
Tending Native Plants
&
Plant Rewilding
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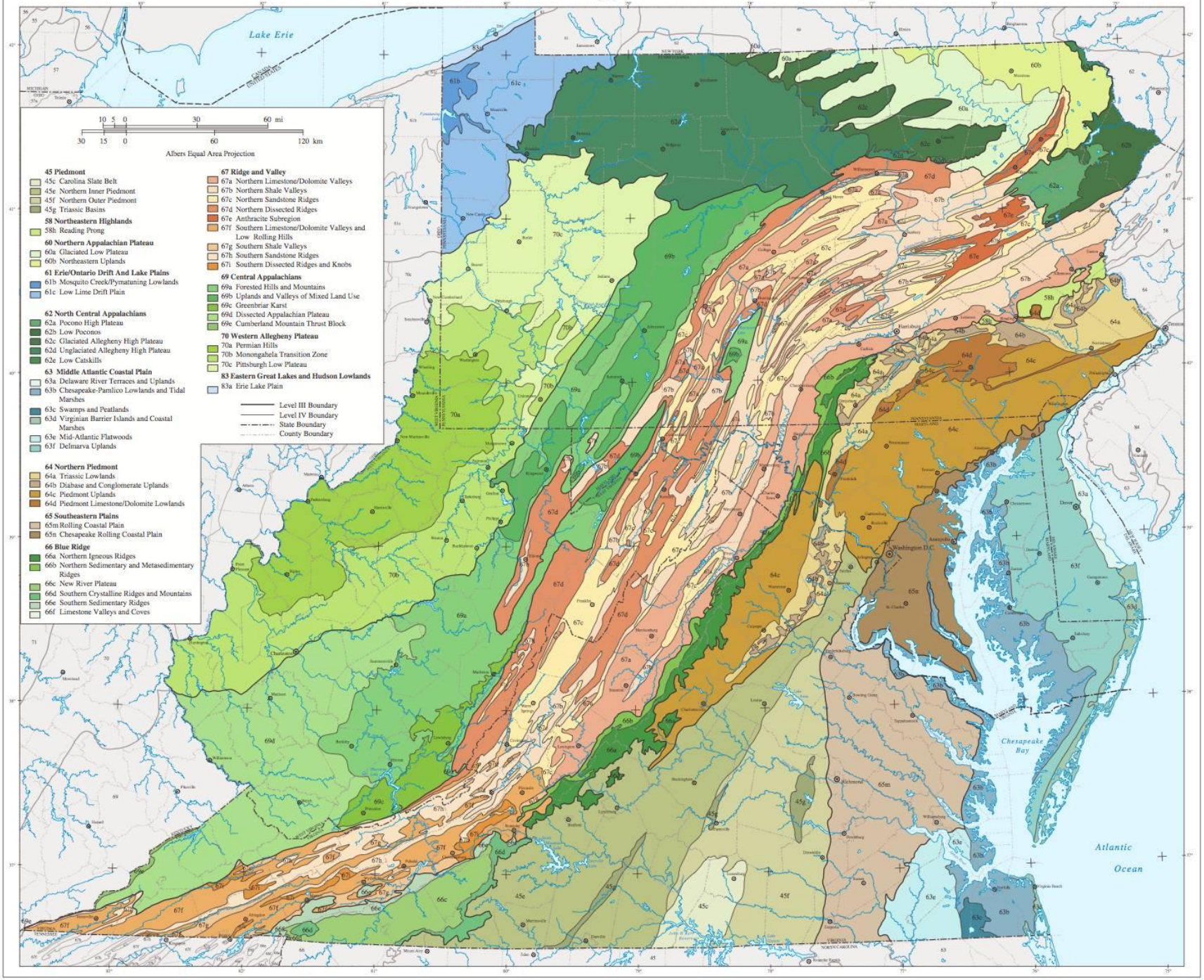
Understanding Native Plants

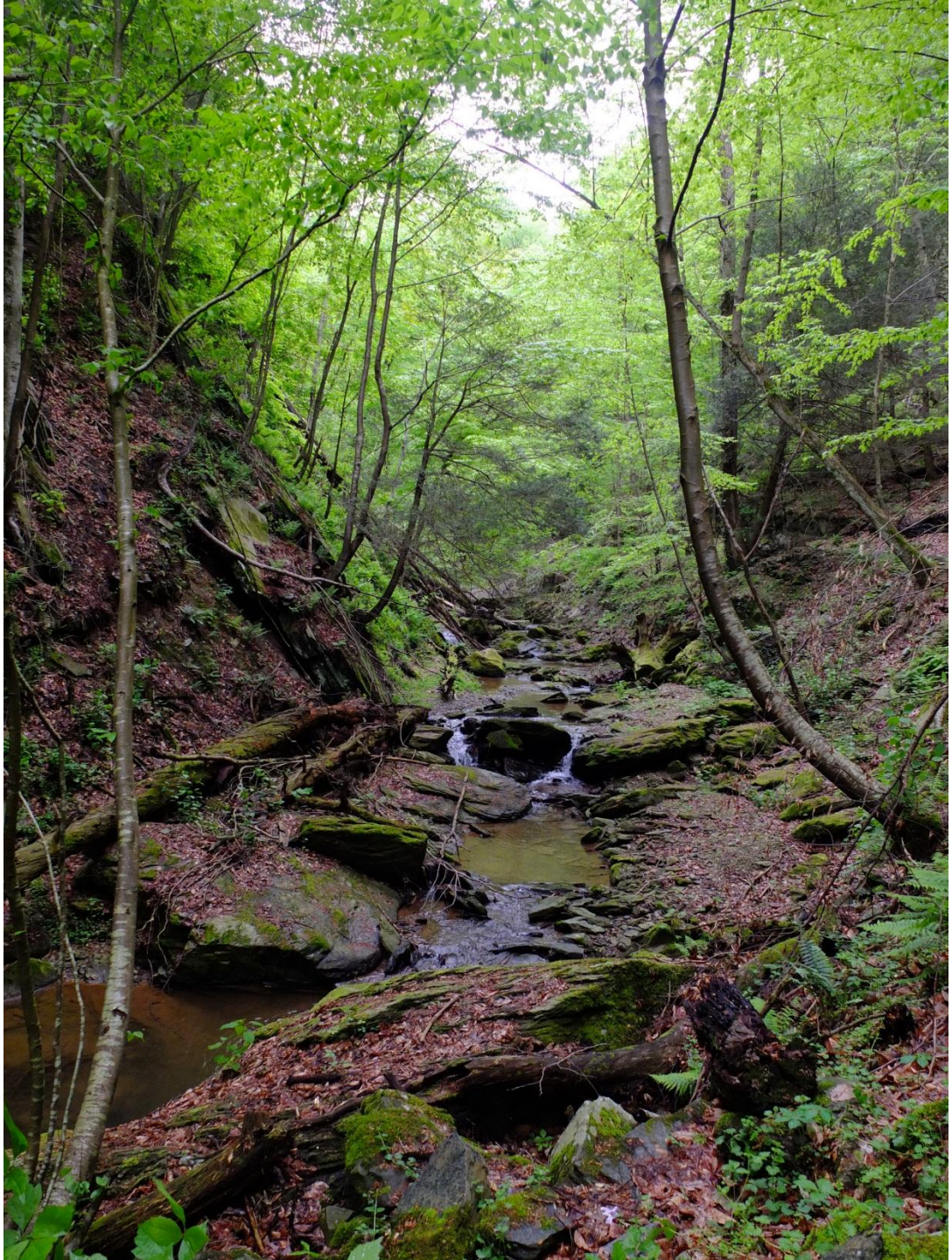
- Eastern temperate forests bioregion
- Overview of some of our spring ephemerals
- Profile of various forest/ecosystem types
- Some various native plants
- Discussion of savanna grasslands, fire
- Management of human habitat species

Rewilding with Plants

- “Rewilding,” emerging out of Earth First! in the ‘80s
- Human habitat = **geophytes**
  - Plus: nuts, fruits, berries, leaves, shoots, meat…
- Strategies and Techniques for:
  - Conservation
  - Management
  - Regeneration
  - Restoration

Level III and IV Ecoregions of EPA Region 3





What Happens When You Plant a Pile of Bear Scat?

- https://blog.nature.org/science/2017/05/10/what-happens-when-you-plant-pile-bear-scat/
- 1,200 seedlings – mostly Oregon Grape and Chokeberry


ARKive
www.arkive.org
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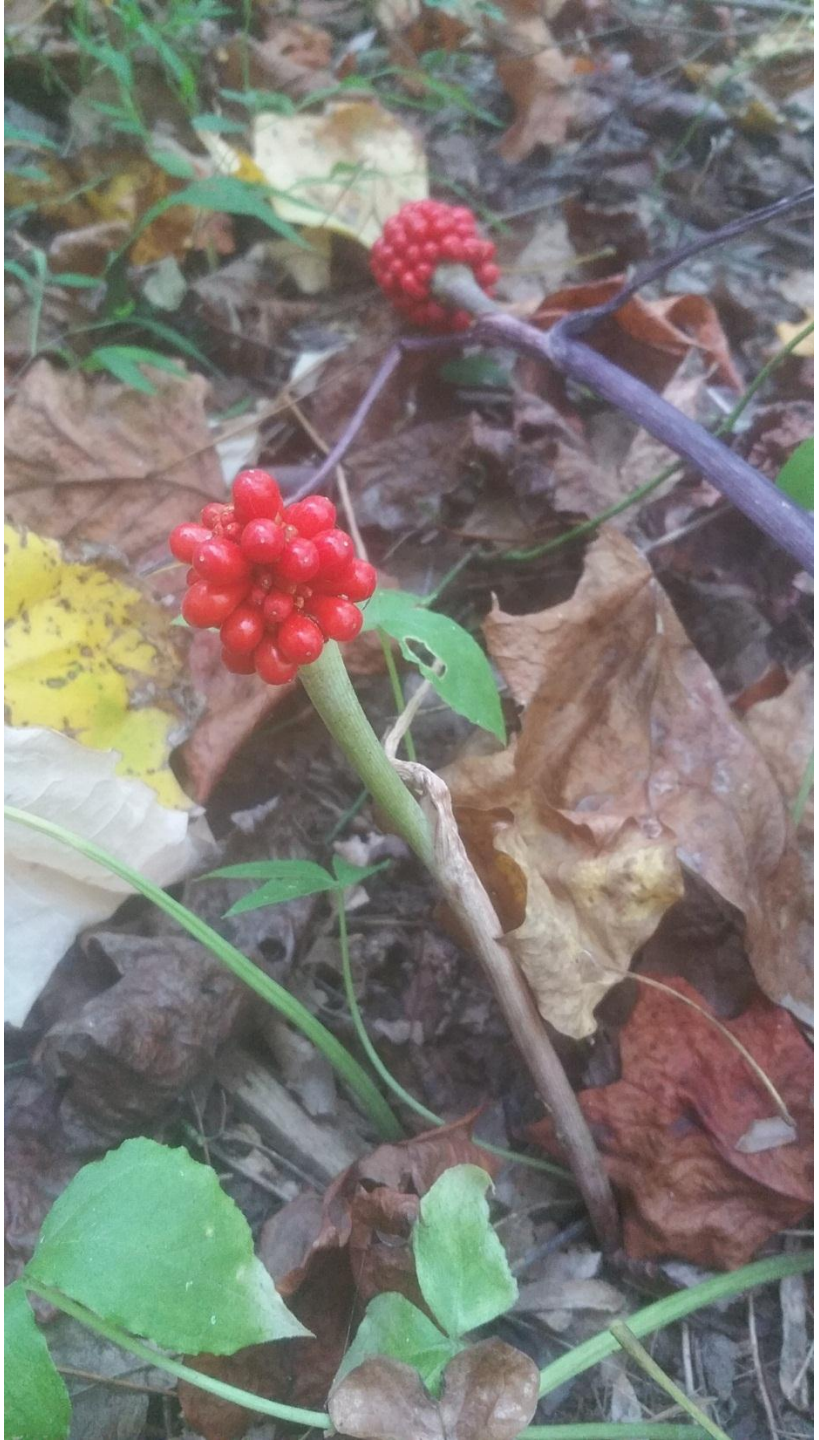


[Birds of prey are spreading fires deliberately in Australia, study reveals]

Same observed behavior seen in Florida ground-nesting birds


Erigenia bulbosa “Harbinger-of-spring”


Claytonia virginica “Spring Beauty”


Erythronium americanum "Trout Lily, Dogtooth Violet"


Caulophyllum thalictroides “Blue Cohosh”


Geranium maculatum “Spotted Geranium”


Mertensia virginica “Bluebells”


Phlox divaricata “Woodland Phlox”

Polygonatum biflorum var. commutatum “Giant Solomon’s Seal”


Sanguinaria canadensis
“Bloodroot”


Trillium erectum


Trillium grandiflorum

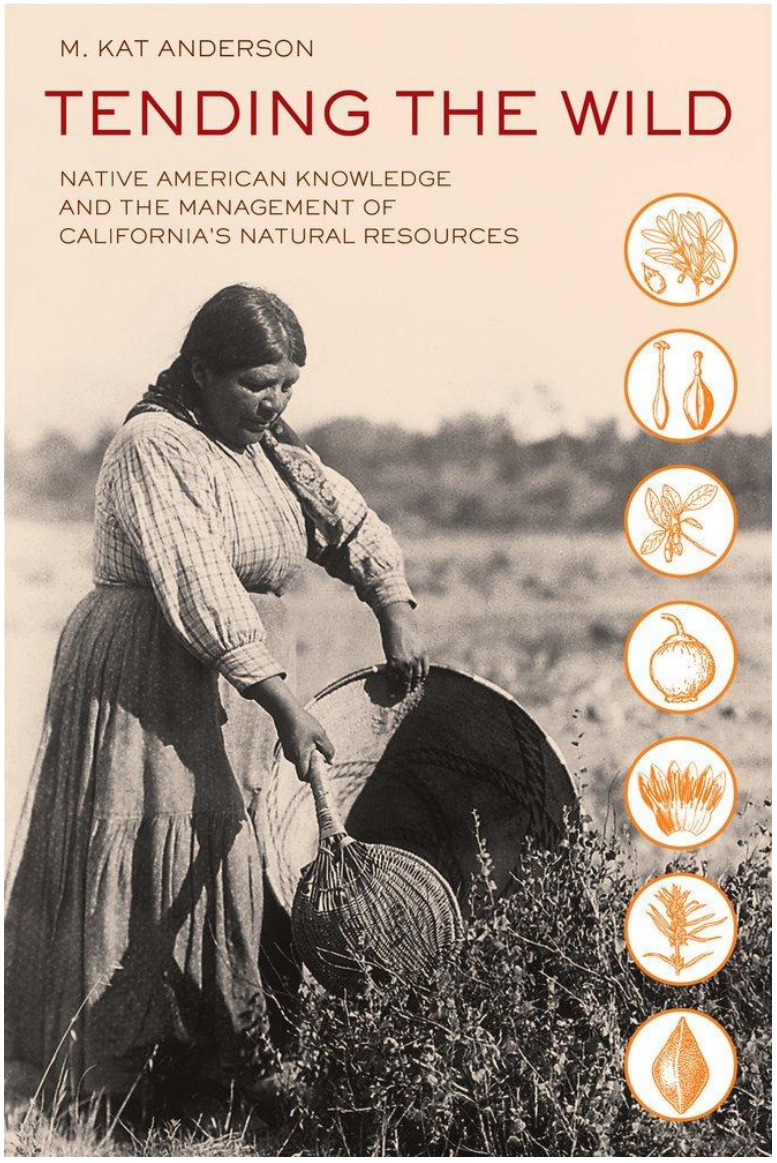

Trillium undulatum

The Importance of Geophytes

- Nez Perce (Nimi'ipuu) digging stick (kapen)

- Starchy tubers rich in carbohydrates & minerals
- Staple food
- Examples: potato, beet, turnip, yam, carrot, radish

Tending the Wild by M. Kat Anderson



Regenerative Harvest

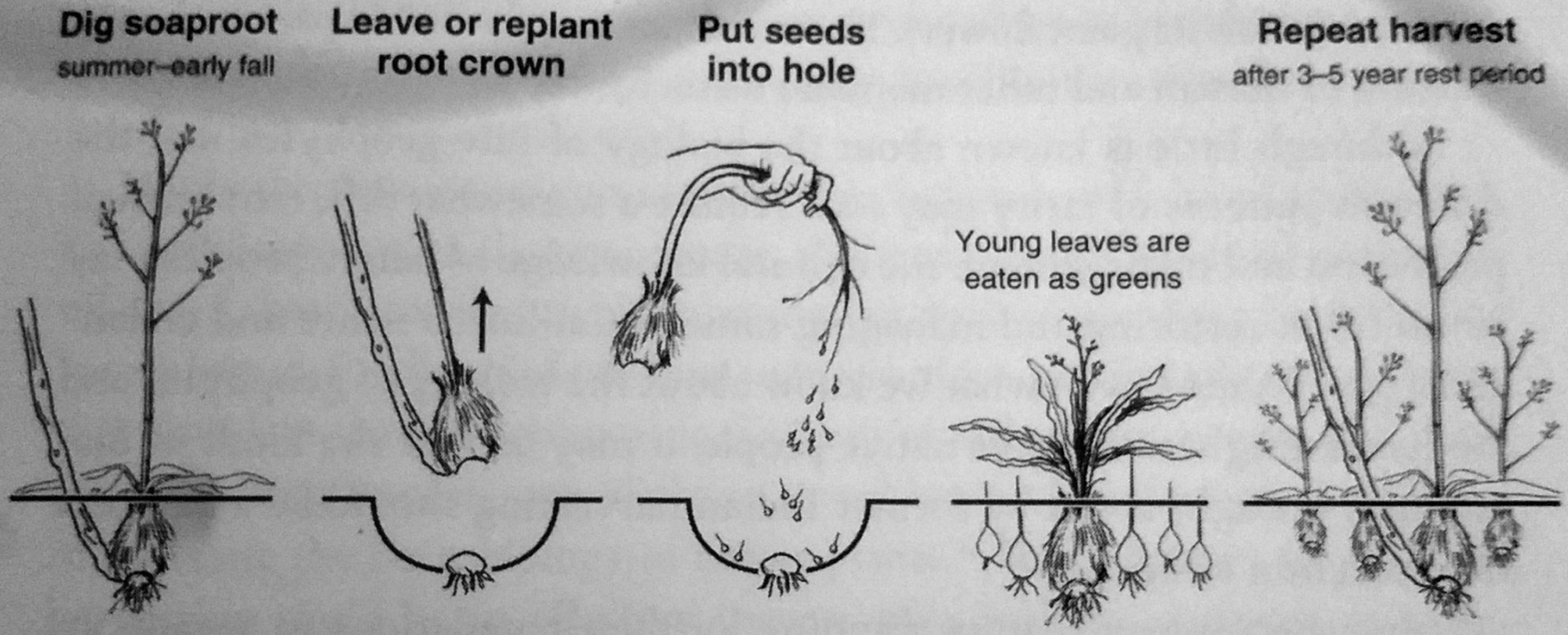


Figure 37. Steps in the cultivation of soaproot *(Chlorogalum pomeridianum)*, an important plant to the majority of California tribes. The bulbs provided glue, fish poison, and food; the young leaves were eaten; and the old leaf sheaths that clothe the bulb were used as bristles for brushes. The plant is still gathered today.

“Depauperate”

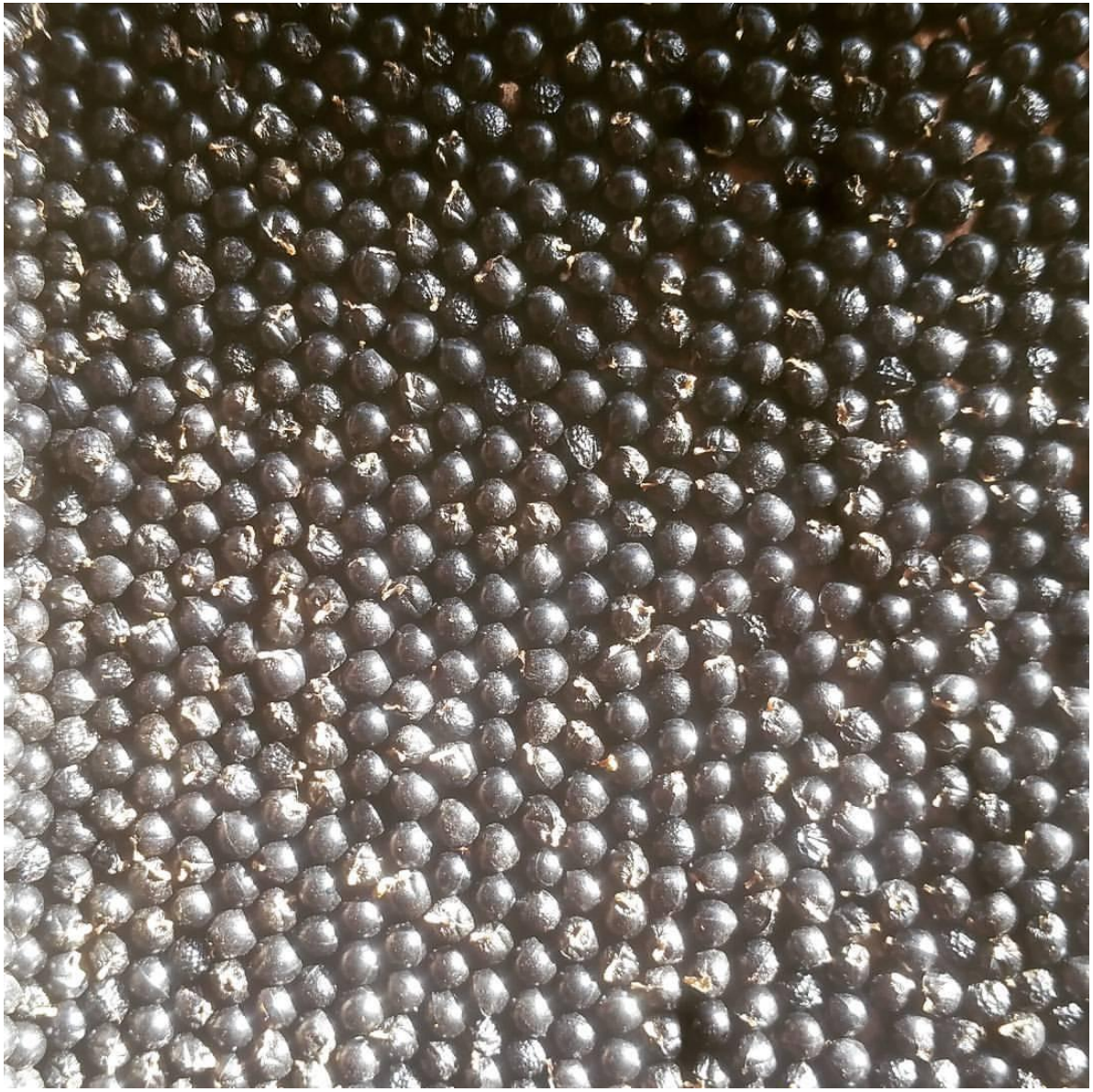
Almost like a barrens of beech (Fagus grandifolia)

“Invaded” / Novel Ecosystem

The Amaryllidaceae

- Amaryllis family
- Genus **Allium**
  - Contains the onions, chives, shallots, garlic, scallions, leeks
  - Wild leeks (A. tricoccum), Wild garlic (A. canadense), nodding onion (A. cernuum), prairie onion (A. stellatum)

Allium tricoccum
Ramps, or Wild Leeks



Ramps, Wild Leeks

- Allium tricoccum, Allium burdickii
- Foliage emerges March or April, dies back by May or June. Blooms in July, seeds around the middle of September
- Seed double-dormant (18 months until germination, or two cold periods)
- At least five years of growth until maturity (flowering) = 6 ½ year investment from seed to flower. General principle is 7 years.
- Seed tolerant of drying, but best sown fresh
- Bulbs divide after certain age

The Montiaceae

- Currently Montiaceae, formerly Portulacaceae or “purslane” family
  - Family contains spring beauty (Claytonia), fameflower (Phemeranthus), bitterroot (Lewisia), miner’s lettuce (Montia), pussypaws (Cistanthe), purslane (Calandrinia)
- Genus **Claytonia**: spring beauty
  - Carolina spring beauty, Virginia spring beauty + variations
  - Western spring beauty, alpine spring beauty, and more.


BOTANY IN A DAY...

Spring Beauty

- Claytonia virginica, Claytonia virginica var. hammondiae, Claytonia virginica f. lutea, Claytonia caroliniana, and western species
- Blooms about 10 weeks beginning Feb. or March; seeds April/May in PA
- Double-dormant (18 months or two cold periods until germination)
- Intolerant of drying, must be stored cool and moist or sown immediately

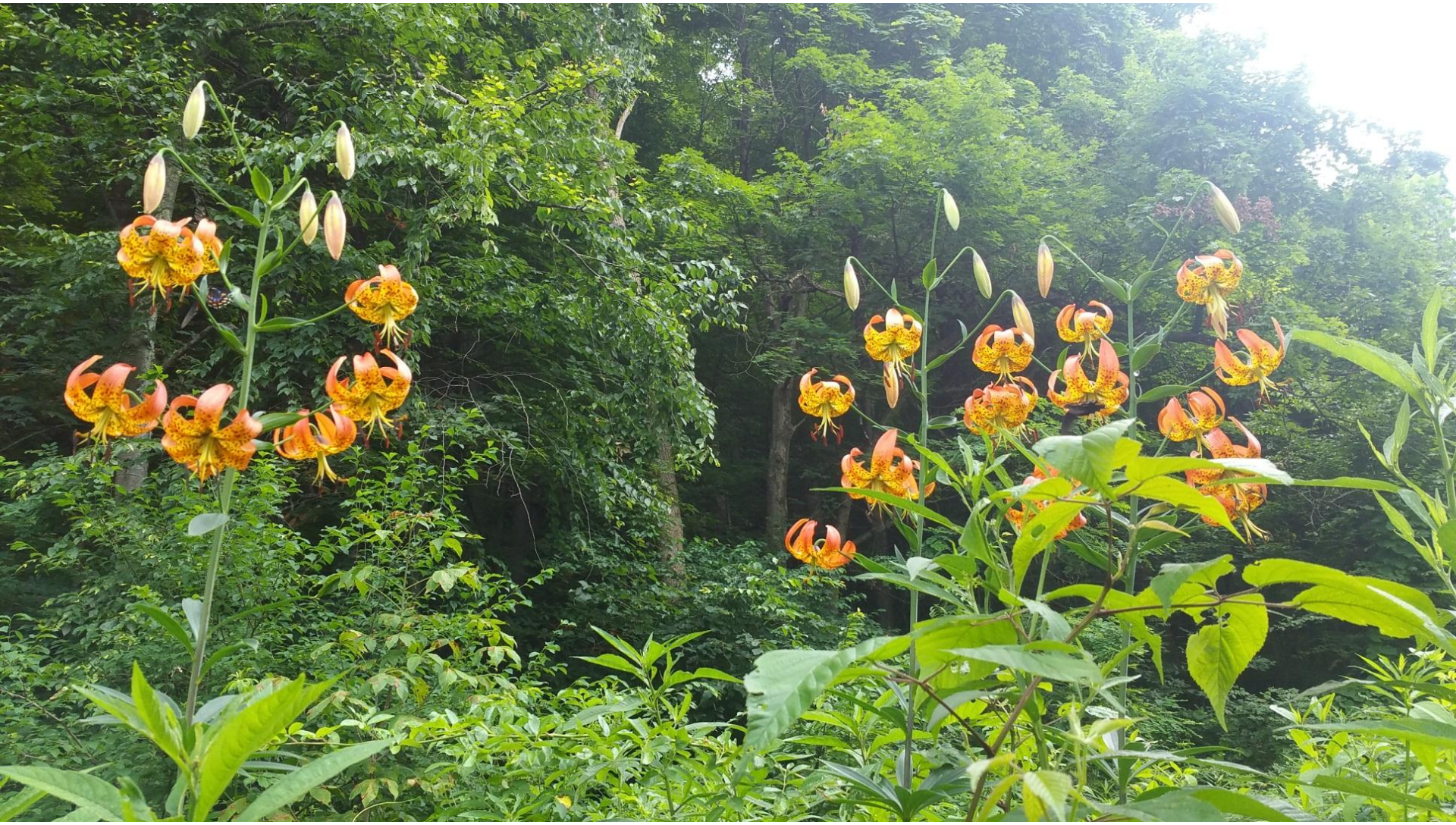
The Liliaceae

- The Lily family
  - Family contains the true lilies (Lilium), cucumber root (Medeola), blue-bead lilies (Clintonia), trout lilies or rush lilies (Erythronium), fairy bells (Prosartes/Disporum), twisted stalk (Streptopus), mariposas (Calochortus), chocolate lilies or rice-roots (Fritillaria)

Lilium species, the “true lilies”

- Eastern: Lilium canadense, L. michiganense, L. michauxii, L. superbum, L. philadelphicum, L. catesbei, L. grayi
- Western: Lilium columbianum, L. washingtonianum, L. rubescens, L. occidentale, L. pardalinum
- Asiatic: Lilium lancifolium, better known as the garden variety Tiger Lily

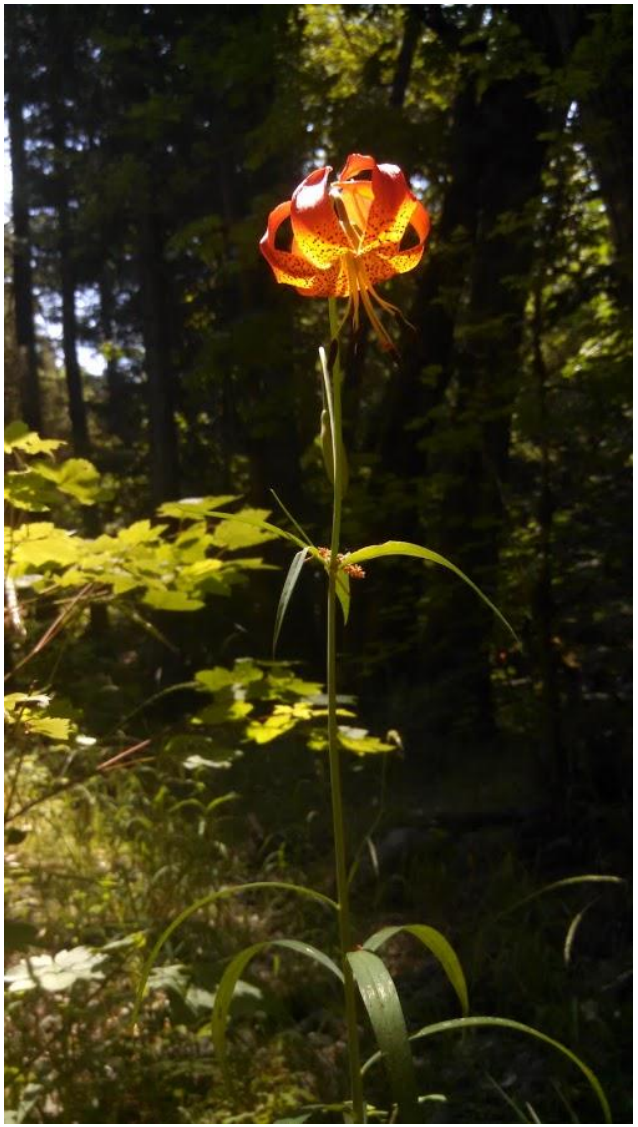
Lilium superbum “Turk’s cap Lily”



Lilium philadelphicum “prairie lily”

Some western lilies…
Lilium columbianum

Lilium washingtonianum, Lilium pardalinum



The True Lilies

- Bloom July-August, seeds September-October. Ripened pods turn brown, dry, and split.
- Hypogeal germination 1st year (starts underground)
- 3-5 (?) years growth to maturity and flowering
- Corm shatters for easy multiplication

Medeola virginiana
Cucumber root

Indian Cucumber Root

- Blooms late April-June; sets seed (berries) which ripen in September
- Double dormant. Berry flesh inhibits germination: remove and wash seed.
- Plants take a few years to grow until flowering
- Stoloniferous, and capable of forming large clonal colonies. Distinct genetic individuals required for fertile pollination.
- Seeds maybe tolerant of drying, but I air on the side of caution. Long-term storage in soil.

Erythronium americanum
Trout Lily

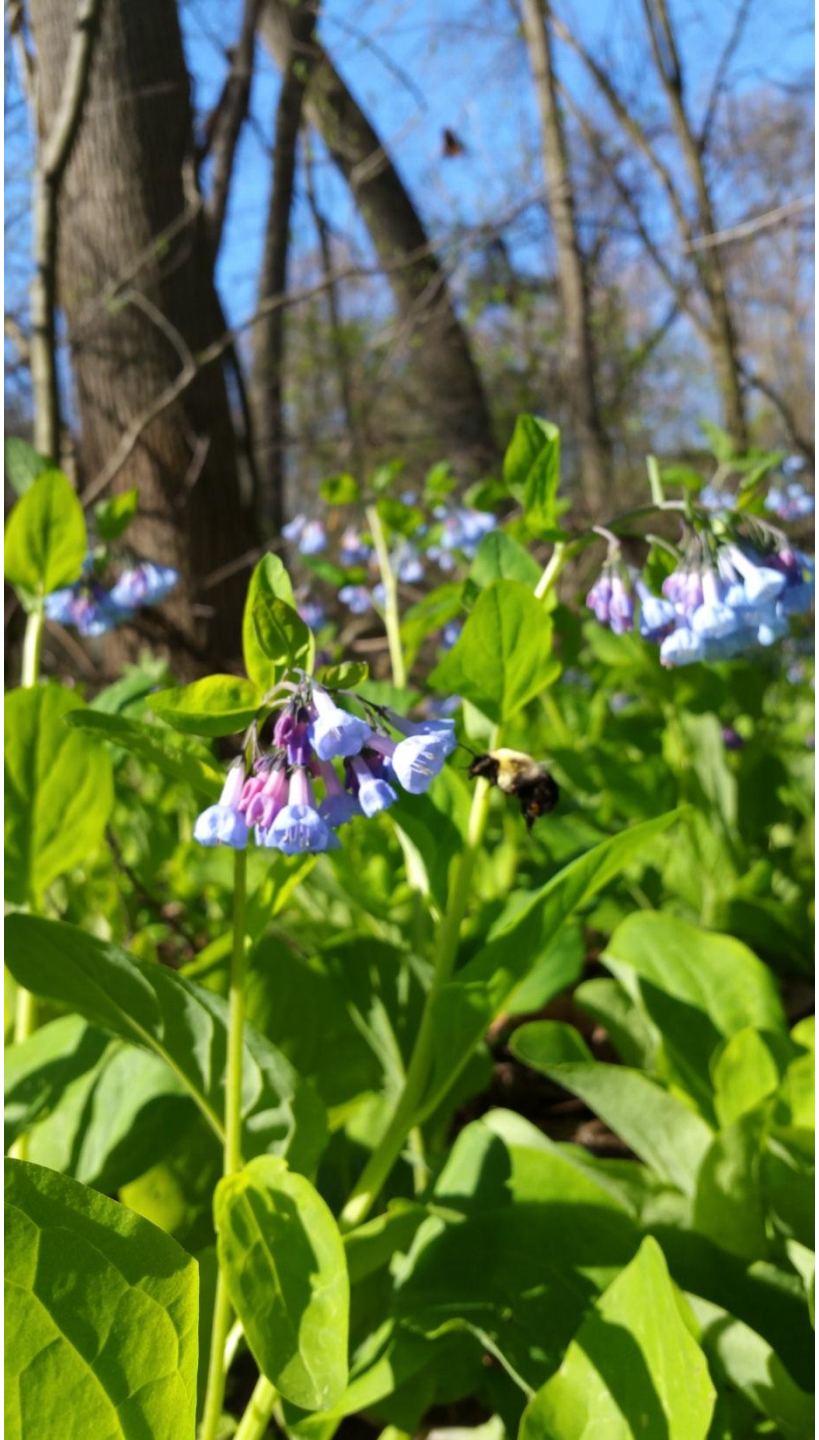
Trout Lily, aka Dogtooth Violet

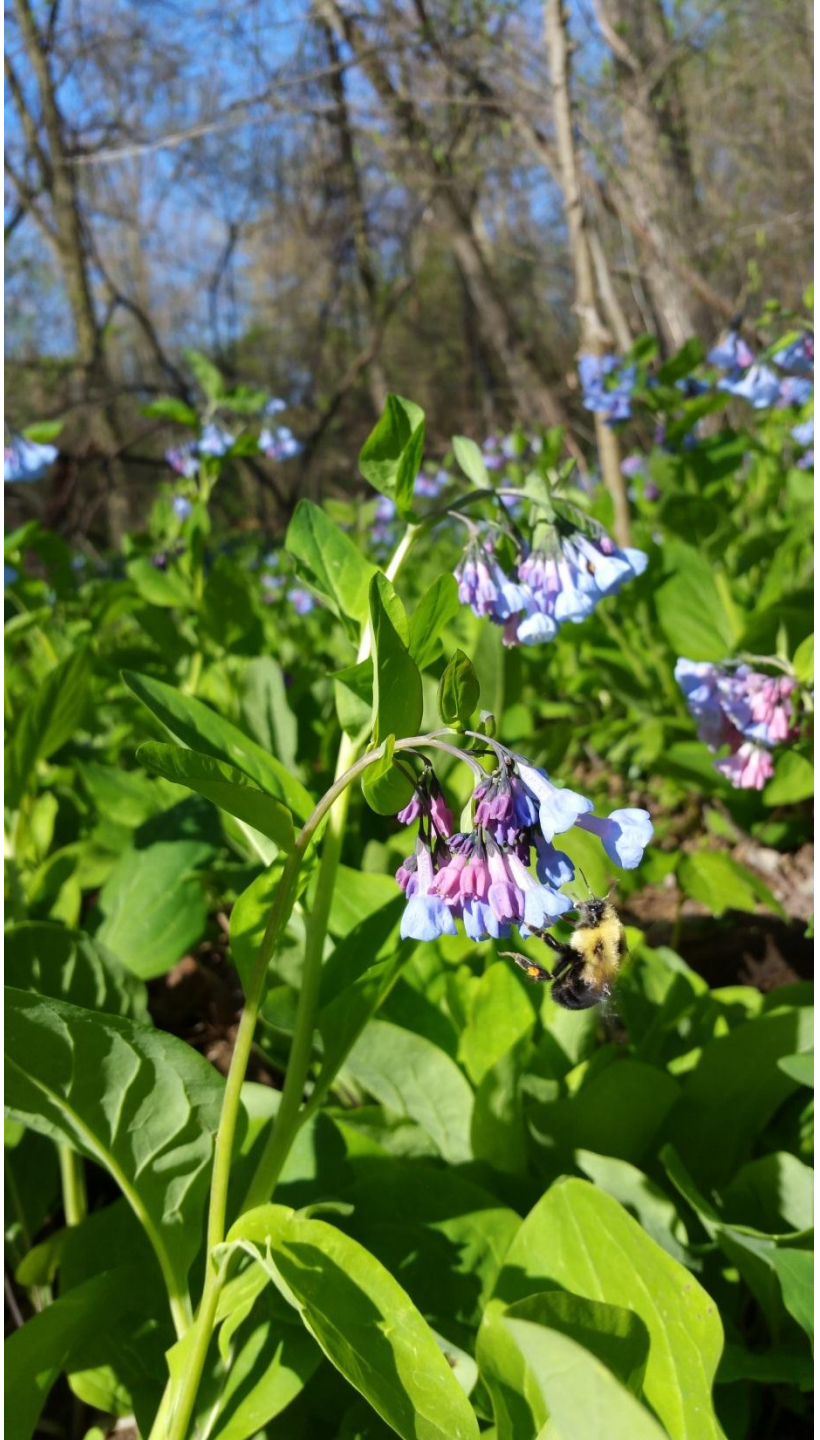
- Erythronium americanum, E. albidum, E. umbilicatum, and some Western species
- Blooms March-April, Seed May/June
- Elaiosome
- Double dormant
- Intolerant of drying
- Long time to maturity, probably a 7 year plant
- Stoloniferous

Boraginaceae

- The borage family
- Family contains bluebells (Mertensia), waterleaf (Hydrophyllum), viper's bugloss (Echium), forget-me-not (Myosotis), comfrey (Symphytum), borage (Borago), and others.

Mertensia virginica
Virginia bluebells



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Virginia Bluebells

- Blooms March-April, Seeds in May
- Germinate following spring
- ~4 years to mature flowering
- Readily produces seed and forms colonies (maybe in as little as a decade)
- Seed tolerant of some drying but not for long-term storage

Asparagaceae

- The asparagus family
- Used to be treated as part of the lily family
- Contains members such as mayflower (Maianthemum), Solomon's seal (Polygonatum), camas (Camassia), and exotics like squill (Scilla) and star-of-bethlehem (Ornithogalum). And, of course, Asparagus officinalis.

Polygonatum biflorum (var. commutatum)
Giant Solomon's Seal

Solomon's Seal

- Flowers April-June, fruits in late-August/mid-September
- Berry-like fruit with 6-8 seeds
- Double-dormant
- 5 years of growth until flower = 7 year plant
- Store seeds inside berry until ready for sowing
- Propagation by rhizome division

Camassia

- The camas or wild hyacinths
- 6 species: 4 western, 2 eastern
  - Quamash or small camas (C. quamash). Northwest
  - Large camas (C. leichtlinii). BC, WA, OR, CA, NV
  - Howell's camas (C. howelli). Oregon serpentine
  - Cusick's camas (C. cusickii). **Not a food (saponins)**!
  - Southern or prairie camas (C. angusta). Southern plains & mid- to lower- Mississippi valley
  - Atlantic or eastern camas (C. scilloides). TX to MD, GA to Ontario

Camassia scilloides

- Wild Hyacinth
- Indian Hyacinth
- Eastern camas
- Atlantic camas
- Woodland camas
- Beargrass
- “Quamash”

Camassia scilloides

Eastern camas
Atlantic camas
Woodland camas
Wild Hyacinth

Camassia leichlinii, Greater Camas

- Slow cook 24-48 hours
- Inulin converts to fructose

(Young shoots edible like asparagus)

Eastern camas

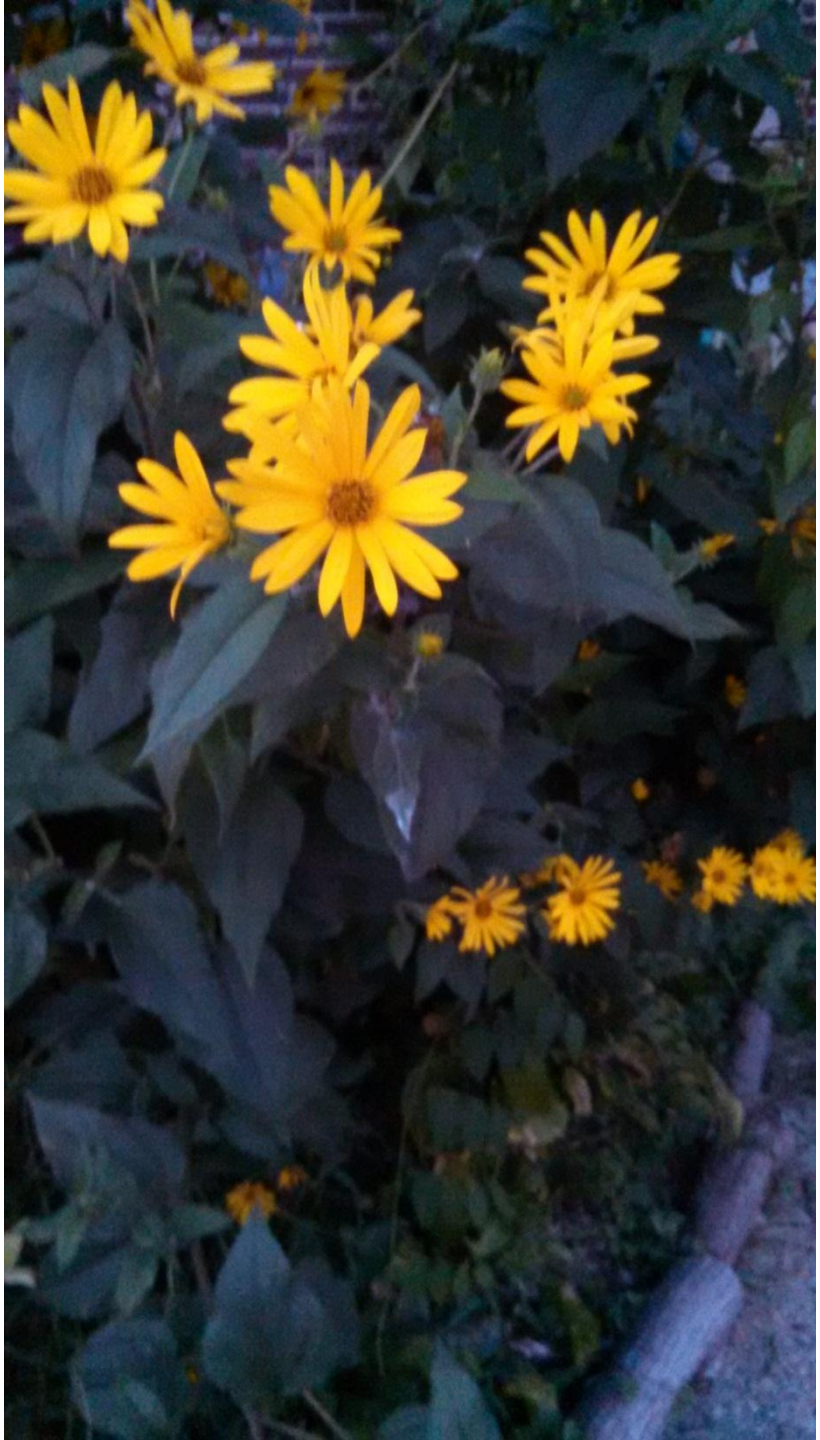
- Blooms for about 4 weeks beginning late March or April; Seeds ripen in May or early June. Pods turn brown, dry, and split.
- Some seeds germinate following spring, some seeds germinate after second cold period (6 or 18 months dormancy)
- At least 5 years of growth until maturity = 7 year plant
- Seeds tolerant of some drying but not for long-term storage

Asteraceae

- The daisy or sunflower family
- Sometimes referred to as Compositae
- Contains foods in genus Helianthus, the sunflowers, in Balsamorhiza, the balsam-root, and in Krigia dandelion and a few others
- Contains flowers such as ragwort (Packera)

Helianthus tuberosus
Jerusalem artichoke, or Sunroot

Helianthus tuberosus from seed



“Three brothers” permaculture guild:

a polyculture of groundnut, sunroot, and mintroot

Krigia dandelion
Dwarf Potato Dandelion

Steve Wilson at Blue Jay Barrens…

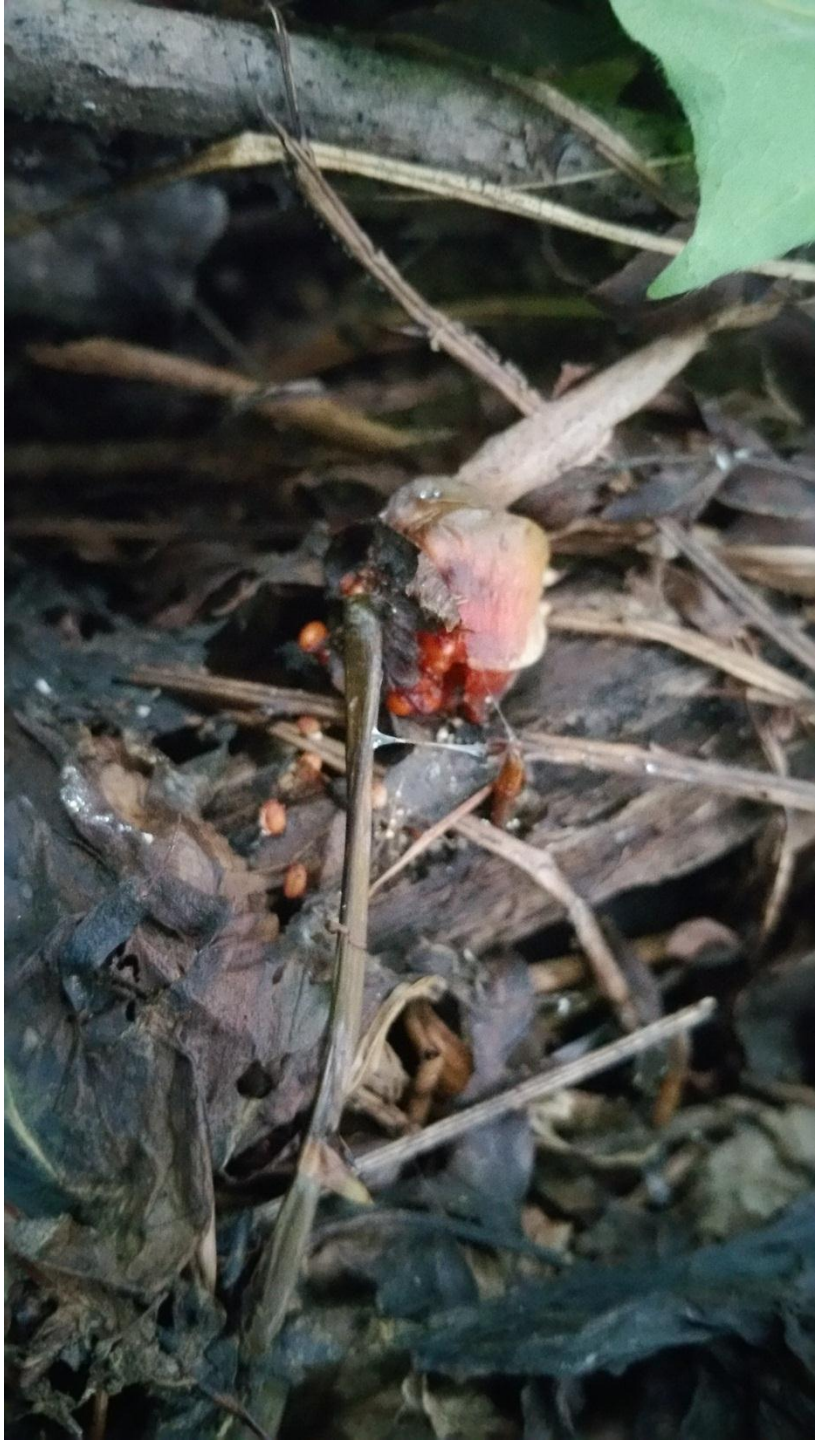
Dwarf Potato Dandelion

- Leaves emerge out of ground in October and begin growing slowly, unphased by snow/ice. Growth accelerates in March, and flowers appear by May if conditions good. Leaves begin withering in June and disappear by July. Summer dormancy. (Steven Wilson – Blue Jay Barrens)
- Each plant may produce up to 40 tubers (!!)
- Plant Tubers August or September, Sow seed as soon as it's ready.
- No trials yet for germination time and years to maturity.

Balsamorhiza sagittata
Arrowleaf Balsam-root

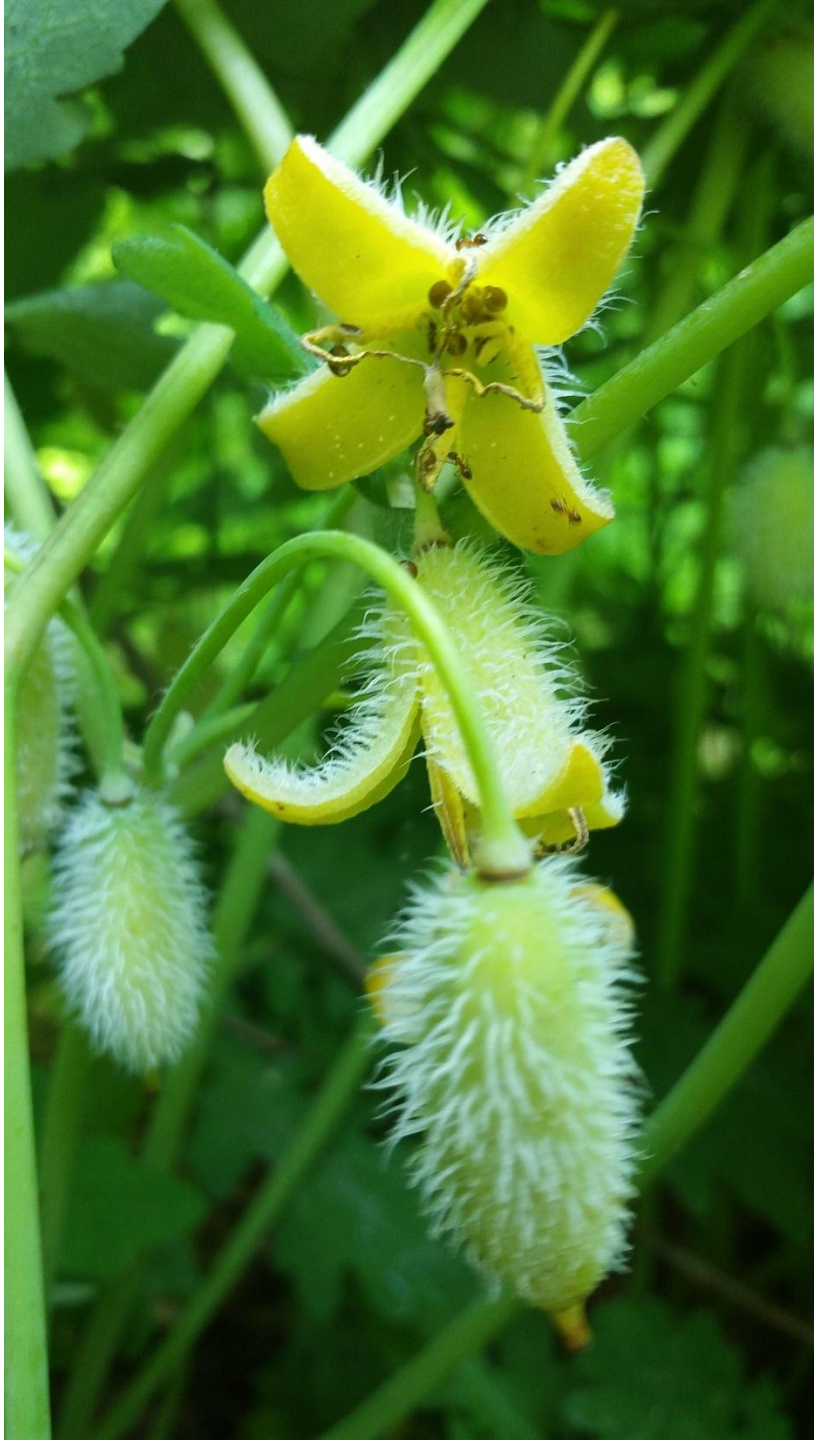
Trilliaceae

- Six genus, the most famous of which and most important to North America is Trillium
- Over 40 species native to North America



Trilliums

- Blooms April/May; Fruit ripens in July. Fruit is ripe when very soft to the touch.
- Seeds double-dormant (18 months until germination). Germination times hastened by early harvest and/or deep cleansing.
- Elaiosomes
- Single-leaf stage 1-3 years, three-leaf stage 2-4 years, first flowering around 7 years. Very long-lived plants.
- Seeds intolerant of drying, sow immediately or store cool & damp
- Roots can be divided for vegetative propagation
- Very easy to transplant!

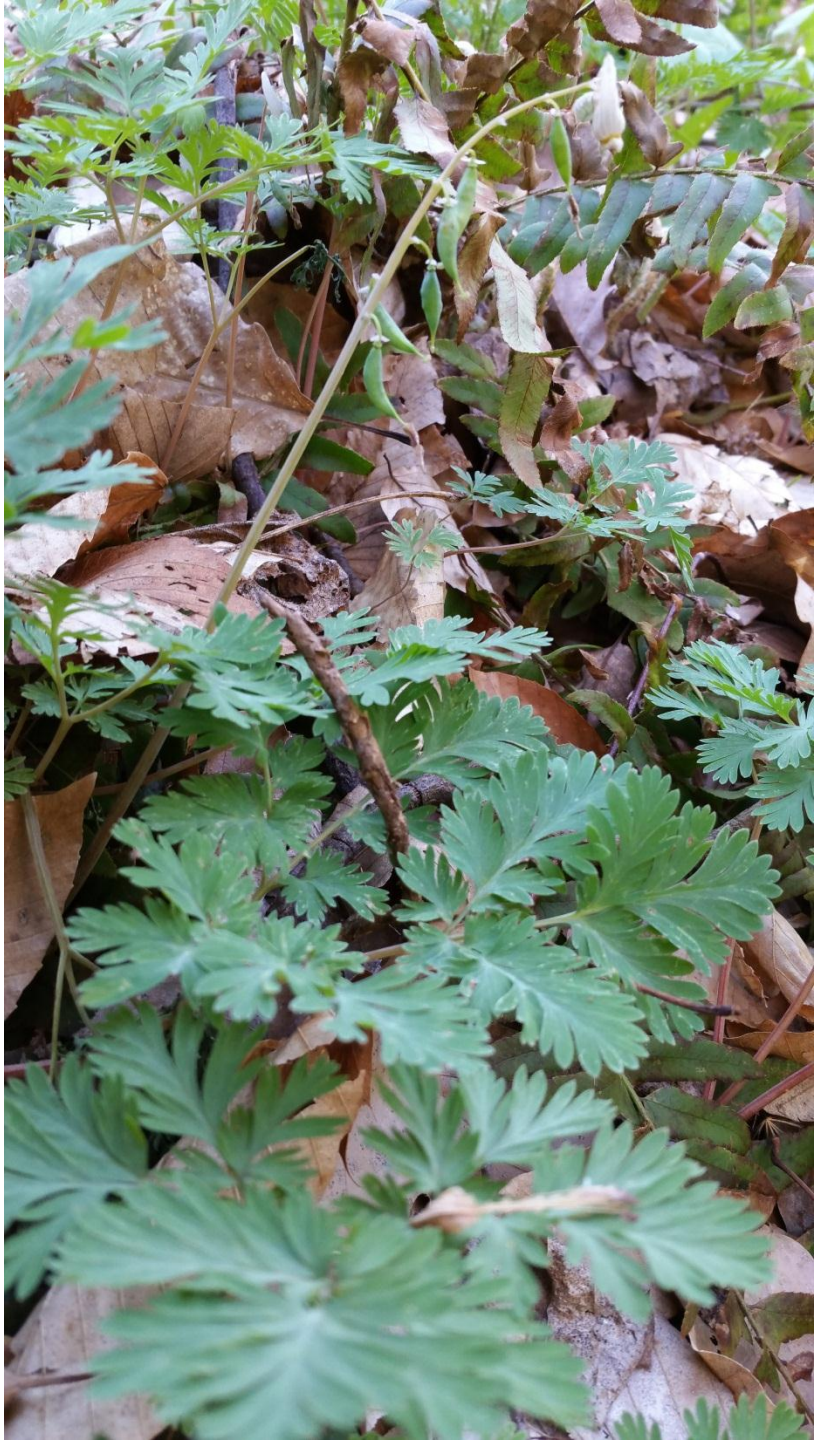


Myrmecochory

Papaveraceae

- The Poppy family
- Includes Fumitory or Bleeding Heart sub-family Fumarioideae: Dicentra cucullaria “Dutchman’s Breeches,” Dicentra canadense “Squirrel Corn,” Dicentra eximia “Wild Bleeding Heart”, Corydalis spp.
- Includes Bloodroot (Sanguinaria canadensis), Wood Poppies (Stylophorum diphyllum), Greater Celandine (Chelidonium major), and Poppy flowers (Papaver spp.)

Dicentra cucullaria



Dutchman's Breeches

- Blooms March/April; Sets seed mid-late April; Foliage gone in May
- Double-dormant
- Elaiosomes
- Takes a few years of growth until maturity
- Seed stored cool & damp or sown immediately (exception for D. eximia -- dry)
- Corm divisible

Sanguinaria canadensis

Bloodroot

- Blooms March or April; Seed pods ripen in May or early June
- Double dormant seed
- Elaiosomes
- Takes several years until mature flowering age
- Drying intolerant

Gerianaceae

- True Geraniums or Cranesbill family
- Geranium genus with several species

Geranium maculatum

Spotted Geranium

- Blooms March-May, seed ripens May-June
- Seeds germinate following spring after cold stratification
- 3-4 years until mature flowering
- Forms loose colonies, grows in wide range of conditions
- Cool, dry storage

Polemoniaceae

- Jacob's Ladder or Phlox family
- Ovary 3 fused carpels, 5 sepals/petals
- Phlox genus
- Polemonium reptans "Jacob's Ladder"

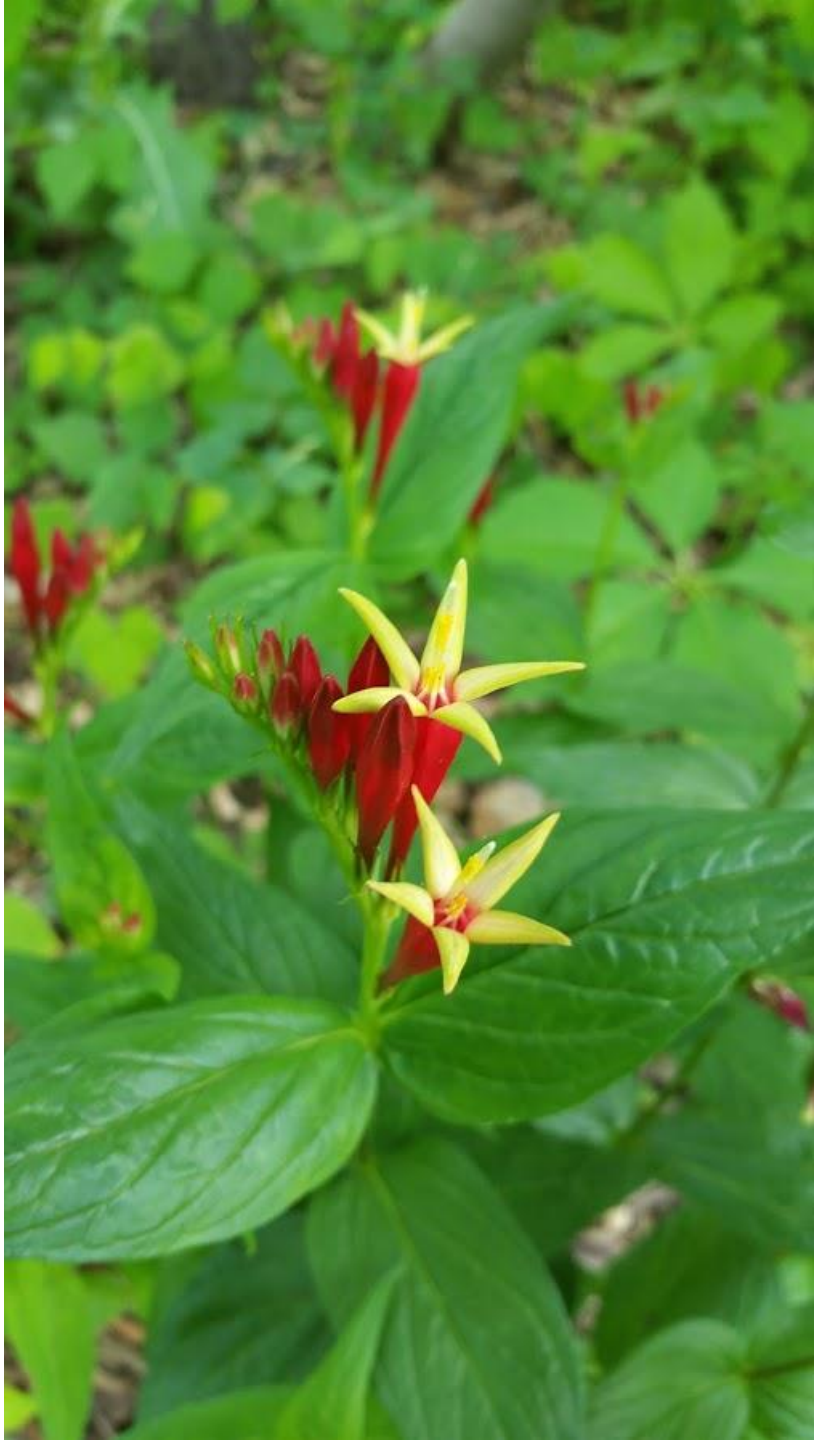
Phlox divaricata
Woodland Phlox

Woodland Phlox

- Blooms March-May, Seed ripens May-June
- Germination following cold stratification, seedlings following spring
- 2-3 years until mature flowering
- Forms loose colonies and tolerates wide variety of soil and sun conditions
- Seed stores cold & dry

Gentianaceae

Spigelia marilandica
Pinkroot / Indian Pink



Pinkroot

- Blooms May-June, Seed ripens July-August
- Germinates after cool stratification period
- ~2 years until flowering
- Tolerant of range of conditions from moist to dry, full-sun to mostly-shade
- Seed stores cool and dry

Apiaceae

- Parsley or carrot family
- Contains some of our best edibles as well as some of the most dangerous plants to consume (such as the poisonous hemlocks)
- Some of the best edibles & medicinals are in genuses Lomatium, Perideridia, Osmorhiza, Angelica, Ligusticum, Heracleum, Cymopterus, Erigenia, Orogenia.

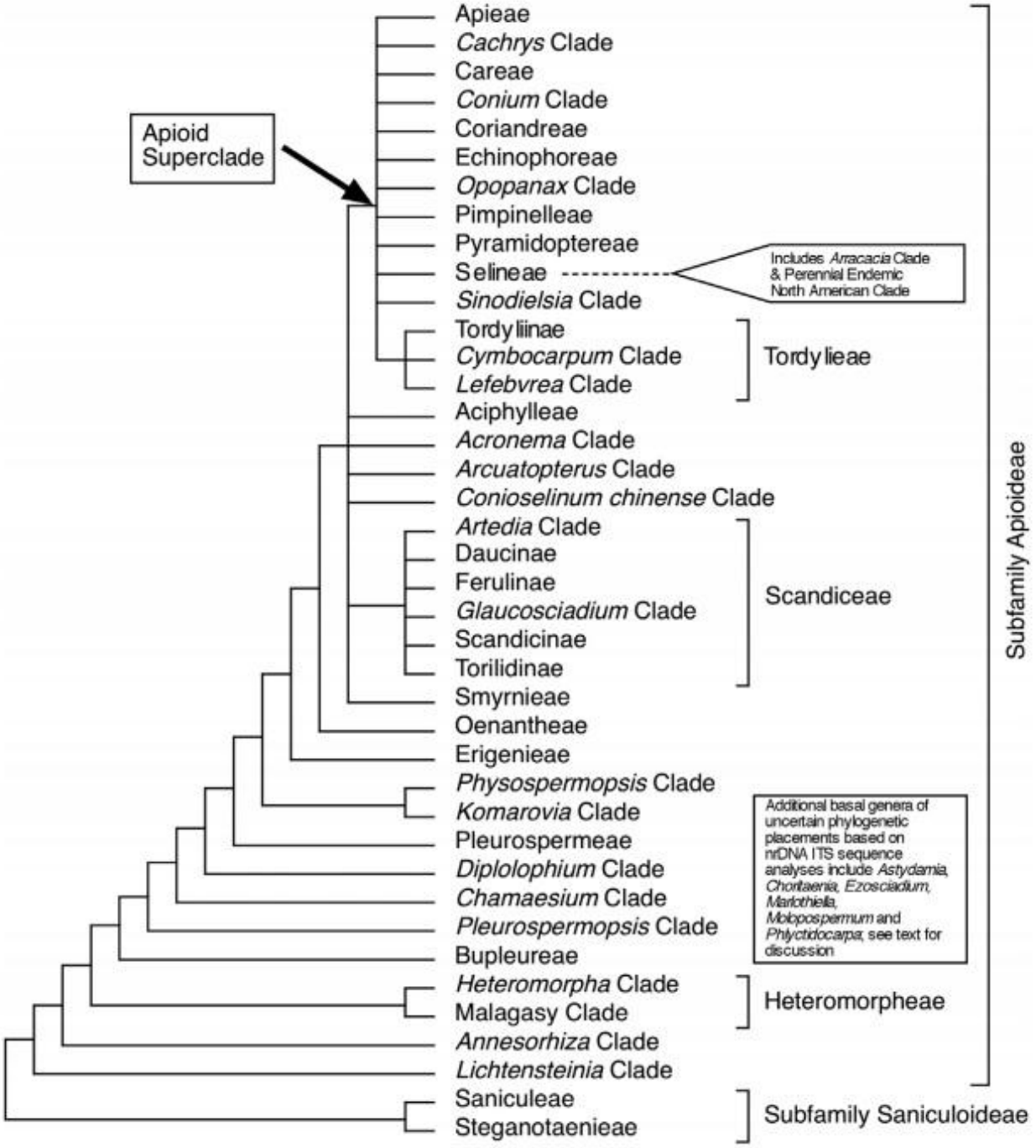
Erigenia bulbosa
Harbinger-of-spring

Harbinger-of-Spring

- Blooms about 6 weeks starting in late January, February, or early March; Seeds ripen April or May; Foliage disappears by May or June = true ephemeral!
- Seeds germinate following spring
- May be a few years until flowering
- Long-lived plant
- Seeds probably not tolerant of drying – keep cool/damp or sow immediately

Orogenia fusiformis, O. linearifolius

Lomatium gormanii
“sycan” / “chewaucan”


Apioid Superclade
Apieae
Cachrys Clade
Careae
Conium Clade
Coriandreae
Echinophoreae
Opopanax Clade
Pimpinelleae
Pyramidoptereae
Selineae
Includes Arracacia Clade & Perennial Endemic North American Clade
Sinodielsia Clade
Tordyliinae
Cymbocarpum Clade
Lefebvrea Clade
Tordylieae
Aciphylleae
Acronema Clade
Arcuatopterus Clade
Conioselinum chinense Clade
Artedia Clade
Daucinae
Ferulinae
Glaucosciadium Clade
Scandicinae
Torilidinae
Scandiceae
Smyrnieae
Oenantheae
Erigenieae
Physospermopsis Clade
Komarovia Clade
Pleurospermeae
Diplolophium Clade
Chamaesium Clade
Pleurospermopsis Clade
Bupleureae
Additional basal genera of uncertain phylogenetic placements based on nrDNA ITS sequence analyses include Astydamia, Chritaenia, Ezosciadium, Marlothiella, Molopospermum and Phlyctidocarpa; see text for discussion
Heteromorpha Clade
Malagasy Clade
Heteromorpheae
Annesorhiza Clade
Lichtensteinia Clade
Saniculeae
Steganotaenieae
Subfamily Saniculoideae
Subfamily Apioideae

Perideridia americana
Eastern Yampah

Eastern Yampah

- AKA Eastern Eulophus, Wild Dill, Thicket Parsley
- Emerges February-April, Blooms very briefly in June or into early July, Seed ripens July
- Cold stratification, seedlings emerge following spring
- 3-4 years until mature flowering
- Tolerates range of soils from moist to slightly dry
- Open prairie/meadow to forested spaces with dappled sunlight, or woodland edges. Full sun/part shade
- Seeds dry-down when ripe. Store cool & dry & dark 2-3 years

Perideridia gairdneri & more Western Yampah

- Perideridia gairdneri: yampah/yearpa, sawitx
- Perideridia oregana: eppaw, ipos
- Also Perideridia bolanderi, P. kelloggii, P. parishii, P. pringlei, P. bacigalupii, P. erythrorhiza, P. howellii, P. lemmonii, P. leptocarpa
- Lewis & Clark describe in their journals Sacajawea spending the day gathering yampah
- Important staple for Shoshone/Paiute/Nimiipuu
- Edible raw or cooked. Taste like carrot or parsnip or horsechestnut. Exceptionally sweet after frost.

Perideridia sp. (cf P. bolanderi)

Osmorhiza longistylis
Sweetroot

Sweetroot

- AKA Sweet Cicely, American Sweetcicely, Aniseroot, Licorice root
- Blooms April-May, Seed ripens June-July
- Germination following cold stratification: following spring
- 2-3 years until mature flowering
- Wide range of soil types & sun exposure
- Seed stores cool & dry

Ligusticum canadense
Eastern osha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Eastern Osha / Boar Hog Root

- AKA Boar Hog Root, Lovage, Canada Licorice
- Emerges late March/early April, blooms July, seed ripens mid-August, then quickly disappears
- High-altitude plant
- Germination following cold moist stratification
- Maturity in ~3 years
- Seeds store cool & dry

Fabaceae

- Known as the legume, pea, or bean family
- Contains native foods such as groundnut (Apios), breadroot (Pediomelum), and wild bean (Phaseolus polystachios).

Pediomelum subacaule
Nashville Breadroot

Harvest from an 8 inch square patch of earth!

Winnowing

Nashville Breadroot

- Foliage emerges in March; Blooms in April; Seed ripens in May, plant is dormant by summer and doesn't begin waking up again until October
- Germination depends on temperature and moisture. No cold stratification necessary.
- Growth is slow, but steady. Long-lived.
- 4 years to flowering maturity?
- Drought/cold/heat tolerant. USDA lists zone 5.
- Seeds dry-down when ripe: long-term dry storage

Prairie Turnip or Timpsula

Pediomelum esculentum (syn. Psoralea esculenta)

Apios americana
“Groundnut” or “Hopniss”


Cultivariable

American Groundnut

- Vines emerge out of the ground in May-June, Flowers in July-September, and seed pods ripen and dry around September-October… or never, in cold climates!
- Vegetative propagation by root division
- Growing from seed slower
- Ploidy issues: diploids vs. triploids
  - southern strains generally diploid and fertile
  - northern strains often triploid and infertile.
  - Human influence / domestication?
- Seeds may be stored dry for a few years without losing viability

Apios priceana

Price's Potato Bean

- Mostly confined to Tennessee and parts of Alabama
- Much like Apios americana but produces a single, larger tuber
- Endangered plant
- Seed from Joe Hollis' Mountain Gardens outside Asheville, NC

Convolvulaceae

- Morning glory family
- Mostly vining plants
- Contains sweet potato

Ipomoea pandurata
Man-of-the-Earth, or Wild Potato Vine

Man-of-the-Earth

- AKA Manroot, Wild Potato Vine
- Emerges in early summer, blooms by late June, seed ripens for each individual bloom, blooms continuous through end of summer
- Long taproot leads to tuber that may grow quite large, hence the name “Manroot.” Young roots sweet and delicious, old roots tough and bitter – may improve with processing.
- Seed germinates following cool moist stratification
- Years until mature flowering seem to depend on conditions. ~2-3 years
- Storage of seed in cool, dry conditions

Fire Ecology

Pine barrens with Pinus taeda “Loblolly pine” and some oak

Warm-season Grasses and Fire Ecology

Andropogon virginicus “Broomsedge”

Longleaf pine savanna, Florida

Flatwoods and Scrub
Tiger Creek Preserve, Florida

Nottingham Serpentine Barrens

Visioning

- Sequence of harvest & seasonal circuitry -- "Sacred hoop"
- Bioregionalism
- Conservation rewilding making more ground
- A more beautiful world
- Transition culture & the next generation…

- Final thoughts and discussion