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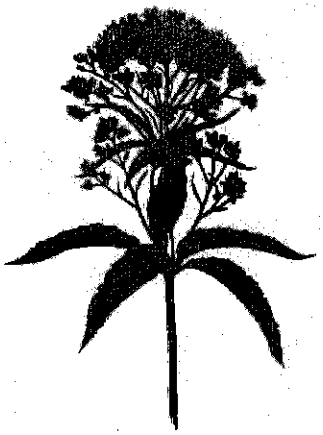
# 4-H Wildflower Project

Twinleaf - Jeffersonia diphylla

Yarrow - Achillea lanulosa

Cardinal Flower - Lobelia cardinalis



Ice-Lye Weed - Eupatorium purpureum

Large Blue Flag - Iris shrevei

5 LEVEL FIVE 5

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Special thanks to Jeff Baker, and Bob Kraft for their invaluable assistance

3-29-00
Revised 12-02-03

# YOUR WILD ADVENTURE BEGINS

Welcome!

As a 4-H Wildflower Project member, you will have numerous opportunities to learn about the world of wildflowers: botany, identification techniques, plant diversity, conservation, and the environment. On the following pages you will find basic information about Indiana native wildflowers and why we should care for them.

This is the 5th grade manual in a series of exciting project booklets that will guide you through this year's wildflower project. Each year you will expand your knowledge of Indiana native plants as you complete many activities. This manual not only explains the project requirements, but also suggests numerous activities and provides you with a wealth of information concerning the vast resources available to you as a project member.

Now let's get started!

# Table of Contents

# INDIANA NATIVE WILDFLOWERS

An Indiana Native Wildflower may be defined as a flowering plant that has evolved and grown naturally in the area we know as the state of Indiana since before the time the first settlers arrived.

Webster's dictionary defines a wildflower as a plant that can survive without cultivation. These plants are able to grow on their own regardless of climate extremes. Wildflowers are adapted to the local growing conditions, surviving and generally flourishing regardless of the weather. A plant can be native to a region, state, or just a certain valley, so there are plants that are found in only specific areas of the state, such as the Indiana Dunes or southern hills and lowlands of the state. Every area has a group of plants that have lived there naturally for hundreds, even thousands, of years. Those plants are that area's native flora.

To understand the concept of "native," it is also important to understand the term, "non-native." Non-native plants may be known as introduced, alien or exotic, all of which mean that the plants did not originate in a particular location. Many non-native plants have escaped from cultivation and now grow wild in areas where they are not native. These include Queen Anne's lace, dandelions, chicory, dame's rocket, and the orange Asiatic daylilies that grow along the edges of country roads. Many of these plants are called wildflowers because they have been here so long that we assume they are native plants, when indeed they have been introduced to our state from other parts of the world. Many of these non-native plants are actually native to Europe and were brought here by settlers for food, medicine, or ornamentation. Other plants came by chance; their seeds may have been mixed in with agricultural seeds or even have been part of the bedding used on ships that crossed the Atlantic on their way to the new colonies.

# PROJECT REQUIREMENTS, GRADE 5

1. Identify five (5) Indiana native wildflowers
2. Complete Wildflower Identification Sheets - page 9 (duplicate as needed)
3. Define vocabulary - page 10
4. Grow one (1) variety of Indiana native wildflower from seed
5. Complete Propagation Record - page 22 (duplicate as needed)
6. Keep a journal and include one *Pourquoi* story - page 23
7. Complete 4-H Wildflower Project Record Sheet - page 39

# EXHIBIT REQUIREMENTS

During your fifth grade year in the 4-H Wildflower Project, you will choose five (5) Indiana native wildflowers to study and exhibit. [You may certainly exhibit more; however, place the five (5) plants that you want judged as the *first* five (5) in your exhibit notebook.]

1. Choose the exhibit medium that most interests you – you may mix media if you wish. The three choices are:

   Photographs
   - One (1) site photo and one (1) close-up photo of each of the five (5) plants
   - Photos must be at least 4" x 6", color or black and white
   - Both photos of each plant must be mounted on the same page on black paper
   - Label each photo with scientific and common names

   Drawings and paintings
   - One (1) drawing or painting of each of the five (5) plants
   - Drawings or paintings must be a minimum of 4" x 6", and a maximum of 5" x 7"
   - Drawings or paintings of each plant must be mounted on black paper
   - Label each drawing or painting with scientific and common names

     Art media may include:
     - Line drawings - pencil or black ink on white paper - mounted on black paper
     - Colored pencils on white paper - mounted on black paper
     - Watercolor on white paper - mounted on black paper

   Collection of Indiana native wildflowers
   - Collect ONLY those wildflowers listed on page 8.
   - Collect and dry each of the five (5) plants; collection should include the bloom, at least one (1) pair of leaves, and at least part of the stem (**no** roots!)
   - Mount each plant on black paper
   - Label each plant with common and scientific names

2. Complete a Wildflower Identification worksheet for each plant - page 9; include in notebook*
3. Complete Vocabulary Worksheet - page 10 - include in exhibit notebook *
4. Grow your own: complete Propagation Record - page 22 - include in exhibit notebook *
5. Keep a journal and include one *Pourquoi* story - page 23 – display next to exhibit notebook
6. Complete 4-H Wildflower Project Record Sheet - page 39 - include in exhibit notebook *
7. Display exhibit in a 3-ring notebook
   - Each page of photographs, drawings, paintings, and/or dried plants should be facing the appropriate Wildflower Identification worksheet so that all information about a specific plant can been seen at once.
   - Vocabulary worksheet
   - Propagation Record
   - 4-H Wildflower Project Record Sheet
8. Display journal next to exhibit notebook

* You may photocopy worksheet as needed, or copies are available at the 4-H office

This is a selected list of Indiana wildflowers that may be collected for your exhibit. Please do NOT collect from any public park, or state or national woods, or other protected area. Obtain permission of the land-owner before picking any flower, and take no more than you must have for your exhibit. Remember, we **strongly** recommend that your first choice be to photograph, draw, or paint wildflowers for your exhibit instead of actually collecting specimens! Buy reliable wildflower books, or borrow from your 4-H library, your school library, or the public library to take on your hikes for identification purposes, and for pictures and names of many hundreds more that may be drawn, painted, or photographed. Please do not pick any wildflowers not on this list. Call the contact person in the front of this book if you have questions.

American Bellflower- *Campanula americana*
Anemone, Woodland- *Anemone quinquefolia*
Angelica- *Angelica atropurpurea* or *A. venenosa*
Aniseroot- *Osmorhiza longistylis*
Arrowhead, Common- *Sagittaria latifolia*
Aster, Hairy- *Aster pilosus*
Aster, Heath- *Aster ericoides*
Aster, New England- *Aster novae-angliae*
Avens, White and Rough – *Geum canadense, G. laciniatum*
Beardtongue- *Penstemon calycosus* and *P. digitalis*
Bedstraw- *Galium* spp.
Beggar's Ticks, Tickseed- *Bidens* spp
Bellwort, Large-flowered- *Uvularia grandiflora*
Bishop's Cap, 2-leaved Mitrewort- *Mitella diphylla*
Black-eyed Susan- *Rudbeckia hirta*
Blazing Star- *Liatris aspera* and *L. spicata*
Blue Cohosh- *Caulophyllum thalictroides*
Blue Flag Iris- *Iris virginica*
Blue Vervain- *Verbena hastata*
Boneset, Common- *Eupatorium perfoliatum*
Butterflyweed- *Asclepias tuberosa*
Carrion Flower, Common- *Smilax lasioneura*
Chickweed, Star- *Stellaria pubera*
Chicory- *Chicorium intybus*
Cinquefoil- *Potentilla simplex*
Cleavers- *Galium aparine*
Compass Plant- *Silphium laciniatum*
Coneflower, Grey-headed- *Ratibida pinnata*
Coneflower, Purple- *Echinacea purpurea*
Coreopsis- *Coreopsis* spp.
Cow Parsnip- *Heracleum sphondylium*
Cress, Common, Creeping and Spring- *Rorippa palustris, R. sylvestris, Cardamine bulbosa*
Cup Plant- *Silphium perfoliatum*
Daisy Fleabane- *Erigeron annuus*
Dutchman's Breeches- *Dicentra cucullaria*
Evening Primrose- *Oenothera biennis*
False Rue Anemone- *Enemion biternatum*
False Sunflower- *Heliopsis helianthoides*
Feverfew, American, or Wild Quinine- *Parthenium integrifolium*
Geranium, Wild (Cranesbill)- *Geranium maculatum*
Goatsbeard- *Aruncus dioicus*
Golden Ragwort- *Packera aurea* and *P. obovata*
Goldenrod – *Euthamia* spp and *Solidago* spp
Ground Cherry- *Physalis* spp
Heal-All or Self-Heal- *Prunella vulgaris*
Horsemint- *Monarda punctata*
Ironweed, Tall- *Vernonia gigantea*
Jewelweed- *Impatiens pallida, I. capensis*
Joe Pye Weed- *Eupatorium purpureum, E. maculatum, E. fistulosum*
Leather Flower- *Clematis viorna*
Lobelia, Blue- *Lobelia siphilitica*
Loosestrife- *Lysimachia ciliata* and *L. quadrifolia*
Lopseed- *Phryma leptostachya*
Licorice, Wild- *Galium circaezans*
Marsh Marigold- *Caltha palustris*
May Apple- *Podophyllum peltatum*
Milkweed, Common- *Asclepias syriaca*
Milkweed, Swamp- *Asclepias incarnata*
Milkweed, Whorled- *Asclepias verticillata*
Milkwort, Whorled- *Polygala verticillata*
Monkey Flower- *Mimulus ringens*
Obedient Plant- *Physostegia virginiana*
Partridge Pea- *Chamaecrista fasciculata*
Phlox, Woodland, Smooth, or Downy- *Phlox divaricata, P. glaberrima, P. pilosa*
Pokeweed- *Phytolacca americana*
Puccoon, Hairy and Hoary- *Lithospermum caroliniense* and *L. canescens*
Pussytoes- *Antennaria* spp
Rattlesnake master- *Eryngium yuccifolium*
Rose mallow- *Hibiscus laevis*
Rue anemone- *Thalictrum thalictroides*
Senna, Northern Wild – *Senna hebecarpa*
Skunk cabbage- *Symplocarpus foetidus*
Sneezeweed- *Helenium autumnale*
Solomon's Seal- *Polygonatum biflorum, P. pubescens*
Spatterdock- *Nuphar lutea*
Spiderwort- *Tradescantia virginiana*
Spring Beauty- *Claytonia virginica*
Spurge, Creeping or Spotted- *Euphorbia maculata*
Squirrel Corn- *Dicentra canadensis*
Sunflower spp.- *Helianthus* spp
Sweet Cicely- *Osmorhiza claytonii*
Sweet William- *Dianthus barbatus*
Thistle, Yellow Star- *Centaurea solstitialis*
Tick trefoil- *Desmodium* spp
Toothwort- *Cardamine concatenata*
Turtlehead- *Chelone glabra*
Violets- *Viola* spp
Virginia Bluebells- *Mertensia virginica*
Waterleaf- *Hydrophyllum* spp
White Snakeroot- *Eupatorium rugosum*
Wild Cucumber- *Echinocystis lobata*
Wild Garlic- *Allium canadense*
Wild Leek- *Allium burdickii*
Wild Lettuce- *Lactuca* spp
Wild Petunia- *Ruellia* spp
Wild Strawberry- *Fragaria virginiana*
Wood Sorrel- *Oxalis fontana*

# WILDFLOWER IDENTIFICATION

*(Include in exhibit notebook)*

Scientific name:

Common name(s):

Exact location of specimen:

Address: _____

City, town or rural area: _____

County: _____

State: Indiana _____

Date photographed, drawn or painted, or collected: _____

Identifying Characteristics –(check those that apply)

Leaves:

- alternate _____
- opposite _____
- whorled _____
- basal _____
- entire _____
- toothed _____
- lobed _____
- divided _____
- hairy _____
- smooth _____

Stem:

- Smooth _____
- fuzzy _____
- square _____
- round _____

Blooms:

- regular _____
- irregular _____
- indistinguishable _____

*Your initials* _____

*Date* _____

# VOCABULARY WORKSHEET

*(Include in exhibit notebook)*

Write the definitions of the following words. Include this sheet in your exhibit notebook

*Parts of a Plant*

Spadix_____

_____

Spathe_____

_____

Tendril_____

_____

Regular_____

_____

Irregular_____

_____

# GROW YOUR OWN!

Very soon now you will become a sower of seeds. Study the plant list and the Propagation Requirements from Seed, beginning on page 12. This information will guide you as you decide which seeds you would most like to plant. Then study General Tips for Starting Seeds Indoors on page 21. Gather the supplies and seeds necessary for success. Have fun!

1. Choose one (1) variety of Indiana native plant to grow from seed
2. Research additional information about your plant choice
3. Plant a minimum of ten (10) seeds, as not all will germinate
4. Complete the Propagation Record provided on page 22 and include in exhibit notebook

# PROPAGATION REQUIREMENTS FROM SEED

**Alumroot; *Heuchera richardsonii***; perennial; germinates in 10-60 days, requires light and 60-70 degrees; start 8-10 weeks before transplanting

**American Bellflower; *Campanula americana;*** perennial; difficult, germinates in 14-28 days, requires light and 60-70 degrees; start 8-10 weeks before transplanting

**American Lotus or Waterlily; *Nelumbo lutea;*** perennial; germinates in 14-30 days; scarify seed and submerge in hot water (75-85 degrees), change water twice a day until it germinates

**Anemone (Woodland); *Anemone quinquefolia***; perennial; germinates in 15-180 days; stratify for 2-3 weeks; sow in a flat, sink the flat in the ground in a shady location, cover with glass, transplant as seedlings appear

**Angelica; *Angelica venenosa;*** biennial; easy, direct seed in late summer, requires light and 60 degrees; germinates in 4 weeks

**Arrowhead; *Sagittaria latifolia***; perennial; grow from seed or fall division

**Aster; *Aster* spp.;** perennial; easy; germinates in 14-36 days; stratify for 2 weeks and provide 70-75 degrees thereafter; start 6-8 weeks before transplanting

**Beardtongue; *Penstemon calycosus* and *P. digitalis***; perennial; germinates in 18-36 days, requires light and 55-65 degrees; start 8-10 weeks before transplanting

**Bedstraw; *Galium* spp.;** perennial; grows easily from seed

**Bellwort; *Uvularia grandiflora***; perennial; sow in flats, sink flats in ground against north facing wall, cover with glass, moisten soil occasionally; germinates in 30-180 days, germinates only outdoors

**Bishop's Cap; *Mitella diphylla;*** perennial; sow outdoors, requires dark (usually propagated by runners)

**Black-eyed Susan; *Rudbeckia hirta*;** perennial; easy; stratify for 2 weeks in moist growing medium in refrigerator; provide light and 70 - 75 degrees

**Blazing Star; *Liatris spicata*;** perennial; germinates in 20-25 days; sow seeds in flats, barely cover, requires 55-75 degrees; start 8-10 weeks before transplanting

**Bloodroot; *Sanguinaria canadensis***; perennial; germinates in 30-90 days; start indoors in peat pots at 50-55 degrees; start 8-10 weeks before transplanting; or sow in flats and sink flats in ground against north facing wall, cover with glass, moisten soil occasionally

**Blue Cohosh; *Caulophyllum thalictroides;*** perennial; propagate by division or cutting

**Blue Lobelia*; Lobelia siphilitica***; perennial; germinates in 15-21 days; requires light, stratify for 3 months, then grow at 65-75 degrees; watch for damping off, don't over water

**Blue-eyed Mary; *Collinsia verna;*** annual; germinates in 14-21 days; requires 65-70 degrees, sow outdoors when soil is cool and light frost is still possible

**Boneset: *Eupatorium perfoliatum***; germinates in 1-3 months, do not cover seeds

**Bunchberry; *Cornus canadensis***; perennial; remove seed from fleshy fruit; sow in flat of peat moss and sand, requires dark, sink flat in ground against north facing wall for winter, cover with glass

**Butterflyweed; *Asclepias tuberosa***; and **Common Milkweed; *A. syriaca*** sow seeds in peat pots; secure in plastic bags, and refrigerate for 21 days; provide light and 50-75 degrees thereafter

**Calamus or Sweetflag; *Acorus calamus;*** grow in swamps and along streams; scatter ripe seeds in late fall in those areas, as they bloom in the spring and early summer

**Cardinal Flower; *Lobelia cardinalis***; perennial; germinates in 15-21 days, requires light; stratify for 3 months, then grow at 65-75 degrees; watch for damping off—don't over water; needs rich, moist soil

**Carrion Flower; *Smilax herbacea;*** Plant ripe berries (blue-black) in woods and thickets in late fall or very early spring; somewhat vine-like; will climb all over bushes.

**Cinquefoil; *Potentilla simplex*; s**tratify in moist conditions in refrigerator for 6 wks, grow at 65-70 degrees; germinates in 14-30 days

**Closed Gentian; *Gentiana andrewsii***; perennial; difficult; germinates in 14-180 days; requires dark, stratify for 8 weeks; grow at 70-75 degrees thereafter

**Columbine; *Aquilegia canadensis***; perennial; germinates in 30-90 days, stratify for 2-3 weeks, sink flat in the ground in a shady location and cover with glass

**Compass Plant; Silphium laciniatum**; stratify for 2 weeks and provide 70-75 degrees thereafter; start 6-8 weeks before transplanting

**Coneflower, Grey-headed; *Ratibida pinnata*;** direct seeding: collect seed in fall after it becomes dark and sow outdoors immediately; for spring seeding, stratify in refrigerator for at least one month before planting

**Coneflower, Pale Purple; *Echinacea purpurea*;** direct seeding: collect seed and sow outdoors immediately; for spring seeding, stratify in moist cold for 3 or 4 months

**Coreopsis; *Coreopsis lanceolata*;** easy perennial; sow seeds indoors under 70 degrees in moist conditions; germination in 2-4 weeks

**Corydalis; *Corydalis flavula;*** difficult; germinates in 30-365 days, requires light; sow seed and place at 60-65 degrees for 6-8 weeks, then chill in refrigerator for 2 weeks, and then again put back at 60-65 degrees

**Cow Parsnip; *Heracleum sphondylium;*** perennial; germinates in 30-90 days; requires dark; in spring, stratify for 2-3 weeks, sow in flat, sink in ground against north-facing wall, glass on top

**Cup Plant; *Silphium perfoliatum*;** perennial; germinates in 21 days; requires dark; scarify seeds, sow in flats, sink flats in ground against a north facing wall, cover with glass

**Daisy Fleabane; *Erigeron annuus*;** perennial; germinates in 10-25 days, requires light and 70 degrees; start 8-10 weeks before transplanting

**Dutchman's Breeches; *Dicentra cucullaria*;** perennial; germinates in 30-365 days, stratify in freezer for 6 weeks, then grow at 55-60 degrees thereafter; germinates in midsummer

**Evening Primrose; *Oenothera* spp.;** perennial; germinates 5-30 days; start 8-10 weeks prior to transplanting; sow seed in peat pots, requires darkness, 65-70 degrees

**False Dragonhead; *Physostegia virginiana*;** perennial; germinates in 15-30 days at 60-65 degrees; start 8-10 weeks before transplanting

**False Foxglove; *Aureolaria flava*:** germination in 10-15 days at 55-65 degrees, cover completely, needs darkness to germinate; sow directly into peat pots if indoors, as it resents transplanting, direct sow outdoors in early spring

**False Rue Anemone; *Enemion biternatum*** [formerly *Isopyrum biternatum]*; - keep seeds cold and moist in refrigerator all winter, then plant in pots in Feb., and transplant outside in May in rich, moist, shady wooded area; or plant outdoors in fall

**False Solomon's Seal; *Smilacina racemosa*;** perennial; sow seed as soon as it ripens, separate seed from fleshy fruit, sow in flats, sink flats in ground against north facing wall, cover with glass; germinates in 30-180 days

**False Sunflower; *Heliopsis helianthoides*:** needs full sun or partial shade; ripened seeds should be planted immediately in the fall and left in ground for spring germination; average well-drained moist soil; 1' - 3' apart; mulch well. (Even though these are the preferences, it can grow on gravel, and tolerates drought. Divide every 3 to 4 years by cutting apart the stocky rhizomatous rootstock with a knife, leaving at least 2 or 3 eyes in each division.)

**Fireweed; *Epilobium augustifolium;*** perennial; germinates in 14-30 days and requires dark; as soon as seed is ripe in autumn sow in flats, sink flat in ground against north facing wall and cover with glass, moisten soil occasionally

**Four O'Clock; *Mirabilis nyctaginea***; perennial; germinates 5-21 days, requires light and 70 degrees; start 6-8 weeks before transplanting

**Fringed Loosestrife; *Lysimachia ciliata***; perennial; germinates in 30-90 days; in autumn sow in flats, sink flats in ground against north facing wall & cover with glass

**Geranium, Wild; *Geranium maculatum***; plant 12" apart; full sun; moist slightly acid, well-drained soil; inside grow in sunny, airy, moist atmosphere where nighttime temperatures are at 50 to 55 degrees.

**Goatsbeard; *Aruncus dioicus***; perennial; germinates in 30-90 days, requires light and 55-65 degrees; start in late winter

**Golden Ragwort; *Packera aurea***; perennial; germinates in10-21 days; start 6-8 weeks before transplanting; needs light and 65-75 degrees; sow in vermiculite; water only from below; highly susceptible to damping-off

**Goldenrod; *Solidago* spp.;** perennial; easy; germinates in 14-42 days at 50 degrees; start 6-8 weeks before transplanting

**Green Dragon; *Arisaema dracontium***; perennial; difficult; germinates in 30-180 days; separate seed from fleshy fruit, stratify for 6 weeks, grow at 55-60 degrees

**Ground Cherry; *Physalis virginiana***; perennial; difficult; germinates in 15-30 days, requires light and 70-75 degrees

**Hepatica; *Hepatica acutiloba;*** perennial; use seed as soon as ripens, stratify 3 weeks in moist medium, then grow at 50-55 degrees in peat pots or outdoors in shady to partially shaded wooded area; plant immediately after stratification

**Hoary Puccoon; *Lithospermum canescens:*** propagate by cuttings; grow in peat enriched soil in sun, or on rocky or gravelly slopes and margins of grasslands; good in rock gardens

**Horsemint; *Monarda punctata***; perennial; germinates in 10-40 days, requires 60-70 degrees; start 8-10 weeks before transplanting

**Ironweed, tall; *Vernonia gigantea*** and **Missouri Ironweed (*V. missurica*)**; likes moist meadow situations, with neutral to slightly acidic soil; sun to partial sun; propagate by dividing its roots with an axe or chainsaw (ADULTS ONLY!); can be cut back in June to a more manageable size

**Jack-in-the-Pulpit;** ***Arisaema triphyllum***; perennial; difficult; remove seed from fleshy fruit; stratify for 6 weeks; provide 55-60 degrees thereafter; germinates in 30-80 days

**Jerusalem Artichoke;** ***Helianthus tuberosus***; perennial; propagate by tuber division

**Jewel Weed; Jewelweeds** - there are two:

**Spotted Touch-me-not** (Impatiens capensis) orange with reddish-brown spots
**Pale Touch-me-not** (I. pallida) light yellow with few or no spots, after flowering, pods are formed; when they start to turn from green to tan to brown, cover with a very fine netting to catch seeds before they disperse; plant in fall where you want plant to come up in spring. They can spread VERY freely

**Joe Pye Weed;** ***Eupatorium purpureum***; perennial; germinates in 30-90 days, requires 55 degrees; start 8-10 weeks before transplanting

**Leadplant;** ***Amorpha canescens***: adaptable; full sun to part shade; tolerates dry, infertile, sandy sites because of long taproot; considered weeds in mild climates; sow seed outdoors in the fall, or stratify in refrigerator for at least 2 months, then plant in peat pots

**Leather Flower;** ***Clematis viorna***; perennial; germinates in 30 days to 3 years; in spring stratify in freezer for 3 weeks, sow in flat, sink flat in ground in shaded location, cover with glass; transplant seedlings as soon as they appear

**Lopseed;** ***Phryma leptostachya***; Plant in rich woods in late fall or early spring, as they bloom in summer; only one seed is formed in the carpel, enclosed in the tubular calyx which "lops" down against the stalk; harvest this in fall, plant immediately in neutral to moderately acid soil in open woods or woodland garden.

**Marsh Marigold;** ***Caltha palustris***; perennial; sow seed outdoors in peat pots standing in shallow water as soon, germinates in 30-90 days

**Mayapple;** ***Podophyllum peltatum***; perennial; difficult; sow seed as soon as ripens (late summer to September) in flat, sink flat in ground against north facing wall, cover with glass; germinates in 30-180 days

**Milkweed, Common;** ***Asclepias syriaca*****;** germinates 30-90 days; start 8-10 weeks before planting outside; sow seeds in peat pots, secure in plastic bags, refrigerate for 21 days; provide light and 50-75 degrees

**Milkweed, Swamp;** ***Asclepias incarnata***; sow outdoors in late fall; moist area

**Milkweed, Whorled;** ***Asclepias verticillata***; sow outdoors in late fall; dry area

**Milkwort or Yellow Candyroot;** ***Polygala lutea;*** biennial; first year produces a rosette of rounded leaves; second year produces flowers and seeds; plant in bogs or wet sandy flats, in *acid* soil; transplant to a bog garden during the first year when leaves are in rosette stage. **Gay-wings or Fringed Milkwort;** ***Polygala paucifolia;*** can be propagated by seed or by the long underground branching stems; difficult; susceptible to slugs, fungi,

and other pests. Both of these species each produce only one hairy seed per plant, which should be planted in rich acid humusy soil in the fall.

**Monkey Flower;** ***Mimulus ringens***; perennial; germinates in 7-21 days, requires light, stratify for 3 wks, provide 70-75 degrees thereafter; start 10-12 weeks before transplant

**Partridge Pea;** ***Chamaecrista fasciculata***; annual; germinates in 5-90 days; requires dark; chip seed with sharp knife and soak in warm water for 2-3 hours, grow at 70-75 degrees; start 6-8 weeks before transplanting

**Phlox, Woodland, Smooth and Downy;** ***Phlox divaricata, P. glaberrima, P. pilosa;*** plant 6" apart; full sun; rich, light, sandy soil with excellent drainage; keep moist during growing season

**Pussytoes;** ***Antennaria neglecta***; perennial; germinates in 30-60 days, requires 55-60 degrees; start in late winter

**Rattlesnake Master;** ***Eryngium yuccifolium***; direct sow outdoors in sun; needs moist well-drained soil

**Rose Mallow;** ***Hibiscus laevis***; perennial; germinates in 10-30 days; chip seed and soak in hot water for 1 hour, requires light and 70-80 degrees; start 8 weeks before transplanting

**Royal Catchfly;** ***Silene regia*****;** germinates 5-20 days; start 8-10 weeks before transplanting; needs dark and 70 degrees

**Rue Anemone;** ***Thalictrum thalictroides;*** perennial; tuber—propagate by division

**Scarlet Pimpernel; Anagallis arvensis**; annual; sow seed outdoors; requires dark; 50-65 degrees; germinates in 30-42 days

**Shooting Star;** ***Dodecatheon meadia***; perennial; difficult; germinates in 90-365 days, requires light, stratify for 3 weeks, grow at 60-70 degrees

**Skunk Cabbage;** ***Symplocarpus foetidus***; perennial; collect seed when ripe (late summer); germinates in 30-60 days; requires dark and 55-65 degrees; sow in flat and stand flat in pan of water to keep moist

**Slender Mountain Mint;** ***Pycnanthemum tenuifolium;*** propagate by taking root cuttings

**Sneezeweed:** ***Helenium autumnale*****;** perennial; germinates 7-10 days; start 8-10 weeks before transplanting; needs dark and 70 degrees

**Soapwort or Bouncing Bet;** ***Saponaria officinalis***; reseeds freely in place

**Solomon's Seal;** ***Polygonatum biflorum***; perennial; stratify for 2-3 weeks, sow in flat, sink in ground in shade location, cover with glass

**Spatterdock or Yellow Pond Lily or Cow Lily; *Nuphar lutea;*** flowers float or are immersed in shallow waters or muddy shores; spreads rapidly; not good for a small garden pool; sow seeds in sand and cover with sand; place pan in water of 70 to 80 degrees F; the surface of the sand should be above the water line, but in contact with it; 2-3 weeks before first floating leaf appears; transplant to flats with 2" soil/compost mix; pot up as necessary before planting outside and *after* planting outside to restrain spreading

**Spiderwort; *Tradescantia* spp.;** perennial; germinates in 10-40 days; grow at 55-56 degrees, barely cover seed; grow in fertile, well-drained soil in a warm, sheltered site in sun or partial shade; provide a deep winter mulch

**Spring Beauty; *Claytonia virginica***; perennial; seeds rarely available; germinates in 14-21 days and requires dark; sow seeds as soon as ripe in flats outdoors (late summer), sink flats in ground against north facing wall and cover with glass, moisten soil occasionally

**Spring Cress; *Cardamine bulbosa***: plant seeds in boggy areas in fall or very early spring or divide the small bulbous tubers; moist humusy soil; partial shade; white bloom in late spring

**Squirrel Corn; *Dicentra canadensis***; perennial; germinates in 30-365 days; in midsummer stratify seed for 6 weeks, grow at 55-60 degrees

**Starry Campion or Starry Catchfly; *Silene stellata:*** plant ripe seeds in open woods, or divide by cutting through the roots, or take cuttings and root them in sandy soil in a cold frame, shaded from the sun, until rooted; once established plants should not be moved; plant in partial shade and in dry sandy, or clay soil.

**Sweet Cicely; *Osmorhiza claytonii***perennial; germinates in 14-42 days and requires light; stratify seeds in freezer for 1 month; grow on at 55-65 degrees

**Sweet William; *Dianthus barbatus***; perennial; germinates in 10-21 days, requires light and 70 degrees; stratify 3 weeks; start 8-10 weeks before transplanting

**Tick Trefoil; *Desmodium canadense***; perennial; requires dark to germinate; nick seed coat before planting; takes 2-4 weeks to germinate

**Toothwort, Cut-leaved; Desmodium canadense;** perennial; grow from seed as soon as seed is ripe

**Trillium; *Trillium sp.;*** perennial; difficult; germinates in 18 months to 3 years; as soon as seed is ripe stratify for 3 months in moist starting mix, then place at 60-70 degrees for 3 months, repeat this entire cycle again

**Turtlehead; *Chelone glabra***; perennial; requires dark to germinate; stratify seed for 4 months

**Twin Leaf; *Jeffersonia diphylla***; perennial; takes up to 2 years to germinate; as soon as seed is ripe (autumn) sow seed sparsely in flats outdoors, sink flats in ground against north facing wall & cover with glass, moisten soil occasionally

**Violets; *Viola* spp;** perennial; germinates in 50 days; sow seeds in flats outdoors in autumn, sink in ground against north facing wall and cover with glass; moisten soil occasionally

**Virginia Bluebells; *Mertensia virginica***; perennial; germinates in 30-60 days, as soon as seed is ripe (late summer) sow seed sparsely in flats outdoors, sink flats in ground against north facing wall and cover with glass, moisten soil occasionally

**Waterleaf** - propagate in spring or fall by division; open woods; neutral or slightly acid soil or in a woodland garden; there are four:

**Appendaged; *Hydrophyllum appendiculatum***
**Broad-leaved; *H. canadense***
**Large-leaved; *H. macrophyllum***
**Virginia; *H. virginianum***

**White Snakeroot; *Eupatorium rugosum***; perennial; germinates in 30-90 days, requires 55 degrees; start 8-10 weeks before transplanting

**Wild Cucumber; *Echinocystis lobata***; annual; grows from seed

**Wild Garlic; *Allium canadense***; perennial; grows from bulbs and bulblets

**Wild Ginger; *Asarum canadense***; perennial; easy; germinates in 7-18 days; as soon as seed ripens stratify for 3 weeks grow on at 60-65 degrees thereafter

**Wild Leek; *Allium burdickii***; perennial; difficult; germinates in 14-365 days, requires light to germinate, stratify for 30 days; grow on at 55-65 degrees; can also grow by separating bulbs and replanting

**Wild Lettuce; *Lactuca canadensis***; biennial; grows from seed

**Wild Petunia; *Ruellia humilis***; perennial; seeds rarely available; germinates in 30-60 days, requires 65-75 degrees; start 8-10 weeks before transplanting

**Wild Sarsaparilla; *Aralia nudicaulis***; perennial; as soon as seed is ripe (autumn) soak seed for ½ to 1 hour in sulfuric acid, wash in water and plant immediately

**Wild Strawberry; *Fragaria virginiana***—propagates by runners

**Wood Sorrel;** ***Oxalis fontana;*** annual; sow in autumn as soon as seed is ripe; germinates in 14-60 days; requires 55-70 degrees

**Woodland Sunflower;** ***Helianthus divaricatus;*** gather seeds in fall when ripe (put an old nylon stocking over the flowerhead to keep birds away and harvest when seeds are dry); keep dry and cool all winter indoors (above 35 degrees); plant outside about May 15 in dry open woods (but keep moist during first growing season).

**Yellow Pimpernel;** ***Taenidia integerrima***; annual; sow seed outdoors; requires dark; 50-65 degrees; germinates in 30-42 days

# GENERAL TIPS FOR STARTING SEEDS INDOORS

*Propagation requirements from seed page*

**Containers**- should have drainage hole on the bottom and be rinsed in a solution of one part bleach to ten parts water. Let them dry before filling with grow mix.

**Soil**- A seed-starting medium should be used. Grow Mix 250 is an excellent choice.

**Water**- should not contain chlorine or salt. Never use softened water. If city water is used, let it sit in open jugs over night to let the chlorine evaporate. Bottom water the plants and seeds (the grow mix will soak up the water). You may wish to mist them with a sprayer.

**Light**- some seeds require darkness to germinate and should be covered with soil. Other seeds require light to germinate and should be left on top of the soil. Some seeds don't have a preference. Once the seedlings have emerged they should be kept **3-4 inches** away from fluorescent bulbs for **14-16 hours** a day. One cool white and one warm white light should be used.

**Temperature**- most seeds will germinate between 65-72 degrees. Most seedlings do best at 60-65 degrees at night and 70-75 degrees during the day.

**Fertilization**- after the true leaves (second set) appear, start using water soluble 15-30-15 fertilizer at a rate of ¼ tsp. per gallon. Once plants are larger, use ½ tsp. per gallon.

**Seeding**- lightly moisten Grow Mix grow in a bucket before using. Fill container almost full and tamp soil down firmly. Place seed on top of soil and cover, unless otherwise instructed. A good rule of thumb is to cover seeds twice their thickness. Mist with water. Place pots in flat and cover with plastic. Never allowing plastic to touch soil. Top of soil should be kept moist until seeds germinate.

**Growing On**- after seedlings are established, they will need a drier medium. Allow surface of grow mix to become dry to the touch between waterings; lower layers should never dry out. (If hardy plants, such as *Rudbeckia* are being grown, members can still mist them.)

**Pinching**- if plants are getting too tall before planting time, cut them back just above a leaf joint. Most plants will respond by branching.

**Hardening Off** - transplants must get used to the sun, wind, and rain. Move trays outdoors to a shady, sheltered area during the day. Keep them well watered. Bring them back indoors each evening. After three (3) days, move to a half sun location for three (3) more days. Allow them to stay out overnight for at least two (2) days before planting.

**Stratify, stratification** – cold treatment given to seeds for a given period of time.

**Damping Off** - a fungal disease causing the stem to close and the plant to die.

**Scarify, scarification** - sanding, nicking, or chipping a hard seed covering, making sure not to touch the seed itself.

# PROPAGATION RECORD

*(Include in exhibit notebook)*

Flower name, Common: _____

Flower name, Scientific: _____

Other Common names: _____

Date planted: _____

Garden soil type (sandy? loam? clay? etc.): _____

Germination date: _____

If sown indoors, date transplanted outdoors: _____

Native American & pioneer uses: _____

_____

_____

**STOP here if you are a Clover (Grades 3, 4, & 5)**

| Flower Name | Light or Dark | Temp. | Stratify, Scarify, Presoak | 1st Flower Date | Growth rate mid-season | Comments |
|---|---|---|---|---|---|---|
| *Yarrow* | *light* | *60-65* | *none* | *7-22-99* | *compact* | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Environmental Factors: (check as appropriate)

Especially cold weather _____ hot weather _____

drought _____ other _____

**STOP here if you are a Junior (Grades 6, 7, & 8)**

Name the birds and/or butterflies that were attracted to this flower/plant: _____

_____

Name the insects that were attracted to this flower/plant: _____

_____

Only project members in Grades 11 & 12 (2 year projects) are required to answer the following:

Did the plant or plants you grew last season come back? Describe or explain. _____

_____

_____

Describe this plant's mode of reproduction: (self-seed, multiply by putting up new shoots, layering) _____

_____

**STOP here if you are a Senior (Grades 9, 10, 11, & 12)**

# *POURQUOI* STORIES

*(Include in journal)*

*Pourquoi* is the French word for "why." Many people have made up legends and stories often known as "how and why" stories. Find a flower whose name suggests a story, such as Jack-in-the-pulpit or Hairy Puccoon. Pick a setting (woods, pond, lake, mountain, etc.). Then make up your characters, and define them well, but leave enough to the imagination that the reader will be a participant in your story. Make sure there's a dilemma or a problem that the main character must deal with (or if the character is oblivious to the problem that the reader is warned about). Make a satisfying ending. Use transformational or magical elements. Read your story over to make sure the logic is consistent throughout

Here's an example of a *pourquoi* story for you to use as a model:

**Harebell (*Campanula rotundifolia*) - England**

At the worst state of the war between the pixies and the fairies, three crippled-winged fairies fled into the bushes. A hare who also was hiding there told them to ride on his back, and thus they all escaped. The Queen of the Fairies, in gratitude to the hare, planted the fields with blue-belled flowers, which would ring out to warn the hares of danger. That is why the people of England call *Campanula rotundifolia* harebells!

# WRITING YOUR WILDFLOWER JOURNAL

*(Exhibit next to your notebook)*

The purpose of the journal is to assist you in focusing on the new habitat, flowers, and other natural features you are learning about this year. You may make as many or as few entries as you wish, but try to do one per day, and at the very least, one per week. Please keep these from year to year, and add to them even after 4-H Fair time.

Two days' typical journal entries might be:

*Dec. 10, 2000 - This morning on my way to school I saw a pair of cardinals pecking at some red berries on a tree in our yard. After I got home I looked that tree up and found that they were eating the fruit of a holly (Ilex) tree.*

*May 15, 2001 - While walking through Starkey Woods in Zionsville with my parents and a friend yesterday, I saw a person lean over and begin to pick an orchid. I knew they are rare, so I told him he mustn't pick it. He left without the orchid! And I looked it up that night and found out it was the Showy Ladyslipper (Galearis spectabilis). I was thrilled to see this rare flower!*

In other words, just record something about nature and how you feel or felt about it when you noticed it!

# OPTIONAL WORKSHOPS

In March you may attend a workshop in plant propagation. This hands-on workshop will teach you how to plant seeds of Indiana native wildflowers. You will actually take home and care for them during the spring, and HOPEFULLY plant them outside in May!

In late April or early May, all project members will be encouraged to participate in a wildflower identification hike at an outstanding local native plant area. This activity will be of great benefit to you, and lots of fun, too! Bring your camera, a notebook, and a pencil. Listen to the weather report and dress appropriately.

We will also sponsor a spring workshop for you at which you will be assisted in finding:

what is permissible to pick and what is NOT...and why,

how to take care of the environment while you photograph, draw, or pick,

how to identify the wildflowers in the field,

how to label correctly, using both the scientific and the common names,

ideas for your nature journal,

how to plan your exhibit notebook.

In mid-summer you will want to attend a workshop on plant rescue and eliminating invasive plants.
(For community service you may rescue plants from areas that are undergoing development and/or you may remove invasive plants in some areas.)

In late summer or very early fall you will enjoy another hike: this time to look for late-maturing wildflowers and learn how to identify them.

# WHERE TO GO TO SEE SPRING WILDFLOWERS

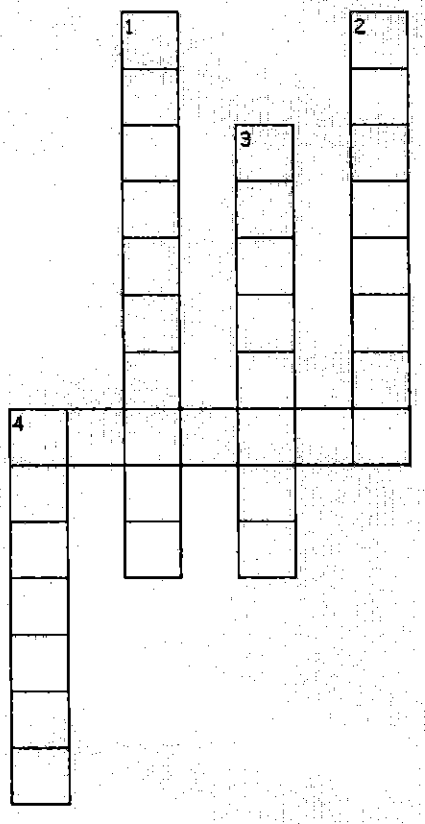
Burnett Woods Nature Preserve: Avon
Butler Woods
Clifty Falls State Park
Cool Creek Park: Westfield
Crown Hill Cemetery: Indianapolis
Eagle Creek Park: Indianapolis
Flowing Well Park: Carmel
Fort Harrison State Park: Lawrence
Holliday Park: Indianapolis
Indianapolis Museum of Art Grounds & Gardens: Indianapolis
Marott Park: Indianapolis
McCormick's Creek State Park
Mounds State Park: Anderson
Patoka Lake: Southwestern Indiana
Potter's Bridge: Noblesville
Ritchey Woods: Fishers
Shades State Park
Southeastway Park:
Starkey Park: Zionsville
Turkey Run State Park
White River State Park Botanical Gardens: Indianapolis

(**No picking!** Just look, enjoy, draw, photograph.)

# OPTIONAL ACTIVITY

The following puzzles have been added for your enjoyment. The puzzles contain items associated with wildflowers and vocabulary. It is not required for 4-H. Just have fun!

# Vocabulary Words




Across
4. A thick, fleshy flower spike.
Down
1. Flowers in which the parts are not alike in size, shape, or arrangement
2. Having all the parts alike in size and shape.
3. A modified leaf or branch structure, often coiled like a spring.
4. A modified, leaflike structure surrounding a spadix.

*5 of 5 words were placed into the puzzle.*

# Love it and leave it

| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | | | | |

16 23 16 25 8 21 4 5 13 4 20 8 25 16 11 11 7 20 12 4 5 1 25

23 5 10 21 16 25 5 1 12 22 4 25 13 22 23 4 20 15 25 21 15

22 7 25 21 16 15 23 22 12 16 23 4 7 23 1 21 22 23 22 11

# GLOSSARY

**Alternate leaf arrangement**: borne singly along a stem, one leaf at each node, not opposite each other
**Annual**: lives only one growing season, then dies
**Anther**: the pollen-bearing part of the stamen
**Aquatic plants**: those which grow in or on water or shorelines
**Axil**: upper angle formed by the main stem and any plant part arising from that stem

**Barb**: a short hooked bristle
**Basal**: leaves located at base of stem, at ground level
**Biennial**: a plant whose life cycle takes two years to be complete
**Binomial system of nomenclature**: the plant's botanical name has two parts -- the generic name and the species name (e.g., Dicentra cucullaria is commonly called "Dutchman's Breeches," while D. canadensis is known as "Squirrel Corn." The Latin name must be underlined or in italics, 1st word capitalized.)
**Blade**: the flat, expanded part of the leaf
**Bog**: an area of wet spongy ground (often with peat, and some evergreens)
**Bract**: a reduced or modified leaf sometimes found around the base of flower clusters
**Bristly-toothed**: leaves having a short bristle at the tip of each tooth
**Bulb**: underground stem or bud with thick fleshy leaves or scales
**Bulblet**: a small bulb, growing in a flower cluster

**Calyx**: outer circle of flower parts, made up of sepals, usually green
**Capsule**: a dry fruit that splits open at maturity into 2 or more sections
**Chlorophyll**: green pigment (color) in most plants' leaves that absorbs energy from the sun and enables photosynthesis
**Clasping leaf**: partially surrounding the stem
**Cleft**: deeply lobed about halfway to mid-vein
**Cold frame**: a box covered with glass in which to grow plants heated by winter's sun
**Corolla**: the inner circle of flower parts, made up of petals
**Community**: a certain set of situations (nutrients, moisture, temperature, light, etc.) that make it possible for a group of unlike plants to exist together successfully
**Composite**: many flowers arranged in a dense head; many small flowers surrounded by leafy rays (e.g., daisy)
**Compound:** made up of 2 or more parts
**Cordate**: heart-shaped (usually regarding the base of a leaf)
**Corymb**: a flat-topped or convex branched flower cluster in which the branching is usually alternate
**Creeping**: running along the ground, and rooting as it goes.
**Cross-pollination**: the transfer of pollen from the anther of one plant to the stigma of another
**Cyme**: a more or less flat-topped, branched flower cluster in which the branching is usually opposite

**Damping Off**: a fungal disease causing stem to close, and plant then dies
**Disk**: in composite flowers (e.g., daisy) it is the central part of the flowering head
**Divided (leaf)**: cut down to or almost to the base or the midrib
**Downy**: covered with fine soft hairs
**Drupe**: a fleshy fruit, usually with only one seed

**Egg-shaped**: broader at one end than the other, usually 1-1/2 to 2 times longer than wide
**Elliptical**: broad in the middle, thin on the ends, and oval.
**Entire**: smooth leaf margins with no teeth or divisions or lobes

**Family**: a group of related plants (divided into genera, which are then divided into species)
**Filament**: the anther-bearing stalk of a stamen
**Flower**: the reproductive structure of a seed-bearing plant, usually with showy or colorful parts

**Genus (plural: genera)**: a group of closely related species (it is the first word in the Latin scientific name and is always capitalized and either underlined or in italics)
**Germinate**: to sprout from seed or spore
**Globular**: round (like a globe)
**Glucose**: a sugary food produced by photosynthesis
**Grasslands**: an area of prairie or meadow grasses, relatively dry most of the year

**Habitat**: the natural place where a plant grows or an animal lives
**Hairy**: covered with hairs, fuzzy; used to describe some leaves and stems
**Halberd-shaped**: arrow-shaped but with lobes at base of leaf pointing outward
**Head**: a group of flowers joined together in a short, dense, terminal cluster

**Indigenous**: native to a region or area
**Indistinguishable**: used to describe flowers that have no visible petals or petal-like parts, or with such tiny petals that it is very difficult to determine their number or arrangement
**Inflorescence**: the flower
**Introduced**: not native to a particular region; exotic
**Involucre**: a circle of bracts below a flower or flower cluster
**Irregular**: a flower whose parts are unlike in size, shape or arrangement

**Joint**: the point on a stem where two parts are joined

**Lance-shaped (leaf)**: a leaf that is about 3 or more times longer than it is wide, and broader toward one end, tapering at the other
**Leaf**: a usually green, usually flattened extension of the stem used to turn nutrients into food
**Leaflet**: one segment of a compound leaf
**Linear**: long and narrow, sides nearly parallel
**Lip**: the upper or lower part of some irregular flowers
**Lobe**: a segment, usually rounded, of a leaf or flower

**Margin**: the outside edge of a leaf
**Marsh**: a wetland with tall grasses
**Midrib**: the central vein of a leaf or leaflet

**Natives**: naturalized plants; plants that originated in a particular area or region
**Naturalized**: not indigenous, but thoroughly established (such as Queen Anne's Lace)
**Nectar**: the sweet liquid produced by flowers that attract pollinators
**Neutral (flower)**: without stamens or pistils

**Oblong (leaf)**: longer than broad, with parallel sides
**Opposite leaf arrangement**: arranged in pairs on the stem
**Oval**: broadly elliptical
**Ovate**: egg-shaped
**Ovary**: the enlarged base of the pistil that produces the seeds
**Ovules**: the eggs of a plant which (when fertilized) become seeds

**Palmate (leaf)**: leaflets radiate from a central point like the fingers of a hand
**Panicle**: an elongated loosely branched flower cluster
**Parasite**: a plant that gets its food from another living plant
**Pedicel**: the stalk of a single flower
**Perennial**: a plant that normally lives more than two years
**Perianth**: the floral "envelope" (sepals AND petals)
**Petal**: one of the segments of the corolla
**Petiole**: the stalk-like part of a leaf
**Photosynthesis**: the process by which plants use sunlight to convert water and carbon dioxide into glucose that plants need
**Pinnate (leaf)**: divided in such a way that the leaflets are arranged on both sides of a common stalk (like a feather)
**Pistil**: the central female reproductive part of a flower
**Pistillate**: having pistils but no stamens
**Pod:** a dry fruit (especially of the pea family)
**Pollen**: the male spores produced by the anther
**Pollination**: the transfer of pollen from an anther to a stigma
**Propagate**: to reproduce
**Prostrate**: lying on the ground instead of growing upright
**Pubescent**: bearing short, soft hairs

**Raceme**: an elongated flower cluster with stalked flowers arranged along a central stem
**Ray**: one of the stalks of an umbel; also strap-like or petal-like flowers surrounding disk flower
**Recurved**: curved downward or backward
**Reflexed**: abruptly turned downward or backward
**Regular**: used to describe flowers having all the parts alike in size and shape, such as a daisy
**Rhizome**: an underground stem that sends up shoots
**Rib**: a prominent vein of a leaf
**Rootstock**: a horizontal, underground stem
**Rosette**: a circular cluster of leaves, usually at the bottom of a plant
**Runner**: a slender, prostrate branch

**Saprophyte**: a plant that gets its food from dead organic matter
**Scarify**: sanding, nicking, or chipping a hard seed covering, making sure not to touch the seed itself
**Sepal**: one of the segments of the calyx
**Serrate**: sharply toothed margin
**Sessile**: without a petiole or other type of stalk

**Simple**: composed of a single part with no subdivisions
**Sheath**: a thin membrane surrounding the stem
**Smooth**: lacking hairs or other protuberances
**Spadix**: a club-like spike bearing minute flowers, usually enclosed in a spathe, as a skunk cabbage
**Spathe**: a large bract (leaflike structure) enclosing a flower cluster or spadix, as a jack-in-the-pulpit
**Species**: a distinct kind of plant; the second part of the scientific name (in italics, not capitalized)
**Spike**: an elongated flower cluster with stalkless flowers arranged along a central stem
**Spur**: a tubular hollow projection on a flower that often holds nectar
**Stem**: stalk; the rising part of a plant from which leaves, flowers, & fruit develop
**Stamen**: male organ of a flower (consists of the anther and the filament)
**Staminate**: having stamens but no pistil
**Stigma**: the pollen-receiving tip of the pistil
**Stipule**: a small leaflike growth at the base of a leaf stalk
**Stratify**: cold treatment given to seeds for a given period of time
**Style**: the stalk of the pistil (connects the stigma to the ovary)

**Tendril**: a slender, coiling, modified leaf or branch structure used for climbing and support
**Terminal**: at the end of a branch or a stem
**Toothed (leaf)**: having several small indentations along the margin (as on a steak knife)
**Trailing**: running along the ground but not rooting
**Trifoliate**: leaflets arranged in groups of three on a common stem
**Tuber**: a short, thick, underground stem

**Umbel**: a flower cluster in which all the flower stalks radiate from the same point (like an umbrella)

**Vein**: one part of a network of little channels in a leaf through which fluid flow

**Wetlands**: wet, soggy or damp ground, such as a bog or swamp
**Whorled**: arranged in a circle around a central point
**Wing**: a thin, narrow membrane extending along a stem, stalk or other part

References:


Field Guide to Indiana Wildflowers, by Kay Yatskievych. Indiana University Press, c2000.

Flowers of Pokagon, by Iva Spangler (Naturalist Ind. St. Parks). Fort Wayne: Wm. A. Didier & Sons, Inc., c1961.

Growing and Propagating Wildflowers, by Harry R. Phillips. Chapel Hill: U. of North Carolina Press, c1985.

National Audubon Society First Field Guide: Wildflowers, by Susan Hood. N.Y.: Scholastic, c1998.

Newcomb's Wildflower Guide, by Lawrence Newcomb. Boston: Little, Brown and Company, c1977.

# WILDFLOWER PROJECT RESOURCE LIBRARY

**The following resources are only made available to current project members.**

These resources are located in the 4-H Office of the Extension Building at the Hamilton County Fairgrounds. Project members may use the resources on site or may check them out, and will be responsible for returning them. Utmost care of resources is expected of project members. Abuse and/or loss of any of the materials will be subject to replacement cost of those materials. These resources are on long-term loan from Hamilton County Master Gardener members.

BOOKS:

American's Prairies, by Frank Staub, Carolrhoda Books, c1994.
Caterpillars, by A. B. Wright, Petersen First Guides, Houghton Mifflin, c1992.
Concise Illustrated Book of Wild Flowers, by J. Flegg, Brian Trodd Publishing, c1990.
Everybody's Everywhere Backyard Bird Book, Klutz Press, c1992,
Fern Finder, by A. & B. Hallowell, Nature Study Guild, c1981.
Ferns, Time-Life Books, c1977.
First Field Guide: Wildflowers, by S. Hood, National Audubon Society, Scholastic, c1998
Flowers of Pokagon, by Iva Spangler, c1961.
Flowers: A Guide to Familiar American Wildfllowers, by H. Zim, c1963.
Gardening with Ferns, by Rex Mabe, c1973.
Hedgemaids & Fairy Candles: the Lives & Lore of North American Wildflowers, by Jack Sanders
How to Draw Plants: the Techniques of Botanical Illustration, by K. West, Timber Press, c1983.
Invasive Plants: Weeds of the Global Garden, by K. West, Timber Press, c1983
Native Perennials: North American Beauties, Brooklyn Botanic Garden, c1996.
Natural Affairs, by P. Bernhardt, Villard Books, c1993.
Nature's Garden, Better Homes & Gardens, c1995.
North American Dye Plants, by A. Bliss, Scribner's Sons, c1976, 1980.
Ragged Mtn. Press, Camden, Maine, c1993.
Woman's Day Book of Wildflowers, by J. Hersey, Simon & Schuster, c1970, 1966.

VIDEOTAPES:

Backyard Conservation, One Yard at a Time. c1998.
Wildflowers...A Woodland Heritage. c1997, 1998.

OTHER RESOURCES:

Notebook of invasives, noxious weeds, endangered plants, and habitat for gr. 3-12
Notebook of Wildlife activities for gr. 3-5
Notebook of Conservation info. for gr. 6-12
Pests Have Enemies Too: Teaching Young Scientists Biological Control (poster and paperback pamphlet)

*An updated list will be published each year.*

# PRINT RESOURCES

Some of this material pertains directly to wildflowers, but others pertain to methods, lore, uses, pests, grasses, ferns, invasives, etc. A few of these resources may be found in your 4-H library at the Hamilton County Fairgrounds office. Other, more up-to-date materials, can be found at your local schools and public libraries. Make SURE you have a public library borrowing card!

**Print:**


Archbald, David, *et al.* Quick-Key Guide to Wild Flowers, Doubleday, c1968.
Blatchley, W. S. The Indiana Weed Book, Nature Publishing Co., c1930.
Deam, Charles C. Trees of Indiana, Bookwalter Co., c1953.
Foster, Steven, *et al.* A Field Guide to Medicinal Plants, Houghton Mifflin, c1990.
Foster, Steven. Forest Pharmacy, Forest History Society, c1995.
Harper, Peter, *et al.* The Natural Garden Book, Fireside Book (Simon & Schuster), c1994.
Harstad, Carolyn. Go Native! Gardening with Native Plants and Wildflowers in the Lower Midwest, Indiana University Press, c1999.
Heilerman, Diane. Gardening in the Lower Midwest, Indiana University. Press, c1994.
Homoya, Michael A. Orchids of Indiana, Indiana Academy of Science, c1993.
Invasive Plants. Brooklyn Botanic Garden, 1995.
Jeffords, M.R. & Hodgins, A.S. Pests Have Enemies Too, Illinois Natural History Survey, c1995.
Johnson, Lady Bird. Wildflowers Across America, Abbeville Press, c1993.
Jones, S. B. & Foote, L.E. Gardening with Native Wild Flowers, Timber Press, c1990.
Ladd, Doug. Tallgrass Prairie Wildflowers, Falcon Press, c1995.
Mabe, Rex E. Gardening with Ferns, Potpourri Press, c1973.
Mohlenbrock, R. H. Where Have All the Wildflowers Gone?, Macmillan, c1983.
National Audubon Society Field Guide to N.A. Wildflowers. Knopf, c1979, 1997.
Native Perennials. Brooklyn Botanic Garden, 1996
Newcomb, Lawrence. Newcomb's Wildflower Guide, Little, Brown & Co., c1977.
Ottesen, Carole. The Native Plant Primer, Harmony Books, c1995.
Phillips, Kathryn. Paradise by Design: Native Plants and the New American Landscape, North Point Press (Farrar, Straus and Giroux), c1998.
Putnam, P. & M. North America's Favorite Butterflies, Willow Creek Press, c1997.
Reilly, Anne. Park's Success with Seeds, Geo.W. Park Seed Co., c1978.
Rogers, Marc. Saving Seeds, Storey Communications, c1990.
Sanders, Jack. Hedgemaids and Fairy Candles, Ragged Mountain Press, c1993.
Scott, Jane. Field and Forest, Walker & Co., c1984, 1992.
Shaw, T. E. Fifty Common Trees of Indiana, Indiana Dept. of Natural Resources, 1968.
Stein, Sara. Noah's Garden, Houghton Mifflin, c1993.
Stein, Sara. Planting Noah's Garden: Further Adventures in Backyard Ecology, Houghton Mifflin, c1997.
Sternberg, G. & Wilson J. Landscaping with Native Trees, Chapters Publishing, c1995.
West, Keith. How to Draw Plants, Timber Press, c1983.
Wherry, Edgar T. Wild Flower Guide: Northeastern & Midland U.S., Doubleday, c1948.
Wright, Amy B. Peterson First Guide to Caterpillars, Houghton Mifflin, c1993.
Yatskievych, Kay. Field Guide to Indiana Wildflowers, Indiana University Press, c2000.


**Recommended Magazines**: Organic Gardening (Rodale Press)
Hoosier Conservation (Indiana Wildlife Federation)
Outdoor Indiana, (Indiana Department of Natural Resources)

# NON-PRINT RESOURCES

**Insect identification cards**:

Helpful or Harmful? Learn the Difference! University of Florida
The Good Guys! Natural Enemies of Insects. Illinois Natural History Survey

**Organizations**:

Indiana Native Plant and Wildflower Society
Indiana Wildlife Federation
Ladybird Johnson Wildflower Research Center
Wild Ones!

**Internet**:

Butterfly site for young people
www.mesc.nbs.gov/butterfly/butterfly.html
Butterflies of North America
http://www.npwrc.usgs.gov/resource/distr/lepid/bflyusa/bflyusa.htm
Celebrating Wildflowers
http://www.nps.gov/plants/color/imgs2/Trpe2b.gif
Center for Plant Conservation
http://www.mobot.org/CPC/welcome.html
Flora of North America
http://www.fna.org/Libraries/plib/WWW/online.html
Green Landscaping with Native Plants – Wild Ones!
http://www.epa.gov/greenacres/wildones
Indiana Native Plant & Wildflower Society:
http://www.inpaws.org
National Wildlife Federation
http://www.nwf.org/
National Audubon Society
http://www.audubon.org
Purdue University's Prairie Page
http:www.hort.purdue.edu/ext/prairie_wildflowers.html
Wild School Site: Project Wild
http://www.projectwild.org/
Spence Restoration Nursery (commercial site in Muncie)
http://spencenursery.com
Crystal Palace Perennials (commercial site)
http://www.crystalpalaceperennials.com
Earthly Goods, Ltd. (commercial site)
http://www.earthlygoods.com
Let's Get Growing (commercial site)
http://www.letsgetgrowing.com/

**Videos**:

Backyard Conservation: One Yard at a Time. National. Association of Conservation Districts, c1998.
Wildflowers...A Woodland Heritage. c1997, 1998

The videos below may be at your school or public library. They are also available from the Indianapolis Museum of Art's Horticultural Society Library (call Mary Kraft at 773-5361 to reserve):

Wild in the City. Wild Hare Media, c1991.
Biological Control: Learning to Live with the Natural Order. NBCI, c1995.
Eastern Butterflies. Nature Science Network, c1995.
Plants of Indiana (Native Wildflowers of Woodland & Prairie Series). Purdue University
Insects, the Little Things that Run the World. Smithsonian, c1989.
Yardening: How to Grow & Nurture Seedlings. Burpee, Mantis & 4 Seasons, c1986.
A Greener Thumb: How to Enhance Lawn, Landscape and Environment. Extension office, Rutgers University, c1998.

# SEED & PLANT SUPPLIERS

**Acorn Ridge Nursery**
22441 Bigler Road
LaCrosse, IN 46348
Tel: (219) 754-2662
E-mail: acornrdg@ix.netcom.com

Arrowhead Alpines
P.O. Box 857
Fowlerville, MI 48836
Tel: (517) 223-3581

**Berg-Warner Tree Nursery**
P.O. Box 259
Lizton, IN 46149-5487
www.berg-warner.com

**Beineke's Nursery**
513 Sharon Road
West Lafayette, IN 47906
Tel: (765) 463- 2994
Email: bein@gte.net

**Cold Steam Farm**
2030 Free Soil Road
Free Soil, MI 49411
Tel: (231) 464-5809
E-mail: cfs@jackpine.com

**Crystal Palace Perennials**
P.O. Box 154
St. John, IN 46373
Tel: (219) 374-9419
www.crystalpalaceperennial.com

**Designs on Nature**
202 Lincolnway East
Mishawaka, IN 46544
Tel: (219) 256-2242
Email: designsonnature@hoosierlink.net

**Earthly Goods Ltd.**
P.O. Box 614
New Albany, IN 47150
Tel: (812) 944-2903
E-mail: www.earthlygoods.com

**Edge of the Prairie Wildflowers**
1861 Oak Hill Road
Crawfordsville, IN 47933
Tel: (765) 362-0915

**Enders Greenhouse**
(Plants only)
104 Enders Drive
Cherry Valley, IL 61016
Tel: (815) 332-5255
E-mail: endrsnatvs@aol.com

**Heartland Restoration Services, Inc.**
349 Airport North Office Park
Fort Wayne, IN 46825
Tel: (219) 489-8511
E-mail: hlandrest@aol.com

**J & J Transplant Aquatic Nursery LLC**
W 4980 County Road W
P.O. Box 227
Wild Rose, WI 54984
Tel: (715) 256-0059 or (800) 622-5055
E-mail: jnalchow@tranzplant.com
www.tranzplant.com

**J.F. New & Associate, Inc.**
708 Roosevelt Road
Walkerton, IN 46574
Tel: (219) 586-2412 or in Indy (317) 388-1982
www.jfnew.com

**Jasper-Pulaski State Tree Nursery**
15508 W. 700 N.
Medaryville, IN 47957
Tel: (219) 843-4827
E-mail: JasperNursery@dnr.state.in.us
www.state.in.us/dnr/forestry/treeimp/
collectinfo.html

**Madeline E. Elder Greenhouse (IMA)**
(Plants only)
1200 W. 38th Street
Indianapolis, IN 46208
Tel: (317) 920-2652
www.ima-art.org/grounds/greenhouse.html

**Miller's Manor Garden & Nursery**
Native Plants (no seeds), Rare Trees, Shrubs
12788 191st St. (2.8 mi. E. of Rt. 37)
Noblesville, IN 46060
Tel: (317) 770-7678

**Munchkin Nursery & Garden**
323 Woodside Drive N. W.
Depauw, IN 47115-9039
Tel: (812) 633-4858
www.munchkinnursery.com

**Possibility Place Nursery**
7548 Monee-Manhattan Road
Monee, IL 60449
Tel: (708) 534-3988
www.possibilityplace.com

**Prairie Nursery**
P.O. Box 306
Westfield, WI 53964
Tel: (608) 296-3679
E-mail: www.prairienursery.com

**Prairie Seed Source**
P.O. Box 83
North Lake, WI 53064-0083
Email:www.Ameritech.net/users/rasillon/Seed.html

**Salsbery Brothers Landscaping**
4317 E 146th Street
Carmel, IN 46033
Tel: (317) 843-0100

**Shooting Star Nursery**
444 Bates Road
Frankfort, KY 40601
Tel: (502) 223-1679
E-mail: Shootingsn@aol.com

**Springcreek Landscaping & Nursery, Inc.**
1860 N. 525 E.
Logansport, IN 46947
Tel: (219) 722-1128
E-mail: scheidjl@iquest,net

**Sunlight Gardens**
174 Golden Lane
Andersonville, TN 37705
Tel: (800) 272-7396
sungardens@aol.com

**Taylor Creek Restoration Nurseries**
17921 Smith Road
Brodhead, WI 53520
Tel: (608) 897-8641
www.appliedeco.com

**Vallonia Nursery**
2782 W. Co. Rd. 540 S.
Vallonia, IN 47281
Tel: (812) 358-3621
www.state.in.us/dnr/forestry/treeimp/collectinfo.html

**Wetlands Nursery, Inc.**
P.O. Box 14553
Saginaw, MI 48601
Tel: (517) 752-3492
E-mail jewelr@aol.com

**Wildseed Farms**
425 Wildflower Hills
P.O. Box 3000
Fredericksburg, TX 78624-3000
Tel: (800) 848-0078
www.wildseedfarms.com

# 4-H WILDFLOWER PROJECT RECORD SHEET

*Do NOT fail to complete this record:*
*this is as important as your exhibit!*

Name_____ Age_____

Name of Club_____ Year in club_____

Township_____ County _____

Date record started_____ Date record completed_____

Signature of leader_____ Date_____

1. How can growing native plants can help preserve diversity?

_____

_____

_____

2. Name the two (2) most important things to remember when collecting wildflowers.

_____

_____

3. What can happen when pesticides (herbicides, insecticides, fungicides) are used (in regard to insects, birds, and plants)?

_____

_____

_____

4. What is the difference between a plant that thrives and one that is invasive? Do we have any laws in Indiana pertaining to invasive plants (check at your public library)?

_____

_____

5. What was the most challenging part of this year's wildflower project? What will make you want to participate again next year?

_____

_____

_____

_____

_____