



Osprey Odyssey

GRADE LEVEL: 4 - 8

TIME: 40 MIN

SUMMARY

In this lesson, students will learn about the many challenges the osprey faces as it matures. Students will play a life-sized board game that simulates the osprey life cycle.

OBJECTIVES

- Identify factors that affect the osprey's life cycle in positive and negative ways.
- Explain how the osprey is affected by changes in its ecosystem.
- Make suggestions for ways they can help protect migratory habitats for osprey.

VOCABULARY

- **Cargo** - Goods carried on a ship, aircraft, or motor vehicle.
- **Cargo Ship** - A ship that transports goods and materials from one port to another.
- **DDT** - A synthetic organic compound used as an insecticide. Like other chlorinated aromatic hydrocarbons, DDT tends to persist in the environment and become concentrated in animals at the head of the food chain. Its use is now banned in many countries.
- **Dredging** - The process of removing sediment from shipping channels.
- **Dredged Material** - The sediment removed from the shipping channels.
- **Draft** - The vertical distance between the water surface and the bottom of the ship.
- **Habitat** - The natural home or environment of an animal, plant, or other organism.

- **Habitat Loss** - When a natural habitat, such as a forest or wetland, is altered so dramatically that it no longer supports the species it originally sustained. Plant and animal populations are destroyed or displaced, leading to a loss of biodiversity.
- **Human Impact** - On the environment or anthropogenic impact on the environment includes changes to biophysical environments and ecosystems, biodiversity, and natural resources caused directly or indirectly by humans.
- **Hurricane** - A storm with a violent wind, in particular a tropical cyclone in the Caribbean.
- **Insecticide** - A substance used to repel insects.
- **Migration** - The seasonal movement of animals from one region to another.
- **Mitigation** - In environmental work, these are projects or programs intended to offset the known impacts to an existing historic or natural resource.
- **Pesticide** - A substance used to repel organisms who is in an area who could harm plants or other organisms.
- **Predation** - The act of hunting and consuming of another animal.
- **Red Tide** - A discoloration of seawater caused by a bloom of toxic red dinoflagellates, known as algae.
- **Restoration** - The act or the process of returning something to its original condition.
- **Shipping Channels** - Areas in the water that are maintained to a depth that can accommodate cargo ships. They are marked by buoys and identified on nautical charts (so captains know where to travel).
- **Tagging** - One of the methods for studying the biology, movements, and migrations of animals. Tagging is used to study the long-range regular and irregular movements of animals and to determine their lifespan.

MATERIALS

- Osprey Odyssey game pieces
- Large foam dice
- Flagging tape
- Pictures of osprey
- Migration route
- Clothes pins, half should be marked with red dots

BACKGROUND

Because the Port of Baltimore performs maintenance dredging each year (see general introduction), placements sites for dredged material removed from shipping channels are used to contain the sediment. The sediment is often used to restore and support habitat at the placement sites. The restored habitat at these placement sites has attracted a wide array of animals by providing thriving habitats. Many previously threatened species have benefitted from the restored habitat as their populations rebounded through increased environmental protection measures. One such animal is the osprey, a large bird that specializes in preying on fish.

Osprey are faced with many challenges as they mature to adulthood. Review with students' factors affecting the bird population. Habitat loss due to shoreline development, erosion, etc.

ACTIVITY

1. Engage/Elicit (10 minutes):

Explain to students that they will be playing a life-size life cycle game where they will learn about osprey and their survival to adulthood. First go over the following background information:

The Port must keep shipping channels deep enough for ships to get to Baltimore safely. They do this by removing sediment in the shipping channels to make sure they are at a depth of 50 feet.

The sediment is relocated to a containment site in Maryland, and the sediment must be used to restore habitat that was lost or habitat may be restored near to the containment sites. These thriving habitats support a variety of wildlife, including a special bird called the osprey.

Osprey are migratory birds. This means they spend the winter in southern US (Florida, Georgia) to South America. They will return to northern habitats, such as Swan Creek at Cox Creek or Poplar Island around mid-March.

Osprey diets consist of 99% fish.

When Osprey reproduce, they will typically have 3 chicks that leave the nest in the fall. However, only 1/3 fledglings are predicted to make it to adulthood.

2. Explore (15min):

Tell the students to line up at the first block of the gameboard. Read the card, roll the die and move ahead that many spaces. Ask the students to "act out" what the card says to do. Make sure to follow the directions on cards exactly! (Jump up and down, duck and cover, etc.). If time allows, they may play



3. **Explain (10 minutes):**

Ask the students to sit down once they have completed the game. By a show of hands ask how many students survived as osprey? How many did not? How many were able to lay eggs? Ask how hard it was to survive as an osprey.

4. **Evaluate/Wrap-Up (5 minutes):**

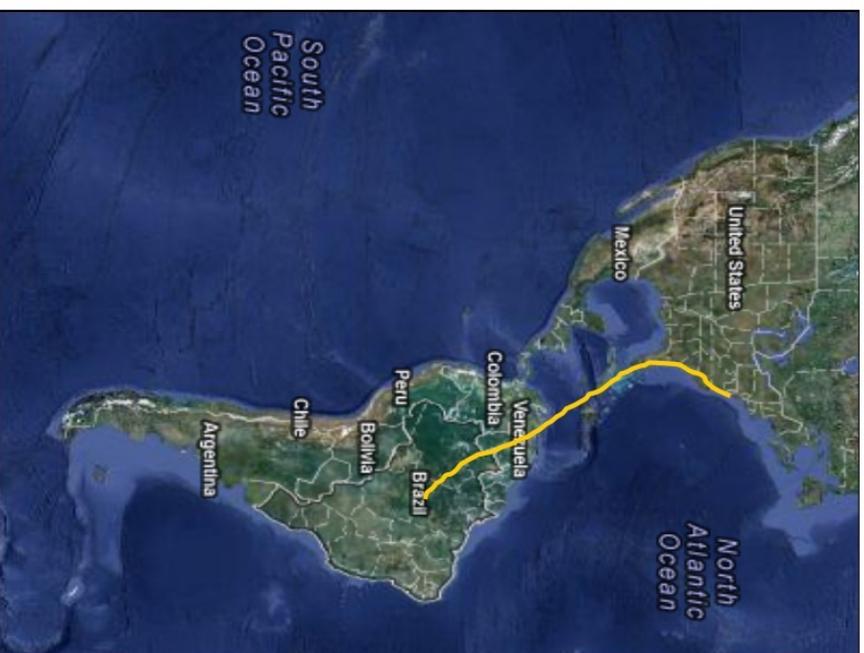
Explain that there are many obstacles that osprey face for survival and ask the students to share some examples of both positive and negative things that happened to them. Ask the students to share the number of times they survived and the number of times they died. If they died, was it caused by predation, accident, weather, etc.? For those who survived, did you find fish, lay eggs, or did your young survive? Ask students what they thought of the game. Is migration hard or easy? What role does habitat at places like Swan Creek and Masonville play in the osprey's migration? One way to help protect the osprey population is to protect breeding and nesting grounds and habitat: food, water, shelter, and space.

DIVE DEEPER

Ask students who survived and have a red dot on their "food" clothes pin (picked up during the game). Tell students that they didn't do anything wrong, but something bad happened. There was no way to know what was happening to them while they were playing the game. Explain that these ospreys (ones with red dot on clothespins) ate fish that were contaminated with DDT. DDT is a chemical that was used in pesticides. This chemical makes the eggshells of apex predators like osprey brittle. When the female osprey sat on their eggs to keep them warm, the eggs would break. Ask the students to guess, what would happen to the osprey population if their eggs continue to crack from DDT exposure? Explain that their population dropped quickly and dramatically. The United States banned the use of the chemical DDT in 1972. The osprey is an EXCELLENT example of a species on the rebound from extinction.

1

It's time to head back to Swan Creek Wetland in Baltimore, MD! Stretch your wings and get ready for the 3,000 mile flight. Roll the die and move ahead that number of blocks.



2

**Good news! You found a small pond
full of yummy fish. Rub your
belly 10 times and move ahead 5
blocks.**



3

Uh-Oh. You couldn't find any fish to eat today. You are weak and tired. Crawl ahead only 1 block.



4

Oh no! A farmer thinks you are trying to eat his chickens! Freeze and hide for 20 seconds and then sneak ahead 2 blocks.



5

Good news! An eagle tried to steal your fish but you were too fast for him to catch you! You're tired now though. Move ahead only 1 block.



6

You've caught a lucky break and snagged 2 big fish from a lake! Clip a clothespin on your shirt and skip ahead 2 blocks.



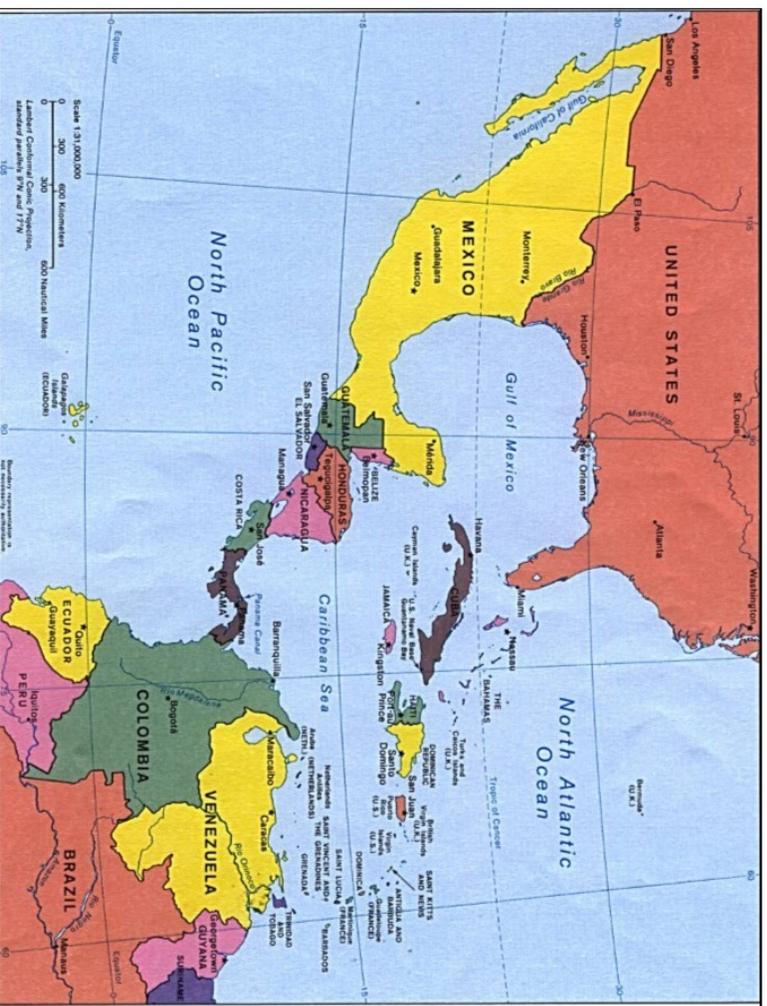
7

You get caught in fishing line and waste a lot of energy trying to get free. Luckily a wildlife rehabilitator cuts the line and feeds you.

Hop on 1 leg in a circle then move ahead 4 blocks.

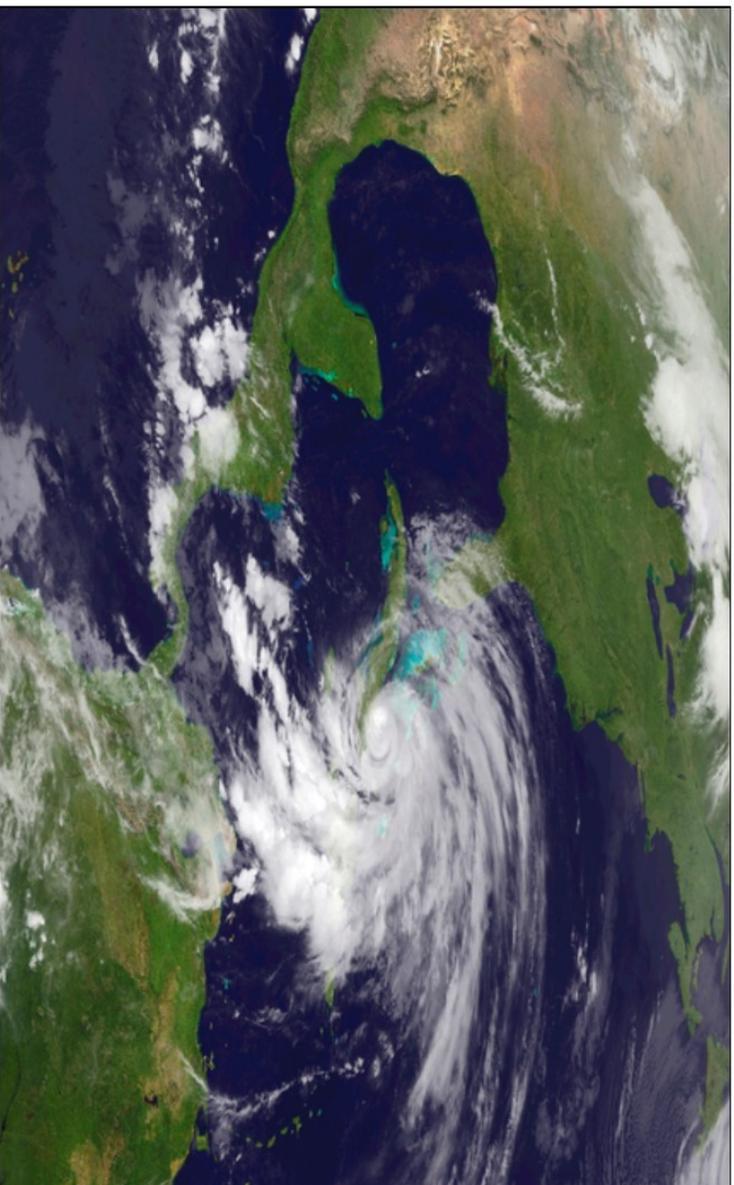


You are getting ready for the big flight over the Caribbean Sea! Spend a night along the shoreline of South America resting up. Roll the die, then move ahead that number.



9

There's a storm over Cuba! Squat down and cover your head. Count to 50 to ride out the storm. Roll the die, then move ahead that number.



10

Strong winds push you

**WWWAAAAYYYYYY off course. Roll the
die and blow backwards that many
blocks.**



You made it to Florida! That was a long flight and you're tired. You only have the strength to move ahead 1 block.



12

**Whew! While flying near the channel
you almost collide with a boat! Bounce
back 3 spaces while you
recover.**

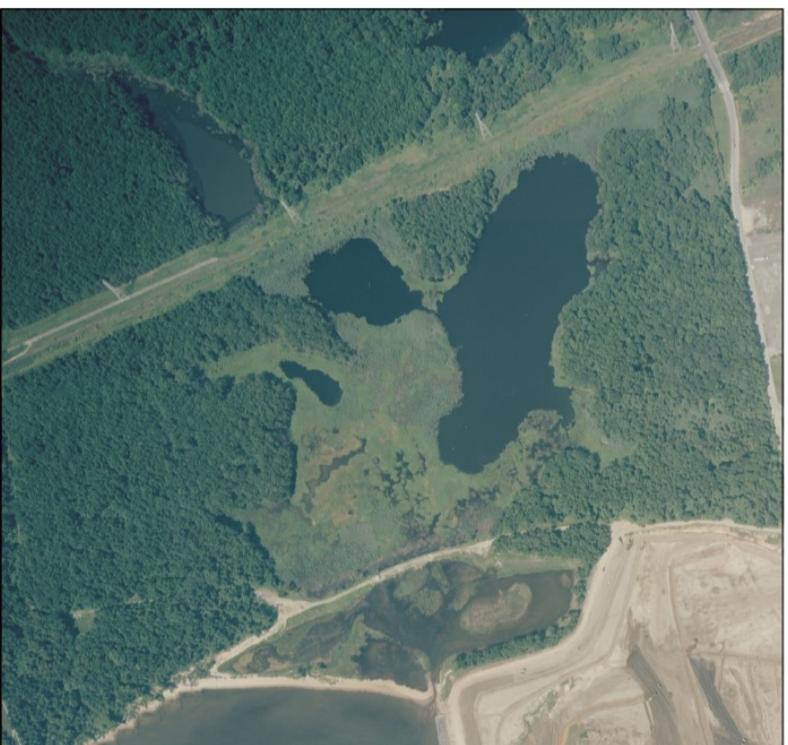


13

You arrive at a Swan Creek wetland! There is plenty of clean water, food and shelter.

Rub your stomach

15 times and move ahead 4 blocks.



14

You are ready to nest!

**Roll the die and move ahead that
number of blocks.**



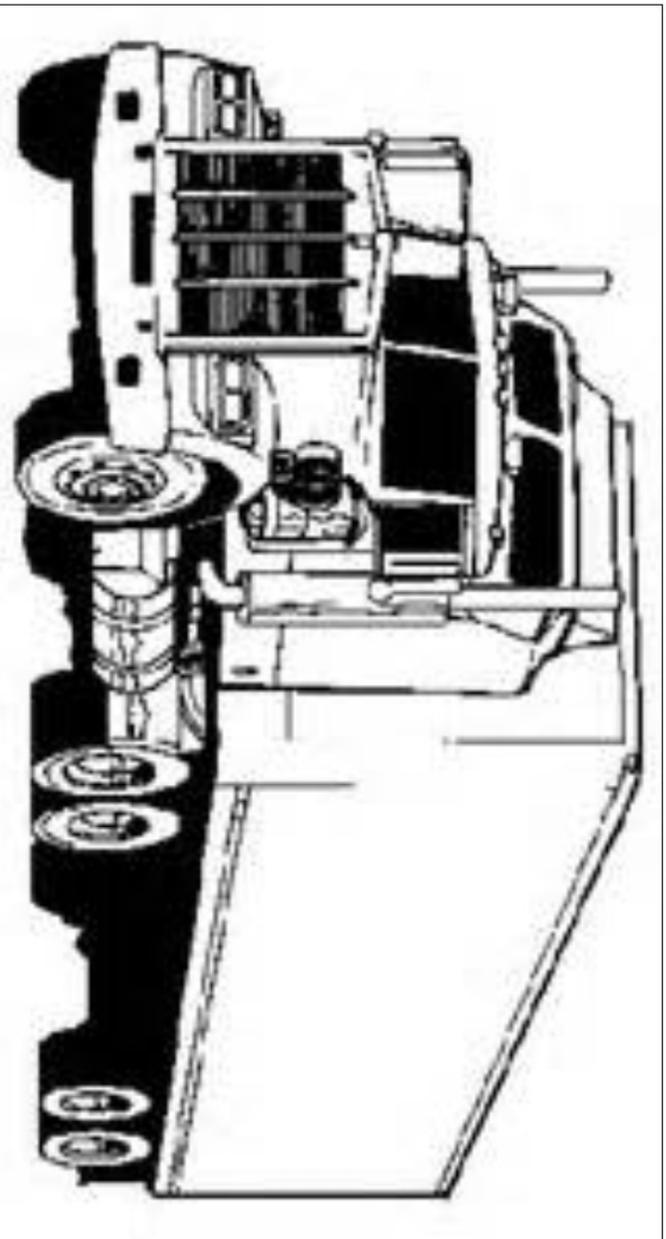
15

**Your nest gets blown over in a
strong wind storm!
Limp back one block.**



16

**You accidentally fly too low to the road and
get hit by a semi-truck on Route 695!
Die dramatically then go back to the
beginning.**



17

Good news! You and your mate have laid 3 eggs! Roll the die and move ahead the number of blocks indicated.



18

Flap your wings as hard as you can!!! You have a HUGE rockfish in your talons but he is just too heavy for you to pull out of the water. Your wings are too wet to fly and you drown in the Patapsco River. Die dramatically and go back to the beginning.



19

You are in a protected habitat at Swan Creek Wetland. Take your time caring for your eggs. Stroll ahead 5 blocks.



20

Your eggs will be hatching soon!

Spend time resting and fueling up on fish you catch. Make a fish face for 10 seconds and then move ahead 4 blocks.



Yikes! An unexpected freeze makes food scarce. Shiver for 5 seconds then go back 2 stations and look for more food.



22

Bad luck! A raccoon climbs into your nest and eats your eggs. You were unsuccessful at nesting this year. Sulk back to the beginning.



23

Your chicks have hatched! Jump for joy and move ahead one block.



24

**Oh no! A Great Horned Owl ate one of
your chicks! Go back two blocks while
your nest recovers.**



25

Congratulations! All three of your chicks survived until Fall. Show off with your best victory dance!

