

Teaching Activity Guide

for use at home or in the classroom

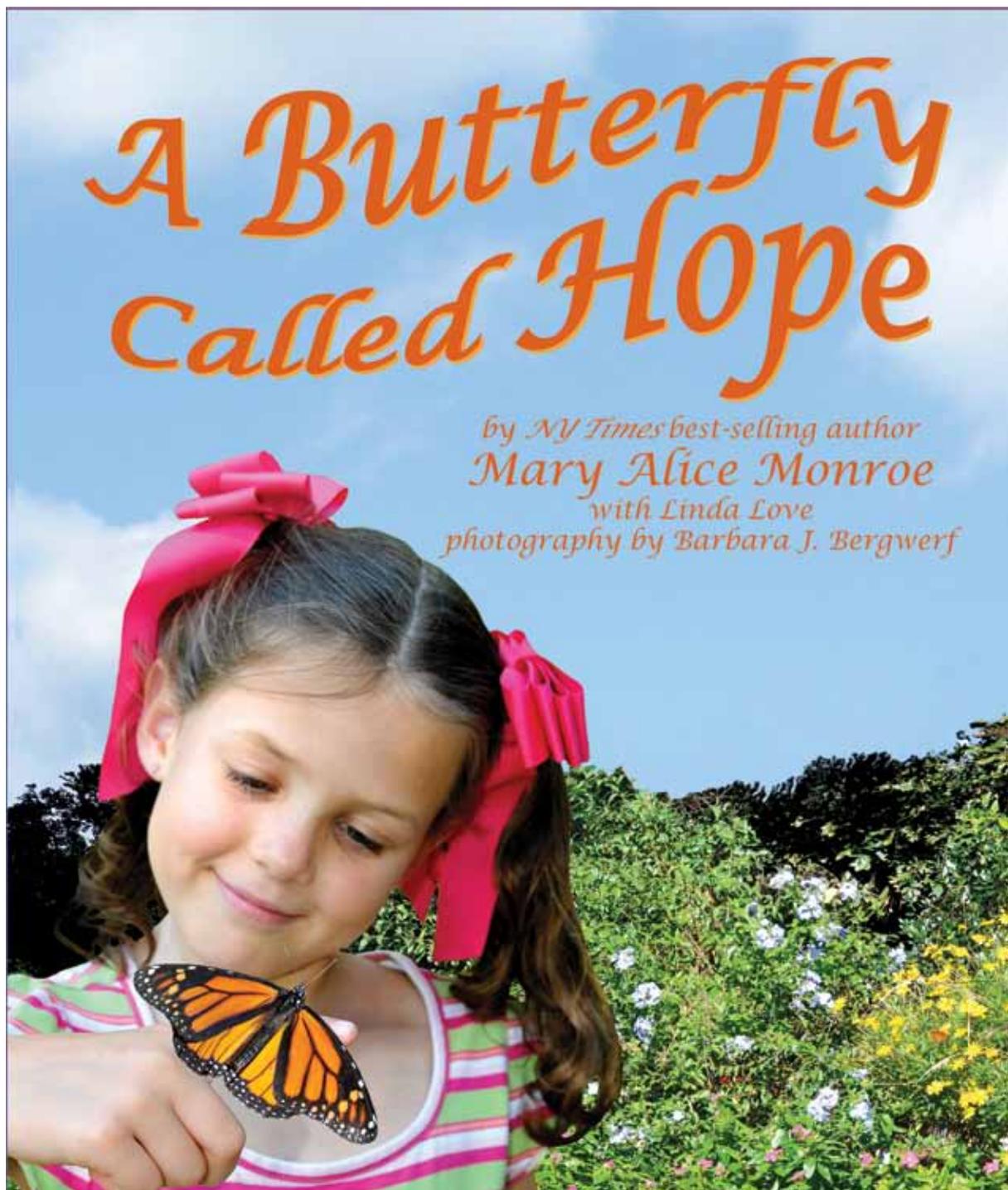


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Arbordale Publishing
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Mt. Pleasant, SC 29464



What Do Children Already Know?

Young children are naturally inquisitive and are sponges for information. The whole purpose of this activity is to help children verify the information they know (or think they know) and to get them thinking “beyond the box” about a particular subject.

Before reading the book, ask the children what they know about the subject. A list of suggested questions is below. The children should write down their “answers” (or adults for them if the children are not yet writing) on the chart found in Appendix A, index cards, or post-it notes.

Their answers should be placed on a “before reading” panel. If doing this as a group, you could use a bulletin board or even a blackboard. If doing this with individual children, you can use a plain manila folder with the front cover the “before reading” panel. Either way, you will need two more panels or sections—one called “correct answer” and the other “look for correct answer.”

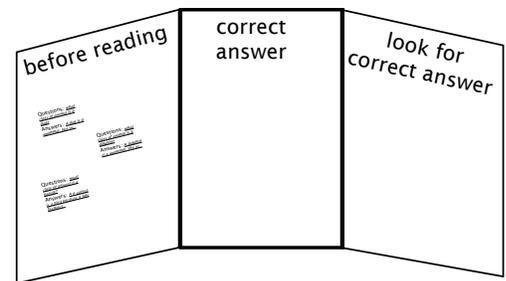
Do the children have any more questions about the subject? If so, write them down to see if they are answered in the book.

After reading the book, go back to the questions and answers and determine whether the children’s answers were correct or not.

If the answer was correct, move that card to the “correct answer” panel. If the answer was incorrect, go back to the book to find the correct information.

If the children have more questions that were not answered, they should look them up.

When an answer has been found and corrected, the card can be moved to the “correct answer” panel.



Pre-Reading Questions

What do you know about the butterfly life cycle? Explain or draw pictures.

What is the larva stage of a butterfly called?

What is the pupa stage of a butterfly called?

On what plant do monarch butterflies lay their eggs so the caterpillars can eat?

Will caterpillars hurt you?

What color is the monarch chrysalis right after it is formed?

What color is the monarch chrysalis right before the adult butterfly emerges?

What do adult monarch butterflies eat?

What do the adult monarchs do during the cold winter?

Do some insects migrate?

Comprehension Questions & Writing Prompts

Objective Core Language Arts, Speaking and Listening: Ask and answer questions about key details in a text read aloud or information presented orally or through other media.

Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood.

Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.

Retell stories, including key details, and demonstrate understanding of their central message or lesson.

Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

What was in the garden that scared the young girl?

Who did the girl and her mother go to see to learn about the caterpillar?

Why didn't she want to leave the caterpillar?

Where did the girl keep the caterpillar?

What did the caterpillar eat?

What were some things the girl did to care for the caterpillar?

What color was the chrysalis when it was just spun?

Why did the chrysalis look black after about two weeks?

What did the butterfly do right after it emerged from the chrysalis?

Why didn't the mother let the girl keep the butterfly?

How did the girl decide she could "own" the butterfly and still let it go free?

What did the girl do with the butterfly?

Where did the name "Hope" come from?

Word Bank

Nouns:

bird	butterfly	caterpillar	chrysalis
cycle	egg	frass	generation
insect	instar	instinct	juice
larva	leaf/leaves	metamorphosis	
migration	molt	nectar	plant
proboscis	tongue	wings	

Adjectives:

adult	black	clear	dried
five	fresh	green	moist
small	straw-like	sugary	two

Verbs:

change	curl	eat	emerge
fly	hatch	lay	migrate
molt	sip	wander	

Cross-Curricular: Silly Sentences

This “game” develops both an understanding of sentence structure and the science subject. Use words from the word bank to fill in the blanks. After completing silly sentences for fun, have children try to fill in the proper words by looking for the correct information in the book.

1. An _____ female monarch _____s her eggs on the leaves of a _____ plant.
adjective verb noun
2. When the caterpillars _____, they _____ the milkweed _____s.
verb verb noun
3. As the _____s grow, they _____ their hard, outer covering and grow a new one.
noun verb
4. The molting stage is called _____, and there are usually _____.
noun adjective (a number)
5. When the caterpillar is about _____ weeks old, it does a “pupa dance” or _____s itself into a _____.
adjective (a number) noun noun
6. At first, the chrysalis is _____.
adjective
7. When the chrysalis looks _____, it is really _____ but you see the butterfly _____.
adjective adjective noun
8. After the butterfly _____es, it stays still for several hours while it pumps fluid into the _____.
verb noun
9. When it is only a few hours old, the butterfly will _____.
verb

Sequencing Cards

Print and cut apart the cards on the next four pages. If desired, use a heavy card stock and laminate. Depending on the age of the child (children), you can use all cards or some of the cards.

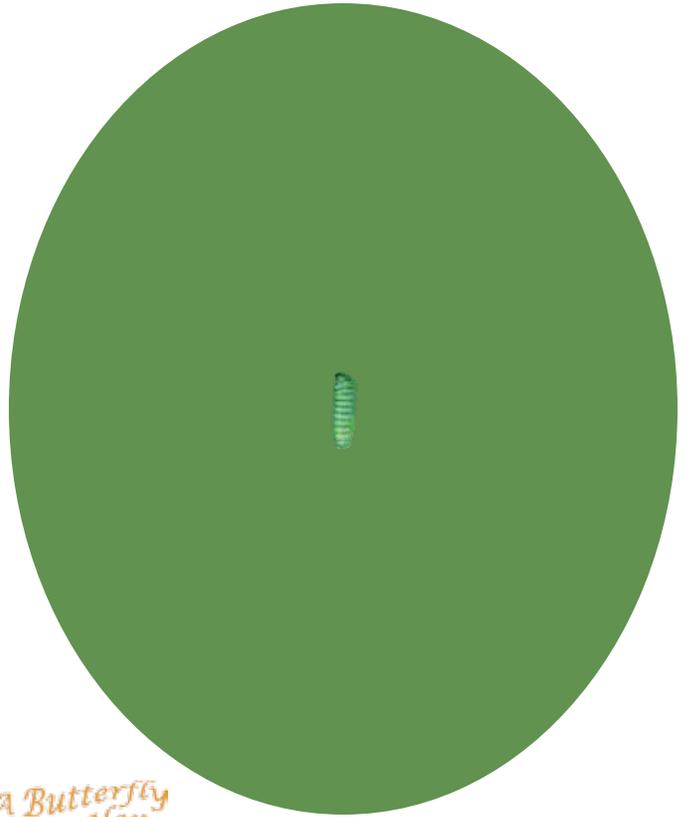
Sequencing: Have children sequence the order of:

- life cycle
- instar (caterpillar molting and growth)
- forming the chrysalis
- emerging from the chrysalis

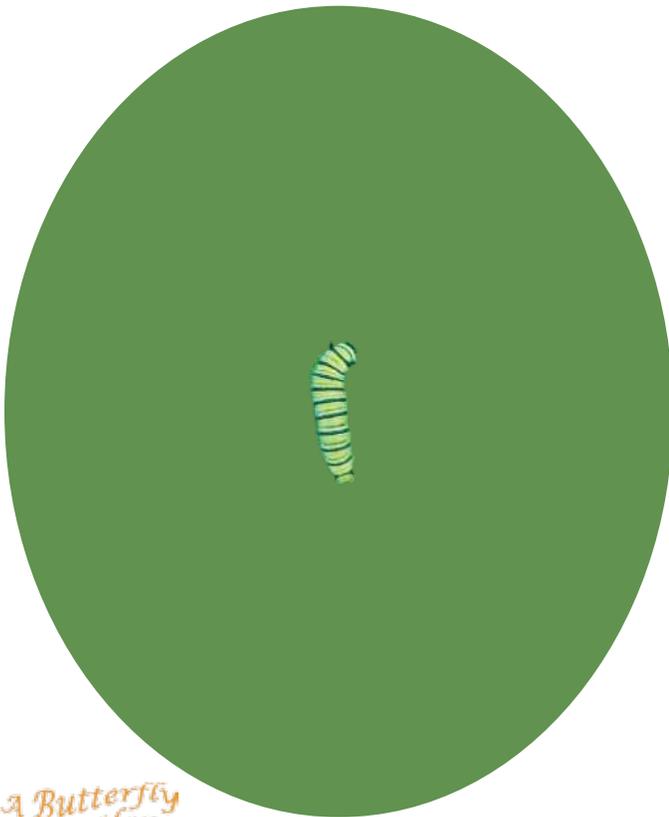
Memory Card Game: Make two copies of each of the sorting card pages and cut out the cards. Mix them up and place them face down on a table. Taking turns, each player should turn over two cards so that everyone can see. If the cards match, he or she keeps the pair and takes another turn. If they do not match, the player should turn the cards back over and it is another player's turn. The player with the most pairs at the end of the game wins.



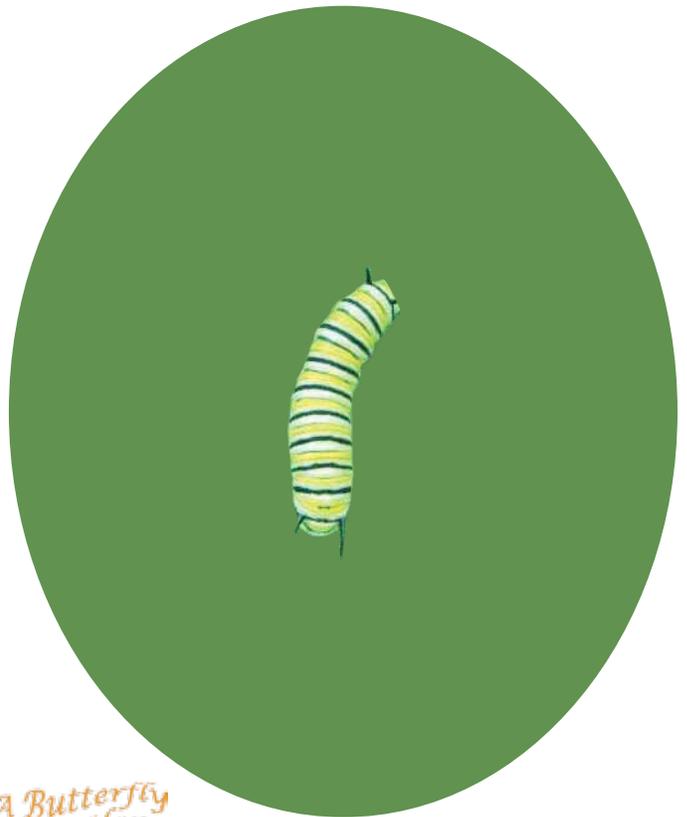
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Called Hope*



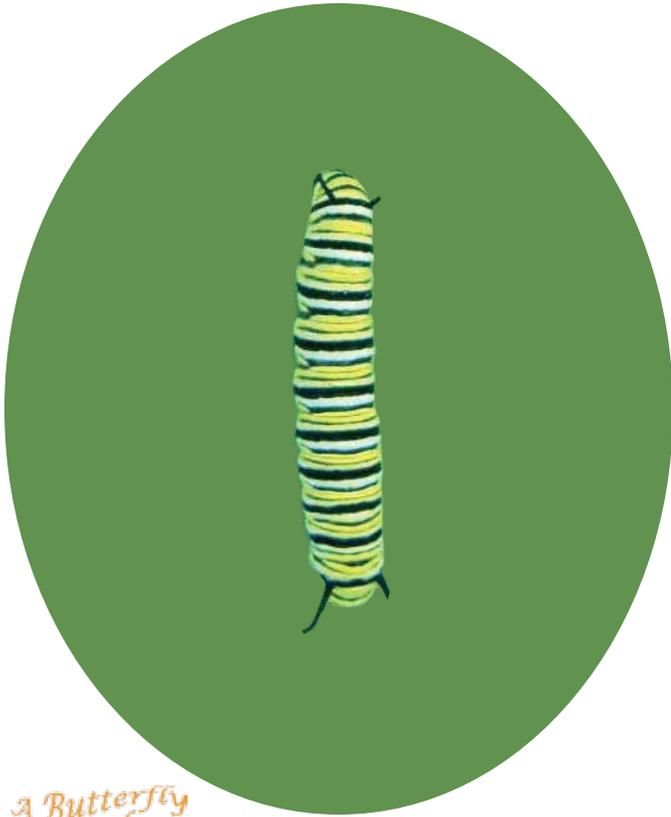
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Called Hope*



*A Butterfly
Called Hope*



*A Butterfly
Called Hope*



*A Butterfly
Called Hope*



*A Butterfly
Called Hope*



*A Butterfly
Called Hope*



*A Butterfly
Called Hope*



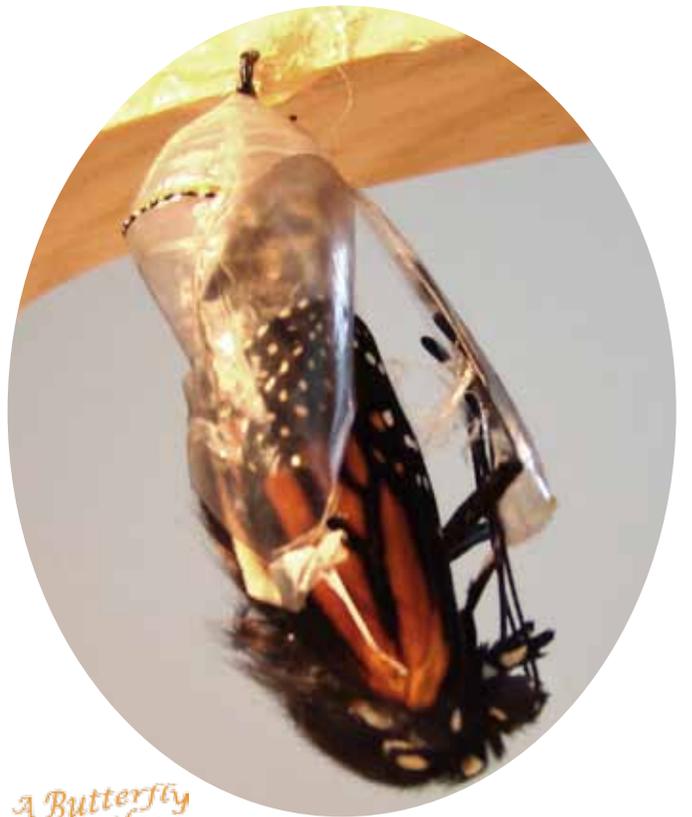
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*A Butterfly
Called Hope*



*A Butterfly
Called Hope*



*A Butterfly
Called Hope*

Math: Butterfly Ages

The times listed for the different stages of the monarch life cycle are based on normal summer conditions and temperatures.

The adult female is old enough to lay eggs when she is about five days old. It takes three to five days for the eggs to hatch.

Caterpillars or larvae hatch from the eggs. This is the second stage of the life cycle when the caterpillar is an eating machine and grows. The caterpillars molt as they grow. This stage lasts nine to 14 days.

The caterpillars form a chrysalis or pupa, where they transform into butterflies after about 10 to 14 days. This stage is called “cocoon” for moths.

Use the information above to fill in the chart.

- What is the shortest number of days that it could take from the time an egg is laid until a monarch butterfly emerges as an adult? About how many weeks is that?
- What is the longest number of days? About how many weeks is that?

Life Cycle State	days		days
egg to hatch		to	
caterpillar (larva)		to	
chrysalis (pupa)		to	

Once the butterfly emerges from the chrysalis, it is an “adult.” This is the final stage of the insect’s life cycle. An adult monarch from one of the first three generations lives two to six weeks. An adult butterfly from the late-summer generation that migrates lives up to eight months!

- Pick a date on the calendar below to use as an “egg laid” date. Using the least number of days and the most number odd days, what is the range of dates that the adult butterfly could emerge?

May						
M	T	W	T	F	S	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

June						
M	T	W	T	F	S	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

Raising and Helping Monarchs

Whether you find a caterpillar or buy one to raise into a butterfly, this is not only a great project and learning activity for young children, but it is a great opportunity to help these butterflies. As more and more land is clear cut for development, there is less and less space available for wild milkweed to grow. Because monarch butterflies only lay eggs on milkweed and the caterpillars only eat milkweed (leaves, stems, buds and even the flowers), that means that less monarchs are surviving.

You will need:

Eggs or caterpillars: You may find caterpillars or can buy eggs. Monarch caterpillars are found only on milkweed plants. Look for chewed leaves and a bright yellow, white, and black striped caterpillar might be nearby. Collect the entire leaf and put into a container to bring to your habitat. Remove all other bugs, like aphids, before putting the leaf and caterpillar into habitat.

Habitat: A caterpillar habitat must have good air flow and be at least four inches deep so that the emerging butterfly has room to hang from its chrysalis and allow its wings to expand. You can buy plastic cages at a pet store. An old aquarium, a plastic shoe box, or large plastic container that you can see through works well, too. The container should be easy to open as you will clean it daily. Before use, the container must be washed with a mild solution of 5% bleach and water. Rinse well and dry.

Lid: The habitat needs a screen or net for air to flow but to keep the caterpillar in. The container needs a lid with ventilation so the caterpillars won't crawl away! Screen tops for 10 gallon aquariums are available at pet stores. For plastic shoe boxes, screen or netting can be used. Cut an opening in the lid and hot glue a piece of screen over the opening on the underside of the lid. For jars, netting with a rubber-band can also be used.

Paper Towels or bleach wipes: Use paper towels and bleach wipes to clean the habitat before adding the eggs or caterpillars.

Food. Caterpillars are very hungry! You will need enough milkweed leaves to last 10-14 days. (At least 20 leaves per caterpillar.) The leaves must be clean, dry, and free of pesticides. Put in habitat daily. You can put the plant cuttings in a small container with water (floral tube, plastic container with a hole in the lid) to hold plants upright. Old camera film canisters work very well as stem holders for rearing larvae, too. Cut an "X" across the canister lid, fill the canister with water, and push the plant stems through to the canister bottom. Simply change water when you add fresh stems. Or you can wrap the ends of the milkweed in moist paper towels and lay in the bottom of the habitat. Store extra washed milkweed leaves in a plastic bag in the refrigerator.

Location: Caterpillars do not do well in an air-conditioned environment or in full sun. The container can be kept on a covered porch or a sunroom.

How to raise the caterpillars into monarchs:

1. As the caterpillar grows, so does its appetite! Every morning and every night before bed check to be sure the caterpillar has enough food.
3. Clean your habitat daily. Caterpillar poop (frass) and drying leaves must be removed and fresh paper towels laid out every day. Be careful not to toss away the tiny caterpillars!
4. If your caterpillar wanders off and stops moving, do not disturb it. It is shedding its skin in what is called a molt. The caterpillar will shed its coat 5 times as it grows. It's like squeezing out of a tight coat. It will increase its size by 3000 times. Don't let your caterpillars get too crowded or your habitat dirty. Bacteria can form that will make your caterpillars sick.
5. After 10-14 days, your large caterpillar will stop eating and wander to the top of the habitat. First it will spin a silk knot, then tuck its feet in and hang head down. It looks like a "J." After 14 hours, it will begin to twist and turn in the "pupa dance" as it transforms into a pale green chrysalis.
6. About 2 weeks later, the chrysalis will look black. In fact, it is transparent. What you see are the butterfly's black wings! Get ready. This means that in about 24 hours your butterfly will emerge!
7. Monarchs usually emerge early in the morning--it happens fast so don't miss it! The butterfly will pop out and hang on the chrysalis shell for two hours while it pumps fluid into the wings. You can watch the wings grow. This is the most dangerous time for a butterfly. If it falls, or is touched, the wings will be damaged and it won't fly. The new butterfly will hang for several hours while the wings dry.
8. Three to four hours after the butterfly emerges it is safe to release to the garden. The butterfly doesn't eat until the day after it is born, so if it is raining, you can keep your butterfly in a flight cage for a day or two.
9. Release the butterfly in your garden where there are flowers. If you live in a city, you can release the butterfly in a park or a garden center.
10. Say goodbye and be proud of yourself and your butterfly!

Helping Monarchs:

Plant native milkweed plants.

Have a fundraiser for the Monarch Butterfly Fund. All of your money will go to help save monarch forests in Mexico. www.monarchbutterfund.org.

Ask people not to spray their garden plants with insecticides that can kill caterpillars and other insects.

Become a monarch scientist! You can learn about lots of fun monarch projects that you can join at the Monarch Joint Venture website at www.monarchnet.org.

Why Milkweed?

There are over 200 different types (species) of milkweed plants in the world with over 100 different types that are native to the United States. Monarch butterflies ONLY lay eggs on milkweed leaves so that the caterpillars will have a food source as soon as the eggs hatch. As the caterpillars eat, they absorb a special chemical from the milkweed. This chemical protects the caterpillars and the adult butterflies by making them taste bitter to would-be predators. In return, the adult butterflies pollinate the milkweed plants as they travel from milkweed to milkweed.

As land is cleared and developed, wild milkweed has less area to grow. In order to help monarchs, you can plant milkweed. But you should make sure to plant the type of milkweed that is from (native) to the area you live. Use the map below to find your state.

The milkweed maps on the following pages come from www.plants.usda.gov. If desired, print and color the maps to identify milkweed species that are native to your area. Use these maps to answer the following questions:

- Which type of milkweed species are native to your area? Those are the milkweed plants you should plant in your area.
- Which types of milkweeds are native to large areas of the United States?
- Which types of milkweeds are native to small areas?





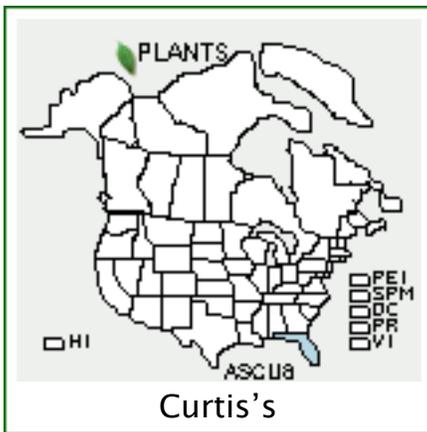
Bear Mountain



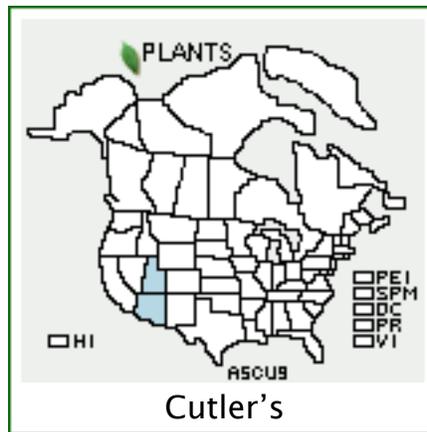
California



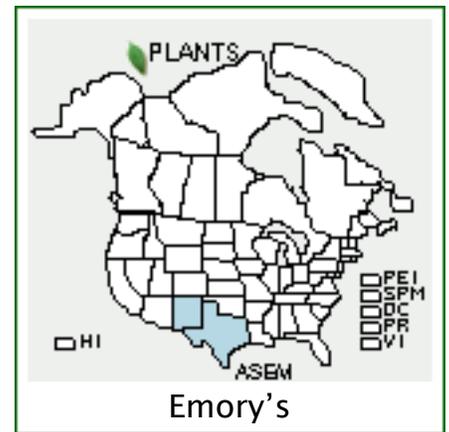
Carolina



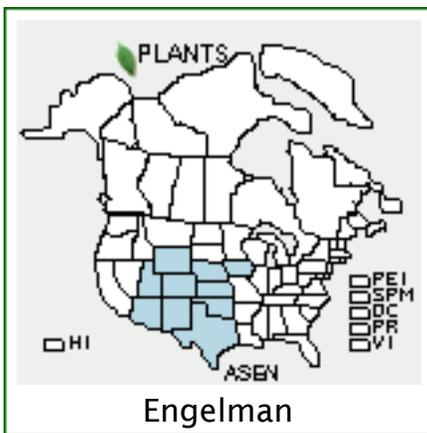
Curtis's



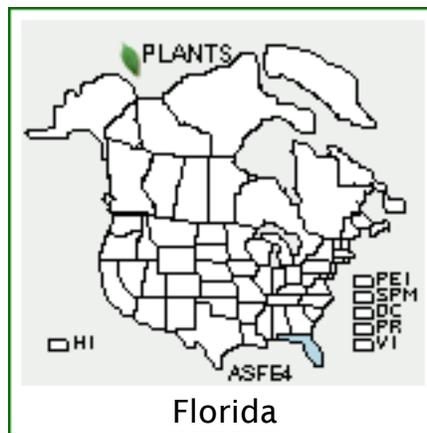
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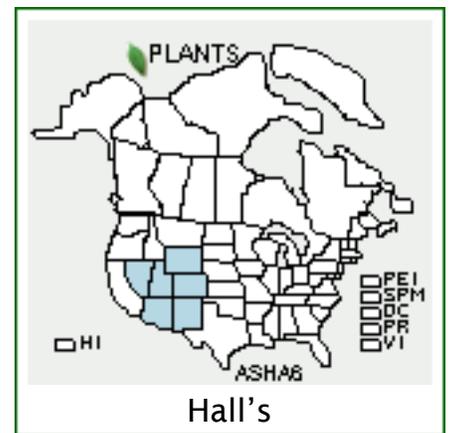
Emory's



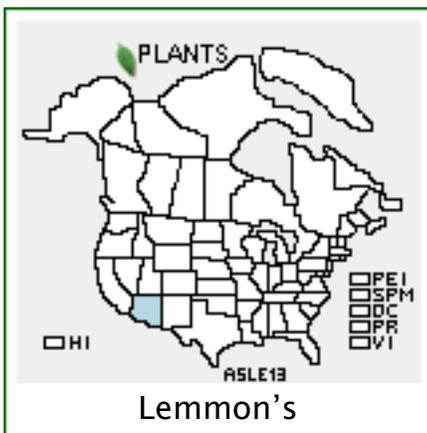
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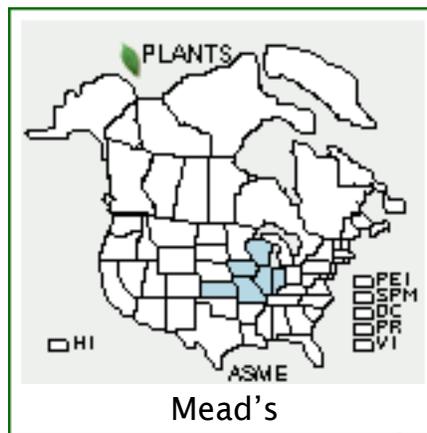
Florida



Hall's



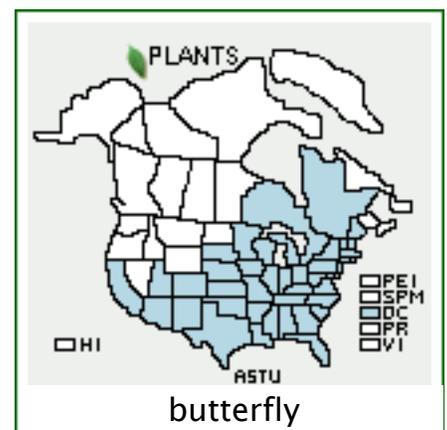
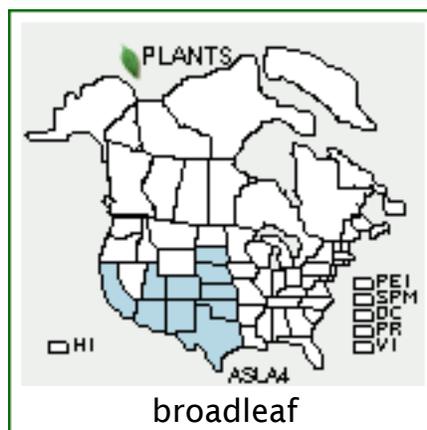
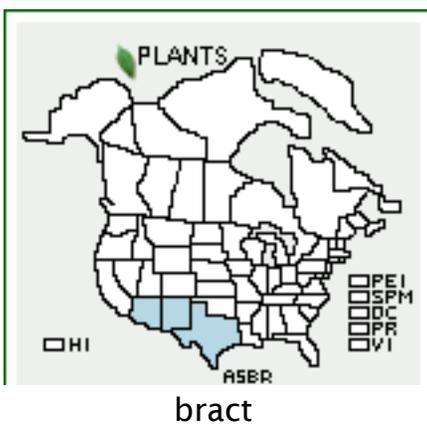
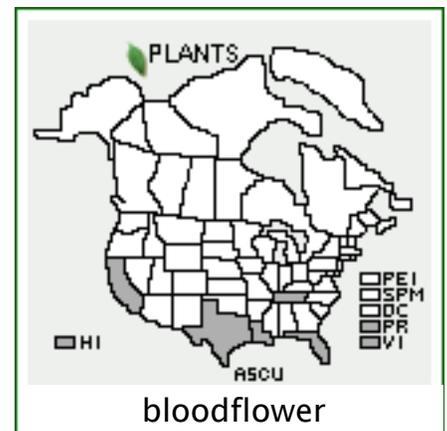
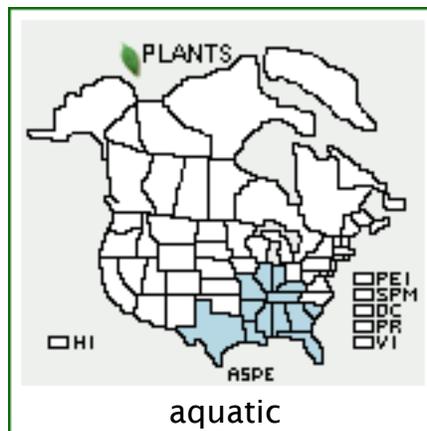
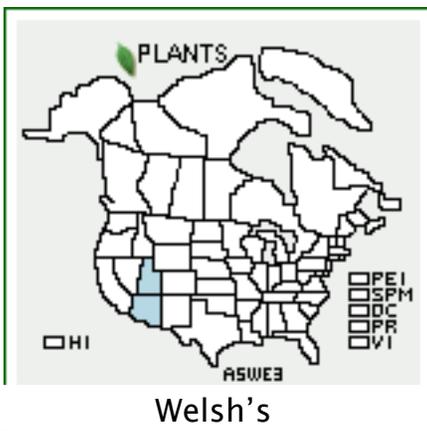
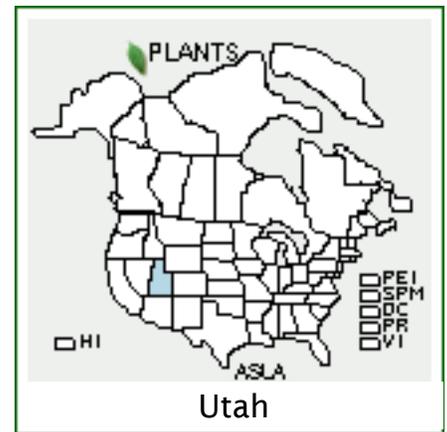
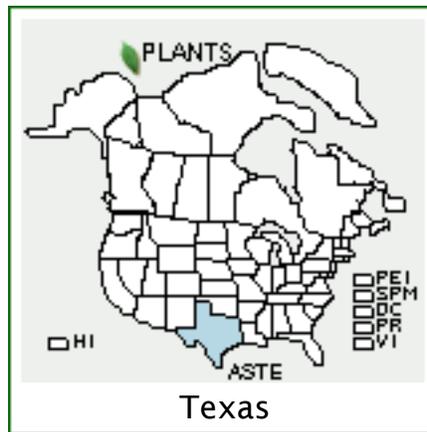
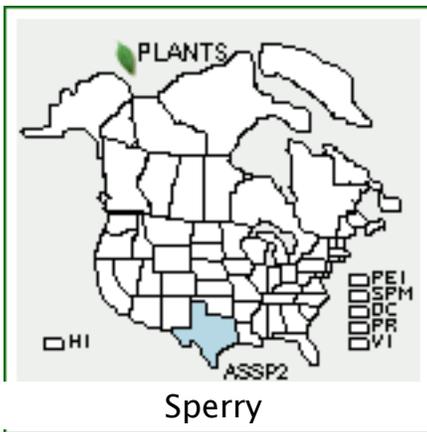
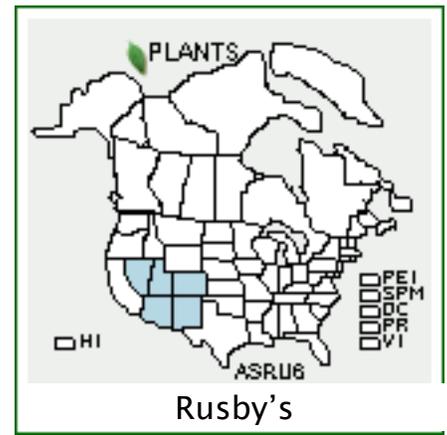
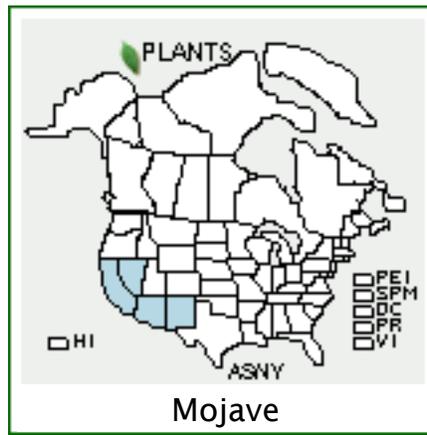
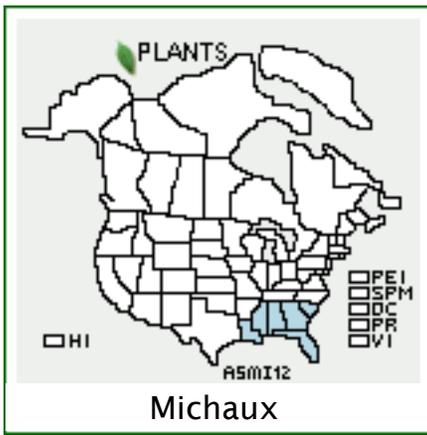
Lemmon's

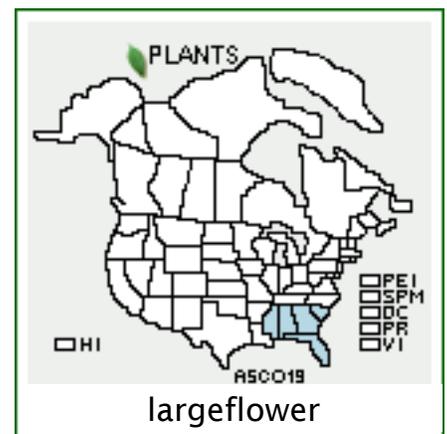
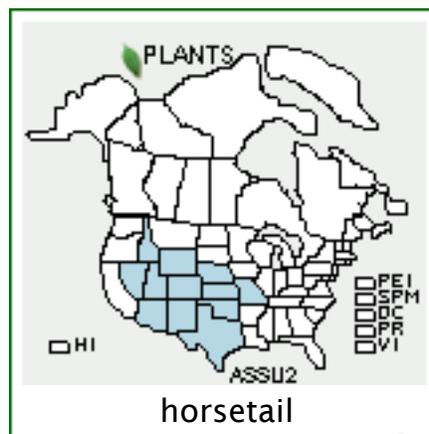
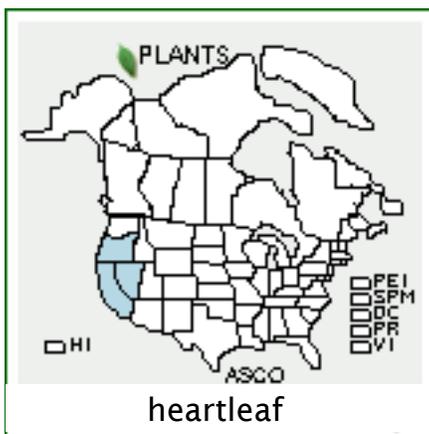
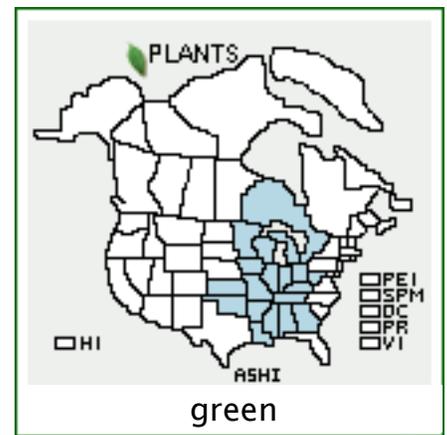
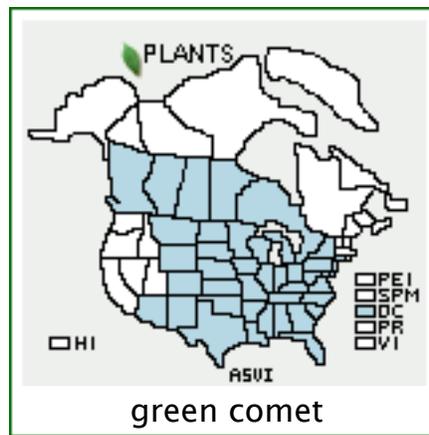
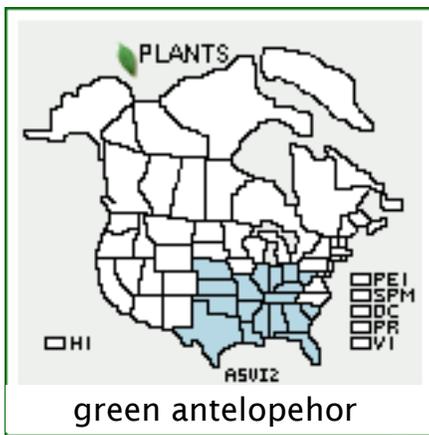
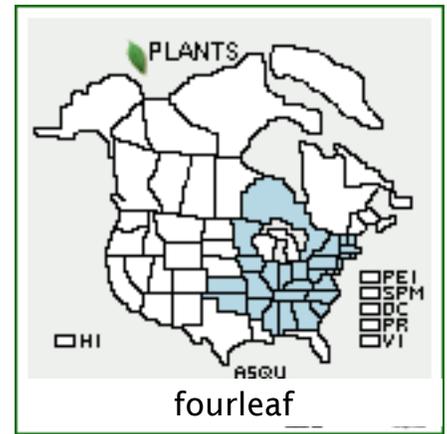
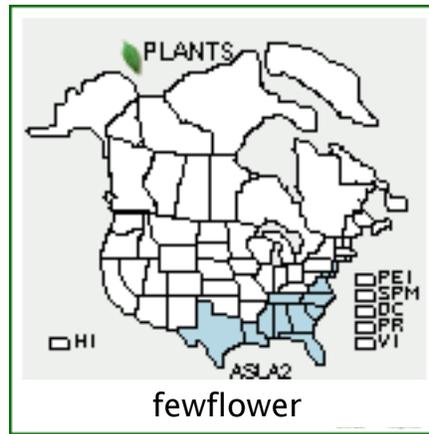
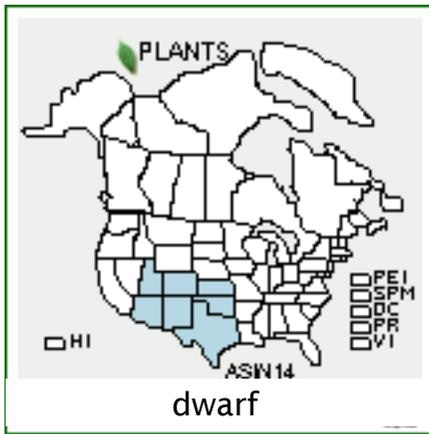
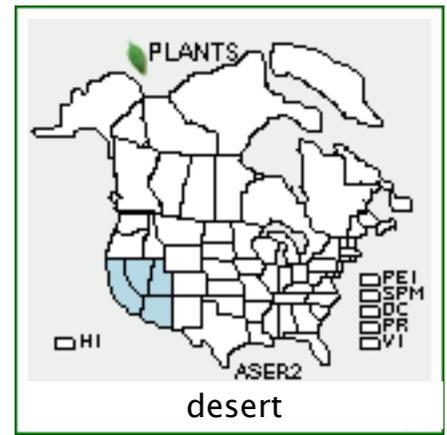
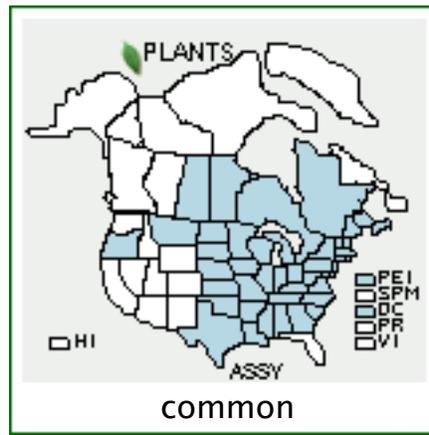
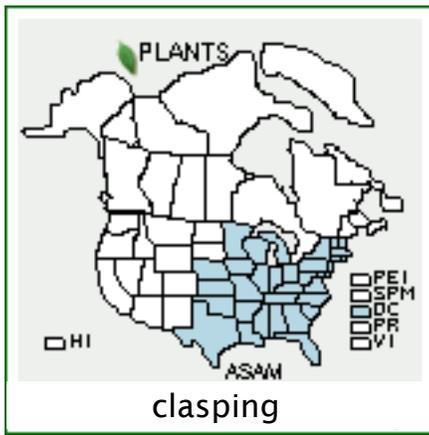


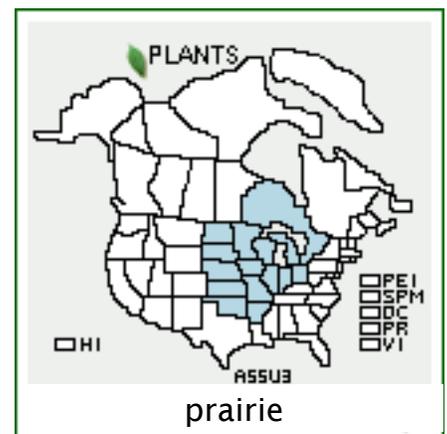
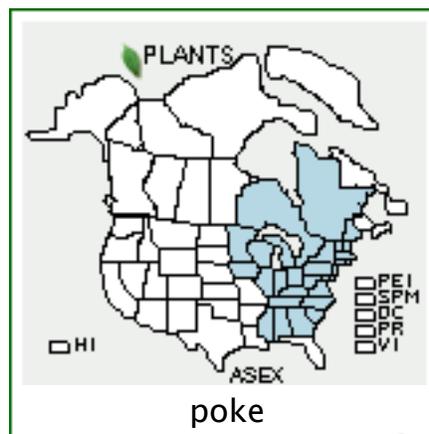
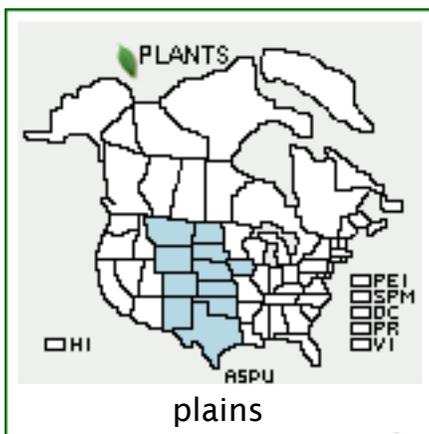
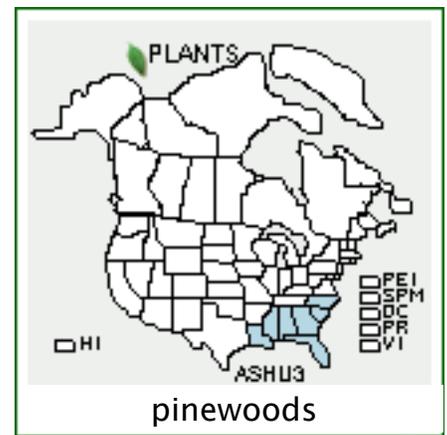
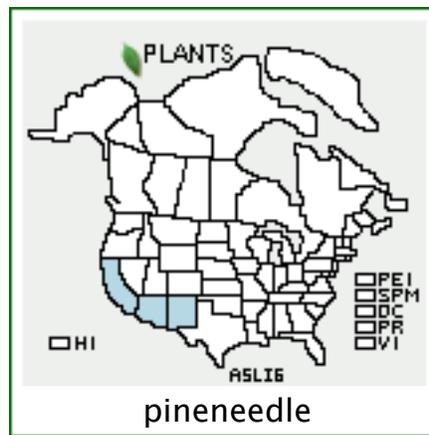
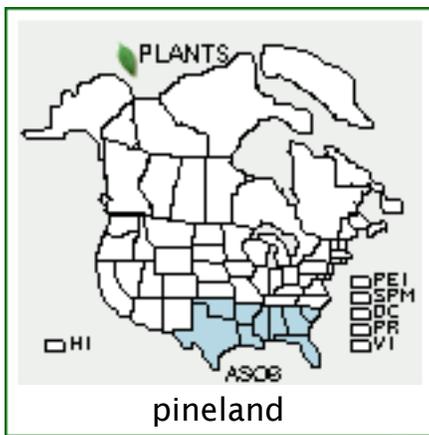
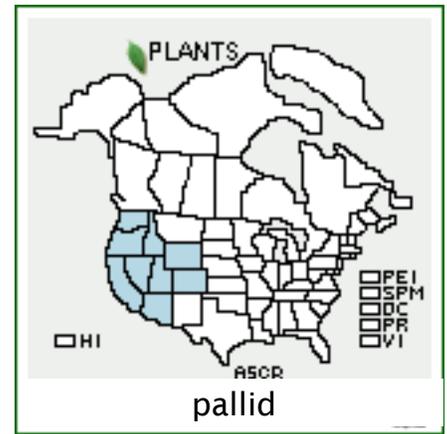
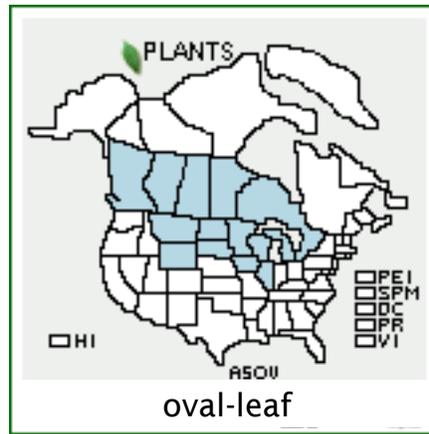
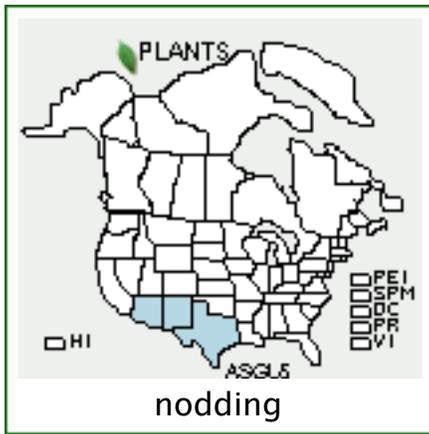
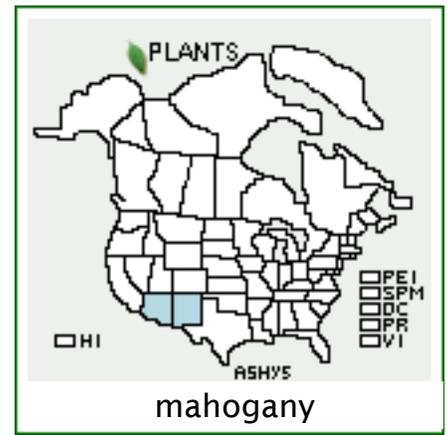
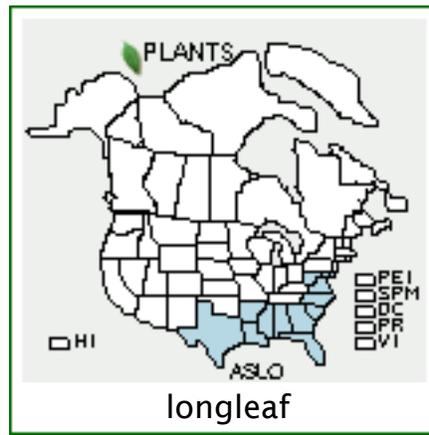
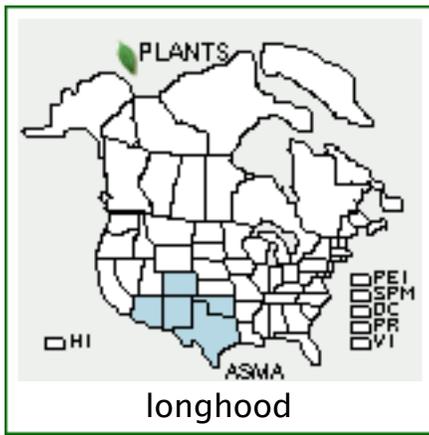
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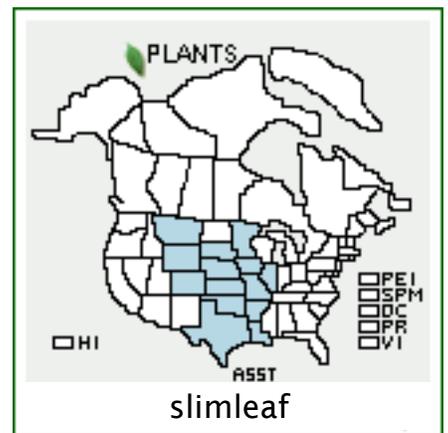
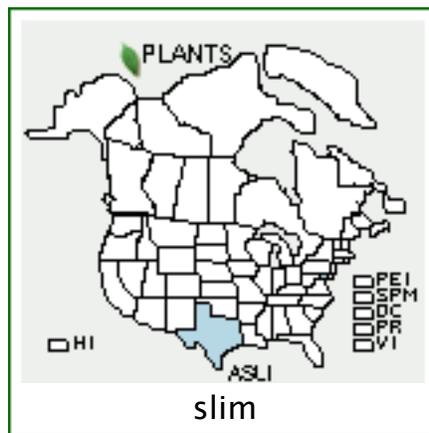
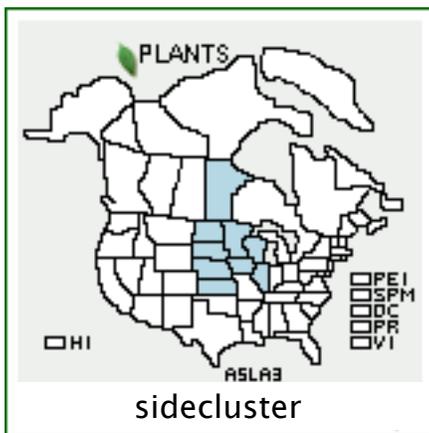
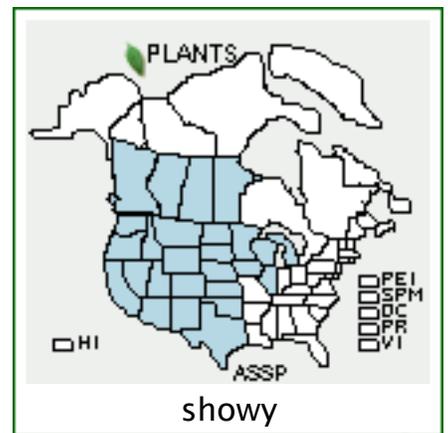
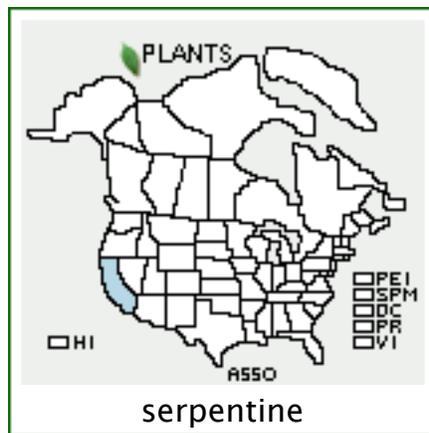
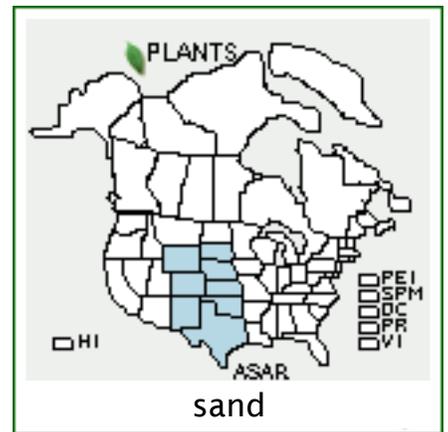
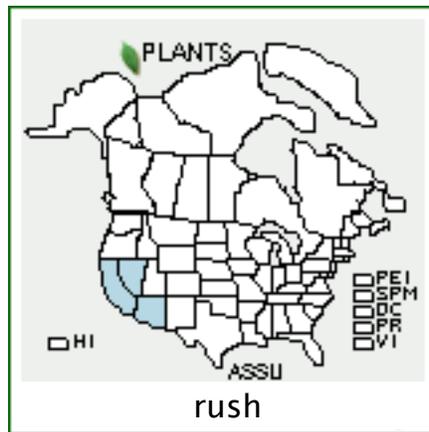
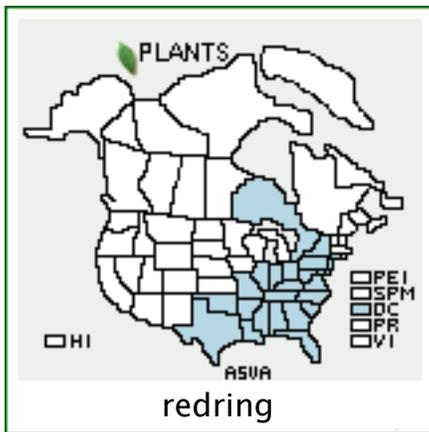
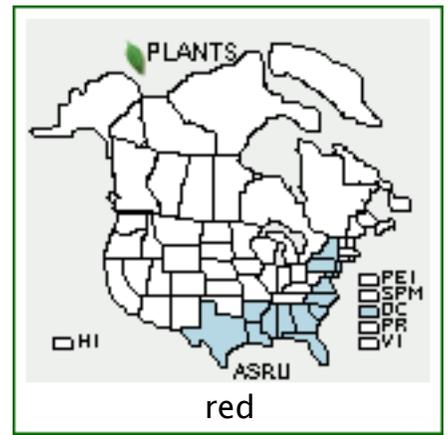
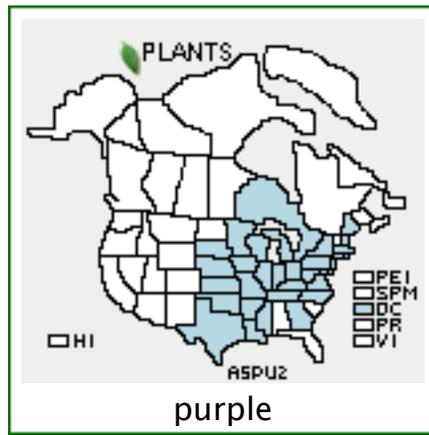
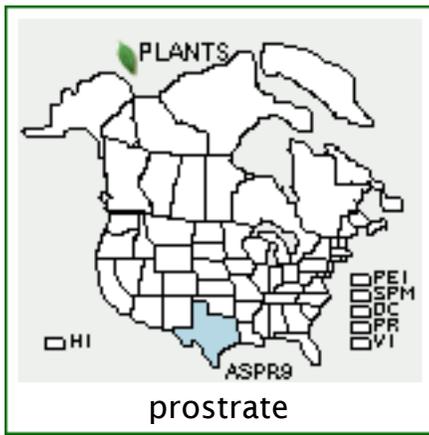


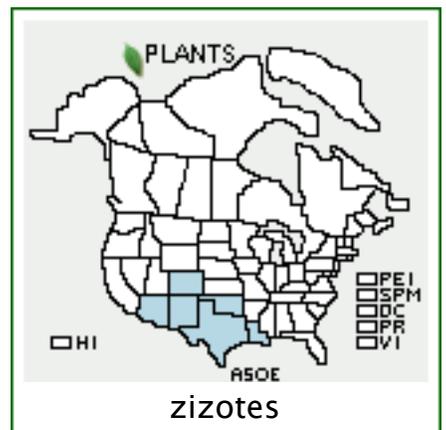
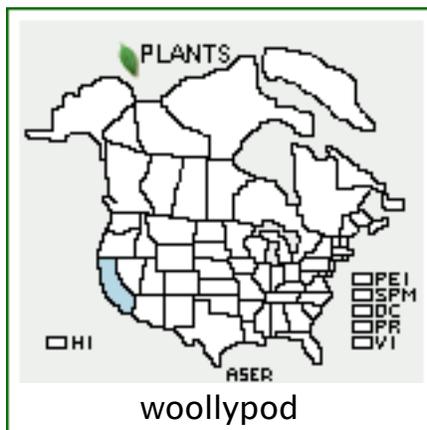
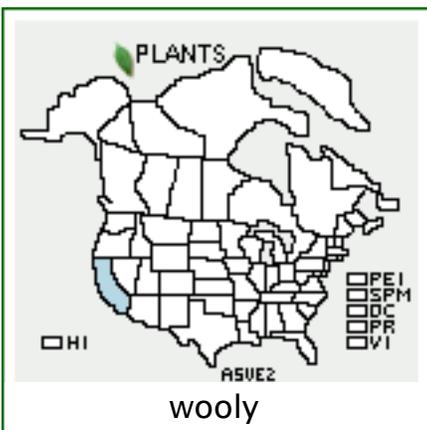
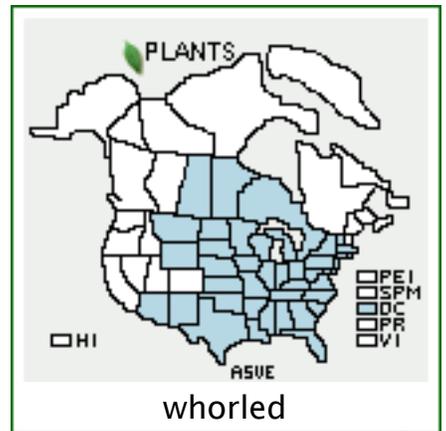
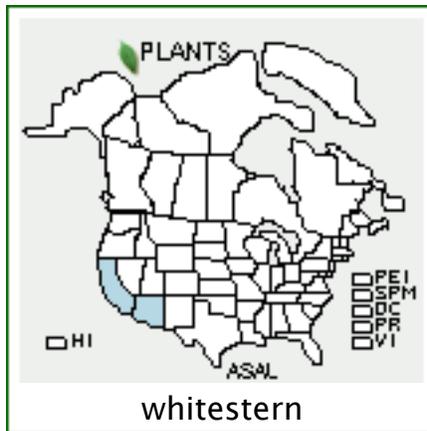
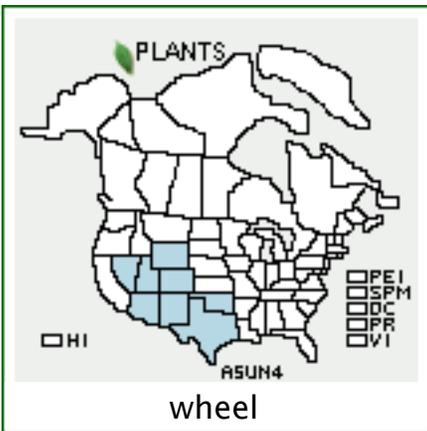
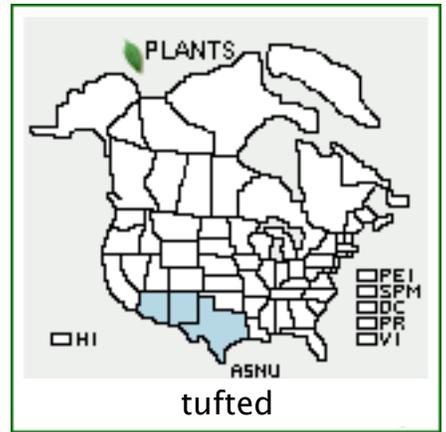
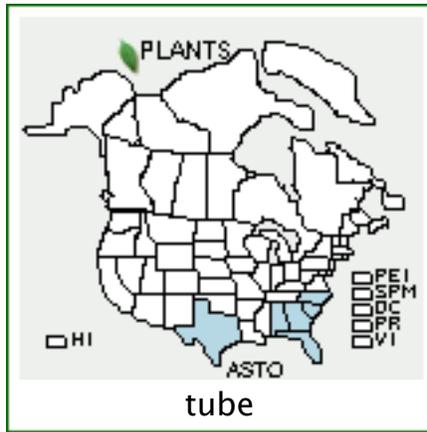
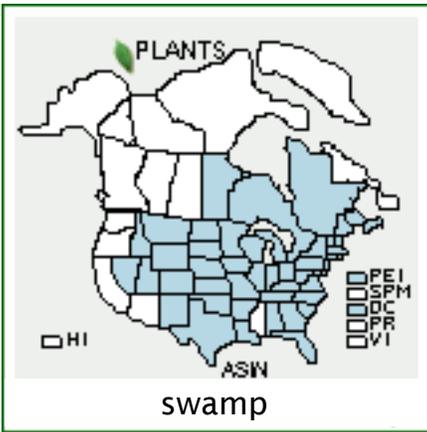
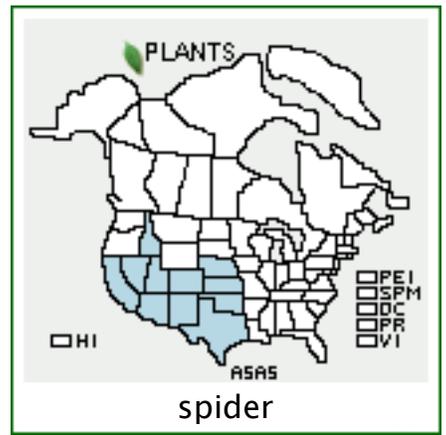
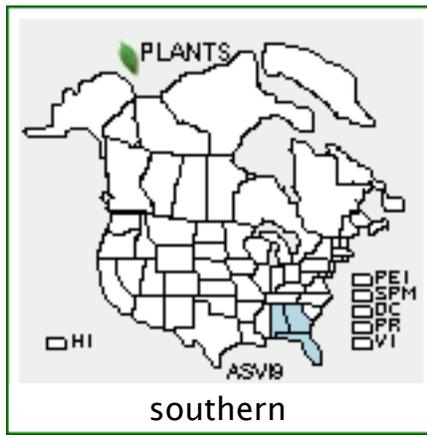
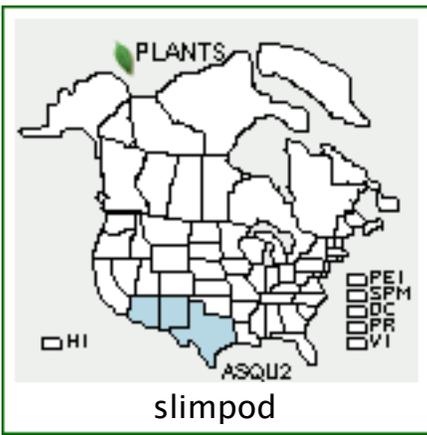
Mexican whorled











Appendix B—“What Children Know” Cards

Question:

My answer:

This information is correct!
This information is not correct; can you find the correct information?

Question:

My answer:

This information is correct!
This information is not correct; can you find the correct information?

Question:

My answer:

This information is correct!
This information is not correct; can you find the correct information?

Question:

My answer:

This information is correct!
This information is not correct; can you find the correct information?

Appendix C—Vocabulary Cards



butterfly



chrysalis



egg



frass



host plant



instar



larva



metamorphosis



migration



molt



nectar



proboscis

Appendix C—Book Science Standards

Next Generation Science Standards			
From Molecules to Organisms: Structures and Processes	Organization for Matter and Energy Flow in Organisms	K-LS1.C	All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow. (K-LS1-1)
Earth and Human Activity	Natural Resources	K-ESS3.A	Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do. (K-ESS3-1)
From Molecules to Organisms: Structures and Processes	Growth and Development of Organisms	1-LS1.B	Adult plants and animals can have young. In many kinds of animals, parents and the offspring themselves engage in behaviors that help the offspring to survive. (1-LS1-2)
Biological Evolution: Unity and Diversity	Biodiversity and Humans	2-LS4.D	There are many different kinds of living things in any area, and they exist in different places on land and in water. Classification (2-LS4-1)
From Molecules to Organisms: Structures and Processes	Growth and Development of Organisms	3-LS1.B	Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles. (3-LS1-1)