely abundant but is found in scattered stations: abundant in deciduous forest, Lockhart Brook; and occasional in rich intervale forest at N. Aspy River and in fir forest at Cape St. Lawrence (Smith and Erskine, 1954).

Nfld. to Alta. south to S.C. and Iowa; eastern Asia.

2. *H. clavellata* (Michx.)Spreng., var. **ophioglossoides** Fern. Fig. 55, b.

Common in bogs, poorly- or well-drained swamps, and damp soil throughout. Late July-Aug.

Nfld. to Minn. and, as the typical variety, south to Fla.

3. *H. flava* (L.)R.Br. Map 207.

Restricted so far as known to the river systems of the Tusket in Yarmouth Co. and the Medway in Queens; pebbly, sandy or gravelly

beaches or wet peaty margins of lakes and rivers in the Tusket Valley (Fernald, 1921); scattered on the pebbly strand of the Medway (Weatherby). Tex. and Fla. north to N.J. & N.S.

Var. *herbiola* (R.Br.) Ames & Correll is the wide-ranging inland plant; scattered, Boylston, Guys. Co.; Cheticamp, Inverness Co.; low ground by the Gaspereau R., Kings Co.; and field near Middleton (D. S. Erskine, 1951).

J. F. Donly has noted a few plants of the species around a little lake near Italy Cross, Lunenburg Co. and mentions specimens collected from the vicinity of Sable River by H. F. Lewis. His interesting observation is that the plants of the Tusket are consistently smaller in size than those of the Medway and that a series of plants collected along the Medway shows plants typical of both the typical species and the variety.

N.S. to Ont. south to N.C. & Mo.

4. *H. hyperborea* (L.)R.Br., var. *huronensis* (Nutt.)Farw. Map 206.  
GREEN HABENARIA

Intervales, wet meadows, bogs and swamps from Annapolis and Queens Cos. to C.B.; not seen by the Gray Herbarium Expedition in the southwestern counties; never as common as the next species. The variety is the more southern type.

Greenland to Alaska south to N.Y., Ill. & Ore.

5. *H. dilatata* (Pursh)Hook. Map 207. WHITE BOG-ORCHID

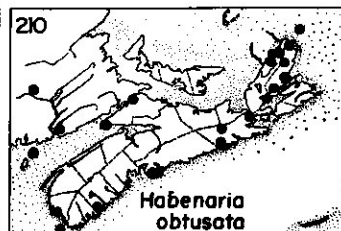
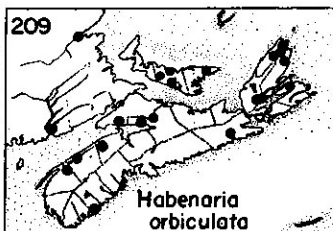
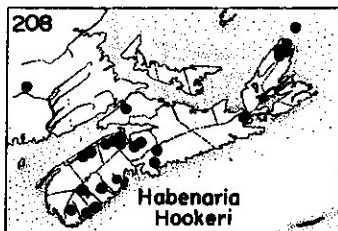
Common and often abundant from Digby Neck to northern C.B. where it is characteristic of wet cliff shelves; elsewhere growing in situations similar to that of the preceding species. It shows a wide variety of habitats, both in sun and shade, often growing up through the grasses and sedges along streams and rivers where there is an open soil and adequate moisture. July-Aug.

Lab. to Alaska south to N.J., Mich. & Calif.

6. *H. Hookeri* Torr. Fig. 55, c. Map 208.

Scattered in many part of the Province, rarer and more local in the southwestern counties; mixed woods or more frequently under conifers. June-July.

N.S. to Minn. south to Penn. and Iowa.



7. *H. orbiculata* (Pursh)Torr. Map 209.

Scattered in the northern parts of the Province, either under coniferous or deciduous forest; characteristic of the coniferous forest in C.B.; spruce woods, Port L'Herbert (Only).

Nfld. to Alaska south to Penn. and the mts. of N.C.

8. *H. macrophylla* Goldie

Rich deciduous or mixed woods; rare and scattered along the northern part of the Province from Hants and the Cobequids to northern C.B.; perhaps merely a larger, long-spurred extreme of the preceding species, with the large size of the plant due to the favorable environment in which it grows. Aug.

Nfld. to Wisc. south to Conn.

9. *H. obtusata* (Pursh)Richards. Map 210.

Damp mossy coniferous woods in the coastal forest and at higher altitudes; scattered to common in eastern N.S., becoming rarer to the southwestern counties where it is local and often very rare. July-Aug.

Nfld. to Alaska south to N.Y., Minn. and Colo.

10. *H. blephariglottis* (Willd.)Hook. WHITE FRINGED-ORCHID Fig. 56. Map 211.

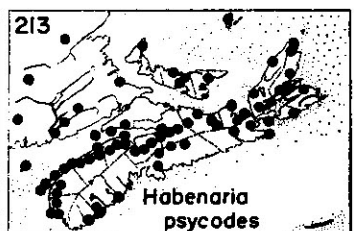
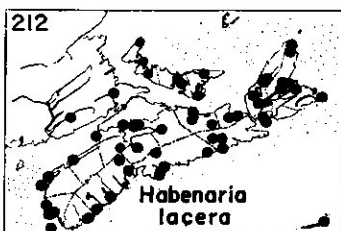
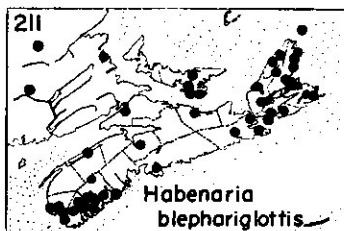
This is one of our most attractive smaller plants. It grows on boggy or even dryish barrens and in peaty hollows: common to abundant in Yarmouth and Shelburne Cos.; rare throughout the rest of the mainland; characteristic of mature bogs in C.B. Fernald (1921) states that it occurs over the gold-bearing series or strata but not on the granitic areas. July-Aug.

Nfld. to Minn. south to S.C.

11. *H. lacera* (Michx.)Lodd. Fig. 56. Map 212. RAGGED FRINGED ORCHID.

Common throughout; meadows, damp fields, bogs and poorly drained clay soils; occasional in the damp dune hollows and turfy banks on Sable Is. July-Aug. Nfld. to Mich. south to Ala. & Tex.

Var. *terrae-novae* Fern. is described as a smaller plant with smaller flowers with the lip to 1 cm long and shallowly fringed and with the color varying from a yellow-white through bronze to pinkish or even



purple. According to the author it is the only form on Sable Is. (*Rhodor* 48: 185. 1946) and the pinkish tinge of some Cape Breton plants indicates an intermediate characteristic. This variety does not seem to be too distinctive.

X. *H. Andrewsii* M.White is a hybrid between *H. lacera* and *H. psycodes*. J. F. Donly notes that: "A short stretch of roadside ditch at West Berlin, Queens County, in the summer of 1962 supported the following plants; both typical specimens of the ragged and small purple fringed, pure white plants of the latter and plants with all degrees of intermediate shades and extent of lip laceration, as above. Also one plant of a most beautiful deep claret color".

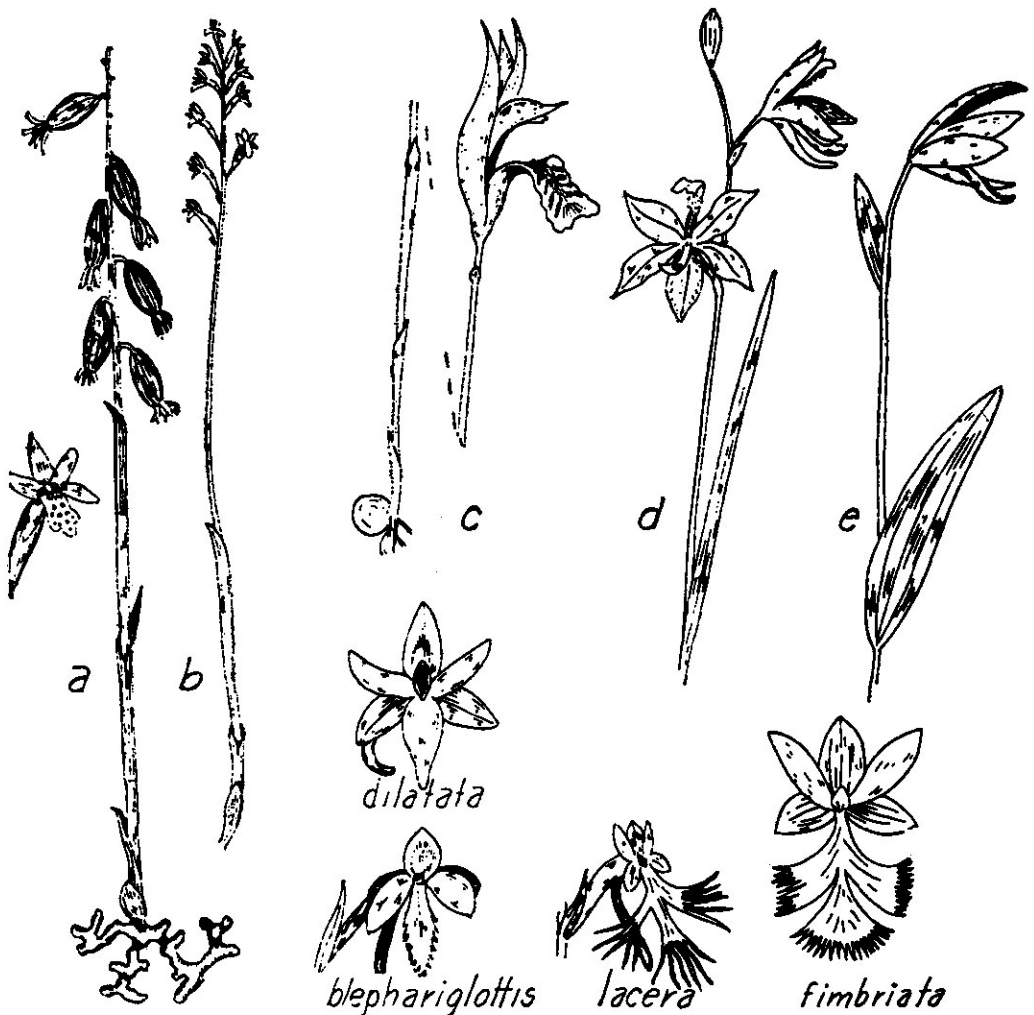


Fig. 56.—*Corallorhiza*. a, *C. maculata*, x 1/3. b, *C. trifida*, x 1/2. *Arethusa*. c, plant, x 1/2. *Calapogon*. d, plant, x 1/2. *Pogonia*. e, plant, x 1/2. *Habenaria*. flowers, x 2.



12. *H. psycodes* (L.) Spreng. Fig. 55, d. Map 213. PURPLE FRINGED ORCHID

Common in damp meadows and hummocks in or along the edges of bogs throughout, often growing in dense masses. Late July-Aug. Intermediate forms between this and the next species occur and the following one is sometimes treated as a variety of *H. psycodes* as var. *grandiflora* (Bigel.) Gray. Forma *albiflora* (Bigel.) Hoffm., with white flowers, has been found growing among typical individuals in an alder swamp near Cape North Village and a roadside ditch, West Berlin, in Queens Co. Plants intermediate between the typical magenta-flowered and white-flowered plants were frequent (Schofield and Smith, 1953).

Nfld. to northern Ont. south to Ga.

13. *H. fimbriata* (Ait.) R.Br. Fig. 56. Map 214. FRINGED-ORCHID

Often found growing with the preceding species and with some collections difficult to identify. It is more restricted to rich intervale soils, wet meadows, borders of swamps and along streams, mostly in the north-central part of the Province and very rare in the southwestern region.

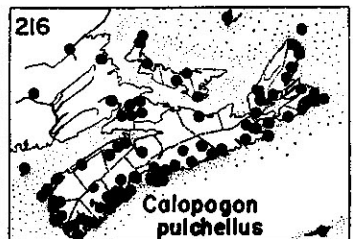
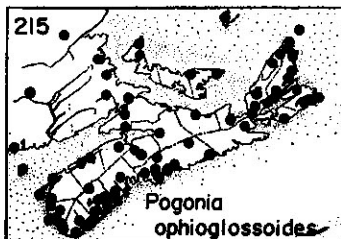
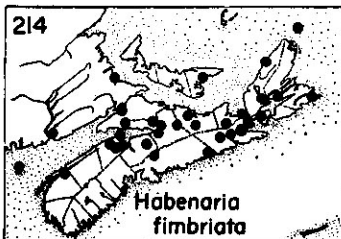
Nfld. to n. Ont. south to Ga.

3. POGONIA Juss. ROSE POGONIA

1. *P. ophioglossoides* (L.) Ker Fig. 56, e. Map 215.

Mature peat bogs, old meadows, river-banks and lake shores; often growing in profusion along the Atlantic Coast and in northern C.B.; scattered elsewhere. Var. *brachypogon* Fern., Rhodora 23: 245. 1921, is described as having the fringe of the lip almost absent or of very short knobs, the segments of the perianth scarcely divergent, and as growing more or less in clumps: around the gravelly shores of lakes in southern Yarmouth and Digby Cos., in many cases transitional to the typical form as are also some of the plants of Nfld. and the Magdalens. July.

Nfld. to Minn. south to Fla.



## 4. CALAPOGON R. Br.

- a. Leaves linear, grass-like, shorter than the flowering stalk. 1. *C. puchellus*  
 a. Leaves oblong- or elliptical-lanceolate, 7-11 cm long, 1.3-2.8 cm wide, equalling  
 or over-topping the scape; plant to 2 dm high. *C. puchellus* var. *latifolius*

1. *C. puchellus* (Salisb.)R.Br. Fig. 56, d. Map 216. CALAPOGON

Mature bogs and swamps; one of the most characteristic plants of bogs in the western part of the Province, even those at the edge of the sea; frequent in dune hollows on Sable Is.; scattered elsewhere and in cranberry bogs in the Annapolis Valley. July. Forma *albiflorus* (Britt.)Fern. has the flowers white instead of magenta-crimson. Rare: sandy and peaty margin of Lake Annis, Yarmouth Co., a single plant (Fernald, 1921); since found at Mooseland, Halifax Co., wet bog at Goldboro, Guysborough Co., and rare in a bog north of Arichat, Richmond Co., in several cases growing with the typical form and pale-flowered intermediates (Schofield and Smith, 1953). Nfld. to Minn. south to Fla.

Var. *latifolius* (St. John)Fern. is found in wet dune hollows on Sable Island; Peggy's Cove; and also on the Magdalen Islands.

## 5. ARETHUSA L.

1. *A. bulbosa* L. Fig. 56, c. Map 217. ARETHUSA

Much less common than the two preceding species; bogs, generally in more acid peat; around the coast of the Province and rarely very far inland. The white form, forma *albiflora* Rand & Redfield, was collected by Smith et al.: a single colony among typical plants in a bog on Brier Island. July-Aug.

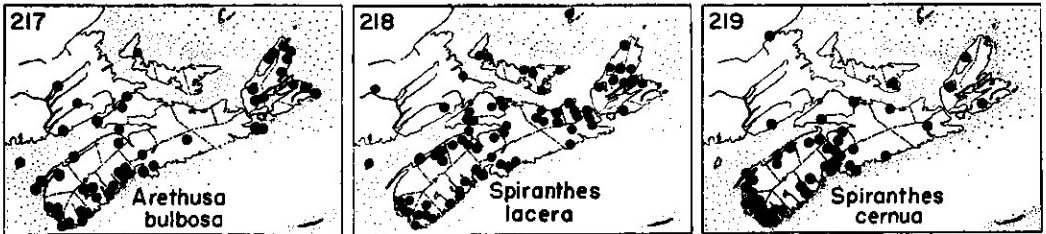
Nfld. to Minn. south to Penn. and the mts. of S.C.

## 6. SPIRANTHES Richard LADIES'-TRESSES

Small, erect plants with tubular flowers arranged in one or three spirals around the stalk (Fig. 57, a, b).

- a. Stem slender, leafless; leaves basal and ovate, soon disappearing; flowers 5 mm long; raceme slender and often one-sided, the flowers in one row. 1. *S. lacera*  
 a. Stem stout, leafy, at least towards the base; leaves linear to widely lanceolate; flowers 5-12 mm long, in three rows so that the raceme is not one-sided.  
 b. Lip squarish, blunt, yellow, with small oblong growths on the margin at the base; leaves lanceolate to oblong, about 1 cm wide; flowering early July. 3. *S. lucida*  
 b. Lip ovate-oblong, scarcely squarish and less blunt; growths at the base round or nipple-shaped or wanting; leaves linear or linear-lanceolate.

- c. Lip not constricted below, with the growths at the base prominent and about 0.5 mm long; lateral sepals not joined to the hood and not upturned so that the flower-parts are not plainly tubular; beak of the stigma very long and slender; flowering late summer.
- d. Flowers white; floral bracts exceeding the ovary by about half the length of the perianth; odor fragrant. 2. *S. cernua*
- d. Flowers whitish-yellow to greenish; floral bracts elongated; odor disgusting; flowering slightly later. *S. cernua* var. *ochroleuca*
- c. Lip constricted below the apex so that there is a round terminal lobe at the tip; growths at base minute or lacking; lateral sepals upturned and joined with the petals and upper sepal so that the perianth parts are tube-like; beak of stigma short; flowering late August. 4. *S. Romanzoffiana*



1. *S. lacera* Raf. Fig. 57, a. Map 218. LADIES'-TRESSES

Scattered throughout, more common in sandy or gravelly soil, barrens, railroad cuttings, edges of woods and open coniferous or mixed woods or brush. (*S. gracilis* (Bigel.) Beck). Late July-Aug.

N.S. to the MacKenzie south to N.C., Tenn. & Okla.

2. *S. cernua* (L.) Richard Fig. 57, b. Map 219. NODDING LADIES'-TRESSES

Boggy meadows, low hayfields, and seepy slopes and pastures, sandy shores of lakes; throughout, generally scattered, often abundant on seepy slopes of the Annapolis Valley, rare in eastern N.S. Late Aug.-Oct.

Var. *ochroleuca* (Rydb.) Ames is often difficult to separate from the species; characteristic of the driest of siliceous barrens in southwestern N.S. (Fernald, 1921); Donly states that he finds it in Queens Co. generally near river or stream banks. It is found in the same general range as the species.

N.S. to Minn. and Nebr. south to Fla. & Tex.

3. *S. lucida* (H. H. Eat.) Ames SHINING LADIES'-TRESSES

Rare; mentioned by Lindsay from Windsor and Halifax. Robinson found it between Margaree and Cheticamp; and it was found on the grassy hillsides along Cape George, Antigonish Co. in flower July 11, 1941. More recent locations are: muddy lake shore, Loch Lomond, Richmond Co., and river bank, River John, Pictou Co.

N.S. to Wisc. south to Va.



Fig. 57.—*Spiranthes*. a, *S. lacera*,  $\times \frac{1}{2}$ . b, *S. cernua*,  $\times \frac{1}{2}$ . *Goodyera*. c, *G. tessellata*,  $\times \frac{1}{2}$ . *Malaxis*. d, plant,  $\times \frac{1}{2}$ . *Liparis*. e, plant,  $\times \frac{1}{3}$ . *Listera*. f, *L. cordata*,  $\times \frac{1}{2}$ . g, *L. convallarioides*, part of plant,  $\times \frac{1}{2}$ .

#### 4. *S. Romanzoffiana* Cham. Map 220. HOODED LADIES'-TRESSES

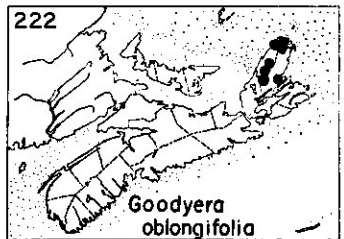
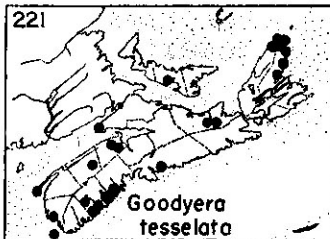
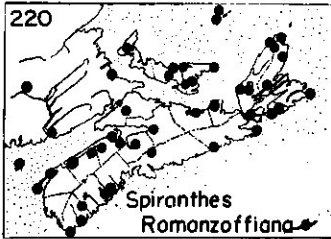
Scattered in wet fields, bogs, damp hollows and seepy banks throughout the whole Province; rare in damp boggy spots on Sable Island. Late July-Sept. X *Spiranthes Steigeri* Correll is a supposed hybrid between this species and *S. cernua*, with one of two records being from Yarmouth Co.

Nfld. to Alaska south to Penn., Ia. and Calif.

#### 7. GOODYERA R.Br. RATTLESNAKE-PLANTAIN

The wide leaves in a basal rosette are veined with white to give a snakeskin-like appearance.

- a. Inflorescence loose, often one-sided; plants rarely over 25 cm high, with leaves 1-7 cm long and plainly reticulate-veined with white; perianth 4.5 mm long.
- b. Flowers in a 1-sided raceme 3-7 cm long; perianth about 4 mm long; leaves small, 1-3 cm long, widest near the base and often with the sides straight to an acute tip; lip deeply saccate with a strongly downward recurved tip.
1. *G. repens*
- b. Flowers in a loose spiral raceme 6-8 cm long; perianth 5 mm long; leaves usually rounded-tapering from the middle to each end; lip less deeply saccate, the tip nearly straight.
2. *G. tessellata*
- a. Inflorescence dense; plants large, usually 20-40 cm high, with leaves green, often with the midrib lined with white, 5-10 cm long; perianth 8-10 mm long.
3. *G. oblongifolia*



1. *G. repens* (L.)R.Br., var *ophioides* Fern. CREEPING RATTLE-SNAKE-PLANTAIN

Mostly rare and local although possibly of wider distribution: collections were seen from Isle Haute in the Bay of Fundy, and from Moose Island and Three-Sisters in Cumberland Co., by Schofield; two stations in Inverness Co., Glendyer and St. Paul Island; and two collections by Donly in Queens Co. It is reported by Rousseau as rather frequent in dry woods of eastern Halifax and Guysborough Cos. Its distribution seems to be near the coast in damp mossy woods.

This more southern variety of the American-Eurasian species ranges from Nfld. to Alaska south to N.Y. and N.C.

2. *G. tessellata* Lodd. Fig. 57, c. Map 221.

Local and scattered; Greenville, Yarmouth Co. (Fernald, 1921); coniferous or pine woods of the Annapolis Valley; scattered in moist coniferous woods and more common in northern C.B. Aug.

Nfld. to Man. south to N.Y.

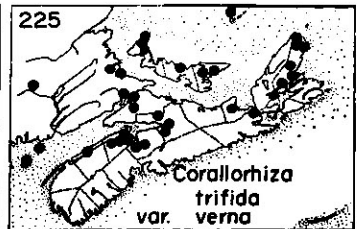
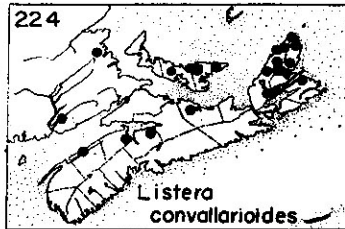
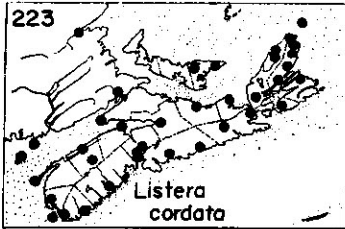
3. *G. oblongifolia* Raf., see Fernald, *Rhodora* 48: 11. 1946. Map 222. WESTERN RATTLESNAKE-PLANTAIN

Known here only from northern C.B. where it is scattered in the deciduous climax or damp mixed forests on slopes and in ravines. (*E. decipiens*).

C.B. to Gaspé and n. Maine; head of Lake Superior; B.C. to Calif.

8. *LISTERA* R. Br. TWAYBLADE

- a. Flowers small, the lip 3-5 mm long and deeply cleft into two spreading prongs; pedicel shorter than the ovary; leaves 12-25 mm long. 1. *L. cordata*
- a. Flowers larger, the lip 9 mm long, narrowed at the base and shallowly cut into wide-spreading rounded lobes; leaves 20-60 mm long. 2. *L. convallarioides*

1. *L. cordata* (L.)R. Br. Fig. 57, f. Map 223.

Occasional in damp woods, in coniferous forests or in wet ravines throughout, becoming commoner near the coast and characteristic of northern C.B.; inconspicuous and often overlooked. Early June-Sept. Greenland to Alaska south to N.J., N.C. and Calif.

2. *L. convallarioides* (Sw.)Nutt. Fig. 57, g. Map 224.

Rare from Annapolis to C.B. Island; common in northern C.B.; rich hardwood slopes, intervalles, mixed woods and deciduous climax forest; moist areas or along wet runs. It is abundant around Pleasant Bay, Inverness Co. July.

Nfld. to Alaska south to N.Y., N.C. and Calif.

9. *CORALLORHIZA* Chatelain CORAL-ROOT

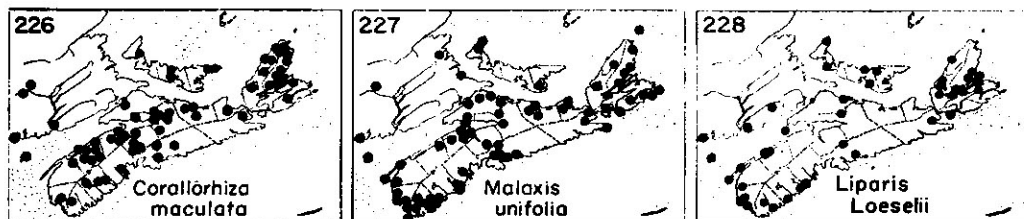
Saprophytic plants devoid of chlorophyll; with inconspicuous flowers and reflexed fruits.

- a. Plants slender, yellowish, 4-15 cm high, flowering in early summer; lateral lobes of the lip small; spur none or obscure. 1. *C. trifida*
- a. Plants larger and stout, 2-4 dm high; lateral lobes of lip prominent; spur conspicuous; flowering late July. 2. *C. maculata*

1. *C. trifida* Chatelain var. *verna* (Nutt.)Fern. Fig. 56, b. Map 225.  
EARLY CORAL-ROOT

Scattered in the northern part of the Province from Annapolis and Cumberland Cos. to northern C.B.: in coniferous woods, often under dense young growth in little light; in pine woods in the Annapolis Valley. June-July. A southern variety of the American-Eurasian plant.

Nfld. to B.C. south to Penn., N.C. and Minn.



## 2. *C. maculata* Raf. Fig. 56, a. Map 226. SPOTTED CORAL-ROOT

Common from Annapolis to northern C.B.; not seen by the Gray Herbarium Expedition west of Annapolis; but scattered in Queens Co. and elsewhere; rather rich soil in deciduous woods, although it is occasionally found under conifers; mentioned by Nichols as characteristic of the climax forest in northern C.B. Late July on.

Various color forms occur. The typical plants are brownish to a brownish-purple. Forma **flavida** (Peck)Farw. is a yellow form with an unspotted lip; found during the summer of 1942 to be common on the wooded slopes of the Annapolis Valley, usually growing in mixed woods. This form grew in dense colonies with the roots of many plants tangled together; while the species in the same woods grew as solitary plants or in groups of several plants. A yellow form has been found in widely scattered locations. Forma **punicea**(Bartlett)Weath. & Adams, reddish-purple with spotted lip, has been found in Kings and Annapolis Cos.

Nfld. to B.C. south to Penn., N.C. and Calif.

## 10. MALAXIS Sw. ADDER'S-MOUTH

Inconspicuous plants with small greenish flowers and a single leaf clasping the base of the stem.

- a. Flowering raceme long and narrow, with the flowers on pedicels 1-2 mm long; lip of flower not lobed, with a slender tapering tip. 1. *M. brachypoda*  
 a. Flowering raceme oval or flattened with the flowers on slender pedicels 4-8 mm long; lip of flower broad and deeply lobed at tip. 2. *M. unifolia*

### 1. *M. brachypoda* (Gray)Fern.

But three locations are known: rare in wet area beside trickle near Indian Flats, Isle Haute (Schofield, 1955); moss cushion on east-facing rock face, Cape Blomidon; and wet mossy cliff-edge along Five-mile River in Colchester Co.

Lab. and Nfld. to N.S. and northern N.J. westward.

### 2. *M. unifolia* Michx. Fig. 57, d. Map 227.

Scattered throughout and probably rather common, since it is relatively inconspicuous; wet meadows, damp upland pastures and fields, bogs near the coast, poorly-drained clay soils, and occasionally in cranberry bogs. July-Aug.

Nfld. to Sask. south to Fla. and Tex.



## 11. LIPARIS Richard TWAYBLADE

1. *L. Loeselii* (L.)Richard Fig. 57, e. Map 228.

Occasional in peaty meadows and cobbly lake shores in Yarmouth and Digby Cos. (Fernald, 1921); scattered usually near the coast behind barrier beaches and along edges of ponds; rather frequent in the bogs from Halifax to C.B. (Rousseau); Isle Haute, springy area on a roadside near Folly Lake and railroad ditch, Conn's Mills in northern N.S. (Schofield, 1955); alkaline bog at West Lake Ainslie, C.B. and in many other similar locations. July-Aug.

N.S. to Sask. south to Ala. and Mo.

## GLOSSARY

- Achene.* Dry one-celled one-seeded fruit.  
*Acuminate.* Gradually tapering to a point or end.  
*Acute.* Quickly tapering to a sharp point.  
*Aggregated.* Crowded into a dense cluster.  
*Anther.* Pollen-bearing part of the stamen.  
*Anthesis.* The time during which the flower is fully expanded.  
*Appressed.* Lying close or flat against.  
*Approximate.* Closely situated without running together.  
*Arcuate.* Curved or arching.  
*Aristate.* Tipped by a bristle.  
*Blade.* Expanded portion of a leaf.  
*Bract.* Modified or scale-like leaf.  
*Capillary.* Hair-like.  
*Capsule.* Dry fruit of more than one carpel, opening when ripe.  
*Carpel.* A single pistil, or the equivalent of one in a compound pistil.  
*Caruncle.* Growth or appendage near the hilum of the seed.  
*Castaneous.* Dark-brown.  
*Cespitose.* Growing in tufts or clumps.  
*Ciliate.* Fringed with hairs.  
*Ciliolate.* Minutely ciliate.  
*Clasping.* Of the base of a leaf, partly surrounding the stem.  
*Clavate.* Club-shaped.  
*Cordate.* Heart-shaped with the point at the apex.  
*Corm.* Enlarged base of stem, bulb-like but solid.  
*Coriaceous.* Leathery.  
*Corymb.* Flat-topped or convex flower-cluster with the outer flowers opening first.  
*Culm.* Stem of grasses and sedges.  
*Cuneate.* Wedge-shaped.  
*Cyme.* Flat-topped flower-cluster with the central flowers opening first; cymose.



- Deciduous.** Quickly falling; not persistent.
- Decumbent.** Reclining with the tips ascending.
- Dentate.** Toothed with outwardly directed teeth.
- Denticle.** A minute tooth.
- Dorsal.** Relating to the back or the outer surface.
- Ellipsoid.** Solid with an elliptical outline, like a football.
- Exocarp.** Outer layer of the fruit coat.
- Exserted.** Prolonged beyond the surrounding parts.
- Fascicle.** A close bundle.
- Fertile.** Capable of bearing fruit; or pollen in connection with anthers.
- Fibrillose.** With or broken up into fine fibers.
- Filament.** Stalk of the stamen.
- Filiform.** Thread-like.
- Fimbriate.** Fringed.
- Floret.** A small flower, usually one of a dense cluster.
- Fronde.** Leaf of a fern.
- Fulvous.** Tawny.
- Geniculate.** Bent abruptly, like a knee.
- Glabrous.** Without hairs.
- Glaucous.** Covered with a bluish-white or grayish bloom.
- Glomerule.** A small compact cluster.
- Glume.** One of the two bracts at the base of the spikelet of grasses.
- Glutinous.** Covered with a sticky substance.
- Grain.** The one-seeded fruit of grasses.
- Halophyte.** Plant growing on brackish or salty locations.
- Herbaceous.** Not woody; leaf-like in color and texture.
- Hilum.** Scar or point of attachment of the seed.
- Hirsute.** With coarse or stiff hairs.
- Hispid.** With rigid or bristly hairs.
- Hispidulous.** Minutely hispid.
- Hyaline.** Transparent or translucent.
- Indusium.** Covering over the fruiting dot or sorus in the ferns.
- Inferior ovary.** One joined to or below the calyx.
- Inflorescence.** Flowering part of the plant.
- Involucel.** Small or secondary whorl of bracts.
- Involucre.** A sheath or collection of bracts about a flower or inflorescence.
- Involute.** Rolled inwardly.
- Irregular.** Having the members of a whorl of flower-parts unequal in shape, size or union.
- Keel.** A sharp longitudinal ridge, as with the keel of a boat.
- Lanceolate.** Several times longer than wide, widest below the middle and tapering to the apex.
- Leaflet.** A single division of a compound leaf.
- Lemma.** The lower of the two bracts enclosing the floret of a grass spikelet.

- Lenticular.* Lens-shaped.
- Ligule.* A projection from the summit of the sheath in grasses.
- Linear.* Long and narrow with parallel sides.
- Megaspore.* The larger size of spore in *Selaginella* or *Isoetes*.
- Moniliform.* Resembling a string of beads.
- Mucronate.* With a short, small abrupt point.
- Nerve.* Unbranched vein or simple slender rib.
- Obcordate.* Inverted heart-shaped.
- Oblanceolate.* Lanceolate but with the widest part above the middle.
- Oblong.* Longer than broad, with nearly parallel sides.
- Obovate.* Inverted ovate, the broadest part above the middle.
- Obovoid.* Egg-shaped, the widest part uppermost.
- Obsolete.* Not evident; extinct.
- Obtuse.* Blunt or rounded at the end.
- Ovary.* Part of the pistil containing the ovules; the enlarged base.
- Ovate.* Having an outline like that of an egg, the broadest part basal.
- Palea.* The upper of the two bracts surrounding the floret of a grass.
- Panicle.* A loose irregular flower-cluster with stalked flowers.
- Paniculate.* Resembling a panicle.
- Papillose.* Bearing minute nipple-like projections.
- Pedicel.* Stalk of an individual flower.
- Peduncle.* Stalk of an inflorescence or a solitary flower.
- Perianth.* Calyx and corolla together.
- Perigynium.* Inflated sac which encloses the ovary in *Carex*.
- Persistent.* Long-continuous or lasting.
- Petiole.* Stalk of a leaf.
- Pilose.* With soft hairs.
- Pinna.* One of the main divisions of a frond or leaf.
- Pinnule.* A division of a pinna.
- Puberulent.* Minutely pubescent.
- Pubescent.* Covered with hairs, especially short soft ones.
- Raceme.* Inflorescence with stalked flowers upon an elongated axis.
- Rachilla.* The axis of the spikelet of a grass, along which the floret or florets are arranged.
- Rachis.* Axis of a spike or of a compound leaf.
- Raphe.* A ridge where the stalk is fused with the coat of a seed.
- Reticulate.* In the form of a network.
- Rhizome.* Prostrate or underground stem; rootstock.
- Saccate.* Sac-shaped.
- Sagittate.* Arrow-head shaped, the lobes directed downwards.
- Scabrous.* Rough to the touch.
- Scape.* Peduncle rising from the ground, without leaves or nearly so.
- Scarious.* Thin, dry and papery, not green.
- Sepal.* Division of the calyx.
- Serrate.* With sharp teeth pointing forward.
- Sessile.* Without a stalk or petiole.

- Sorus.* Fruiting dot of a fern.
- Spadix.* Spike with a fleshy axis.
- Spathe.* Large bract or pair of bracts enclosing or lying behind an inflorescence.
- Spike.* Inflorescence with the flowers sessile or nearly so upon an elongated common axis.
- Spikelet.* A small secondary spike in the inflorescence of a grass or in the sedge family.
- Sporangium.* The structure in which the microscopic spores are borne in the ferns and their allies.
- Sterile.* Flower without a pistil or stamen without an anther.
- Stigma.* Tip of the pistil, for reception of the pollen.
- Stipe.* Stalk of the frond of a fern.
- Stipule.* Appendage, often leaf-like, at the base of the petiole or on each side.
- Stoloniferous.* Producing runners or stolons.
- Strobilus.* A cone-like structure, composed of bracts bearing sporangia.
- Style.* Upper part of the pistil, connecting the ovary and the stigma.
- Subtended.* Enclosed in an axil, as by a bract.
- Superior ovary.* One free from the calyx.
- Suture.* Line of union or splitting.
- Terete.* Having a circular cross-section.
- Trigonous.* Three-angled, as a buckwheat seed.
- Truncate.* Ending abruptly as if cut off transversely.
- Umbel.* Inflorescence with the pedicels or peduncles arising from the same point.
- Ventral.* Belonging to the front or inner surface of a part or organ.
- Villous.* Bearing long soft hairs.

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