NATIVE PLANTS

Topic: Supporting Ecosystems

GRADE LEVEL

5th

STUDENT OUTCOMES

-Discover reasons why it is important to use native plants in landscapes.

-Identify several Midwest native plants and learn about the local wildlife that they support.

TIME FRAME

Year-round
45 minutes

LOCATION

Kemper Center for Home Gardening-Butterfly Meadow

KEY TERMS

Native
Invasive
Symbiotic relationship
Pollinator
Ecosystem
Biotic
Abiotic

MATERIALS NEEDED

For each small group:

- Leader sheet: "Native Plants"
- Native Plants picture card set
- Native Pollinators picture card set
- Pencils
- Colored pencils (optional)
- Clipboards (optional)

For each student:

- Student sheets: "Native Plants" Recording Data sheet

PRE-VISIT ACTIVITY

Share these 2 YouTube videos about native plants and pollinators with students. First, watch "Why Plant Native Trees? By The Right Green" (**https://www.youtube.com/watch?v=y2FizX24bYo**) and then watch "The Power of Pollinators: Nature on PBS" (**https://www.youtube.com/watch?v=eDxZojp9yNg**).

After watching the videos, have a whole class conversation about what are some reasons why it is important to grow native plants versus non-native plants. Brainstorm with your students what might be some challenges to convince people to grow native plants versus non-native plants and what might be ways that we could convince our community to plant native plants.

Students can then research different native plants that grow in the Midwest. Here are some good resources:

- "Nature's Best Hope (Young Readers' Edition): How You Can Save the World in Your Own Yard" by Doug Tallamy and Sarah Thomson
- Missouri Department of Conservation Native Plants for Your Landscape (https://mdc.mo.gov/trees-plants/native-plants-your-landscape)
- National Wildlife Federation Native Plants Finder (https://www.nwf.org/nativeplantfinder/plants)

BACKGROUND INFORMATION

Ecosystems are made up of relationships. In order for an ecosystem to stay strong and healthy, it needs the right combinations of **biotic** (living) and **abiotic** (non-living) things. Living things like plants, animals, and fungi as well as non-living things like nutrients, minerals, water, air, and sunlight are all part of ecosystems. Healthy ecosystems have formed over billions of years because of the vital and intricate relationships that living and non-living things share with one another.

For millions of years, **native** plants and animals have co-evolved together. They both adapted to survive better in their environments and to fit perfectly with one another forming **symbiotic relationships**, also known as mutually beneficial relationships. For generations, humans have been removing native plants in order to create farmland and build cities. This loss means that many of the native **pollinators** who rely on them are also suffering, many becoming endangered or going extinct.

We can support our local ecosystems by choosing to plant native plants instead of non-native or invasive plants. Native plants support hosts of native bees, butterflies, birds, and other pollinators. They can also support other native wildlife like mammals, reptiles, and amphibians.

Sometimes the hardest part is to change mindsets of people who are not accustomed to planting native plants. While native plant gardens are not yet common in most homes, more and more people are beginning to see the environmental value of them and choose native plants for their yards. We can help show people that there is tremendous value in choosing to grow a native plant garden and how we can make a positive difference by choosing native plants instead of non-native plants when we add to our landscapes.

POST-VISIT ACTIVITY

Encourage students to research native plants from their local area. Give students time to learn about both the native plants and their native pollinators and the relationships that they have with one another. Ask students to record in a notebook some specific native plants that they would like to have planted in a garden along with the native pollinators and other wildlife that each plant supports. Finally, provide the students with graph paper or blank paper to design their own native plant garden. Encourage them to think of other elements, like rocks or water in a pond, that could be added to their gardens to create an inviting habitat for living things.

NATIVE PLANTS

LEADER SHEET

1. Kemper Center for Home Gardening-Butterfly Garden

Have the students gather in the Kemper Center for Home Gardening area by the Butterfly Garden. Make sure that students have their entire native plant picture sets and their pollinator picture sets.

Today, we are going to explore the native plant garden at the Missouri Botanical Garden. You will go on a scavenger hunt here in the Butterfly Garden to look for the native plants on your cards and then see which pollinators rely on these plants for survival.

1. **Seek**
   - Look at the picture and description of each native plant species on each card.
2. **Find**
   - Look amongst all the native plants inside the area of the Butterfly Garden to find the native plants on your cards.
3. **Match**
   - Which pollinator(s) visit this native plant and rely on it for survival?
   - Use the matching pollinator cards to find out!
4. **Record**
   - When you correctly match the pollinator card with its native plant card, be sure to record this information on your recording sheet and draw a picture of the native plant.
5. **Observe**
   - After recording the information, think about what kind of native plant garden you want to design.
   - Are there other features besides the plants that make this garden appealing? (Fountain, pond, paths, boulders, gazebo, etc.)
6. **Design**
   - Begin designing your own native plant garden. Be sure to label the names of the native plants, and list the pollinators that they will be helping.
7. **Share**
   - Allow students time to share their designs with each other in their small group.

Possible questions to ask students:

- Which native plants did you use in your garden design?
- Do you have a favorite native plant? If so, why is it your favorite?
- Did you decide to incorporate any other features (paths, bridges, pond, fountain, etc.) in your native plant garden?

2. Conclusion

We have seen many native plants today and learned about the native pollinators that they support. Let's keep safe and hang on to our garden designs so that way we can continue to use them back in the classroom with our teacher.

NATIVE PLANTS

LEADER SHEET

Key Terms

Native: a plant or animal of indigenous origin; they are originally from that place and have developed important beneficial ecological relationships with other living things from that environment.

Invasive: a plant or animal that is not originally from an environment and poses a threat to the living things that are originally from that place; plants or animals that tend to spread prolifically and undesirably or harmfully.

Symbiotic relationship: a long-term relationship that is mutually beneficial for two or more organisms.

Pollinator: an insect, hummingbird, or other agent that brings pollen to a plant and allows fertilization and pollination to occur.

Ecosystem: a community of living organisms that live and interact with each other in a specific environment.

Biotic: living things (plants, animals, fungi).

Abiotic: non-living things (rocks, water, sunlight).

Teacher's Notes

NATIVE PLANTS

STUDENT SHEET: RECORDING DATA

Answer the questions below using the native plant and native pollinator picture card sets.

1. What pollinator matches with the native plant, **Aster (*Symphyotrichum sp.)?***

2. What pollinator matches with the native plant, **Closed Gentian (*Gentiana sp.)****?*

Draw a picture of the native plants listed below.

1. Aster (*Symphyotrichum sp.)*

2. Closed Gentian (*Gentian asp.)*

NATIVE PLANTS

STUDENT SHEET: RECORDING DATA

Answer the questions below using the native plant and native pollinator picture card sets.	**Draw a picture** of the native plants listed below.
3. What pollinator matches with the native plant, **Blazing Star (*Liatris sp.)***?	3. Blazing Star (*Liatris sp.)*
4. What pollinator matches with the native plant, **Rattlesnake Master (*Eryngium sp.)***?	4. Rattlesnake Master (*Eryngium sp.)*

NATIVE PLANTS

STUDENT SHEET: RECORDING DATA

Answer the questions below using the native plant and native pollinator picture card sets.	**Draw a picture** of the native plants listed below.
5. What pollinator matches with the native plant, **Goldenrod (*Solidago sp.)*** *?*	5. Goldenrod (*Solidago sp.)*
6. What pollinator might match with the native plant, **Purple Coneflower (*Echinacea sp.)*** *?*	6. Purple Coneflower (*Echinacea sp.)*

NATIVE PLANTS

STUDENT SHEET: RECORDING DATA

Answer the questions below using the native plant and native pollinator picture card sets.	**Draw a picture** of the native plants listed below.
7. What pollinator matches with the native plant, **Bee Balm (*Monarda sp.)***?	7. Bee Balm (*Monarda sp.)*
8. What pollinator matches with the native plant, **Butterfly Milkweed (*Asclepias sp.)***?	8. Butterfly Milkweed (*Asclepias sp.)*

NATIVE POLLINATOR CARDS:

Students: Cut out each card below and put them all in an envelope.
Teachers: Give each student their envelope the day of the field trip to use in their small group.

Crescent Butterfly

Likes a wide, flat surface for landing.

To save energy, prefers to remain on one flower for a while to feed.

Attracted to red, yellow, pink, and purple flowers.

Bumble Bee

Physically strong, able to push their way into tightly closed flowers.

Hairy bodies that pick up lots of pollen.

Attracted to blue and purple flowers.

Monarch Butterfly

Likes red, pink and purple flowers.

Has a long tongue for tubular flowers.

Needs nectar sources in late summer when preparing to migrate south.

Paper Wasp

Likes white flowers.

Has a small, short tongue.

Relies on long lasting flowers that carry lots of nectar.

Mining Bee

Short, tiny tongues for sipping nectar.

Hairy bodies that collect lots of pollen.

Can visit many flowers in a single trip.

Swallowtail Butterfly

Likes a wide, flat surface for landing.

Attracted to red, yellow, pink, and purple flowers.

One of our larger native butterflies.

Ruby Throated Hummingbird

Long, narrow tongue to sip nectar.

Attracted to red, pink, and orange.

Constantly seeking nectar sources.

Milkweed Leaf Beetle

Seek out both nectar from flowers and

eat the leaves of milkweed plants.

Females lay their eggs on the underside of milkweed leaves.

NATIVE PLANT CARDS

Students: Cut out each card below and put them all in an envelope.
Teachers: Give each student their envelope the day of the field trip to use in their small group.

Aster (*Symphyotrichum sp.)*

Petals form a flat landing pad.

Each flower has multiple florets with nectar and pollen.

Yellow + purple attract butterflies.

Closed Gentian (*Gentiana sp.)*

Tightly closed flowers.

Produces lots of pollen.

Flowers are usually blue or purple.

Blazing Star (*Liatris sp.)*

Flowers are purple and sometimes pink.

Flowers are narrow and tubular.

Flowers bloom in late summer.

Rattlesnake Master (*Eryngium sp.)*

Flowers are white.

Flower heads are short and small.

Flowers last a long time and contain lots of nectar.

Goldenrod (*Solidago sp.)*

Small, shallow flower heads.

Produces lots of pollen.

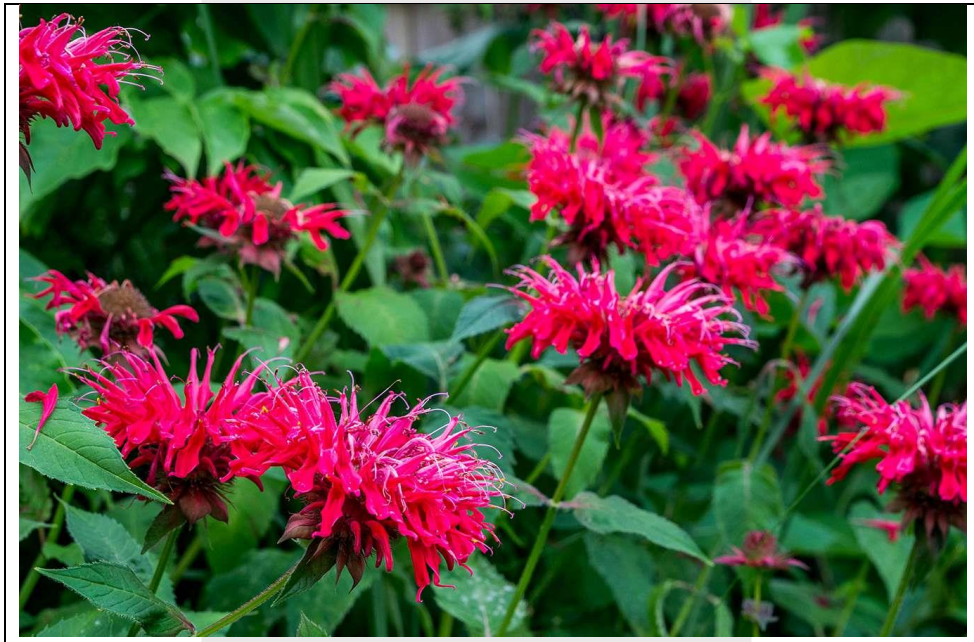
Single flowers, not clumps.

Purple Coneflower (*Echinacea sp.)*

Petals form a flat landing pad.

Often pink and purple in color.

Large flower heads provide space for larger pollinators to sip nectar.



Bee Balm (*Monarda sp*.)

Long, narrow, tubular flowers.

Flowers can be red, pink, or purple.

Old flowers frequently get replaced by new flowers with nectar.

Butterfly Milkweed (*Asclepias sp.)*

Bright orange, red, and yellow in color.

Contains a large amount of pollen and nectar for many insects.

An important host plant for many native pollinators.