Field Guide to the Aquatic Plants of Lake George, New York

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INTRODUCTION

This bulletin is a guide to the aquatic flowering plants and ferns growing in Lake George, New York, and its adjacent marshes. It includes a checklist, keys and illustrations, to assist in the identification of the aquatic vascular plants most likely to be encountered. If no location is given, it is assumed the species is common and may be found in suitable habitats throughout. Specific habitats may not be inferred from most cited locations; for example, "Dunham Bay" includes open water and adjacent marshes.

Our data are from observations and herbarium records. Many of the herbarium collections do not indicate whether the plants were taken from the lake or from some nearby aquatic or non-aquatic habitat; if such species are known to grow in water, they are included. A few species are included for which we have no records from the lake but which have been collected in the Lake George drainage area. Trees and woody shrubs are not included; we do not consider them to be truly aquatic.

The keys are based on vegetative characters as much as possible. As such characters are often variable; many of the genera appear in more than one place in the key. If the characters in the generic key trace to but one species in a genus having more than one, the species is named.

For descriptions, notes on habitats, additional keys, and additional illustrations, see one or more of the following references:

Fassett, N. C. 1957. A manual of aquatic plants. University of Wisconsin Press.

Fernald, M. L. 1950. Gray's manual of botany. American Book Company.

Gleason, H. A. 1952. The new Britton and Brown illustrated flora of the northeastern United States and adjacent Canada. New York Botanical Garden.

House, H. D. 1924. Annotated list of the ferns and flowering plants of New York State. New York State Museum Bulletin No. 254.

Muenscher, W. C. 1944. Aquatic plants of the United States. Comstock Publishing Company.

Where the names used in one or more of these books differ from the ones used here, those synonyms are given in parentheses, unless the derivation is obvious, such as: *Isoetes echinospora* subsp. *braunii* vs. *I. braunii*.

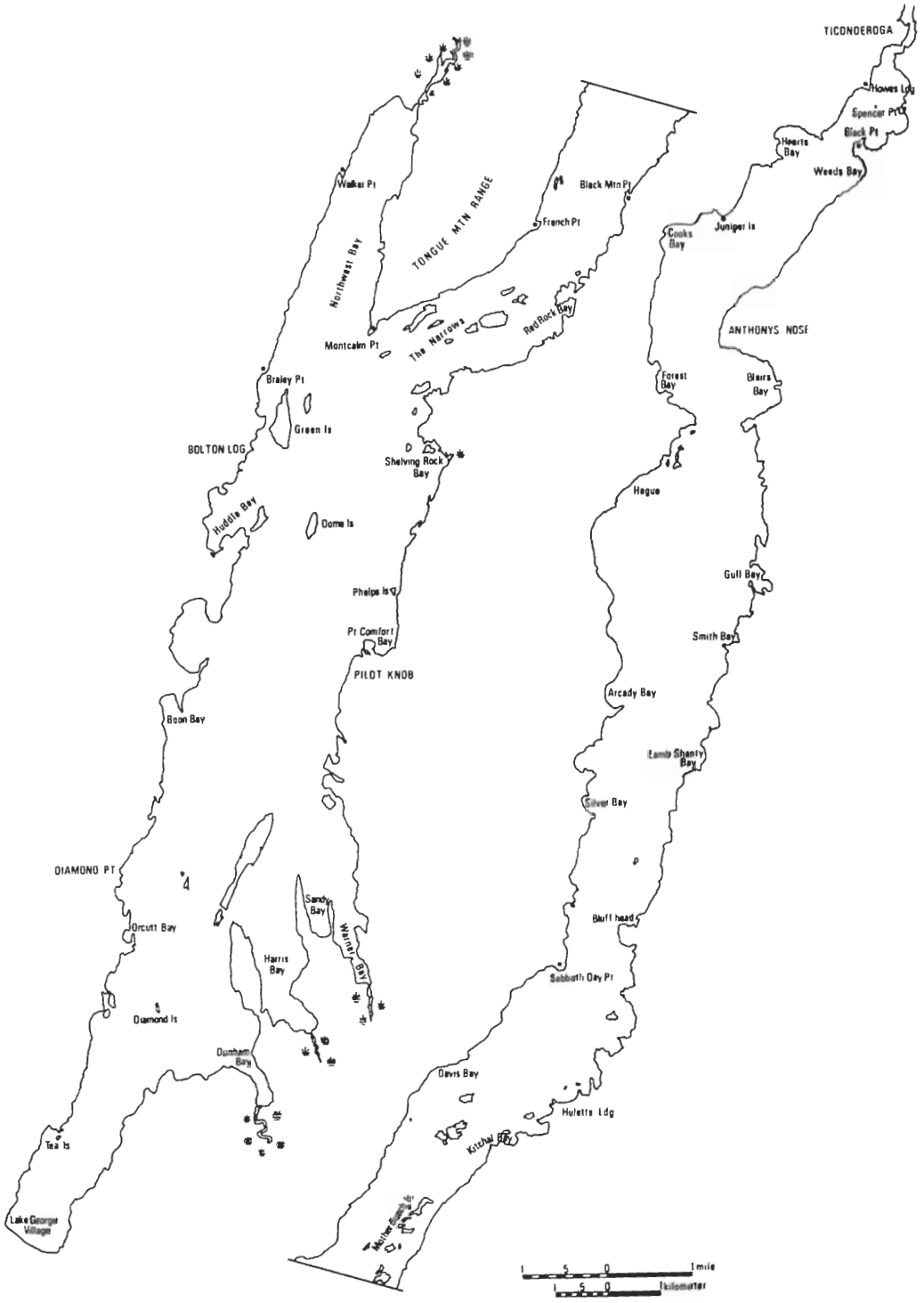
Detailed underwater surveys were made for some common deep water species using scuba gear. The diver (Richard B. Sheldon) recorded the data underwater as to species encountered at various depths from one to several meters. See DEPTH DISTRIBUTION DATA.

Lake George is situated on the southeastern side of the Adirondack Mountains. It is famous for its spectacular scenery and its military significance during both the French and Indian Wars and the American Revolution. It has an overall length of 51 km and a mean width of 2.3 km. Maximum depths of almost 60 m have been recorded off Anthony's Nose and Phelp's Island. The lake is divided near the middle by a channel dotted with islands (The Narrows). The northern basin and perhaps the lake itself is largely spring fed. However, much surface runoff water does enter via streams in the lake's southern basin. The southern basin is also the location of most of the lake's marshland. The single outlet of the lake is at the extreme northern end at Ticonderoga, the water thus flowing north.

Lake George occupies a complex graben in Precambrian bedrock. The sheer slopes and the often linear shorelines are largely due to faulting along this graben. Much of the lake floor glacial or postglacial material is now covered or mixed with modern organic-rich sediments—a suitable substrate for aquatic vegetation. Because of the sheer sloped sides of much of the lake, the littoral zone is most confined to a narrow band around the periphery. Most submergent vegetation is found in 7 m of water or less although *Elodea* has been found as deep as 12 m and *Nitella* (a macrophytic alga) forms a zone throughout the lake between 12 and 15 m. Water transparency is exceptionally high for a freshwater lake, with secchi disc readings commonly 6 to 7 m throughout and values exceeding 13 m off Rogers Rock in the northern basin.

Water chemistry measurements over the last several years as routinely monitored by the Freshwater Institute at Smith Bay show variation within a relatively small range. The pH of the

water column ranges between 6.8 and 7.8. Variation does not appear to be associated with either the southern or northern basins or time of year. Alkalinity measurements range from 16 to 24 mg $CaCO_3$/liter throughout Lake George. Interstitial water pH usually approaches neutrality regardless of sediment type, and alkalinity ranges from 20 to 30 mg $CaCO_3$/liter. Amounts of nitrogen and phosphorus in the interstitial sediment water are approximately ten times as high as they are in the water above.



KEY TO GENERA

1. Plants tiny (several may be attached together), floating on or near the water surface; without differentiation into stem and leaf
  2. Each plant with a single root; undersurface green ..... *Lemna*
  2. Each plant with several roots; undersurface often purplish ..... *Spirodela*
1. Plants with obvious stem and/or leaves
  3. Stems jointed; leaves whorled, reduced to scales ..... *Equisetum*
  3. Stems not jointed
    4. Leaves basal or essentially so, may be reduced to bladeless sheaths (2nd 4, p. 6)
      5. Leaves compound
        6. Leaves palmate
          7. Leaflets three; reproduction by seeds
            8. Leaves not fleshy; leaflets lobed; flowers yellow ..... *Ranunculus septentrionalis*
            8. Leaves fleshy; leaflets not lobed; flowers white or pink ..... *Menyanthes*
          7. Leaflets more than three; fertile and sterile portions of leaf dissimilar; reproduction by spores ..... *Osmunda regalis*
        6. Leaves pinnate
          9. Leaves with margin entire or essentially so but leaflets may be lobed; reproduction by spores (ferns)
            10. Leaflets 25 or less; sterile and fertile fronds dissimilar ..... *Onoclea*
            10. Leaflets more than 25
              11. Sterile and fertile leaves dissimilar; sterile leaves with brown hairs at base of leaflets; fertile leaves cinnamon-brown, hairy ..... *Osmunda cinnamomea*
              11. Sterile and fertile leaves similar, green, glabrous ..... *Thelypteris*
          9. Leaves with margins of leaflets mostly serrate; reproduction by seeds; inflorescence an umbel
            12. Stems angled; leaves pinnately compound, upper ones once, lower twice; leaflets serrate; fruits with 1 oil tube between each pair of ribs ..... *Sium*
            12. Stems terete; leaves twice or thrice compound, often some of them appearing palmate; leaflets serrate or entire; fruits with 1-3 oil tubes between each pair of ribs ..... *Cicuta*
      5. Leaves simple
        13. Leaves sessile, with no distinction between blade and petiole (2nd 13, p. 5)
          14. Leaves less than twice as broad as thick (2nd 14, p. 4)
            15. Stems and/or leaves arising several from a common base or several from distinct points along a horizontal axis (2nd 15, p. 4)
              16. Leaves with closed sheaths, sometimes bladeless; inflorescence a spike or panicle of spikelets; flowers inconspicuous in the axils of scales; fruit an achene (sedges)
                17. Inflorescence a subterminal spike, a panicle of spikelets, or a close cluster of spikelets that appears to be lateral to the stem ..... *Scirpus*
                17. Inflorescence a terminal spike or cluster of spikelets
                18. Inflorescence with long white bristles; achenes lacking a tubercle .... *Eriophorum*
                18. Inflorescence without obvious bristles; achenes with a terminal tubercle ..... *Eleocharis*
              16. Leaf sheaths open or absent; inflorescence not a spike nor a cluster of spikelets
                19. Inflorescence many-flowered; flowers 2- or 3-merous
                20. Roots with prominent cross striations; inflorescence a scape with a single head of tiny flowers ..... *Eriocaulon*
                20. Roots without prominent cross striations; inflorescence a raceme or panicle

21. Leaves broadly triangular in cross section ..... *Sparganium*
21. Leaves terete or nearly so
22. Inflorescence a spikelike raceme, terminal on a long scape; each flower with 6 pistils ..... *Triglochin*
22. Inflorescence a panicle, appearing lateral; each flower with 1 pistil ..... *Juncus effusus*
19. Inflorescence few-flowered
23. Plants with rhizomes or stolons
24. Stolons greenish, arching above the soil; stems and leaves without striae; inflorescence single-flowered; flowers with showy yellow petals ..... *Ranunculus reptans*
24. Rhizomes whitish; either stems or leaves with striae; inflorescence of several inconspicuous flowers
25. Stems filiform and leaflike, or uniform thickness, not flattened or cupped at base; stems usually with a delicate membranous, tubular, basal sheath; plants usually green or yellowish green; inflorescence (seldom produced on wholly submersed plants) a terminal spike ..... *Eleocharis acicularis*
25. Leaves gradually tapered to tip, somewhat flattened at base, base of outer leaves cupped around inner leaves; sheathing lower portion of leaf with membranous margins, upper sheath truncate, abruptly tapered, or minutely auricled; plants often with a reddish cast; inflorescence (seldom produced on wholly submersed plants) a spacious cyme ..... *Juncus pelocarpus*
23. Plants with no rhizomes or stolons
26. Roots with prominent cross striations ..... *Eriocaulon*
26. Roots without prominent cross striations
27. Leaves round at apex, with two hollow tubes as seen in cross section; inflorescence a raceme of blue flowers ..... *Lobelia dortmanna*
27. Leaves acute, with 4 or more hollow areas as seen in cross section
28. Leaves with enlarged bases, bearing sporangia and spores, with 4 hollow tubes as seen in cross section; inflorescence never produced ..... *Isoetes*
28. Leaves never with sporangia, the hollow areas more than 4 as seen in cross section; inflorescence a raceme of tiny white flowers on a scape 2-10 cm long, seldom produced when plants are submersed ..... *Subularia*
15. Stemlike peduncles arising singly from distinct points along a horizontal axis
29. Stems without bladders; leaves merely small blunt scales; flowers tiny, sessile, greenish ..... *Myriophyllum tenellum*
29. Stems bearing tiny bladders; leaves tiny, straplike and rarely seen; flowers showy, about 10 mm long, violet, on short pedicels ..... *Utricularia resupinata*
14. Leaves more than twice as broad as thick
30. Roots less than 1 mm in diam, with prominent cross striations; leaves awl-shaped, ±5 mm wide at base, tapering rapidly to a slender apex, loosely cellular, often translucent, forming a basal rosette; inflorescence a scape with a single head of tiny 2-merous flowers ... *Eriocaulon*
30. Roots without prominent cross striations (except sometimes in *Sagittaria*)
31. Leaves stiff, not requiring water for support, less than 20 cm long
32. Leaves round at apex, with 2 hollow tubes as seen in cross section; inflorescence a raceme of blue flowers ..... *Lobelia dortmanna*
32. Leaves acute at apex; inflorescence a raceme of white flowers or an umbel of spikelets
33. Stems terete; leaves thick with open sheathing base; inflorescence a raceme of white flowers ..... *Sagittaria*
33. Stems triangular; leaves thin, with closed sheath; inflorescence an umbel of spikelets ..... *Cyperus*
31. Leaves limp; requiring water for support, ribbonlike, more than 20 cm long
34. Leaves with midvein not evident, longitudinal and cross veins numerous giving the leaf a checkered appearance with squares or short rectangles (some plants of *Pontederia cordata* forma *taenia* may key to this point); male and female flowers in separate spherical heads, monoecious ..... *Sparganium*

34. Leaves with an evident midvein, cross veins widely separated; flowers not in heads
  35. Leaves with a dense middle area bordering the midrib and with translucent marginal areas that lack longitudinal veins; plants dioecious; flowers borne singly, female flowers on long coiled peduncles, male flowers sessile or on very short peduncles, both peduncles from a basal rosette ..... *Vallisneria*
  35. Leaves with translucent areas between the narrow midrib and the margins; inflorescence a raceme of showy white flowers ..... *Sagittaria cuneata*
13. Leaves with distinct petiole and blade
  36. Leaf blades stiff and erect, not requiring water for support
    37. Leaf blades with 2 basal lobes, cordate or sagittate
      38. Leaf blades with basal lobes acute
        39. Leaves with 3 prominent veins from the juncture of the petiole and blade and with many lateral veins from the midvein to the margins; inflorescence a spadix in a green spathe; flowers with no petals ..... *Peltandra*
        39. Leaves with many veins from the juncture of the petiole and blade, with no veins from midvein to margins; inflorescence a raceme with pedicels in whorls of 3; flowers with showy white petals ..... *Sagittaria*
      38. Leaf blades with basal lobes rounded
        40. Leaves round at apex, venation netted
          41. Odor not skunky; leaf margins toothed; inflorescence of large pedicelled yellow flowers ..... *Caltha*
          41. Odor skunky; leaf margins entire; inflorescence of tiny sessile flowers on a spadix in a fleshy spathe ..... *Symplocarpus*
        40. Leaves acute at apex, margin entire, venation parallel; flowers not yellow
          42. Plants up to 30 cm tall; leaf blades about as long as wide, apex with a sharp point; stems a horizontal rhizome only; inflorescence a spadix subtended by a large white spathe; fruits fleshy, red ..... *Calla*
          42. Plants up to 100 cm tall; leaf blades mostly much longer than wide, apex with a blunt point; stems a thick horizontal rhizome with vertical stems each bearing a single foliage leaf; inflorescence a spikelike panicle subtended by a small green spathe; flowers blue; fruits dry, brownish ..... *Pontederia*
    37. Leaf blades neither sagittate nor cordate
      43. Leaf blades deeply lobed, nearly compound ..... *Ranunculus septentrionalis*
      43. Leaf blades not lobed
        44. Leaf blades with hollow trumpet-shaped leaves ..... *Sarracenia*
        44. Leaf blades not trumpet-shaped
          45. Leaves with long glandular hairs ..... *Drosera*
          45. Leaves glabrous
            46. Plants creeping, rooting at the nodes; flowers yellow ..... *Ranunculus reptans*
            46. Plants erect; flowers white or blue
              47. Petioles with central hollow cavity ..... *Pontederia*
              47. Petioles with spongy central area
                48. Leaf blades mostly less than twice as long as wide, rounded at base, all flowers bisexual; fruits in a single whorl on the receptacle, forming a disk ..... *Alisma*
                48. Leaf blades mostly more than twice as long as broad, tapering to the petiole; most flowers unisexual, male above, female below; fruits attached all over the receptacle, forming a globose structure ..... *Sagittaria*
  36. Leaf blades floating on the water surface, requiring water for support
    49. Floating leaf blades sagittate; submersed ribbon-shaped leaves may be present; inflorescence a raceme ..... *Sagittaria cuneata*
    49. Leaf blades cordate; inflorescence a single flower or flowers clustered to form an umbel
      50. Leaf blades mostly less than 5 cm long, several principal veins equally strong, branching and recurving to unite with each other; some leaves appearing to be basal, others

from a slender, limp stem bearing a cluster of fleshy roots or flowers or both at the base of the petiole near the water surface ..... *Nymphoides*

50. Leaf blades mostly more than 3 cm long, central vein more prominent than other veins, forking but not uniting; petioles and peduncles from a basal rhizome; flowers borne singly

51. Leaf blades about as long as wide, with more veins from the base of the midrib than from along the midrib, veins much forked; petioles and peduncles with 4 large hollow areas as seen in cross section; flowers white ..... *Nymphaea*

51. Leaf blades with more veins from the midrib than from the base of midrib, veins little forked; petioles and peduncles with many small hollow areas; flowers yellow ..... *Nuphar*

4. Leaves cauline or essentially so

52. Leaves linear

53. Leaves stiff, not requiring water for support

54. Leaves with parallel veins

55. Leaves with basal sheaths closed, or if open then with a ligule at the juncture of sheath and blade

56. Leaf sheaths several times as wide as the stem, basal sheaths overlapping, cauline leaves 1-3, not overlapping; inflorescence a terminal few-flowered raceme; each fruit composed of 3 follicles ..... *Scheuchzeria*

56. Leaf sheaths scarcely wider than the stem; inflorescence a group of spikelets; fruit an achene or caryopsis

57. Leaf sheaths open (except *Glyceria*); stem internodes with hollow pith; leaves 2-ranked, with a ligule at the juncture of sheath and blade; fruit a caryopsis (grasses)

58. Inflorescence with spikelets closely aggregated to form a narrow spikelike panicle

59. Plants usually less than 70 cm tall; spikelets in a dense spikelike panicle; spikelets with sterile flowers or glumes attached above the fertile flower ..... *Alopecurus*

59. Plants usually more than 60 cm tall; spikelets in a loose spikelike panicle; spikelets with sterile flowers or glumes attached below the fertile flower ..... *Phalaris*

58. Inflorescence with spikelets widely spaced to form an open panicle

60. Plants without rhizome; staminate spikelets below and distinctly separated from the pistillate spikelets ..... *Zizanea*

60. Plants with rhizomes (except *Puccinellia*); with no distinct separation of staminate and pistillate spikelets

61. Plants 2-4 m tall; spikelets with long silky hairs giving a silky appearance to the whole inflorescence ..... *Phragmites*

61. Plants less than 2 m tall; spikelets without conspicuous hairs

62. Each spikelet with several florets

63. Leaf sheaths closed; rhizomes present; second glume with one distinct vein ..... *Glyceria*

63. Leaf sheaths open; rhizomes absent; second glume with 3 veins ... *Puccinellia*

62. Each spikelet with a single floret; leaf sheaths open

64. Leaf margins with fine sharp teeth; panicle pale green to whitish; spikelets 4-5 mm long; glumes absent; lemma pilose, ciliate on the keel but without long basal hairs ..... *Leersia*

64. Leaf margins without sharp teeth; panicle often purplish; spikelets 3-3.5 mm long; glumes present; with copious long hairs around the base of the lemma ..... *Calamagrostis*

57. Leaf sheaths closed; stem internodes with solid or spongy pith (except *Dulichium*); leaves 3-ranked, with no ligule; fruit an achene (sedges)

65. Spikelets with long, exserted, silky bristles subtending the achenes, giving the inflorescence a cottony appearance ..... *Eriophorum*
65. Inflorescence without long exserted bristles
66. Inflorescence a terminal umbel of spikelets
67. Scales of spikelets 2-ranked ..... *Cyperus*
67. Scales of spikelets spirally imbricated ..... *Scirpus*

66. Inflorescence not an umbel
68. Stem internodes hollow; spikelets axillary on the stem ..... *Dulichium*
68. Stem with solid or spongy pith
69. Florets unisexual; achenes enclosed in a sac (perigynium) ..... *Carex*
69. Florets bisexual; achenes not in a sac
70. Achenes with a tubercle (persistent style base) at the apex; perianth bristles 8-14 ..... *Rhynchospora*
70. Achenes without a tubercle; perianth bristles usually 1-6 ..... *Scirpus*

55. Leaves without basal sheath, or if sheath present then with sheath open and without a ligule
71. Leaves less than 3 mm wide; flowers bisexual, radially symmetrical; fruit a capsule, less than 10 mm long ..... *Juncus*
71. Leaves more than 5 mm wide; fruit an achene or, if a capsule, then more than 30 mm long
72. Leaves with a keeled midrib; flowers in pistillate and staminate globose heads ..... *Sparganium*
72. Leaves without prominent midrib; inflorescence a spike or a single flower
73. Leaf sheaths abruptly narrowed to blade; inflorescence a spike; flowers tiny; fruits an achene ..... *Typha*
73. Leaf sheath tapered to blade; flowers large and showy; fruit a capsule ..... *Iris*

54. Leaves with netted veins
74. Leaves whorled; stems 4-angled; flowers 3- or 4-merous; fruits spherical and paired .... *Galium*
74. Leaves not whorled; stems terete or 3-angled; flowers 5-merous; fruits not spherical or paired
75. Stems 3-angled; flowers borne singly, bell-shaped ..... *Campanula*
75. Stems terete or nearly so; flowers in heads
76. Inflorescence flat-topped; flowers yellow ..... *Solidago*
76. Inflorescence not flat-topped; flowers not yellow ..... *Aster*

53. Plants limp and flaccid, requiring water for support
77. Leaves opposite or whorled
78. Leaves whorled; flowers and fruits (both rarely seen) on long filamentous stalks ..... *Elodea*
78. Leaves opposite; flowers and fruits sessile in the leaf axils
79. Lower submersed leaves linear, bidentate at apex, tapering to a sessile base; upper and floating leaves spatulate to ovate; fruits heart-shaped with 4 seeds ..... *Callitriche*
79. Leaves all linear and submersed, apex acute, base broad and semiclasping or with sheathing stipules; fruits with 1 seed
80. Leaves 15-40 mm long, 0.5-1 mm wide at base above the lobes, tapering gradually to the apex; fruits borne singly in the leaf axils, terete and tapering to both ends ..... *Najas*
80. Leaves 30-100 mm long, less than 0.5 mm wide, sides parallel; fruits with a long beak, often toothed on one side, 2-5 in an axil ..... *Zannichellia*

77. Leaves alternate
81. Leaves to 150 cm long, with midvein not evident, longitudinal and cross veins numerous giving the leaf a checkered appearance with squares and short rectangles, stipules absent; flowers unisexual in globose heads ..... *Sparganium*

81. Leaves less than 30 cm long, stipules present (may disappear with age); flowers bisexual, borne singly or in cylindrical or globose spikes
  82. Leaves several times as wide as thick, with no definite midvein, stipules adnate to the leaf base; flowers (rarely seen) borne singly, 3-merous, pale yellow ..... *Heteranthera*
  82. Leaves with an evident midvein, except for those which are very narrow and scarcely wider than thick; stipules adnate or free; flowers borne in spikes, 4-merous, greenish or brownish ..... *Potamogeton*

52. Leaves broad
  83. Leaves opposite or whorled
    84. Plants stiff, not requiring water for support
      85. Stems terete or nearly so
        86. Leaf margins entire
          87. Leaves sessile
            88. Leaves with transparent dots
              89. Flowers yellow, without glands between the groups of stamens ..... *Hypericum*
              89. Flowers pinkish or greenish, with three orange glands alternating with the three groups of stamens ..... *Triadenum*
            88. Leaves without transparent dots (opaque dots may be present)
              90. Plants 10-30 cm tall; stems soft; flowers bilaterally symmetrical ..... *Gratiola*
              90. Plants 40-120 cm tall; stems firm; flowers radially symmetrical
                91. Larger leaves slightly cordate; inflorescence a spike; flowers reddish-purple, trimorphic ..... *Lythrum*
                91. Leaves never cordate; inflorescence a raceme; flowers yellow, not trimorphic ..... *Lysimachia*
          87. Leaves petioled
            92. Plants delicate, erect or decumbent; leaves less than 4 cm long; flowers tiny, sessile in the leaf axils ..... *Ludwigia*
            92. Plants firm, erect; inflorescence large and showy
              93. Plants with milky sap; inflorescence an umbel; flowers pink ..... *Asclepias*
              93. Plants without milky sap; inflorescence a raceme; flowers yellow . *Lysimachia terrestris*
        86. Leaf margins serrate
          94. Leaves connate or whorled ..... *Eupatorium*
          94. Leaves opposite, not connate
            95. Plants decumbent; leaves linear lanceolate; inflorescence a raceme; flowers violet; fruits a notched capsule ..... *Veronica*
            95. Plants erect or essentially so; inflorescence not a raceme
              96. Plants 10-30 cm tall; leaves obovate; flowers borne singly in the leaf axils, white tinged with purple; fruits a globose capsule ..... *Gratiola*
              96. Inflorescence a spike or a head
                97. Inflorescence a terminal spike; flowers white ..... *Chelone*
                97. Inflorescence a head; flowers yellow ..... *Bidens*

      85. Stems 4- or 6-angled
        98. Leaf margins entire; leaves opposite or in threes (some near inflorescence may be alternate); stems corky; flowers purple ..... *Decodon*
        98. Leaf margins with teeth; stems not corky
          99. Leaves whorled, mostly in fours or sixes; flowers white ..... *Galium*
          99. Leaves opposite
            100. Flowers borne singly or in loose racemes in the leaf axil
              101. Plants 10-30 cm tall; leaves 1-3 cm long; flowers pale lavender, 7-10 mm long ..... *Lindernia*
              101. Plants 30-100 cm tall; leaves 3-10 cm long; flowers blue
                102. Leaves sessile; flowers borne singly in the leaf axils on pedicels 2-4 cm long; fruits a capsule with many seeds ..... *Mimulus*

102. Leaves with petioles 1-20 mm long; flowers in racemes or singly on pedicels less than a cm long; fruits forming 4 nutlets in each flower ..... *Scutellaria*

100. Flowers borne in dense axillary clusters or terminal spikes

103. Plants fragrant; tubers absent; flowers bluish-pink; stamens 4 ..... *Mentha*

103. Plants not fragrant; tubers sometimes present; flowers white; stamens 2 ..... *Lycopus*

84. Plants flaccid, requiring water for support, or prostrate

104. Leaves simple

105. Leaves 4 mm or less wide, sessile, with 1 vein; flowers in the leaf axils ..... *Elatine*

105. Leaves, at least some of them 5 mm or more wide, petioled

106. Upper leaves broad, forming a small rosette at the water surface, lower ones linear ..... *Callitriche*

106. All leaves broad

107. Stems trailing; flowers in the leaf axils, 20-30 mm wide, yellow, 5-merous, on pedicels 10-25 mm long ..... *Lysimachia nummularia*

107. Some stems upright from a horizontal rhizome; flowers small, 4-merous, sessile or nearly so

108. Flowers terminal on the branches ..... *Chrysosplenium*

108. Flowers in the leaf axils ..... *Ludwigia*

104. Leaves dissected

109. Leaves with bladders; flowers showy, bilaterally symmetrical ..... *Utricularia*

109. Leaves without bladders; flowers radially symmetrical

110. Leaves pinnately divided ..... *Myriophyllum*

110. Leaves forked

111. Plants without roots; all leaves submersed, lobes usually toothed on one side (plants lacking teeth might be confused with *Bidens*); flowers tiny, in the leaf axils ..... *Ceratophyllum*

111. Plants rooted; with or without emersed leaves, lobes entire; flowers in a showy head with yellow rays ..... *Bidens beckii*

83. Leaves alternate

112. Leaves peltate, floating plants usually with gelatinous coating ..... *Brasenia*

112. Leaves not peltate

113. Floating leaves with inflated petioles; submersed leaves pinnately dissected ..... *Trapa*

113. Leaves without inflated petioles

114. With a cluster of thick, tuberlike roots near the water surface at the juncture of the petiole and stem; leaves cordate ..... *Nymphoides*

114. With no thick roots near the water surface

115. Plants flaccid, requiring water for support, or creeping mats

116. Leaves compound with broad leaflets; flowers about 2 cm wide, 5-merous; petals red-purple ..... *Potentilla*

116. Leaves simple or compound with narrow leaflets or dissections

117. Leaves with parallel veins, with a stipule in the axil of the stem and leaf; inflorescence a spike; flowers small, greenish, 4-merous ..... *Potamogeton*

117. Leaves with netted veins

118. Leaves palmately veined

119. Petioles as long or longer than the blades; inflorescence a tiny axillary umbel ..... *Hydrocotyle*

119. Petioles much shorter than the blade; flowers solitary, on a long pedicel ..... *Ranunculus*

118. Leaves pinnately veined

120. Leaf margins entire; with a tubular sheath (ocrea) at the base of each petiole; inflorescence a spike with rose-colored flowers ..... *Polygonum*

120. Leaf margins shallowly to coarsely toothed; with no tubular sheath; inflorescence not a spike

121. Leaves less than 2 cm long, with a short petiole, shallowly toothed; flowers solitary, terminal, 4-merous ..... *Chrysosplenium*

121. Leaves more than 2 cm long, sessile, coarsely toothed; flowers axillary, solitary or in clusters, 3-merous . . . . . *Proserpinaca*

115. Plants stiff, not requiring water for support

122. Leaves compound

123. Leaves once compound; inflorescence 1- to several-flowered;

124. Leaflets 3, terminal one stalked; flowers yellow . . . . . *Ranunculus septentrionalis*

124. Leaflets 5 or more; flowers not yellow

125. Petiole with broad base that encircles the stem; flowers 5-merous, red-purple . . . . . *Potentilla*

125. Petiole without broad base; flowers 4-merous, white or pink . . . . . *Cardamine*

123. Leaves twice or thrice compound; inflorescence an umbel; flowers white

126. Stems angled; leaves pinnately compound, upper ones once, lower twice; leaflets serrate; fruits with 1 oil tube between each pair of ribs . . . . . *Sium*

126. Stems terete; leaves twice or thrice compound, often some of them appearing to be palmate; leaflets serrate or entire; fruits with 1-3 oil tubes between each pair of ribs . . *Cicuta*

122. Leaves simple, may be deeply lobed

127. With short cylindric stipules sheathing the stem at the nodes (ocreae), may be reduced to fibers in *Rumex*; flowers whitish, greenish, or rose

128. Flowers sessile, forming a spike . . . . . *Polygonum*

128. Flowers on pedicels in whorls . . . . . *Rumex*

127. Ocreae absent

129. Leaves cordate

130. Stems with one cauline leaf; leaves with parallel veins, margins smooth; inflorescence a showy spike of blue flowers . . . . . *Pontederia*

130. Stems with more than one cauline leaf; leaves with netted veins; margins scalloped; flowers yellow or white

131. Leaves mostly more than 10 cm wide; flowers yellow . . . . . *Caltha*

131. Leaves mostly less than 5 cm wide; flowers white . . . . . *Hydrocotyle*

129. Leaves not cordate

132. Flowers in heads . . . . . *Aster*

132. Flowers not in heads

133. Leaf margins entire, may be lobed

134. Leaves sessile, not lobed, flowers blue with yellow spot in center; fruits 4-lobed, becoming 4 nutlets . . . . . *Myosotis*

134. Leaves petiolate, with or without lobes; flowers violet or purple; fruits a berry . . . . . *Solanum*

133. Leaf margins toothed

135. Leaves lobed; flowers yellow; fruits a silique . . . . . *Rorippa*

135. Leaves not lobed; flowers not yellow; fruits a follicle or capsule

136. Inflorescence a cyme, coiled when young, straightening as flowers open; flowers greenish; fruits a follicle . . . . . *Penthorum*

136. Inflorescence a raceme of showy blue or scarlet flowers; fruits a capsule . . . . . *Lobelia*

CHECKLIST

ISOETACEAE

ISOETES QUILLWORT
echinospora subsp. **braunii** *(I. muricata)* Fig. 2.
macrospora Fig. 1.
1. Megaspores spinulose, 0.3-0.6 mm in diam. ..... *I. echinospora*
1. Megaspores reticulate, 0.5-0.8 mm in diam. ..... *I. macrospora*

EQUISETACEAE

EQUISETUM HORSETAIL
fluviatile Fig. 3. Lake outlet; Red Rock Bay; Harris Bay
palustre Fig. 4. Harris Bay swamp
1. Central cavity of stem about 4/5 the diameter of the stem ..... *E. fluviatile*
1. Central cavity about 1/6 the diameter of the stem ..... *E. palustre*

OSMUNDACEAE

OSMUNDA
cinnamomea CINNAMON FERN Fig. 5. Big Burnt I.; Northwest Bay; Pilot Knob; Speaker Heck I.; Warner Bay; Harris Bay; Dunham Bay
regalis var. **spectabilis** ROYAL FERN Fig. 6.
1. Leaves once pinnate ..... *O. cinnamomea*
1. Leaves twice pinnate ..... *O. regalis*

POLYPODIACEAE

ONOCLEA
sensibilis SENSITIVE FERN Fig. 7.
THELYPTERIS
palustris var. **pubescens** *(Dryopteris thelypteris)* MARSH FERN Fig. 8.

TYPHACEAE

TYPHA CATTAIL
angustifolia NARROW-LEAVED CATTAIL Fig. 10. Lake outlet; N end of lake; Black Pt; Harris Bay; Dunham Bay
× **glauca** *(=T. angustifolia × latifolia)* Fig. 11. Lake outlet; Harris Bay; Dunham Bay
latifolia BROAD-LEAVED CATTAIL Fig. 9. Lake outlet; Cooper Pt; Northwest Bay; Warner Bay; Harris Bay; Dunham Bay
1. Stigmas lance-ovate; pistillate and staminate parts of spike usually contiguous; pollen grains in tetrads ..... *T. latifolia*
1. Stigmas linear to lance-linear; pistillate and staminate parts of spike usually separated; pollen grains single
   2. Stigmas lance-linear; pistillate and staminate parts of spike contiguous or separated by an interval up to 4 cm (usually less than the diameter of the pistillate spike); leaves mostly 7-12 mm wide ..... *T. × glauca*

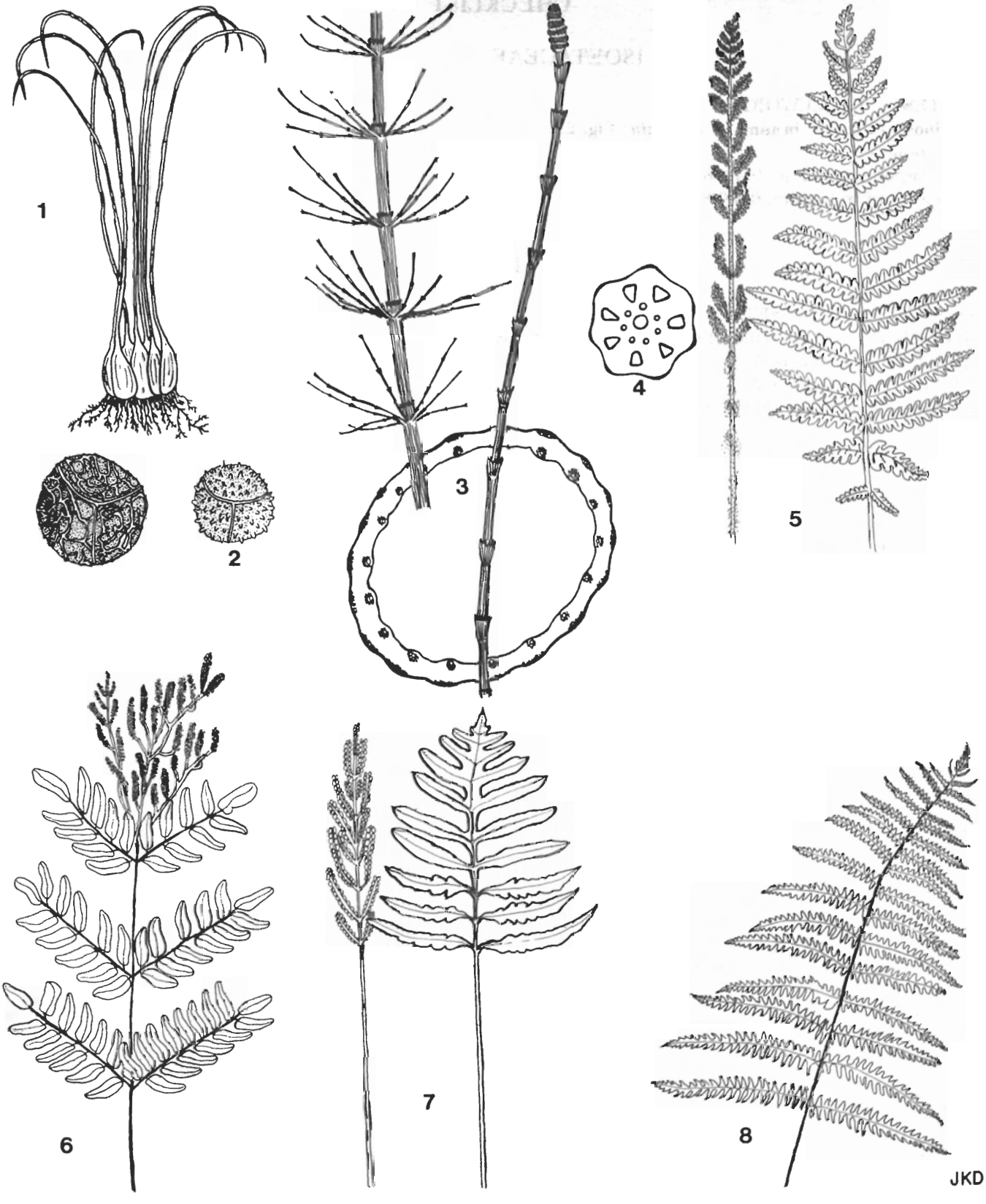


Fig. 1. Isoetes echinospora; Fig. 2. I. macrospora; Fig. 3. Equisetum fluviatile; Fig. 4. E. palustre; Fig. 5. Osmunda cinnamomea; Fig. 6. O. regalis; Fig. 7. Onoclea sensibilis; Fig. 8. Thelypteris palustris.

Fig. 9. Typha latifolia; Fig. 10. T. angustifolia; Fig. 11. T. × glauca; Fig. 12. Sparganium eurycarpum; Fig. 13. S. americanum; Fig. 14. S. chlorocarpum; Fig. 15. S. angustifolium; Fig. 16. S. fluctuans; Fig. 17. S. minimum.

2. Stigmas linear; pistillate and staminate parts of spike separated by an interval of 0.5-12 cm (usually about twice the diameter of the pistillate spike); leaves mostly 4-8 mm wide ..... *T. angustifolia*

SPARGANIACEAE

SPARGANIUM BUR REED

americanum Fig. 13. N end of lake; Northwest Bay; Shelving Rock; Bolton Ldg; Dunham Bay

angustifolium Fig. 15. Harris Bay. This species and/or *S. fluctuans* found sterile throughout and impossible to distinguish with certainty.

chlorocarpum Fig. 14. Northwest Bay; Warner Bay; Dunham Bay

eurycarpum Fig. 12.

fluctuans Fig. 16. Northwest Bay; Warner Bay. See note under *S. angustifolium*.

minimum Fig. 17. Dunham Bay

1. Stigmas 2; fruit 4-8 mm wide, usually with 2 seeds ..... *S. eurycarpum*
1. Stigma 1; fruit 1-3 mm wide, with 1 seed
   2. Pistillate heads more than 12 mm in diameter; staminate heads 2 or more; beak of fruit about as long as ovary
      3. Plants erect with upper leaves emersed
         4. Pistillate heads axillary (from the axils of bracts); upper part of fruit usually dull ..... *S. americanum*
         4. One or more of the pistillate heads supra-axillary (on the peduncle above the axil); upper part of fruit usually shiny ..... *S. chlorocarpum*
      3. Plants flaccid with upper leaves floating and often very long
         5. Inflorescence branched; pistillate heads axillary; mature fruit dark with firm pericarp; beak strongly curved; sepals attached near base or middle of fruit stalk; leaves 3-10 mm wide, usually flattish on both sides ..... *S. fluctuans*
         5. Inflorescence unbranched; one or more pistillate heads supra-axillary; mature fruit brownish or greenish with loose pericarp; beak straight or slightly curved; sepals attached near the summit of fruit stalk; leaves 2-5 mm wide, usually rounded on the back ..... *S. angustifolium*
   2. Pistillate heads about 10 mm in diameter; staminate heads 1 (rarely 2); beak of fruit short ..... *S. minimum*

POTAMOGETONACEAE

POTAMOGETON PONDWEED

alpinus var. **tenuifolius** Fig. 22. Northwest Bay stream; Shelving Rock; Warner Bay; Dunham Bay

amplifolius Fig. 19.

crispus Fig. 18. Hague; Gull Bay; Smith Bay; Lamb Shanty Bay; Tea I.; S end of lake

epihydrus var. **ramosus** (*P. e.* var. *nuttallii*) Fig. 31.

foliosus Fig. 32. Lake outlet; Dunham Bay

friesii Fig. 34. Shelving Rock; Warner Bay; Dunham Bay

gramineus Fig. 21.

illinoensis (*P. angustifolius, P. lucens*) Fig. 24. Lake outlet; N end of lake, bay N of Black Pt; Weeds Bay; Warner Bay

natans Fig. 20.

obtusifolius Fig. 36. Dunham Bay

pectinatus Fig. 28. **Hearts Bay;** Arcady Bay; Shelving Rock Bay; Dunham Bay
perfoliatus var. **bupleuroides** Fig. 23.
praelongus Fig. 26.
pusillus var. **tenuissimus** *(P. berchtoldii)* Fig. 33.
richardsonii Fig. 25. Weeds Bay; Warner Bay; Brayton
robbinsii Fig. 27.
spirillus *(P. dimorphus)* Fig. 30.
vaseyi Fig. 29. Bolton Ldg; Warner Bay; Dunham Bay
zosteriformis *(P. compressus)* Fig. 35.

1. Leaves all submersed, linear, auricled at base, margins finely denticulate; stipules adnate ..... *P. robbinsii*
1. Leaves various but if linear then not auricled
  2. Stipules adnate to the base of the leaf for a distance of 10 mm or more; floating leaves absent ..... *P. pectinatus*
  2. Stipules free or adnate for a distance of less than 10 mm
    3. Leaf margins serrate ..... *P. crispus*
    3. Leaf margins entire
      4. Stem strongly flattened; leaves linear, veins 15-35 ..... *P. zosteriformis*
      4. Stem terete or slightly flattened; leaves various but if linear then with less than 15 veins
        5. Submersed leaves linear, less than 10 mm wide, length more than 20 times the width
          6. Submersed leaves ribbonlike, flaccid, 2-10 mm wide, with a prominent parallel-sided median band of lacunae filling the broad space between the inner veins; fruits 2.5-4 mm long, embryo coil more than a complete revolution ..... *P. epihydrus*
          6. Submersed leaves 0.1-4 mm wide, lacunae not forming a prominent parallel-sided band; fruits 0.8-3 mm long, embryo coil less than one revolution, or if more than fruits less than 2.5 mm long
            7. Floating leaf blades more than 20 mm wide, usually cordate; submersed leaves (usually absent at maturity) mostly from the main stem, firm, 0.8-2 mm wide; fruits 3.5-5 mm long, keels obscure, coat wrinkled ..... *P. natans*
            7. Floating leaves less than 15 mm wide, not cordate, often absent; submersed leaves flaccid, usually from branches; fruits less than 4 mm long
              8. Floating leaves absent; submersed leaves 0.5-4 mm wide; fruits with embryo coil less than one revolution
                9. Stipules strongly fibrous, becoming whitish, especially on the winter buds ..... *P. friesii*
                9. Stipules delicate, greenish or brownish
                10. Leaves 2-4 mm wide, rounded at apex; fruits 3-4 mm long ..... *P. obtusifolius*
                10. Leaves 0.5-3 mm wide, acute to obtuse (if rounded, then with a sharp mucro); fruits 1.8-2.8 mm long
                11. Fruits with dorsal keel thin, undulate or dentate; leaves acute, scarcely lacunate ..... *P. foliosus*
                11. Fruits with dorsal keel rounded; leaves acute or obtuse, usually with one or more rows of lacunae each side of the midrib ..... *P. pusillus*
              8. Floating leaves usually present; submersed leaves 0.1-2 mm wide
                12. Submersed leaves 0.1-0.5 mm wide, tapering to a sharp pointed apex, stipules not adnate; peduncles from axils of floating leaves only; fruits with dorsal keel rounded and with embryo coil less than one revolution ..... *P. vaseyi*
                12. Submersed leaves 0.5-2 mm wide, obtuse to rounded at apex; stipules slightly adnate to leaf base; peduncles from axils of floating and of submersed leaves; fruits with dorsal keel winged and with embryo coil more than one revolution ..... *P. spirillus*
        5. Submersed leaves without parallel sides, 2-70 mm wide (sometimes narrowly linear in *P. gramineus*), length less than 20 times the width

13. Submersed leaves petioled or sessile but not clasping; floating leaves often present
  14. Submersed leaves sessile, apex obtuse; floating leaves delicate, blade tapering without sharp distinction into the petiole; fruit wall hard and smooth, tawny-olive ..... *P. alpinus*
  14. Submersed leaves sessile or petioled, apex obtuse or acute; floating leaves coriaceous, blade distinct from petiole; fruit wall spongy, greenish, brownish, or reddish
    15. Submersed leaves, usually arcuate, with 19-37 veins; floating leaf blades mostly with more than 30 veins; fruits mostly more than 3.5 mm long ..... *P. amplifolius*
    15. Submersed leaves seldom arcuate, with 3-19 veins; floating leaf blades mostly with less than 30 veins; fruits mostly less than 3.5 mm long
      16. Stem usually much branched; submersed leaves 2-15 mm wide, sessile, with 3-9 veins; floating leaf petioles mostly longer than the blades; fruiting spikes 10-25 mm long; fruits 1.7-2.8 mm long ..... *P. gramineus*
      16. Stem simple or once branched; submersed leaves 15-40 mm wide, sessile or petioled, with 9-17 veins; floating leaf petioles mostly shorter than the blades; fruiting spikes 25-60 mm long; fruits 2.5-3.5 mm long ..... *P. illinoensis*
13. Leaves all submersed, cordate or rounded at base and clasping the stem
  17. Leaves ovate-oblong, mostly 10-20 cm long, apex boatshaped, splitting when flattened; stipules persistent; stem often whitish; fruits more than 4 mm long ..... *P. praelongus*
  17. Leaves ovate or elongate ovate, 1-10 cm long, apex not boatshaped; stipules at maturity inconspicuous or disintegrated to fibers; stem greenish; fruits less than 3.5 mm long
    18. Stipules coarse, disintegrating to persistent whitish fibers; peduncles clavate; fruits with a cavity in the endocarp loop ..... *P. richardsonii*
    18. Stipules delicate, disappearing with age; peduncles not clavate; fruits without a cavity in the endocarp loop ..... *P. perfoliatus*

ZANNICHELLIACEAE

ZANNICHELLIA HORNED PONDWEED
palustris Fig. 37. Lake outlet; Gull Bay

NAJADACEAE

NAJAS NAIAD
flexilis Fig. 38.

SCHEUCHZERIACEAE

SCHEUCHZERIA
palustris subsp. americana Fig. 39. East Lake George marsh

JUNCAGINACEAE

TRIGLOCHIN ARROW GRASS
maritima var. elata Fig. 40. East Lake George marsh near Brayton

ALISMATACEAE

ALISMA WATER PLANTAIN
plantago-aquatica subsp. subcordatum *(A. p.-a. var. parviflorum)* Fig. 41. Lake outlet; Little Harbor Island; Bolton Ldg; Dunham Bay marsh

Fig. 18. **Potamogeton crispus**; **Fig. 19. P. amplifolius**; **Fig. 20. P. natans**; **Fig.** 21. P. gramineus; Fig. 22. P. alpinus; **Fig. 23. P. perfoliatus**; **Fig. 24. P. illinoensis**; **Fig. 25. P. richardsonii**; **Fig. 26. P. praelongus.**

Fig. 27. Potamogeton robbinsii; Fig. 28. P. pectinatus; Fig. 29. P. vaseyi; Fig. 30. P. spirillus; Fig. 31. P. epihydrus; Fig. 32. P. foliosus; Fig. 33. P. pusillus; Fig. 34. P. friesii; Fig. 35. P. zosteriformis; Fig. 36. P. obtusifolius.

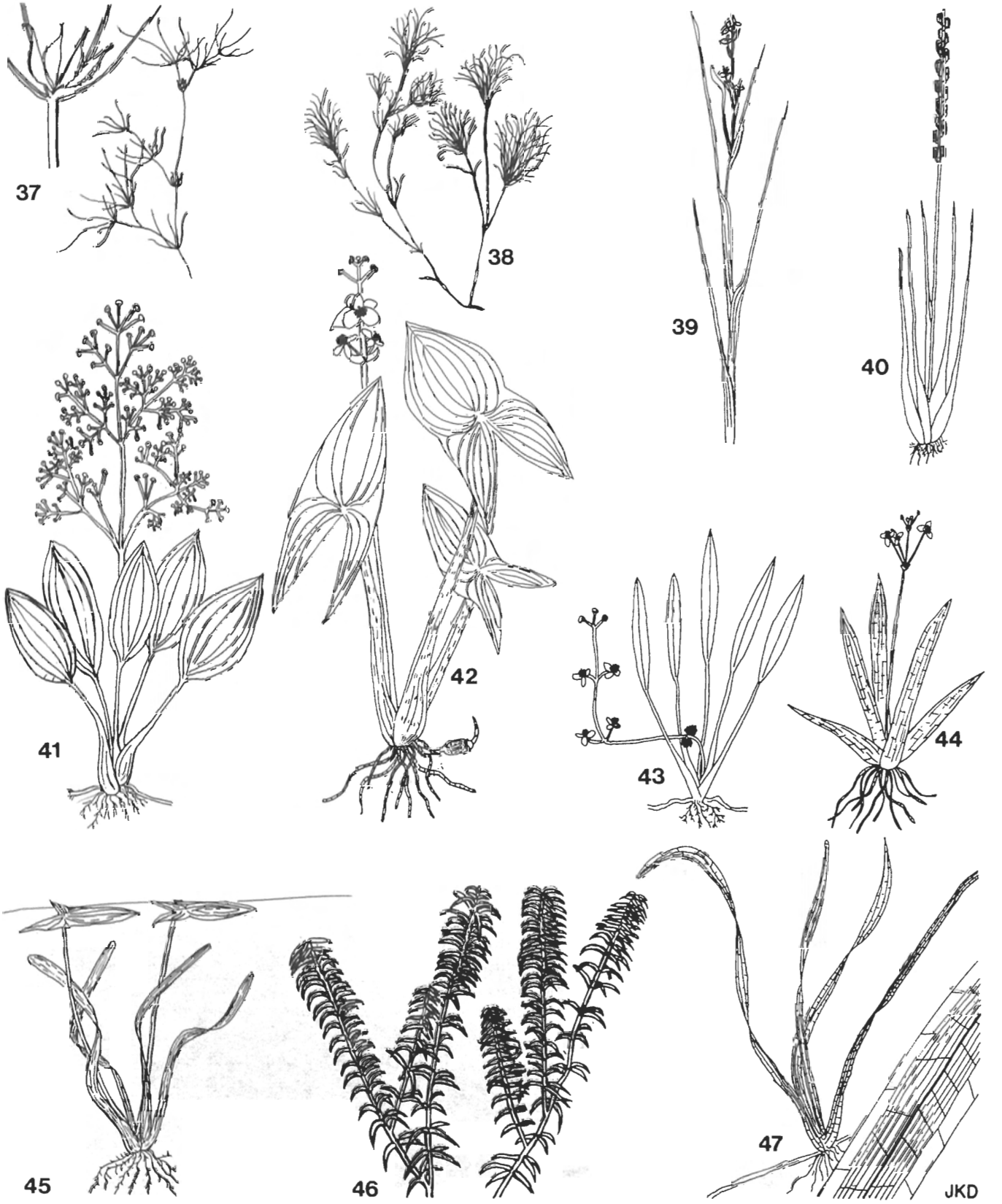


Fig. 37. Zannichellia palustris; Fig. 38. Najas flexilis; Fig. 39. Scheuchzeria palustris; Fig. 40. Triglochin maritima; Fig. 41. Alisma plantago-aquatica; Fig. 42. Sagittaria latifolia; Fig. 43. S. rigida; Fig. 44. S. graminea; Fig. 45. S. cuneata; Fig. 46. Elodea canadensis; Fig. 47. Vallisneria americana.

SAGITTARIA ARROWHEAD

cuneata *(S. arifolia)* Fig. 45.

graminea Fig. 44. Sterile emersed plants similar to *S. rigida*.

latifolia Fig. 42.

rigida Fig. 43. See note under *S. graminea*.

1. Most leaves sagittate
   2. Pistillate flowers on definite pedicels
      3. Leaves stiff and erect; beak of achene horizontal ..... *S. latifolia*
      3. Leaves usually flaccid, often of two kinds (submersed ribbonlike, floating sagittate) beak of achene nearly erect ..... *S. cuneata*
   2. Pistillate flowers sessile or nearly so ..... *S. rigida*
1. Most leaves not sagittate
   4. Pistillate flowers sessile or nearly so; peduncles strongly bent above the lowest flowers; achenes 3-4 mm long ..... *S. rigida*
   4. Pistillate flowers on definite pedicles; peduncles straight or nearly so; achenes about 1 mm long ..... *S. graminea*

HYDROCHARITACEAE

ELODEA ELODEA, WATERWEED

canadensis *(Anacharis c., Philotria c.)* Fig. 46.

VALLISNERIA DUCK CELERY, FRESH WATER EEL GRASS

americana *(V. spiralis)* Fig. 47.

GRAMINEAE

ALOPECURUS FOXTAIL

aequalis *(A. aristulatus)* Fig. 48. Warner Bay; Dunham Bay; Bloody Pond

CALAMAGROSTIS

canadensis BLUEPOINT GRASS Fig. 49. Warner Bay; Harris Bay; Dunham Bay

GLYCERIA MANNA GRASS

borealis *(Panicularia b.)* Fig. 50.

canadensis *(Panicularia c.)* Fig. 53. Bloody Pond

maxima subsp. grandis *(Panicularia g.)* Fig. 51.
Lake outlet; Sabbath Day Pt; Lake George village

striata *(G. nervata, Panicularia s., P. n.)* Fig. 52. Lake outlet; Harris Bay; Bloody Pond

1. Spikelets 10 mm or more long, cylindrical; panicle narrow and erect ..... *G. borealis*
1. Spikelets 7 mm or less long, flattened, panicle spreading and nodding
   2. Spikelets 3-4 mm wide; veins of lemma inconspicuous ..... *G. canadensis*
   2. Spikelets less than 3 mm wide; veins of lemma conspicuous
      3. Leaves 6-12 mm wide; spikelets 4-7 mm long; first glume 1-2 mm long; second glume 1.5-2.5 mm long ..... *G. maxima*
      3. Leaves 2-5 (−8) mm wide; spikelets 3-4 mm long; first glume 0.6-1 mm long; second glume 0.8-1.3 mm long ..... *G. striata*

LEERSIA

oryzoides *(Homalocenchrus o.)* CUT GRASS Fig. 55. Lake outlet; Black Pt Bay; Dunham Bay

PHALARIS

arundinacea REED CANARY GRASS Fig. 56. Bolton Ldg; Diamond Pt; Harris Bay; Dunham Bay

PHRAGMITES

australis *(P. communis, P. maximus, P. phragmites)* GIANT REED GRASS
Fig. 57. East Lake George marsh; Dunham Bay

Fig. 48. Alopecurus aequalis; Fig. 49. Calamagrostis canadensis; Fig. 50. Glyceria borealis; Fig. 51. G. maxima; Fig. 52. G. striata; Fig. 53. G. canadensis; Fig. 54. Puccinellia pallida; Fig. 55. Leersia oryzoides; Fig. 56. Phalaris arundinacea; Fig. 57. Phragmites australis; Fig. 58. Zizania aquatica; Fig. 59. Z. palustris.

PUCCINELLIA

pallida *(Glyceria p., Panicularia p.)* Fig. 54. Bolton Ldg; Harris Bay; Dunham Bay

ZIZANIA WILD RICE

aquatica *(Z. palustris)* Fig. 58. Harris Bay; Dunham Bay

palustris *(Z. aquatica, Z. a.* var. *angustifolia)* Fig. 59. Harris Bay; Dunham Bay

1. Pistillate lemmas thin, delicately ribbed, with scattered strigose hairs on the surface or glabrous . . . . . *Z. aquatica*
1. Pistillate lemmas coarsely corrugated; with hairs only between the ribs . . . . . *Z. palustris*

CYPERACEAE

CAREX SEDGE

alata Fig. 64. East Lake George marsh; Dunham Bay

bebbii Fig. 65. Pilot Knob; Harris Bay swamp; Dunham Bay

canescens Fig. 75. Northwest Bay; Warner Bay; Harris Bay; Dunham Bay

chordorrhiza Fig. 74. East Lake George marsh

comosa Fig. 78.

crinata Fig. 85. Smith Bay; Northwest Bay; Harris Bay swamp

cristatella Fig. 66. Lake outlet; N of Bolton; Pilot Knob; Warner Bay; Harris Bay; Dunham Bay

diandra Fig. 72. Warner Bay; Brayton; Harris Bay; Dunham Bay

exilis Fig. 60. East Lake George marsh; Harris Bay bog mat

flava Fig. 92. Brayton

gynandra *(C. crinata* var. *g.)* Fig. 84. Hague; Tongue Mt; Pilot Knob; Brayton; Harris Bay

howei Fig. 61. Brayton

hystericina Fig. 81.

interior Fig. 62. Harris Bay swamp; marsh S of Lake George village

intumescens Dunham Bay

intumescens var. **fernaldii** Fig. 90. Boon Bay; Basin Bay; Brayton; Harris Bay

lacustris Fig. 86. Northwest Bay; Dunham Bay

lanuginosa Fig. 88. Dunham Bay

lasiocarpa subsp. **americana** Fig. 89. Lake outlet; Dunham Bay

leptalea Fig. 77. Pilot Knob

limosa Fig. 83. Brayton; Dunham Bay

lupulina Fig. 91. Cotton Pt; Pilot Knob; Dunham Bay

lurida Fig. 80. Lake outlet; Dunham Bay

magellanica subsp. **irrigua** *(C. paupercula)* Fig. 82. swamp east of Harris Bay marsh

muricata var. angustata *(C. angustior)* Diamond Point; Harris Bay

muricata var. **cephalantha** Fig. 63.

normalis Fig. 67. Harris Bay; Lake George village

prairea Fig. 73. Abandoned road east of Harris Bay marsh

projecta Fig. 68. Pilot Knob

pseudocyperus Fig. 79. Northwest Bay; Dunham Bay

rostrata Fig. 93. Cotton Pt; Northwest Bay; Dunham Bay

scabrata Fig. 94. Hague

stipata Fig. 70.

stricta *(C. strictior)* Fig. 87. Typical form throughout. A form with drooping pistillate spikes found on Harris Bay bog mat. This may be **C. stricta** forma **xerocarpa.**

tenuiflora Fig. 76. East Lake George marsh

tribuloides Fig. 69. Pilot Knob

trisperma Fig. 76A. Hague; Huddle Bay; Harris Bay bog mat

trisperma var. **billingsii** Harris Bay bog mat

vulpinoidea Fig. 71. Pilot Knob

1. Staminate and pistillate flowers in the same spike; spikes more or less uniform in shape
  2. Stigmas three; staminate scales connate at base much like a miniature aroid spathe; spike solitary, terminal ..... *C. leptalea*
  2. Stigmas two
    3. Culms arising from axils of preceding year's leaves on prostrate culms lying in Sphagnum moss ..... *C. chordorrhiza*
    3. Culms arising from roots or rootstocks
      4. Spikelets one ..... *C. exilis*
      4. Spikelets two or more
        5. Perigynia with thin winged margins, sometimes narrow but at least present on the lower part of the beak and the upper part of the body of the perigynia. (Species keying to this point belong to an extremely difficult taxonomic complex—the Ovales. Precise measurements are necessary since forms of one species often simulate another species to an exasperating degree. Other books should be consulted for more than field identification.)
          6. Perigynia more than 2.5 mm wide ..... *C. alata*
          6. Perigynia less than 2 mm wide
            7. Perigynia with wing more prominent on upper half, narrowed or absent on lower half
              8. Spikelets crowded, overlapping in a dense, compact inflorescence
                9. Inflorescense 2.5-5 cm long; spikelets tapered at base; perigynia appressed-ascending ..... *C. tribuloides*
                9. Inflorescence 1.5-3 cm long; spikelets rounded at base; perigynia appressed or spreading
                10. Perigynia appressed, usually winged to the base though wing narrowed below; pistillate scales acute and sharp. (Hybrids between this species and the next have been postulated) ..... *C. bebbii*
                10. Perigynia spreading or recurved, wing usually absent toward the base; pistillate scales acute with a blunt or notched tip ..... *C. cristatella*
              8. Spikelets remote, separated in a long, flexuous inflorescence ..... *C. projecta*
            7. Perigynia winged from base to beak without conspicuous narrowing on lower half
              11. Inflorescence greenish; perigynia distinctly nerved on inner face ..... *C. normalis*
              11. Inflorescence brownish; perigynia nerveless or at most slightly nerved at base of inner face ..... *C. bebbii*
        5. Perigynia without winged margins (at most with a thin rib)
          12. Inflorescence simple (any branch with only one spikelet); spikelets 10 or less
            13. Achene nearly filling body of perigynium; perigynia elliptic, with rounded margins, surface greenish-white dotted under magnification, beak short
              14. Lowest spikelet subtended by a bract several times as long as the spikelet, spikelets 1-5 flowered, widely separated in a flexuous, filiform inflorescence ..... *C. trisperma*
              14. Lowest spikelet subtended by a bract usually less than twice as long as the spikelet, spikelets 3-30 flowered in a straightish, firm inflorescence
                15. Inflorescence elongate; each spikelet with 10-30 perigynia ..... *C. canescens*
                15. Inflorescence subglobose with 2-4 closely spaced silvery spikelets; each spikelet with 3-10 perigynia ..... *C. tenuiflora*
            13. Achene filling only upper portion of perigynium (spongy below the achene); perigynia broadest toward the base, margins ribbed or sharp, surface not greenish-white dotted under magnification, beak prominent. (Species keying to this point belong to another difficult group—the Stellulatae. Confident identification may require additional reference books or minute comparisons with correctly identified specimens.)
              16. Pistillate scales bluntish, shorter than body of perigynium (excluding beak); beak about ¼ total length of perigynium

17. Leaves lax, delicate, less than 1 mm wide; perigynia with veins on inner surface ..... *C. howei*
17. Leaves stiff, ascending, 1.2-2 mm wide; perigynia without veins on inner surface .... *C. interior*
16. Pistillate scales acutish, as long or nearly as long as body of perigynium (excluding beak); beak about ⅓ total length of perigynium ..... *C. muricata*
12. Inflorescence compound (branches, at least the lowest, with two or more spikelets); spikelets numerous
18. Perigynia 4 mm or more long; culms spongy, leaf sheaths strongly cross puckered ..... *C. stipata*
18. Perigynia 3 mm or less long; culms not spongy
19. Perigynia flat ..... *C. vulpinoidea*
19. Perigynia plump
20. Sheaths copper-colored; inflorescence loose; perigynia appressed and concealed by their scales; perigynia flattish on ventral face ..... *C. prairea*
20. Sheaths pale, not copper-colored; inflorescence compact; perigynia spreading, not concealed by their scales; perigynia convex on ventral face ..... *C. diandra*
1. Staminate and pistillate flowers in different spikes or the staminate flowers in a strongly constricted terminal portion of a spike
21. Perigynia with beak 2-toothed, each tooth longer than wide
22. Perigynia 15 or less per spike; pistillate spikes globose or nearly so ..... *C. intumescens*
22. Perigynia 15 or more per spike; pistillate spikes cylindric or short oblong
23. Perigynia densely pubescent
24. Leaves flat, 1.5-5 mm wide; stems sharply 3-angled ..... *C. lanuginosa*
24. Leaves rolled, 2 mm or less wide; stems with 3 rounded angles ..... *C. lasiocarpa*
23. Perigynia glabrous
25. Perigynia nearly all pointing downward
26. Pistillate spikes upright, sessile or with short peduncles ..... *C. flava*
26. Pistillate spikes drooping on long slender peduncles
27. Teeth of mature perigynium 1.5-2 mm long, widely spreading ..... *C. comosa*
27. Teeth of mature perigynium 0.5-1 mm long, parallel or slightly spreading ..... *C. pseudocyperus*
25. Perigynia nearly all pointing upward (except sometimes the lowest)
28. Pistillate scales terminated with an awn
29. Staminate spikes 2 or more ..... *C. lacustris*
29. Staminate spikes solitary
30. Perigynia with 8-10 veins ..... *C. lurida*
30. Perigynia with 15-20 veins ..... *C. hystericina*
28. Pistillate scales without an awn
31. Perigynia 4-8 mm long; staminate spikes 2 or more ..... *C. rostrata*
31. Perigynia 12-15 mm long; staminate spike solitary ..... *C. lupulina*
21. Perigynia with beak not 2-toothed, at most slightly notched at tip
32. Pistillate spikes drooping
33. Pistillate scales terminated with a long serrulate awn
34. Leaf sheaths smooth; pistillate scales notched at base of awn ..... *C. crinata*
34. Leaf sheaths scabrous; pistillate scales tapered to base of awn ..... *C. gynandra*
33. Pistillate scales without an awn
35. Roots glabrous; lower sheaths with threadlike brown fibers opposite the leaf blade ..... *C. stricta*
35. Roots pubescent
36. Pistillate scales nearly as broad as the perigynium ..... *C. limosa*
36. Pistillate scales conspicuously narrower than the perigynium ..... *C. magellanica*
32. Pistillate spikes erect
37. Perigynia scabrous, beak prominent, obscurely toothed; plants forming extensive beds in wet woods ..... *C. scabrata*
37. Perigynia granular-papillate or smooth, beak minute, not toothed; plants often forming large dense hummocks ..... *C. stricta*

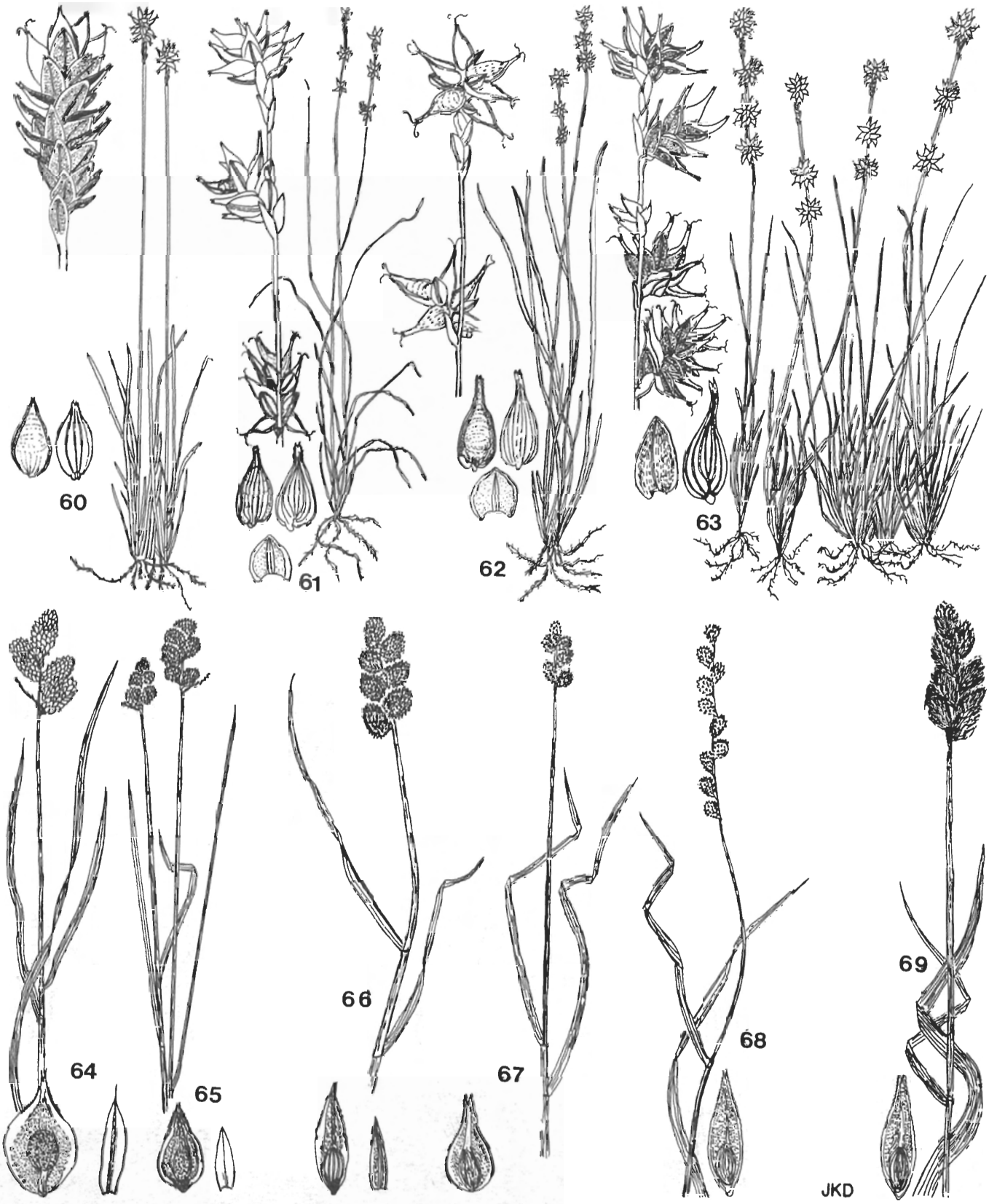


Fig. 60. Carex exilis; Fig. 61. C. howei; Fig. 62. C. interior; Fig. 63. C. muricata; Fig. 64. C. alata; Fig. 65. C. **bebbii; Fig. 66. C. cristatella; Fig. 67. C. normalis; Fig. 68. C. projecta; Fig.** 69. C. tribuloides.

Fig. 70. Carex stipata; Fig. 71. C. vulpinoidea; Fig. 72. C. diandra; Fig. 73. C. prairea; Fig. 74. C. chordorrhiza; **Fig. 75. C. canescens; Fig. 76. C. tenuiflora; Fig. 76A. C. trisperma; Fig. 77.** C. leptalea.

Fig. 78. Carex comosa; **Fig. 79.** C. pseudocyperus; Fig. 80. C. lurida; Fig. 81. C. hystericina; Fig. 82. C. magellanica; Fig. 83. C. limosa; **Fig. 84.** C. **gynandra**; Fig. 85. C. crinata.

Fig. 86. Carex lacustris; Fig. 87. C. stricta; Fig. 88. C. lanuginosa; Fig. 89. C. lasiocarpa; Fig. 90. C. intumescens; Fig. 91. C. lupulina; Fig. 92. C. flava; Fig. 93. C. rostrata; Fig. 94. C. scabrata.

Fig. 95. Cyperus strigosus; Fig. 96. C. rivularis; Fig. 97. Eriophorum gracile; Fig. 98. E. vaginatum; Fig. 99. E. virginicum; Fig. 100. Dulichium arundinaceum; Fig. 101. Eleocharis acicularis; Fig. 102. E. smallii; Fig. 103. Rhynchospora alba.

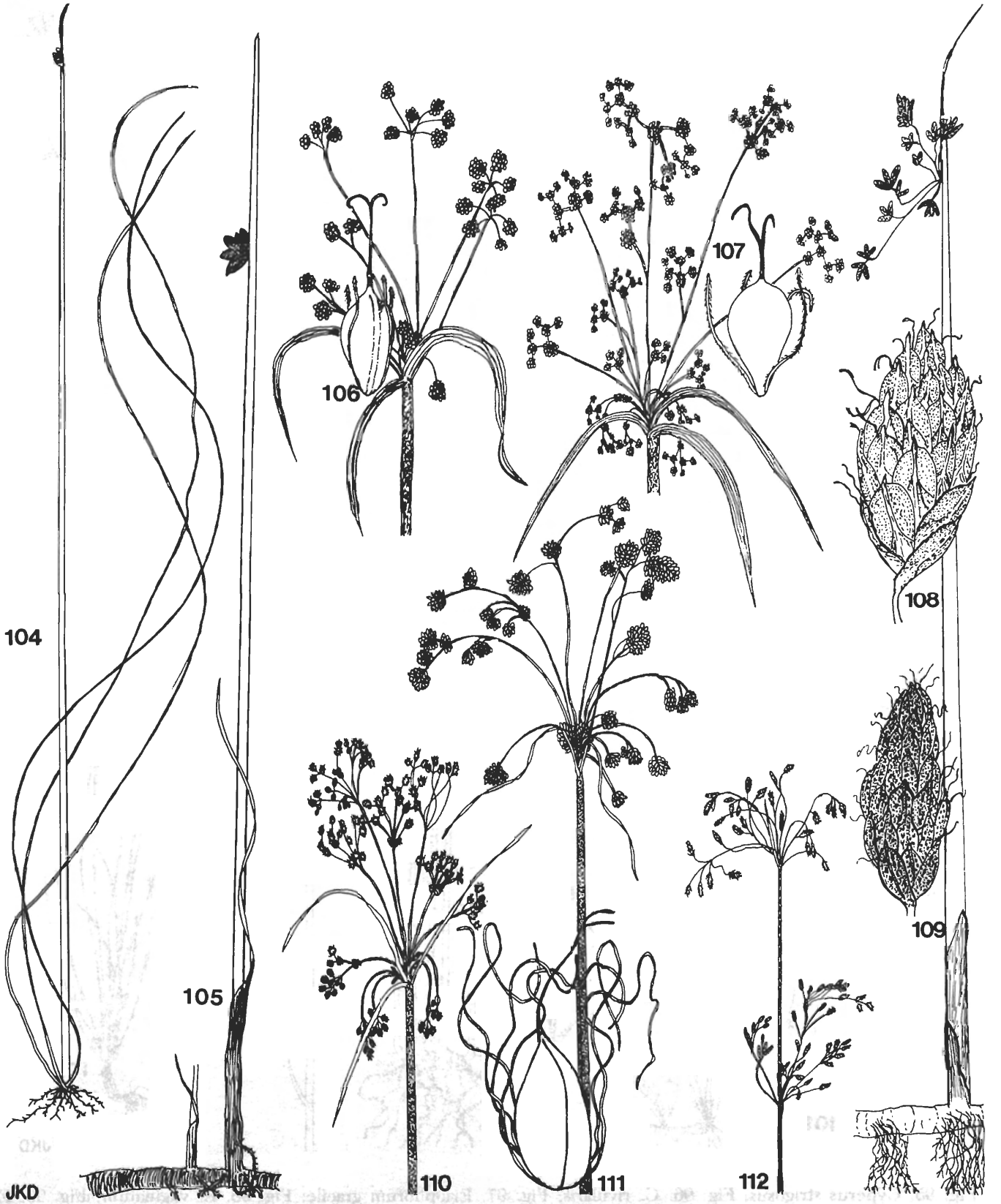


Fig. 104. Scirpus subterminalis; Fig. 105. S. pungens; Fig. 106. S. atrovirens; Fig. 107. S. rubrotinctus; Fig. 108. S. acutus; Fig. 109. S. validus; Fig. 110. S. pedicellatus; Fig. 111. S. cyperinus; Fig. 112. S. pendulus.

CYPERUS GALINGALE

aristatus *(C. inflexus)* Hague; Caldwell
diandrus Harris Bay
rivularis Fig. 96. Harris Bay; Caldwell
strigosus Fig. 95. Bolton Ldg

1. Spikelets pinnately placed ..... *C. strigosus*
1. Spikelets radiating
   2. Scales with 7-13 veins ..... *C. aristatus*
   2. Scales with 3-5 veins
      3. Pigmentation mostly at summit of scale ..... *C. diandrus*
      3. Pigmentation mostly at base of scale ..... *C. rivularis*

DULICHIUM

arundinaceum THREE-WAY SEDGE Fig. 100. Northwest Bay; East Lake George marsh; Warner Bay; Dunham Bay

ELEOCHARIS SPIKE RUSH

acicularis Fig. 101.
erythropoda *(E. calva)*
smallii *(E. palustris)* Fig. 102.

1. Styles 3-cleft; achene 3-angled ..... *E. acicularis*
1. Styles 2-cleft; achene 2-angled
   2. Spikelets with blunt scales, with one empty basal scale ..... *E. erythropoda*
   2. Spikelets with sharp pointed scales, with 2 or 3 empty basal scales ..... *E. smallii*

ERIOPHORUM COTTON GRASS

alpinum *(Scirpus hudsonianus)* East Lake George marsh at Brayton
gracile Fig. 97. Harris Bay
vaginatum ssp. **spissum** *(E. callitrix)* Fig. 98. East Lake George marsh; Harris Bay bog mat
virginicum Fig. 99. South of Brayton; Harris Bay bog mat

1. Spikelets grouped into a single cluster
   2. Stem about 0.5 mm in diameter; foliaceous bract 1, ovate; each floret with 6 bristles ..... *E. alpinum*
   2. Stem about 1 mm in diameter; foliaceous bract absent; each floret with many bristles .. *E. vaginatum*
1. Spikelets grouped into 2 or more clusters
   3. Leaves 1-2 mm wide, channeled; cluster of spikelets in a loose umbel; foliaceous bract 1, shorter than the umbel ..... *E. gracile*
   3. Leaves 2-4 mm wide, flat; cluster of spikelets in a compact umbel; foliaceous bracts 2 or 3; exceeding the umbel ..... *E. virginicum*

RHYNCHOSPORA BEAK RUSH

alba Fig. 103. Bolton Ldg; East Lake George

SCIRPUS BULRUSH, WOOLGRASS

acutus HARDSTEM BULRUSH Fig. 108. N end of Lake; Prison I.; Harris Bay
atrocinctus Cotton Pt; Brayton
atrovirens Fig. 106. Lake outlet; Pilot Knob; Harris Bay; Dunham Bay
cyperinus var. **pelius** Fig. 111. Lake outlet; Black Pt; Northwest Bay; Bolton Ldg; Harris Bay
pedicellatus Fig. 110. Cotton Pt. Brayton
pendulus *(S. lineatus)* Fig. 112. Brayton; Harris Bay
pungens *(S. americanus)* THREE-SQUARE Fig. 105. Hearts Bay; Harris Bay
rubrotinctus *(S. microcarpus)* Fig. 107. Pilot Knob; Million Dollar Beach marsh
subterminalis Fig. 104. Northwest Bay; Dunham Bay
validus SOFTSTEM BULRUSH Fig. 109. Lake outlet; Dunham Bay; pond at S end of Lake

1. Involucral leaves one
   2. Spikelets solitary on each stem; stems weak; often with tufts of hairlike leaves ..... *S. subterminalis*
   2. Spikelets several; stems rigid
      3. Stems terete

4. Stems firm; scales of spikelet longer than achene; achenes 2.5-3 mm long ..... *S. acutus*
4. Stems soft; scales about as long as achene; achenes about 2 mm long ..... *S. validus*
3. Stems triangular ..... *S. pugens*
1. Involucral leaves 2 or more
5. Stems solitary from a thick rootstock
6. Basal sheaths green; inflorescence once or twice branched; scales of spikelet mucronate; bristles barbed, about as long as achene or absent; achenes 3-angled ..... *S. atrovirens*
6. Basal sheaths reddish; inflorescence repeatedly branched; scales acute or obtuse or mucronulate; bristles longer than achene, achenes 2-angled ..... *S. rubrotinctus*
5. Stems in clumps; bristles without barbs
7. Mature bristles little longer than the scales ..... *S. pendulus*
7. Mature bristles much longer than the scales giving the inflorescence a wooly appearance
8. Spikelets mostly sessile in glomerules of 3-15 ..... *S. cyperinus*
8. Lateral spikelets mostly stalked
9. Involucels (bracts subtending each spikelet) blackish ..... *S. atrocinctus*
9. Involucels red-brown or yellow-brown ..... *S. pedicellatus*

ARACEAE

CALLA
palustris WATER ARUM, WILD CALLA Fig. 113.

PELTANDRA
virginica ARROW ARUM Fig. 114.

SYMPLOCARPUS
foetidus *(Spathyema f.)* SKUNK CABBAGE Fig. 115. Red Rock Bay; Brayton marsh; Dunham Bay

LEMNACEAE

LEMMA DUCKWEED
minor Fig. 119.
trisulca Fig. 121. Lake outlet; Red Rock Bay; Bolton Ldg; Pilot Knob; Warner Bay; Dunham Bay
1. Fronds 2-4 mm long, not stalked, free and floating on the surface ..... *L. minor*
1. Fronds 6-12 mm long, stalked, mostly attached to the parent plant and sinking below the water surface ..... *L. trisulca*

SPIRODELA
polyrhiza LARGE DUCKWEED Fig. 120.

ERIOCAULACEAE

ERIOCAULON
septangulare PIPEWORT Fig. 118.

PONTEDERIACEAE

HETERANTHERA
dubia *(Zosterella d.)* WATER STAR GRASS Fig. 117.

PONTEDERIA
cordata PICKERELWEED Fig. 116. *P. c.* forma *taenia* seen at Northwest Bay and Harris Bay

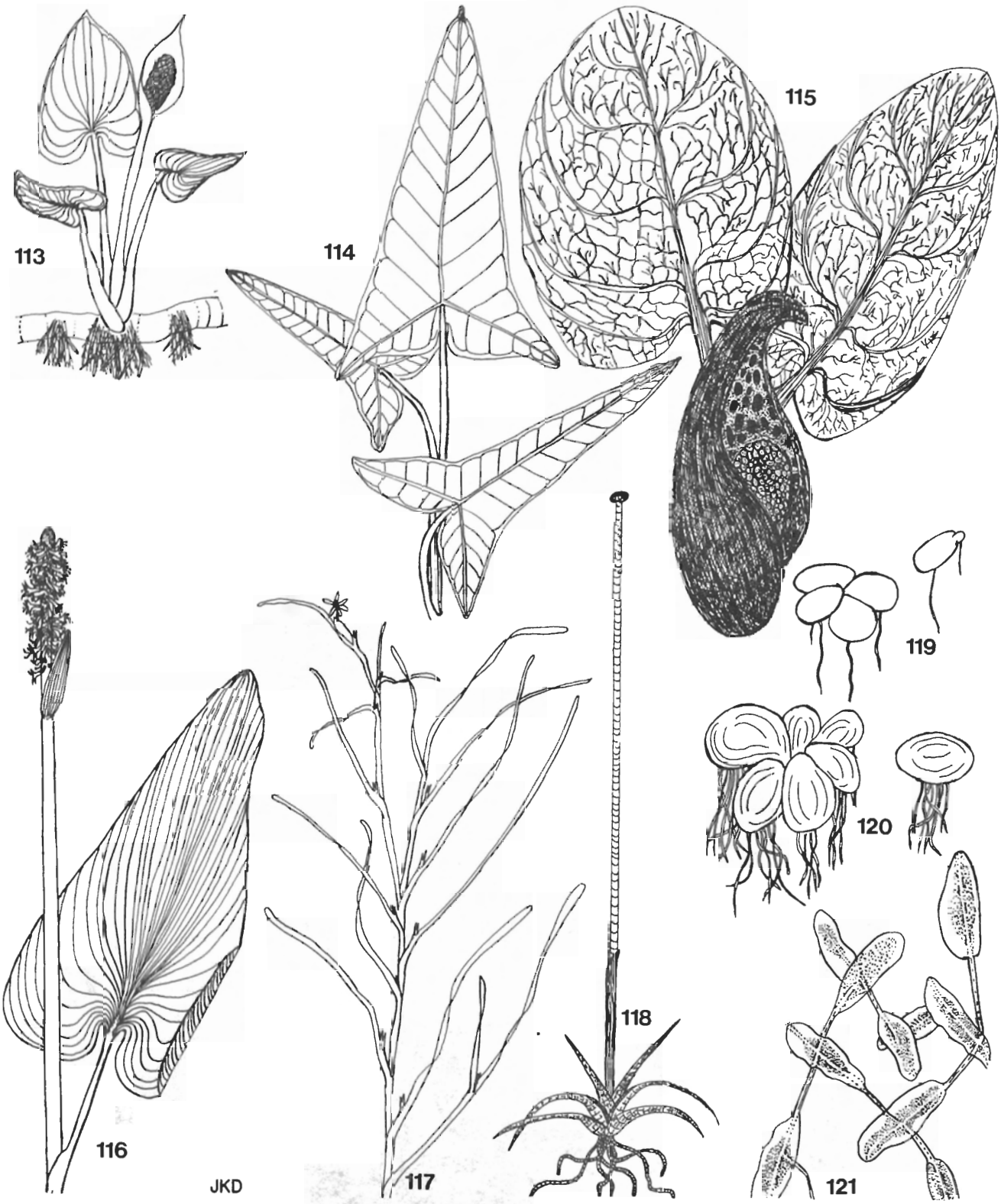


Fig. 113. Calla palustris; Fig. 114. Peltandra virginica; Fig. 115. Symplocarpus foetidus; Fig. 116. Pontederia cordata; Fig. 117. Heteranthera dubia; Fig. 118. Eriocaulon septangulare; Fig. 119. Lemna minor; Fig. 120. Spirodela polyrhiza; **Fig. 121. Lemna trisulca.**

Fig. 122. Juncus effusus; Fig. 123. J. canadensis; Fig. 124. J. brevicaudatus; Fig. 125. J. acuminatus; Fig. 126. J. marginatus; Fig. 127. J. articulatus; Fig. 128. J. pelocarpus; Fig. 129. J. nodosus; Fig. 130. Iris versicolor.

JUNCACEAE

JUNCUS RUSH

acuminatus *(J. paradoxus)* Fig. 125. Bolton Ldg; S end of Lake
articulatus Fig. 127. Caldwell
brevicaudatus Fig. 124. Sabbath Day Pt; Harris Bay; Lake George village
canadensis Fig. 123. Harris Bay; Dunham Bay
effusus var. **solutus** Fig. 122.
maginatus Fig. 126. Northwest Bay; Bolton; Brayton
nodosus Fig. 129. Bolton Ldg
pelocarpus Fig. 128.

1. Inflorescence appearing lateral ..... *J. effusus*
1. Inflorescence terminal
  2. Leaves nodose, having firm cross partitions at regular intervals
    3. Stamens 3
      4. Seeds with tails (whitish tubular extensions of the seed coat)
        5. Seeds, including tails, 1-1.8 mm long; tails ⅔ as long as the body of the seed; flowers 5-50 in each cluster; inflorescence (when well developed) quite broad; flower clusters usually subglobose ..... *J. canadensis*
        5. Seeds, including tails, about 1 mm long; tails about one half the body of the seed; flowers 3-7 in each cluster; inflorescence narrow and elongate; flower clusters hemispherical ..... *J. brevicaudatus*
      4. Seeds without tails ..... *J. acuminatus*
    3. Stamens 6
      6. Flowers borne singly or in pairs or partly replaced by bulblets ..... *J. pelocarpus*
      6. Flowers more than 3 in a cluster
        7. Clusters spherical, with 10-25 flowers ..... *J. nodosus*
        7. Clusters hemispherical, with 3-11 flowers ..... *J. articulatus*
  2. Leaves not nodose
    8. Flowers borne singly or in pairs or partly replaced by bulblets ..... *J. pelocarpus*
    8. Flowers in clusters ..... *J. marginatus*

IRIDACEAE

IRIS IRIS

pseudacorus YELLOW FLAG Turtle I., Warner Bay; Dunham Bay
versicolor BLUE FLAG Fig. 130.

1. Flowers blue ..... *I. versicolor*
1. Flowers yellow ..... *I. pseudacorus*

POLYGONACEAE

POLYGONUM SMARTWEED

amphibium var. **emersum** *(P. coccinium, P. inundatum)* Fig. 132. Black Pt; Dunham Bay; S end of Lake
amphibium var. **stipulaceum** *(P. natans, P. fluitans, P. hartwrightii)* Hague; Big Burnt I.
hydropiper WATER PEPPER Fig. 134. Pilot Knob
pensylvanicum var. **laevigatum** Pilot Knob; Warner Bay
punctatum var. **confertiflorum** Fig. 133. Brayton; Dunham Bay; Million Dollar Beach

1. Plants annual, from a taproot
  2. Flowers with yellow to brownish punctations (glands)
    3. Achene surface dull; flowers with a pinkish tinge ..... *P. hydropiper*

3. Achene surface shiny; flowers without pink tinge ..... *P. punctatum*
2. Flowers not punctate ..... *P. pensylvanicum*
1. Plants perennial with rhizomes or stolons
4. Flowers greenish to cream with glandular dots ..... *P. punctatum*
4. Flowers pink to carmine, without glands
5. Inflorescence 3 cm or less in length ..... *P. amphibium* var. *stipulaceum*
5. Inflorescence 3 cm or more in length ..... *P. amphibium* var. *emersum*

RUMEX

orbiculatus *(R. britannica)* WATER DOCK Fig. 131.
Northwest Bay; Pilot Knob; Harris Bay; Dunham Bay; swamp at Brayton

verticillatus SWAMP DOCK Black Pt; Sabbath Day Pt; south of abandoned road from Cleverdale to Brayton

1. Leaves often slightly reddish, margins crinkled or denticulate; peduncles about as long as mature sepals, with no obvious joint; mature sepals nearly orbicular. 5-8 mm long; achenes about ½ as long as sepals ..... *R orbiculatus*
1. Leaves not reddish, margins not crinkled nor denticulate; peduncles 3 to 4 times as long as mature sepals, with a swollen joint less than a mm from the base; mature sepals 3.5-5 mm long; triangular-ovate; achenes about ⅔ as long as sepals ..... *R. verticillatus*

NYMPHAEACEAE

BRASENIA

schreberi WATER-SHIELD Fig. 137. Lake outlet; Northwest Bay; Warner Bay; Harris Bay; Dunham Bay

NUPHAR YELLOW WATER LILY

luteum subsp. **macrophyllum** *(N. advena, Nymphozanthus a.)* Dunham Bay

luteum subsp. **pumilum** *(N. microphyllum, Ny. m.)* Echo Bay by Rogers Rock; Shelving Rock; Bolton Ldg; Cooper Pt; Dunham Bay

luteum subsp. **variegatum** *(Ny. v.)* Fig. 135.

NYMPHAEA WHITE WATER LILY

odorata (Castalia o.) Fig. 136.

CERATOPHYLLACEAE

CERATOPHYLLUM

demersum COONTAIL Fig. 139.

echinatum Fig. 140. Deep water of Warner Bay

1. Leaf lobes mostly toothed on only one side; fruits with no lateral spines. only 2 basal spines ..... *C. demersum*
1. Leaf lobes entire or nearly so; fruits with many lateral spines ..... *C. echinatum*

RANUNCULACEAE

CALTHA

palustris MARSH MARIGOLD Fig. 138. Pilot Knob; Dunham Bay

RANUNCULUS BUTTERCUP

flabellaris Fig. 142. Swamp near Brayton; Harris Bay swamp; Dunham Bay

longirostris *(R. circinatus)* Fig. 143.

reptans *(R. flammula)* Fig. 145.

septentrionalis Fig. 144. Marsh along shore, Pilot Knob

1. Leaves linear or linear-lanceolate, not lobed; flowers yellow ..... *R. reptans*

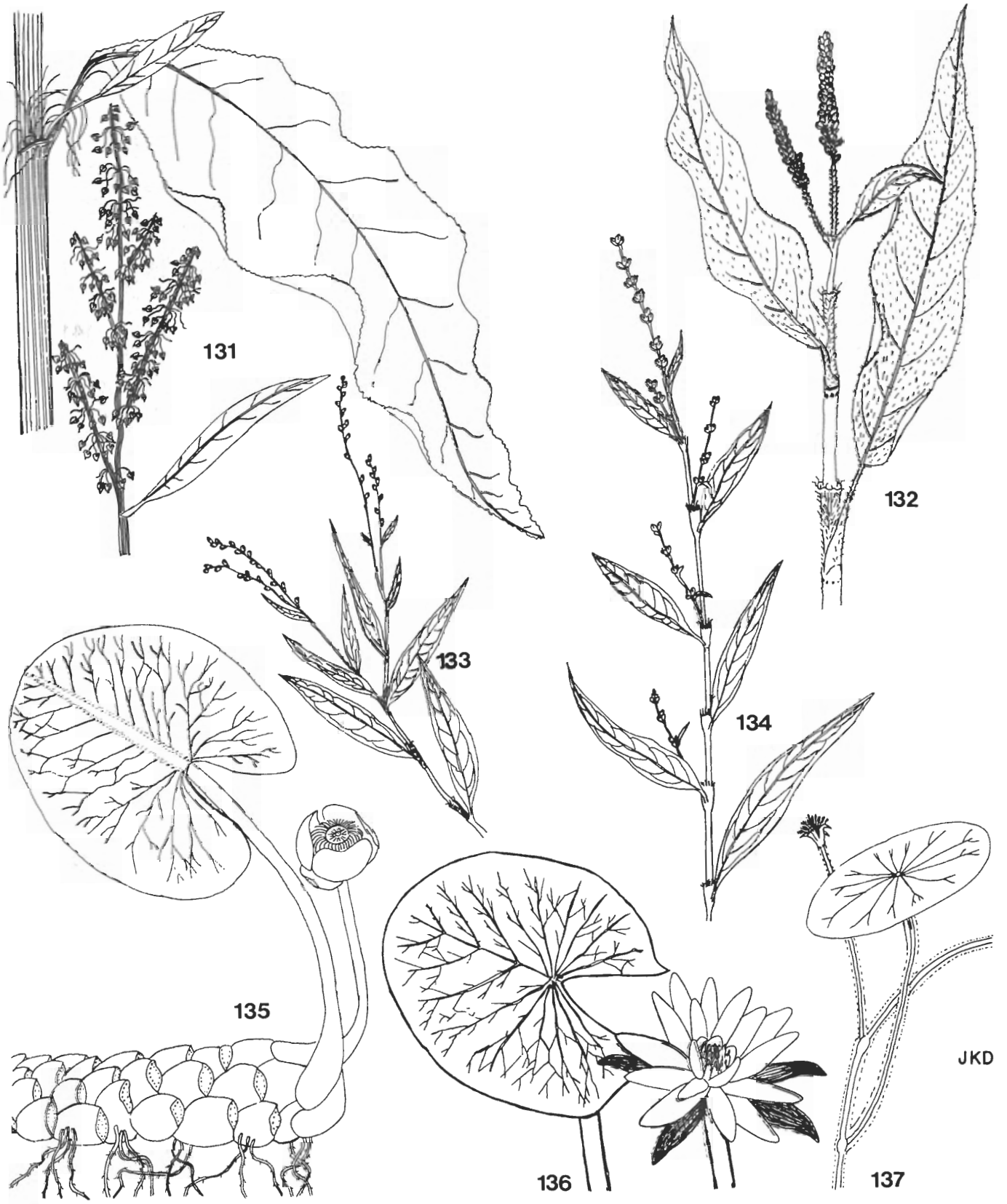


Fig. 131. Rumex orbiculatus; Fig. 132. Polygonum amphibium; Fig. 133. P. punctatum; Fig. 134. P. hydropiper; Fig. 135. Nuphar lutem; Fig. 136. Nymphaea odorata; Fig. 137. Brasenia schreberi.

Fig. 138. Caltha palustris; Fig. 139. Ceratophyllum demersum; Fig. 140. C. echinatum; Fig. 141. Rorippa palustris; Fig. 142. Ranunculus flabellaris; Fig. 143. R. longirostris; Fig. 144. R. septentrionalis; Fig. 145. R. reptans; Fig. 146. Sublaria aquatica; Fig. 147. Sarracenia purpurea; Fig. 148. Drosera rotundifolia.

1. Leaves broad, lobed or finely dissected
  2. Stems flaccid and requiring water for support; submersed leaves dissected 2 or 3 times into slender segments
    3. Flowers yellow; emersed leaves sometimes present ..... *R. flabellaris*
    3. Flowers white; emersed leaves absent ..... *R. longirostris*
  2. Stems stiff and erect; leaves lobed but all lobes broad ..... *R. septentrionalis*

CRUCIFERAE

CARDAMINE BITTER CRESS
pensylvanica Log Bay I.
pratensis CUCKOO FLOWER Bolton Ldg
pratensis subsp. **palustris** Pilot Knob; Cotton Pt; Harris Bay
1. Cauline leaves with terminal leaflet usually wider than the other leaflets; petals white. 1.5-4 mm long ..... *C. pensylvanica*
1. Cauline leaves with terminal leaflet usually as wide or narrower than the other leaflets; petals: petals white or pink, 10-15 mm long ..... *C. pratensis*

RORIPPA
palustris *(R. islandica, Radicula p.)* YELLOW CRESS Fig. 141. Swamp near Brayton

SUBULARIA
aquatica subsp. **americana** AWLWORT Fig. 146.

SARRACENIACEAE

SARRACENIA
purpurea PITCHER PLANT Fig. 147. Silver Bay; bog mat southwest of Brayton; Harris Bay bog mat

DROSERACEAE

DROSERA SUNDEW
rotundifolia Fig. 148.

SAXIFRAGACEAE

CHRYSOSPLENIUM
americanum GOLDEN SAXIFRAGE Fig. 150. Swamp near Brayton; Dunham Bay; Shelving Rock

PENTHORUM
sedoides DITCH STONECROP Fig. 149. Bolton Ldg; Pilot Knob; Dunham Bay

ROSACEAE

POTENTILLA
palustris MARSH CINQUEFOIL Fig. 151.

CALLITRICHACEAE

CALLITRICHE WATER STARWORT
verna *(C. palustris)* Fig. 152. Lake outlet; Paradise Bay; Northwest Bay; Dunham Bay

Fig. 149. Penthorum sedoides; Fig. 150. Chrysosplenium americanum; Fig. 151. Potentilla palustris; Fig. 152. Callitriche verna; Fig. 153. Hypericum boreale; Fig. 154. H. punctatum; Fig. 155. Triadenum fraseri.

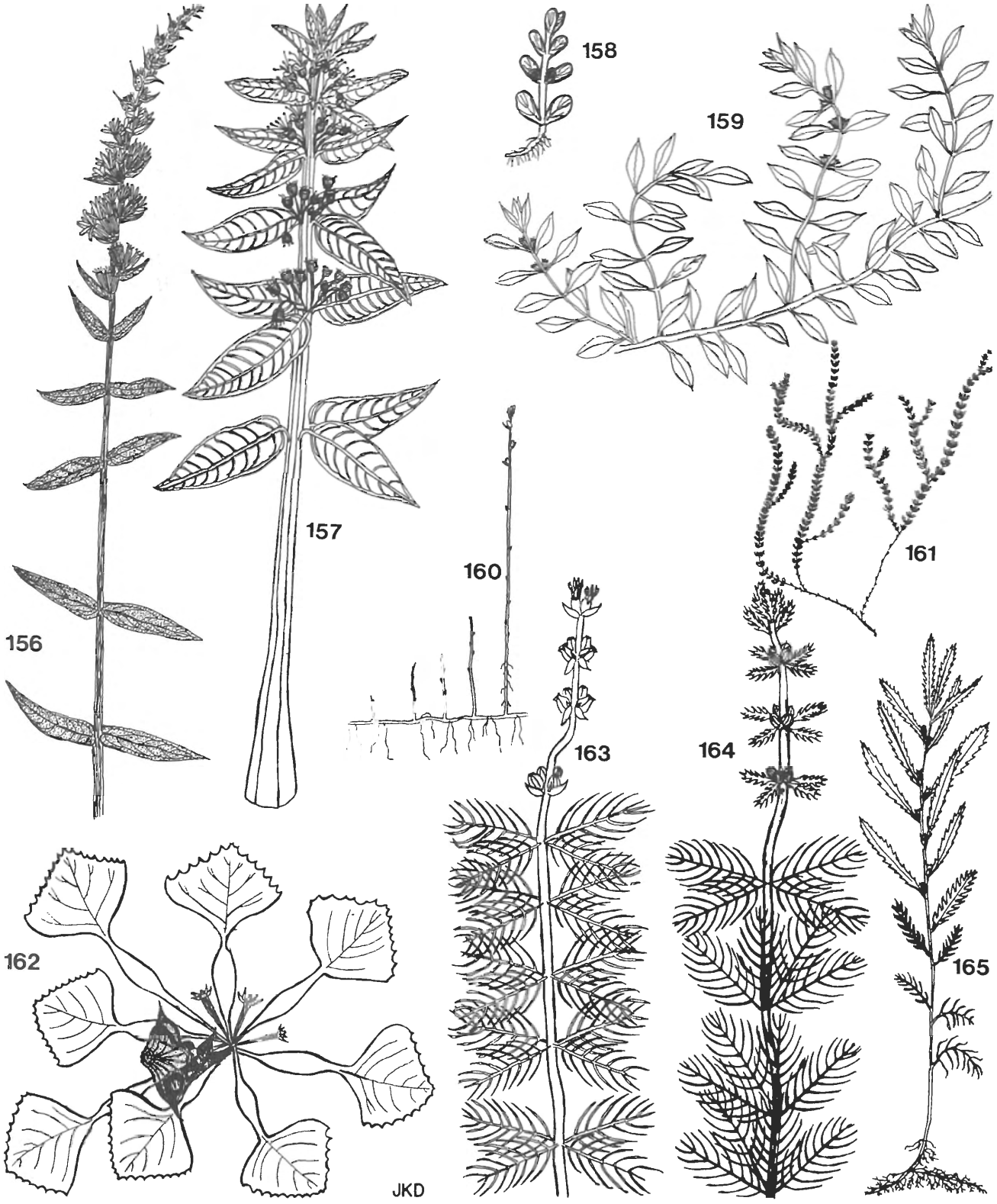


Fig. 156. Lythrum salicaria; Fig. 157. Decodon verticillatus; Fig. 158. Elatine minima; Fig. 159. Ludwigia palustris; Fig. 160. Myriophyllum tenellum; Fig. 161. M alterniflorum; Fig. 162. Trapa natans; Fig. 163. Myriophyllum spicatum; Fig. 164. M. verticillatum; Fig. 165. Proserpinaca palustris.

HYPERICACEAE

HYPERICUM ST. JOHN'S-WORT
boreale Fig. 153. Northwest Bay; Kattskill Bay; Harris Bay; Dunham Bay
ellipticum Harris Bay
mutilum Hermit I.; Speaker Heck I.; Dunham Bay
punctatum Fig. 154. Pilot Knob; Brayton; Dunham Bay

1. Stems and often the flowers with black dots; fruit 3-celled ..... *H. punctatum*
1. Stems and flowers without black dots; fruit 1-celled
   2. Leaves with veins originating at intervals along the midrib; stamens many ..... *H. ellipticum*
   2. Leaves with veins originating at the base of the blade; stamens 12 or less
      3. Bracts of inflorescence resembling stem leaves ..... *H. boreale*
      3. Bracts of inflorescence much smaller than stem leaves ..... *H. mutilum*

TRIADENUM MARSH ST. JOHN'S-WORT
fraseri (*Hypericum virginicum* var. *f.*) Fig. 155.
virginicum (*Hypericum v.*) Dunham Bay

1. Sepals ovate-lanceolate, acute, 5-7 mm long; style 2-3 mm long ..... *T. fraseri*
1. Sepals oblong or elliptic, obtuse, 2.5-5 mm long; style 0.5-1.3 mm long ..... *T. virginicum*

ELATINACEAE

ELATINE
minima WATERWORT Fig. 158.

LYTHRACEAE

DECODON
verticillatus var. **laevigatus** WATER WILLOW Fig. 157.

LYTHRUM
salicaria PURPLE LOOSESTRIFE Fig. 156. Warner Bay; Harris Bay

ONAGRACEAE

LUDWIGIA
palustris var. **americana** WATER PURSLANE Fig. 159. Northwest Bay; Pilot Knob

HYDROCARYACEAE

TRAPA
natans WATER CHESTNUT Fig. 162. Dunham Bay (a few specimens seen and destroyed by State personnel; none found during past few years)

HALORAGACEAE

MYRIOPHYLLUM WATER MILFOIL
alterniflorum Fig. 161.
spicatum subsp. **exalbescens** Fig. 163. Lake outlet; Warner Bay; Harris Bay; Dunham Bay
tenellum Fig. 160.
verticillatum Fig. 164. Lake outlet; Dunham Bay

1. Leaves not dissected, scales minute or absent ..... *M. tenellum*
1. Leaves pinnately dissected
  2. Submersed leaves 3-10(-12) mm long; flowers alternate ..... *M. alterniflorum*
  2. Submersed leaves 10-50 mm long; flowers whorled
    3. Bracts shorter than the flowers and fruits; not lobed; stems often whitish on drying ..... *M. spicatum*
    3. Bracts mostly longer than the flowers, deeply lobed; stems remaining greenish or brownish ..... *M. verticillatum*

PROSERPINACA
palustris var. **creba** MERMAID WEED Fig. 165. Brayton

UMBELLIFERAE

CICUTA WATER HEMLOCK
bulbifera Fig. 166.
maculata Fig. 167; Turtle I.; Big Burnt I.; Log Bay I.; Pilot Knob; Harris Bay; Dunham Bay
1. Leaflets linear, 1-5 mm wide; leaves usually with bulblets in the axils ..... *C. bulbifera*
1. Leaflets lanceolate to ovate-oblong, 5-20 mm wide; leaves without bulblets ..... *C. maculata*

HYDROCOTYLE
americana WATER PENNYWORT Fig. 169. Northwest Bay; Shelving Rock; Pilot Knob; Dunham Bay

SIUM
suave WATER PARSNIP Fig. 168. Lake outlet; N end of Lake; Red Rock Bay; Northwest Bay; Uncas I.; Warner Bay; Harris Bay

PRIMULACEAE

LYSIMACHIA
nummularia MONEYWORT Fig. 170. Smith Bay; Paradise Bay; Big Burnt I.
terrestris SWAMP CANDLE Fig. 172. Little Harbor I.; Oval I.; Log Bay I.; Pilot Knob; Speaker Heck I.; Lake George village; Harris Bay
thyrsiflora (*Naumburgia t.*) TUFTED LOOSESTRIFE Fig. 173. Lake outlet; Sabbath Day Pt.; Northwest Bay; Bolton Ldg; Brayton
1. Stems creeping; flowers solitary in the axils ..... *L. nummularia*
1. Stems erect; flowers in racemes
  2. Racemes terminal; petioles without fringe of hairs ..... *L. terrestris*
  2. Racemes axillary; petioles with fringe of hairs ..... *L. thyrsiflora*

GENTIANACEAE

MENYANTHES
trifoliata var. **minor** BUCKBEAN Fig. 171. Northwest Bay swamp; Harris Bay swamp; Dunham Bay marsh

NYMPHOIDES
cordatum (*Trachysperma lacunosa*) FLOATING-HEART Fig. 176. Harris Bay (reported by House in 1941, no voucher)

ASCLEPIADACEAE

ASCLEPIAS
incarnata SWAMP MILKWEED Fig. 174.

Fig. 166. Cicuta bulbifera; Fig. 167. C. maculata; Fig. 168. Sium suave; Fig. 169. Hydrocotyle americana; Fig. 170. Lysimachia nummularia; Fig. 171. Menyanthes trifoliata; Fig. 172. Lysimachia terrestris; Fig. 173. L. thyrsiflora; Fig. 174. Asclepias incarnata; Fig. 175. Myosotis scorpioides; Fig. 176. Nymphoides cordatum.

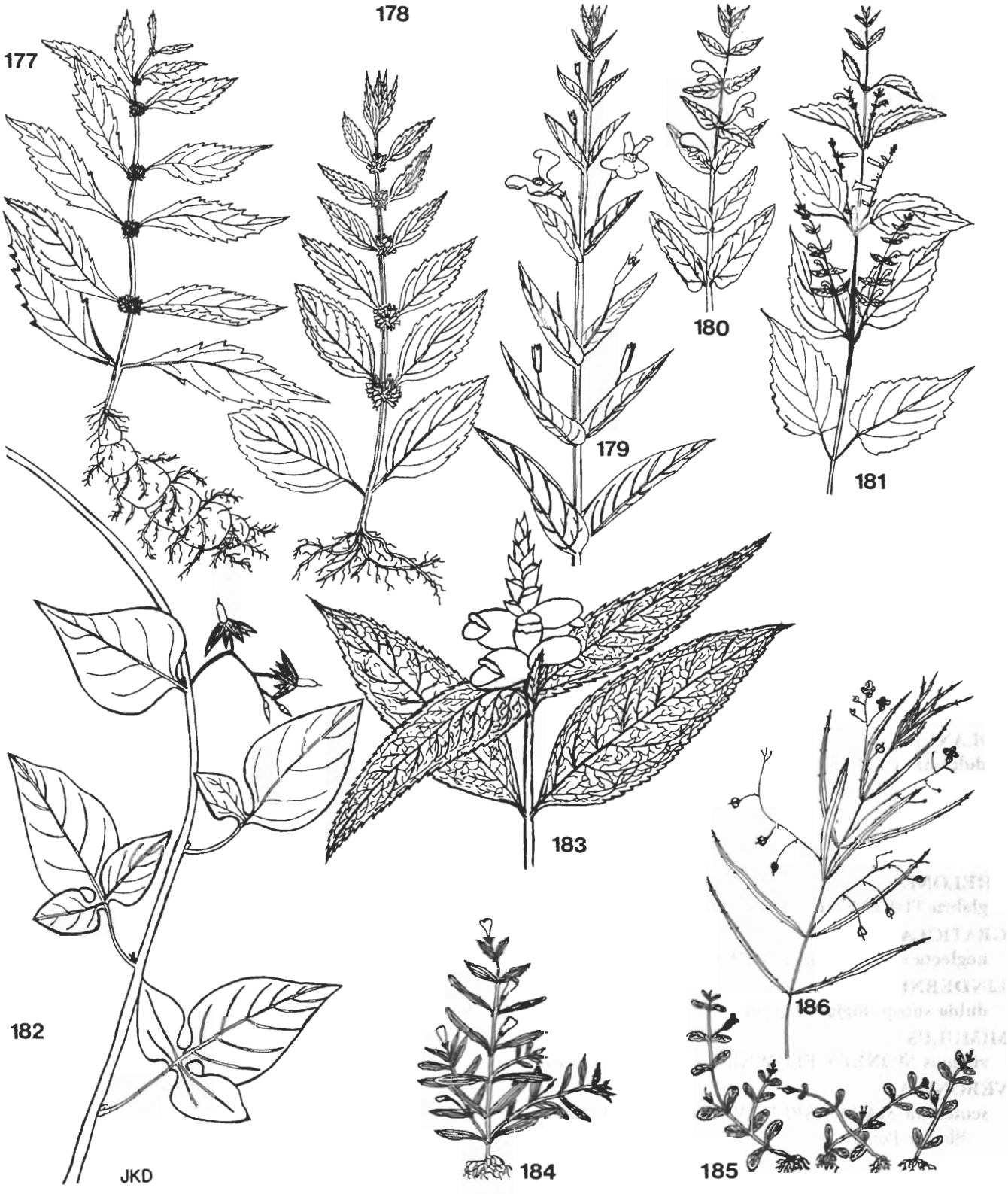


Fig. 177. Lycopus uniflorus; Fig. 178. Mentha arvensis; Fig. 179. Mimulus ringens; Fig. 180. Scutellaria galericulata; Fig. 181. S. lateriflora; Fig. 182. Solanum dulcamara; Fig. 183. Chelone glabra; Fig. 184. Gratiola neglecta; Fig. 185. Lindernia dubia; Fig. 186. Veronica scutellata.

BORAGINACEAE

MYOSOTIS
scorpioides FORGET-ME-NOT, SCORPION GRASS Fig. 175.

LABIATAE

LYCOPUS
americanus WATER HOREHOUND Northwest Bay; Bass I.; Uncas I.; Hermit I.; Clark I.; Little Harbor I.; Perch I.; Pilot Knob; Speaker Heck I.
uniflorus BUGLEWEED Fig. 177. Northwest Bay; Bass I.; Gull Rock I.; Hermit I.; Crow I.; Sarah I.; Speaker Heck I.; Brayton; Harris Bay; Dunham Bay
virginicus bugleweed Perch I.; Log Bay I.; Dunham Bay

1. Leaves usually lobed; sepals with rigid spine at apex ..... *L. americanus*
1. Leaves with coarse teeth but not lobed; sepals with apical spines
   2. Plants with tubers; fruits clusters 4-9 mm wide ..... *L. uniflorus*
   2. Plants without tubers; fruit clusters 8-15 mm wide ..... *L. virginicus*

MENTHA MINT
arvensis var. **canadensis** Fig. 178.

SCUTELLARIA SCULLCAP
galericulata var. **pubescens** *(S. epilobiifolia)* Fig. 180. Hague; Turtle I.; Speaker Heck I.; Harris Bay; Dunham Bay
lateriflora Fig. 181. Big Burnt I.; Uncas I.; Gull Rock I.; Sarah I.; Hermit I.; Pilot Knob; Harris Bay

1. Petioles 1-4 mm long; flowers borne singly in the leaf axils ..... *S. galericulata*
1. Petioles 5-20 mm long; flowers in racemes in the axils ..... *S. lateriflora*

SOLANACEAE

SOLANUM
dulcamara BITTERSWEET NIGHTSHADE Fig. 182.

SCROPHULARIACEAE

CHELONE
glabra TURTLEHEAD Fig. 183. Northwest Bay; Montcalm Pt.; Brayton; Dunham Bay

GRATIOLA
neglecta *(G. virginiana)* HEDGE HYSSOP Fig. 184. Green Island; Bolton Ldg; Harris Bay

LINDERNIA
dubia subsp. **major** *(Ilysanthes d.)* FALSE PIMPERNEL Fig. 185. Harris Bay

MIMULUS
ringens MONKEY FLOWER Fig. 179. Dunham Bay

VERONICA
scutellata MARSH SPEEDWELL Fig. 186. Uncas I.; Speaker Heck I.; Brayton; Dunham Bay; Bloody Pond

LENTIBULARIACEAE

UTRICULARIA BLADDERWORT
intermedia Fig. 189. Northwest Bay; Bolton Ldg; Harris Bay; Dunham Bay

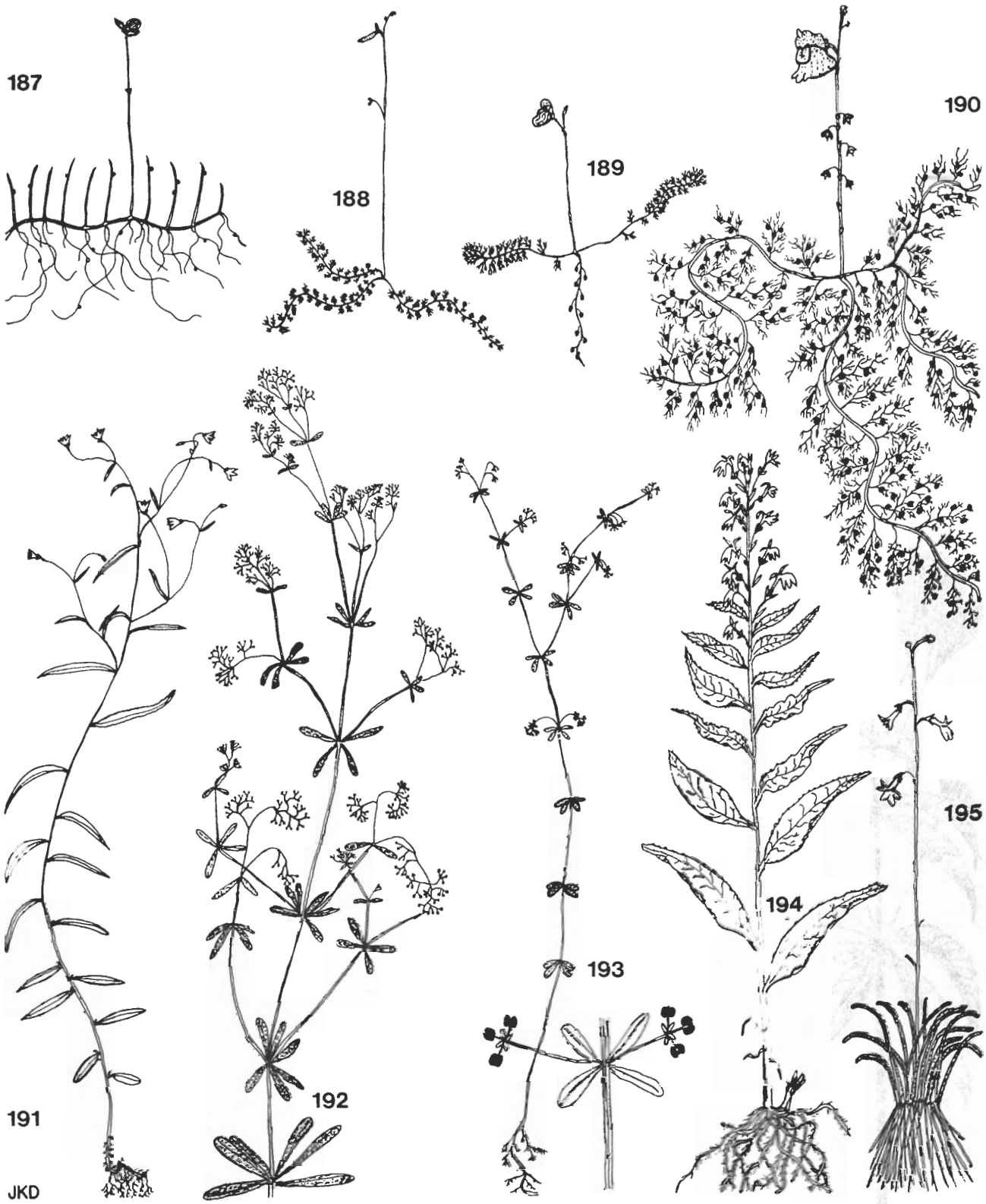


Fig. 187. Utricularia resupinata; Fig. 188. U. minor; Fig. 189. U. intermedia; Fig. 190. U. vulgaris; Fig. 191. Campanula aparinoides; Fig. 192. Galium palustre; Fig. 193. G. trifidum; Fig. 194. Lobelia cardinalis; Fig. 195. L. dortmanna.

Fig. 196. Aster puniceus; Fig. 197. A. lateriflorus; Fig. 198. Solidago graminifolia; Fig. 199. Eupatorium maculatum; Fig. 200. E. perfoliatum; Fig. 201. Bidens frondosa; Fig. 202. B. beckii.

minor Fig. 188. Lake outlet; Harris Bay; Dunham Bay
resupinata Fig. 187.
vulgaris subsp. **americana** *(U. macrorhiza)* Fig. 190.

1. Stems erect from a rooted base; bladders absent or poorly developed ..... *U. resupinata*
1. Stems floating in the water, sometimes rooted; bladders commonly found in finely dissected leaves
   2. Stems 0.5 or more mm thick; leaf segments terete, without a midrib; plants free floating ..... *U. vulgaris*
   2. Stems less than 0.5 mm thick; leaf segments flattened, with a midrib; plants creeping on the bottom in shallow water
      3. Bladders on stem separate from leaves; margins of terminal leaf segments minutely spiny; corolla spur nearly as long as lower lip ..... *U. intermedia*
      3. Bladders on leaves; margins of leaf segments entire; corolla spur short ..... *U. minor*

RUBIACEAE

GALIUM BEDSTRAW
palustre Fig. 192. Lake outlet; Perch I.; Pilot Knob; Speaker Heck I.; Lake George village
trifidum subsp. **tinctorium** Fig. 193. Northwest Bay; Bolton Ldg; Bloody Pond

1. Flowers in much-branched clusters ..... *G. palustre*
1. Flowers mostly in groups of three ..... *G. trifidum*

CAMPANULACEAE

CAMPANULA MARSH BELLFLOWER
aparinoides Fig. 191. Northwest Bay; Harris Bay; Dunham Bay

LOBELIA
cardinalis CARDINAL FLOWER Fig. 194. Gull Bay; Pilot Knob; Brayton
dortmanna WATER LOBELIA Fig. 195. Juniper I.; Cooks Bay; Forest Bay; Hague; Smith Bay; Bluff Head; Bolton Ldg; Huddle Bay; Dome I.; Phelps I.; Gem I.
siphilitica BLUE LOBELIA Marsh near shore; Bolton Ldg

1. Leaves in a basal rosette, fleshy ..... *L. dortmanna*
1. Leaves on the stem, flat
   2. Flowers red ..... *L. cardinalis*
   2. Flowers blue ..... *S. siphilitica*

COMPOSITAE

ASTER ASTER
junciformis *(A. junceus)* Dunham Bay
lateriflorus CALICO ASTER Fig. 197. Northwest Bay; Little Harbor I.; Uncas I.; Oahu I.; Crow I.; Sarah I.; Bolton Ldg; Dunham Bay
puniceus PURPLE-STEM ASTER Fig. 196. Pilot Knob; Brayton
simplex *(A. paniculatus)* Bolton Ldg; Brayton; Harris Bay

1. Stem leaves clasping ..... *A. puniceus*
1. Stem leaves not clasping
   2. Bracts of the involucre nearly equal in length; leaves more than 15 times as long as wide ..... *A. junciformis*
   2. Bracts unequal in length; leaves seldom more than 12 times as long as wide
      3. Leaves pubescent beneath, at least along the midrib; lobes of the disk corollas ½ to ¾ as long as the tube; flower heads mostly on one side of the branch ..... *A. lateriflorus*

3. Leaves glabrous; lobes of the disk corollas 1/5 to 1/2 as long as the tube; flower heads on all sides of the branch ..... *A. simplex*

BIDENS BEGGAR TICKS, BUR MARIGOLD

beckii (*Megalodonta b.*) WATER MARIGOLD Fig. 202.

comosa (*B. tripartita*) Northwest Bay; Brayton; Harris Bay

frondosa Fig. 201. Northwest Bay; Mohican I.; Pilot Knob; Brayton; Harris Bay; Dunham Bay

vulgata Bolton Ldg

1. Aquatic plants with filiform-dissected submersed leaves; achenes terete ..... *B. beckii*
1. Subaquatic plants without filiform-dissected leaves; achenes flattened or quadrangular
   2. Leaves simple, unlobed to 3-lobed, terminal lobe without an evident stalk ..... *B. comosa*
   2. Leaves compound, terminal leaflet with an evident petiolelike stalk
      3. Disk flowers orange; outer elongated bracts 5-10, sparingly ciliate ..... *B. frondosa*
      3. Disk flowers yellow; outer bracts 10-20, copiously hispid ..... *B. vulgata*

EUPATORIUM

fistulosum (*E. maculatum*, in part) JOE-PYE-WEED Bolton Ldg; Pilot Knob

maculatum (*E. bruneri*) JOE-PYE-WEED Fig. 199. Bolton Ldg; Brayton

perfoliatum BONESET Fig. 200. Pilot Knob; Dunham Bay

1. Leaves opposite, connate-perfoliate; flowers whitish ..... *E. perfoliatum*
1. Leaves whorled; flowers purplish
   2. Inflorescence flat-topped; stem not glaucous; florets 8-20 ..... *E. maculatum*
   2. Inflorescence convex; stem glaucous ..... *E. fistulosum*

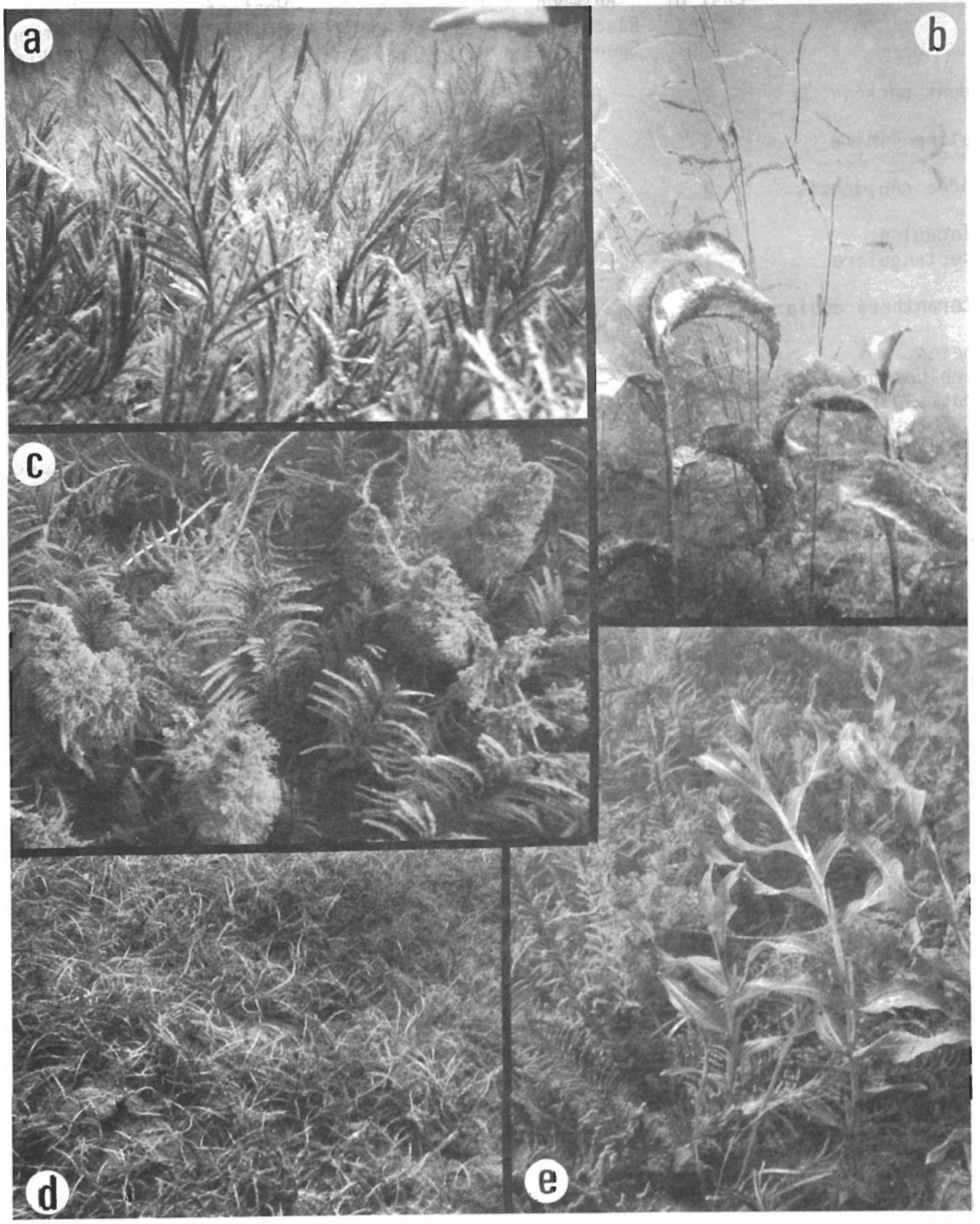
SOLIDAGO

graminifolia FLAT-TOPPED GOLDENROD Fig. 198. Big Burnt I.; Crow I.; Pilot Knob; Brayton; S end of Lake

DEPTH DISTRIBUTION DATA

Detailed underwater surveys were made to record the occurrence of species growing at water depths ranging from 1 to 12 meters. Underwater observations were made during the summers of 1973 and 1974 at 44 different sites in the lake. The location of these sites are shown on the map on page 2. The occurrence of species is given in tabular form starting at the most northerly site and moving south. The depths routinely observed were 1, 2, 3, 5, 7, and 9 meters. In this presentation, only presence or absence of a given species is scored; no information is given as to its abundance. Thirty-one species were observed most frequently in the lake and their presence is recorded in the following tables. This does not represent the total number of species growing in water at greater depths than 1 meter. Submergent macrophytes sighted infrequently are not listed in the survey. Presence of a species is scored for each depth listed above. If the notation is hyphenated (for example: 1-3), the plant was present inclusively between those depths (at 1, 2, and 3 meters). If the notation is given with a comma or "and" (for example: 1,3 or 1 & 3), the plant was observed at those depths only and not at a depth inbetween (absent at 2 meters). Species growing at depths less than 1 meter and emergent were not scored in the survey. These include species of the following genera: *Nuphar*, *Nymphaea*, *Sagittaria*, *Scirpus*, *Sparganium*, and *Typha*.

The procedure for surveying was as follows: all underwater observations were made by R. B. Sheldon using self-contained breathing apparatus. Routinely observations started at the 1-meter depth and a transect approximately 5 meters wide was traversed to the 12-meter depth. Observations were made directly underwater. Species of uncertain taxonomic position were taken from the water for closer examination. It is important to note that a thorough underwater survey was not possible at each site. Each survey as described above took between 20 to 30 minutes to complete. Any omission from the list, therefore, does not necessarily mean the plant was not present at a given site.



Growth habits of common submergent macrophytes found in Lake George.

a: *Potamogeton robbinsii* (7m); b: *P. amplifolius* and *P. gramineus* (3m), c: *Bidens beckii* and *P. robbinsii* (5m); d: *Isoetes macrospora* (9m); e: *P. praelongus* and *P. robbinsii* (5m).

	East of Howes Ldg	Between Black Pt & Spencer Pt	Hearts Bay	Weeds Bay	West of Juniper Island	Cooks Bay	North of Anthony's Nose
Bidens beckii	2	1-3	1&5		2	3	
Elatine minima	1						
Elodea canadensis	2	1-2	5&7		2&7	1&5	9
Eriocaulon septangulare	1	1	1-3	2	2	2	2
Heteranthera dubia	2	1					
Isoetes							
echinospora		1		3	2	1&3	2
macrospora			5	5-7	5-7	5-7	3-5
Juncus pelocarpus	1-2	1	1-3	2			3
Lobelia dortmanna					2	2	
Myriophyllum							
alterniflorum			1		2	2-3	3-5
tenellum	1	1	1-2	2	2	1-2	1-2
Najas flexilis	1-2	1-3	1-7	1-7	2-3	2-5	1-5
Potamogeton							
alpinus							
amplifolius	1-2	1-3	1-5	2	3	3-5	
crispus							
epihydrus							
gramineus	1-2	1-3	1-3	1-5	2-3	1-5	1-5
illinoensis		2-3		3&7			
pectinatus			3				
perfoliatus	1-2	1-3	1-5	2-5	3	5	
praelongus			3	3-5			
pusillus	2	2-3	1-5	1-3	3	2-3	1-3
robbinsii	1-2	1-3	1-5	2-7	5-7	2&5	5
spirillus							
zosteriformis		2-3					
Ranunculus longirostris	2	1-2	1				
Sagittaria graminea	1-2	1-2	2				
Subularia aquatica							
Utricularia resupinata	1		1-3	2	2		1-2
Vallisneria americana	1-2	1-3	1-7	1-7	3	2	1-3

	Forest Bay	Blairs Bay	Hague	Gull Bay	Smith Bay	Arcady Bay	Lamb Shanty Bay
Bidens beckii		3-5	3-5		2-7	3	
Elatine minima		1		1		1	
Elodea canadensis	5	1&5	1&5	1&3	1-9	7-9	
Eriocaulon septangulare		1	1	1	1	1	1
Heteranthera dubia				1-2	1-3		
Isoetes echinospora	5	2		2&5	1-2		1-3
Isoetes macrospora	7	7-8	5-7	5-6	7	3-7	5-7
Juncus pelocarpus			2			1	2
Lobelia dortmanna	2						2
Myriophyllum alterniflorum	5	3-5	5	1	1-2		3
Myriophyllum tenellum	3	1		1-2	1-2	1-3	1
Najas flexilis	2-7	1-7	2-7	1-3,7	1-7	2-7	1-9
Potamogeton alpinus							
Potamogeton amplifolius	5-6	2-5	3-7	3	1-6	3-5	
Potamogeton crispus				1	1		3
Potamogeton epihydrus							
Potamogeton gramineus	3-5	1-5	1-5	1-3	1-3	1-5	1-3
Potamogeton illinoensis							
Potamogeton pectinatus						1-2	
Potamogeton perfoliatus	5	2-5	1-5	1-2	2-5	3-5	2-5
Potamogeton praelongus		5		5	3-5	5	
Potamogeton pusillus	5-7	2-7	3	1-2	1-7	3-5	1-9
Potamogeton robbinsii	7-9	2-7	3-7	1-7	2-8	3-7	3-9
Potamogeton spirillus				1			3-5
Potamogeton zosteriformis					5		
Ranunculus longirostris				1			
Sagittaria graminea				1	1-2		
Subularia aquatica				1	2	2	
Utricularia resupinata	1-3	2	2	1		1-2	1
Vallisneria americana	2&7	2-5	1-6	1-5	1-6	3-5	2-5

	Silver Bay	Bluff Head	Sabbath Day Point	Huletts Ldg	Davis Bay	Kitchal Bay	Mother Bunch Islands
Bidens beckii				3-5		3	
Elatine minima		1			1		1
Elodea canadensis	1&7	1-5		3-6		7	5-7&12
Eriocaulon septangulare		1		2	1	1	1
Heteranthera dubia	1	2		2-3		3	
Isoetes							
echinospora	1-3		1-2	6	1&3	2-5	
macrospora	5-9		7	4-7	5-6	5-7	1-7
Juncus pelocarpus	3						
Lobelia dortmanna							
Myriophyllum							
alterniflorum				1-3	1-3		3
tenellum	1	1-3			1	1	1
Najas flexilis	1-9	2-7	1-7	2-9	1-7	1-7	2-3&8
Potamogeton							
alpinus							
amplifolius	2&5			2-5		2-5	3
crispus							
epihydrus							
gramineus	1-7	1-3	1-7	2-7	1-5	1-3	1-3
illinoensis							
pectinatus							
perfoliatus	1,5-7	2	5	2-6	2	3-5	3
praelongus			5	2-3&7		3-5	
pusillus	5-7	2-3&7	1&5-7	2-6	2-5	1-7	2-7
robbinsii	5-7	3-7	5-7	2-7		2-7	
spirillus							
zosteriformis							
Ranunculus longirostris	1	2		3			
Sagittaris graminea	3						
Subularia aquatica						1	
Utricularia resupinata	1-2		2			1	
Vallisneria americana	2&5-7	1-3	3	2-5		1-3	

	Black Mountain Point	French Point	Red Rock Bay	The Narrows	North end Northwest Bay	Walker Point	West side Tongue Mt.
Bidens beckii	1		5	5	3-5		
Elatine minima	1			1-2		1	1
Elodea canadensis		2	5&9	7&10		1&7	5-7
Eriocaulon septangulare	1	1-2	1	1-2	1	1	1
Heteranthera dubia		2	2-3	2-3	3		2
Isoetes							
echinospora	3	2&5	1&3	1&3-5	1-5	3-5	1-3
macrospora	5-8	3-7	3-7	1-7	3-7	5-7	5-7
Juncus pelocarpus				1-3			
Lobelia dortmanna							
Myriophyllum							
alterniflorum			3	3			
tenellum			1	3	2	1-2	1
Najas flexilis	2-5	2-5&9	1-7	1-7	2&5	1-5	1-5&9
Potamogeton							
alpinus							
amplifolius		3	3	3-5	2-3		3
crispus							
epihydrus							
gramineus	1-3	2-5	1-2	1-5	2-5	1-5	1-2&5
illinoensis							
pectinatus							
perfoliatus	3-5		2-5	2-5	2		1&3
praelognus		5	5	5	2		3
pusillus	2-7	5&9	2-5	1-7	2-7	1-5	2-3&7
robbinsii	5-7	5-7&10	1-9	2-7	3-9	7-9	2-9
spirillus							
zosteriformis					3		
Ranunculus longirostris	1	2			3		
Sagittaria graminea		1		1	1		
Subularia aquatica	1					1-2	1
Utricularia resupinata			1			1-2	2-3
Vallisneria americana	2-5	2-5	1-5	2-5	2-5	1	2-5

	Montcalm Point	Green Island	Shelving Rock Bay	Huddle Bay	Dome Island	Phelps Island	Point Comfort Bay
Bidens beckii	2	3-5		2-3			1-3
Elatine minima	1	1-2			1-2		1
Elodea canadensis	3-7	2-7	7-9	1-3	1-2		1-8
Eriocaulon septangulare	1-2	2	1		1-2		1
Heteranthera dubia	2-3	2-3			1-5		1-3
Isoetes							
echinospora	3-7		1	3	1-2	1-3	
macrospora	5-7	5-7		7-8	7	5-8	3-8
Juncus pelocarpus	1-2						
Lobelia dortmanna				1	1	1-2	
Myriophyllum							
alterniflorum	1-3				1-2	2	1
tenellum	3	2-3			1-2		
Najas flexilis	1-3	1&3-5	1-2&5	1&3-5	1-7	2-5	2-5
Potamogeton							
alpinus							
amplifolius	2-5			2-5			3-5
crispus							
epihydrus							
gramineus	1-3	2-3	1-3	1-5	1-5	2-5	1-3
illinoensis							
pectinatus			1				
perfoliatus	2&5	3-5	2-5	1-5	2-5	4-5	1-3
praelongus			5	5			3-5
pusillus	1-7	1-5	5	1-7	1-5	4-5	1-3
robbinsii	2-5	5-7	3-9	1-7	5-7		1-3
spirillus							
zosteriformis			3-5	1-5			
Ranunculus longirostris		3		1-2&5			1-3
Sagittaria graminea		1-3	1	1-2			1
Subularia aquatica	1						1-2
Utricularia resupinata	2-3						1
Vallisneria americana	2-5	2-5	2	1-5	1-7		1-5

	Boon Bay	Sandy Bay	Warner Bay & Cove	Harris Bay	Dunham Bay	Orcutt Bay
Bidens beckii	1-3	5	1-3	3		
Elatine minima	1		1			
Elodea canadensis	1-3&9	5	1-5	1,3-5	1-5	1
Eriocaulon septangulare	1		1			1
Heteranthera dubia	1-3	5		1-2	1	
Isoetes echniospora			3			
Isoetes macrospora		5	3&5	3		
Juncus pelocarpus						
Lobelia dortmanna						
Myriophyllum alterniflorum						
Myriophyllum tenellum	2					
Najas flexilis	1-5	2-5	1-3	1-2	1&5	1
Potamogeton alpinus			1			
Potamogeton amplifolius	2-3	3-5	2-5	2-5	2-3	
Potamogeton crispus						
Potamogeton epihydrus				1		
Potamogeton gramineus	1-2	2-3	1-3	1-3	1	1-3
Potamogeton illinoensis			5			
Potamogeton pectinatus					1	
Potamogeton perfoliatus	1-3	2-5	1-3	1-3	1&5	1
Potamogeton praelongus		5-6	2-5	2-6	2-5	
Potamogeton pusillus	1-7	3-5	1-7	1,3-5	5	1&3
Potamogeton robbinsii	1-5	2-6	1-7	1-7	3-5	
Potamogeton spirillus	1					
Potamogeton zosteriformis			2-3		1&5	3
Ranunculus longirostris	1		2	3		
Sagittaria graminea			1-3	1-3	1	1
Subularia aquatica	1					
Utricularia resupinata	1	1			1	2-3
Vallisneria americana	1-5	2-6	1-5	1-5	1-5	1-2

	Diamond Island	Tea Island	Lake George Village
Bidens beckii		3	3
Elatine minima		1-2	
Elodea canadensis	1&5-10	2-7	3-10
Eriocaulon septangulare		1	
Heteranthera dubia	2-3	2	3
Isoetes echinospora		2	
Isoetes macrospora	5	2-7	5-6
Juncus pelocarpus			
Lobelia dortmanna			
Myriophyllum alterniflorum	2-3		
Myriophyllum tenellum		1	
Najas flexilis	1-5	2-5	3
Potamogeton alpinus			
Potamogeton amplifolius		5	
Potamogeton crispus		2	
Potamogeton epihydrus			
Potamogeton gramineus	1-5	2-3	
Potamogeton illinoensis			
Potamogeton pectinatus			
Potamogeton perfoliatus	1-3	2-3	
Potamogeton praelongus		3-6	
Potamogeton pusillus	1-5	2-7	3
Potamogeton robbinsii		2-7	3-7
Potamogeton spirillus			
Potamogeton zosteriformis		2-3	
Ranunculus longirostris		2-3	3
Sagittaria graminea		2	3
Subularia aquatica			
Utricularia resupinata		1	
Vallisneria americana	2	2-5	3

GLOSSARY

achene: a small, dry fruit with a single seed that is free from the fruit wall. The fruit wall does not open naturally to release the seed.
acute: pointed or forming less than a right angle.
adnate: unlike parts united or fused together. See **connate.**
alternate: any arrangement of parts that are not opposite or whorled.
anther: that portion of the stamen in which the pollen grains are formed.
apex: the tip or extreme end.
arcuate: curved or arched.
aroid: pertaining to a member of the arum family (Araceae).
auricle: an earlike lobe or appendage.
awl-shaped: gradually tapering from the base to a slender point.
awn: a long stout or stiff bristle.
axil: the upper angle between an organ and its axis such as a leaf attached to a stem.
basifixed: attached by the base or lower end.
berry: a fruit which, except for the seeds, is completely fleshy.
bilaterally symmetrical: with two vertical planes of symmetry.
bisexual: having both sexes in the same flower.
bladder: an inflated structure.
blade: the expanded portion of a leaf as distinct from the petiole.
bract: a small leaf, usually subtending a part of an inflorescence.
bristle: a stiff hair.
calyx: the outer part of a flower, composed of sepals.
capsule: a dry fruit formed from two or more carpels, which open at maturity exposing the seeds.
carpel: a single modified seedbearing leaf that alone or fused to others forms a fruit.
caryopsis: similar to an achene but with the seed coat fused to the fruit wall. Found only in the grasses.
cauline: pertaining to the stem.
centimeter: ten millimeters or two-fifths of an inch.
ciliate: with marginal hairs or bristles.
clavate: gradually enlarged upward. Shaped like a club.
compound: formed of a number of similar parts, as a leaf made up of two or more leaflets or a fruit of two or more carpels.
connate: similar parts united or fused together. See **adnate.**
cordate: heart-shaped.
coriaceous: leathery.
corolla: the petals of a flower.
culm: the stem of a grass or a sedge.
cyme: a somewhat flat-topped cluster of flowers in which the central flowers open slightly in advance of the outer ones.
decumbent: reclining but with tip usually ascending.
decurrent: extending down the stem from the point of attachment.
dehiscent: process of opening which releases pollen or seeds.
dentate: with teeth projecting at right angles, such as on a leaf margin.
denticulate: finely dentate.
dioecious: having male and female sex organs on separate individuals, such as pollen produced by one plant, seeds by another.
disk: an enlargement of the tip of the peduncle bearing the tiny flowers in the family Compositae.
dissected: divided into narrow segments.
dorsal: the back or outer side.
embryo: the rudimentary plant within a seed.
emersed: extending above the water surface.
endocarp loop: the tissue that projects as a fold into the center of the fruit of *Potamogeton*.

entire: with an unbroken or even margin, without teeth or other indentations, such as the smooth margin of a leaf.
fertile: productive. Capable of producing seeds, pollen, or spores.
filamentous: like a thread.
filiform: threadlike. Long and slender.
flaccid: limp.
floret: a tiny flower. Usually used to indicate a flower in a cluster of flowers.
foliaceous: having leaves.
follicle: a dry fruit of one carpel that splits on one side.
frond: the leaf of a fern. Sometimes used to describe the plant body in the Lemnaceae.
fruit: a mature ovary with enclosed seeds; sometimes including other adherent parts.
glabrous: without hairs, bristles, or scales.
glandular: having secreting organs or glistening bodies.
glaucous: covered with a powdery bloom, which is easily rubbed off.
glomerule: a small compact, more or less rounded cluster.
glume: one of a pair of empty scalelike bracts at the base of a grass spikelet.
head: a dense inflorescence of sessile or subsessile flowers on a short or broadened axis.
hispid: having stiff, bristly hairs.
indehiscent: not opening. See **dehiscent.**
inflorescence: a flower cluster.
internode: portion of a stem between nodes.
interstitial: referring to the space between particles.
involucel: a secondary involucre that subtends a part of an inflorescence.
involucre: a whorl of bracts subtending an inflorescence.
keel: a prominent ridge.
lacuna: a large intercellular cavity.
lanceolate: lance-shaped, much longer than wide, widest below the middle and tapering to the apex.
leaflet: one of the divisions of a compound leaf.
lemma: a bract that usually encloses a flower in the spikelet of grasses.
lenticular: lens-shaped, biconvex with two edges.
ligule: a strap-shaped corolla bract of some flowers in the family Compositae. A membranaceous appendage at the juncture of the blade and sheath of grasses and similar plants.
linear: narrow with parallel sides.
littoral: along the shore.
lobe: a partial division of a plant organ, such as a deeply cut part of a leaf, petal, etc.
megaspore: a female spore, usually the larger when both male and female spores are produced.
membranous: thin, flexible and more or less translucent.
-merous: a suffix which taken with a numerical prefix indicates the number of each of the floral parts.
midrib: the middle vein of a leaf or other structure.
millimeter: one-tenth of a centimeter or one twenty-fifth of an inch.
monoecious: having pollen and seeds in separate flowers, but on the same plant.
mucronate: a short, sharp point at the tip of a rounded apex.
node: position on the stem where a leaf, a bud, or a branch is attached.
nodose: knotty, knobby, or having prominent nodes.
nutlet: a small nut. Often used to include any small, thick-shelled, seedlike fruit.
obovate: inverted ovate, egg-shaped with the attachment at the smaller end.
obtuse: blunt, usually forming more than a right angle.
ocrea: a stipular sheath surrounding the stem.
opposite: two parts at a node on opposing sides of a node.
ovary: the basal portion of a pistil containing one or more seeds.
ovate: egg-shaped with the attachment at the larger end.
palmate: with parts diverging from a common base, as fingers of a hand.

panicle: an elongate inflorescence with compound branching.
papillate: bearing minute pimplelike protuberances.
pedicel: the stalk of a single flower or fruit. The ultimate branch of a peduncle.
peduncle: the stalk, including branches, of an inflorescence.
peltate: attached by the lower surface, not by the margin.
perfoliate: descriptive of a leaf having the stem apparently passing through it because of a joining or overlapping of the basal lobes.
perianth: the calyx and corolla collectively or either one when only one is present.
perigynium: a modified leaflike structure that surrounds the ovary, such as the inflated sac in Carex.
perigynous: borne around the ovary, rather than below or above.
petal: one of the parts of the corolla or inner leaflike parts of a flower.
petiole: the stalk of a leaf.
pilose: with rather sparse, soft hairs.
pinnate: having the parts arranged in two rows along the common axis.
pistil: the female reproductive part of a flower.
pith: the central, soft tissue of a stem.
plano-convex: flat on one side and convex on the other.
raceme: an inflorescence having an elongate axis bearing single flowers on pedicels.
rachis: the central axis of an inflorescence or compound leaf.
radically symmetrical: having more than two planes of symmetry.
rank: a vertical row. Leaves that are 2-ranked are in two vertical rows; 3-ranked in three vertical rows.
receptacle: the floral axis to which the flower parts are attached.
rhizome: a modified, underground stem. Distinguished from a root by having buds or scalelike leaves.
rootstock: the basal thickened portion of a stem where the roots are attached.
rosette: a basal cluster of leaves produced on a very short stem.
sac: shaped like a bag or pouch.
sagittate: shaped like an arrowhead. Similar to cordate but with pointed basal lobes.
scabrous: rough to the touch because of tiny, stiff hairs or other projections.
scale: thin membranous structure, such as a chafflike bract or a flattened hair.
scape: a peduncle arising at ground level from a very short stem.
scuba: self-contained underwater breathing apparatus.
sepal: one of the parts of the calyx.
serrate: with fine, sharp teeth that are inclined toward the tip.
sessile: without a stalk, as with some leaves and flowers.
sheath: a tubelike part surrounding another part, such as the lower part of a grass or sedge leaf that is wrapped around the stem.
silique: a dry fruit that splits open leaving a thin partition. Found in the Cruciferae.
spadix: a spike of flowers on a fleshy axis.
spathe: a single large bract subtending an inflorescence, which is usually a spadix.
spike: an elongated, unbranched inflorescence of sessile flowers.
spikelet: a tiny spike, usually used for portions of the inflorescence of the grasses and sedges.
spinulose: minutely spiny.
sporangium: a structure containing spores.
spore: single reproductive body of plants that does not produce seeds.
stamen: the pollen-bearing organ of the flower.
staminate: having male but not female reproductive organs.
sterile: without sexual reproductive parts.
stigma: the part of a pistil on which pollen adheres and germinates.
stipule: a pair of appendages that may be present at the point of attachment of a leaf to a stem.
stolon: a modified above-ground horizontal or arched stem that produces new plants at the nodes.
striae: narrow lines, streaks, grooves, or channels.

strigose: covered with straight appressed hairs.
style: the stalklike part of some pistils connecting the stigma and the ovary.
supra-axillary: attached above the axil.
terete: circular in cross section.
tetrad: a group of four.
trigonous: three-angled.
trimorphic: having three forms. Having three kinds of flowers which differ in the relative length and placement of stamens and stigmas.
tuber: a modified portion of a rhizome, being thick and fleshy.
tubercle: a small swollen structure.
umbel: an inflorescence having peduncles of nearly equal length and attached at a common point. It is usually flat-topped and may be simple or compound.
undulate: wavy.
unisexual: of one sex only; staminate or pistillate.
vein: a bundle of externally visible transporting tissue in a leaf or other organ.
venation: the pattern of veins in an organ.
ventral: the under or inner side.
versatile: attached by the middle and free to swing as with some anthers.
whorl: a group of three or more parts at a node.
winter bud: shortened and hardened tips of branches with crowded leaf blades, which serve to survive the winter and germinate the next season.

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