

Migration Madness Board Game



Image from naturewatch.ca.

Specific Learning Outcomes

5-4-01: Use appropriate vocabulary related to their investigations of weather.

5-4-04: Recognize that warm and cold air masses are important components of weather, and describe what happens when these air masses meet along a front.

5-4-07: Describe the key features of a variety of weather phenomena.

General Learning Outcomes

5-0-4c: Work cooperatively with group members to carry out a plan, and troubleshoot problems as they arise.

5-0-5a: Make observations that are relevant to a specific question.

5-0-7b: Base conclusions on evidence rather than pre-conceived ideas or hunches.

Vocabulary

weather, wetland, migration, wind, tornado, hurricane, fog, lightening, thunder, sleet, blizzard, sun dogs, cold front, warm front, air masses, nimbostratus, altocumulus, cumulonimbus, cirrus, rain, snow, sun, water cycle

Summary

Students learn about the key features of a variety of weather phenomena while exploring the value of wetlands during migration, and the impact weather has on migratory birds.

Materials

- *Print out game board (5 pages per game +1 page of instructions) - please consider reusing for future use*
- *Scissors (to cut out cards, game pieces, and die)*
- *Tape (to tape together the 3 pieces of paper making up the game board and the die)*

Procedure

Warm Up

Begin by reminding students about their visit to Oak Hammock Marsh Interpretive Centre, briefly reviewing the day's activities. Remind students of the word 'wetland' and ask them what they think it means now that they have visited one.

Review different kinds of weather and cloud formations (see accompanying sheets for specific terms used in this activity).

Discuss the concept of migration, if this was not covered during your field trip, articulating what it is (see definition).

Migration is a large movement of animals who are driven by the need to find more favourable living conditions and/or food, with some animals migrating to breed. For birds in North America, there are usually two migrations that occur per year: a migration during the fall to travel to overwintering sites, and a migration during the spring to travel to summer breeding sites. Migration is a difficult journey with many challenges, including the weather.

Continue by having students list different kinds of weather, then discussing as a class how weather might impact migration, particularly bird migration.

Explain that students will be playing a board game to learn more about how weather impacts birds who migrate from wetland to wetland during the fall and spring. Explain that there will be a maximum of six players per game, each representing a migratory bird who uses wetlands either as rest stops, breeding grounds, feeding

grounds, and/or as their main habitat. Show the pictures and accompanying descriptions for each bird, briefly discussing each of their migratory journeys.

Activity

Explain to students that they will be getting a taste of the challenges experienced by migrating birds species, who each strive to survive and arrive safely in their overwintering or summer breeding grounds. Each of these bird species use wetlands, either as rest stops, breeding grounds, feeding grounds, and/or as their main habitat.

Explain that students will be divided into groups of six (or less) and each will play as a different migratory bird with the objective to make it to the finish circle first (which ends the game). Students will encounter obstacles throughout the game including severe weather warnings where each players' understanding of weather will be tested. The elements of chance, strategy and an understanding of different weather phenomena will all come into play as players navigate the board to see who becomes the first to make it to the finish line, surviving the madness of migration!

Go over the rules of the game (see game instructions). Divide students into groups of six or less, giving each group a board game, one die, a card set (contains 30 cards), and a set of six game pieces. Either give each group the game instructions or post on the board.

Once all games are set up, have students play the game.

Wrap Up

Once all students have played at least one round of the game, bring class together for a discussion on the students' overall experience as a bird in the game (did they experience any set backs, did they encounter any advantages, what kinds of weather did they encounter, were any of them able to finish the game).

Conclude by stating that weather impacts all living things, whether be birds during migration or humans during an outdoor field trip. We must remain mindful of this important force in our world.

Optional: Have students write an exit slip where they write down three things they have learned about weather and wetlands from their experiences with the board game, the pre-visit activity, and/or the field trip.

Different Kinds of Weather

Wind - the movement of air around the world, and is a fundamental ingredient to developing weather.

Air Mass - a large body of air that has a similar temperature and moisture levels throughout the air body.

Cold Front - a cold air mass replaces a warm air mass.

Warm Front - a warm air mass replaces a cold air mass.

Rain - liquid precipitation formed by water droplets.

Thunder & Lightning Storm - negatively charged particles sink to the bottom of clouds and gather until a giant spark is created, followed by a loud noise (created by the increase in pressure, temperature and expansion of air).

Fog - water droplets mix with dust and/or air pollution, creating a cloud near the ground.

Snow - solid precipitation formed by ice crystals.

Sleet - precipitation that occurs at temperatures around 0°C which creates a slush.

Blizzard - blowing snow with temperatures below freezing and wind speeds of at least 70km/hour.

Tornado - when a warm, moist air mass and a dry air mass meet, they create instability in the atmosphere and a narrow, rotating funnel that stretches from the ground to the clouds is created, with wind speeds varying from 100 km/hour to 400 km/hour.

Hurricane - considered the most violent storms on earth, hurricanes (also known as typhoons or cyclones, depending on where they occur) form over warm ocean waters. Moist air rises from the water, forming storm clouds which turn into rotating bands around the “eye” (centre) of the storm. Cool air is sucked into the “eye” and wind grows in speed, reaching at least 63 km/hour to be considered a hurricane.

The Effects of Weather

Forest Fire - when there is no rain for many days and the air has been very dry, forest fires can start with just a small spark, and significantly change habitats.

Flood - when an area experiences heavy amounts of precipitation in a short period of time, water stays in an area, significantly changing habitats.

Drought - when an area experiences drier-than-normal conditions, like no rainfall, this drought or lack of moisture can significantly change habitats.

Sun Dogs - an effect of very cold temperatures, ice crystals refract sunlight creating a bright spot on the left and/or right of the sun, creating the illusion that there are two or three suns in the sky.

How Weather Impacts Bird Migration



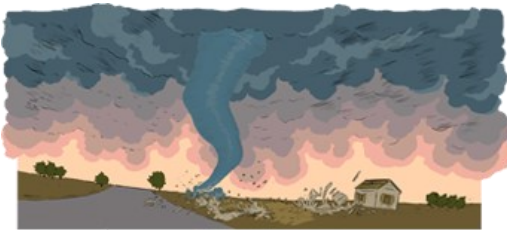
Heavy Rain, Thunder & Lightening Storm, Fog, Sleet, Snow

- *Grounded, delayed*



Blizzard

- *Grounded, delayed*
- *Increases chances of death*



Warm & Cold Front

- *Impacts when the birds actually begin to migrate; they are sensitive to weather changes*



Tornado, Hurricane

- *Grounded, delayed*
- *Blown off course (on a smaller scale for a Tornado)*
- *Use more energy to avoid*

How the Effects of Weather Impacts Bird Migration

Drought



Forest Fire

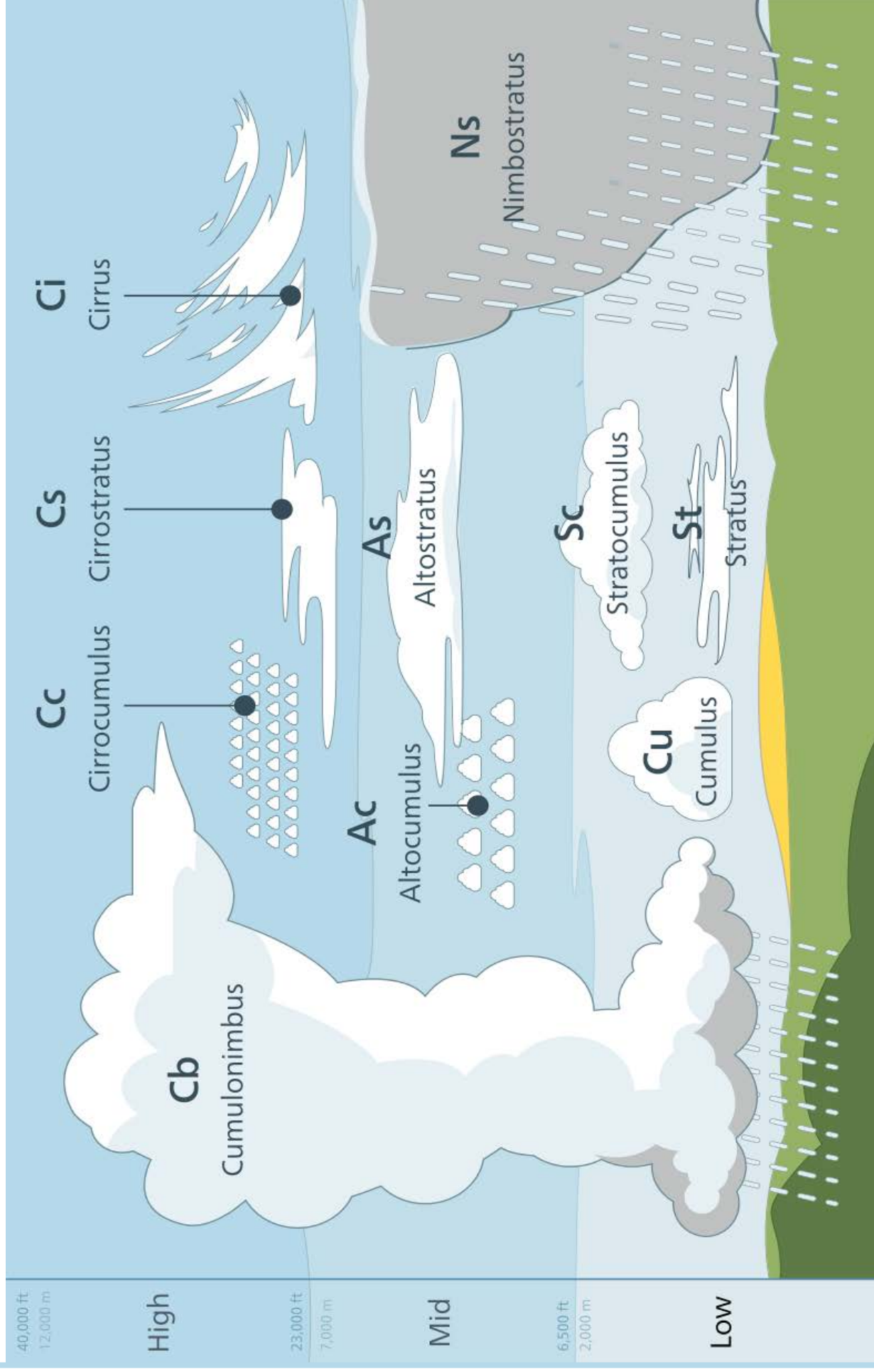


Flood



Effects stop-over sights / Increases chances of death / Use more energy to avoid

Different Kinds of Clouds



Migration *Madness!* Board Game

Migratory Bird Information

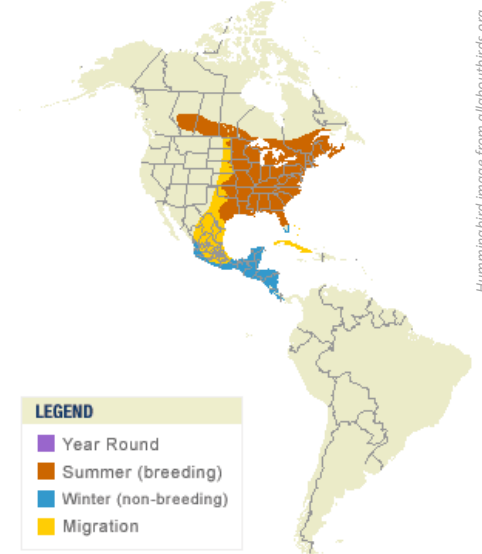


Ruby-throated Hummingbird

The Ruby-throated Hummingbird is a medium to long distance migrant, traveling as far as Central America. The hummingbird will travel from its breeding ground in southern Canada and eastern United States across the centre of the US and Mexico, then fly across the Gulf of Mexico to reach its destination.

The hummingbird overwinters in Central America (in countries such as Guatemala, Belize, Honduras, El Salvador, Nicaragua, and Costa Rica), but will also overwinter in southern Mexico and the southern tip of Florida (US).

Ruby-throated Hummingbird
Archilochus colubris



Hummingbird image from allaboutbirds.org.

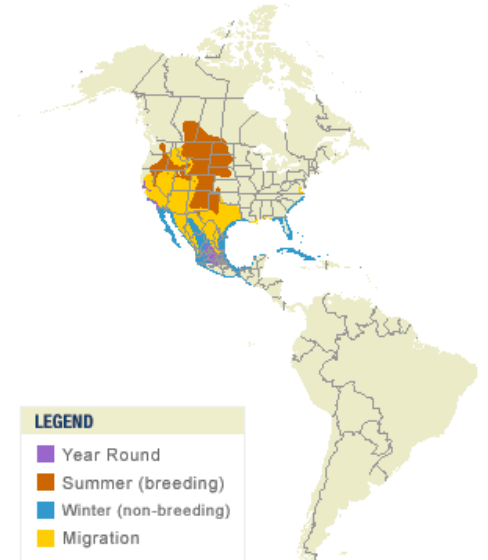


American Avocet

The American Avocet is a medium distance migrant, traveling as far as southern Mexico. The avocet flies from its breeding ground, located in central United States and the southern region of the prairie provinces in Canada, traveling over central and western United States and Mexico.

The avocet overwinters throughout Mexico, Cuba, and in the United States in southern Florida, Georgia, and the Carolinas.

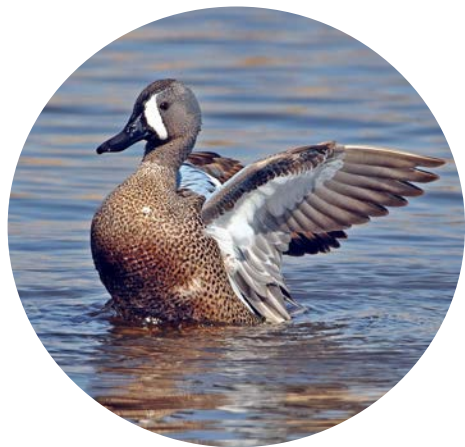
American Avocet
Recurvirostra americana



Migration *Madness!* Board Game

Migratory Bird Information

Blue-winged Teal



The Blue-winged Teal is a long distance migrant, traveling as far as South America. The teal flies from its breeding ground, which is located across Canada and the United States, and travels over eastern and western United States as it migrates to its overwintering ground.

The teal overwinters throughout central America and the northern region of South America.

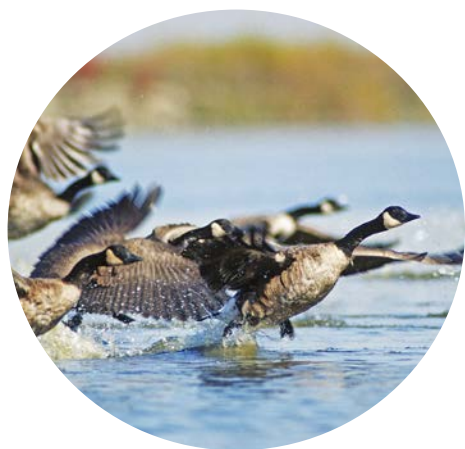
According the Cornell Lab of Ornithology, the teal is among the last of the ducks to migrate in spring , and is also one of the last to migrate in the fall.

Blue-winged Teal
Anas discors



Map by Cornell Lab of Ornithology
Range data by NatureServe

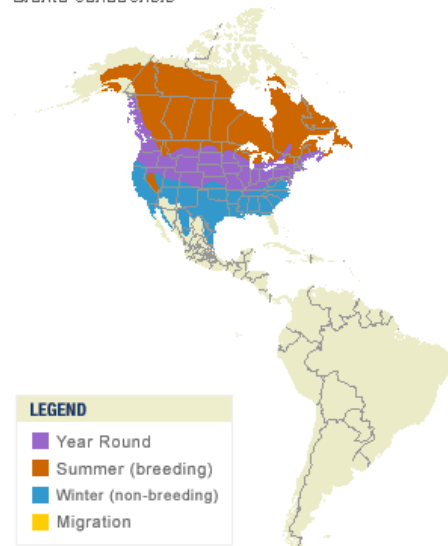
Canada Goose



The Canada Goose is a medium distance migrant, where some geese fly from arctic to the southern United States. The goose flies from its breeding ground, located across Canada, northern United States, and Alaska (USA), and travel over North America during migration.

The goose overwinters in the southern United States and the northern region of Mexico.

Canada Goose
Branta canadensis



Map by Cornell Lab of Ornithology
Range data by NatureServe (in part)

Migration *Madness!* Board Game

Migratory Bird Information



Barn Swallow

The Barn Swallow is a long distance migrant, flying as far as South America. The swallow flies from its breeding ground, located throughout North America, traveling over southwest United States, the Caribbean, and Florida (USA) to their overwintering grounds.

The swallow overwinters throughout Central and South America.

Barn Swallow
Hirundo rustica



Map by Cornell Lab of Ornithology
Range data by NatureServe

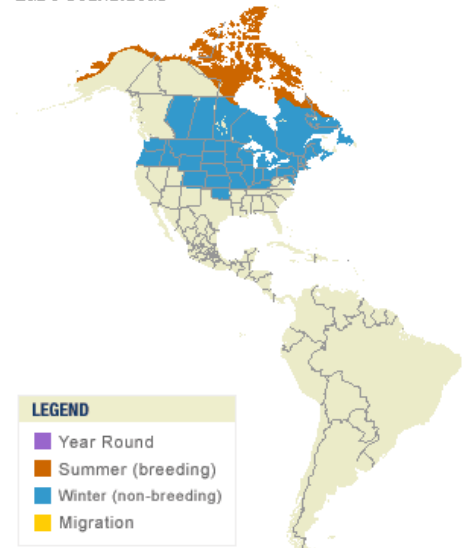


Snowy Owl

The Snowy Owl is an irruptive medium- to long distance migrant. This species of owl is an irruptive migratory bird, which means they can have irregular migrations where large numbers of birds fly to areas where they are not typically found. This irruptive migration behaviour is usually due to a lack of food in the areas they normally inhabit, or very cold and/or severe weather.

This owl flies from its breeding ground, which is located in the arctic, traveling to the central, eastern areas of Canada and northern and mid-United States.

Snowy Owl
Bubo scandiacus



Map by Cornell Lab of Ornithology
Range data by NatureServe



Migration *Madness!* Board Game

Game Instructions

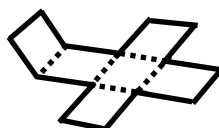
Game Description: Migration Madness the Board Game allows players to experience a taste of the challenges experienced by migrating birds species, who each strive to survive and arrive safely in their overwintering or summer breeding grounds. Each of these bird species use wetlands, either as rest stops, breeding grounds, feeding grounds, and/or as their main habitat.

Playing as six different migratory birds, players will encounter many obstacles including severe weather warnings where each player's understanding of weather will be tested. The elements of chance, strategy and an understanding of different weather phenomena will all come into play as players navigate the board to see who becomes the first to make it to the finish line, surviving the madness of migration!

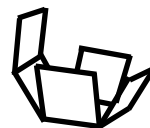
Materials:

- Game board (3 pages taped together)
- 30 'Weather Warning' cards
- 6 game pieces
- 1 die

B) 1.



2.



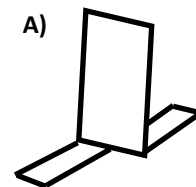
3.



Set Up: Tape board game pages together. Cut out cards, game pieces, and die.

Fold game pieces so they stand (see diagram A). Fold die to make a cube, taping sides (see diagram B). Place game pieces on the start circle. Shuffle 'Weather Warning' cards (30 in total).

A)



How to Play:

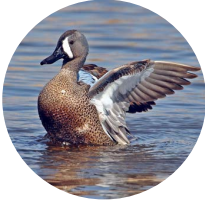





1. Have each player roll the die once to determine the playing order. The highest number rolled by a player goes first, with the other players following according to their number.
2. Following the order established in the beginning of the game, each player will roll the die on their turn to see how many spaces they move forward. The number rolled is the amount of spaces the player moves forward.
 - a) If a player lands on a circle with specific instructions (such as: You have lost your flock, go back three spaces) follow those instructions.
 - b) If a player lands on a **Weather Warning** circle, another player will pick a card from the Weather Warning deck of cards, reading out the question. The player (whose turn it is) must answer the question. If the player answers correctly, they can move ahead one space. If the player answers wrongly, the player must skip their next turn.
 - c) If a player lands on a space that is already occupied by another player, the player whose turn it is must go back one space. If the player lands again on a space occupied by another player, the player whose turn it is must go back another space, until they land on a space that is free.
3. The **objective of the game** is to land on a finish circle first, resulting in the end of the game.















Conserving
Canada's
Wetlands

Manitoba 

2	5	
6	3	4
1		

 <p>Blue-winged Teal</p> <p>_____</p>	 <p>Ruby-throated Hummingbird</p> <p>_____</p>
 <p>Canada Goose</p> <p>_____</p>	 <p>Snowy Owl</p> <p>_____</p>
 <p>Barn Swallow</p> <p>_____</p>	 <p>American Avocet</p> <p>_____</p>

<p>1</p> <p>Weather Warning!</p>  <p>This kind of storm includes an eye; the centre of the storm. What am I?</p> <p><i>Answer: Hurricane</i></p>	<p>2</p> <p>Weather Warning!</p>  <p>This kind of weather includes a narrow, rotating funnel that stretches from the clouds to the ground, with wind speeds varying from 100 km/hour to 400km/hour. What am I?</p> <p><i>Answer: Tornado</i></p>	<p>3</p> <p>Weather Warning!</p>  <p>This kind of weather includes temperatures below freezing, blowing snow which makes it very difficult to see, and wind speeds of at least 70km/hour. What am I?</p> <p><i>Answer: Blizzard</i></p>	<p>4</p> <p>Weather Warning!</p>  <p>This kind of weather includes cloudy skies and precipitation. What am I?</p> <p><i>Answer: Rain</i></p>	<p>5</p> <p>Weather Warning!</p>  <p>When there has been no rain for many days and the air has been very dry, I can be started with just a small spark and significantly change habitats. I am an effect of weather. What am I?</p> <p><i>Answer: Forest Fire</i></p>	<p>6</p> <p>Weather Warning!</p>  <p>This kind of weather happens when precipitation occurs at temperatures around 0°C, creating a kind of slush and slippery conditions. What am I?</p> <p><i>Answer: Sleet</i></p>
<p>7</p> <p>Weather Warning!</p>  <p>This kind of weather makes it hard to see and looks like clouds hovering over the ground. This kind of weather happens when water droplets mix with dust and/or air pollutants. What am I?</p> <p><i>Answer: Fog</i></p>	<p>8</p> <p>Weather Warning!</p>  <p>This kind of weather happens during storms when negatively charged particles sink to the bottom of clouds and gather until a giant spark is created. What am I?</p> <p><i>Answer: Lightning</i></p>	<p>9</p> <p>Weather Warning!</p>  <p>This kind of weather happens during storms and only <i>after</i> lightning strikes, when a sudden increase in pressure, temperature and expansion of the air creates a loud noise.</p> <p><i>Answer: Thunder</i></p>	<p>10</p> <p>Weather Warning!</p>  <p>When it is very cold, ice crystals can refract sunlight, creating a bright spot on the left and/or right of the sun, creating the illusions there are two or three suns in the sky. What am I?</p> <p><i>Answer: Sun Dogs</i></p>	<p>11</p> <p>Weather Warning!</p>  <p>This kind of weather happens when a warm air mass replaces a colder air mass. What am I?</p> <p><i>Answer: Warm Front</i></p>	<p>12</p> <p>Weather Warning!</p>  <p>This kind of weather occurs when a cold air mass replaces a warm air mass. What am I?</p> <p><i>Answer: Cold Front</i></p>

<p>13</p> <p>Weather Warning!</p> <p>This kind of weather is a large body of air that has a similar temperature and moisture levels throughout the air body. What am I?</p> <p><i>Answer: Air Mass</i></p>	<p>14</p> <p>Weather Warning!</p> <p>This type of cloud is thin and wispy, and is the most common high-level cloud and forms 6000 meters above the ground.</p> <p><i>Answer: Cirrus</i></p>	<p>15</p> <p>Weather Warning!</p> <p>This type of cloud looks like light parallel bands or small, rounded masses, which forms 2000 to 6000 meters above the ground. What am I?</p> <p><i>Answer: Altostratus</i></p>	<p>16</p> <p>Weather Warning!</p> <p>This type of cloud is dark and low to the ground, and looks formless. This cloud develops under 2000 metres above the ground and is usually accompanied by falling precipitation. What am I?</p> <p><i>Answer: Nimbostratus</i></p>	<p>17</p> <p>Weather Warning!</p> <p>This type of weather happens when precipitation falls while temperatures are below freezing. What am I?</p> <p><i>Answer: Snow</i></p>	<p>18</p> <p>Weather Warning!</p> <p>This type of cloud is very large and fluffy, usually developing over 2000 meters above ground and can reach past 6000 metres in height. This cloud type is usually accompanied by falling precipitation. What am I?</p> <p><i>Answer: Cumulonimbus</i></p>
<p>19</p> <p>Weather Warning!</p> <p>This is the movement of air around the world, and is a fundamental ingredient to developing weather. What am I?</p> <p><i>Answer: Wind</i></p>	<p>20</p> <p>Weather Warning!</p> <p>This is the movement of water around the earth and our atmosphere. This is a fundamental ingredient to weather development on our planet. What am I?</p> <p><i>Answer: Water Cycle</i></p>	<p>21</p> <p>Weather Warning!</p> <p>This is what warms up our earth, and influences the temperature. This is one of the fundamental ingredients to creating weather on our planet. What am I?</p> <p><i>Answer: The Sun</i></p>	<p>22</p> <p>Weather Warning!</p> <p>What do ducks and geese do to stay cool when it is hot and sunny?</p> <p><i>Answer: Pant, fluff up their feathers to be more immersed in cool water, and dive and splash to cool down.</i></p>	<p>23</p> <p>Weather Warning!</p> <p>What do swallows do when it is hot and sunny?</p> <p><i>Answer: Pant and splash in cold water to stay cool, and sun themselves to get rid of harmful germs and parasites which are hitching a ride in their feathers, for it is too hot for them.</i></p>	<p>24</p> <p>Weather Warning!</p> <p>What do ducks and geese do when it is cool and raining?</p> <p><i>Answer: Stay out and active, fluff up their feathers to stay warm, and spread oil from a gland over their feathers for waterproofing.</i></p>
<p>25</p> <p>Weather Warning!</p> <p>What do ducks and geese do when it is cool and windy?</p> <p><i>Answer: As winds intensifies, ducks and geese will move to more sheltered areas. They will also fluff up their feathers to stay warm.</i></p>	<p>26</p> <p>Weather Warning!</p> <p>What do ducks and geese do during thunder and lightening storms?</p> <p><i>Answer: Due to the increased cloud cover, they stop feeding, and move earlier and later in the day; they also move to sheltered areas.</i></p>	<p>27</p> <p>Weather Warning!</p> <p>What do ducks and geese do when it is cold and snowing?</p> <p><i>Answer: If shallow water ices over, they move to the remaining open water, and move farther for food if closest food source is covered by layers of snow.</i></p>	<p>28</p> <p>Weather Warning!</p> <p>What do hummingbirds do when it is cold?</p> <p><i>Answer: They go into a state called torpor, which is when they reduce their metabolic rate (how fast they burn calories), reduce their body temperature to decrease how much energy they need, and essentially go to sleep.</i></p>	<p>29</p> <p>Weather Warning!</p> <p>When there is an area that experiences drier-than-normal conditions, like little to no rainfall, I am an effect of weather and can significantly change habitats. What am I?</p> <p><i>Answer: Drought</i></p>	<p>30</p> <p>Weather Warning!</p> <p>When there is an area that experiences heavy amounts of precipitation in a short period of time, I am an effect of weather and can significantly change habitats. What am I?</p> <p><i>Answer: Flood</i></p>

Migration Madness!

The Board Game

Start

Roll the die.

Who ever has the highest number goes first.

Good luck!

You lost your flock, go back two spaces!

Wetland Stop!
You need to
rest, skip your
next turn.

You lost your flock, go back two spaces!

Weather Warning!

**The wind is at
your back, skip
ahead two
spaces!**

You lost your flock, go back three spaces!

Wetland Stop!
You need to
rest, skip your
next turn.

Wetland Stop!
You need to
rest, skip your
next turn.

Weather Warning!

