

What is the Passenger Pigeon?

Objectives:

Students will be able to:

- Construct an explanation for how human choices significantly altered the life history of the passenger pigeon.
- Obtain and synthesize information about the sizes of passenger pigeon flocks, and connect this information to personal experiences.

Materials List:

- Image of passenger pigeon (*Ectopistes migratorius*), available at: <http://passengerpigeon.org/elementary.html>
- Image of a rock pigeon (*Columba livia*), available at: <http://passengerpigeon.org/elementary.html>
- “Life on the Move” downloadable exhibit panel, printed or projected where students can see it, available at: http://passengerpigeon.org/life_on_move.pdf
- Excerpt (0:00 – 1:47) of “Stewart Brand: The Dawn of De-extinction. Are You Ready?” Available at: http://www.ted.com/talks/stewart_brand_the_dawn_of_de_extinction_are_you_ready.html
 - Note: The selected excerpt (0:00 – 1:47) is about the extinction of the passenger pigeon. The remainder of the video (1:47 – 18:24) covers complex topics beyond the scope of this lesson. It is not recommended that students watch the entire video at this point. Debates about de-extinction of the passenger pigeon could be quite valuable in the classroom but are probably best left until *after* students have some background knowledge about the passenger pigeon.
- Attached excerpts from *A Feathered River Across the Sky: The Passenger Pigeon’s Flight to Extinction* by Joel Greenberg.
 - Note: Two versions of the excerpts are available. The text in the first version is excerpted verbatim from Greenberg’s text, though the excerpt is not continuous. (Ellipses are not shown in the student text.) The second version is modified to be appropriate for a lower reading level. Both versions of the text support the same main idea: Passenger pigeon flocks were enormous, with birds numbering in the billions.

Procedure:

1. Post or project images of a rock pigeon (*Columba livia*) and a passenger pigeon (*Ectopistes migratorius*) where all students can see them. Ask students if they recognize the birds and know their names. Students will likely recognize that the birds, at least the rock pigeon, are “pigeons.”
2. Point to the rock pigeon, and ask students if they have ever seen one of these birds. Give a few students an opportunity to share where/when they have seen pigeons up close. Tell students that this pigeon is called a “rock pigeon.”
3. Point to the passenger pigeon, and ask students if they have ever seen one of these birds. (Tell students that it is called a “passenger pigeon.”) Tell students that no one in the class (including you!) has ever seen one of these birds alive!



Rock Pigeon



Passenger Pigeon



4. Post or project the “Life on the Move” exhibit panel, and draw students’ attention to the image on the lower left of the panel. The image contains four study skins (animals that have been taxidermied in uniform position for use in scientific collections) of different pigeon species. Discuss that the passenger pigeon and the rock pigeon are *not* the same pigeon species. (See text to the right of the photo: “There are over 300 different species of pigeons and doves...”)
5. Ask if anyone knows a person who is 100 years old or older. Explain that only people who are 100 years old may have ever seen a living passenger pigeon, because the last passenger pigeon died almost 100 years ago, in 1914. If students are not already familiar with the term, discuss the term “extinct,” and explain that the passenger pigeon is an extinct animal.
6. Have students share what they know about the reasons why something might become extinct.
7. To learn more about the passenger pigeon extinction, students will watch a short video providing a brief overview of the passenger pigeon’s extinction. Tell students that when they are watching the video, they should focus on the following questions:
 - Do scientists know anything about the *last* passenger pigeon?
 - Why did the passenger pigeon become extinct?
 Play the excerpt (0:00 – 1:47) from the Stewart Brand video listed in the Materials List.
8. After students have watched the video excerpt, discuss what they learned about the passenger pigeon and its extinction. (See questions listed in Step 7.) If not already mentioned, ask students if they recall the year that Martha (the last living passenger pigeon) died. (1914) Tell students that some people are calling the current year, 2014, The Year of the Passenger Pigeon. What is significant about this year in relation to Martha’s death? (It is the *centenary* (100 year marking) of the passenger pigeon’s extinction.)
9. Ask students to share their ideas about why people would want to mark the centenary of the passenger pigeon extinction. What are some benefits of calling attention to this event that occurred a century ago?
10. Discuss one of the most important messages of the passenger pigeon story: Something that we take for granted can quickly become something that we have lost. Explain that one of the reasons why the passenger pigeon was taken for granted was that there were *billions* of the birds in the United States, and it was difficult to conceive of such a numerous population going extinct. Since it’s no longer possible to witness these giant flocks in person, scientists and historians depend on the accounts of people who were alive to see the flocks.
11. Pass out an excerpt from *A Feathered River Across the Sky: The Passenger Pigeon’s Flight to Extinction* by Joel Greenberg (attached at the end of the lesson plan) to each student or pair of students. Give students time to read the excerpt.
12. Discuss the excerpt. Possible discussion questions include:
 - What did Major W. Ross King see that was quite amazing?
 - What are some reasons why scientists can’t determine exactly how many passenger pigeons flew over King? (In addition to the uncertainty of the estimates used (as indicated in the reading), it is also exceptionally difficult to accurately count the *exact* number of animals in the wild.)

As an analogy, tell students that thinking of a passenger pigeon and a rock pigeon as the same animal would be like thinking of a house cat and a tiger as the same animal!



- What would it have been like to be King, standing under a flock of birds that continued for *fourteen hours*? What would you have been thinking about? What would you have felt?
 - Does King's story give you a better understanding of why people took passenger pigeons for granted? How so?
13. Discuss that, as mentioned before, one of the greatest lessons to be learned from the passenger pigeon extinction is that things taken for granted can disappear. Have students share their ideas about how "taking things for granted" might have played a role in the passenger pigeon extinction.
 14. Explain that the passenger pigeon isn't the only animal that has ever been taken for granted or become extinct at the hands of humans. However, there are also other animals that have more positive stories. For example, American bison (*Bison bison*), which were hunted to the brink of extinction after their immense populations were presumed to be inexhaustible, have experienced a recovery in the last century.
 15. Ask students to think about the animals that they see around them. (If possible, go outside and look for the animals that can be found around the school.) Are there any animals that seem too numerous to become extinct? How could students use the story of the passenger pigeon to think about these animals in a new way?
 16. Reiterate that 2014 is the Year of the Passenger Pigeon, a year to learn from the story of the passenger pigeon and to use that story to change our perspectives about how we interact with the world around us.

Visit passengerpigeon.org throughout 2014 to find new lesson plans, resources, and event listings for your area!



Nothing in the human record suggests that there was ever another bird like the passenger pigeon. At the time that Europeans first arrived in North America, passenger pigeons likely numbered anywhere from three to five billion. It was the most abundant bird on the continent, if not the planet, and may well have comprised 25 to 40 percent of North America's bird life. When the flocks moved for migration or foraging, the earth below would be darkened by shadows for hours: famed naturalist John James Audubon recorded a pigeon flight along the Ohio River that eclipsed the sun for three days. (pg. 1)

Though striking as individuals, passenger pigeons most differed from other species in the size of their flocks and colonies. (pg. 3) The individual birds were packed into these immense flocks, seemingly with only enough space on either side to accommodate the pumping of their wings. (pg. 4) One of the largest flights of passenger pigeons ever described in detail occurred at Fort Mississauga, Ontario, in May of what was probably 1860. Major W. Ross King was an English hunter and naturalist who spent three years traveling through Canada. He had hoped to see one of those vast movements of passenger pigeons about which he had read so much, and he was not to be disappointed:



Passenger Pigeon

Early in the morning I was apprised by my servant that an extraordinary flock of birds was passing over, such as he had never seen before. Hurrying out and ascending the grassy ramparts, I was perfectly amazed to behold the air filled, the sun obscured by millions of pigeons, not hovering about but darting onwards in a straight line with arrowy flight, in a vast mass a mile or more in breadth, and stretching before and behind as far as the eye could reach.

Swiftly and steadily the column passed over with a rushing sound, and for hours continued in undiminished myriads advancing over the American forests in the eastern horizon, as the myriads that had passed were lost in the western sky.

It was late in the afternoon before any decrease in the mass was perceptible, but they came gradually less dense as the day drew to a close... The duration of this flight being about fourteen hours, [that is,] from four a.m. to six p.m., the column (allowing a probable velocity of sixty miles an hour) could not have been less than three hundred miles in length, with an average breadth, as before stated of one mile. (pg. 5)

King never offered a numerical estimate, but Schorger [ornithologist and author of a book about the history of the passenger pigeon], assigning two birds per square yard and a speed of sixty miles per hour, concludes that the flight involved an amazing 3,717,120,000 pigeons. At least three different scientists have each worked King's data in recent years and come up with the same results as Schorger, although doubting that the pigeons would be flying at 60 mph as a normal speed during migration. Ken Brock of Indiana University Northwest created a graph showing the numbers of birds at speeds from 35 to 60 mph. But even at 35 mph, closer to the speed at which mourning doves fly, which is more unlikely given that the passenger pigeon was a far more accomplished flier than the dove, King witnessed well over a billion birds passing over Fort Mississauga during the period of his observation. (pg. 6)

Whatever the number, this species enjoyed a population that may have exceeded that of every other bird on earth, and its aggregations surpassed in numbers those of every other terrestrial vertebrate on the continent. (pg. 7)

Passenger Pigeon Flocks - Version 2

Excerpted and modified, with permission, from Joel Greenberg's

A Feathered River Across the Sky:

The Passenger Pigeon's Flight to Extinction, pages 1-7.

When Europeans first arrived in North America, three to five *billion* passenger pigeons lived on the continent. There were more passenger pigeons than any other bird in North America, and maybe more than any other bird on the planet. When the passenger pigeon flocks flew through the air, their shadows would darken the earth beneath them for hours. John James Audobon, a naturalist, recorded a flock of flying pigeons that took three days to pass! (pg. 1)



Passenger Pigeon

The passenger pigeons were different from other birds because of the size of their flocks. (pg. 3) The individual birds flew packed into tight groups, and they had only enough space on either side to pump their wings. (pg. 4) In May, 1860 (the exact year isn't known), a large flock of passenger pigeons flew over Fort Mississauga, Ontario, Canada. Major W. Ross King, an English hunter and naturalist, was traveling through Canada at the time. He had read about the giant flocks of passenger pigeons and had hoped to see one. King wasn't disappointed:

King's servant came to tell him that there was "an extraordinary flock of birds" flying overhead. King hurried outside and was amazed to see that the sun was blocked by millions of passenger pigeons. The flock of pigeons was more than a mile wide and stretched forward and backward as far as he could see.

The birds continued flying past King for many hours. Fourteen hours later, the flock began to appear thinner and was finally finished passing. King estimated that the birds were flying at sixty miles per hour in a flock that was three hundred miles long and a mile wide.

King never wrote down an estimate of the number of birds in the flock that he observed, but A.W. Schorger, a scientist and historian, used King's observations to calculate the size of the flock. Schorger estimated that there were two birds per square yard moving at a speed of sixty miles per hour. He concluded that the flight involved an amazing 3,717,120,000 pigeons. Other scientists have used King's data to estimate the number of pigeons in the flock that King observed. Even if the birds were only travelling at 35 miles per hour, King still saw over a billion passenger pigeons. (pg. 6)

The exact number of passenger pigeons that lived in North America is not known. However, scientists and historians do know that the population of passenger pigeons was very large. Whatever the number, the passenger pigeon population may have been greater than the populations of every other bird on earth. (pg. 7)