



Chapter 3 – Open Spaces Along the Way - *Seaway Trail Wildguide*

Lesson #1 Fields and The Eastern Bluebird

Grade 4 – 6

Subject: Science

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Anticipatory Set:

Ask the students what makes a field different from a forest? Ask the students what type birds and animals you might find in fields.

NYS Learning Standards:

Mathematics, Science, and Technology Standard 4: Students will understand and apply scientific concepts, principles, and theories pertaining to the physical setting and living environment and recognize the historical development of ideas in science.

Objectives:

To have the students learn about the different species of birds you can find in the fields in New York. To teach the students how important the Eastern Blue Bird is to New York farmers.

Purpose:

To have students aware of the environmental importance the Eastern Blue Bird is to the agriculture of New York.

Summary: Field Succession and the Eastern Bluebird

If a field is left unattended or abandoned for over a year or more, the field will begin the process of developing into a forest. The process takes over 200 years before a field becomes a climax forest. In the first year the field is made up of mostly annual “weeds”, plants that grow from seed each year. Some annuals are pigweed, ragweed, wild mustard and horseweed. In the second year biennials and perennial weeds and grasses start growing in the field. Some examples are wild carrot, burdock, milkweed, Canada goldenrod, and chicory. In the first two years these weeds and grasses need a lot of light to grow.

In the 3rd year to the 18th year woody plants like pines start growing as tree saplings and shrubs, often in bunches. These species need a lot of light and cannot survive in the shade. In the 19th year to the 30th year the pine saplings continue to grow and become a young pine forest. As the pine trees grow, the shrubs are getting cut off from any direct sun light causing the shrubs to start dying out in the fields. In the 30th year to the 70th year the pine trees have become a mature forest and young hardwoods, which can tolerate shade, start to increase in the understory. In the 70th year to the 100th year the pine trees are taken over by the hard woods. By the 100th year the hardwoods develop into a climax forest that continues on for a number of years.

Eastern Bluebird - New York State Bird (Also for the state of Missouri)

Bluebirds are often seen near open fields in the spring, summer and early fall. The male has blue back with reddish-brown breast and a white belly. The female has less



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One of America's Byways

brilliant colors. The young birds will have speckled breast and duller colors than either parent. The Eastern bluebird typically builds their nest near open fields or an orchard. The nests are located in cavities of a hollow branch or can be found in an abandoned woodpecker hole. They will also build a nest in a birdhouse. The female will lay 3 to 7 light blue eggs. The eggs incubate for 12 to 14 days by the female. When the first set of young birds leave the nest, the male takes charge of feeding them. The female prepares the nest for a second and sometimes a third brood.

The Eastern Bluebird mostly eats insects, but will also consume wild fruits like wild grapes, blackberries, staghorn sumac, and mountain ash. The bird will sit on an exposed branch or fence post until it sees an insect in the grass below. The bird will swoop down and get the insect then it will return back to its look out perch. The bluebird migrates southward where it spends the winter from Ohio Valley eastward and southward to the Gulf of Mexico.

The Eastern Bluebird's population has decreased by as much as 90% in this century. The reason is from the result of destruction of their habitat and competition for nesting sites with the English Sparrows and the European Starlings. The English Sparrows and the European Starlings are not native species of North America. Both species were introduced to America from Europe. They are year round residents in large flocks, and can be aggressive nest builders. They have displaced the Eastern Bluebirds and the Swallows. The European Starling was introduced in New York City in 1890 and has spread throughout the United States and southern Canada. They have become a pest in many areas. They eat insects, grains, and fruits such as cherries and strawberries. The English sparrow was introduced into Brooklyn in 1850 and has also spread throughout the United States and southern Canada. The Sparrow habitats are near humans where they feed off of grains and waste humans produce. They especially like farms with a lot of horse manure that provides them with a lot of undigested seeds.

One difference between the Eastern bluebird and the other two birds is that farmers value the bluebird. The bluebird consumes many insects that are a problem for the farmer. The bluebird seldom eats the plant produce that is grown by farmers. The European starling and the English sparrow are problems for farmers and the eastern bluebird themselves. They take over nesting areas and never leave for winter.

Other birds found in the fields in New York are the red-tailed hawk and the ring-necked pheasant. Animals you may find are the eastern cottontail rabbit, the red or gray foxes and the woodchuck.

Plants – Non-native plants

About 20% of the seed plants in Northeastern United States and adjacent Canada are not native species. Some of these plants were deliberately brought to North America as ornamentals or for herb gardens. Most were introduced accidentally through commerce and world travel. Many have been here so long that they appear to be natural residents of the native ecosystems and are said to be naturalized. Some of the colorful flower species are:

1. Buttercup
2. Chicory
3. Creeping bellflower
4. Brown Knapweed



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5. Musk mallow
6. Wild carrot
7. Bouncing bet
8. Ox-eye daisy.

Some plants species from Europe and Asia that do not have showy flowers and not considered obnoxious plants are:

1. White and yellow sweet clover
2. Teasel
3. Plantain
4. Lamb's quarters
5. Mullein
6. Heal-all
7. Ground ivy

There are other species that are not friendly and are considered noxious weeds. They are:

1. Giant hogweed
2. Japanese knotweed
3. Phragmites - reed
4. Purple loosestrife

The problem with these weeds is they spread aggressively and are difficult to eradicate. They do not contribute to the native ecosystem's food chain. The weeds do not provide any habitat for the ecosystem. The weeds also displace native species from their habitat. The Giant hogweed causes an allergic reaction in some people. A person who has contact with the juice of this plant followed by direct sunlight on the skin will produce painful blisters and some discoloration of the skin.

Materials:

1. Large white sheet of paper.

Teach:

1. Teach the lesson on what makes a field turn into a forest and the types of species that live in the fields.
2. Have the students take the sheet of paper and fold it in three parts. Have the students mark first column Eastern blue bird. Mark the second column English sparrow and the third column European Starling.
3. As you teach the lesson, have the students record information on each bird in his or her column.
4. After the material has been covered have the class discuss the effect each bird has on the farmer.
5. Discuss with the students on what can happen when people introduce non-native specie to a new area. Have the students discuss what they think they could do to help the Eastern blue bird.
6. Give the students an assignment to write a letter to a government official like the New York State Conservation Department and have the letter explain what ideas the class came up with to help the Eastern blue bird. An example would



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One of America's Byways

be to see if the class could build birdhouses and create a blue bird nesting in a local area. The students may have to ask for permission from landowners about setting up the birdhouses.

Guided Practice:

The teacher will help the students record the information about each bird on the sheet of paper.

Closure:

How long does it take for a field to turn into a forest? What could happen if non-native specie is introduced to a new area? Why is the Eastern bluebird so important to farmers?

Independent Practice:

To have the students complete the writing assignment to the Department of Conservation Office.

Extended Studies:

1. Have the students make birdhouses for the Eastern Bluebird. Have the students write letters to the landowners asking for permission to place birdhouses on their property.
2. Have the students do research on other birds and animals whose habitat includes fields. Have the report state if the specie is a native of the area.
3. Have the students do research on the different types of plants found in a field. Have the students write a report about the plant they are assigned to research. Have the students state whether the plant is a native of America or another country.

Web sites:

1. <http://natl.ifas.ufl.edu/oldfgall.html>
The site has photos of the different levels of succession in a field in Florida.
2. <http://www.ext.vt.edu/resources/4h/virtualforest/Old%20Field%20Succession.htm>
4-H Virtual Forest - This is a great site for students to visit.
3. http://www.serc.si.edu/Ed_Webpage/pages/ccc_forest.htm
This is a lesson plan for teaching from field to forest where the students create a board game arranging succession in order.
4. <http://www.dukeforest.duke.edu/succession.htm>
Plant Succession: How a Field Becomes a Forest – This site is great to use in explaining the levels of succession in a field.
5. <http://www.nearctica.com/biomes/edf/success.htm>



Learning on the Great Lakes Seaway Trail

One of America's Byways

The site has photos to help explain how an eastern deciduous forest is developed. This site also would be good to use in the forest section in chapter 2.

Eastern Bluebird and other animals

1. <http://www.ces.ncsu.edu/nreos/forest/steward/www5.html>
This site gives a lot of information on this site about animals found in the forest, fields and wetlands.
2. <http://www.camocdonald.com/birding/usnewyork.htm>
This site gives you a list of places to check out birds in New York. The site gives you a number of links to check out. If you click on the link "Bluebird conservation on Long Island" you end up on another site. On the second site click on animals and you find information on the Eastern Bluebird and the Woodpecker.
3. <http://www.dec.state.ny.us/index.html>
This is the DEC site that offers a number of information on the site. You can get a list of endangered species in the United States and in New York. You can learn about the different projects the state is doing to help protect the animals and the environment.
4. <http://www.dec.state.ny.us/website/dpae/cons/bluebird.html>
This site is great if the class is planning on building birdhouses for the Bluebird. It has blueprints the class can print out and use.
5. <http://www.50states.com/bird/bluebird.htm>
This is a great site for students to go and learn a lot about the bluebird.

Books for children to read:

1. "A Forest's Life: From Meadow to Mature Woodland, Robert and Cathy Mania, Watts, 1997, ISBN 0531203190, (ages 9-12)
2. "The Hidden Life of the Meadow", David M. Schwartz, Crown Publishers, NY NY, 1988, ISBN 0517570599