

BIRDS & US: MIGRATION GAME

INTRODUCTION

Welcome to the BEMP migration game!

Today you will play a game about migration to help you think about what is necessary to survive this journey. But, what is migration in the first place?

Well, have you ever gone away in winter to a hot, sunny place? Lots of animals (and some human populations) do the same thing! They sometimes travel a very long way to reach warmer places where there is a better chance of finding food. This journey is called **migration**. Some animals like birds migrate because of phenological (seasonal) changes to access food and warmth, while others like humans migrate due to the implications of poverty, violence, and oppression. This game intends to (1) highlight the similarities and differences that these two animals (birds and humans) face when migrating and also (2) work as a framework to introduce broader concepts like climate change and environmental justice. For more information on these subjects, additional resources are provided at the end of the game.

Now, what do they need in order to have a successful migration? To help you think about it, imagine... What do you need when you go on vacation that makes the journey smoother? For instance, if your family were to go on a trip to Florida, what kinds of things would you need to get there safely and successfully? Maybe you are thinking about physical things like food, water, a place to sleep (shelter)... But you need to keep in consideration that you need, for example, the water to be clean, the food to be healthy, and the shelter to be safe (and not right next to a nuclear plant, for example). Now think, what would be some of the things that would make the trip more difficult? For example, maybe you are driving there and get a flat tire. This would be like trying to fly or walk to another place but with a broken wing or leg. Today, through this game, you will learn some of the similarities and differences humans and birds face when migrating.

To help you start thinking about this topic, answer the following questions. Try to predict the outcome of the game to the best of your knowledge:

- What resources do birds need in order to migrate? What about humans?
- Are there similar resources both humans and birds need?
- Do all humans have access to these resources equally? Do birds?
- What obstacles might birds find along their journey? What about humans?
- Are there similar obstacles both humans and birds will face?
- Do all animals and humans face these obstacles in the same way? (For example, think back to what we were saying about traveling with a flat tire).

Good luck on your journey!

GAME INSTRUCTIONS

Goal

The goal of this game is to survive all the obstacles you might encounter during this journey and finish the migration.

Materials

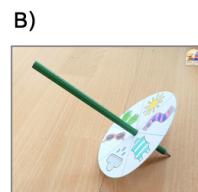
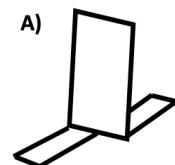
- Game board
- 15 cards (resources and obstacles/hazards)
- Up to 7 game players (or more)
- 1 dice (not provided in this game) or spinner (provided with the other parts of the game)

Set up

*Print set double sided (make sure to select the following options in the printer configuration so the front and the back sides match):

- 1) Layout - "short-edge binding (two-sided)"
- 2) Page Scaling - "Fit to printable area"
- 3) Select "Auto-rotate and center"

Cut out cards, game player pieces and spinner (if you don't have a dice). Fold the game player pieces so they stand (one leg forward and one backward; Fig. A). For the spinner, use a pencil to punch a hole through the center and leave it part way through (you might have to use a piece of tape to keep it in place so it doesn't slide down; Fig. B). Twist the pencil to make the wheel spin. The number that touches the ground is the number of spaces you will move. Place the player pieces at the start. Shuffle the other cards and split them up into their categories.



How to play

Start by reading through the "game players" section below. After, choose which species you want to be for this game. If you decide to create your own player, don't forget to write down the migration history (at the end of the "game players" section). Then, follow these steps:

1. To start your journey, each of you will roll the dice (or spin the wheel) once to determine who plays first. The highest number will start and the other players will follow their turns in descending order.
2. Roll the dice (or spin the wheel) and move that number of spaces.
 - a. If you land on a space with a symbol, pick up one of the cards with that same symbol. Read it and follow the instructions for your specie's player (bird or

- human). When conditions are favorable, the card will tell you to move ahead. When you encounter a hazard, you may be delayed or have to go back.
- i. If after following the card instructions you fall into another symbol, you will wait until your next turn to read the new card associated with the new symbol and follow the instructions. In this case, you won't need to roll the dice during your turn.
 - b. If you land on a blank space. Wait for your next turn.
 - c. If you land on a space that is already occupied by another player, you will have to go back one space. If by going back you land on another occupied space, you will keep going one space back at a time until you land on a space that is free.
3. If you run out of cards, shuffle the existing ones and pull one out.
 4. Return your card at the end of your journey.
 5. Remember that the objective of the game is to finish your migration journey successfully by landing on the FINISH space.
 6. Use the answer sheet (*Birds & Us: Migration*) to think about some of the challenges you faced during your migration journey.
 7. If you liked it, remember that you can always create your own players with different people/animals and their stories!

GAME PLAYERS

BIRDS:

*Maps by the Cornell Lab of Ornithology.

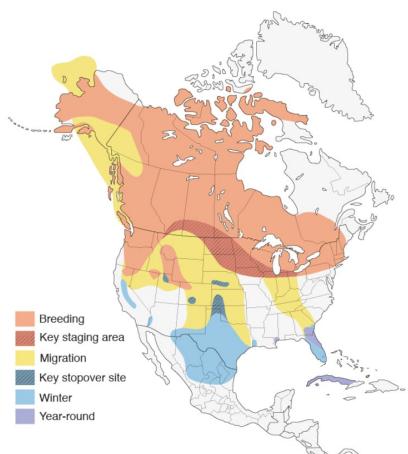


Southwestern Willow flycatcher

(*Empidonax traillii extimus*)

The scientific name for the genus *Empidonax* is the Latin word for “mosquito king” which already gives you a lot of information about their diet. What gives name to the southwestern subspecies is the word *extimus* which in Latin means “farthest away” because of the area where they live. This flycatcher breeds during late spring (mid-May to early July) in Southern California, Arizona, southwestern **New Mexico**, southern Nevada and Utah, southwest Colorado and western Texas. It winters in the rain forests of central Mexico, Central America (El Salvador, Nicaragua and Costa Rica) and northern South America. Their round-trip journey is about 5,000 miles depending on the exact departure location.

This little bird is in decline because of the loss of our riparian forest like the Bosque due to things like fires, drought or invasive species.



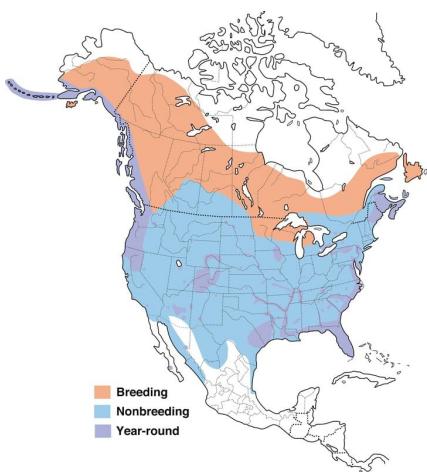
Sandhill crane

(*Antigone canadensis*)

As their species name *canadensis* indicates, this large bird breeds as far north as the Arctic coast of Canada and Alaska into Idaho, Nevada and Oregon. It winters in parts of California, **New Mexico**, Arizona, Texas, Georgia, Florida and northern Mexico. The longest migratory route can be about 14,000 miles round-trip.

Sandhill cranes depend on wet places for their survival like wet meadows, freshwater marshes or river beds. Because of that, the degradation or loss of wetland habitats represent one of the main threats for them. Another hazard can be

collisions with power lines or excessively high levels of nest and chick predation (being eaten).



Bald Eagle

(*Haliaeetus leucocephalus*)

The Bald eagle's scientific name *Haliaeetus leucocephalus* literally means "white head" in Latin (for the species word leukos-cephalos) and "sea eagle" (for the genus word hali-aetos). This robust bird migrates partially, moving south or to the coast in winter in search of food. In other cases, if the area they are living in has enough water and food resources, this species will occupy that territory year-round. Migratory eagles can travel as many as 225 miles a day but they don't do long distance migrations.

This species suffered a major decline during the 20th century mainly because of illegal shooting and lead poisoning. After its legal protection, numbers have been increasing gradually. Other threats that still play a role today are habitat loss, power line electrocutions and running into wind energy turbines.

HUMANS:



Laura Pages Barceló

BEMP Educator-Biologist (She/her/hers)

You can probably tell by her two last names, but this BEMPer did not grow up in the United States. She was born in a tiny town in Catalonia, Spain. She left her country nine years ago to study sea turtles in Costa Rica, after which she traveled to Albuquerque to find a better future.

Some things that have made her migration more challenging have been language barriers, culture shock, racism and discrimination.



Thank you for participating! Like what we do? Consider donating to BEMP to support a new generation of environmental stewards. Visit www.bemp.org/donate/.

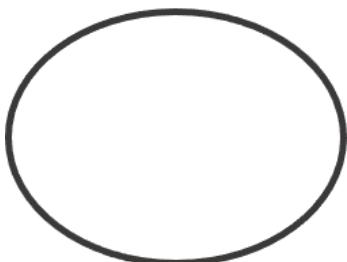


Zoe Wadkins

BEMP Educator Manager (She/her/hers)

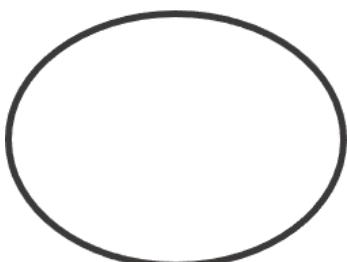
This BEMPer was born and raised in Washington State but her ancestors originally came from Germany, Scotland, Ireland and Poland before coming to the occupied lands of what is now the United States. In her migration, Zoe landed in California for 10 years to work as an Environmental Educator. Zoe has recently moved to Albuquerque to work for BEMP and create a better life for her and her family. Throughout her journey, she is learning more about the impact of her heritage and how that continues to define her today.

Use these two spaces below to write about YOU as a human player. Write your full name, school, and a description of you and/or your family/ancestors migration history. If you don't know, ask your family members/caretakers. Then, draw in the circle a representation of you and/or your family. Don't limit yourself to the space given below!



Name: _____

School: _____



Name: _____

School: _____

Information for teachers and other adults

The goal of this game is to introduce the concept of migration as one of the processes animals (birds and humans for this game) do in order to survive. Some animals like birds migrate because of phenological (seasonal) changes to access food and warmth, while others (humans) migrate due to the implications of poverty, violence, and oppression. This resource intends to (1) highlight the similarities and differences that these two animals (birds and humans) face when migrating and also (2) work as a framework to introduce broader concepts like climate change and environmental justice. "Why?", you might ask...

As our communities continue to shift due to global crises, we need to build toward preventing greater climate devastation. In doing so, we must consider how to bring environmental justice to the forefront of our conversations. Below please find more information about climate change and environmental justice initiatives; we see the first step as educating yourself and others about these issues and learning how to be a better ally and advocate. Please consider the following resources to assist in that journey:

- Read:
 - American Public Health [factsheet](#) on Health and Environmental Justice.
- Listen:
 - Grist Podcast "[Temperature Check](#)" covering climate, race, and culture by Julian Brave NoiseCat.
 - [Think 100% for Climate](#) uses podcasts, films, music, and activism to draw inspiration in the climate justice movement.
- Watch:
 - Grist also offers "[What is environmental justice?](#)", a short video that explains what actually is environmental justice.
- Engage:
 - [The National Black Environmental Justice Network](#) aims to combat environmental racism by creating a space for leaders and building alliances to connect their work, share resources, and strategically target systemic racism.
 - [Center for Earth Ethics](#) works at the center of social equity and the ecological crisis by raising public consciousness.
- Follow/Get involved:
 - [NM Climate Justice](#) and the [Land Witness Project](#) are two organizations that fight against local projects/initiatives that affect climate change.

Once your students have played at least one round of the game, use the activity sheet (*Birds & Us: Migration*) as an educational resource to prompt a discussion about migration. We invite you to use this opportunity as a way to link the game to student's and student's families migration stories as well as current natural and social events.

**This game was adapted from the game *Migration Madness Board Game* from the Oak Hammock Marsh Interpretive Centre and the game *Migration Board Game Pack* from Marwell Wildlife.

6. BIRDS & US: MIGRATION



NGSS: K-ESS3-1; K-ESS3-3; MS-LS2-1; MS-LS2-4; HS-ES3-1

As you have learned through our activities, BEMP focuses on monitoring the seasonal changes of bosque plants and animals, like arthropods, to better understand the **phenology** of this ecosystem. This is important for knowing how changes impact organisms living in the bosque (including us!), and what the causes are for these changes. For example, we can ask: How will migratory birds be impacted by spring starting earlier? What if spring starts later than usual? What causes spring's timing to change in the first place?

In this lesson you will learn about one example of phenology, **migration**. This activity will encourage you to interact with migration to better understand the obstacles that different organisms, birds and humans, encounter along this long journey. Remember to answer the reflection questions below after you are done!

Migration Game!

Migration is the movement of animals from one place or habitat to another. Usually, organisms migrate in search of better living conditions, food sources and/or breeding grounds. Migration is different from other movements because it happens seasonally and is not permanent; they usually return to where they started. This makes it different from *emigration* where organisms move to find a new, permanent place to live. When we think about the reasons why we, as humans, migrate (especially nowadays), the lines get a bit more blurry. For example, Black, Indigenous and People of Color experience far more pollution and health concerns, or are more impacted by climate change than others. These examples can force people to migrate in search of new and better living conditions. Play this game to learn more about why migration occurs and the many challenges species face. Once you're done, answer the following questions with your fellow game players. Have fun!

Reflection after the game:

1. What does migration tell us about animals and humans that have access to a lot of resources? What about when they do not have access to a lot of resources?
2. What obstacles did birds and humans find along their journey? List them separately and describe specific events you noticed: Which of the obstacles were created by people? Which were natural?
3. Which of those obstacles affected both birds and humans the same? Differently? Why?
4. What relationship do you see between the obstacles animals and humans face when migrating and the distance they have to travel?
5. Do all animals and humans face these obstacles in the same way? (For example, think back to what we were saying about traveling with a flat tire).
6. What resources helped birds and humans complete their migration (list them separately)?
7. What should people consider when altering a natural habitat?
8. What solutions do you see could help reduce negative human impacts on bird migration (like water pollution)?
9. What are some things that we can do to help organisms (including humans) during their migration?



Have you ever been to...?

Bosque del Apache National Wildlife Refuge is located in San Antonio, Socorro county. This refuge has seasonal wetlands that re-create the types of habitats that year-round and migratory wildlife need to thrive. These wetlands provide food and homes for some of America's most spectacular wildlife, as well as a place where people gather to observe and enjoy nature.

We invite you to practice this activity at Bosque del Apache! Keep an eye out for a variety of migratory bird species as well as other wildlife!

Have you met...?

Shelby Bazan (she/her/hers), BEMP Environmental Educator.

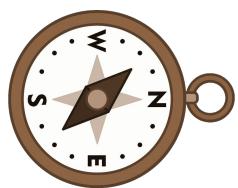
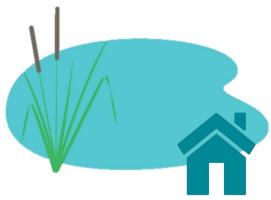
As an amateur birder, Shelby loves adding species she's seen to a list, while seeing regular bird visitors at her backyard feeder. She believes that birding is a way to build community, is something that everyone is able to do, and is also something that needs work to create a safer space for those wanting to partake. The Bosque del Apache is one of her favorite spaces that she regularly visits.



BIRDS & US: MIGRATION GAME



Leave this page blank in purpose



Bird: It's hunting season. You just entered a hunting ground by error and got shot.

Go back to the start.

Human: You crossed another border and got caught by an immigration officer.

Go back to the start.

Bird: It's pouring rain and you don't want to fly.

Skip your next turn.

Human: It's pouring rain and your house is located on the river bank so it flooded.

Skip your next turn.

Bird: You found a wetland to rest at! Take a break and recharge, then move ahead 2 places.

Human: You found a safe house with clean food to rest! Take a break and recharge, then move ahead 2 places.

Bird: The light from buildings at night disoriented you and now you're lost!

Go back 1 place.

Human: The fumes from a factory in the suburbs of a city make you feel dizzy and you get lost.

Go back 1 place.

Bird: Watch out! You are flying through wind turbine fields and you almost got hit by one of the blades! Take your time getting across.

Skip your next turn.

Human: Careful! You reached a wire fence border wall. You will have to find another way to cross.

Skip your next turn.

Bird: It hasn't rained in a long time and the lake you were planning to stop at has dried up.

Go back 2 places to try to find a place to rest.

Bird: It hasn't rained in a long time. You stop at a remote town to get some water but the water wells in town are dry. They had to pull the water to larger cities due to a shortage.

Human: It hasn't rained in a long time. You stop at a remote town to get some water but the water wells in town are dry. They had to pull the water to larger cities due to a shortage.

Go back 2 places to try to find a place to drink.

Bird: Good news! You found a field with plenty of food to restore some energy for the journey!

Move ahead 1 place.

Human: It's your lucky day! You found a field of fresh local vegetables. Fill up your belly with delicious healthy food for your journey!

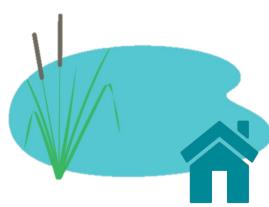
Move ahead 1 place.



Weather
Warning!



Weather
Warning!



Bird: Bad news! You landed on a polluted wetland and got sick. You will need to recuperate before you can continue.

Skip your next turn.

Human: Oh no! You stopped in a small community to get some water but can't drink because their water is polluted because of a storm event.

Skip your next turn.

Bird: You made it into a wildlife refuge. Food, water and shelter is abundant. Take a rest day. You deserve it!

Move ahead 1 place.

Human: An elder from a remote community provides you with water and food for your journey and teaches you where to get more from.

Move ahead 1 place.

Bird: It's too hot and you can't fly. You will have to find a place to rest until the temperatures go down.

Skip your next turn.

Human: It's hot but you can't swim because a recent storm pushed all the trash into the water. You choose to stay and help clean it up.

Skip your next turn.

Bird: Yum! You found the perfect habitat to find your favorite food! Enjoy!

Move ahead 1 place.

Bird: You almost got caught by a predator and sprained your wing in the process. You need to rest before continuing your journey.

Skip your next turn.

Human: You find a farm along the way where you get to eat all the local produce of the season. Fill up your belly!

Move ahead 1 place.

Human: There is a thick fog and you can't see what's ahead of you. You trip on a rock and sprain your ankle. You will have to pause your trip until you recover.

Skip your next turn.

Bird: Strong winds play in your favour and help you speed your journey.

Move ahead 2 places.

Human: A hurricane is approaching and you look for shelter. The community you find doesn't have safe homes because they don't have enough resources. You will be trapped in a building for two days.

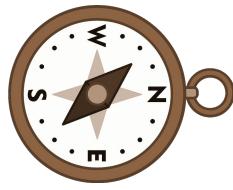
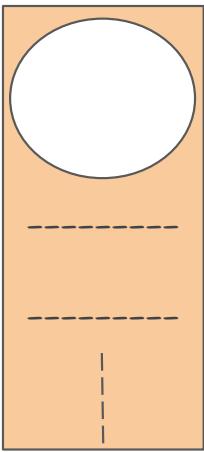
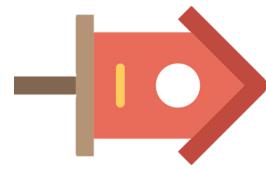
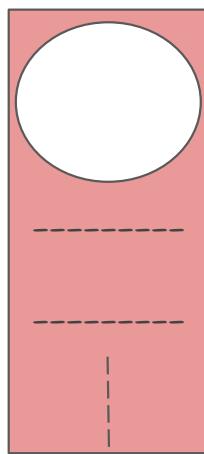
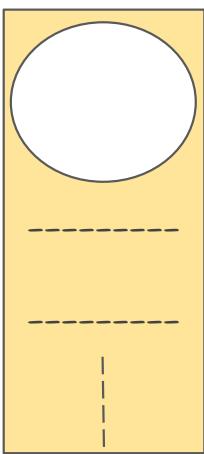
Move back 2 places.

Bird: Luck is on your side! You landed in a 5th grader's back-yard, with great habitat and a bird feeder full of delicious food!

Move ahead 1 place.

Human: You found people that offer you a place to stay for the night and some food for your journey ahead.

Move ahead 1 place.

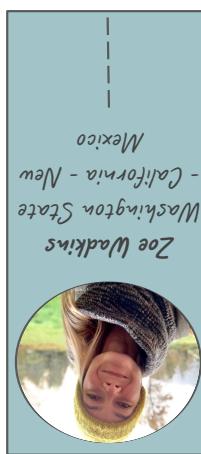


Bird: A blizzard is approaching and the sudden strong cold winds disoriented you and now you're lost!
Go back 2 places.



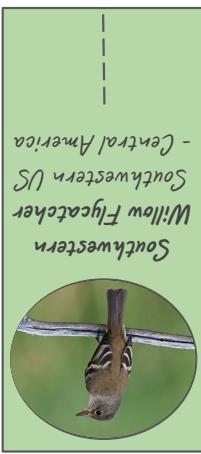
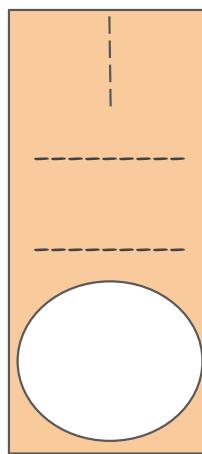
Bird: You accidentally drank from a pond with polluted water and got sick. You will need to rest before continuing your trip.
Skip your next turn.

Human: You accidentally drank from a well with polluted water and got sick. You will need to rest before continuing your trip.
Skip your next turn.



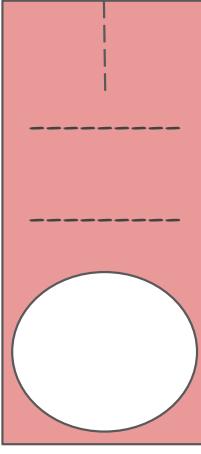
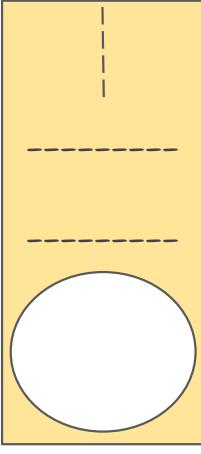
Bird: Oh no! You got lead poisoning from your food. You will need to take a break until you are fully recuperated.
Skip your next turn.

Human: Oh no! You got lead poisoning from your food. You will need to take a break until you are fully recuperated.
Skip your next turn.



Bird: Congratulations! You found a bird house to rest for a bit and recuperate some energy.
Move ahead 1 place.

Human: Yay! You found a place to rest for a bit that has clean water, air and soil. Enjoy it!
Move ahead 1 place.



For this spinner, use a pencil to punch a hole through the center and leave it part way through (you might have to use a piece of tape to keep it in place so it doesn't slide down). Twist the pencil to make the wheel spin. The number that touches the ground is the number of spaces you will move.

