



Photo Credit: Debbie Roos

Part EIGHT

RESOURCES for Educators (and Others)

Common Buckeye butterfly (*Junonia coenia*) on smooth blue aster (*Aster laevis*)

Posters for Classrooms

[The University of Minnesota Bee Lab](#) has a terrific graphic showing the percent distribution of the 3600 bees species native to the US, divided by families. Bumblebees comprise only 1.4% of our bee species.

[Heather Holm Website](#): Holm has numerous photos of bees on pollinator plants, and letter-size (8.5" x 11") posters showing which plants are suitable for different soil conditions (wet, rich, dry), which bees are ground dwellers with photos of these nests, which bees are cavity (hole) dwellers –with nest photos, recommended plant lists with photos of the plants and more. While her focus is on Midwestern plants, the topics are relevant for NE.

[Poster of Chemistry of Neonicotinoids](#): These chemicals are the most prevalent and the most problematic class today. Many countries have banned their use, but in the US use has skyrocketed since 1990s when they first appeared. The graphic has diagrammed related compounds and descriptions of how they work. Compoundchem.com is source of this poster.

[Attracting Native Pollinators to your Garden](#): Artist Nancy Seiler has a simple eye-catching booklet for Eastern US, with lovely watercolors of native pollinators and native plants, with related essential facts about pollinators. She also has a poster of native pollinators, and a [Pollinator Activity Guide](#), suitable for younger children. Her 'think like a pollinator' poster about gardens is on our handout for educational events in 2017.

[Upper Valley Pollinator Partners](#). For the 2017 events, we prepared three posters:

- [Poster showing bee families](#), that features a chart of bee families from the Minnesota Bee Lab. (Format: 11x17)
- [Poster of interactions between native plants and animals](#) [link pending] (format: 11 x 17)
- [Poster on problems with neonicotinoid chemicals](#) (format: 11 x 17)

Native Bee Videos

[Integrated Crop Pollinator Project](#): www.projectICP.org

- [Pollinator Habitat 101: Incorporating Flowers on Farms to Support Bees](#)
- [Five Steps for Success in Establishing Wildflowers for Bees](#)
- [Benefits of Planting Flowers for Bees](#)
- [An Inside Look at Pollinator Research](#)
- [What is Integrated Crop Pollination?](#)

Other Videos

[Ghost-in-the-Making](#) A 20-minute film that follows native bee photographer Chris Bolt on his quest to locate the disappearing *rusty patched bumble bee*, now listed as "threatened" by Endangered Species Act. He talks to experts along the way to Indiana where he finally is able to photograph these bees. The bee, once common in NH and VT, was last found in VT in 1999, and in NH in 1997.

Other Resources for Classroom:

[What do Bee's Eyes See?](#) B-Eye. How a honeybee perceives certain patterns.

[Pollination and Fertilization](#) A short video on flower fertilization (< 1 minute)

[Sip, Pick, Pack: How pollinators help plants make seeds](#). Cheney, Polly. (2016) 22-page self-published book, highly recommended by a local elementary school teacher.

[Build a Simple Nest](#) for cavity nesting bees.

[Why Native Pollinators Matter](#) a powerpoint program for schools created in 2017 by Upper Valley Pollinator Partners. This version is in movie format [here](#), and doesn't have the speaker notes. The powerpoint with notes is available on [request](#).

[Think Like a Pollinator](#), a 1-page handout prepared by the Upper Valley Pollinator Partners.

New York Times – Series of Bee Articles and Videos

These articles use results from recent pollinator research (native bees / honeybees). The NY Times has an on-going series of bee-related articles, so Google to see the latest entries in a long list of fascinating articles.

[Bees Buzz for their Supper](#) (has video and text).

[Why do Bees Buzz?](#) Two-minute video explaining mechanics of buzz pollination, and important role of native bumble bees.

[Unravelling the Pollinating Secrets of a Bee's Buzz](#) (2 mini videos and text)

[Climate Change is Shrinking Where Bees Live](#)

[You're a Bee: This is What it Feels Like](#)

[Can You Pick Out the Bees From this Insect Lineup?](#) quiz, with bees, flies, ants and other insects.

[The Sweet Emotional Life of a Bee](#)

[Why Honeybees are Good at Grooming](#) 1-minute video with text explaining the mechanics of hair structures.

[The Caffeinated Life of Bees](#) (video and text) Some plants contain Caffeine – to fool bee visits.

[It's a Good Thing Bees Don't Have Car Keys](#) Bees remember which flowers have rewards.

[The Bee Solution to Winter](#) Q&A – short answer.

[Our Bees, Ourselves: Bees and Colony Collapse](#) Pesticides and more.

[Decline of Pollinators is Threat to World Food Supply](#) Discussion of causes of decline.

[The Head-Scratching Case of the Vanishing Bees](#) Ten minute overview on honeybee colony decline.

Lesson Plans / Educational Materials

US Forest Service Materials:

- [Bee Basics](#): An Introduction to Our Native Bees, by Beatriz Moisset, Ph.D. and Stephen Buchmann. A 39-page booklet for educators, this an excellent source of background material. Distinguishes bees, wasps and flies and describes key members of five bee families.
- [Pollinator Live – a distance learning adventure](#) sponsored by USFS and many others. Webinars for teachers, curriculum materials (free), tips for schoolyard pollinator gardens and much more.

[Xerces Society Materials](#): links to Xerces Society materials and other websites (such as PBS and Smithsonian) with materials for educators. This site lists sources of curricula, websites, school garden for pollinators, monitoring.

[Pollinator Partnership](#): A concise list of many helpful links to free educational pollinator materials elsewhere on the web, organized by curriculum, educational tools, activities, facts, links, contests-food-fun. The organization has class ideas and curriculum and planting materials, and also offers a [Bee Education Tool Kit](#) (\$150 for mailed kit / \$50 for digital) with lesson plans, handouts, seeds (30 of several types). A special section for [Curriculum Materials](#) with links to other websites (some non-functioning)

[The Monarch Lab](#) University of Minnesota, has curriculum materials on monarch and other butterflies.

[4 Winds Nature Institute](#) This non-profit has developed year-long nature study materials that meet new science standards, available on-line, offers 40 workshops for children, educators, interested adults (who are trained to help with monthly K-6 classroom nature studies).

[Plants and Animals: Partners in Pollination](#) Lesson plans developed by the Smithsonian Institution, materials for grades 5-8.

Citizen Science Opportunities

The following websites seem to be well maintained and are fairly easy to use.

[Bumble Bee Watch](#) The site has excellent description pages for bee species. The ID section for each species lists their floral associations, has a large photo of the bee, a drawing with key features, look-alikes, range and the months when the species can be found. Users can submit sightings, photos and information about bee nests. Registration required.

[e-Butterfly](#) A site for reporting butterfly sightings; registration is required to submit or review the data. The VT Center for Ecostudies is one of the organizations involved with this site.

[Butterflies and Moths of North America](#) (BMONA) A rich resource for photos, taxonomy, checklists. This is a place to collect, store, and share species information and occurrence data. User can input location (by county) and learn which butterflies and moths can be found there.

DEAD BEES

If you have witnessed a dead bee sighting (1,000+ bees), please take photos and report the sighting and location to your [state Department of Agriculture](#).