



# HISTORY OF BALD EAGLES AND DDT

*Prepared by James River Association*

Today, when you spend time along the James River, you are likely to see a few bald eagles soaring above the water. Tragically, 50 years ago, that wasn't the case. In the 1970s, the bald eagle had all but disappeared from Virginia. The culprit was DDT - a widely used pesticide that, when ingested, prevented the eagles from reproducing successfully by weakening their offsprings' eggshells. The bald eagle population declined and became critically endangered. At their lowest point, there were zero nesting pairs of bald eagles left along the James River. Several interventions from humans -- such as banning DDT and protecting habitat -- helped restore the bald eagle population to a stable and healthy size. The story of the bald eagles is one of our greatest success stories. When you see bald eagles flying by the river, you are seeing the proof that humans can repair damage to the environment if they take strong enough action.

Bald eagles (*Haliaeetus leucocephalus*) are native to North America, including Virginia. They can live to be 20-30 years old, and their wingspan can reach up to 8 feet long. Their preferred habitat is forested regions alongside bodies of water. Most of their diet is fish, but bald eagles will also hunt small mammals, other birds, reptiles, and they will also sometimes scavenge. They are also the national symbol of the United States.

Read the following website article and answer the questions below.

<https://abcbirds.org/bald-eagle-the-ultimate-endangered-species-act-success-story/>

1. What is DDT?
2. How, specifically, did DDT harm bald eagle populations?
3. At their lowest point in 1963, how many bald eagle nests were left in the lower 48 states?
4. What is the Endangered Species Act (ESA)? When was it made into law?
5. Name three protections the ESA gave bald eagles:
6. When were bald eagle populations recovered enough to be delisted from the ESA?
7. What are 2 threats bald eagles still face today?

Every two years, the James River Association (JRA) publishes a comprehensive assessment of the health of the James River. Access the most recent version here, and use it to answer the following questions: <https://thejamesriver.org/stateofthejames/>

8. What number of breeding pairs is the JRA benchmark for a healthy breeding population?
9. What was the first year the James River eagle population passed that benchmark?
10. Pick one other metric on the interactive State of the James Report. What is the JRA benchmark for a healthy value, and what was its actual value for 2019? Was it healthy?

In the article, Hesiman defines the “take” of a protected species is defined as “killing, capturing, or otherwise harming” them. She also poses a question: “how much take is too much?”

What do you think? How much should we limit human behavior in order to protect an endangered species? What is the right thing to do ethically? Environmentally? Legally? Why? What counterargument might someone with an opposing viewpoint make, and how would you attempt to persuade them?

Write a 6-10 sentence response that 1) makes an argument, 2) acknowledges an opposing viewpoint, and 3) uses at least 3 facts from the article to support your argument.

# Biomagnification

Watch these short YouTube videos:

<https://www.youtube.com/watch?v=85I7oPWUuak>

<https://www.youtube.com/watch?v=fcVRK6ALXMo>

In your own words, define biomagnification:

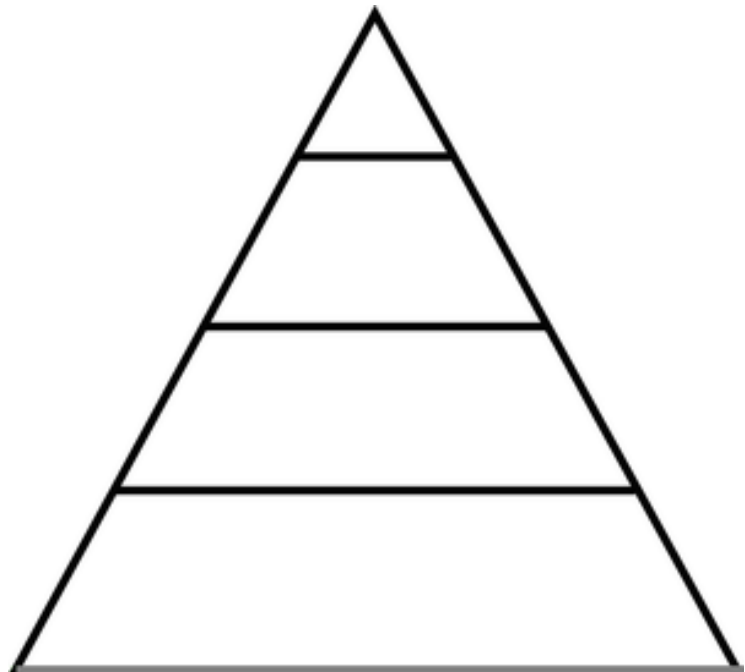
Create your own food pyramid with the organisms from your local habitat.

*Tertiary consumer*

*Secondary consumer*

*Primary consumer*

*Producer*



Now, imagine a toxin has been released into your food pyramid's environment. Assuming the concentration inside your producers is 1 unit per organism, and each organism eats 10 of the lower level's organisms per day, what will the concentration be at each trophic level?

Producer = 1 unit per organism

Primary consumer =

Secondary consumer =

Tertiary consumer =