Bird Safe Guelph
School Programs

Bird Safe Guelph: School Programs

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Thank you for taking the opportunity to help educate your students about avian conservation! At Bird Safe Guelph, we believe that we can make a meaningful impact to help protect wildlife, and that education is one of the best ways to achieve this goal. Our classroom package is geared towards primary school students from grades K-6 and provides an interactive and informative presentation that can be delivered within a 15 - 30-minute time period to best suit the needs of different ages. This presentation is divided into three sections:

1) A standard 15 to 20-minute talk, where you and your students can discuss the conservation challenges being faced currently, and how we can overcome them. This section encourages students to engage in wildlife conservation by asking them to relate their own experiences and ideas to meaningful conservation challenges. Passages that are italicized are intended to be presented as open questions to students that can then be expanded upon in subsequent slides.
2) An optional active, in-class game that should last between 10-15 minutes and allows students to learn about a specific conservation challenge through play. This can either be done in a large open space within a classroom or outdoors. (See post-lesson activities).
3) Optional take-home or in-class colouring and research projects for students to continue engaging with the concepts presented in these lessons at the instructor's discretion. (See post-lesson activities).

5 – 6: Let's Save Some Birds!

Our grades 5 & 6 module goes further in depth, exploring the conservation challenges faced by birds in North America. We invite your class to explore what makes a bird a bird, then discuss reasons why they think birds are important. Following this, we introduce the concept of extinction, and describe the three main conservation challenges that birds are facing and provide actionable measures that your class can take to help.

Following this 15 to 20-minute presentation, we have provided three different activities that your class can take part in to actively engage with the subject matter (see post-lesson activities).

What are Birds?

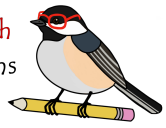
- Ask the students *what they think the 6 defining features of birds are?* (They likely mentioned some of these in the previous question, so you can circle back to that and reinforce that they did a great job)
  1. Feathers
     - Birds possess specialized structures called feathers that provide insulation and help them fly
  2. Wings
     - All living birds have a single pair of wings. Most birds use these wings for flying, but they can serve many other purposes such as swimming, producing visual displays, and even making sounds!

3. Beaks
    - Birds don't have teeth. All birds have a lightweight toothless beak
4. They lay hard-shelled eggs
    - All birds lay hard-shelled eggs. Most of you have probably eaten eggs before. These most often come from chickens!
5. Warm-blooded
    i. Birds are warm-blooded animals, just like us mammals! This means that they can maintain a steady body temperature and stay active in cold weather
6. Lightweight Bones
    i. Most birds actually have hollow bones. This helps them with flying as it reduces their weight.

- I've also included a link to the bird anatomy tool at the Cornell Lab of Ornithology's All About Birds website (https://academy.allaboutbirds.org/features/birdanatomy/). Depending on how in-depth you want to go, this can let you cycle through all the different organ systems of a bird.

Birds are important

- Ecological significance
    - Birds are a crucial part of almost every ecosystem around the world
    - There are over 900 species of birds like the Ruby-throated hummingbird that are important pollinators for plants (C. H. Sekercioglu, 2006)
    - Many species like the Turkey Vulture, are important scavengers that help clean up decaying organic matter and control the spread of diseases (Ç. H. Sekercioglu et al., 2021)
    - Some species even have very special mutualistic relationships with other animals, like the Egyptian plover, that helps clean the teeth of Nile crocodiles. The crocodile gets its teeth cleaned, while the plover gets an easy meal!
- Cultural Significance
    - Birds hold an important place in many cultures around the world
    - Such as the Ruru/Morepork of Aotearoa (New Zealand), which the Māori view as a watchful guardian from the spirit world. It's different calls are recognized as either a good omen or a warning.
    - Many countries have included birds as national symbols, like the Bald Eagle in the United States
    - The Greater Honeyguide helps the Yao people of Mozambique find bee nests. The bird and the people each have unique sounds they make to each other to communicate. In return for guiding the people to the bees, the honeyguide gets to eat the larvae and wax, which it would not be able to get at itself.
- Economic significance
    - In Canada alone, people eat around 822 million eggs a year and raised around 233 million chickens for food (as calculated from mean mass of poultry chicken/net mass produced for 2019).
    - Birds eat up to 500 million tons of insects every year! Many of these are species that would eat our food crops. (Nyffeler et al., 2018)



    - Birdwatching is becoming an increasingly popular hobby that lets people get outside, explore nature and find new birds. Kind of like real-life Pokémon! You can even download apps like eBird that help you identify and keep track of all the different birds you've found.
- *Does anyone have a cool bird story they would like to share?*

What is happening to birds?

- Many bird species are facing extinction. *Does anyone know what extinction means?*
    - When a species disappears from the earth forever
- Over 150 bird species have gone extinct in the last 500 years (can provide information on any of the examples if there is time or students are interested)
    - Ivory-billed woodpecker
        - Was declared extinct in 2021
        - Was largely wiped out due to the logging industry in the early 20th century (https://www.audubon.org/news/-ivory-billed-woodpecker-be-officially-declared-extinct-us)
    - Coastal Moa
        - Moa were large flightless birds that used to live in New Zealand
        - The largest species reached over 3.6m (12 feet) tall! (Bunce et al., 2003)
        - They went extinct around 500 years ago due to overhunting (Perry et al., 2014)
    - Passenger pigeon
        - The last individual named "Martha" died in the Cincinnati Zoo in 1914
        - Once the most numerous bird in North America, with flocks that would block the sun, they were overhunted to extinction in under 100 years (https://www.audubon.org/magazine/may-june-2014/why-passenger-pigeon-went-extinct)
    - Huia (pronounced *hoo-ee-uh*)
        - Went extinct in the early 1900s (https://teara.govt.nz/en/photograph/13671/huia)
        - Due to a combination of factors related to European settlement, but largely due to invasive mammals such as rats, cats, and weasels (https://nzbirdsonline.org.nz/species/huia)
- They are going extinct 1000x faster in the 21st century (Pimm et al., 2006)
    - Largely due to human impacts
- Ask the next two questions and write students thoughts up on the board to come back to later and discuss. It's very likely they may know of some we have missed in this presentation!
    - *What do you think us humans might be doing to cause this?*
    - *How do you think we can help?*

What can we do to help?

- This slide acts as a nice jumping-off point for each of the three main conservation challenges that Bird Safe Guelph tries to address. At this level, we take a look at each issue a little more in-depth, providing conservation solutions that everyone can get involved with.

1) Bird-proof windows
    - This will help reduce window collisions
    - More resources can be found at FLAP
2) Turn off your lights at night
    - Many migrating birds travel at night and rely on starlight for navigation
    - Turning your lights off prevents birds from becoming disoriented, and as an added bonus lets you see the stars!
    - More can be found at Lights Out
3) Don't let your cat outside
    - Cats are some of the best predators imaginable and are responsible for a lot of unnecessary bird deaths
    - It isn't their fault though, and they should just be kept inside or on a leash

1) Window Collisions

- *How many birds do you think die from colliding with windows?*
- In Canada it's estimated that 25 million birds die every year from window collisions (Machtans et al., 2013)
- This number increased to between 100 million to one billion birds in North America (Klem et al., 2004)
- *Why do you think this happens?*
    1. Reflections or perfectly transparent windows make it seem like there isn't a barrier
- **What can we do?**
    1. Move your birdfeeder
        - Within 0.5 m of your window
        - This prevents birds from seriously injuring themselves when leaving your bird feeder. The limited distances ensures that if they hit your window, it's only a gentle bump.
    2. Follow some of these FLAP guidelines to birdproof your windows!
    3. High-contrast markings on the outside of your windows
        - ≥6 mm in diameter
        - <5 cm apart
        - Cover the entire surface of the window
        - Examples (3 images per slide)
            - Feather Friendly DIY Tape
            - Ribbons or string
            - Decals
            - Tape
            - Exterior window screens
            - Get artistic and make your own patterns with either paint pens or a bar of soap!

2) Artificial Lights at Night (ALAN)

- *Have you ever tried looking for stars at night while you are in a big city? How about when you are outside of the city?* It tends to be easier to see stars when you are out in the country. This is because of light pollution. *Does anyone know what light pollution is?*
    - Light pollution is when human lights alter the night sky, causing reduced visibility or stars, planets, and other celestial objects
    - Light pollution has significant negative impacts on the health of both humans and wildlife, such as birds
- 70% of terrestrial bird species in North America are migratory, and of these 80% migrate predominantly at night (Horton et al., 2019)
- *How do you think our lights may impact birds?*
- Artificial lights at night (ALAN) can cause:
    - Disorientation, resulting in both fatal collisions with windows (Lao et al. 2020),
    - Attraction towards large urban centers and away from ideal stopover locations during migration (McLaren et al. 2018)
    - Unnecessary energy expenditure (National Audubon Society), which can be devastating during migration events (IDA, 2019)
- **What can we do?**
    - *Does anyone have any ideas on how we can help reduce light pollution?*
    - Light pollution can be mitigated using a combination of (IDA 2018):
        - Turning lights off at night
        - The use of timers and motion detectors to restrict ALAN to when they are needed
        - Shielding to direct light away from the sky
        - Reduced lumen bulbs that operate on longer wavelengths

3) Keeping Cats Indoors

- Domestic cats are excellent hunters and account for the majority of bird deaths in North America. *How many birds do you think cats kill every year?*
    - Up to **350 million** birds every year in Canada alone! (Blancher, 2013)
    - Close to **4 BILLION** birds per year in the United States! (Loss et al., 2013)
- So far, we know that domestic cats have contributed to at least 63 species going extinct. These animals have ceased existing and will never be seen again. (Doherty et al., 2016)
- In Canada over 115 bird species are vulnerable to domestic cats
- **What can we do?**
    - *What do you think we can do to help?*
    - Keep your cat inside
    - This will also let your cat live up to 5x longer! (Loyd et al., 2013)
    - Take your dog or cat for a walk on a leash!

Post-lesson activities

1) Piping Plover Game

This game is designed to have kids engage with and learn about a conservation concept through active play. While this game should be fun, it's also important to take a moment once it is over to reflect on the impacts that each of these slight changes to the game have on the piping plovers in this scenario. You can ask you class whether each of the following changes made it easier or harder for the kids playing as plovers:

1) Increasing the number of children playing as dogs
    - This simulates increased predator density and should have a negative impact on the plovers
2) Decreasing the number of markers available
    - This simulates the impacts of climate change on resource abundance, and should have a negative impact
3) Increasing the size/number of their safe zones
    - This simulates increasing protected areas for wildlife and should have a positive impact

We hope, that through playing this game and reflecting on how each round goes that your class will both have fun and a greater appreciation for the impacts that (1) invasive predators, (2) climate change, and (3) conservation areas can have on wildlife.

Materials

- Markers (food)
- Cones (to mark safe areas)

Steps

1) First, scatter the markers across the floor (somewhere with lots of space, gym) or outside
2) Mark an area with cones that represents the Dunes, where the Piping Plovers can escape predators and humans (this is where they nest and often it is illegal to step on the dunes)
3) Randomly select some children to be the piping plovers, and for the first round, choose someone to be a dog
4) The dog must try to catch the piping plovers, who have to get at least three or more markers in order to survive the round
5) If they don't, they become dogs and must chase the rest of the piping plovers
6) Each round (up to instructor how many are played) replenish the markers

- To make the game more difficult or challenging, explain that the summer is passing by, less insects are available because they hatched early due to global warming
- Another addition that can be made is adding more safe areas or increasing/decreasing the size of the safe area for the piping plovers
    - This can be used to highlight the importance of protected areas for wildlife

End of game discussion

- Explain to the children or ask, was it harder to get markers when there were more dogs chasing you? (Trying to make connection that more traffic = less food)

- How does this connect to the real world and how piping plovers are affected?
- If adding on challenge:
    - How is climate change affecting birds? Why do you think there are less insects for the birds to eat later in the season?
    - With added safe spaces, was it easier for piping plovers to get back to safety?

2) Dark Sky Wheel Activity

- You can either provide printouts or the link to students to access this short at-home activity from NASA's Jet Propulsion Laboratory
- In short:
    - Provide each student with the Dark Sky Wheel, and direct them to the visible stars of Orion in each section (The really obvious ones are Rigel at the bottom and Orion's Belt, the three bright stars clumped closely in a straight line).
    - You can provide some idea where Orion will be at around 8pm using this website (https://www.globeatnight.org/finding/orion) using 40˚N. Let the students know where they should be looking (in Guelph it should be close to directly South)
    - Ask them to take home the Dark Sky Wheel, and at night look for Orion. When they spot the constellation, they should write down the number that corresponds to what they see in the sky relative to the wheel.
    - The next day, ask students to share what "score" or number they saw, writing each number on the board. Engage the class in a discussion as to why some of their numbers are different or why they are so similar.
    - The main takeaway should be that urban centers have higher light pollution, and that there is a lot we can do to reduce this impact. This provides an excellent opportunity to review mitigation methods covered in the presentation.

3) Colouring and livestream of bird nests

a) At the instructor's discretion, you may elect to do a more subdued activity. In that instance, we have provided a booklet of printable colouring pages from the Cornell Ornithology Lab for students to colour while watching live camera feeds of a number of different birds around the world.
    - The link to the Cornell All About Birds live feeds can be found here, or on the final slide of the presentation.
    - The species and locations available will vary throughout the year, so the instructor may need to try a few different cameras before finding one with anything going on.

b) This activity can also be provided as a take-home exercise:
    - Allow students to each choose a colouring sheet with a specific bird.
    - Ask them to research their chosen bird at home, colouring them in as close to their natural colours as possible, and provide one interesting fact about their chosen bird.

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