

4. *H. boreale* (Britt.) Bickn. Fig. 99, d. Map 367.

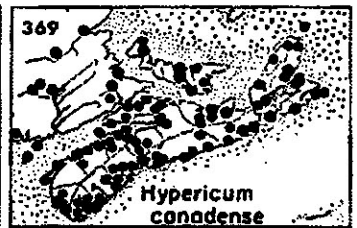
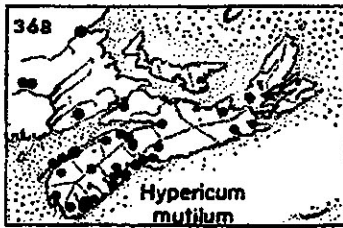
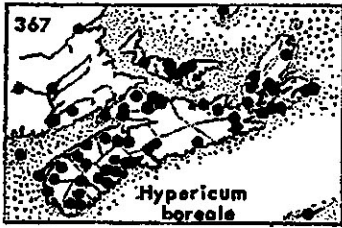
Common throughout and on Sable I.; probably our most common species in low ground, edges of lakes and ponds, on damp sands and along edges of bogs. July-Aug.

Nfld. to Ont. and Minn. south to Va. and Ind.

5. *H. mutilum* L., var. *parviflorum* (Willd.) Fern. Fig. 99, c. Map 368.

Common in southwestern N.S.; swamps, borders of ponds, river shores and wet areas; rare north and east of Colchester Co. with one collection near Judique in Inverness Co.: occasional on brook-bank (Erskine, D.S., 1955). The variety is the northern extreme.

Fla. to Tex. north to N.S., Que. and Minn.

6. *H. majus* (Gray) Britt.

Victoria Co.; mossy woods road, Big Baddeck, some plants of the collection suggest an admixture of *H. canadense* (Erskine, D.S., 1951). July-Sept.

N.S. to B.C. south to Penn., Ind. and Wash.

7. *H. canadense* L. Fig. 99, b. Map 369.

Common throughout in swamps, wet meadows, brook-sides, edges of lakes, etc. Forma *minimum* (Choisy) Rousseau seems to be merely a much-reduced ecological form. July-Aug.

Nfld. to Ont. south to Ga. and Iowa.

8. *H. dissimulatum* Bickn. Map 370.

Scattered in swales, wet moss and on lake beaches from Digby to Halifax Co., with one record near Guysborough. This species is much rarer than the preceding ones and is closely related to them, by some people considered to be a hybrid. Barney River, Pictou Co., collected by H. Groh in 1935. This collection may well be interpreted as a specimen of the hybrid *H. boreale* x *canadense* (Erskine, D.S., 1955).

N.S. south to N.C. mostly near the coast.

9. *H. virginicum* L. Fig. 99, f. Map 371.

Common on muddy shores, boggy margins of lakes, beaches and other low areas in sw. N.S. east to Halifax Co.

Fla. north to N.S., N.Y. and Ind.

Var. *Fraseri* (Spach) Fern. is rather common throughout and seems to be the only variety eastward. July-Aug. This species is quite different in appearance from the other ones and has a decidedly reddish tinge to the flowers and leaves.

Nfld. to Sask. south to southern New Eng., Ohio and Ill.

## 76. ELATINACEAE WATERWORT FAMILY

Tiny creeping plants with erect branches up to 5 cm long, with small, opposite, entire leaves. The small, sessile flowers are borne in the axils of the leaves and have only 2-3 small petals. The fruit is a many-seeded capsule with seeds with prominent shallow pits on their surface.

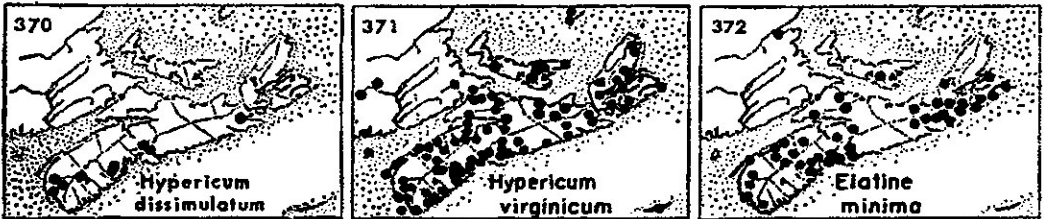
### 1. ELATINE L. WATERWORT

We have but one species, although a second has been found on various muddy tidal shores in the southeastern part of N.B. (Fassett, 1939).

1. *E. minima* (Nutt.) Fisch. & Mey Map 372. Fig. 94, h.

Of widespread occurrence, and found wherever a suitable habitat is present. The only area in which it has not been found is the northern plateau in C.B. (Smith, 1959). Edges of lakes, marginal shallows, sandy bottoms of lakes, and sometimes on wet sandy or rocky shores; often in about one foot of water, sometimes fruiting when only a few mm high.

Nfld. and Que. to Minn. south to Va.



## 77. CISTACEAE ROCKROSE FAMILY

This is a small family of low shrubby plants and wiry herbs with simple, entire, usually alternate leaves; most abundant around the Mediterranean. Two sepals are much smaller than the other three; and the stamens are indefinite in number, often numerous. The fruit is a capsule which splits lengthwise to the base.

- a. Plants herbaceous and wiry; leaves 10-30 mm long, spreading.
  - b. Petals 5, showy, yellow; primary capsules about 6 mm long with smaller secondary ones present; pubescence stellate.
1. *Hellanthemum*



- b. Petals 3, minute, purplish; capsule about 2 mm long; pubescence of simple hairs.
- a. Plants low and shrubby, much-branched; leaves 1-3 mm long, awl-like, closely overlapping; flowers yellow and showy.

3. *Lechea*  
2. *Hudsonia*

## 1. HELIANTHEMUM Mill. ROCKROSE

### 1. *H. canadense* (L.) Michx. ROCKROSE

Rare and local; in small numbers on the sand plains between Aylesford and Middleton; reported by Weatherby (1942) from Queens Co.; a large colony on the border of dry mixed woods, Greenfield, associated with *Aster undulatus*. June-early July.

N.S.; Me. to s. Que. and Ont. south to N.C.

## 2. HUDSONIA L.

These small, evergreen, heather-like plants grow up to 3 dm high and often occur in patches. The flowers occur singly at the ends of short branches and are a showy yellow. Very local and occurring mainly on sandy or open soils.

- a. Flowers on slender naked pedicels; leaves linear, 2-7 mm long, spreading to loosely appressed; plants greenish.
- a. Flowers nearly sessile; leaves small, closely appressed; plants densely whitish-pubescent; capsule ovoid, glabrous.

1. *H. ericoides*  
2. *H. tomentosa*

### 1. *H. ericoides* L. Fig. 95, c. Map 373. HUDSONIA

Dry, rocky and sandy barrens about Shelburne; scattered on rocky soil near Halifax; abundant on the sandy soils in the center of the Annapolis Valley on recently disturbed areas or in open bush-land, and becoming abundant in plowed areas reverting to native vegetation on sand; collected by H. Harries on barren headland near Corney Brook, Inverness Co. for the only known station in C.B.

Nfld., P.E.I. and N.S.; southern Me. to Del.

### 2. *H. tomentosa* Nutt. Map 374. WOOLLY HUDSONIA

Kings Head, Pictou; reported in Lindsay's Catalogue from the Northwest Arm, Halifax but this last record probably refers to the previous species. This plant, which is usually found near the coast, is very rare in N.S. and only occurs locally on the sandy shore near Pictou and north of New Glasgow. It is more common locally on the sand dunes in P.E.I. from Bothwell to Malpeque (Erskine, D.S., 1960). A hybrid, *Hudsonia intermedia* (Peck) Erskine, occurs between the two species. This has the capsule intermediate in length and pubescent at the summit and the flowers are on short pedicels. This is found in P.E.I., growing with the two parents.

Along the sand dunes about the Gulf St. Lawrence and south to N.C. west to Alberta. and Minn.

## 3. LECHEA L. PINWEED

These wiry, erect herbs with very small flowers and round capsules are common in sandy or sterile soils, with the species indefinite or difficult to identify. See Hodgdon (1938).

- a. Inner sepals broader and more obtuse, equal or shorter than the depressed-globose capsule; basal leaves darker green, decidedly oblong, often purplish.
  - 1. *L. intermedia*
- a. Inner sepals narrowly ovate and acute to subacute, exceeding the globose capsule; basal leaves bright-green, narrowly lanceolate. *L. intermedia* var. *juniperina*

1. *L. intermedia* Leggett Fig. 94, g. PINWEED

Common in dry open soils, open woods and sterile fields, in rocky, siliceous or sandy regions of the Province. In the northern part and around the sea-coast it is largely replaced by the following and very similar and intergrading variety. P.E.I. and N.S. to Minn. south to Va.

Var. *juniperina* (Bickn.) Robin. intergrades and is found mostly around the coast from Halifax to northern C.B. where it becomes common in the lee of the dunes and back of the sandy beaches.

C.B. to southern N.H., mostly along the coast.

## 78. VIOLACEAE VIOLET FAMILY

This family of some 16 genera and 800 species is represented in our area by one herbaceous genus which comprises the violets and the pansies. In the tropics shrubby and treelike forms also occur.

## 1. VIOLA L. VIOLET

There are about 500 species of *Viola*. The cultivated pansy is a hybrid between *V. tricolor* and several European species. Many of our forms bear cleistogamous flowers in addition to the normal showy ones. These are flowers without petals which are self-fertilized without opening; and they are borne on short pedicels or runners near the base of the plant. See Cinq-Mars (1966).

- a. Plants stemless; leaves and flower-stalks directly from the rootstocks or from runners (Fig. 100).
- b. Rootstock short and stout, 3-10 mm thick; flowers blue.
- c. Leaves heart-shaped, with the margins round-toothed.
  - d. Beard of the lateral petals, or part of it, with strongly club-shaped hairs; flowers usually on peduncles longer than the leaves; spurred petal shorter than the lateral ones, glabrous. 1. *V. cucullata*
  - d. Beard of the lateral petals long, not club-shaped; flowers on peduncles usually equalling or shorter than the leaves; spurred petal as long as the lateral, glabrous or hairy.
  - e. Plant essentially glabrous. 2. *V. nephrophylla*

- c. Plant hairy, with the sepals and leaf-blades ciliate. 3. *V. septentrionalis*  
 c. Leaves ovate or widely lanceolate; plant usually densely hairy. 4. *V. fimbriatula*
- b. Rootstock slender, 2-4 mm thick near the top, often long and creeping.  
 f. Style enlarged above and beaked at the summit in front; flowers comparatively small.  
 g. Flowers light blue; spur  $2/3$  as long as the limb of the petal; sinus of the leaf very deep, the lobes overlapping; leaf with short stiff hairs above. 5. *V. Selkirkii*  
 g. Flowers white; spur  $1/4$  as long as the limb; leaves with the basal sinus shallower, the lobes not overlapping.  
 h. Leaves heart-shaped or wider, with a definite sinus at the base of the blade.  
 i. Leaves heart-shaped, usually pointed at the tip, generally dull, relatively thin and small; stolons present; lateral petals usually bearded near the base.  
 j. Leaves glabrous on both sides; cleistogamous capsule green, on erect peduncles; flowers on peduncles usually longer than the leaves; seeds black, 1.0-1.4 mm long. 6. *V. pallens*  
 j. Leaves pubescent on one side; peduncles longer than the leaves; cleistogamous capsules ovoid, usually purplish, erect only when ripe; seeds brownish, 1.6-2.1 mm long.  
 k. Leaves pubescent beneath and on the petioles, glabrous above. 7. *V. incognita*  
 k. Leaves lightly pubescent above, usually glabrous beneath and on the petioles. *V. incognita* var. *Forbesii*  
 i. Leaves orbicular to reniform, large, usually rounded at the tip, waxy-glossy; lateral petals beardless; stolons absent. 8. *V. renifolia*  
 l. Leaves pubescent on both sides.  
 l. Leaves glabrous above, pubescent beneath. *V. renifolia* var. *Brainerdii*
- h. Leaves truncate at the base or tapering to the petiole, glabrous.  
 m. Leaves lanceolate or linear-lanceolate, more than 3 times longer than wide, the summer leaves to 1.5 cm wide and gradually tapering at the base. 9. *V. lanceolata*  
 m. Leaves ovate, acute at the tip with a squarish or wedge-shaped base, less than 3 times as long as wide. 10. *V. sublancoolata*  
 f. Style scarcely enlarged above, hooked; flowers large, fragrant, blue or whitish; gardens. 11. *V. odorata*
- a. Plant leafy-stemmed, with axillary flowers (Fig. 101).  
 n. Flowers violet-like; stipules entire or finely toothed.  
 o. Style capitate, beakless, bearded at the summit; spur short; stipules nearly or quite entire; plants large.  
 p. Petals yellow; stipules narrowly ovate, foliaceous and persistent; capsule 9-13 mm long, glabrous. 12. *V. eriocarpa*  
 p. Petals white within, violet without; stipules lanceolate, white, scarious and deciduous after flowering; capsule 4-6 mm long, downy or puberulent. 13. *V. canadensis*  
 o. Style slender, the tip bent downwards, slightly pubescent at the summit; spur twice or more as long as wide; stipules slightly toothed; petals blue; stems slender and branched.  
 q. Stipules ovate-lanceolate, bristly-serrate; leaves often 4-5 cm wide, acute. 14. *V. conspersa*  
 q. Stipules linear with a tooth or two at the base; leaves not more than 2 cm wide, blunt. 15. *V. labradorica*

n. Flowers pansy-like; stipules large, leaf-like and pinnatifid; style much enlarged above into a round hollow summit with a wide opening on the lower side.

r. Petals 2-3 times longer than the sepals; flowers large.

16. *V. tricolor*

r. Petals seldom longer than the sepals; flowers small and pale yellow.

17. *V. arvensis*

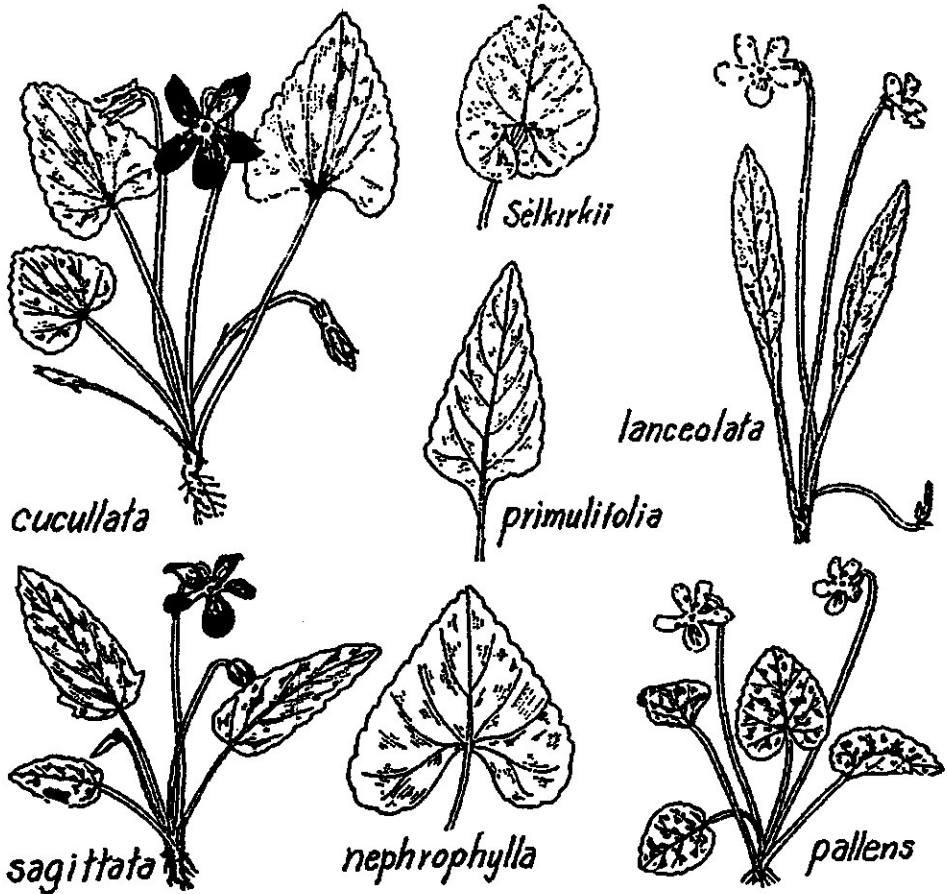


Fig. 100.—*Viola* spp.  $\times \frac{1}{2}$ .

1. *V. cucullata* Ait. Fig. 100. BLUE VIOLET

Common throughout in wet fields, swamps, rocky beaches and meadows. The flowers are often of a paler color in open, wet pastures.  $2n = 54$ . Forma *prionosepala* (Greene) Brainerd, has the leaves more hairy and the margins of the sepals often interruptedly serrate and ciliate. It is more common than the glabrous form and occurs in similar habitats. Nfld. to B.C. south to Ga. and Tenn.

Var. *microtitis* Brainerd has the auricles of the sepals 1-2 mm long, much shorter than those of the typical variety. Rare; reported from

mixed woods at Hectanooga, Digby Co., and from wet thickets at Yarmouth (Fernald, 1921); also scattered further east. Nfld., Magdalen I., N.Y. and N.S.

2. *V. nephrophylla* Greene. Fig. 100. Map 374.

Rare in N.S.: wet woods, north of Truro; and occasionally in northern C.B. Erskine notes that it is very characteristic of cedar swamps in western P.E.I. Cool mossy bogs, borders of streams and in damp woods.

Nfld. to B.C. south to N.S., w. New Eng. and Iowa.

3. *V. septentrionalis* Greene. Map 375.

Common throughout; open woods, often under conifers, on light soils and in pasture land, one of the earliest of the blue violets to flower. This species hybridizes to some extent with *V. cucullata*. Mid-May.

Nfld. to B.C. south to Va. and Tenn.



4. *V. fimbriatula* Sm. Fig. 100. Map 376.

Common on open soil from Yarmouth to Halifax and Hants Co.; Isle Haute, not collected eastward although it is found near Charlottetown in P.E.I. On some of the dry hillsides of the Annapolis Valley, and particularly on the south slope of the ridge above Wolfville occurs a form with deeply toothed leaves and early flowering season. The shape of the leaves shows a tendency towards *V. sagittata* but it does not have the smoother leaves of that species. Specimens collected at Point Pleasant Park, Halifax, likewise seem to be a variation of this species. (*V. sagittata* Ait., var. *ovata* (Nutt.) Torr. and Gray).

On the sand plains near Wilmot, Annapolis Co., the plants are almost glabrous with glabrous sepals. This extreme may be called forma *glabrata* Pennell. Forma *umbelliflora* Fern. (Fernald, 1949-a) has the type from Halifax, where it was collected by J. R. Lunt in 1912. This has the peduncles 3-flowered with the flowers sub-umbellate.

This species often hybridizes with *V. septentrionalis*, and the resulting plants are large, with elongated leaves and ciliate sepals. This cross is especially abundant in the Annapolis Valley and on the slopes of Cape Blomidon. Early May to June.

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

5. *V. Selkirkii* Pursh. Map 377.

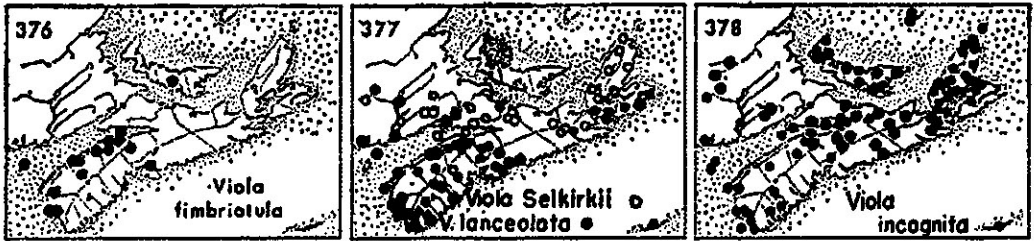
Characteristic of rich hardwood forests from Kings and Cumberland Co. to northern C.B. This plant is local and occurs in small numbers, often found not flowering.

Nfld. and Lab. to Alaska south to Penn., Mich. and Colo.

6. *V. pallens* (Banks) Brainerd. Fig. 100. SMALL WHITE VIOLET

Very common throughout in moist ground, meadows, bogs, borders of lakes, wet thickets, etc. This is our common early white violet. Leaves with long-ciliate petioles do not seem to be common and in most cases the petioles are glabrous. Var. *subreptans* Rousseau (1938-b), is a form with the long stolons bearing cleistogamous flowers; scattered in the range of the species. This plant is sometimes classified as a subspecies of the western *V. Macloskeyi* Lloyd. May-early June.

Lab. to Alaska south to S.C. and Colo.

7. *V. incognita* Brainerd. Map 378. WHITE VIOLET

Common in wet woods and thickets throughout. Lab. to N.Dak. south to New Eng. and N.Y. In Que. this typical variety is the more common one northward.

Var. *Forbesii* Brainerd is common, usually in drier or more upland woods than the preceding variety. Both this variety and the species are more common in shaded locations than is *V. pallens*. Collected by Güssow on Sable I.

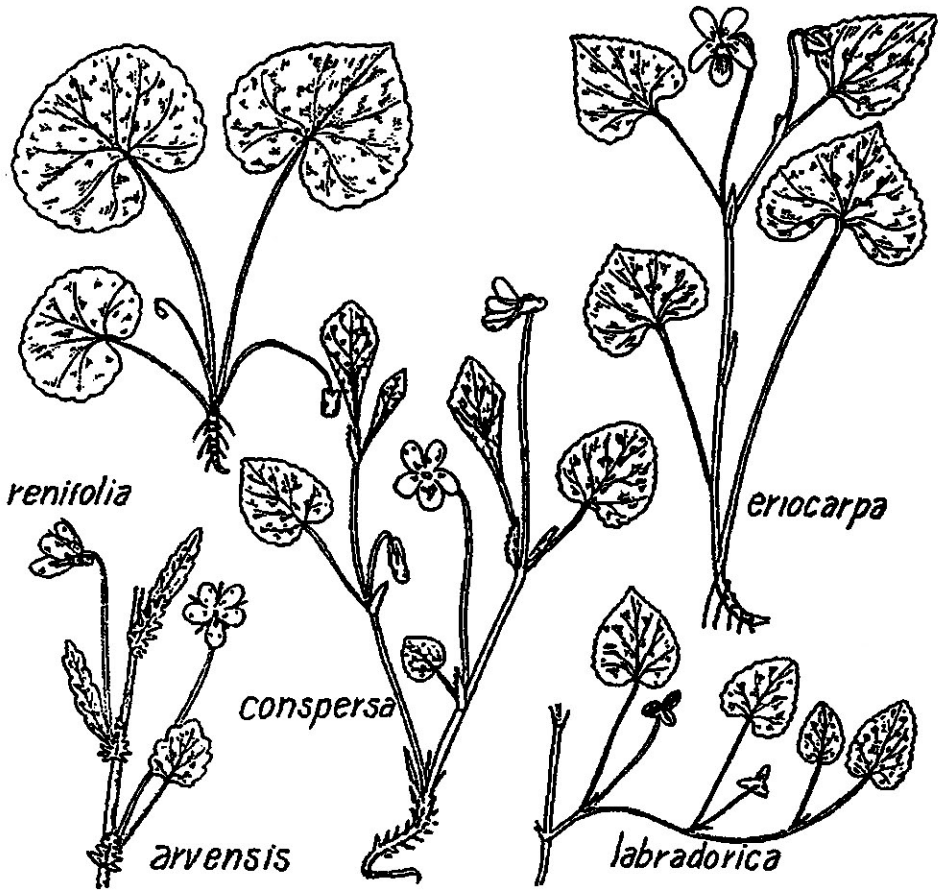
N.S. to Minn. south to Penn.

8. *V. renifolia* Gray. Fig. 101. Map 379.

Rare; occasionally seen in rich woods or on slopes in the center of the Province. Nfld. to Minn. south to Mass. and N.Y.

Var. *Brainerdii* (Greene) Fern. is rather common in rich or calcareous woods, on hillsides, under coniferous trees and on gypsum; Annapolis Co. to northern C.B., where Nichols lists it as characteristic of wooded swamps. Boivin (1951) does not consider this as a good geographical variety.

Lab. and Nfld. to Alaska south to Conn. and N.Y.

Fig. 101.—*Viola* spp.  $\times \frac{1}{2}$ .

9. *V. lanceolata* L. Fig. 100. Map 377. LANCE-LEAVED VIOLET

Common in the western half of the Province, becoming rarer eastward to Cumberland Co. and through Richmond Co. to Mira in C.B. Co. It is found on the edges of pools, around lakes, on mud flats and in boggy places; abundant on Sable I.; and in grassy fields and headlands around the southwest part of the mainland. The leaves appearing in summer may be much wider than those appearing with the flowers in the spring.

Fla. to Tex. north to C.B., s. Que. and Minn.

10. X *V. sublanceolata* House. Fig. 100. Map 374.

Damp sand, gravel and peat; Yarmouth to Halifax; rare on sandy banks on Sable I.; plants from wet fields north of Canning, Kings Co. belong here. It is local to rare except in the southwestern counties, where it is found around the lakes and in river gravels. This plant is now considered to be a hybrid between *V. pallens* and *V. lanceolata* and true *V. primulifolia* to occur north only to Long I., N.Y. It practically



always occurs with *V. lanceolata*; occasionally the leaves may be practically as round as *V. pallens* but with winged petioles (*V. primulifolia* L., var. *acuta* (Bigel.) T. & G.)

Eastern U.S. north to N.S., N.B. and Que.

11. *V. odorata* L. ENGLISH or SWEET VIOLET

Occasionally planted in gardens or in natural locations and persisting for some time or escaping to roadsides and ditches.

Introduced from Eu.

12. *V. eriocarpa* Schwein., var. *leiocarpa* Fern. & Wieg. See Jones (1959). Map. 380 Fig. 101. YELLOW VIOLET

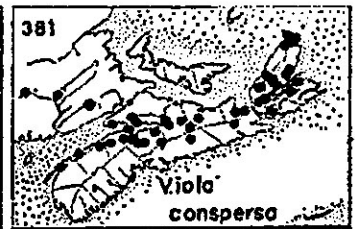
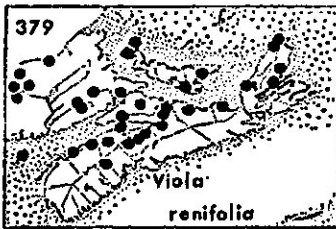
Edges of woods, rich banks, and along shady streams or rich intervalles, usually in rich or calcareous soils. In the Annapolis Valley it is scattered along the North Mt., at least in Kings Co., and very rare and local on the South Mt. It is common along the intervalles in the central and northern part of the Province; characteristic of rich hardwoods from Cumberland Co. to northern C.B., here growing usually as scattered plants. Early May. This plant is sometimes classed as a variety of *V. pennsylvanica* or of *V. pubescens* Ait.  $2n = 12$ .

N.S. and P.E.I. to Man. south to Ga. and Ala.

13. *V. canadensis* L. CANADA VIOLET

Very rare; known only from Newport, Hants Co., near the plaster quarries, where it was also collected by J. S. Erskine more recently in the same general area. The report of Nichols from northern C.B. belongs to the previous species.

N.S.; N.H. to Ont. and Mont. south to Ala. and Iowa.



14. *V. conspersa* Reichenb. Fig. 101. Map 381. DOG-VIOLET

Digby Neck to C.B.; frequent in alluvial meadows in the Annapolis Valley and along the North Mt.; frequent in Cumberland and Colchester Co.; characteristic of mountain swamps in northern C.B.; absent in southwestern N.S. and along the Atlantic Coast. The petals are rather wide and a pale violet in color. Late May-June. Forma *Masonii* (Farw.) House has white flowers; rich woods, Sweet's Corner, Hants Co.

N.S. to Minn. south to Ga.

15. *V. labradorica* Schrank. Fig. 101. Map 382.

Rare; in ravines, along spring-brooks or occasionally in cold woods from along the North Mountain in Annapolis Co. to northern C.B. This small violet is usually found in shaded areas close to tumbling streams or on rocky cliffs where it is moist. (*V. adunca* Sm., var. *minor* (Hook.) Fern.).

Greenland to Alaska south to n. New Eng., Mich. and Colo.

16. *V. tricolor* L. PANSY, JOHNNY-JUMP-UP

This tiny pansy is occasionally found as an escape to roadsides, fields or around old gardens, sometimes very persistent, and flowering over a long period of time.

Introduced from Eu.

17. *V. arvensis* Murr. Fig. 101. FIELD PANSY

Occasional in old fields and seeded ground. This plant has probably been introduced in clover seed, persisting but a short time.

Introduced from Eu.; Nfld. to B.C. and southward.

## 79. THYMELAEACEAE MEZEREUM FAMILY

Low shrubs with tough bark and simple, alternate, entire leaves. The flowers appear in lateral clusters in late April or early May before the leaves; petals none, sepals usually 4; fruit a berry-like drupe.

a. Calyx small and tubular, without spreading lobes, light yellow; stamens long-exserted; drupe greenish to reddish; leaves obovate and very short-petioled.

1. *Dirca*

a. Calyx showy, with 4 spreading sepals, pink to purple; stamens included; drupe cherry-red; leaves oblanceolate, widest above the middle with a tapering base.

2. *Daphne*

## 1. DIRCA L. LEATHERWOOD

1. *D. palustris* L.

A single sterile bush of this species was found on the Newport "chimneys", a network of gypsum sinkholes shaded by spruce beside the St. Croix R., Hants Co. Since then W. B. Schofield has found in some unpublished material of Macoun's, in the National Museum at Ottawa, a report of the finding by Dr. Soloan and his students of three stations of this plant in N.S. These were unsupported by collections and the definition of locality was vague, e.g. "Wentworth" (Erskine, J. S., 1953).

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

## 2. DAPHNE L. DAPHNE

1. *D. Mezereum* L. Fig. 97, g. DAPHNE

Introduced by the French and locally established at Annapolis, Grand Pré, Louisburg and at scattered places elsewhere. It is rather common along the roadsides and in thickets between Avonport and Kentville in Kings Co., the pale pinkish or rose flowers appearing in late April or early May before the leaves unfold. Occasionally transplanted as an ornamental. The berries are deadly poisonous.

Introduced from Eu.; Nfld. to Ont. and N.Y.

## 80. ELAEAGNACEAE OLEASTER FAMILY

Shrubs or small trees with the leaves scurfy with silvery to reddish scales. The Russian Olive, *Elaeagnus augustifolia* L., is often planted as an ornamental.

## 1. SHEPHERDIA Nutt.

1. *S. canadensis* (L.) Nutt. Fig. 97, f. Map 383. SHEPHERDIA

Locally, but usually abundant where found. In Hants Co. it is abundant on gypsum between Windsor and Brooklyn by the roadside; and in northern C.B. it is found on gypsum or on talus slopes growing with plants such as *Potentilla fruticosa* and *Senecio pauperculus*; also along the coast within reach of the salt spray.

Nfld. to Alaska south to N.S., n. N.Y., Iowa and N.Mex.



## 81. LYTHRACEAE LOOSESTRIFE FAMILY

Tall perennial herbs with simple, lanceolate, entire or slightly wavy-margined leaves, growing in damp or wet habitats. The flowers are rose-purple and occur in the axils of the upper leaves.

a. Axillary flower-clusters widely separated; leaves tapering to the base, petioled, with numerous lateral veins; stem prostrate at the base and often spongy.

1. *Decodon*

a. Axillary flower-clusters aggregated to make a showy terminal spike; leaves cordate at the base, sessile, and with only 3-5 prominent lateral veins; stem erect, not spongy at the base.

2. *Lythrum*

1. **DECODON** J. F. Gmel. **SWAMP-LOOSESTRIFE**1. **D. verticillatus** (L.) Ell., var. **laevigatus** T. & G. Map 383.

Quaking margins of ponds or lakes, or sphagnous borders; rare. It is scattered in Shelburne Co.; and found at New Tusket, Digby Co. The variety is the northern type with the pedicels and the undersides of the leaves glabrous.

The species ranges from Fla. to Texas north to N.S., s.w. Que. and Ont.

2. **LYTHRUM** L. **PURPLE LOOSESTRIFE**1. **L. Salicaria** L. Fig. 103, a.

Low ground, marshes and ditches; local; rare near Yarmouth and on Digby Neck; along the Annapolis R. above Middleton; common in the marshes at Truro; and in small numbers in other places in the Province. This plant is apparently being transplanted because of its showy flowers; and it is now more common along roadsides where patches of it are seen in ditches or in low areas. A cultivated form is now being grown in gardens. Most of our plants have the calyx and bracts softly white-tomentose and thus belong to var. *tomentosum* (Mill.) DC.

Introduced from Eu.; Nfld. to Man. and B.C. south to Va. and Ohio.

82. **MELASTOMATACEAE MELASTOMA FAMILY**

A large tropical family with only one genus in our area. Flowers purple, with the parts in 4's and the ovary inferior. The leaves are strictly opposite and are strongly ribbed with bristly teeth; herb.

1. **RHEXIA** L. **MEADOW-BEAUTY**1. **R. virginica** L. Map 384. Fig. 103,g. **MEADOW-BEAUTY**

Wet thickets, peaty swales and lake margins; scattered in the southwestern counties north to the lakes of Annapolis Co. and west nearly to Bridgewater. July-Aug.

N.S.; Me. to southern Ont. south to Ga. and Ala.

83. **ONAGRACEAE EVENING-PRIMROSE FAMILY**

This family of diverse herbaceous plants has perfect, regular flowers, the ovary inferior and the flower-parts in 2's or 4's. The cultivated *Fuchsia* and *Clarkia* are good examples.

a. Flower-parts in 4's; fruit without hooked hairs.

b. Plant prostrate and rooting at the nodes; petals absent; leaves opposite; fruit to 4 mm long (Fig. 103,b).

1. *Ludwigia*

- b. Plant erect; petals conspicuous; leaves mostly alternate; fruit long, cylindrical to linear.
- c. Flowers purplish to white; calyx-tube scarcely prolonged beyond the ovary; seeds tufted with whitish hairs (Fig. 103,b-f). 2. *Epilobium*
- c. Flowers yellow; calyx-tube conspicuously prolonged; seeds without hairs (Fig. 102,b-c). 3. *Oenothera*
- a. Flower-parts in 2's, the petals sometimes almost divided; flowers minute, white; fruit with hooked hairs; plants thin-leaved, delicate (Fig. 102,a); leaves always opposite. 4. *Circaea*



Fig. 102.—*Circaea*: (a) *C. alpina*  $\times \frac{1}{2}$ . — *Oenothera*: (b) *O. biennis*, top of plant  $\times \frac{1}{2}$ , (c) *O. perennis*  $\times \frac{1}{2}$ . — *Panax*: (d) *P. trifolium*  $\times \frac{1}{2}$ .

## I. LUDWIGIA L.

1. *L. palustris* (L.) Ell., var. *americana* (DC.) Fern. & Griseb. Fig. 103, h. Map 385.

Common throughout the northern areas and scattered elsewhere on wet shores, bottoms of ditches, and growing out of shallow water at the edges of lakes or streams. Forms found in deep water, with limp stems and broad, thin distinctly-petioled leaves, belong to forma *elongata* Fassett. The plant has been little-collected between Bridgewater and the Strait of Canso on the Atlantic side of the Province. Our plant is considered a variety of the European plant, although the differences are very slight.

N.S. to Minn. south to Ga. and Tex.; also on the West Coast.

## 2. EPILOBIUM L. WILLOW-HERB

About 100 species, mainly perennial plants from temperate climates. The white to pinkish flowers with 4 petals and the long inferior ovary serve to identify this genus. The capsule is long and slender and each seed within it has a tuft of long, white to brownish hairs at the upper end. Some species are very variable and need further study before they can be properly classified.

- a. Stigma 4-parted; flower showy, 1 cm or more in length; plants 1 m high or higher.
- b. Petals pointed at their ends; flowers numerous in elongate racemes; leaves nearly glabrous.
  - 1. *E. angustifolium*
- b. Petals notched at the ends; flowers few from the upper leaf-axils; leaves villous-hairy.
  - 2. *E. hirsutum*
- a. Stigma ovoid or club-shaped; flowers less than 1 cm long.
- c. Stem terete, with no lines running down from the bases of the leaves; leaves entire or nearly so, with inrolled margins.
- d. Capsules and stems velvety with spreading hairs; leaves 4-8 mm wide; petals 7-9 mm long.
  - 3. *E. strictum*
- d. Capsules and stems glabrous to crisp-pubescent with sub-appressed or in-turned hairs (Fig. 103,c).
- e. Upper part of the stem and upper surface of leaves densely pubescent; tips of the stem or branches, and buds before flowering, arching or ascending.
- f. Plant usually much branched; petals 4-6.5 mm long; calyx 3-4.5 mm high; capsules not glandular; leaves numerous, 1-3 mm wide.
  - 4. *E. leptophyllum*
- f. Plant usually simple or little branched towards the top; petals 7-9 mm long; calyx 4.5-6 mm high; capsule tending to be glandular.
  - 5. *E. nesophilum*
- e. Upper part of stem and upper surface of leaves with scattered hairs or becoming glabrous; stem-tips, and pedicels before flowering, nodding.
  - 6. *E. palustre*
- c. Stems with lines running down from the bases of the leaves; leaves toothed, flat, the margins not inrolled.
- f. Plants reproducing by short, basal buds, with the erect stems usually solitary.
- g. Basal bud composed of leathery, ovate scale-leaves which persist until flowering time the following year around the base of the stem.
- h. Stems 1-3 dm high; leaves 2-3 cm long, narrowed to the distinctly winged petiole.
  - 7. *E. leptocarpum*
- h. Stems taller and stouter; leaves 3-6 cm long, rounded at the base and practically sessile.
  - 8. *E. glandulosum*
- g. Basal bud sub-aerial and composed of delicate elongated scales which soon disappear the following season; common throughout.
- i. Seeds beakless; hairs of the seed tawny to dirty-white; leaves lanceolate, tapering to the tip from near the base, closely and irregularly serrate, with 30 or more serrations on each side, with short petioles; mature fruit erect or nearly so.
  - 9. *E. coloratum*
- i. Seeds usually with a short beak; hairs white; leaves more remotely serrate; mature fruit spreading.
  - 10. *E. adenocaulon*
- f. Plants reproducing by slender, creeping basal stolons; the sparingly-branched plants often matted with the stems decumbent at the base and up to 3 dm high.
  - 11. *E. Hornemanni*

1. *E. angustifolium* L. Fig. 103,b. FIREWEED, LARGE WILLOW-HERB

Common and conspicuous in burnt-over areas, along fence-rows, edges of thickets and in waste places throughout. Forma *albiflorum* (Dumort.) Haussk. has white flowers with whitish sepals: occasional, Sandy Cove in Digby Co.; near Wentworth in Cumberland Co.; and a large patch north of Truro. Forma *spectabile* (Simmons) Fern. has white petals with reddish sepals. July 10-Aug.

Greenland to Alaska south to N.C. and Calif.; Eurasia.

2. *E. hirsutum* L.

Beside Steele's Pond, Point Pleasant, Halifax, collected by J. S. Erskine, 1949.

Intro. from Eu.; N.S., Que. to Mich. south to N.Y.

3. *E. strictum* Muhl. Fig. 103,d. Map 384.

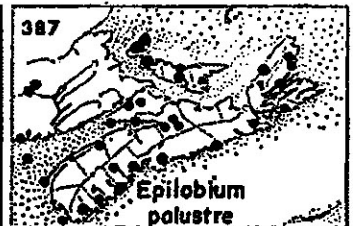
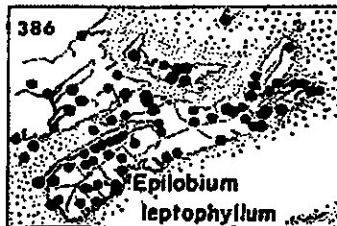
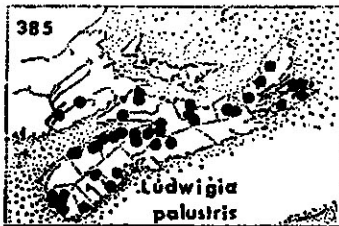
Boggy areas and meadows, scattered throughout C.B., rarer westward: swamp, three miles south of Merland, Antigonish Co.; swamp by main road, Hortonville, and marsh at Sheffield Mills in Kings Co. (Erskine, D. S., 1951); and pond-edge at Amherst Point where it was collected by J. S. Erskine.

N.S. to Minn. south to Va., Ind. and Ill.

4. *E. leptophyllum* Raf. Fig. 103,c. Map. 386. BOG WILLOW-HERB

Scattered to common in swales, wet meadows, bogs and lake and stream margins throughout (*E. densum* Raf.).

N.S. to Alta. south to Va., Ind. and Colo.



5. *E. nesophilum* Fern.

This large-flowered species is relatively rare in the Province. Inverness Co.: bogs head of South Blair R.; Victoria Co.: occasional in swamp, Bay St. Lawrence; common in swamp above Gray Glen Brook; C.B. Co.; rare in bog, Northwest Cove, Scatari I.; and in Richmond Co. common in bog at Point Michaux (Smith and Erskine, 1954).

Var. *sabulonense* Fern. has the leaves oblong-lanceolate instead of narrowly lanceolate, with blunt tips and the fruiting pedicels are shorter



and only up to 1.5 cm long. This is the only variety found on Sable I. and has as yet been found nowhere else.

Anticosti I., the Magdalen I., Nfld. and C.B. with the variety on Sable I.

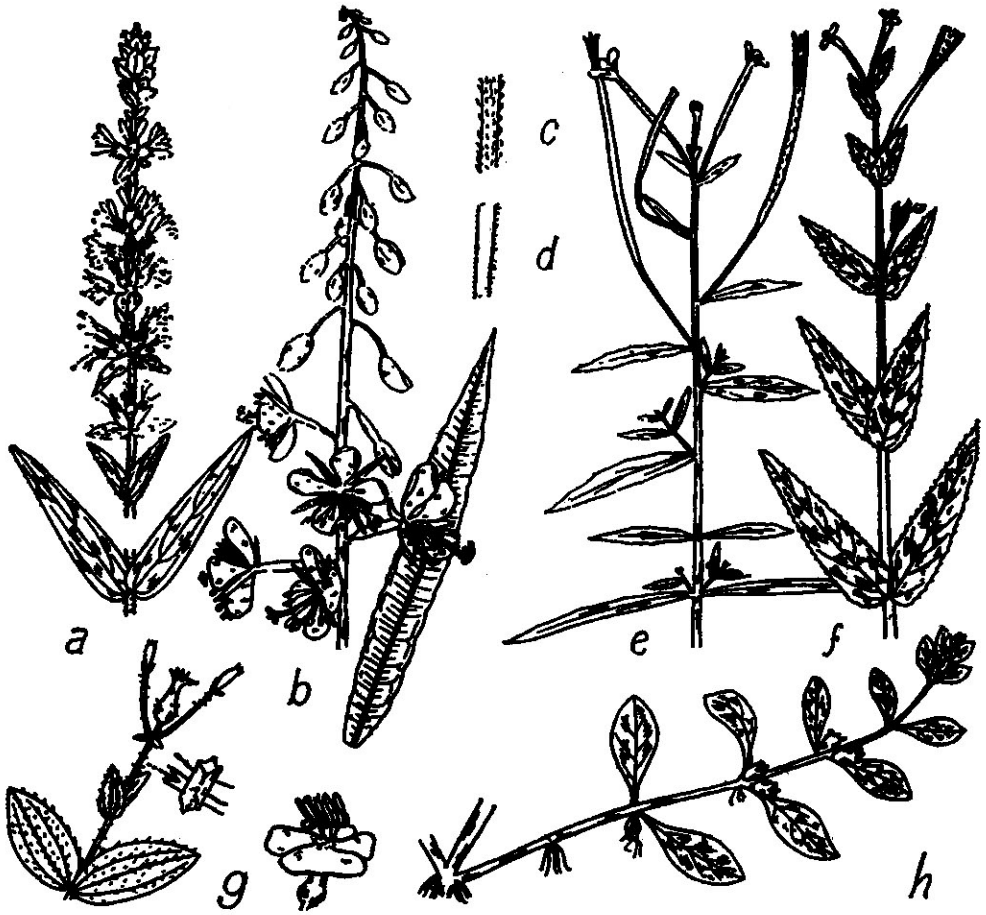


Fig. 103.—*Lythrum*: (a) *L. Salicaria*  $\times \frac{1}{2}$ . — *Epilobium*: (b) *E. angustifolium*, flowers and leaf  $\times \frac{1}{2}$ , (c) *E. leptophyllum*, stem showing pubescence  $\times 1$ , (d) *E. strictum*, stem  $\times 1$ , (e) *E. palustre*  $\times 1$ , (f) *E. adenocaulon*  $\times \frac{1}{2}$ . — *Rhexia*: (g) *R. virginica*  $\times \frac{1}{2}$ , stem and flower enlarged. — *Ludwigia*: (h) *L. palustris*  $\times 1$ .

6. *E. palustre* L. Fig. 103,e. Map 387.

This variable northern species is scattered throughout. Several varieties have been proposed and reported as being found in N.S. Most of our plants are about 3 dm high, usually unbranched and rarely with axillary tufts of leaves, the principal leaves 1-4 mm wide and 1-3 cm long and strongly ascending; the leaves subtending the flowers usually only equalling or shorter than the fruiting pedicels. This is var. *oliganthum* (Michx.) Fern. (Map 388). It is found in open bogs or damp

peaty barrens, more characteristic of the Atlantic Region of the Province. July-Aug. (var. *monticola* Haussk.).

Occasionally larger, more branching plants are seen which seem to be more typical of the species as described in Gray's Manual; some growing on wet rocks or cliffs, possibly in the shade, have wide, more flaccid leaves. These have been named var. *grammadophyllum* Haussk. but it is doubtful if they constitute a valid variety.

Greenland to Alaska south to Conn. and the Great Lakes region.

7. *E. leptocarpum* Haussk., var. *Macounii* Trel.

This small, slender species has been reported from N.S. both by Fernald and by Gleason in recent floras, from moist, often calcareous spots. The variety is the eastern form. No recent collections have been seen.

Nfld. to B.C. south to N.S., Ont. and Man.

8. *E. glandulosum* Lehm. Map 390.

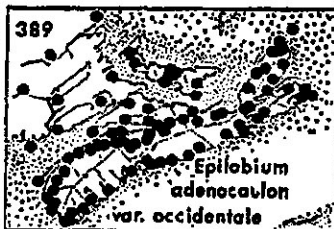
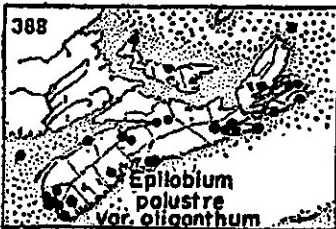
The collections from northern C.B., especially those from the most northern part, show the persistent basal rosette and are here kept separate from the following species. The plants are unbranched and the leaves maintain their size up to the inflorescence.

Lab. south to Que. and N.S.; Alaska to Oreg.

9. *E. coloratum* Biehler.

Open spot near the station at Weymouth as first report east of the Penobscot region, the earlier records from eastern Canada resting on *E. glandulosum* var. *adenocaulon* and *occidentale* (Fernald, 1922). The characters commonly used to separate this species from the next do not apply too well in N.S. Seeds with brownish or grayish hairs often occur; the 4 sepals may or may not project at the tip of the bud as 4 points; the seeds may be rounded or have a short neck at the top. A number of the characters of *E. coloratum* seem to be found at random to some extent in our population of the next species. Plants most typical of this species have also been found in a ditch at Seabright, Antigonish Harbour and in a marsh east of Roxville, Digby Co. Other collections in the north-central counties resemble it more or less.

N.S. and Me. to Minn. south to Ga. and Ala.



10. *E. adenocaulon* Haussk. Fig. 103,f. Map 389. WILLOW-HERB

The plants considered under this name are so variable that the extremes seem like entirely different species. Part of the variation seen in herbaria may result from the stage of development in which they are collected as the plants may be simple in the early stages of flowering and then develop numerous side-branches later. The plants taken as typical of the species are relatively unbranched with the middle stem-leaves ovate to ovate-lanceolate and rounded at the base, the whole plant with a reddish tinge. This is common throughout in rich or damp soils, commonly in dried-out muddy spots.

Var. *occidentale* (Trel.) Fern. is said to be a more-western variety. However, the large, green, bushy plants with many long branches and the leaves narrowly lanceolate are placed here for the present. It is easy to pick out a number of collections from rich soil, edges of swales or wet habitats, especially from the north-central parts of the Province, which appear quite distinctive, but the species is variable and intergrading forms make determination doubtful.

Var. *perplexans* Trel. represents the opposite extreme, with the small, unbranched plants having thin, flaccid leaves which taper to a definite petiole. This has been described as *E. ciliatum* Raf. and resembles depauperate plants of *E. adenocaulon* or plants which have grown in places where pools have dried up in late spring. Wet rocks, cliffs and damp areas, sometimes close to the sea-shore.

Nfld. to Alaska south to New Eng., Del. and Ill.

11. *E. Hornemanni* Reichenb. Map 390.

Mentioned by Fernald (1948, 1950-a) as occurring in C.B., this plant is now found to be characteristic of the banks of cold brooks in the northern part of the Island, in ravines as they approach the plateau, and occasional in damp places in the birch-fir forest at an elevation of 1200 feet (Smith and Erskine, 1954). It was first collected from Big Intervale, C.B. by Macoun in 1898.

Arctic Amer., south to C.B., mts. of New Eng. and N.Y. and Colo.

### 3. OENOTHERA L. EVENING-PRIMROSE

These yellow-flowered biennial plants are common, especially along the shoulders of roads and in waste places. In the first 4 species self-pollination is the rule but occasional cross-fertilization may occur. Consequently a number of races are found, often existing side by side; and new ones differing in height, coloration, pubescence, size and width of petals and in other characteristics may arise.

The main species is *O. biennis* L. Boivin places the next 3 as forms of this: the large-flowered ones as forma *grandiflora*, the plants with

short wide petals as forma *muricata*, and the ones with short linear petals as forma *stenopetala*. We are retaining the species names but, except for the flower-characteristics, the 3 common types do seem to be closely related and confused. See Fernald (1949-b).

- a. Plants stout, erect, more than 5 dm high; capsules not winged on the angles.
- b. Tips of the calyx-lobes in the unexpanded bud close together at the end of the tapering bud and forming a tube, in flower the tips appear terminal and point directly backwards, 2-6 mm long; flowers showy, the petals 1.5-6 cm long.
- c. Petals 15-20 mm long; calyx-lobes 1-2.5 cm long. 1. *O. biennis*
- c. Petals 2.5-6 cm long; calyx-lobes 2.5-5 cm long. 2. *O. grandiflora*
- b. Tips of the calyx-lobes in the bud not close together at the base, spreading at the tip of the more rounded tip or ridge and bent back from it; flowers small, the petals up to 2 cm long.
- d. Petals linear, 1-3 mm wide. 3. *O. cruciata*
- d. Petals obovate, broader. 4. *O. parviflora*
- a. Plants slender, 1-5 dm high; capsule winged on the angles.
- e. Bud and tip of the inflorescence erect; petals mostly about 10-20 mm long; inflorescence in fruit less than half the length of the plant; anthers 4-6 mm long. 5. *O. tetragona*
- c. Buds and tip of the inflorescence nodding; petals 5-9 mm long; inflorescence in fruit about half the length of the plant; anthers 1.5-3 mm long. 6. *O. perennis*

## 1. *O. biennis* L. Fig. 102,b. EVENING-PRIMROSE

Scattered to common throughout, but apparently more abundant in the central and western parts of the Province. Some of the segregates or races have been named. *O. novae-scotiae* Gates (1916-7), was separated on the basis of the rosette leaves being nearly smooth and with relatively narrow, pale pink midribs; stems red, with leaves tapering at both ends and bracts somewhat curled; buds green and petals about 15 mm long. It was described from plants grown from seed collected near the reservoir on the North Mt. above Middleton. Other plants in the same general region seem to be as distinctive as this segregate.

Var. *canescens* T. & G. has the surface of the calyx, ovaries and capsules densely covered with incurved hairs. This grades into a form with the capsule and calyx covered with thick, ascending or spreading long hairs, which has been known as var. *hirsutissima* Gray. Kings Co.: sand at foot of cliff, Starr's Point. A specimen from the beach at Cook's Cove, Guysborough Co. seems to belong here also (Erskine, D. S., 1951); open roadside, Tusket, Yarmouth Co. (Klawe, 1955).

Nfld. to B.C. south to Fla. and Tenn.

## 2. *O. grandiflora* Ait. LARGE-FLOWERED EVENING-PRIMROSE

Digby Co.; an escape from cultivation, established for 100 years along the main road at Plympton (Smith and Erskine, 1954). *O. biennis* forma *grandiflora* (Ait.) Carpenter.

Introduced from Eu.; N.S. to Ont. south; B.C.

3. *O. cruciata* Nutt.

There is a tendency towards narrow-petalled plants in the Maritimes. Erskine reports this species from several locations in P.E.I. and Smith and Erskine (1954) list it from Wentzell's Lake in Lunenburg Co. for the first record for the mainland of N.S. (*O. biennis* forma *stenopetala* (Bickn.) Boivin).

St. John states that it is occasional on the slopes of the dry dunes on Sable I. and Fernald (1949-b) describes these plants as var. *sabulonensis* Fern. because of the low stems; up to 3.5 dm high, the calyx minutely and sparsely pilose instead of villous; and the capsule 8-10, instead of 5-7 mm thick.

Dry open soil, beaches, etc., N.S. to Ont. and Mich. south to New Eng.

4. *O. parviflora* L. SMALL-FLOWERED EVENING-PRIMROSE

This seems to be the common species in eastern N.S. around the coast and spreading along the roadside shoulders; becoming rarer westwards at least to Cumberland and Guysborough Co. The evening-primroses seem well adapted to the roadside habitat and are apparently spread by maintenance machinery. (*O. ammophiloides* Gates and Catcheside, described from plants grown from seeds from Guysborough).

Nfld. to northern Ont. south to N.Y.

5. *O. tetragona* Roth

Scattered at various places in Digby Co.; old fields, edges of thickets and roadsides in dry, open sandy soil; collected at Wolfville by J. S. Erskine; unknown elsewhere, and probably introduced from further south.

Western N.S.; Ont. to Ill. south to Ga. and Tenn.

6. *O. perennis* L. Fig. 102,c. SUNDROPS

Common in light soils or in sandy places throughout; collected but rarely in the Atlantic coastal region. July-Sept. (*O. pumila* L.). Var. *rectipilis* Blake with the stem having short spreading hairs, instead of appressed stiff ones, is scattered near the coast of N.B. on the Gulf of St. Lawrence and was found by Erskine in north central P.E.I., but still has not been collected in N.S.

Nfld. to Man. south to Del., Ga. and Ohio.

## 4. CIRCAEA L. ENCHANTER'S-NIGHTSHADE

Perennial herbs with opposite thin leaves, growing in rich soil, usually in shaded locations; flowers with parts in 2's, the petals deeply lobed, small and white. The fruits are usually beset with soft hooked bristles.

a. Leaves firm, shallowly undulate-dentate; mature pedicels strongly reflexed; disk of flower cup-shaped, prolonged about 0.5 mm above the petals; anthers 0.7-1 mm long; stigmas shallowly 2-lobed; mature fruit with strong-hooked bristles, 3.5-5 mm thick, marked with 5 longitudinal corrugations on each face.

1. *C. quadrisulcata*

a. Leaves flaccid, coarsely sharp-dentate; mature pedicels spreading or only slightly reflexed; disk of flower inconspicuous; stigma deeply cleft; mature fruit with soft hairs, 1-3 mm thick, not furrowed.

b. Rhizome slender, scarcely tuberous-thickened; anthers 0.5-0.8 mm long; petals 2.3-3.5 mm long; fruit unequally 2-celled, 1.5-3 mm thick.

2. *C. canadensis*

b. Rhizome tuberous-thickened; anthers 0.2-0.3 mm long; fruit 1-celled, 1-1.5 mm thick.

3. *C. alpina*

1. *C. quadrisulcata* (Maxim.) Franch. & Sav., var. *canadensis* (L.) Hara. LARGE ENCHANTER'S-NIGHTSHADE Map 391.

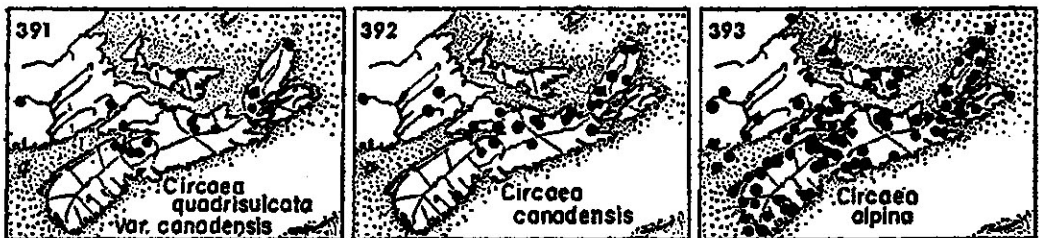
Scattered in rich or alluvial woods from Kings and Cumberland Co. in the northern part of the Province to northern C.B.; large localized stands along the Cornwallis R. in Cambridge, Kings Co. (Schofield 1949). July-Sept. (*C. lutetiana* of earlier authors).

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

2. *C. canadensis* Hill. Map 392.

Alluvial woods and rich wooded slopes in central N. S. to northern C.B.; rather rare. July-Aug. (*C. intermedia* Ehrh.). This is possibly an intermediate hybrid of our other two species. See Cooperrider (1962).

N.S. to Ont. and Minn. south to mts. of Va.



3. *C. alpina* L. Fig. 102, a. Map 393. SMALL ENCHANTER'S-NIGHTSHADE

Common in rich or wet woods, ravines, dripping slopes and borders of wooded streams and swamps, throughout. This is one of the most common plants in its habitat, often carpeting the ground.  $2n=22$ . July-Aug.

Lab. to Alaska south to Ga., Tenn. and Colo.

## 84. HALORAGACEAE WATER-MILFOIL FAMILY

Weak, erect or floating water-plants with either small scale-like leaves or with leaves deeply pinnately lobed or divided; flowers and fruit minute, in the axils of leaves or scales. Seven genera and 150 species (Fig. 104).

- a. Flower-parts in 4's; leaves whorled or alternate, the emerged ones scale-like.
  - 1. *Myriophyllum*
- a. Flower-parts in 3's; leaves alternate, the emerged ones foliaceous.
  - 2. *Proserpinaca*

## 1. MYRIOPHYLLUM L. WATER-MILFOIL

Rather common aquatic plants, but not often found fruiting. The leaves are usually regularly pinnately divided and are not to be confused with those of *Utricularia* (see Fig. 122).

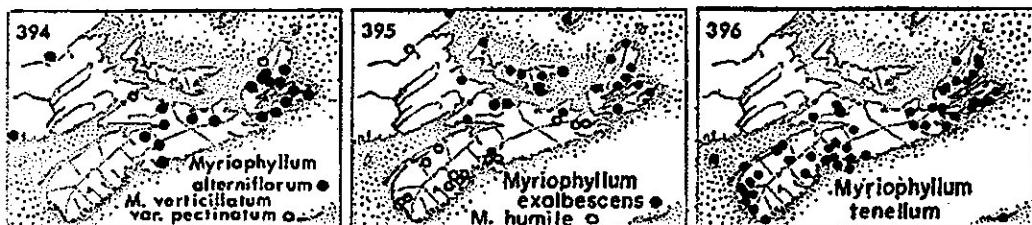
- a. Leaves deeply lobed, or cut into narrow or linear segments.
  - b. Foliage leaves all whorled.
    - c. Floral bracts mostly scattered or alternate, shorter than the flowers; leaves 5-12 mm long, the rachis and segments thread-like. 1. *M. alterniflorum*
    - c. Floral bracts whorled; leaves 10-30 mm long.
      - d. Floral bracts sparingly dentate or serrate, rarely as long as the flowers or fruit; rachis of the leaves terete, of nearly equal diameter throughout, the segments not broadened at the base. 2. *M. exalbescens*
      - d. Floral bracts deeply lobed, about twice as long as the flowers or fruit; rachis of the leaves flattened, much broader towards the base, the segments also broadened at the base. 3. *M. verticillatum*
  - b. Foliage leaves partly whorled and partly scattered.
    - c. Flowers and fruit borne below the surface of the water in the axils of ordinary leaves; leaves filiformly divided, the segments about 0.1 mm wide at base and tapering to the tip; fruits 2-2.5 mm long, the carpels with prominent tubercles along the dorsal ridge. 4. *M. Farwellii*
    - c. Flowers and fruit borne mostly above the surface of the water; leaves coarser; fruit 0.7 mm long, plump, without a ridge or tubercles on the back. 5. *M. humile*
- a. Leaves small, inconspicuous, not lobed, to 1 mm long. 6. *M. tenellum*

1. *M. alterniflorum* DC. Fig. 104,c. Map 394.

Occasional in slow streams or shallow pools; central Hants and Halifax Co.; Salmon R. at Truro; in Pictou Co. and common in C.B. The American plants have been designated var. *americanum* Pugsley, but Fernald states that the varietal name refers only to clones with smaller leaves.

Eu. and Greenland; Nfld. to Alaska south to Conn. and Minn.





2. *M. exalbescens* Fern. Fig. 104,d. Map 395. (Löve, A., 1961).

Brackish water or in alkaline ponds, northern C.B.; Sydney Mines, Baddeck and Bay St. Lawrence; in 4 feet of water and fruiting in the pond at Presque Isle, in Inverness Co.; scattered west to Halifax and Cumberland Co.

Nfld. to Alaska south to Md. and W.Va.

3. *M. verticillatum* L., var. *pectinatum* Wallr. Map 394.

Spring pools south of Amherst (Fernald, 1921); mentioned by Nichols as characteristic of ox-bow ponds in northern C.B.

Nfld. to B.C. south to Del. and Md.

4. *M. Farwellii* Morong. Fig. 104,b.

Muddy cove in Lily Lake, Sandy Cove, Digby Neck (Fernald, 1921.).

N.S. and the Gaspé to Minn. south to Me., N.H., Vt. and N.Y.

5. *M. humile* (Raf.) Morong. Map 395.

Peaty, sandy or muddy shores from Yarmouth to Hants Co. and rarer to southern Pictou and eastern Guysborough Co.; local, passing in deep water to forma *natans* (DC.) Fern. which has the stems erect and floating in the water instead of growing on the bottom.

N.S. to N.Y. west to Ont. and Ill.

6. *M. tenellum* Bigel. Fig. 104,a. Map 396.

Shallow water on the sandy or peaty lake-margins from Digby and Yarmouth Co. and now known to exist pretty well throughout the Province; abundant at the borders of fresh-water lakes on Sable I. Nichol's record of *M. humile* from C.B. belongs here. The plant varies greatly in stature from dwarf to tall flowering ones; often it grows in a loose tangled mat in shallow waters.

Nfld. to Ont. and Minn. south to N.J., Penn. and N.Y.

## 2. PROSERPINACA L. MERMAID-WEED

Perennial, prostrate, amphibious or marsh plants with lobed alternate leaves and the flowers solitary, or 2-3, in the axils of the emerged leaves; flowers with no petals, 3 stamens, and the ovary inferior. These

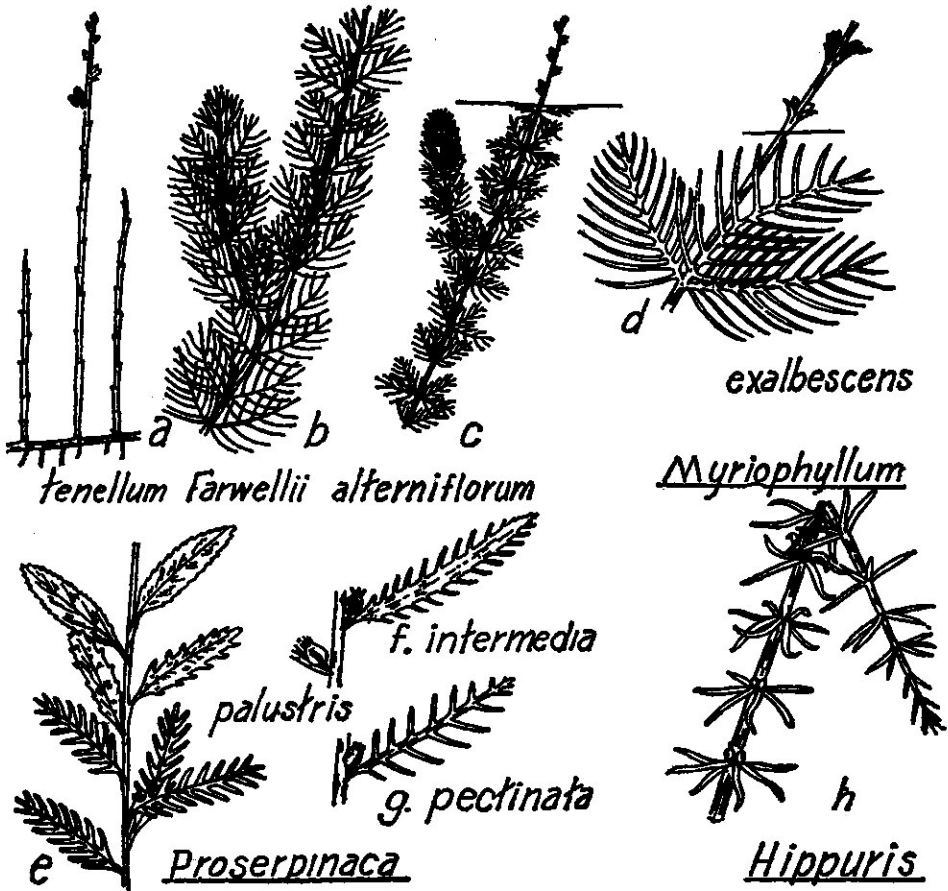


Fig. 104.—*Myriophyllum* spp., (a - d) x 1. — *Proserpinaca* spp., (e - g) x 1. — *Hippuris*: (h) *H. vulgaris* x ½.

plants usually grow at the edges of ponds and in swales and ditches where the lower half may be in water and the upper branches grow out into the air.

- a. Leaves of two types, the submersed ones deeply lobed, those above water merely toothed; flowers in the axils of the unlobed leaves; fruit with calyx-lobes as broad as long. 1. *P. palustris*
- a. Leaves all alike, deeply lobed; fruit with the calyx-lobes longer than broad.
- b. Leaves lobed only part way to the center with the rachis, or central part, about as broad as the segments are long. 2. *P. intermedia*
- b. Leaves deeply cut, with the rachis narrow and about as broad as the segments are wide. 3. *P. pectinata*

1. *P. palustris* L., var. *crebra* Fern. & Grisc. Fig. 104,e. Map 397. MERMAID-WEED.

Boggy swales, savannahs, wet marshes and edges of streams, often abundant where found. Scattered in south-western N.S. to central

Halifax, Colchester and Cumberland Co.; rare in eastern N.S. and into southern Inverness and C.B. Co. In Lunenburg Co. it sometimes reaches a remarkable development, up to 15 dm high, with emersed leaves up to 8.5 cm long and 1.3 cm wide (Fernald, 1922). The variety is the northern variation of the wide-ranging southern plant. July-Sept.

N.S. to Minn. south to Ga. and Okla.; Mex.

2. *P. intermedia* MacKenz.

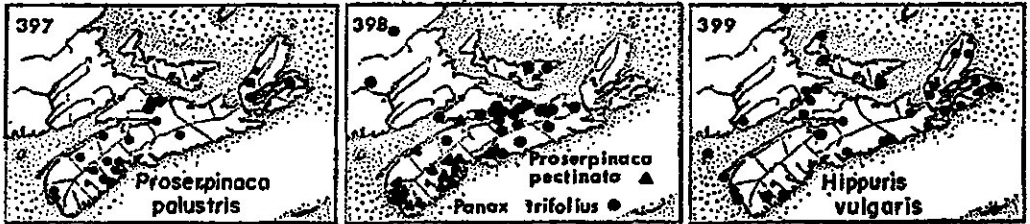
This species is intermediate in its characteristics between the first and the next species and is suspected of being a hybrid between them. It is found in similar habitats, usually growing with the two supposed parents. Boggy savannah by Butler's Lake, Gavelton, Yarmouth Co., filling small depressions which are damp or partly filled with water; scattered elsewhere in southwestern N.S.

N.S.; eastern Mass. to Va.

3. *P. pectinata* Lam. Fig. 104,g. Map 398.

Yarmouth and Shelburne, becoming rarer east to Annapolis and through central Lunenburg to Halifax Co.; wet savannahs, peaty or muddy pond-holes, sphagnum swales and sandy, gravelly or muddy borders of lakes or ponds. Rather common in the Medway Valley, Queens Co., generally growing in dense mats.

Fla. to Tex. north to N.S., sw. Me. and Tenn.



## 85. HIPPURIDACEAE MARE'S-TAIL FAMILY

This odd family consists of only one genus with one species, a water-plant with erect, unbranched stems and numerous whorls of small lanceolate leaves.

### 1. HIPPURIS L. MARE'S-TAIL

1. *H. vulgaris* L. Fig. 104,h. Map 399.

Local but widely scattered throughout; edges of ponds, brackish pond, wet swamps, usually edges of ponds, and quite often in pools near the sea, behind barrier beaches; occasionally on borders of streams, a

species of cold waters. It is found on the swampy margins of a few of the larger fresh-water ponds on Sable I.; luxuriant in the sink-holes near gypsum about Amherst. *Forma fluviatilis* (Coss. & Germ.) Gluck is a submerged form with long stems and weak trailing leaves found occasionally: Antigonish, Cumberland and Yarmouth Co. (Smith, 1959). Greenland to Alaska south to New Eng., N.Y., Minn. and N.Mex.

## 86. ARALIACEAE GINSENG FAMILY

Herbs to shrubby plants with compound leaves and insignificant flowers in small umbels; flower white to greenish with 5 petals, 5 stamens and an inferior ovary. The berry-like fruits are often highly aromatic or spicy. The family has about 60 genera and 750 species, most abundant in the tropics.

- a. Plants woody below; leaves alternate or basal, with 3 main divisions, each further divided; inflorescence of 3 or more umbels (Fig. 105). 1. *Aralia*  
 a. Plants herbaceous, low; leaves in a single whorl, palmately compound, with 3-5 leaflets; inflorescence a single umbel (Fig. 102,d). 2. *Panax*

### 1. ARALIA L. SARSAPARILLA

- a. Stem woody, 8-20 dm high, much branched; umbels in a dense panicle on a zig-zag axis. 1. *A. racemosa*  
 a. Stem 4-8 dm high, woody and bristly below; umbels in a simple or much-branched corymb. 2. *A. hispida*  
 a. Stem almost absent; umbels 3, stalked on a naked scape. 3. *A. nudicaulis*

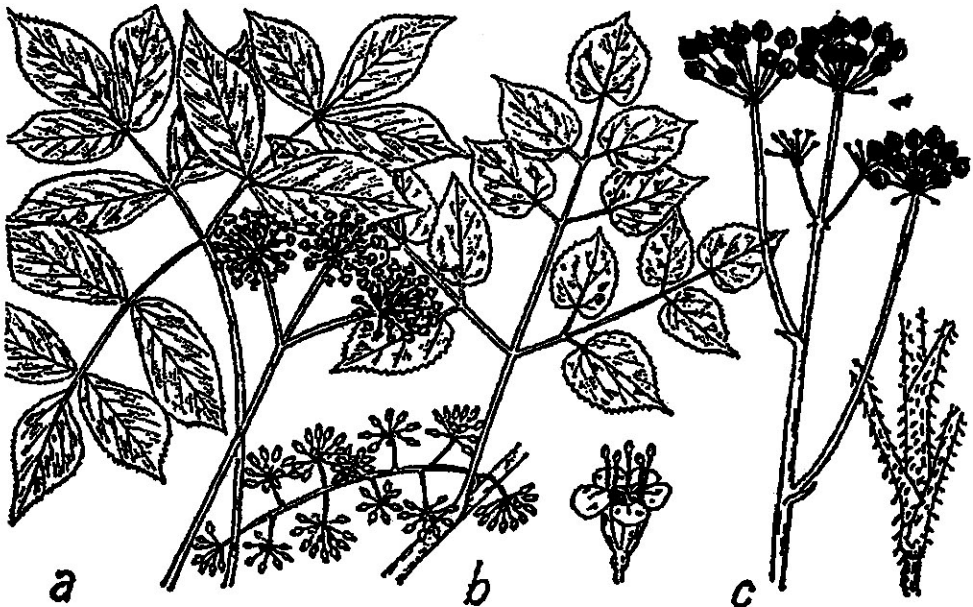


Fig. 105.—*Aralia*: (a) *A. nudicaulis*  $\times \frac{1}{2}$ , (b) *A. racemosa*  $\times \frac{1}{2}$ , (c) *A. hispida*, inflorescence and stem  $\times \frac{1}{2}$ , flower  $\times 3$ .

1. *A. racemosa* L. Fig. 105,b. Map 400. AMERICAN SPIKENARD

Rich or calcareous wooded slopes and in hardwood forests; occasional from Annapolis and Lunenburg Co. to northern C.B., usually as solitary plants. Absent in southwestern N.S.; rare in Halifax and Guysborough Co.; and not found in the more acid soils in Richmond and C.B. Co. near the Atlantic. Early July-Aug.

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

2. *A. hispida* Vent. Fig. 105,c. BRISTLY ARALIA

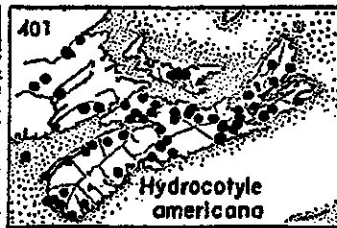
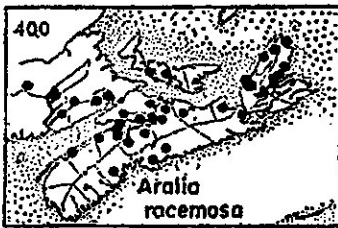
Common in burnt areas, recently-cut forest land, around saw-mills and in light or barren soils; throughout. July.

Nfld. to Alta. south to N.C., W. Va. and Minn.

3. *A. nudicaulis* L. Fig. 105,a. WILD SARSAPARILLA

Common throughout dry woodlands and old forests, one of the common flowering plants in early summer. May 25-June.

Nfld. to B.C. south to Ga., Ill. and Colo.



## 2. PANAX L. GINSENG

1. *P. trifolius* L. Fig. 102,d. Map 398. DWARF GINSENG, GROUND-NUT

Rich deciduous woods or open woodland, local; Kings Co.; beech woods at Morristown; common on the intervalles of northern N.S. from Cumberland Co. east to Antigonish Co.; scattered in rich hardwoods in the Cobequids, east to Antigonish and Guysborough Co., where it is very rare, growing with a number of other typical intervalle plants. June.

N.S. and P.E.I. and Ont. and Minn. south to Ga., Ind. and Neb.

## 87. UMBELLIFERAE PARSLEY FAMILY

A large family with the individually small flowers in sometimes small, but usually many-rayed showy and conspicuous umbels; leaves alternate, with few exceptions compound. The flowers have 5 petals, 5 stamens inserted on a disk, and an inferior ovary with two cells and stigmas (Fig. 107). The fruit consists of two one-seeded dry halves which separate at maturity. These halves may be nearly terete or may

be strongly flattened. The cultivated carrot, parsnip and dill are good examples of the family. The seeds of some species, especially those of *Conium* and *Cicuta*, are very poisonous. The family is a large one with up to 3,000 species.

- a. Ovary and fruit densely prickly or bristly.
  - b. Leaves palmately compound, the divisions simple (Fig. 106,f). 2. *Sanicula*
  - b. Leaves pinnately compound, the divisions filiformly divided, slightly hairy (Fig. 106, a, d). 21. *Daucus*
- a. Ovary and fruit not bristly nor prickly, sometimes stiff-hairy.
  - c. Leaves simple; plants small of wet habitats.
    - d. Leaves orbicular; plants small, creeping; flowers few in the axils of the leaves (Fig. 106, g). 1. *Hydrocotyle*
    - d. Leaves reduced to thickened petioles 2-6 cm long; plant creeping, small, in water. 12. *Lilaeopsis*
  - c. Leaves compound.
    - e. Leaves pinnately-compound with sessile leaflets (Fig. 106, b-c).
      - f. Leaflets less than 5 mm wide; each half of the fruit almost terete; flowers white.
        - g. Leaflets divided into numerous filiform divisions; bulblets absent; a common weed (Fig. 106,c). 8. *Carum*
        - g. Leaflets little or not divided; bulblets sometimes found in the upper axils; marsh plants (Fig. 106,h). 7. *Cicuta*
      - f. Leaflets more than 5 mm wide, coarsely cut or toothed.
        - h. Leaflets narrowly lanceolate, the upper not lobed or cut; each half of the fruit nearly terete; flowers white (Fig. 106,c). 11. *Sium*
        - h. Leaflets elliptical, often nearly as wide as long, the upper one often lobed or deeply cut; (Fig. 106,b).
          - i. Fruits terete; expanded leaves mostly basal, the leaflets 1-2 cm long, nearly oval and evenly toothed; flowers white. 9. *Pimpinella*
          - i. Fruits thin and flattened; expanded leaves continuing up the stem, the leaflets coarse, up to 5 cm long or more, irregularly cut and toothed; flowers yellow. 19. *Pastinaca*
  - e. Leaves more or less palmately compound, with stalked leaflets.
    - j. Divisions of the leaf less than 4 mm wide; flowers white; fruit (except in *Conioselinum*) with the halves little flattened.
      - k. Involucre, at the base of the umbel, of many persistent bracts; plant 1-2 m high; leaves large. 5. *Conium*
      - k. Involucre absent, or 1 to a few bracts.
        - l. Divisions of the leaf long and ribbon-like, coarsely toothed; bulblets appearing in the axils of the upper leaves; swamp plant (Fig. 106,h). 7. *Cicuta*
        - l. Divisions of the leaf short and lanceolate, irregularly toothed or cut; bulblets absent.
          - m. Involucels (at the base of the tiny secondary umbels) long and conspicuous, exceeding the flowers and fruit. 13. *Aethusa*
          - m. Involucels much shorter than the flowers or fruit.
          - n. Basal leaves variously and coarsely divided; upper leaves with filiform divisions; fruit subglobose, 3-5 mm in diameter. 4. *Corlandrum*
          - n. Basal and upper leaves both ternately compound with the divisions 2-4 mm wide; fruit flattened; tall native plant. 16. *Conioselinum*
  - j. Divisions of the leaf more than 5 mm wide.

- o. Umbels with 2-8 rays, fruit linear with stout appressed hairs (Fig. 107,a); woodland plants. 3. *Osmorhiza*
- o. Umbels with more than 10 rays; fruit not linear nor with appressed hairs.
- p. Leaves rather fleshy, smooth with anastomosing veins, the teeth few, averaging 5 mm or more long (Fig. 107, d).
- q. Involucre of numerous conspicuous bracts; fruit strongly flattened; introduced and rare. 18. *Levisticum*
- q. Involucre of a few linear deciduous bracts or absent; fruit almost round; native sea-shore plants. 14. *Ligusticum*
- p. Leaves thinner; the teeth close and numerous, averaging 2 mm or less (Fig. 107,c,e).
- r. Upper leaf-sheaths much inflated, over 15 mm long (Fig. 107, e).
- s. Leaves downy beneath, only once compound; fruit pubescent and strongly flattened; petals of the outer flowers irregularly enlarged. 20. *Heracleum*
- s. Leaves glabrous to finely pubescent beneath, twice compound or more; fruit glabrous; outer flowers not enlarged.
- t. Fruits flat; involucels of few bracts or none; tall coarse plants of C.B. 17. *Angelica*
- t. Fruit terete; involucels of numerous bracts; plants short and stout. 15. *Coelopleurum*
- r. Upper leaf-sheaths little inflated, less than 12 mm long; fruit with each half nearly terete.
- u. Leaves and stem glabrous; plant without spreading root-stocks, and not growing in patches.
- v. Flowers bright yellow; plant to 1 m high, of dry or moist habitats. 6. *Zizia*
- v. Flowers white; plant 1-2 m high, in ditches and marshes, with thick fleshy crowns (Fig. 107,c); main lateral veins ending in a sinus between the teeth. 7. *Cicuta*
- u. Leaves downy to pubescent; plant 2-10 dm high, spreading by stout rhizomes to make large dense patches in dry ground; involucre none; main lateral veins ending in a tooth. 10. *Aegopodium*

## I. HYDROCOTYLE L. WATER-PENNYWORT

Small creeping herbaceous plants, the only members of this family here with rounded undivided leaves.

- a. Leaves peltate, the petiole attached to the center of the blade; umbels many-flowered, long-stalked. 1. *H. umbellata*
- a. Leaves cordate, the petiole attached at a notch in the blade; umbels sessile, 1-5 flowered, in the leaf axils. 2. *H. americana*

### 1. *H. umbellata* L.

Very rare; known only from the wet sandy and gravelly margin of St. John (Wilson's) Lake, Yarmouth Co. "Very rare and local and appearing like a waif washed down from some as yet undiscovered station farther up the valley of the Tusket" (Fernald, 1922).

Fla. and Tex. north to Mass. and N.S.; B.C. southward.



2. *H. americana* L. Fig. 106,g. Map 401. WATER-PENNYWORT

Common throughout except in the northern tip of C.B.; moist half-shaded places, bottom of depressions, bordering brooks, ditches, etc. July-Aug.

N.S. to Minn. south to Me., N.C. and Tenn.

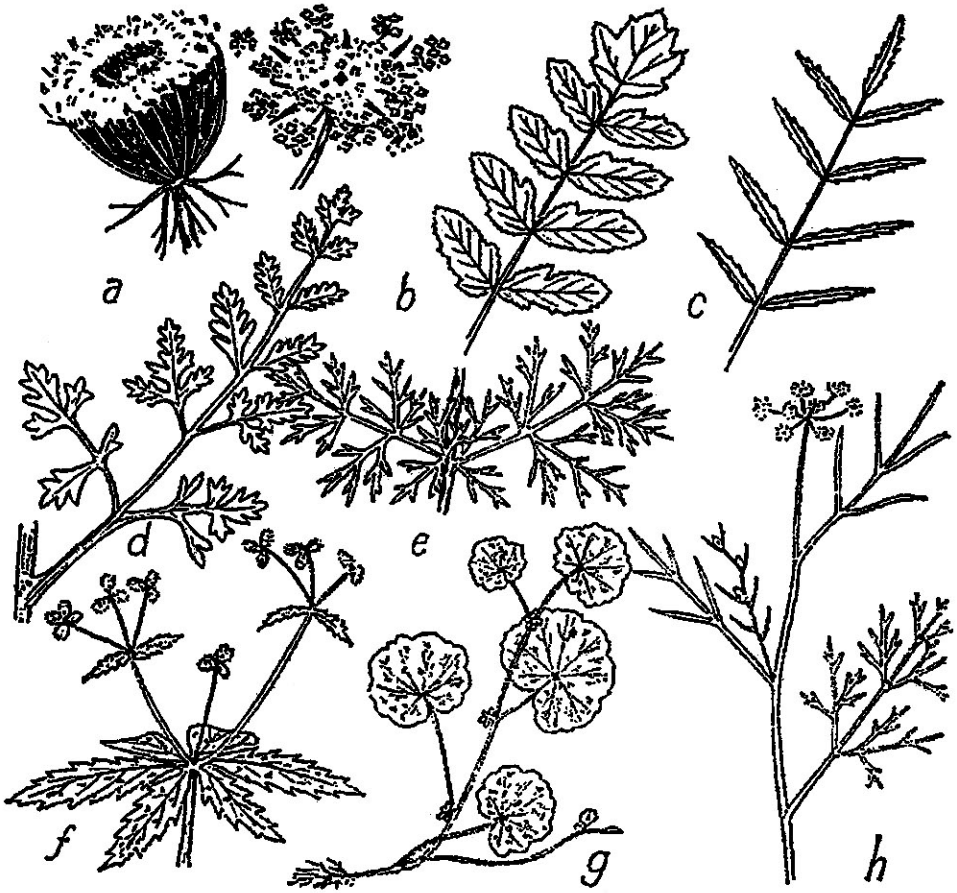


Fig. 106.—*Daucus*: (a) *D. Carota*, fruiting inflorescence and flowering umbel  $\times \frac{1}{2}$ , (d) leaf  $\times \frac{1}{2}$ . — *Pastinaca*: (b) *P. sativa*, leaf  $\times \frac{1}{2}$ . — *Sium*: (e) *S. suave*, leaf  $\times \frac{1}{2}$ . — *Carum*: (c) *C. Carvi*, leaf division  $\times \frac{1}{2}$ . — *Sanicula*: (f) *S. marilandica*, inflorescence  $\times \frac{1}{2}$ . — *Hydrocotyle*: (g) *H. americana*  $\times \frac{1}{2}$ . — *Cicuta*: (h) *C. bulbifera*, tip of plant  $\times \frac{1}{2}$ .

2. *SANICULA* L.

Our two species of rich woodland habitats are quite different from other members of the family. The leaves are palmately divided and glossy; and the ovoid bristly fruits are distinctive although the umbel-arrangement of the flowers is not so marked as in other genera.

- a. Flowers greenish-white; sepals lanceolate, 1-1.5 mm long; fruit 6-7 mm long.  
1. *S. marilandica*
- a. Flowers yellowish-green; sepals obtuse and ovate, about 0.5 mm long; fruit 3-4 mm long.  
2. *S. gregaria*

1. *S. marilandica* L. Fig. 106,f. Map 402. BLACK SNAKEROOT

Scattered to common in rich woods and intervale soils from Annapolis and Cumberland Co. to northern C.B.; rarer on the Atlantic side of the Province in Queens Co. and central Halifax Co.; rich woods, borders of intervale thickets, usually growing where the soil is rather damp and the humus content good. June-Aug.

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

2. *S. gregaria* Bickn. SANICLE

Rarer than the preceding, growing only in rich alluvial woods and along intervalles: Five-Mile R., Hants Co.; Kings Co.: abundant in thickets bordering meadows by the Cornwallis R., Cambridge (Schofield, 1949); West R. in Pictou Co., and S.W. Margaree in Inverness Co. July-Aug.

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

3. OSMORHIZA Raf. SWEET CICELY

Loose woodland plants with divided, soft thin leaves, about 5-10 dm high; the distinctive fruits are few in each umbel and are club-shaped with stiff, appressed hairs. The crushed plants have a distinctive sweetish odor. The garden sweet cicely is *Myrrhis odoratus* Scop. and this tends to escape: Wolfville, Halifax and Dartmouth.

- a. Each small umbel subtended by several, small persistent leafy bracts; styles nearly straight and parallel; fruiting pedicels spreading.
- b. Styles, together with their bases, 0.5-1 mm long. 1. *O. Claytoni*
- b. Styles, together with their bases, at least 2 mm long in flower to 4 mm in fruit.
- c. Stems glabrous or essentially so. 2. *O. longistylis*
- c. Stems puberulent with short spreading hairs. var. *brachycoma*
- a. Each small umbel without leafy bracts at the base; styles at maturity outwardly curved; fruiting pedicels strongly ascending.
- d. Stylopodium (base of the style) usually thicker than long; fruit convexly narrowed to the summit so that the fruit is blunt and rounded on the end. 3. *O. obtusa*
- d. Stylopodium usually longer than thick; fruit concavely narrowed to the summit so that the end is more tapering. 4. *O. chilensis*

1. *O. Claytoni* (Michx.) Clarke. Fig. 107,a. Map 403. HAIRY SWEET CICELY

Rich woods, shaded alluvial soils, and also in upland hardwoods and the most common species: Annapolis Co. to northern C.B. and along

the Cobequids to Cumberland Co. and northward; rare and scattered along the Atlantic half of the Province from Yarmouth to Sydney.

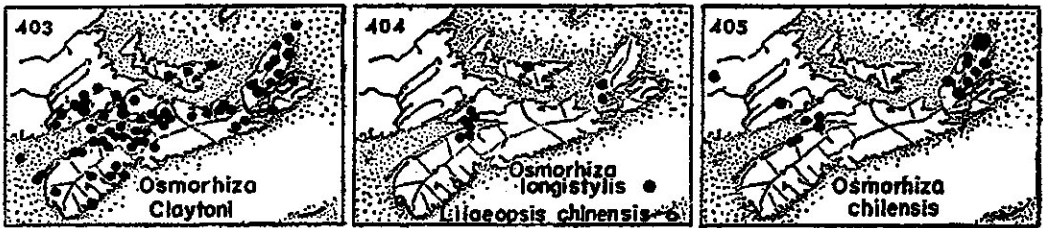
N.S. and Nfld. west to western Ont. south to N.C., Ala. and Kans.

2. *O. longistylis* (Torr.) DC. Map 404.

Scattered in rich hardwoods or along intervalles; along the North Mt. and on Cape Blomidon in Kings Co. and directly north in Cumberland Co.; rarer in C.B. where it has been collected south of Whycocomagh and east Lake Ainslie. This plant has not recently been collected between these two small areas, although Robinson (1907) states that it is a much more common intervalle plant in eastern N.S. than is usually supposed. Late June-July.

Var. *brachycoma* Blake has been collected along the edge of the intervalle at Southampton in Cumberland Co. The stems of this species vary in their pubescence and this variety tends towards the more southern form where the stems in general are more hairy or pubescent, while our northern plants tend to have them almost glabrous.

N.S. to Alta. south to Va., Ky. and Okla.



3. *O. obtusa* (C. & R.) Fern.

Rare near the northern tip of Cape Breton; talus slope at Lockhart Brook and in a woodland at Cape St. Lawrence. This plant closely resembles the next species but the fruits are noticeably shorter and thicker; our plants have mostly 4 rays to the umbel. (*O. chilensis* H & A., var. *cupressimontana* Boivin).

Nfld. and Lab. to Alaska south to N.S. and northern N.B., northern Mich. and to Calif.

4. *O. chilensis* H. & A. Map 405.

Local and restricted to rich hardwoods or their neighborhood; along the North Mt. from Annapolis Co. to Cape Blomidon, and directly north scattered in rich hardwoods in Cumberland Co.; characteristic of climax hardwoods and intervalles in northern C.B. This is our largest and most robust species, often growing to 1 m high. (*O. divaricata*). June-July.

Nfld. south to N.S., northern N.B., Me. and N.H.; northern Mich. and Ont.; Alaska to Sask. and Calif.; S.Amer.

## 4. CORIANDRUM L.

1. *C. sativum* L. CORIANDER

Waste places, rarely introduced and not persisting. Several of the members of this family are grown as herbs or medicinal plants and may be found occasionally as casual escapes.

N.S. south and west; adventive from Eu.

## 5. CONIUM L.

1. *C. maculatum* L. POISON HEMLOCK

Introduced and rare; found in waste places and on dumps, occasionally in a garden where the seed has been introduced; Weymouth, Digby, Truro, etc. This tall plant has the lower part of the stem with short stripes or blotches of red; deadly poisonous, especially the seeds. July-Aug.

Eu.; widely introduced.

## 6. ZIZIA W. D. J. Koch

1. *Z. aurea* (L.) Koch. GOLDEN ALEXANDERS

Occasional: Antigonish Co., roadside along Pomquet R. and in meadow above St. Andrews along South R.; Halifax Co.; bank of stream, Upper Musquodoboit (Erskine, D. S., 1951).

N.S. to Man. south to Ga., Tenn. and Texas.

## 7. CICUTA L. WATER-HEMLOCK

Tall perennial herbs of wet or marshy areas, with conspicuous umbels of flowers in mid-summer. All parts of the plants are poisonous.

a. Leaves with divisions linear, mostly less than 2 mm wide; fruit 1.5-2 mm long; upper leaf-axils with bulblets in autumn. 1. *C. bulbifera*

a. Leaves with divisions lanceolate, 5-10 mm wide; fruit 3-3.5 mm long; axils without bulblets. 2. *C. maculata*

1. *C. bulbifera* L. Fig. 106,h. Map 406. BULBOUS WATER-HEMLOCK

Scattered from Annapolis and Queens Co. to northern C.B.; absent in southwestern N.S. This plant is usually found growing with other marsh plants in shallow water, at the edges of ponds or in wet cat-tail marshes; rather common in north-central N.S. and typical of these habitats. Aug.

Nfld. to B.C. south to Va. and Oreg.

2. *C. maculata* L. Fig. 107,c. WATER-HEMLOCK

Marshes, swamps, ditches and wet pastures and meadows, in mucky or alluvial soils; general from Yarmouth to C.B., becoming more abundant northwards and eastwards; common on the marshes about the head of the Bay of Fundy. July.

N.S. to Man. south to N.C. and Tex.

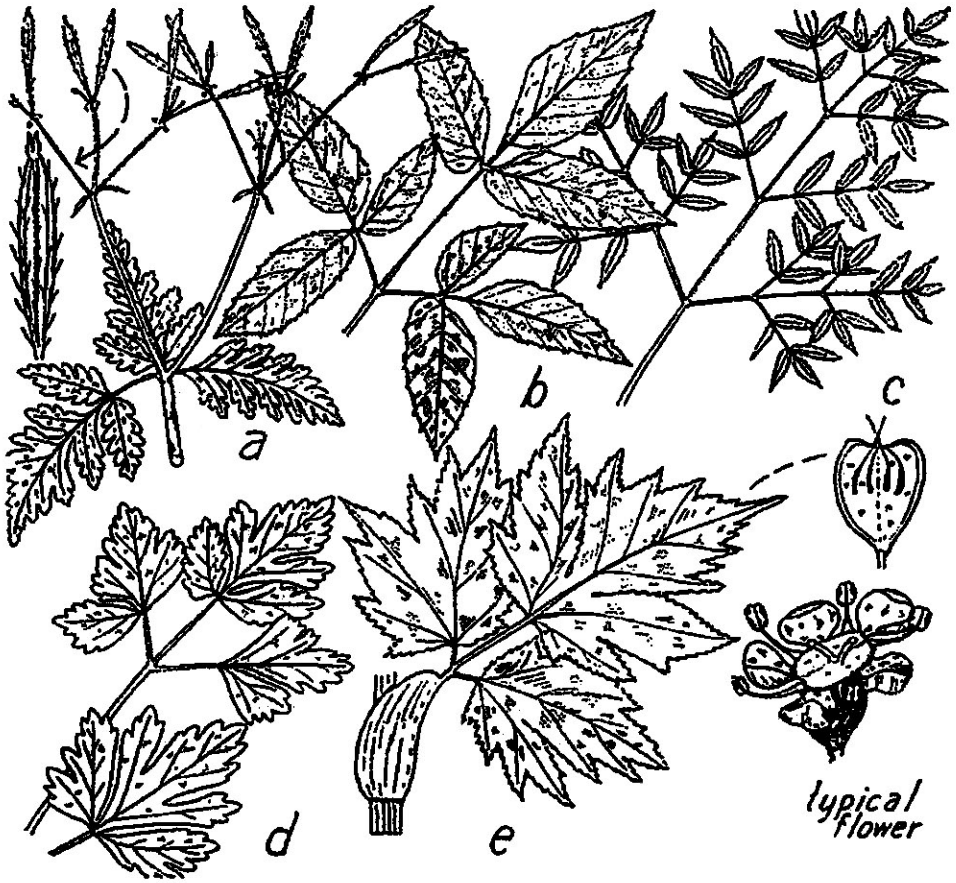


Fig. 107.—*Osmorhiza*: (a) *O. Claytoni*, inflorescence  $\times 1$ , ripe fruit  $\times 2$ . — *Aegopodium*: (b) *A. Podagraria*, typical leaf  $\times \frac{1}{2}$ . — *Cicuta*: (c) *C. maculata*, leaf  $\times 1/10$ . — *Ligusticum*: (d) *L. scothicum*, leaves  $\times \frac{1}{2}$ . — *Heracleum*: (e) *H. lanatum*, leaf with large sheaf  $\times \frac{1}{2}$ .

## 8. CARUM L. CARAWAY

1. *C. Carvi* L. Fig. 106,c. CARAWAY

Common throughout; damp fields and rich soil, around houses, in meadows and along roadsides. June. The fruits are often used as a seasoning but the plants should not be confused with the poisonous species. *Forma rhodochranthum* A.H.Moore has delicate pinkish

flowers. This was found scattered among the typical whitish flowered plants at Advocate, Cumberland Co.; it is found along the roadside near Havre Boucher east of Antigonish.

Introduced from Eu. and widespread.

## 9. PIMPINELLA L.

### 1. *P. Saxifraga* L. BURNET-SAXIFRAGE

A weed, locally abundant on lawns and along roadsides at Upper Pubnico in Yarmouth Co., growing in about the habitat and with much the same appearance as Wild Carrot. July-Aug.

Introduced from Eu.; Nfld. to Ont. south to Del., Penn. and Ind.

## 10. AEGOPODIUM L.

### 1. *A. Podagraria* L. Fig. 107,b. GOUTWEED

Common and a very bad weed at Boylston and Guysborough and frequent around Halifax; occasionally elsewhere and sometimes propagated and spread with garden plants; usually growing near buildings or along roadsides in large patches. A smaller type with variegated leaves is less persistent and rarely fruits; this is often grown as an ornamental. June-July.

Introduced from Eu.; becoming common in northeast N. Amer.

## 11. SIUM L. WATER-PARSNIP

### 1. *S. suave* Walt. Fig. 106,c. Map 407. WATER-PARSNIP

Common throughout; muddy shores of rivers and lakes, ditches and marshes. Submersed leaves are often finely dissected. July 15-Aug. (*S. circutaefolium* Schrank).

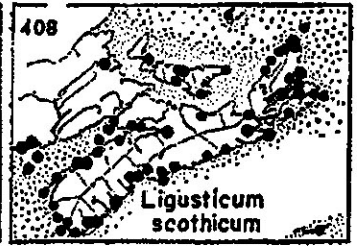
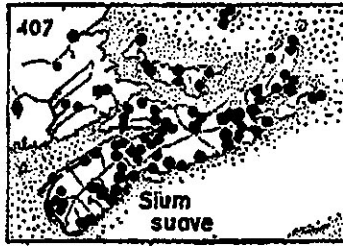
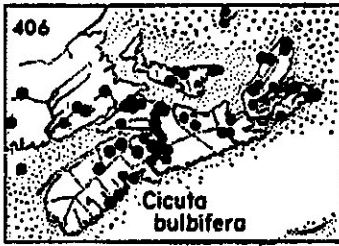
Nfld. to B.C. south to Fla. and Calif.

## 12. LILAEOPSIS Greene

### 1. *L. chinensis* (L.) Ktze. Map 404.

Known in Canada only from the muddy and rocky tidal banks of the Tusket R., at Tusket, Yarmouth Co. and about the estuary of the Medway R. in Queen's Co. where it was discovered by J. F. Donly. July-Aug.

N.S. to Fla. and west to Miss. along the coast.



### 13. AETHUSA L.

#### 1. *A. Cynapium* L. FOOL'S-PARSLEY

Rare but occasionally introduced around yards, in waste places or in towns; barnyard, Shelburne, and in Halifax.

Introduced from Eu.; N.S. to Minn. south to Penn.

### 14. LIGUSTICUM L. LOVAGE

#### 1. *L. scoticum* L. Fig. 107,d. Map 408. SCOTCH LOVAGE

Scattered near the coast and one of the typical plants of this habitat: rocky cliffs, sea-shores and headlands. July-Aug.

Along the coast from Greenland to N.Y.; Eu.

### 15. COELOPLEURUM Ledeb.

#### 1. *C. lucidum* (L.) Fern. Map 409.

Scattered on gravelly sea-shores and headlands around the coast, except for the sandy shores of Northumberland Strait. It has never been collected between Hubbards and Guysborough but there is no reason why it should not occur along this shore-line. Infrequent on the slopes of the turf-covered dunes on Sable I. July-Aug.

(*Angelica lucida* L.)

Along the coast from Greenland and Lab. to N.Y. and Ont.; B.C.

### 16. CONIOSELINUM Hoffm.

#### 1. *C. chinense* (L.) BSP. HEMLOCK-PARSLEY

Scattered in swamps, mossy coniferous woods or swales and seepy slopes near the coast; common on St. Paul I., rare on the mainland and in C.B. Aug.-Oct.

Lab. and Nfld. to w. Ont. south to N.Y., N.C. and Ind.



## 17. ANGELICA L. ANGELICA

About 50 species of tall coarse perennials with long-petioled decom-  
pound leaves, the upper of which are often bladeless. The flowers  
are greenish-white in compound umbels with few or no bracts.

- a. Plant puberulent or minutely pubescent to pilose above and densely so on the  
rays of the umbels; uppermost leaves reduced mostly to inflated petioles; fruits  
5-6 mm long. 1. *A. sylvestris*
- a. Plant essentially glabrous or only minutely pubescent above; upper leaves not so  
prominently reduced; fruits 5.5-7.5 mm long. 2. *A. atropurpurea*

1. *A. sylvestris* L. ANGELICA

Scattered around Sydney; introduced at Louisburg and now very  
common in that area and spreading out along the roadsides and in fields,  
an aggressive weed that grows in all the open areas around the town.  
July-Sept.

Introduced from Eu.; eastern N.S. only.

2.. *A. atropurpurea* L. Map 409. PURPLE ANGELICA

Formerly thought to be rare and restricted to coastal areas, this  
species has been found to be abundant along the upper reaches of the  
brooks of northern C.B. Inverness Co.: bog-meadow, headwaters of the  
South Blair R.; gravel beach, mouth of Red R.; headwaters of Mac-  
Kenzie and Red R., very abundant; Victoria Co.: brookside at head-  
waters of Gray Glen Brook (Smith and Schofield, 1952); formerly found  
at other places near the coast in C.B., as at Mabou, Louisburg, Pleasant  
Bay and Bay St. Lawrence, in swamps, low ground and along streams.

Nfld. to Ont. and Minn. south to W.Va. and Ind.

## 18. LEVISTICUM Hill LOVAGE

1. *L. officinale* Koch

Rare; railway bank, Lake Annis, Yarmouth Co. (Fernald, 1921).  
Cultivated as an herb; occasionally found as an escape.

## 19. PASTINACA L. PARSNIP

1. *P. sativa* L. Fig. 106, b. WILD PARSNIP

Escaped from cultivation and a common weed in parts of the Prov-  
ince; most often seen in the Annapolis Valley, scattered elsewhere; road-  
sides, old fields, waste places and orchards. July.

Naturalized from Eu. and widely distributed.

## 20. HERACLEUM L.

Very coarse plants with large, decompose leaves and large umbels; leaves irregularly cut and finely toothed.

- a. Leaves woolly beneath, large, divided into three main divisions which are irregularly and sharply cut. 1. *H. lanatum*  
 a. Leaves pubescent beneath only, pinnately divided, the divisions rather bluntly lobed and toothed. 2. *H. Spondylium*

1. *H. lanatum* Michx. Fig. 107,e. Map 410. COW-PARSNIP

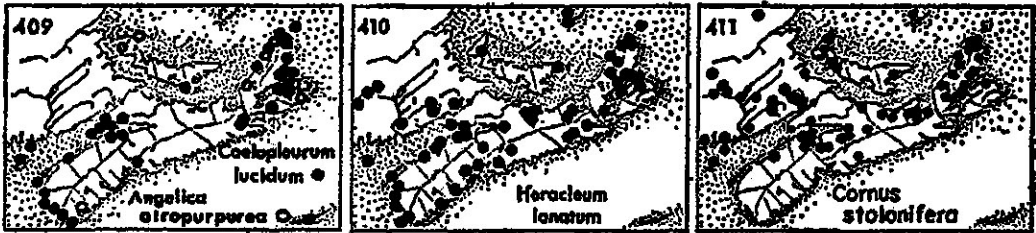
Wet meadows and brooksides in alluvial soil; scattered throughout; a common intervale plant in eastern N.S.; common on sea-bluffs in northern C.B., often growing in large clumps and conspicuous because of its size. (*H. maximum* Bartr.). Early July.

Lab. to Alaska south to New Eng., mts. of Ga. and Ohio.

2. *H. Spondylium* L.

Common along roadsides and vacant lots near Willow St. in Truro; persistent but it does not appear to be rapidly spreading. Late July-Aug.

Introduced from Eu.; se. Nfld.; N.S. to Ont. and N.Y.



## 21. DAUCUS L. CARROT

1. *D. Carota* L. Fig. 106, a, d. WILD CARROT

A too-common weed in hay-fields and along roadsides from Yarmouth to central Hants Co.; spreading rapidly in Pictou Co., in areas next to Northumberland Strait, and occasionally in C.B., as along roadsides and fields at Judique and north of Inverness. This weed seems to spread rapidly along road-shoulders and in open fields. It is distinguished from caraway by the hairy leaves and stem; the leaflets are also less crowded on the leaf-rhachis. Flowers of plants near Brooklyn, Hants Co., show a reddish tinge throughout. July-Sept.

Introduced from Eu., throughout N.Amer.

## 88. CORNACEAE DOGWOOD FAMILY

Shrubs and herbaceous plants with entire leaves that have only a few main veins curving inward toward the tip of the leaf; flowers small and very numerous in rather flat-topped inflorescences; petals 4, stamens 4, and ovary inferior forming a berry-like fruit. Various species are often grown as ornamental shrubs because of their bright red or yellow stems. Fig. 108.

## I. CORNUS L. DOGWOOD

- a. Low herbs, the flowers in a head surrounded by a 4-leaved white petaloid involucre.
  - b. Leaves more or less whorled near the top of the stem; flowers (not the involucral bracts) greenish-white; lateral veins arising from the midrib of the leaf.
    - 1. *C. canadensis*
  - b. Leaves all opposite; flowers deep violet; lateral veins arising at the base of the leaf.
    - 2. *C. suecica*
- a. Shrubs.
  - c. Leaves opposite.
    - d. Leaves ovate to lanceolate with appressed hairs beneath, or smooth; branches not normally speckled, bright red the first year; berries white.
      - 3. *C. stolonifera*
    - d. Leaves oval, thinly woolly beneath, with 7-9 pairs of veins; branches rather pale, speckled or streaked with purple; berries light blue or almost white.
      - 4. *C. rugosa*
  - c. Leaves alternate, clustered toward the ends of the twigs; berries deep blue; stems yellow.
    - 5. *C. alternifolia*

1. *C. canadensis* L. Fig. 108. BUNCHBERRY

Common throughout; heaths, barrens, woodland pioneer, edges of thickets, mature bogs, sometimes a weed. June. The number of leaves and their placement vary but this does not seem to have much significance. Lepage (1946) has described a number of forms, some found in N. S. Forma *ramosa* Lepage, the plant branched and with each branch bearing one whorl of leaves; Arichat, Richmond Co. Forma *intraverticillata* Lepage carries a second whorl of 4-6 leaves lower on the stem under the normal whorl: Bridgewater. Forma *medioloides* Lepage has a second whorl of 3-6 leaves on a prolongation of the stem: Arichat, Isle Madame. Forma *elongata* Peck carries several pairs of opposite leaves on a prolongation of the stem above the normal whorl: Lily L., Sandy Cove, Digby Co. Forma *purpurascens* (M. & T.) Hara has the broad, usually white, bracts roseate throughout; found by J. S. Erskine at Pembroke L., Inverness Co., in 1967.

Lab. to Alaska south to N.C., W.Va. and Calif.

2. *C. suecica* L.

Sphagnous depressions in barrens, St. Paul I.; gravelly shore at Canso, growing with *Empetrum nigrum* (Rousseau, 1938-a). This plant

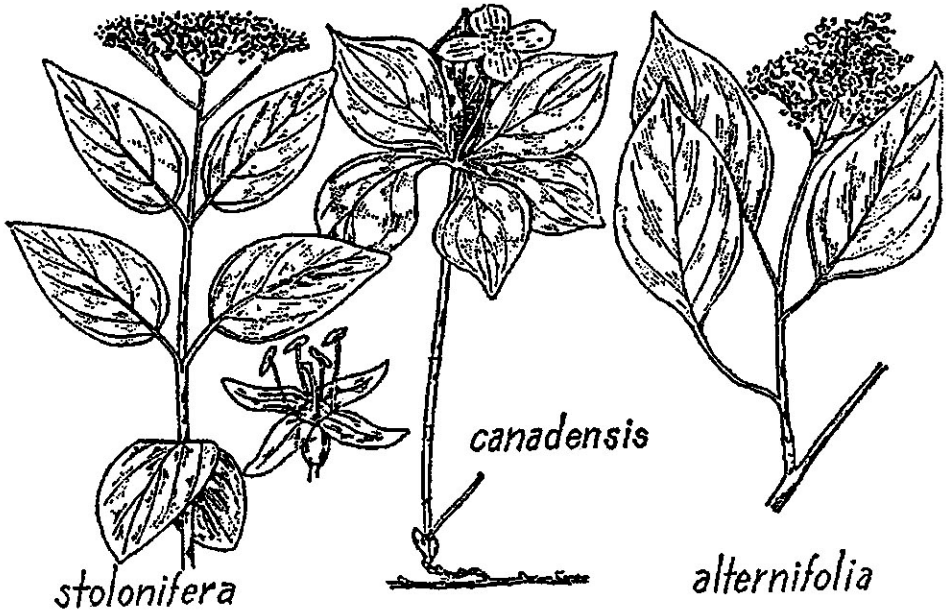


Fig. 108.—*Cornus* spp.  $\times \frac{3}{8}$ .

was also discovered in C.B. Co.: abundant colonies on dry exposed headland, south-east of N.W. Cove, Scatari I.; very abundant on dry exposed sea-cliff, two miles north of N.W. Cove, Scatari. Although growing in abundance and in association with *C. canadensis* L., the hybrid *X. C. unalaschkensis* Ledeb. was not found (Smith and Schofield, 1952).

Greenland and Nfld. south around the Gulf St. Lawrence; Eurasia.

3. *C. stolonifera* Michx. Fig. 108. Map 411. RED OSIER DOGWOOD

Annapolis Co. and common from Kings Co. to C.B.; edges of intervals, brook-sides and wet meadows, June. The bright-red stems are very conspicuous in early spring and may be seen in the ditches along roadsides near Windsor and Truro. It is most common in rich and alkaline soils. It is absent from the southwestern and Atlantic areas of the Province.

Lab. to Yukon south to Va. and Calif.

4. *C. rugosa* Lam. Map 412. ROUND-LEAVED DOGWOOD

Open woods, ravines and talus of cliffs; in nearly neutral or alkaline areas. It is always found near the gypsum areas; common on the slope of Cape Blomidon on the basic trap rock; scattered elsewhere in the northern area from Annapolis Co. to northern C.B., preferring rocky locations. Early July. The range of this species is even more restricted than is the last; it is absent from southwestern N.S. and all along the Atlantic side.

N.S. to Man. south to Va., Ill. and Iowa.

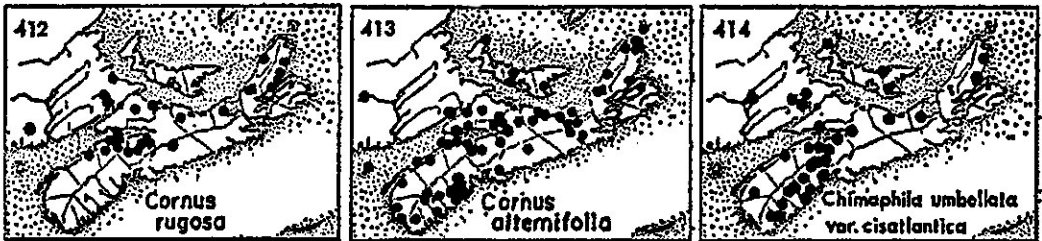
5. *C. alternifolia* L.f. Fig. 108. Map 413. ALTERNATE-LEAVED DOGWOOD

Common from northern Digby Co. to northern C.B., where Nichols reports it as scattered in the climax forest; rare to scattered elsewhere throughout. This species is more of a woodland plant and it is found in rich woods, on ravine slopes and edges of intervalles. June 15-July 15.

Nfld. to Man. south to Fla. and Ark.

X *C. acadensis* Fern. (Fernald, 1941).

This hybrid is intermediate between *C. alternifolia* and *C. stolonifera*, has the leaves crowded near the tips of the branches as in *C. alternifolia*, but opposite and more like the outline of those of *C. stolonifera*; with small cymes and fleshy blue berries. This is known only from C.B. and was first reported as *C. amomum* from a cold brook at the head of Baddeck Bay (Fernald, 1921).



## 89. PYROLACEAE WINTERGREEN FAMILY

This small family of the northern hemisphere, consisting of about 8 genera and 35 species, is often included as a subfamily of the *Ericaceae*. The flower-parts are in 5's with the petals separate or barely united; stamens 1-10; and the ovary superior. Herbaceous plants with thick, evergreen leaves; or else non-green saprophytes.

- a. Plants with green leaves which are, or tend to be, in a basal rosette; pollen-grains in 4's.
  - b. Leaves scattered on the stem, lanceolate; flowers in a terminal short inflorescence; styles very short (Fig. 109,c).
    1. *Chimaphila*
  - b. Leaves mostly basal, almost round; flowers solitary, or in an erect narrow raceme; style elongate and conspicuous.
    - c. Flowers solitary (Fig. 109,d).
      2. *Moneses*
    - c. Flowers numerous in a raceme (Fig. 109,f-k).
      3. *Pyrola*
- a. Plants saprophytic, without green color; pollen-grains separate; anthers opening by slits instead of pores.
  4. *Monotropa*

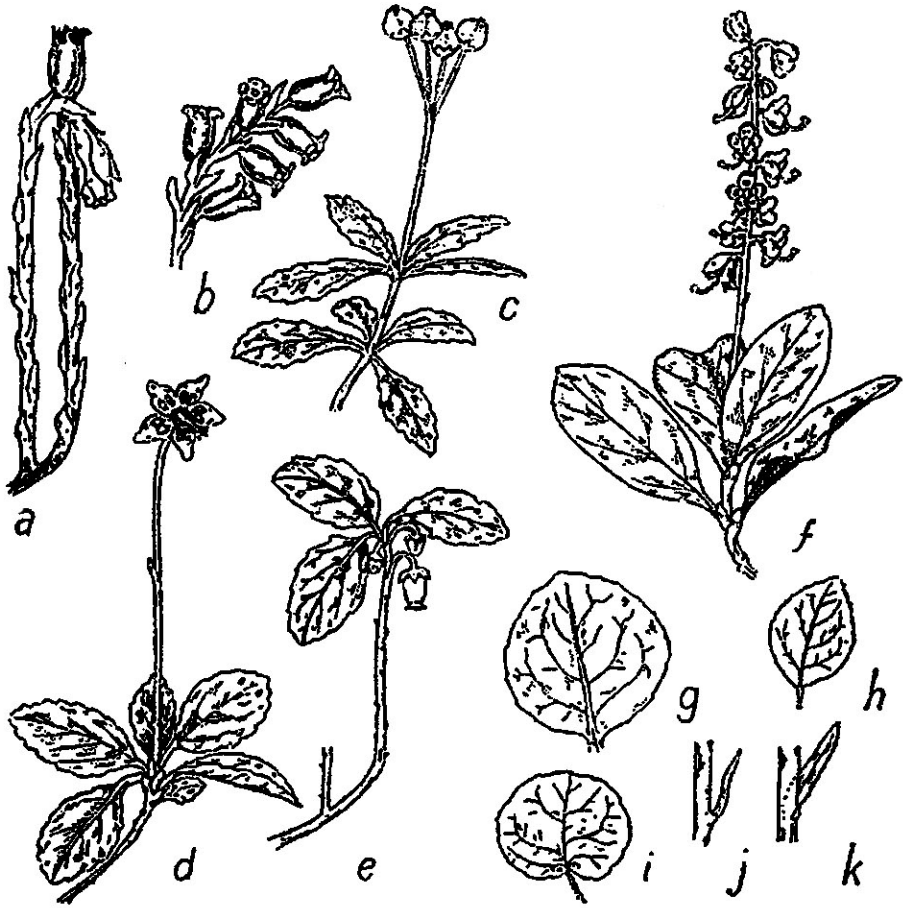


Fig. 109.—*Monotropa*: (a) *M. uniflora*  $\times \frac{1}{2}$ , (b) *M. Hypopitys*, inflorescence  $\times \frac{1}{2}$ . — *Chimaphila*: (c) *C. umbellata*  $\times \frac{1}{2}$ . — *Moneeses*: (d) *M. uniflora*  $\times \frac{1}{2}$ . — *Gaultheria*: (e) *G. procumbens*  $\times \frac{1}{2}$ . — *Pyrola*: (f) *P. elliptica*  $\times \frac{1}{2}$ , (j) bract on stem  $\times 3$ , (g) *P. rotundifolia* var. *americana*, leaf  $\times \frac{1}{2}$ , (k) bract on stem  $\times 3$ , (h) *P. secunda*, leaf  $\times \frac{1}{2}$ , (i) *P. asarifolia*, leaf  $\times \frac{1}{2}$ .

## 1. CHIMAPHILA Pursh

1. *C. umbellata* (L.) Bart., var. *cisatlantica* Blake. Fig. 109,c. Map 414. PRINCE'S-PINE

Scattered to rather rare in the western part; very rare in Antigonish and northern Victoria Co.; in dryish soil or sometimes in spruce or fir woods. The flowers are flesh-colored with violet anthers; but the plants are often found non-flowering. Typically Eurasian; the variety occurs on this side of the Atlantic. Mid-July.

Nfld. and N.S. to B.C. south to Ga.

2. **MONESSES** Salisb.1. **M. uniflora** (L.) Gray. Fig. 109,d. Map 415. **ONE-FLOWERED SHINLEAF**

Found throughout, often rather rare; deciduous or more often in mixed and sometimes in coniferous woods; characteristic of both hardwoods and coniferous forests in northern C.B. The flowers are a waxy-white, with the 10 stamens lying against the petals. Var. *reticulata* (Nutt.) Blake is a western form which has been reported once in eastern America: St. Paul I., northern C.B. This form has the leaves more ovate, usually acute, coarsely dentate and strongly veined (See Porsild, 1939). This record is of doubtful value. June 20-July 20.

Lab. to Alaska south to Penn. and Minn.: Eurasia.

3. **PYROLA** L. **WINTERGREEN, SHINLEAF**

These are typical plants of barrens, bush and open woods, often on acid soils. They are rarely abundant but one or more species usually occur in most dryish habitats.

- a. Styles and stamens straight, extending outward; the stamens surrounding the style; petals touching each other, forming a tube.
- b. Style longer than the petals; flowers forming a one-sided raceme; bracts at base of the stem 2-4 mm long, often absent, distinct from the leaves.
- c. Flowers 7-15, in a long raceme; leaves narrowed to a pointed tip, 1.5-6 cm long; stem leafy, elongated and trailing. 1. *P. secunda*
- c. Flowers 3-8, clustered; leaves rounded at the tip, 0.8-3 cm long; stem short with few leaves. *P. secunda* var. *obtusata*
- b. Style shorter than the petals; flowers placed all around the axis of the raceme; the bracts intermingled with the leaves at the base, crowded, usually 1 cm long or longer, often grading into the leaves. 2. *P. minor*
- a. Styles and stamens bent downward with the tips upwardly curved; stamens not surrounding the style; petals wide and spreading so that the flower is saucer-shaped.
- d. Bracts on the stem none or 1-3, narrowly lanceolate and long-tipped, not sheathing at their base; sepals little or not at all longer than broad (Fig. 109,j).
- e. Blades of the leaves almost round, 1-3 cm long, shorter than the petioles; anthers with a neck or point; basal bracts 2-4 mm long, distinct from the leaves, acute to acuminate.
- f. Leaves rounded at the base and apex, 1.5-3.4 cm wide, 4-11 in a rosette. 3. *P. virens*
- f. Leaves wedge-shaped at the base and squarish at the apex, 0.7-2.5 cm wide, 0-7 in a rosette. *P. virens* forma *paucifolia*
- c. Blades of the leaves oval, 3-8 cm long, longer than the petioles; anthers blunt; bracts mixed with the leaves at the base, numerous, usually 1 cm long, often grading into the leaves, obtuse to truncate. 4. *P. elliptica*
- d. Bracts on the stem 1-5, ovate-lanceolate, their bases somewhat sheathing the stem (Fig. 109,k); sepals at least a half longer than wide.
- g. Sepals oblong, blunt or sharp, very variable, twice as long as wide, not overlapping at the base; flowers white, leaves not cordate.
- h. Petals 5-7 mm long; leaf-blades 1.8-5 cm long; raceme 3-12 flowered, 2-9 cm long at flowering time. 5. *P. rotundifolia*



h. Petals 6.5-10.5 mm long; plant larger; leaf-blades 2.5-8 cm long; raceme 5-20-flowered, 2.5-20 cm long at flowering time.

*P. rotundifolia* var. *americana*

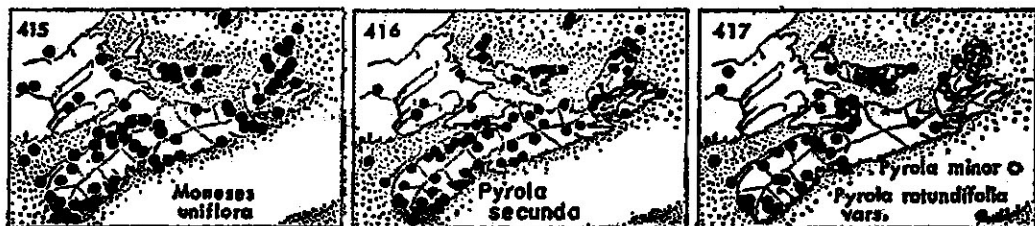
g. Sepals triangular, sharp-pointed, about 1.5 times as long as wide, often slightly overlapping at the base; petals crimson to pale pink, about 5 mm long.

i. Leaves usually as broad or broader than long, cordate to rounded at the base, glossy above.

6. *P. asarifolia*

i. Leaves usually slightly longer than wide, rounded to slightly wedge-shaped at the base, dull above.

*P. asarifolia* var. *purpurea*



1. *P. secunda* L. Map 416. Fig. 109,h. ONE-SIDED WINTERGREEN

Scattered to common throughout; coniferous or mixed woods and in recently cleared areas. July. Because of its technical characters this species is sometimes placed in a separate genus as *Orthilia secunda* (L.) House. Nfld. to Alaska south to New Eng., Va. and Iowa.

Var. *obtusata* Turcz. is rarer than the species. It was reported by Fernald (1921) from a sphagnous spruce swamp at Hectanooga, Yarmouth Co. and specimens are at Truro from a cool damp wood, Nuttby, Colchester Co. Gleason (1952) considers that this variety is merely a small form growing in dense shade. With much the range of the species.

2. *P. minor* L. Map 417. SMALL WINTERGREEN

Rare in cold woods; characteristic of maturer coniferous woods in northern C.B. (Nichols); scattered west at least to Colchester Co. July-Aug.

Greenland to Alaska south to N.S., New Eng. and Mich.

3. *P. virens* Schweigger. Map 418. GREEN-FLOWERED WINTERGREEN

Dry or sandy woods, generally under conifers but also in mixed or deciduous woods; not found in the extreme southwestern area, scattered from Digby to Hants Co. and common eastward to northern C.B. Forma *paucifolia* Fern. seems to be in the more southern part of the range of the species. Practically all the N.S. collections show rosettes with few, blunt-pointed leaves. July-Aug. (*P. chlorantha* Sw.).

Lab. to Alaska south to Mass., Wisc. and Oreg.

4. *P. elliptica* Nutt. Fig. 109,f. Map 419. SHINLEAF

Common throughout; open woods, roadsides, open pastures and hillsides on light soil. This is probably the most frequently observed species and is easily identified. July-Aug. 10.

Nfld. to B.C. south to Penn., Iowa and N. Mex.

5. *P. rotundifolia* L. Fig. 109,g,k. Map 417. ROUND-LEAVED PYROLA

Dry areas, open pastures, sandy plains and barrens from Yarmouth Co. east at least to Colchester Co. and in southern Antigonish and Guysborough Co. This is the smaller European form that is found in America from Greenland and Nfld. south to e. Que. and N.S. (Var. *arenaria* Mert. & Koch).

Var. *americana* (Sweet) Fern. is scattered on the peninsula; open or rich woods and on hillsides, more common in the central part of the Province. July.

N.S. to Minn. south to N.C., Ky. and Ind.

6. *P. asarifolia* Michx. Fig. 109,i. Map 420.

The differences between the typical and the following variety are slight. Erskine reports typical *P. asarifolia* from rich thickets on the western end of P.E.I. The N.S. plants seem more representative of the variety, with the leaves not cordate at the base. The general ranges of the two varieties are much the same.

Var. *purpurea* (Bunge) Fern. is rare; found in rich hardwoods and along intervalles from Bear R., Annapolis Co. to north-central N.S., and in northern C.B. (Var. *incarnata* (Fisch.) Fern.).

Nfld. to Alaska south to New Eng., N.Y., Ind. and Colo.



## 4. MONOTROPA L.

These unbranched, low herbs are parasitic on roots or saprophytic on decaying organic matter and have lost all green color. The Indian-pipe, with its single recurved flower and pure white plant, is strange in appearance. The Pine-sap is yellowish and darker and thus not so conspicuous. One other related non-green plant has been reported from P.E.I. and may now be extinct there. This is *Pterospora andromedea*

Nutt., a much taller plant with small flowers in an open raceme 1-3 dm long.

- a. Flower solitary, white, turning blackish.  
 a. Flowers several, yellowish, usually pubescent.

1. *M. uniflora*  
 2. *M. Hypopithys*

1. *M. uniflora* L. Fig. 109, a. Map 421. INDIAN-PIPE

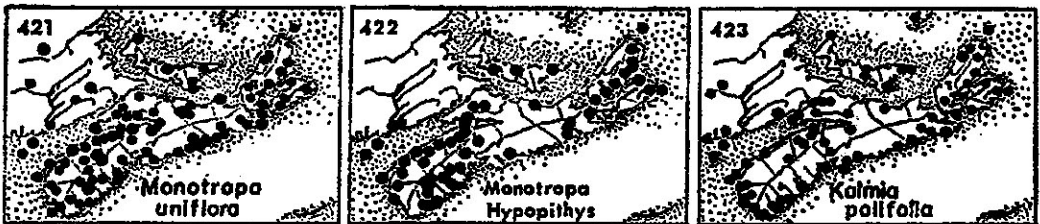
General throughout; thickets, climax or old coniferous forest, sometimes growing in dense shade; and also common in mixed or deciduous growth in leaf-mould. July-Aug.

Lab. to B.C. south to Fla. and Mex.; Asia.

2. *M. Hypopithys* L. Fig. 109, b. Map 422. PINE-SAP

Found throughout but not as abundant as the preceding species and usually in coniferous woods; scattered in pine woods in the Annapolis Valley; in fir and spruce woods eastward; occasionally in older mixed woods. July-Aug. The plants are quite variable and various varieties have been proposed which apparently cannot be maintained. The American plants are sometimes separated from the European ones as var. *americana* (DC) Farw.

Nfld. to Alaska south to Fla. and Mex.



## 90. ERICACEAE HEATH FAMILY

All the members of this family are low shrubby or woody trailing plants, many with leathery leaves that persist over winter. They are typically plants of acid soils, bogs and woodlands and are very common throughout the Atlantic Provinces. The blueberry and cranberry are common representatives. The flowers have 4-5 petals, usually partly united; with as many or twice as many stamens; pistil one, inferior or superior, forming a berry or capsule. There are about 75 genera and 2,000 species in the family.

- a. Leaves 5 mm long or longer, not scale-like.  
 b. Leaves densely rusty-woolly beneath, the edges strongly inrolled; flowers irregular, white, with petals separate (Fig. 110, b).  
 b. Leaves greenish or whitish beneath; petals more or less united.

1. *Ledum*

- c. Plants erect and shrubby, with wiry woody stems.
- d. Ovary superior; fruit a capsule.
- e. Leaves with the margins nearly or entirely without teeth; flowers pinkish or flesh-colored.
- f. Flowers before the leaves unfold, the corolla funnel-shaped, split irregularly to the base; fruit a capsule 3 times as long as thick; leaves with scattered brownish hairs beneath, glabrous and rugose above.
2. *Rhododendron*
- f. Flowers after the leaves appear, the corolla saucer-shaped or bell-shaped, the petals united; fruit almost round; leaves shiny above, whitish beneath or with very short hairs.
- g. Flowers saucer-shaped; leaves flat or with the margins very slightly in-rolled, white and powdery beneath, the tips blunt (Fig. 110,f).
4. *Kalmia*
- g. Flowers vase- or bell-shaped; leaves inrolled so they are nearly linear, finely pubescent beneath with a sharp prickle at the tip (Fig. 110,a).
6. *Andromeda*
- e. Leaves with the margins minutely toothed; flowers white, vase-shaped, in a slender arching terminal raceme; the whole plant with a rusty tinge (Fig. 110,d).
7. *Chamaedaphne*
- d. Ovary inferior, so that the sepals persist on the tip of the berry-like fruit; flowers vase-shaped; leaves thinner, deciduous in autumn.
- h. Berry 10-celled, 10-seeded; leaves resinous-dotted beneath (Fig. 110,e).
12. *Gaylussacia*
- h. Berry 5-celled, many seeded; leaves not resinous-dotted beneath; blueberries.
13. *Vaccinium*
- c. Plants low, prostrate and trailing, the horizontal branches woody, some genera with erect flowering branches that appear herbaceous.
- i. Leaves cordate at the base, 2-3 cm wide, the veins prominent; flowers in late April or early May, tubular, woolly in the throat; mayflower.
8. *Epigaea*
- i. Leaves not cordate but tapering to the base.
- j. Leaves oval to elliptical, widest at the middle, tapering at the base and with an acute tip; plants with a wintergreen flavor (Fig. 109,e).
9. *Gaultheria*
- j. Leaves linear to lanceolate, rarely elliptical, at least twice as long as wide, to 5 mm wide.
- k. Leaves opposite, strongly revolute, 3-5 mm long; stems growing in a tangled mat, smooth.
3. *Loiseleuria*
- k. Leaves alternate or crowded, flat or only slightly revolute.
- l. Young leaves, pedicels and calyces densely brownish-glandular; leaves crowded, linear; flowers purple, 1-several; capsules round, on erect peduncles 2-3 cm long from the top of a branch.
5. *Phyllodoce*
- l. Young leaves and pedicels not glandular; leaves not toothed; fruit a berry.
- m. Leaves small, 8-12 mm long, mostly rounded at the base, widest at or below the middle; flowers tubular or open at the throat, the parts in 4's.
13. *Vaccinium*
- m. Leaves coarse, oblanceolate, widest near the tip and long-tapering to the base, 2-3 cm long; flowers narrowed at the throat, the parts in 5's.
10. *Arctostaphylos*
- a. Leaves 1-2 mm long, scale-like, opposite; flowers in elongated racemes, 3-4 mm long, the parts in 4's.
11. *Calluna*



Fig. 110.—*Andromeda*: (a) *A. glaucophylla*  $\times \frac{1}{2}$ . — *Ledum*: (b) *L. groenlandicum*  $\times \frac{1}{2}$ . — *Rhododendron*: (c) *R. canadense*  $\times \frac{1}{2}$ . — *Chamaedaphne*: (d) *C. calyculata*  $\times \frac{1}{2}$ . — *Gaylussacia*: (e) *G. baccata*  $\times \frac{1}{2}$ . — *Kalmia*: (f) *K. angustifolia*  $\times \frac{1}{2}$ .

## 1. LEDUM L.

### 1. *L. groenlandicum* Oeder. Fig. 110, b. LABRADOR-TEA

Scattered throughout; bogs, wooded swamps, wet barrens and poorly-drained opens and pastures, not common but usually found as scattered clumps. June 10-30. (*L. palustre* L., var. *latifolium* (Jacq.) Michx.).

Arctic Amer. south to Penn., Minn., etc.

## 2. RHODODENDRON L.

Various species are grown as ornamental plants. The great laurel is of this type, but may possibly now be extinct. The rhodora is sometimes put in a genus of its own or it may be included with *Azalea*.

- a. Shrub 2-5 m high; leaves thick and smooth, 8-20 cm long; corolla bell-shaped, 3.5-5 cm wide. 1. *R. maximum*  
 a. Shrub to 1 m high; leaves thin, deciduous, dull and rugose; corolla 2-lipped, less than 2 cm wide, rose-purple. 2. *R. canadense*

### 1. *R. maximum* L. GREAT LAUREL

Collected over 70 years ago near Beaver Dam Gold Mines, Sheet Harbour, Halifax Co., and unknown in the Province since that time. Lawson (1875-6) gives an interesting account of the discovery and location of this plant. Some attempts have been made to find it recently but the area is large and the location of the original discovery indefinite. Late June-July.

N.S.; Me. south through the Alleghenies to Ga.

### 2. *R. canadense* (L.) Torr. Fig. 110,c. RHODORA

Very common throughout; swamps, rocky barrens, poorly-drained soils and in wet pastures and around the edges of bogs. Forma *viridifolium* Fern. has the leaves and twigs lacking the grayish bloom which characterizes the typical variety. Occasionally seen in wet areas in areas in Yarmouth Co. Forma *albiflorum* (Rand & Redf.) Rehd. has white flowers. This is very rare but has been collected near Cambridge in Kings Co. Rhodora is one of our dominant spring-flowering shrubs and large areas may be rose-purple as it comes into flower before the new leaves develop. May 20-June 20.

Nfld. to Que. south to N.J. and Penn.

### 3. LOISELEURIA Desv.

#### 1. *L. procumbens* (L.) Desv.

Reported by Howe and Lang on dry humus, Kingsport, 1901. This collection may be mislabelled since there is no evidence that the plant grows anywhere near this location. It is common in southern Nfld. and may be expected in C.B.

Mts. of N.H., Me. and Que. to Nfld. and Alaska.

### 4. KALMIA L.

Showy and readily identified in flower by the saucer-shaped 5-lobed corolla with 10 stamens sunken in depressions in the petals; leaves and stems poisonous to livestock.

- a. Leaves smooth beneath, flat; twigs terete; flower-clusters lateral.

1. *K. angustifolia*

- a. Leaves finely whitish-pubescent beneath, the edges inrolled; flowers terminal.

2. *K. polifolia*

1. *K. angustifolia* L. Fig. 110,f. SHEEP LAUREL, LAMBKILL

Very common throughout; pastures, barrens, roadsides and open thickets everywhere. It is characteristic of dryish, acid and run-out soils; found also in bogs; one of the worst weeds in blueberry fields where it tends to increase after burning. June 20-early July.

Lab. to Ont. south to Ga. and Mich.

2. *K. polifolia* Wang. Map 423. PALE LAUREL

Scattered in peat bogs throughout; apparently much more common eastward where bog conditions are more often found. This species is more often found as individual plants, rather than in large beds like the sheep laurel, and it is conspicuous only when in flower. Mid-June.

Lab. to Alaska south to Penn., Mich. and Oreg.

## 5. PHYLLODOCE Salisb.

1. *P. caerulea* (L.) Bab.

Rare in northern C.B., Victoria Co.: abundant locally on steep north-facing cliff slope, Lockhart Brook, Salmon River; an extension from Nfld., Que. and Me. (Smith and Erskine, 1954). See Cody (1953).

Arctic Regions south to the mts. of Me. and N.H.; circumboreal.

## 6. ANDROMEDA L.

1. *A. glaucophylla* Link Fig. 110,a. Map 424. ANDROMEDA

Peat bogs throughout, except from Kings Co. to central Inverness where cool peat bogs are rare; rather common in its habitat, occurring as individual clumps half sunken in the moss. The plants resemble those of *Kalmia polifolia* but the sharp-pointed leaves serve to identify them. Reports of *A. polifolia* belong here. Early June. (*A. polifolia* L., var. *glaucophylla* (Link) DC).

Lab. to Sask. south to Penn. and Minn.

## 7. CHAMAEDAPHNE Moench

1. *C. calyculata* (L.) Moench, var. *angustifolia* (Ait.) Rehd. Fig. 110,d. LEATHER LEAF, CASSANDRA

Common throughout, found nearest the center of bogs or marshes and next to the bog-lakes; occasionally found on lake-margins in Sphagnum mats or on the edges of ponds and on poorly-drained, acid soils. May 15-June 10.

There is a single circumboreal species. Our plant is named the variety as distinct from the plants of Eurasia. In the northeast part of the range, and ranging south to N.S. and New Eng. the leaves tend to be wider, about half as broad as long and rounded at the end; the sepals



are broader, ovate and blunt. This is named var. *latifolia* (Ait.) Fern. Nfld. to Alaska south to Ga., Ind. and Iowa.

## 8. EPIGAEA L. MAYFLOWER

### 1. *E. repens* L., var. *glabrifolia* Fern. TRAILING ARBUTUS

Rather common; open pastures, hillsides, barrens, open woods and light soils throughout on acid, well-drained soils. April 15-May 15, only occasionally fruiting; flowers white to a deep rose color. The variety is the more-northern form with the leaves becoming glabrous beneath. There is only one other species known, found in eastern Asia.

Lab. to Man. south to Va., N.C. and Tenn.

## 9. GAULTHERIA L. WINTERGREEN

About 150 species, very numerous in the mountains of S. Amer. The name commemorates Jean-François Gaultier, a naturalist and court physician at Quebec.

a. Leafy stems erect; leaves 25-35 mm long, reddish-tinged; flowers vase-shaped, the parts in 5's; berries red. 1. *G. procumbens*

a. Leafy stems long-trailing; leaves less than 10 mm long, green; flowers small, the parts in 4's; berries pure white. 2. *G. hispidula*

### 1. *G. procumbens* L. Fig. 109,e. TEABERRY, CHECKERBERRY

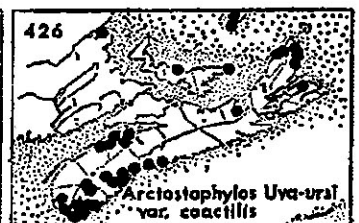
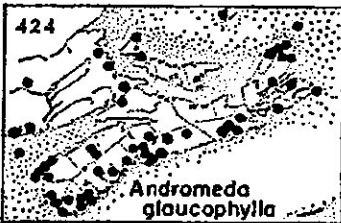
Very common throughout; woods, barrens, pastures, mostly in the open or nearly so, frequently the common plant of the ground-cover over considerable areas. The berries, leaves and stems have the odor and taste of wintergreen, a characteristic shared to a lesser extent by the following species. Late July-Aug., the berries persisting over winter and distinctive because of their large, fleshy sepals.

Nfld. to Man. south to Ga.

### 2. *G. hispidula* (L.) Muhl. Map 425. SNOWBERRY, CAPILLAIRE

Scattered throughout, often abundant on mossy woodland knolls, barrens and mature bogs, and in coniferous woods, growing in moist situations, usually in partial shade. The small oval berries are edible and of excellent flavor. (*Chiogenes* Salisb.) June.

Lab. and Nfld. to B.C. south to N.C.



## 10. ARCTOSTAPHYLOS Adans.

1. *A. Uva-ursi* (L.) Spreng., var. *coactilis* Fern. & Macb. Map 426.  
BEARBERRY

Common on the sandy barrens of Kings and Annapolis Co.; scattered in dry areas from Yarmouth to Halifax Co.; local in Antigonish Co. and more common in northern C.B. This coarse trailer is local but where it is found it is apt to form considerable patches and a solid cover over the ground. Early June.

Arctic regions south to New Eng., Va. and Colo; Eurasia.

## 11. CALLUNA Salisb.

1. *C. vulgaris* (L.) Hull. LING, HEATHER

Growing in scattered places from Halifax and Pictou to C.B., probably scattered elsewhere and possibly still being planted. All the records known, however, are of early introductions. Aug.

Introduced from Eu.; local, Nfld. to W.Va.

## 12. GAYLUSSACIA HBK. HUCKLEBERRY

The huckleberries are low, freely-branching shrubs forming small clumps and bearing flowers and edible berries much like the blueberries. The yellow-glandular dots on the undersides of the leaves help to identify them.

- a. Leaves thick, oval, rounded at the apex with a prominent short point formed by the extension of the midrib; ovary and fruit bristly-hairy. 1. *G. dumosa*  
a. Leaves thin, oblong, acute and tapering similarly to both ends; ovary and fruit smooth. 2. *G. baccata*

1. *G. dumosa* (Andr.) T. & G., var. *Bigeloviana* Fern. Map 427.  
BOG HUCKLEBERRY

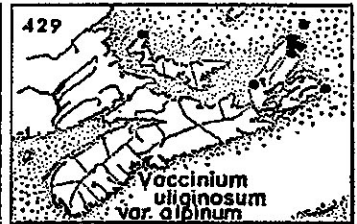
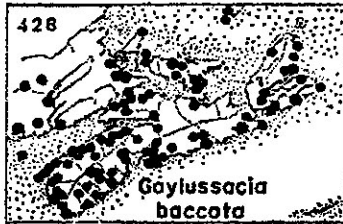
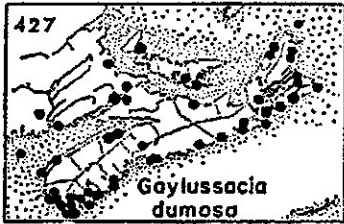
Common in boggy barrens and sphagnous bogs from Yarmouth east along the Atlantic Coast; scattered elsewhere. Early June.

Nfld. south to N.S., N.B. and Va. near the coast.

2. *G. baccata* (Wang.) K. Koch. Fig. 110, e. Map 428. HUCKLEBERRY

Rather general throughout, often common; rocky pastures, barrens and mature bogs, sometimes in light soil or on sand but also in wet soil or on bogs; occasionally seen heavily fruiting, as around Halifax Co. Early June.

Nfld. to Ont. south to Ga. and La.



### 13. VACCINIUM L. BLUEBERRY, FOXBERRY, CRANBERRY

The genus *Vaccinium* has been divided into a number of subgenera or sections. The cranberries, in particular, are often segregated as the genus *Oxycoccus*. Both our low-bush blueberries and the high-bush *V. corymbosum* are very variable and often difficult to identify exactly. Different clones may vary widely in appearance and hybrids may occur between the different species. See Camp (1944, 1945). Porsild (1938), Hall and Aalders (1961).

- a. Corolla vase-shaped to globose, shallowly lobed or toothed; flowers and fruit on short pedicels.
- b. Erect or ascending, woody, much-branched shrubs; fruits blue to black.
- c. Flowers and fruit few in the axils of the leaves or on short, leafy-bracted racemes; anthers bearing a pair of conspicuous awns on the back in addition to the terminal tubules; corolla restricted at the top.
  - d. Leaves oval, about 12 mm long, strictly without teeth, leathery and rugose-veined; stems short, stout and much-branched; flowers solitary or 1-3 from axils of the bud-scales, the parts in 4's. 1. *V. uliginosum*
  - d. Leaves thinner and larger, toothed at least on the lower part; flower-parts in 5's.
    - e. Leaves acute, widely lanceolate, to 25 mm long, sharply serrulate their whole length; plants low. 2. *V. cespitosum*
    - e. Leaves elliptical to oval, to 40 mm long, entire or toothed only on the lower part; plant to 1 m high. 3. *V. ovalifolium*
- c. Flowers and fruit in dense terminal or lateral racemes; anthers not awned.
  - f. Plants of the low-bush type, seldom over 7 dm high, and usually only 1-4 dm; leaves 2-4 cm long or less; corolla white to rose.
    - g. Leaves densely pubescent or downy on both sides, green on both sides, not toothed; twigs densely and finely hairy; fruit with a heavy bloom, light blue. 4. *V. myrtilloides*
    - g. Leaves smooth or pubescent only on the midrib beneath, often toothed; twigs hairy only in lines.
      - h. Leaves glaucous beneath with a whitish bloom.
        - i. Leaves only half as wide as long, nearly entire; twigs not glaucous, green; berries blue with a bloom. 5. *V. vacillans*
        - i. Leaves narrow, commonly a third as wide as long; twigs glaucous; berries black. 6. *V. Brittonii*
      - h. Leaves bright green on both sides.
        - j. Corolla 5-7 mm long; leaves averaging 16.5 mm long and 6 mm wide; common. 7. *V. angustifolium*
        - j. Corolla 3-3.5 mm long; leaves averaging 10.6 mm long and 3.6 mm wide; rare and northern. 8. *V. boreale*

- f. Tall shrubs, 1-4 m high; leaves 3-8 cm long and 1.5-4 cm wide; corolla white, 6-12 mm long; Halifax to sw. N.S. where it is common.
9. *V. corymbosum*
- b. Plant extensively creeping with short, erect branches mostly 5-8 cm high; flowers few, the parts in 4's; berries red with 4 locules (foxberry).
10. *V. Vitis-Idaea*
- a. Corolla deeply 4-cleft to below the middle with the lobes recurved; flowers nodding on long, erect filiform pedicels; plants long-trailing on the surface of the ground; fruits red to brownish-dotted, with 4 locules (cranberries).
- k. Leaves acute; stem slender and thread-like, not usually growing beyond the flowers and fruit; pedicels with 2 small reddish linear bracts; berry brownish-dotted.
- l. Leaves 1-3 mm wide; flowers 1-4; corolla-lobes 5-8 mm long; berry 6-8 mm thick.
11. *V. Oxycoccus*
- l. Leaves 3-6.5 mm wide; flowers 2-10; corolla-lobes 6-8 mm long; berry 8-10 mm thick.
- var. *intermedium*
- k. Leaves oblong and blunt; pedicels with wider, green bracts; corolla-lobes 6-10 mm long; berry 10-20 mm thick, red.
12. *V. macrocarpon*

1. *V. uliginosum* L., var. *alpinum* Bigel. Map 429. ALPINE WHORTLEBERRY

Nichols (1918) reports it from the top of Mount Franey, C.B., and says that it is characteristic of the dwarf-shrub heath in northern C.B.; Perry (1931) reports it from the upper slope of a headland, West Point, and South West Light on St. Paul I. Prest (1904-5) says that it is on barrens with blueberries, very rarely in swampy land, and gives no locations. Smith and Erskine (1954) list a number of locations in northern C.B. from high-exposure barrens, bogs, old pastures, and rock outcrops near sea-level where it is rare. The variety is a smaller version of the Eurasian and northwestern American plant.

Circumboreal; ranging south to C.B., northern New Eng., N.Y. and n. Mich.

2. *V. cespitosum* Michx. Map 430. DWARF BILBERRY

Rocky cliffs, Black River in the Gaspereau Valley, Kings Co., where it is abundant on rocky cliffs (Erskine, D.S., 1951); locally abundant in rock crevices, Cheticamp R., Inverness Co. (Smith and Schofield, 1952); ledges and crevices along Indian Brook and old clearings up North R. in Victoria Co.

Lab. to Alaska south to northern New Eng., N.Y. and N. Mich.

3. *V. ovalitolium* Sm. Map 431.

Victoria Co.: shaded banks of Glasgow Brook, near falls; a single but very vigorous colony was seen in ascending Glasgow Brook to its source. This was growing in a sheltered moist location and was in young fruit at the time of collection on July 2. The scraggly bushes reached a height of about one meter (Smith and Schofield, 1952). Also known

from a station covering several acres; shrub under open forest, Lockhart Brook, Salmon River (Smith and Erskine, 1954).

Local; Nfld., Lab. and the Laurentides; n. Ont. to Mich.; Alaska to Oreg.

#### 4. *V. myrtilloides* Michx. CANADA BLUEBERRY

Common throughout; sterile and dry soils, rocky barrens, roadside thickets and open woods, sometimes associated with conifers, and not growing well in open sunlight. The fruit is rather small, with a heavy bloom, and is generally of inferior quality (*V. canadense* Kalm).  $2n = 24$ , according to Aalders and Hall (1962). These authors also discuss the form with white berries.

#### 5. *V. vacillans* Torr.

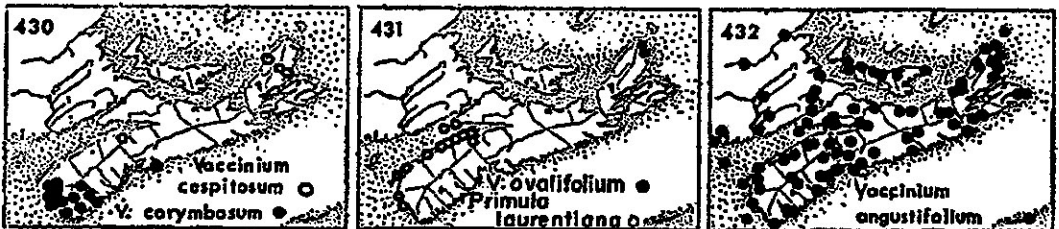
Rare; recorded with doubt by Lindsay from Halifax. It is reported by Fernald (1921) as dominant on the upper border of the cobble-beach of Butler's L., Gavelton, Yarmouth Co. This station is now under water due to the building of a power dam. This area has been little studied recently and the plant should be found elsewhere in the southwestern counties. *V. pallidum* Ait. of earlier records.

Dry open woods and thickets; w. N.S.; s. Me. to Mich. south to Ga. and Mo.

#### 6. *V. Brittonii* Porter

Scattered in the western half of the Province, probably throughout. In the southwestern counties it makes up a considerable part of the blueberry population. It is usually found on light soil and seems to grow in light shade as well as in full sunlight. In the Annapolis Valley it frequently becomes dominant in open second growth on sandy soils. The status of this plant is difficult to evaluate. It does represent an extreme type in our low-bush blueberry population. The chromosome number is tetraploid,  $2n = 48$ , the same as our common blueberry and it is apparently able to cross freely with it.

Nfld. to Minn. south to Penn. and Ill. and the mts. of W. Va.



#### 7. *V. angustifolium* Ait. Map 432.

This tetraploid species is the dominant blueberry of our fields and barrens. It is very variable. Different clones, especially in bloom, show a wide variety of characteristics, and the plants vary considerably

in different environments. Hall and Aalders have concluded that the name *angustifolium* belongs to our common species and that this is the only type found in the cultivated blueberry fields of the Maritimes. Occasionally the leaves may be slightly hairy on the undersides and they suggest that this is due to a cross between *V. angustifolium* and *V. myrtilloides*. Var. *hypolasium* Fern., reported from Nfld. to Va., may be based on this type of material. The species has been known under various names. *V. angustifolium* was first considered a northern plant and our plants were named var. *laevifolium* House. They were later separated as *V. Lamarckii* Camp. If the name *V. angustifolium* applies to our plants, then the diploid northern plants belong to the following species.

Forma *nigrum* (Wood) Boivin, with the leaves greenish beneath but with the berries black and without a bloom, may be considered a hybrid between this species and *V. Brittonii*. It is found mixed with the typical plants and many variations occur. It also occurs over a wide range from Nfld. south to Va. and to Minn.

Forma *leucocarpum* (Deane) Rehd., with white berries, is very rare; reported by Hall and Aalders (1963) from West Brook, Cumberland Co. and East Halls Harbour, Kings Co.

Nfld. to Sask. south to the uplands of Va. and Ohio.

#### 8. *V. boreale* Hall and Aalders

This is a small, much-branched, northern diploid form which grows abundantly on the exposed headlands of Nfld. It is apparently scattered in the northern part of C.B. but the authors state that they have never found it in commercial fields, with the exception of a few in Nfld. It is difficult to separate from the preceding species, since environmental conditions cause the measurements of the two to overlap.

A natural hybrid between this species and *V. myrtilloides* is reported by Hall and Aalders (1962) from a commercial field at Frizzleton, Inverness Co. The two species were growing with *V. angustifolium*; and the hybrid is intermediate between its parents, *i.e.*, intermediate in stem-pubescence and towards *V. boreale* in leaf serration. (*V. angustifolium* var. *integrifolium* Lepage). N.S. and nw. Que.

Nfld. and Lab. to Que. and probably southward in cooler areas.

#### 9. *V. corymbosum* L. Map 430. HIGHBUSH-BLUEBERRY

This species is found in the southwestern counties from Digby around to Halifax: bogs, upland rocky barrens, dry soil and along lake-margins. The plants are very variable, with the progeny from a single bush showing variable combinations as to pubescence, size and bloom of berry, habit of bush, etc. The typical form of the species, with the leaf-margins nearly smooth and the leaves more or less pubescent beneath, is rarely seen: thicket bordering Goven L., Yarmouth Co. Forma *albiflorum* (Hook.) Fern., with toothed leaves and the blades green on



both surfaces, is the commonest form (*Var. amoenum* (Ait.) Gray). This is found in bogs, on lake-margins, thickets, swampy spruce woods and in new clearings. Forma *glabrum* Gray, with the leaves glaucous and nearly or quite glabrous beneath, is much rarer than the preceding form but is occasionally found in wet woods and swampy thickets (*Var. pallidum* (Ait.) Gray). This species will cross with *V. angustifolium* and half-high bushes are frequently found in Yarmouth Co.

N.S. to southern Que. and Wisc. south to Fla. and Tex.

10. *V. Vitis-Idaea* L., var. *minus* Lodd. Map 433. FOXBERRY

Common in any of the cooler regions of the Province; bare headlands, barrens or other exposed situations generally near the sea; occasional on barrens or heaths inland. It is most abundant in Guysborough Co. and C.B. June.

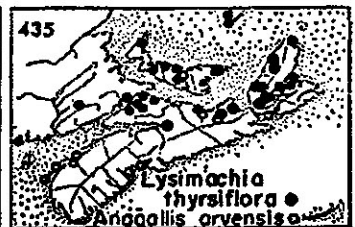
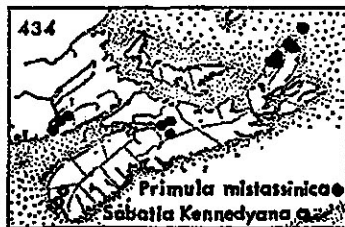
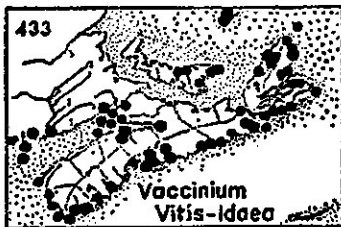
Arctic America south to New Eng., L. Superior and B.C.

11. *V. Oxycoccus* L. SMALL CRANBERRY

Found throughout; in moderately wet, open bogs or poorly-drained swamps, almost always associated with *Sphagnum* moss since the plants are sensitive to the amount of water present. It is most abundant on lake-margins of the Atlantic coastal regions and in C.B. June 20-July 15. Arctic Amer. south to Va. and Wisc.

*Var. ovalifolium* Michx. is rare; spruce bog at Yarmouth, collected by Bissell and Long; edge of cliffs on St. Paul I., C.B. Found throughout with much the same range as the species.

This species is a tetraploid hybrid of two diploid species, the following one and *V. microcarpum* of Eu. and northwestern N. Amer. Camp considers that all the varieties should be placed in one variable species, *Oxycoccus quadripetalus* Gilib., with the different variations in leaf size and width being due to genetic segregation and to be expected throughout the range. In general, the leaves of our plants are rather small and these plants are sometimes designated *var. microphyllum* (Lange) Rouss. & Raym., taking the large form as the species.



12. *V. macrocarpon* Ait. LARGE CRANBERRY

Frequent to abundant in meadows, along brooks, on *Sphagnum* mats around lakes, in poorly-drained swamps, or bogs, in meadows covered by spring tides, and often growing into dryish fields or along the



edges of salt marshes and wet areas back of the beaches. On Sable Is. it is very abundant in most of the dune hollows. (*Oxycoccus macrocarpus* (Ait.) Pers.). Introduced forms are cultivated in the commercial cranberry bogs. Mid-July.

Nfld. to Minn. south to New Eng., N.C. and Ohio.

## 91. DIAPENSIACEAE

### 1. DIAPENSIA L.

#### 1. *D. lapponica* L.

A densely-tufted plant with a tuft of green narrow leaves at the end of each branch, with the lower part of the short stems covered by the persistent dead leaves. The white flowers are borne singly on peduncles about 3 cm long. Victoria Co.: frequent in clumps on projecting shoulders and in crevices of steep north-facing cliff-slope, Lockhart Brook, Salmon R. (Smith and Erskine, 1954). Early July.

Arctic regions south to mts. of New Eng. and N.Y.; Eurasia.

## 92. PRIMULACEAE PRIMROSE FAMILY

Annual and perennial herbs with simple leaves without stipules. The flowers are regular with the parts in 5's; ovary superior or nearly so; petals joined (absent in *Glaux*, which has petaloid sepals) with the corolla-tube very short; stamens 5, opposite the lobes of the petals; fruit a capsule. More than 1000 species, with many in Asia.

- a. Plants low; leaves smooth to mealy beneath, in a basal-rosette; flowers in a terminal umbel (Fig. 111,b). 1. *Primula*
- a. Plant with a leafy stem; leaves not mealy beneath; flowers rarely or scarcely in umbels.
- b. Leaves opposite or whorled.
- c. Flowers yellow, 1-2 cm wide; leaves numerous, scattered; plants erect, 2-8 dm high, except for one trailing species (Fig. 111,c-g). 2. *Lysimachia*
- c. Flowers scarlet, pinkish, lavender or white.
- d. Leaves in a single whorl at the top of the stem; plant 10-15 cm high; flowers white (Fig. 113,b). 3. *Trientalis*
- d. Leaves in numerous whorls or pairs; plants low or trailing.
- e. Plants erect, 0.5-2 dm high, with oblong thickish leaves; flowers 3 mm wide, without petals; sea-coast (Fig. 113,a). 6. *Glaux*
- e. Plants trailing, with acute thin elliptic leaves; flowers 10-12 mm wide, usually scarlet; capsule circumscissile with the top falling off like a lid. 4. *Anagallis*
- b. Leaves alternate; plants rare; flowers never yellow, 1-3 mm wide.
  - f. Flowers stalked in erect racemes, white; ovary joined at the base to the base of the calyx. 7. *Samolus*
  - f. Flowers small, sessile in the axils of the leaves, pinkish; ovary wholly separate from the calyx. 5. *Centunculus*