

## Key to species on Dan N.'s Bear Island lists

1. Reproductive organs in cones. Trees with resinous, needle-like leaves. *Pinus virginiana*
1. Reproductive organs in flowers. Various but not exactly as above. 2.
  2. Leaf venation generally parallel; floral parts usually in 3s. "Monocots."
    3. Inflorescence a spathe (cylindrical naked axis covered with minute flowers) surrounded by a single large bract (spadix). *Arisaema triphyllum*
    3. Inflorescence not as above. 4.
      4. Perianth absent or inconspicuous; inflorescence of one or more spikelets; leaves linear or narrowly lanceolate.
        5. Perianth inconspicuous, of green or brown scales; spikes arranged in an umbel. *Luzula echinata*
        5. Perianth absent; spikelets arranged in a panicle or raceme.
          6. Leaves and bracts 3-ranked. *Carex* (Cyperaceae)
          6. Leaves and bracts 2-ranked. Poaceae
      4. Perianth conspicuous; flowers not in spikelets; leaves broad (except in *Muscari*).
        7. Woody vines with prominent prickles. *Smilax* spp.
        7. Herbaceous, unarmed.
          8. Leaves 3, venation reticulate. *Trillium sessile*
          8. Leaves indefinite in number; venation parallel.
            9. Leaves all basal.
              10. Perianth with a prominent corona. *Narcissus* sp.
              10. Corona absent.
                11. Leaves linear. *Muscari botryoides*
                11. Leaves broad. *Erythronium*
                  12. Perianth white. *Erythronium albidum*
                  12. Perianth yellow. *Erythronium americanum*
              9. Leaves all cauline.
                12. Flowers white, in terminal panicles. *Smilacina racemosa*
                12. Flowers yellow or greenish, solitary or paired in leaf axils.
                  13. Tepals united for most of their length; flowers paired. *Polygonatum biflorum*
                  13. Tepals free; flowers solitary. *Uvularia sessilifolia*
    2. Leaf venation generally reticulate; floral parts usually in 4s or 5s. "Dicots."
      14. Evergreen succulents of rock outcrops.
        15. Spiny; stems succulent. *Opuntia humifusa*
        15. Unarmed; leaves succulent. *Sedum ternatum*
      14. Not succulent, rarely evergreen.
        16. Trees, shrubs, or woody vines.
          17. Petals united; calyx and corolla always well-defined. **1. Sympetalous woody dicots.**
          17. Petals separate or absent. **2. Apetalous or polypetalous woody dicots**
        16. Herbaceous plants.
          17. Petals united to form a tube, at least below.
            18. Flowers in heads, enclosed in a tight involucre of bracts. Asteraceae (all key under **4. Sympetalous actinomorphic herbs.**)
            18. Flowers not in heads.
              19. Corolla strongly zygomorphic, usually bilabiate. **3. Sympetalous zygomorphic herbs.**
              19. Corolla radially symmetrical. **4. Sympetalous actinomorphic herbs.**
          17. Petals free to base.
            20. Corolla bilaterally symmetrical. **5. Zygomorphic polypetalous herbs**
            20. Corolla radially symmetrical. **6. Actinomorphic polypetalous herbs**

## MONOCOT FAMILIES CYPERACEAE

1. Perigynium glabrous.
2. Female flowers crowded. *Carex careyana*

- 2. Female flowers remote. *Carex laxiflora*
- 1. Perigynium pubescent.
- 3. Plant us. less than 20 cm tall, its base strongly fibrous from old disintegrating leaves. *Carex nigromarginata*.
- 3. Plant us. 20-45 cm tall, its base scarcely fibrous.
- 4. xxx. *Carex albicans*
- 4. xxx. *Carex pensylvanica*?

#### POACEAE (GRAMINEAE)

- 1. Flowers 1 per spikelet.
- 2. Leaves linear; panicle dense, spikelike, the spikelets crowded. *Anthoxanthum odoratum*
- 2. Leaves lanceolate; panicle open, the spikelets well separated. *Dichantherium ravenelii*
- 1. Flowers 2-several per spikelet.
- 3. Spikelets rounded in cross section. *Melica mutica*
- 3. Spikelets keeled. *Poa*
- 4. Plants spreading by elongate stolons. *Poa cuspidata*
- 4. Plants without spreading stolons.
- 5. Ligule 4-6 mm long; coarse perennials with large inflorescences, lower inflorescence branches usually ascending. *Poa trivialis*
- 5. Ligule ca 1 mm long.
- 6. Soft annuals, panicles 1-8 cm long, spikelets tightly clustered, lower inflorescence branches usually ascending. *Poa annua*
- 6. Coarse tufted perennials, panicles 10-20 cm long, spikelets not clustered, lower inflorescence branches usually reflexed. *Poa sylvestris*

#### DICOTS

#### Woody

##### 1. Sympetalous woody dicots

- 1. Leaves opposite or whorled.
- 2. Inflorescences terminal.
- 3. Inflorescence surrounded by petaloid bracts; leaves entire, secondary veins turning aside before reaching margins. *Cornus florida*
- 3. Inflorescence without prominent bracts; leaves toothed, secondary veins extending  $\pm$  straight to margins. *Viburnum*
- 4. Leaves 3-lobed. *V. acerifolium*
- 4. Leaves unlobed.
- 5. Leaves finely toothed, secondary veins not especially prominent. *V. prunifolium*
- 5. Leaves coarsely toothed, secondary veins deeply impressed. *V. rafinesqueanum*
- 2. Inflorescences axillary.
- 6. Leaves compound. *Fraxinus*
- 7. Twigs glabrous. *F. americana*
- 7. Twigs hairy. *F. pensylvanica*
- 6. Leaves simple.
- 8. Flowers radially symmetrical; corolla-lobes threadlike. *Chionanthus virginicus*
- 8. Flowers bilaterally symmetrical; corolla-lobes much broader. *Lonicera*
- 9. Woody vines. *L. japonica*
- 9. Shrubs.
- 10. Leaves strongly acuminate. *L. maackii*
- 10. Leaves broadly acute, obtuse, or mucronate. *L. xylostemon*
- 1. Leaves alternate.
- 11. Trees.
- 12. Corollas small, green, radially symmetrical. *Nyssa sylvatica*
- 12. Corollas large, lavender, bilaterally symmetrical. *Paulownia tomentosa*
- 11. Shrubs.
- 13. Plants trailing; leaf bases cordate. *Epigaea repens*
- 13. Plants erect or ascending; leaf bases not cordate.
- 14. Ovary superior; corolla not urceolate, pure white or pink.
- 15. Corolla tubular proximally, deeply lobed; stamens 5, projecting forward from the corolla. *Rhododendron perichlymenoides*

- 15. Corolla bowl-shaped, scarcely lobed; stamens 10, inserted in pockets in the corolla. *Kalmia latifolia*
- 14. Ovary inferior; corolla urceolate, greenish.
  - 16. Underside of leaf glandular-dotted. *Gaylussacia baccata*
  - 16. Underside of leaf not glandular-dotted.
    - 17. Anthers exerted from corolla. *Vaccinium stamineum*
    - 17. Anthers immersed in corolla. *Vaccinium pallidum*

## 2. Apetalous or polypetalous woody dicots

- 1. Leaves opposite or whorled.
  - 2. Low shrubs with simple unlobed leaves.
    - 3. Flowers solitary in leaf axils; petals green, stamens 4. *Euonymus alata*
    - 3. Flowers in cymes (terminal and upper leaf axils); petals yellow, stamens many. *Hypericum prolificum*
  - 2. Small to large trees, leaves lobed or compound.
    - 4. Inflorescences terminal.
      - 5. Leaves simple and lobed; petals green. *Acer saccharum*
      - 5. Leaves 3-foliolate; petals white. *Staphylea trifolia*
    - 4. Inflorescences axillary.
      - 6. Flowers long-pedicellate, in long dangling inflorescences; leaves compound. *Acer negundo*
      - 6. Flowers sessile or subsessile, in dense clusters; leaves simple and lobed.
        - 7. Petals present; ovaries glabrous; branchlets spreading or ascending; leaves lobed less than halfway to base. *Acer rubrum*
        - 7. Petals none; ovaries villous; branchlets pendulous; leaves lobed more than halfway to base. *Acer saccharinum*
- 1. Leaves alternate.
  - 8. Inflorescences unisexual, at least male flowers sessile in pendulous catkins or glomerules (erect catkins in *Salix*).
    - 9. Male and female inflorescences of one or more dense spherical glomerules. *Platanus occidentalis*
    - 9. Male flowers in catkins; female flowers various but not as above.
      - 10. Male and female flowers both numerous in elongate catkins.
        - 11. Secondary veins of leaves curving and not reaching margins.
          - 12. Leaves triangular. *Populus deltoides*
          - 12. Leaves linear. *Salix nigra*
        - 11. Secondary veins of leaves running straight to margins.
          - 13. Intact woody cone-like infructescences persisting from previous year. Shorelines. *Alnus serrulata*
          - 13. Infructescences not woody, disintegrating on tree and not persisting. Understorey of woods.
            - 14. Bark smooth. *Carpinus caroliniana*
            - 14. Bark scaly. *Ostrya virginiana*
  - 10. Male flowers in catkins; female inflorescences few-flowered.
    - 15. Leaves compound. *Carya*
    - 15. Leaves simple, lobed or not. *Quercus*
      - 16. Leaves linear, entire, inrolled in bud. *Quercus phellos*
      - 16. Leaves broader, lobed or crenate, imbricate in bud.
        - 17. Leaves lobed, the lobes bristle-tipped.
          - 18. Leaf blade lobed for 0.7-0.95 of its width, with 2-3(-4) lobes on each side. Tufts of hairs in vein axils large and conspicuous, each hair with 9-19 rays. *Quercus palustris*
          - 18. Leaf blade lobed for 0.25-0.88 of its width, with 3-5 lobes on each side. Tufts of hairs in vein axils small and inconspicuous or absent, each hair with 5-9 rays. *Quercus rubra*
        - 17. Leaves lobed or crenate, lobes or crenae rounded, without bristles.
          - 19. Leaves crenate, with 8-12 lateral veins; bark grey, splitting into persistent ridges. *Quercus montana*
          - 19. Leaves lobed, with (3-)4-6 lateral veins; bark grey or almost white, exfoliating as thin plates or scales.



- 41. Anthers red; leaves glabrous or weakly villous.
- 42. Styles 2-3; young plants very thorny. \**Pyrus calleryana*
- 42. Styles 5; young plants seldom thorny. \**Pyrus communis*
- 40. Petals narrow, oblanceolate; flowers in longer racemes; leaf primordia folded along midrib in bud.
- 43. Inflorescence ascending. *Amelanchier canadensis*
- 43. Inflorescence lax, horizontal or pendent.
- 44. Shrubs stoloniferous, colonial, to 2 m tall. *Amelanchier nantucketensis* [not confirmed]
- 44. Shrubs not colonial, usually taller.
- 45. Undersides of leaves tomentose. *Amelanchier arborea*
- 45. Undersides of leaves glabrous (sometimes sparingly pubescent when young). *Amelanchier laevis*

### 3. Sympetalous zygomorphic herbs.

- 1. Plant white, yellow, or brown, parasitic.
  - 2. Yellow or yellow-brown; stems thick, scaly; stamens exserted. *Conopholis americana*
  - 2. White; stems slender, naked; stamens immersed. *Orobanche uniflora*
- 1. Plant green, photosynthetic.
  - 3. Corollas rotate; stamens 2, exserted.
    - 4. Leaves wider than long, 3-5-lobed. \**Veronica hederifolia*
    - 4. Leaves longer than wide, unlobed. *Veronica persica*
  - 3. Corollas tubular; stamens 4.
    - 5. Stems trailing and mat-forming; leaf blade reniform, all leaves green. \**Glechoma hederacea*
    - 5. Stems erect; leaf blade triangular, upper leaves purple. \**Lamium purpureum*

### 4. Sympetalous actinomorphic herbs.

- 1. Inflorescence a head. Asteraceae
  - 3. All corollas ligulate (the tube split down one side to form a flat strap).
    - 4. Involucre 1.5-2.5 cm long, outermost phyllaries reflexed; heads solitary on an unbranched scape. *Taraxacum officinale*
    - 4. Involucre 3-10 mm long, all phyllaries appressed; stem often branched, heads often more than one per stem.
      - 5. Perennial, 1-2 feet high; pappus of bristles only; all leaves entire, veins and underside purple. *Hieracium venosum*
      - 5. Annual, less than 1 foot high; pappus of alternating scales and bristles; outer leaves entire, inner lobed, all green. *Krigia virginica*
  - 3. Corollas tubular, or corollas of central flowers (disk flowers) tubular surrounded by a ring of peripheral flowers (rays) having flat corollas.
    - 6. Head discoid; phyllaries straw-coloured. *Antennaria plantaginifolia*
    - 6. Head radiate; phyllaries green.
      - 7. Leaves opposite. *Arnica acaulis*
      - 7. Leaves alternate.
        - 8. Rays white or pinkish. *Erigeron philadelphicus*
        - 8. Rays yellow.
          - 9. Large leaves basal and cauline. *Senecio aureus* [=Packeria]
          - 9. Large leaves basal, white-tomentose beneath; heads on scaly unbranched pedicels. *Tussilago farfara*
  - 1. Inflorescence not a head.
    - 10. Leaves opposite or apparently whorled.
      - 11. Corolla strongly salverform. *Phlox*
        - 12. Leaves subulate. *Phlox subulata*
        - 12. Leaves laminate. *Phlox divaricata*
      - 11. Corolla not salverform.
        - 13. Leaves whorled (or apparently so).
          - 14. Inflorescence axillary; stems reclining, covered with retrorse teeth. \**Galium aparine*
          - 14. Inflorescence terminal; stems erect, without teeth. *Chimaphila umbellata*
    - 13. Stipules small and different from the opposite leaves.
      - 15. Evergreen. *Mitchella repens*

- 15. Green only in the warmer months. *Houstonia caerulea*
- 10. Leaves alternate.
  - 16. Flowers solitary, opposite the leaves. *Ellisia nyctelea*
  - 16. Flowers in helicoid inflorescences.
    - 17. Leaves entire. *Mertensia virginica*
    - 17. Leaves parted or compound.
      - 18. Petals fimbriate. *Phacelia purshii*
      - 18. Petals entire.
        - 19. Filaments glabrous, shorter than corolla tube. *Phacelia ranunculacea*
        - 19. Filaments pubescent, longer than corolla tube.
          - 20. Inflorescence with a well-developed axis; stem leaves small, not overtopping inflorescences, pinnately lobed. *Phacelia dubia*
          - 20. Inflorescence branching; stem leaves large, overtopping inflorescences, ± palmately lobed. *Hydrophyllum canadense*

### 5. Zygomorphic polypetalous herbs

xx add *Vicia caroliniana*

- 1. Petals overlapping.
  - 2. Leaves cauline; flowers yellow, spurred on one side, with one plane of symmetry. *Corydalis flavula*
  - 2. Leaves basal; flowers white, spurred on both sides, with two planes of symmetry. *Dicentra*
    - 3. Bases of corolla prolonged strongly backward into long spurs. *Dicentra cucullaria*
    - 3. Bases of corolla rounded, barely prolonged into shallow sacs. *Dicentra canadensis*
- 1. Petals spreading.
  - 4. Corolla green, petal blades ca the same size. *Hybanthus concolor*
  - 4. Corolla white, yellow, or blue, petal blades conspicuously different in size. *Viola*
    - 5. Plant acaulescent, all leaves basal; corolla usually deep blue.
      - 6. Leaves cordate, ca as wide as long, margins finely crenate. *Viola sororia*
      - 6. Leaves lanceolate, much longer than wide, with large teeth or lobes near base. *Viola sagittata*
    - 5. Leaves cauline; corolla white, yellow, or pale blue.
      - 7. Corolla yellow; stipules entire or crenulate. *Viola pubescens*
      - 7. Corolla white, pale blue or creamy; stipules strongly toothed or lobed
        - 8. Stipules pinnately lobed in lower half, upper half entire; corolla pale blue or creamy. *Viola bicolor*
        - 8. Stipules strongly toothed for their whole length; corolla white. *Viola striata*

### 6. Actinomorphic polypetalous herbs

- 1. Flowers with several separate ovaries.
  - 2. Petals strongly spurred, red with yellow mouths. *Aquilegia canadensis*
  - 2. Petals plane, never red.
    - 3. Petals white or pink.
      - 4. Inflorescence a raceme; leaves all basal.
        - 5. Leaves entire or toothed; stamens 10. *Saxifraga virginiana*
        - 5. Leaves palmately lobed; stamens 5. *Heuchera americana*
      - 4. Flowers solitary or cymose; cauline leaves present (calyx-like in *Anemone americana*).
        - 6. Leaves compound; stigma sessile. *Thalictrum thalictroides* [*Anemonella*]
        - 6. Leaves lobed or parted; stigma terminating a short style.
          - 7. Basal leaves evergreen; involucre leaves sepal-like. *Anemone americana* [*Hepatica*]
          - 7. Basal leaves seasonal; involucre leaves deeply lobed, well separated from flowers. *Anemone quinquefolia*
- 3. Petals yellow.
  - 8. Flower perigynous, subtended by an epicalyx of small bracts; stem reclining or prostrate; leaves 3-5-foliolate.
    - 9. Leaves 3-foliolate; bractlets 3-lobed. \**Duchesnea indica*
    - 9. Leaves 5-foliolate; bractlets unlobed. *Potentilla canadensis*
  - 8. Flower hypogynous, without an epicalyx; stem erect or nearly so; leaves otherwise. *Ranunculus*
    - 10. All leaves undivided, merely crenate; sepals 3; stigma sessile. \**Ranunculus ficaria*
    - 10. At least stem leaves deeply parted; sepals 5; stigma stigma terminating a short style.

- 11. Basal leaves undivided; petals small and inconspicuous. *Ranunculus abortivus*
- 11. All leaves deeply parted or compound; petals showy.
  - 12. Base of stem bulbous. \**Ranunculus bulbosus*
  - 12. Base of stem not bulbous. *Ranunculus hispidus* var. *nitidus*
- 1. Flowers with a single ovary.
  - 13. Stem long-creeping and rooting; leaves evergreen. *Asarum canadense*
  - 13. Stem erect or ascending, or plant acaulescent; leaves seasonal.
    - 14. Inflorescence a terminal leafless raceme.
      - 15. Fruit discoid or obcordate, scarcely longer than wide.
        - 16. Fruit obcordate. \**Capsella bursa-pastoris*
        - 16. Fruit discoid.
          - 17. Stem leaves with auriculate bases. \**Lepidium campestre*
          - 17. Stem leaves tapering to base. *Lepidium virginicum*
      - 15. Fruit cylindrical, several times as long as wide.
        - 18. Petals yellow.
          - 19. Stem leaves deeply pinnately lobed, bases not clasping. \**Barbarea vulgaris*
          - 19. Stem leaves deeply toothed or weakly pinnately lobed, bases clasping. \**Erysimum repandum*
        - 18. Petals white or greenish.
          - 20. Hairs branched.
            - 21. Lower leaves toothed. *Arabis laevigata*
            - 21. Lower leaves pinnately lobed. *Arabis lyrata*
          - 20. Hairs never branched.
            - 22. Leaves entire or toothed.
              - 23. Leaves with strong garlic odor when crushed. \**Alliaria petiolata*
              - 23. Leaves without garlic odor. *Cardamine bulbosa*
            - 22. Leaves deeply lobed or parted.
              - 24. Leaves palmately lobed.
                - 25. Glabrous; teeth of leaflets short, rounded. *Cardamine angustata*
                - 25. Hairy; teeth of leaflets long, acute. *Cardamine concatenata*
              - 24. Leaves pinnately lobed.
                - 26. Petioles of stem leaves ciliate at base; most leaves basal. \**Cardamine hirsuta*
                - 26. Petioles of stem leaves not ciliate at base; most leaves cauline. *Cardamine arenicola*
  - 14. Inflorescence otherwise.
    - 27. Corolla yellow; leaves 3-foliolate.
      - 28. Flowers small; inflorescences terminal compound umbels. *Zizia aurea*
      - 28. Flowers showy; inflorescences axillary simple umbels.
        - 29. Stems erect or ascending, rooting only at base; stipules small, green. *Oxalis stricta*?
        - 29. Stems creeping and rooting at nodes; stipules large, purple or brown. *Oxalis corniculata*
    - 27. Corolla white or purple; leaves various.
      - 29. Leaves basal, flowers scapose (sometimes 1-2 stem leaves in *Podophyllum*).
        - 30. Leaves simple and lobed.
          - 31. Leaves peltate. *Podophyllum peltatum*
          - 31. Leaves not peltate. *Sanguinaria canadensis*
        - 30. Leaves compound.
          - 32. Petals 8, white; leaves 2-foliolate, not sour. *Jeffersonia diphylla*
          - 32. Petals 5, purple, rarely white; leaves 3-foliolate, very sour. *Oxalis violacea*
      - 29. Leaves cauline or basal and cauline; flowers not scapose.
        - 33. Inflorescence a compound umbel.
          - 34. Plant glabrous; fruit ca as wide as long. *Erigenia bulbosa*
          - 34. Plant pubescent; fruit much longer than wide.
            - 35. Hairs spreading; stipules ciliate on margins only. *Osmorhiza claytonii*
            - 35. Hairs appressed; stipules densely soft-hairy all over. *Osmorhiza longistylis*

- 33. Inflorescence not an umbel.
  - 36. Sepals 2 or 3.
    - 37. Sepals 2, petals 5, pink; leaves linear and undivided. *Claytonia virginica*
    - 37. Sepals 3, petals 3, white; leaves compound. *Floerkea proserpinacoides*
  - 36. Sepals 5.
    - 38. Leaves alternate.
      - 39. Leaves deeply parted; corollas purple. *Geranium maculatum*
      - 39. Leaves undivided; corollas white. *Comandra umbellata*
    - 38. Leaves opposite.
      - 40. Sepals fused into a ± united tube; petals white or pink. *Silene caroliniana*
      - 40. Sepals separate; petals white.
        - 41. Styles 3.
          - 42. Leaves petiolate, 1-3 cm long; stem cylindrical. \**Stellaria media*
          - 42. Leaves sessile, 2-9 cm long; stem 4-angled. *Stellaria pubera*
        - 41. Styles 5.
          - 43. Petals longer than sepals. *Cerastium arvense*
          - 43. Petals and sepals equal in length. \**Cerastium vulgatum*