

CATS AND BIRDS

KEEP CATS SAFE AND SAVE BIRD LIVES



Educational
Program

Grades 4 to 6





Dear Educator,

Thank you for your interest in our educational program!

Keep Cats Safe & Save Bird Lives is an initiative of Nature Canada, the oldest conservation charity in Canada. It has been developed in collaboration with the Canadian Federation of Humane Societies, Earth Rangers, Bird Studies Canada, and our regional partners.

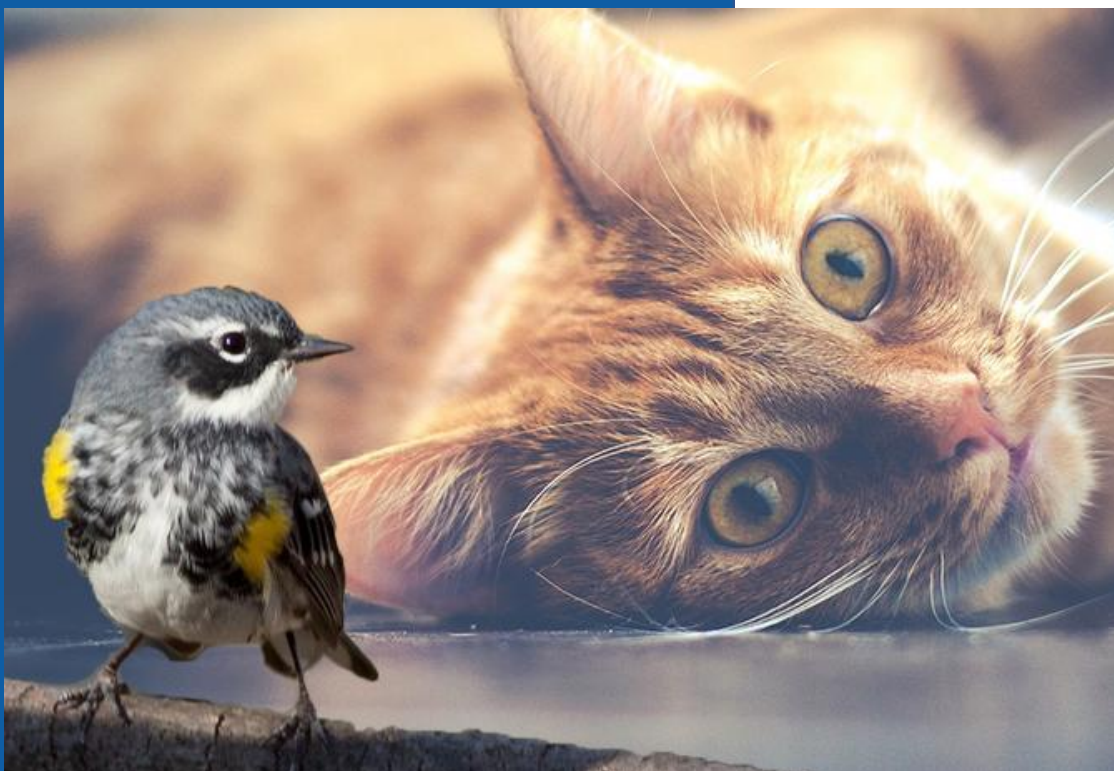
This package is comprised of five core lessons, plus two optional lessons that include activities and discussions about cats and birds. The lessons cover a variety of subject areas, including science and technology, math and social studies, and address the curriculum for Grades 4 to 6. The lessons can be taught individually or in succession. We have also included a primer for teachers and a glossary. You might also be interested in **Additional Resources** which includes some colouring pages and links to more information.

We're very interested in any ideas you may have for improvements to this program. If you have any comments, suggestions or questions, please contact me at info@catsandbirds.ca. We'd love to hear from you on social media too – find us on [Facebook](#) (TakingCareofCatsandBirds) and Twitter [@safecatssafebird](#).

Warm Regards,

Sarah Cooper
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CONCEPTUAL FRAMEWORK and LESSON SUMMARY

This curriculum package offers a flexible approach to introducing and addressing the Keep Cats Safe & Save Bird Lives initiative with your students within the context of building healthy communities. We invite you to create a mini-unit; the five core lessons cover the key concepts, and optional lessons allow you and your students to explore various aspects in more depth. The initiative is interdisciplinary and while we've identified the subject(s) a particular lesson may fit with the best, all the lessons are adaptable to best suit your curriculum needs.

For a summary of the key facts and concepts pertaining to the Cats & Birds curriculum, as well as links to further information, please see the **Primer for Teachers**. In each lesson, specific information and links are provided in the **Background Information** section; all key words are defined in the **Glossary**. Check **Additional Resources** for general links, a fact sheet, and links to further learning opportunities.

Core / Option	Key Concept	Title of Lesson	Lesson Summary	Subject(s)/ Key Concept(s)
Core	Introduction to domestic cats and wild birds	1: Cat Bird Science 101: Similarities and Differences between Cats and Birds	As a whole class, students establish that domestic cats and wild birds share the same basic needs but differ in how and where these needs are met. In small groups, students compare physical and behavioural characteristics of domestic cats and wild songbirds in a card sorting activity to understand their ecological roles.	Science Social Studies (responsibilities) Language Arts
Core	Birds are integral to natural ecosystems	2: Bird Webs in the Neighbourhood!	By exploring local outdoor areas, students become familiar with bird diversity and ecology. The cumulative physical activity demonstrates how birds are an integral component of local ecosystems and provide ecosystem services.	Science Social Studies Physical Education Language Arts
Core	Cats are domestic and require responsible care	3: Cats in our Lives	Reading about the history and domestication of cats students learn the responsibilities of being a pet owner and how to keep cats safe. Two math activities introduce the consequences of allowing	Language Math

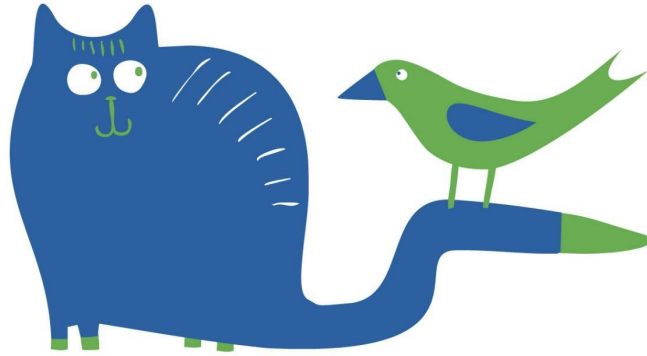
			cats to roam unsupervised outdoors (and not spay or neutering).	
Core	Consequence of cats and bird interactions	4: Cats and Birds in the Neighbourhood: Can Helpful Humans Really Make a Difference?	After playing an active game of 'tag' to learn the impact of unsupervised outdoor cats on the cats themselves and on bird populations, student explore what they can do to keep cats safe and save bird lives.	Science Social Studies Physical Education
Core	Conclusion	5: Writer's Wrap Up!	Students share what they have learned by writing and revising a sentence or paragraph.	Language
Option	Difference in level of care between cats and dogs	6: Different Where? Different There, in Outdoor Care	Students create a Venn diagram to examine the differences in the standards of care between cats and dogs and discuss responsible pet ownership.	Science Social Studies
Option	Bird Migration	7: Cats and Birds: a Global Problem, a Local Solution	Students learn about migration of North American birds by viewing two interactive websites and completing a worksheet, then brainstorm actions they can take to save bird lives in their local community as well as communities in other parts of the world.	Science Social Studies

PRIMER FOR TEACHERS

This educational program is designed to raise awareness of two connected issues: the well-being of domestic cats and the protection of wild bird populations within the context of building healthy communities.

Cats

The pet cat, *Felix catus*, was domesticated from a wildcat, *Felis silvestris*, over 10,000 years ago and; it is now one of the most popular pets in Canada. Although domestic, a cat's hunting instincts are very much intact - even well-fed cats will hunt if left unsupervised. A recent study indicates that there



are an estimated 9.3 million cats in Canadian homes. This number does not include those that are lost or abandoned, nor feral cats that may live in colonies established near human settlements.

For the purpose of this curriculum, we have identified three possible statuses of domestic cats:

- **Safe:** Owned pets that are kept indoors and fully supervised or enclosed when outdoors, with all needs met by responsible owner.
- **Stray:** cats that roam outdoors for short to extended periods of time without human supervision; owned or semi-owned strays are regularly fed, possibly by more than one person; un-owned strays are lost or abandoned pets that may become feral; stray cats are usually comfortable interacting with humans.
- **Feral:** Un-owned cats that are born and live outdoors full time either alone or in colonies; lost or abandoned pet cats may become feral; feral cats usually have to hunt for food, though some colonies are fed by cat-care groups and volunteers in special programs; feral cats are fearful of humans and avoid human contact.

The domestic cat population is far from healthy in Canada. An estimated [261,000 cats in shelters](#) did not find homes in 2016. Twice as many cats end up in shelters compared to dogs, and whereas 68 per cent of stray dogs are reunited with their owners, [only 10 per cent of cats are returned home](#). Cats that live or are allowed to roam outdoors (feral and stray cats) are exposed to a variety of threats, including diseases (e.g., Feline Immunodeficiency Virus, Feline Leukemia Virus, heartworm), parasites, poisoning, vehicle collisions, fights with wildlife and other cats, and getting lost. Stray cats also contribute to the feral cat population; feral cat overpopulation is a growing problem in communities across Canada.

Birds

Many of Canada's approximately 450 bird species are in trouble; some have declined by more than 90 per cent, and a full third are considered of urgent conservation concern. The official list of Bird Species at Risk increased from 47 to 87 between 2001 and 2017. Birds are ecologically significant species, providing a variety of "services" such as seed dispersal, insect control, and pollination: it is critical that we act to protect them.

Habitat alteration and destruction along with climate change are taking their toll, but many birds die due to other human actions and decisions. Environment Canada research estimates that, in addition to the impacts of climate change and habitat loss, **130 to 433 million birds a year die as a result of human-related causes**. These include collisions with windows, power lines, cars and other human-built structures, use of pesticides decreasing food availability, and predation by domestic cats. While it is extremely difficult to calculate the number of birds killed by stray and feral cats — especially when the number of feral cats is not known — it is estimated that cats are responsible for up to 75 per cent of those human-related deaths of birds.

[The Canadian Federation of Humane Societies](#) is one of many organizations that urges cat owners to keep their pets safely indoors unless the cat is supervised or in an enclosure when outdoors. Estimates indicate that as many as 30 per cent or higher of pet cats are allowed to stray, in other words, roam unsupervised outdoors. While cats' independent natures might lead some people to treat them like something between pet and wildlife, we owe them the same level of care we provide dogs.

These twin issues of keeping cats safe and saving bird lives requires a balanced approach, one that respects the nature of each kind of animal and considers the needs of each. By developing students' personal connections to birds as wild animals that live all around us, the program cultivates awareness and empathy for our richly varied bird populations. Similarly, by building awareness of responsible pet care and how unsupervised time outdoors can be dangerous for cats, as well as the problem of feral cat overpopulation, the program seeks to improve students' understanding of how to keep cats safe, and the need to keep pets and wildlife from interacting, for the benefit of both.

Sources / Read More:

About Keep Cat Safe and Save Bird Lives: <http://catsandbirds.ca/who-we-are>

Bird Population Declines: <http://catsandbirds.ca/research/the-state-of-na-birds/>

Human-Related Threats to Birds / Impact of Outdoor Cats on Birds:

<http://naturecanada.ca/initiatives/save-bird-lives>

<http://catsandbirds.ca/research/estimated-number-of-birds-killed-by-house-cats/>

<http://catsandbirds.ca/blog/but-my-cat-never-brings-home-dead-birds/>

<http://catsandbirds.ca/blog/fledgling-season/>
<http://catsandbirds.ca/blog/where-the-birds-are/>
<http://catsandbirds.ca/blog/nature-cats-birds/>

Services Birds Provide: <http://catsandbirds.ca/birds-matter/bird-services/>

Cat demographics and shelter statistics: <http://catsandbirds.ca/research/an-update-on-cats-in-canada/>

Outdoor risks for cats:

<http://catsandbirds.ca/research/safe-happy-cat/>
<http://catsandbirds.ca/blog/coyotes/>
<http://catsandbirds.ca/blog/kitty-cam-part-ii/>
<http://catsandbirds.ca/blog/wheres-that-lost-cat/>
<http://catsandbirds.ca/blog/cats-birds-cold-weather/>

History of cats:

<http://catsandbirds.ca/blog/evolution-domestication-1/>
<http://catsandbirds.ca/blog/evolution-of-domestication-2/>

How to help cats and birds:

Keeping Birds Safe at Your Feeder: <http://catsandbirds.ca/birds-matter/keeping-birds-safe-at-your-feeder/>
Top Six Ways to Help Birds: <http://catsandbirds.ca/birds-matter/top-six-ways-to-help-birds/>
How to keep cats safe, stimulated & exercised: <http://catsandbirds.ca/research/safe-happy-cat/>
Safe Outdoor Options: <http://catsandbirds.ca/research/safe-outdoor-options/>
Tips for Transitioning: <http://catsandbirds.ca/research/tips-for-transitioning/>
Cat Training Basics: <http://catsandbirds.ca/research/cat-training-basics/>
Leash Training How-To: <http://catsandbirds.ca/research/leash-training/>
Dealing with Escape Artists: <http://catsandbirds.ca/research/dealing-with-escape-artists/>



LESSON 1: CAT BIRD SCIENCE 101 (CORE): Similarities & Differences between Cats & Birds

Summary

As a whole class, students establish that domestic cats and wild birds share the same basic needs but differ in how and where these needs are met. In small groups, students compare physical and behavioural characteristics of domestic cats and wild songbirds in a card sorting activity to understand their ecological roles.

Central Questions

- How are cats and birds similar? How are they different?
- What are the main characteristics of domestic cats and songbirds? What do these characteristics tell us about their ecological role?

By the end of this lesson students will:

- understand that all animals have basic needs that must be met in order to survive;
- understand the differences between domestic and wild animals in how their basic needs are met;
- understand that the term “bird” represent a highly diverse range of species whereas domestic cats are one species;
- explore how the physical and behavioural differences (adaptations) between cats and songbirds indicate their (historic) ecological role;
- understand cats can be both predators and prey when allowed to interact with wildlife;
- understand that cats, as pets, are part of the human community, not a part of our natural ecosystems.

Subjects:

- Science
- Social Studies (responsibilities)
- Language Arts

Key words:

- Basic needs, habitat, species, biodiversity, domestic, wild, songbirds, characteristics, adaptations, ecological role

Suggested time frame:

- One 45-minute period

Materials:

- Domestic Cat/Songbirds Chart (Figure 1) and Characteristic Cards (Figure 2), one set per student or group of students
- Alternative: large format Chart Titles and Characteristic Cards (Figure 3 and 4), whole class activity
- Scissors
- Glue (optional)

Background Information:

This curriculum focuses on one species of cat, the domestic cat (*Felix catus*), and the many species of wild birds, specifically songbirds. Songbirds are also referred to as passerines or perching birds as they belong to the order Passeriformes. Many of the common wild birds that live in and around our human communities are songbirds. In Canada, we have a large number of songbird species (high biodiversity) in part due to the numbers of migratory species; birds providing vital ecosystem services, including controlling insect populations and regenerating forests through seed dispersal.



Both cats and birds share the basic needs of food, water, and shelter to survive. Domestic animals, such as pet cats, have their needs provided by humans. Wild animals, including birds, are able to meet their needs within their natural habitat. Physical and behavioural characteristics (adaptations) enable animals to successfully locate water sources, find or build shelter, and forage for food. Domestic animals retain many of their basic characteristics, even though their needs are provided by humans.

Domestic cats have characteristics of a predator, but they are not part of natural ecosystems in Canada. Many songbirds feed or nest near or on the ground, have nestlings that are unable to defend themselves, and or fledglings that are initially unable to fly making them particularly vulnerable to predation by domestic cats.

For more information:

- <http://catsandbirds.ca/blog/evolution-of-domestication/>
- <http://www.birdscanada.org/education/school/index.jsp>
- <https://www.canada.ca/en/environment-climate-change/services/biodiversity.html>

Instructions:

Warm-up

1. As a whole class, brainstorm the things all animals physically need in order to survive. Under a title of “Basic Needs”, list their responses on the blackboard (or equivalent, so that all students can see the responses), prompting them as necessary until they have included food, water, and **shelter** [shelter provides adults and young protection from harm, including predators and weather]. Discuss, guiding your students to understand while food, water and shelter are the basic needs to survive there are others needs to ensure physical and emotional health, especially of animals in our care such as pets.
2. Create a chart to compare basic needs of wild birds and domestic cats. Start by writing “Wild Birds” at the top of a column next to your list of basic needs. Ask your students if birds they see outdoors need food, water and shelter; as they reply affirmatively, put a check mark next to each need. Then ask the students if domestic pets, such as cats, have the same needs. Add “Domestic Cats” as a column title and add a checkmark next to food, water, and shelter as students indicate these are *basic needs* of cats also. Add columns for humans or other animals as desired. Reminding students of their experiences of camping, hiking or picnicking may be helpful in identifying basic physical needs of humans.
3. Compare how and where the basic needs of wild birds and domestic cats are met. Start by asking your students how and where do wild birds obtain their needs. Discuss, drawing in concepts suitable for the level of your students. [Using physical and behavioural **adaptations**, they search for and locate their needs in natural **habitats**; in areas shared with humans, some individual birds in a population may also obtain their needs from maintained feeders, baths, birdhouses and even human garbage can be a source of food for some species].
4. Ask how and where domestic cats obtain their needs. [Ideally, provided by responsible owners; a more thorough discussion of these responsibilities is covered in Lesson 6].
5. Summarize by providing definitions of the terms “**wild**” and “**domestic**” [Generally, domestic refers to species that have: needs provided by humans, lived closely associated with humans for generations, and altered characteristics compared to wild animals of

the same species, due to artificial selection. Wild species must meet their own needs, may or may not live near humans with minimal association, and undergo natural selection].

6. Explain the concept of **biodiversity** by asking students to name different birds types they have seen, heard or read about (for example, Blue Jay, gull, duck, puffin, hawk, owl, woodpecker, albatross, sparrow, crow). If desired, provide clarification between types or “families” of birds (for example, owls, geese, chickadees) and individual species (for example, Great Horned Owl, Canada Goose, Black-capped Chickadee). After a range of types has been provided, note this huge diversity in bird types, and the equally diverse habitats in which they live, is referred to as **biodiversity**.
7. Now ask them to focus on “backyard birds” they are familiar with on a more daily basis, and identify as many as possible (for example, chickadee, robin, sparrow, finch, etc., assuming your school is in an urban, suburban, or semi-rural area). Explain the majority of backyard birds belong to a group of birds referred to as “**songbirds**”; these are the birds the activity will focus on.

Activity: Characteristics of Cats and Songbirds

1. To assist students in recognizing the physical and behavioural differences between domestic cats and songbirds, provide individual or small groups of students a set of Domestic Cat/Songbirds Chart (Figure 1) and Characteristic Cards (Figure 2). If desired, this activity can also be done with the whole class, using the larger format Characteristic Cards (Figure 4) and creating a chart on the blackboard or floor using Chart Titles (Figures 3).
2. Direct students to read each Characteristic Card and place it into either the bird or cat column of the chart. If they are not sure where to place the card, they can put the card to one side. Give students ample time to place all the cards.
3. Review and discuss their work as a whole class if activity is done individually or in groups, ensuring students have placed the cards in the appropriate column. Glue characteristic cards in place.

Wrap-up:

1. Ask students what they think songbirds eat in their natural habitat [seeds, nuts, fruit, berries, flying and crawling insects, and other invertebrates such as worms, spiders, and slugs]. If desired, review the terms used to describe an animal based on its main food

[**herbivores** eat whole or various parts of plants, **insectivores** eat insects, **carnivores** eat meat from animals, usually vertebrates, **omnivores** eat a mix of plants and animals].

2. Ask what characteristics of songbirds indicate what they might eat [shape and size of beaks, ability to fly]. Then ask if birds are themselves eaten [**prey**], if so, what eats them [**predators**]? [Predators include hawks, falcons, owls, raccoons, squirrels, foxes, snakes]. Ask what characteristics do songbirds have to avoid predation? [Eyes on either side of head, muted feather colours to blend with environment, ability to fly away, alarm calls].
3. Discuss how domestic cats have characteristics of being a predator [eyes forward on face to enable depth perception, agility in climbing and pouncing, claws on toes] but as pets they are provided with their food. Note how cats are not part of natural habitats in Canada, so songbirds are not well adapted to avoiding predation by the large population of domestic cats. Also note domestic cats face predators themselves if outside unsupervised [predators include coyotes and large raptors in urban and suburban areas, plus larger predators in semi-rural areas].

Figure 1: Domestic Cat/Songbirds Chart

DOMESTIC CATS  	SONGBIRDS 



Figure 2: Characteristic Cards

Builds nests to lay eggs	Young hatch from eggs	Creates nest area for young	Mothers give birth to live young
Cares for young by bringing food to nest	Sings songs and other calls to communicate	Provides milk to young	Purrs or meows to communicate
Feathers cover the body	Uses wings to fly	Fur covers the body	Uses legs to leap and climb
Has a beak	Eats berries, seeds, nuts, insects	Has teeth	Eats meat
Eyes are on either side of head	Poor sense of smell	Eyes are in front of head	Excellent sense of smell
Avoids predators by giving alarm call to warn others and flying away	Toes on feet able to grasp perches	Catches prey by moving quietly (stalking) or sitting still, then pouncing	Claws on toes can retract, used to catch and hold prey
Considered "wildlife"	External ears are not visible	Considered "domestic"	Ears stand up on either side of head



Figure 3: Chart Titles



Figure 4: Characteristic Cards



Builds nests to lay eggs	Creates nest area for young
Young hatch from eggs	Mothers give birth to live young
Cares for young by bringing food to nest	Provides milk to young
Sings songs to communicate	Purrs or meows to communicate

Feathers cover the body	Fur covers the body
Can fly using wings	Can leap and climb
Claws on feet to grasp perches	Claws on toes can retract, used to catch and hold prey
Eats berries, seeds, nuts, insects	Eats meat

Eyes are on either side of head	Eyes are in front of head
Poor sense of smell	Excellent sense of smell
Avoids predators by giving alarm call to warn others and flying away	Catches prey by moving quietly (stalking) or sitting still, then pouncing
Has a beak	Has teeth

Considered “wildlife”	Considered “domestic”
External ears are not visible	Ears stand up on either side of head

LESSON 2: BIRD WEBS IN THE NEIGHBOURHOOD (CORE)

Summary:

By exploring local outdoor areas, students become familiar with bird diversity and ecology. The cumulative physical activity demonstrates how birds are an integral component of local ecosystems and provide ecosystem services.

Central Questions:

- How are birds integral to local ecosystems?
- What services do birds provide in local ecosystems?
- What challenges do bird species face?
- What could happen in an ecosystem if the number of one or more species decline?

By the end of this lesson students will:

- have a better understanding of the local birds species and their behaviours;
- understand the many roles that birds play in an ecosystem;
- understand that the balance of ecosystems can be disrupted.

Subjects:

- Science
- Social Studies
- Physical Education
- Language Arts

Key words:

- Habitat, ecosystem, foraging behaviour

Suggested time frame:

- One – two 45 minute periods for Warm-up and Outdoor Exploration
- 30 minutes for Culminating Activity

Materials:

Per student:

- Nature Canada's Junior Birder Guide / Journal (download or order from: <http://naturecanada.ca/initiatives/bird-day/resources/>)
- Alternative: Create a booklet of pages from the guide (Figure 5):
 - Birdwatcher's Code of Ethics, page 4
 - Birds Abound Around You, page 9
 - Bird Behaviour: Foraging, page 15
 - Your Observations, page 16
- Clipboard (*make using pieces of stiff cardboard and butterfly clips to hold paper in place*)

- Pencils (*secure by tying to butterfly clip with string*)
- Optional: binoculars
- Optional: Sit-upons (*make using pieces of cardboard or foam protected by a large plastic bag, taping open ends*)

Per Class:

- Ball of string
- Optional: Web Cards (Figure 6)
- Safety equipment as needed, for example whistle, cell phone, first aid kit

Background Information:

An ecosystem is the result of interactions between all the living organisms (biotic) and non-living geological, physical and chemical components (abiotic) in an area or region. Often, there are a few species that predominate which help to identify the ecosystem, for example, boreal forest or grassland ecosystems. Multiple relationships comprise ecosystems, including those between biotic and abiotic components (for example, nutrient cycling, flow of energy, provision of shelter, temperature regulation) and those amongst biotic components (for example, mutually beneficial relationships such as pollination of flowers by insects, bats and hummingbirds and relationships that benefit one component over another such as predation and competition). In ecosystems, everything is connected.

Food chains indicate the flow of energy in the form of food through an ecosystem; interconnected food chains form a food web. Our sun is the source of all food energy in terrestrial ecosystems. Plants transform solar energy through the process of photosynthesis into a form they can use to live, grow and reproduce. Some of the energy is stored and can be accessed by other organisms as food; plants are producers. Some animals consume plants (primary consumer) and other animals eat either living animals (secondary consumer) or dead animals and plants (decomposer). At each stage, the consumed energy is used by the animal to live, grow and reproduce; much of the energy is lost to food webs as heat energy.

Birds are an integral component in all Canadian land-based ecosystems. The “ecosystem services” provided include:

- Control of insect populations
- Dispersal of seeds
- Transportation / cycling of nutrients
- Pollination of flowers

Threats to bird populations include:

- habitat destruction (nesting, roosting, and foraging habitats)

- collision with windows and other human made structures
- pesticides and herbicides (decreasing available food populations and poisoning)
- non-native predators, including cats

<http://catsandbirds.ca/backgrounders/save-bird-lives>

<http://catsandbirds.ca/birds/bird-services>

Instructions:

Preparation for Outdoor Exploration

1. Prepare your students to learn outside; they will be exploring for birds in the school grounds, a local park, and or natural area. (For tips on preparing students for learning outdoors see: <http://www.birdsleuth.org/leading-groups-outdoors-tips/> <http://ierg.ca/IEE/wp-content/uploads/2014/03/Taking-Kids-Outside-Tips-Anne.pdf>)
2. Provide each student a copy of Nature Canada's Junior Birder Journal (Guide). Alternatively, copy pages 4, 9, 15 & 16 (Included as part of this package, Figure 5).
3. Use the Birdwatcher's Code of Ethics (page 4), expanding as needed, to help students prepare for using the outdoors as a classroom.
4. Plan a route that includes a range of habitats where students are likely to see different types of birds (for example, open grassy area; garden; area with shrubs or trees; pond, stream or other open water; bird feeders). The final destination should be where students can sit comfortably spaced apart for approximately 5 to 15 minutes to observe birds. An ideal location is where birds can be readily observed feeding, such as a pond or bird feeder, though not required. You may consider setting up a bird feeder temporarily on the school grounds; in many areas, songbirds such as chickadees will quickly discover them!
5. Plan to be outside early in the day as this is when birds are most likely to be active.
6. Note: this activity does **not** require you or your students to be able to identify the species (specific type) of birds observed! It is helpful to be familiar with families (major types) of common birds such as ducks, gulls, hawks, woodpeckers, jays/crows, chickadees, etc. (See Additional Resources). Consider inviting a guest birder/naturalist on the exploration, such as a student, parent, or volunteer from a local natural history or bird watching organization to assist you in finding and identifying birds.
7. If desired, include students in creating their clipboards and sit-upons.

Outdoor Exploration

8. As you head outside, invite your students to be "sleuths" searching for birds and evidence of birds using their eyes and ears, staying as quiet and calm as possible.
9. Lead your class along the pre-determined route. Stop to observe birds as they are spotted and record bird names, number and habitat type. If it is a bird you and the students are not familiar with, ask your students to come up with a short name that (two to three words) that describes the bird, for example, "black-backed squeaker". If desired, take

photos for use in identifying the bird back in the classroom using book or on-line bird guides (see Additional Resources; there are apps for bird identification!).

10. Encourage students to observe behaviour, such as **foraging** (feeding), preening, flying, communicating, etc. Record.
11. At the observation site, ask students to find a spot to sit quietly, ideally at least a meter or two from other students. Ensure each student has a clipboard, pencil and the Birds Abound Around You (page 9) worksheet.
12. Direct students to look and listen for as many different birds as possible all around them, recording the locations as they see or hear birds on the space provided on the worksheet. Symbols, sketches and or words are all acceptable for the map. Use descriptions to name the birds as needed.
13. Allow students to focus for approximately 5 to 15 minutes.
14. Optional: Also ask students to observe birds feeding and record their observations, including sketches, on the Your Observations page (page 16) of Bird Behaviours: Foraging (page 15).

Discussion

15. As a group, invite students to share their observations by asking: What did you notice? How many birds did you see? Hear? Did anyone observe a bird foraging? Other interesting behaviours?
16. Brainstorm what songbirds eat, drawing on the student's observations, prior knowledge, and predictions (based on physical aspects of birds such as their beaks), expanding as necessary [seeds, nuts, fruit, berries, insects (flying adults as well as larval forms such as caterpillars), and other invertebrates such as worms, snails, slugs and spiders].
17. Ask your students if they think songbirds are important to ecosystems. Discuss, noting how birds are integral to ecosystems food webs. Share the very important "ecosystem services" songbirds provide, including controlling insect numbers, dispersing seeds, pollinating flowers (hummingbirds), and transporting and cycling of nutrients.
18. Ask your students to brainstorm what animals might eat songbird eggs, young (nestlings and fledglings) and or adults [some species of hawks and owls, racoons, squirrels, foxes, snakes]. Inform them that while not part of the natural ecosystems, domestic cats are significant predators (consumers) of songbird eggs, young and adults because of the large domestic cat population in Canada, in particular, cats that roam unsupervised outdoors.
19. Optional: Review the concept of **food chains and webs** in **ecosystems** (see Background Information).

Cumulating Activity: Bird Ecosystem Web

1. Head to a large outdoor or indoor space with your class. Request students to stand in a circle. For classes of 20 students or more, request students to form pairs (or trios as needed to ensure all students are in a group), and then stand with their partners in a circle.

2. Inform the students they will be creating an ecosystem web by connecting each group using one ball of string. Each small group will work together to figure out possible ecosystem connections to other groups as the activity unfolds.
3. Start the web by asking the class what the source of energy in an ecosystem is. Give the end of the ball of string to a group who correctly responded “sun”. One student in the group should hold tightly to the end of the string, while all the remaining students will support the string with their fingers so it is comfortably taut but able to move freely as needed (only slight movement will happen).
4. Next, ask the class what directly uses energy from the sun? Pass the ball of string to the group that provides a reasonable response [plant, tree, grass, etc.]. Prompt the group to explain how the plant is using the sun’s energy [grows leaves, produces seeds; see Background Information for more detail of energy flow through ecosystems].
5. Tip: if possible, pass the string so that it criss-crosses to the other side of the circle of students, avoiding passing to groups that are next to each other.
6. Continue to prompt the groups to think of ecosystem connections, passing the string to another group that has a reasonable response. Encourage students to think of connection beyond food chains, including the ecosystem services provided by birds. There are many possible combinations of connections, for example:
 - a. sun – grass grows – seeds are produced – sparrow eat seeds – falcon eats sparrow (food chain indicating the flow of energy through ecosystem)
 - b. tree grows – fruit produced – moths lay eggs on fruit - caterpillars eat fruit – chickadees eat caterpillars – chickadees make nest in tree - squirrels raid nest and take eggs or young – squirrels feed their young (food chain including insect control; habitat providing shelter)
 - c. remains of songbird (or poop) – nutrients in soil – bush grows – berries produced – songbird eats berries – seeds dropped – more bushes with seeds (cycling of nutrients; seed dispersal; food chain)
 - d. specific example using Web Cards (Figure 6): seed in **soil** – milkweed seed **sprouts** – sprout uses energy from **sun** to grow – monarch butterfly lays **eggs** on milkweed - larva eat **milkweed** – larva become **butterflies** – **barn swallow** eats butterfly (or **dragonfly** or **mosquito**) – **merlin** (or **snake** or **raccoon**) eats barn swallow (food chain; habitat providing shelter; nutrient cycling)
7. Optional: Prior to starting this activity, research the ecosystem services of some of the common songbirds in your local ecosystem(s). For example: for each species, determine what they eat (insect control, seed dispersal), what might eat them (as eggs, young or adults; nutrient cycling), if they pollinate flowers and or if they roost in groups (nutrient cycling and transportation).
8. As desired, ask the groups to not only identify the relationship, but also give a fuller explanation, for example “grass uses energy from the sun to grow” or “caterpillars hatch from eggs laid by moths on fruit of a tree and start eating the fruit”.
9. Continue until all groups are connected.

10. Direct the students to observe how everything is connected in an ecosystem. To demonstrate this further, ask groups that had a relationship involving insects (or other organisms) to tug on their line. All groups should feel the string move.
11. Ask the students what would happen if birds were to be removed from the ecosystem? Request all groups that have a direct connection to birds to drop their string.
12. Discuss the impact on the ecosystem of removing birds. Review threats to wild birds, including habitat destruction, pesticides and herbicides, collision with windows, and predation by introduced species, especially domestic cats.
13. Share how they will be finding solutions in the next lessons!

Figure 5: Junior Birder Guide, page 4

Figure 5: Junior Birder Guide, page 9

Figure 5: Junior Birder Guide, page 15

Figure 5: Junior Birder Guide, page 16

Figure 6 Web Cards (optional)

MILKWEED 	BARN SWALLOW 
SOIL	 RACCOON
SUN (SOLAR ENERGY)	DRAGONFLY 
SNAKE 	MOSQUITO 

MILKWEED SPROUT	MONARCH BUTTERFLY 
EGGS of MONARCH	MERLIN 

LESSON 3: CATS IN OUR LIVES (CORE)

Summary:

Reading about the history and domestication of cats, students learn the responsibilities of being a pet owner and how to keep cats safe. Two math activities introduce the consequences of allowing cats to roam unsupervised outdoors (and not spay or neutering).

Central Questions:

- What is the history of domestic cats?
- How do we take care of pet cats responsibly? What happens if we don't?
- What can we need to do to keep cats safe?

By the end of this lesson students will:

- understand responsible pet ownership keeps cats (and other pets) safe;
- be able to distinguish between safe indoor cats and outdoor cats (stray and feral cats);
- understand outdoor cats face multiple threats;
- understand one solution is to keep cats safely indoors, while still meeting all their needs.

Subjects:

- Math
- Social Studies (responsibilities)
- Language Arts

Key words:

Responsibilities, spay, neuter, terms for domestic cats: safe, stray and feral

Suggested time frame:

- 20 minutes for Student Reading
- 25 minutes for math problem

Materials:

- Student Reading: Cats in our Lives (Figure 7)
- Cat Math Part 1: Crazy Expanding Numbers (Figure 8)
- Cat Math Part 2: Dangers Everywhere (Figure 9)
- Cat Count Cards (Figure 10)

Background Information:

<http://catsandbirds.ca/blog/spay-neuter>

<http://catsandbirds.ca/research/an-update-on-cats-in-canada/>

Instructions:

1. Introduce domestic cats as pets by asking your class how many have a pet or have a relative or friend with a pet. Let them know while they will be focusing on domestic cats, the information is also important for anyone who has a pet in their lives or would like to have a pet, or who likes being around pets.
2. Provide students with the Student Reading: Cats in our Lives (Figure 7). Ask student to read alone, in pairs, or as a class.
3. Discuss. Ask students if anything was surprising to them. Example, as needed, that cats are domestic and therefore require our care. Also note there are responsibilities of owning a pet beyond meeting their basic needs.
4. Provide students with Cat Math Part 1 (Figure 8; answer key below). Optional: Have students cut out Cat Count Cards (Figure 10) to use as a manipulator for adding and subtracting in each word problem.
5. Discuss the final answer of how many cats could be in a community after 1.5 years if the female cats had kittens at their average rate of reproduction [2800 plus at least one male cat]. Note the numbers calculated are based on researched cat statistics: female cats have on average 1.4 litters per year, up to 3 in warm climates, with an average of 3 kittens per litter.
6. Ask your class what might happen to all these cats? [Be adopted, taken to an animal shelter, allowed to become stray, abandoned]. Discuss by asking students what a cat owner could do to make sure they didn't have cats that they may not be able to fully care for [keep cats safe indoors; as appropriate to your class, introduce the concept of spaying or neutering cats].
7. Discuss the concept of outdoor cats, including both **stray** and **feral** cats, versus **safe** indoor cats that are fully cared for by responsible owners. Discuss how stray cats have much shorter lives due to the multiple threats they face, including collision with cars and much higher risk of contracting diseases and parasites, fighting with other cats or wildlife causing harm, getting lost, and poisoning.
8. Provide students with Cat Math Part 2 (Figure 9). Discuss, concluding with how pet cats can be kept safe from threats.
9. Wrap-up by asking students to write a sentence or short paragraph about the importance of keeping cats safe indoors.

Answer Key:

Cat Math Part 1

- 1) $1 + 3 = 4$ total cats
- 2) $4; 4 \times 3 = 12$; 16 total cats
- 3) $4; 12; 4 \times 3 = 12$; $4 + 12 + 12 = 28$ total cats
- 4) 1 feral cat + (28 female cats x 100 households)
= 2,801 cats
- 5) one cat; 101 cats

Cat Math Part 2

- A1) $\frac{1}{3}$
A2) 5 years
A3) 15 kittens
B1) 5 now adult kittens + 10 5)
original adults = 15 total

Figure 7

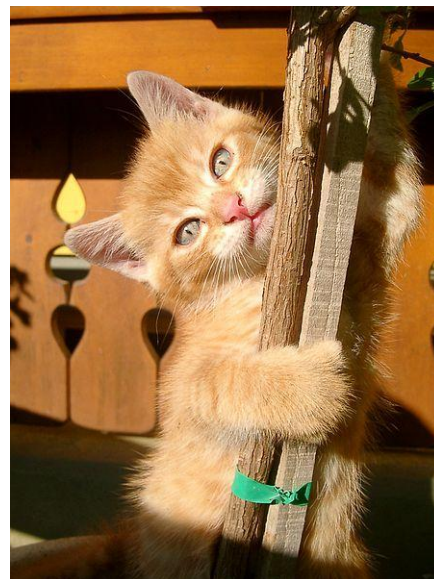
Student Reading: Cats in Our Lives

History of Cats

Domestic cats, *Felix catus*, have been living with humans for a very long time. Evidence from archaeology indicates a wild cat (the Near Eastern Wildcat, *Felis sylvestris*) may have started to become domesticated as long as 12,000 years ago. This is about the same time that agriculture flourished – along with an abundance of mice eating the stores of grain. Wild cats moved in and gradually became tamer, eventually becoming domestic pets in our homes.¹

Cats were very popular amongst the Ancient Egyptians and were revered as hunters and worshipped as gods. The Egyptian goddess Bastet, commonly depicted as a cat or as a woman with a cat's head, was among the most popular gods in Egypt. She was the keeper of hearth and home, protector of women's secrets, guardian against evil spirits and disease, and the goddess of cats.²

Cats spread quickly throughout the Middle East and Europe. In Islam, cats were and are regarded as the ideal pet, and permitted to enter homes and mosques.² The Ancient Romans also admired cats, which were seen as a symbol of liberty. In the Far East, cats were valued for their ability to protect treasured scrolls from rodents. As humans explored, cats rode along with them, including when Europeans sailed to North and South America, Asia and Australia.



Cats in Canada



Cats are now one of the most popular pets in the world and live everywhere people do. In Canada, almost 37% of households have at least one cat, and a bit more than 32% have at least one dog. The average is 1.64 cats per household, which adds up to 9.3 million pet cats in Canada alone!³

About 72% of those 9.3 million pet cats are **safe** cats, cats who are kept indoors, or supervised when they're outdoors.³

There are also **stray** cats. Stray cats might be pet cats that are roaming unsupervised, or they might be lost pet cats, or they

¹ David Zax, "A Brief History of House Cats", Smithsonian Magazine, June 30, 2007
<https://www.smithsonianmag.com/history/a-brief-history-of-house-cats-158390681/?no-ist>

² Joshua J. Mark, "Cats in the Ancient World," Ancient History Encyclopedia, 17 November, 2012
<https://www.ancient.eu/article/466/cats-in-the-ancient-world/>

³ Canadian Federation of Humane Societies, "Cats in Canada 2017: A Five Year Review of Cat Overpopulation", December 2017. <http://catsandbirds.ca/research/an-update-on-cats-in-canada/>

might be cats that were abandoned, or they might be homeless or feral cats. It's hard to tell which, but if the cat is wearing a collar he or she is usually a pet or lost cat. Since it's hard to tell if they need help or not, many people don't help them unless it's really clear they're in trouble.

If a pet cat gets lost, it may over time become a **feral** cat. Feral cats are the descendants of stray cats and their offspring who have grown unused to human contact. While feral cats are very difficult to count because they're very shy of humans, it's estimated that there are between 1.2 and 4 million in Canada.⁴ Feral cats mostly have to fend for themselves and tend to have much shorter lives than pet cats.



Threats to Outdoor Cats

Stray cats and feral cats face risks outdoors. These dangers include:

- Diseases (including rabies, feline distemper, feline immune-deficiency, feline leukemia)
- Cars
- Fights with other cats, wildlife, or dogs
- Parasites such as fleas, ticks, earmites, worms
- Poisoning from common garden plants, antifreeze, rat poison, etc.
- Getting lost

Unfortunately, when cats get lost they often don't find their way home. Only 10% of stray cats in shelters in Canada are reclaimed by their owners, compared to 68% of stray dogs. That means only one out of ten stray cats gets back home, compared to 7 out of 10 stray dogs!

Being a responsible pet owner!

Responsible pet owners provide for all of their cats' needs. In addition to meeting their basic needs – a healthy diet, ready access to fresh water, and comfortable shelter – responsibilities also include:

- preventing injury or illness, and veterinary treatment when they are sick;
- giving them the chance to express normal behaviour;
- conditions and treatment which keep them happy and safe.

The Canadian Federation of Humane Societies and most other cat-care organizations in Canada say keeping cats indoors, or supervising any outdoor time, while providing ample stimulation and exercise, is an important part of responsible cat care.

⁴ Peter Blancher, "Estimated Number of Birds Killed by House Cats in Canada" Avian Research & Ecology, Volume 8, Issue 2. <http://catsandbirds.ca/research/estimated-number-of-birds-killed-by-house-cats/>

Figure 8: Cat Math Part 1

Cat Math Part I: Crazy Expanding Cat Numbers

- 1) Your adult female cat has a litter of three female kittens. How many cats do you have now?

Number of adults:
Number of kittens:
Total (number of adults plus kittens):

- 2) One year later, the kittens are now adult female cats. All of your cats have a litter of three kittens each, again all female. How many cats do you now have?

Number of adults:
Number of kittens:
Total (number of adults plus kittens):

- 3) In another six months, all the adult cats have another litter of three kittens each. Now how many cats do you have?

Number of adults:
Number of 6 month old kittens:
Number of new kittens:
Total (number of adults 6 month old kittens plus new kittens):

- 4) You live in a community with 100 cat owners, with only one female cat each. There is one male stray cat in the community. If all the cats had as many kittens as yours over the same time period (one and one half years = 1.5 years), how many cats would be in your community?

- 5) If all cat owners had kept their cats safe indoors, how many cats would you have in your home (assuming you didn't adopt any more!)? How many would there be in your community?

Figure 9: Cat Math Part 2

Cat Math Part 2: Dangers Everywhere

A: Outdoor cats live a fraction of the lifespan of safe indoor cats. In one study of domestic cats in Canada, it was only one third as long.

Write the lifespan of outdoor cats as a fraction of indoor cats' lifespan:

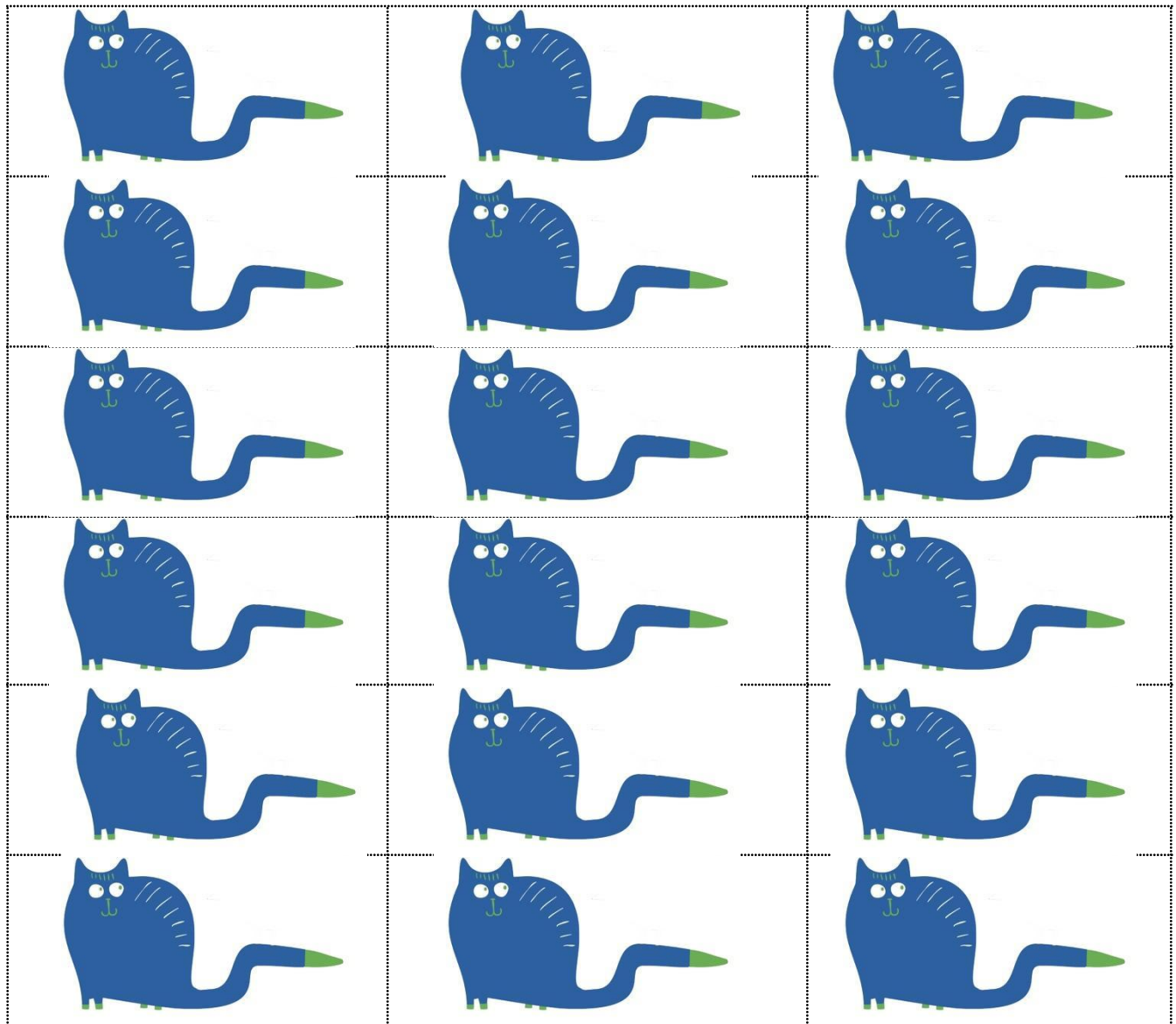
If an indoor cat lives for 15 years, how long does an outdoor cat live?

In your community, there are 10 outdoor cats and $\frac{1}{2}$ of them have 3 kittens each. How many kittens are there?

B. Outdoor cats face multiple dangers. They may be hit by cars, get lost, be poisoned, contract diseases and parasites, or be harmed in fights with other domestic animals or wildlife.

Only $\frac{1}{3}$ of the kittens born outdoors survive to adulthood. How many cats are there now in your community?

Figure 10: Cat Count Cards



LESSON 4: CATS & BIRDS IN THE NEIGHBOURHOOD (CORE) Can Humans Make a

Summary:

After playing an active game of 'tag' to learn the impact of unsupervised outdoor cats on the cats themselves and on bird populations, student explore what they can do to keep cats safe and save bird lives.

Central Questions:

- How do cats and birds physical and behavioral characteristics contribute to their predator-prey relationship?
- What are the threats to stray cats? What is the impact on bird populations of stray cats?
- What can an owner do to keep pet cats safe and save bird lives?

By the end of this lesson students will:

- be exposed to a variety of ways individuals can keep cats safe and reduce the chance of them hurting birds;
- understand there is a relationship between domestic cats and wild birds and that people can influence this relationship by being a Helpful Human.

Subjects:

- Science
- Social Studies
- Physical Education

Key words:

- Habitat, foraging behaviour

Suggested time frame:

- One 45-minute period

Materials:

- 16 Life Cards (Figure 12; 3 - 4 cards per student for 1/8 of class size)
- Clipboard
- Pencil/eraser
- Means to create 4 circles, approx. 1m diameter, on floor or ground of playing area (for example, hula hoops, circle ropes, chalk or painters tape).
- Boundary lines (skipping ropes, chalk, painters tape or existing gym lines or goal posts).
- Food tokens (approx 50 - 3 per student of $\frac{3}{4}$ of class size with a few extras) (Figure 13)
- 4 pinnies or coloured scarves
- treats, enough for all students in class (e.g., cool drink)

Background Information:

See Primer for Teachers and <http://catsandbirds.ca/about/>

Possible actions students can take to keep cats safe & save bird lives:

- protect cats and birds by not letting their cats roam unsupervised
 - ensure sufficient stimulation & exercise for indoor cats (see catsandbirds.ca/safe-happy-cat)
 - leash train their cats and take them on walks
 - build a safe outdoor enclosure (“catio”) for their cat so it can enjoy the outdoors without being exposed to the risks
- ensure their cat wears ID, preferably permanent (microchip or tattoo) so that if they do escape and get lost, their owner can be found
- ensure their cat is spayed/neutered so they can not contribute to cat overpopulation
- help friends and family learn more about the risks to cats and birds of allowing pet cats to roam unsupervised
- keep birds safe at their feeders at home (see <http://catsandbirds.ca/birds/keeping-birds-safe-at-your-feeder/>)
- participate in citizen science projects such as the Great Backyard Bird Count or the Christmas Bird Count for Kids (<http://www.birdscanada.org/volunteer.jsp?lang=EN>)
- advocate for their municipality to take action on behalf of cats and birds (public education / accessible spay-neuter programs / licensing / no roaming unsupervised for pet cats bylaw)

Instructions:

Warm-up

1. Remind students of the key concepts from previous lessons: songbirds are an integral component to all ecosystems and provide ecosystem services; pet owner responsibilities include keeping cats safe from harm.
2. Review songbird and cat characteristics (Lesson 1) by asking the students: What are characteristics of cats that indicate they are **predators**? [Eyes in front of face enabling accurate judgement of distance, ability to jump quickly, claws on paws to grasp prey, retractable claws to move quietly] What are the characteristics of songbirds that help them avoid *natural* predators in their environment as prey? [Eyes on either side of head giving them a large field of view to detect movement of predators, ability to fly away, and warning others by alarm calls].

3. Let the students know they are about to play a game that explores what happens to songbirds populations when domestic cats are allowed to roam freely outdoors.

Activity Set-up

1. In a large open area, identify the boundaries of the play area – this is the ‘neighbourhood’. Identify two end zones, roosting and nesting habitats, using 2 lines to clearly indicate the boundaries. Between the end zones is the feeding habitat. It is not as important to have the other two sides clearly marked (see diagram Figure 11).
2. Create 3 or 4 “safe havens” in the feeding habitat of approximately 1 meter in diameter between the two ends. The number of safe havens depend on your class size and size of the playing area; aim for one per six to seven students (safe havens help to slow down the game and increase interaction between cats and birds).
3. Distribute food tokens throughout the play area. (Figure
4. Explain the set-up to the students, indicating the roosting and nesting habitats at either end, the feeding habitat with food tokens in between, and the safe havens.
5. Designate 3 students as Stray Cats and 3 as Threats/Helpful Humans; the rest of the class are Songbirds (assuming a class size of 24 students; the overall ratio should be approximately 1/8 Stray Cat, 1/8 Threat/Human and 3/4 Songbirds).
6. Optional: to assist in identifying players, give the Stray Cats coloured pinnies or armbands to wear.
7. Optional: Designate one or two students as “Investigators”. They will keep a tally of the Songbird population and Stray Cat populations (total number of students in each group) at the beginning and the end of each round. Give these students a clipboard with paper and pencil to record numbers. A data sheet is provided in Figure 15.
8. Explain the mission of the Songbirds is to “fly” from one side of the neighbourhood to the other side to search for food. As they find them, they pick up food tokens while avoiding being tagged by a Stray Cat. Birds reaching the opposite end from which they started with three or more tokens survive another day. Those that do not obtain three tokens move to the sidelines to decompose.
9. Explain that once the signal is given, the Stray Cats’ mission is to tag as many Songbirds as possible (signifying injuring a bird in the neighbourhood while roaming outdoors unsupervised).
10. Note that Songbirds can “rest” by placing at least one foot inside the safe haven. While resting, they cannot be caught (tagged) by a Stray Cat.
11. Give each Songbird three Life Cards (Figure 12) to indicate that they have three lives (creating in essence a population three times the number of students representing songbirds). Explain that each time they are tagged, Songbirds give one Life Card to the Stray Cat that caught them to represent the songbird has lost one life. When a Songbird has lost all their Life Cards (lives), they move to the sidelines to decompose.

12. Remind the class that stray cats face many dangers. As you review these threats, designate the three remaining students as Threats: 1 Car, 1 Disease/Parasite/Poison, and 1 Predator.
13. Then explain after a few minutes of play, another signal will be given to the Threats to start trying to tag Stray Cats. When tagged, Stray Cats give the Threat a Life Card (obtained them from Songbirds when tagged). If they don't have one to give, they go to the sideline to decompose.

Playing the Game!

Rounds with Threats

1. Ask all the Songbirds to go to one end zone (Roosting and Nesting Habitat), with Stray Cats and Threats in one corner of the playing area (Foraging Habitat). Signal the Songbirds to start foraging and moving toward the opposite end zone of the playground/ game area.
2. Once the Songbirds have spread out somewhat, signal for the Stray Cats to start hunting. After a minute or two of play, signal for the Threats to enter the game.
3. When all (or almost all) the Songbirds have either reached the other end of the Neighbourhood or are decomposing on the sidelines, stop the play.
4. Check to see if all Songbirds in the end zone have three food tokens. If they don't, they join the others on the sidelines to decompose.
5. Ask the Investigators to record the number of Songbirds and Stray Cats still in play. Once done, those on the sidelines can rejoin the Songbird population (due to successful breeding!); same with Stray Cats. Return the food tokens to the foraging area and ensure Songbirds have the appropriate number of Life Cards; Stray Cats should start with no Life Cards.
6. Play another few rounds, noting numbers for each round. As appropriate for your class, you can alter variables to explore additional concepts (see Game Variations below).

Final round with Helpful Humans

1. For the last round of this game, the students that were Threats now become Helpful Humans (change around players as desired). Ask your students what can humans do to help keep cats safe, while saving bird lives? (See Background Information)
2. For this final round, play the game as before, instructing the Helpful Humans to look for Stray Cats to adopt. Once they tag (adopt) a Stray Cat, instruct them to bring the Stray Cat over to you. Award the Helpful Human and Stray Cat with a treat.
3. Allow the Songbirds to complete their foraging journey from one end to the other. Record how many Songbirds survived. Share treats with Songbirds and Investigators as well.

4. Discuss with the class the differences they noticed between communities with or without Helpful Humans. Summarize which is better and why. Review possible actions students can take to keep cats safe and save bird lives.
5. Optional: Provide students with the Helpful Human cards to read aloud (Figure 14).

Game Variations:

- Increase or decrease the number of cats and or threats
- Place food items in a concentrated area away from the safe havens, representing feeders
- Decrease the size of nesting and roosting habitats (end zones) to represent ability of cats to access some of these areas and or habitat destruction
- Increase the size of nesting and roosting habitats (end zones) to represent habitat conservation and restoration
- Decrease the number of safe havens to represent habitat destruction
- Indicate the songbirds are migrating, decrease the number of safe havens and or size of roosting habitat

Accommodations for alternate learners:

- Throughout the game “Cats and Birds in the Neighbourhood” students will create a data set based on the change in total populations of cats and birds before and after the helpful humans are introduced into the game.
- To work with this data further, students can keep track of each result and after the game go back to the classroom to practice graphing this data.
-

Figure 11: Diagram of Neighbourhood / Play Area

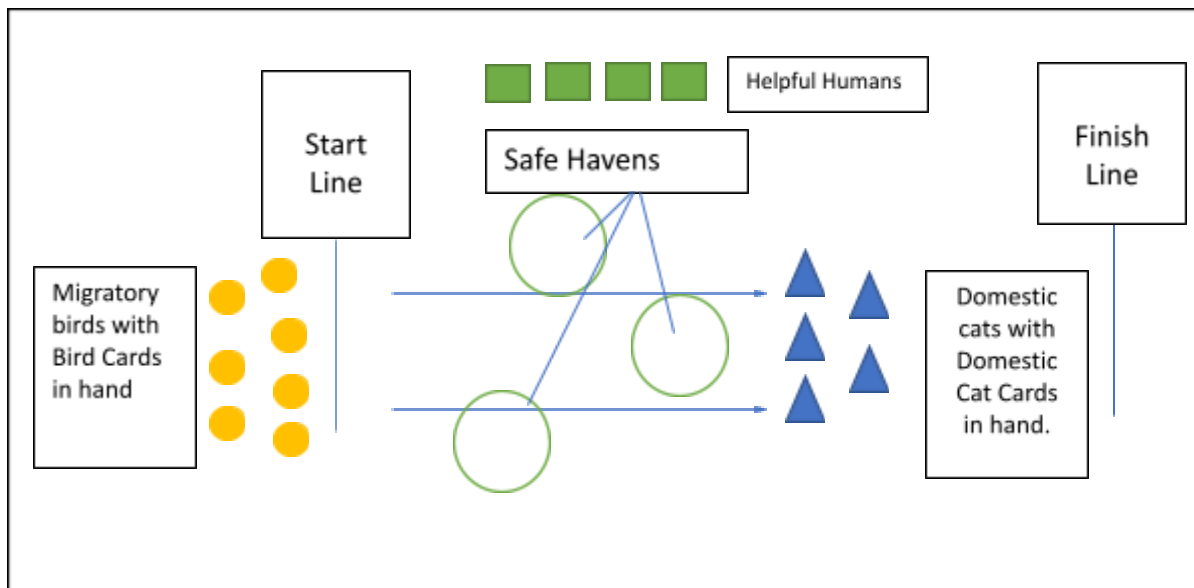
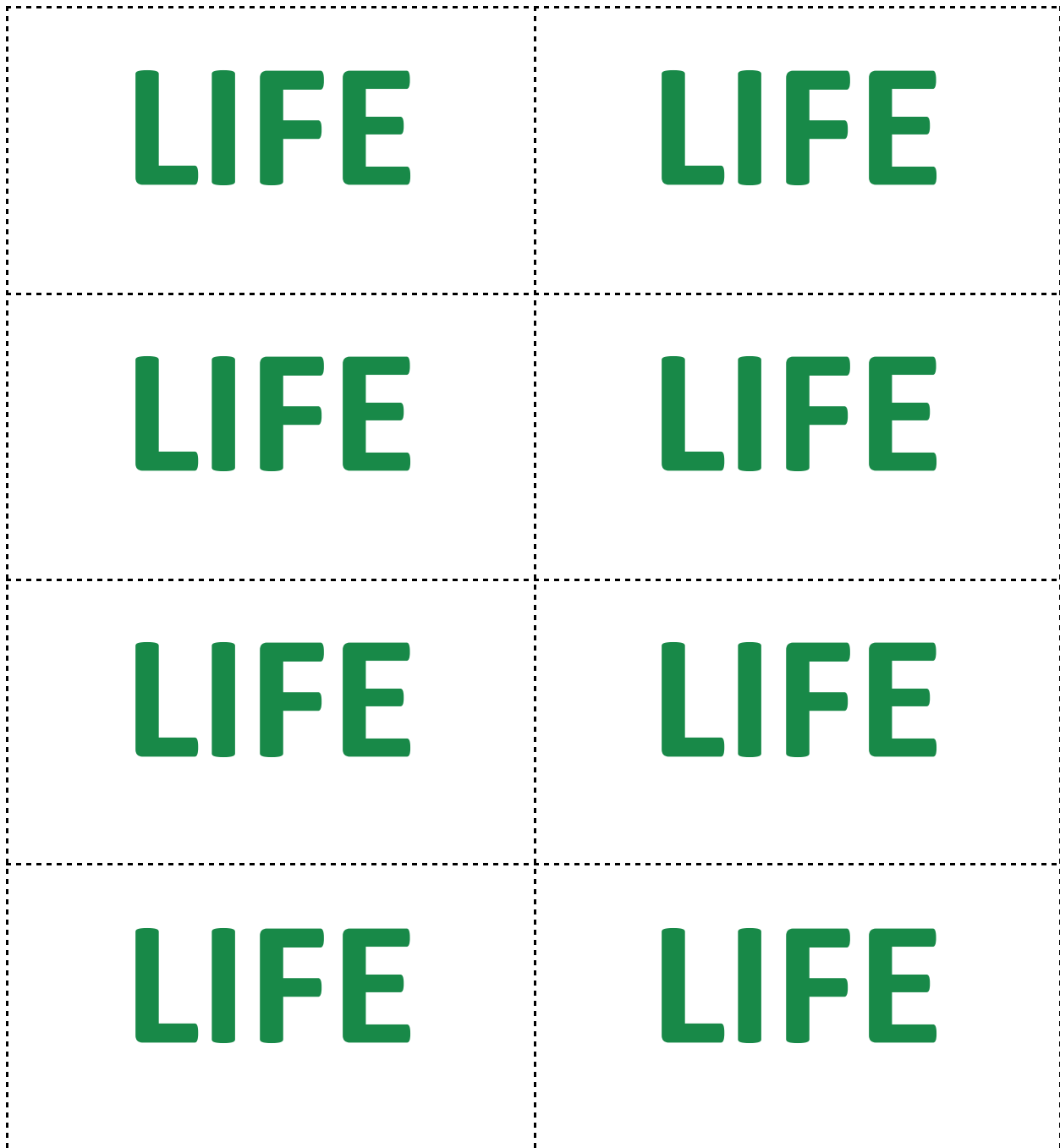


Figure 12



LIFE

LIFE

LIFE

LIFE

LIFE

LIFE

LIFE

LIFE

LIFE

LIFE

Figure 13: Food Tokens

food	food	food	food
food	food	food	food
food	food	food	food
food	food	food	food
food	food	food	food
food	food	food	food
food	food	food	food

food	food	food	food
------	------	------	------

Figure 14

Take your cat on a leash walk just like a dog.	Build an outdoor enclosure or “catio”.
Talk to your parents about keeping your cat safe from roaming unsupervised.	Help your cat play. Make sure they are having fun and getting enough exercise indoors by playing with them.
Tell a friend why too many outdoor cats can mean bad things for the cats, birds, and us.	Instead of buying a kitten at a pet store, adopt a kitten from your local humane society.

Get your cat spayed or
neutered.

Ask your parents to let a
neighbor who owns a cat
know about the issues you
learned in school.

Figure 15: Data Sheet

LESSON 5: WRITER'S WRAP UP!			
ROUND #			

Summary:

Students share what they have learned by writing and revising a sentence or paragraph.

Central Questions:

- What are things people can do to help keep cats safe and save bird lives?
- What can we do to help cats and birds if we don't own a cat?
- What physical and behavioural characteristics of cats and birds make each special and contribute to their relationship to each other?
- Why does getting your cat spayed or neutered, keeping them supervised if they're outside, and keeping them engaged and active indoors help to keep your cat safe, and save bird lives?

By the end of this lesson students will:

- write a clear and concise sentence or paragraph on something they learned about keeping cats safe and saving bird lives;
- identify one way they can help cats and birds and be a helpful human;
- create a rough draft of a sentence or paragraph, edit, and complete a final copy;
- accompany the sentence or paragraph with a drawing of their new understanding, or commitment to help cats and birds.

Subjects:

- Social Studies (responsibilities)
- Language Arts
- Visual Arts

Key Words:

- Draft, edit, revise

Suggested time frame:

- One 45-minute period

Materials:

- Cats & Birds: What I've Learned! worksheet (Figure 16)
- Sentence or paragraph template (Figure 17)
- Markers, crayons, coloured pencils

Instructions:

1. Based on their understanding of information given in the previous lessons on the connection between birds, responsible cat ownership and social responsibility, ask students to write a polished sentence or paragraph reflecting something they learned about cats and birds.
2. If applicable for the class, they can also include one thing they aim to do personally to help cats and/or birds.
3. Ask students to follow the process of organizing their idea, writing a rough draft, editing, and producing a final draft of their sentence or paragraph.

4. Students can use the Cats & Birds: What I've Learned! worksheet and template (Figures 16 and 17), or their journals. The organization of ideas can be done as a class, or individually.

Accommodations for alternate learners:

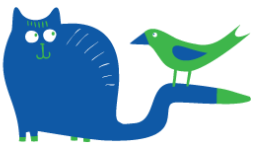
- You can complete a class version of this activity instead of having students participate individually. Go through the brainstorming sheet as a class while prompting students on things they learned that were new, things they thought were interesting etc. As a class decide on a common idea and write the sentence as a group.
- Alternatively, you can have your students send a friendly letter to another student in the school outlining one thing they have learned about this issue.

Figure 16



Cats and Birds, What I've Learned!

CATS AND **BIRDS**
KEEP CATS SAFE AND SAVE BIRD LIVES



Name _____

LESSON 6: DIFFERENT WHERE? Different There, in Outdoor Care (OPTIONAL)

Summary:

Students create a Venn diagram to examine the differences in the standards of care between cats and dogs and discuss responsible pet ownership.

Central Questions:

- Is keeping a cat indoors, or supervising any outdoor time, is an important part of responsible cat care?
- Are cats outdoors alone safe?
- Why do people let cats outside alone but not dogs?

By the end of this lesson students will:

- see how within a family structure, cats are sometimes treated differently than dogs or other pets;
- understand that although cats are often seen as independent, they are at risk when outdoors alone, and need the same level of care we give our other pets;
- understand that responsible pet ownership reduces the impact of our feline family members on our environment and on our community;

Subjects:

- Science
- Social Studies (responsibilities)

Key words:

Vaccination, responsibility

Suggested time frame:

- 30 minutes

Materials:

- Care Cards (Figure 19), cut out
- Labels for Venn Diagram (Figure 20),
- 2 Hula Hoops for Venn Diagram

Background information:

Responsible pet ownership involves providing a pet with everything it needs: a healthy diet, access to fresh water, appropriate shelter, veterinary treatment when they're sick, the chance to express normal behaviour, and conditions and treatment which keep them happy and safe. The Canadian Federation of Humane Societies and most other cat-care organizations in Canada say

keeping a cat indoors, or supervising any outdoor time, is an important part of responsible cat care.

Instructions:

1. Using two hula hoops, place the hoops in an overlapping position to create a large visual of a Venn diagram (Figure 18). Print the “Cat” or “Dog” labels (Figure 20) and place them on either side of the hula hoops. Where the two hoops overlap indicates both cats and dogs.
2. Ask a student to read a Care Card (Figure 19) aloud. As a class, decide where the card should go. Place the care card in the corresponding “Cat” or “Dog” or “both” area. Keep in mind, there may be exceptions to these generalizations! Explore these exceptions with the class as they come up. For example: “Walked daily on a leash” could apply to both dogs and cats, and go in the overlapping area between the two hoops.
3. Once your students have decided where each card goes, discuss with your class why cats and dogs may be cared for differently by some owners, including why some owners allow cats to roam outdoors unsupervised. Based on what they have learned, ask if cats should receive the same level of care as dogs. Why or why not? Review the responsibilities of caring for a pet as needed.

Figure 18. Diagram indicating placement of hula hoops, labels and Care Cards.

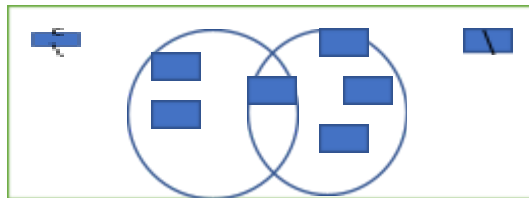


Figure 19: Care Cards

Sometimes gets haircuts from a groomer or other trained professional	Trained as a young animal by owner and often brought to a special school
Is vaccinated for viruses, parasites, and diseases when very young	Often let outside to roam without any supervision by owners
Walked on a leash daily	Fed everyday by human owners
Kept in a fenced in area whenever outside on its own, such as a backyard	If this animal gets lost, people can usually tell it's lost and know they should help it.
Usually taken to the vet every year	Often seen outside without an owner

Wears a collar with identification tag	If ill, is taken to a vet immediately
Thought to be “independent” so is often left alone for long periods of time, even a few days	Seldom left at home for more than three or four hours alone
Sometimes taken to a park to socialize with other animals while supervised	Seldom seen walking with its owner on a leash

Figure 20: Labels for Venn Diagram

CATS

DOGS

LESSON 7: CATS AND BIRDS: a Global Problem, a Local Solution (OPTIONAL)

Summary:

Students learn about migration of North American birds by viewing two interactive websites and completing a worksheet, then brainstorm actions they can take to save bird lives in their local community as well as communities in other parts of the world.



Central Questions:

- Why do birds migrate? Where do they go? What threats do they face?
- How does keeping cats safe in your community affect communities along the migratory routes that birds take during their bi-annual migration journey?
- What actions can students take to save bird lives?

By the end of this lesson students will:

- gain an understanding of migrations of birds;
- understand impacts on bird species in their communities can affect other communities;
- consider actions they can take, including supporting local bylaws.

Subjects:

- Science
- Social Studies

Suggested time frame:

- One 45-minute period

Materials needed:

- Cats & Birds: a Global Problem, a Local Solution worksheet (Figure 21)
- Class or individual map of North and South America (or suggested websites)
- Access to a computer
- Markers or coloured pencils

Background information:

Bird Migration:

Most birds in North America migrate to some extent, with over 350 species migrating to the tropics each year.

<https://www.allaboutbirds.org/mesmerizing-migration-watch-118-bird-species-migrate-across-a-map-of-the-western-hemisphere/>

<https://www.nationalgeographic.com/magazine/2018/03/bird-migration-interactive-maps/>

<https://www.allaboutbirds.org/the-basics-how-why-and-where-of-bird-migration/>
<http://www.audubon.org/news/9-awesome-facts-about-bird-migration>
<https://www.canada.ca/en/environment-climate-change/services/environmental-indicators/trends-migratory-bird-populations.html>

Resources for further study of migration of Canadian species:

http://www.canadiangeographic.com/educational_products/wild_migrations_map.asp
<http://cwf-fcf.org/en/explore-our-work/connecting-with-nature/in-the-classroom/wild-migration/floor-maps.html>

Possible Actions to Address these Issues:

<http://catsandbirds.ca/take-action/>
<http://catsandbirds.ca/blog/healthy-alternatives-to-free-roam/>
<http://catsandbirds.ca/research/safe-outdoor-options/>
<http://catsandbirds.ca/research/safe-happy-cat/>
<http://catsandbirds.ca/for-municipalities>
<http://catsandbirds.ca/blog/the-calgary-model/>

Instructions:

1. Distribute the Cats and Birds: a Global Problem with a Local Solution worksheet (Figure 21) to individual or small groups of students.
2. Ask the students to follow the instructions on the worksheet for the first task (identify continents and countries) using in-class or on-line resources as appropriate. You can opt to ask students to label other aspects of the map, for example, the oceans and/or the general area where your students live.
3. As a class, view the following (or similar) links to introduce migratory flyways (routes) of North American bird species, noting in particular land birds:
<https://www.allaboutbirds.org/mesmerizing-migration-watch-118-bird-species-migrate-across-a-map-of-the-western-hemisphere/>
And
<https://www.nationalgeographic.com/magazine/2018/03/bird-migration-interactive-maps/>
4. Option: You may wish to introduce a local example; pick a local bird species and describe its migration route to your students. Alternatively, ask your students to pick a species and research it!
5. Discuss why birds migrate [migrate north in summer to access high abundance of food and nesting habitat; migrate south in winter to food supplies and avoid cold weather]. Ask students to record the answers in the worksheet.
6. Identify the natural and human-related threats to birds when they are migrating, asking students to record on the worksheet [natural: storms, predators, becoming lost;

human-related: habitat loss, pesticides, hunting or trapping, disorientation due to lights, collision with human-made structures such as buildings].

7. Drawing on understanding gained in previous lessons, ask students to discuss with a partner, in their small group, or as a class the impact of pet cats that are permitted to roam unsupervised on migrating birds. How would this affect other communities these birds visit and travel to during their migratory journey?
8. Wrap-up with a brainstorm of actions students can take to keep cats safe and save bird lives, noting actions we take at a local level also have a positive effect on people living in communities thousands of kilometres away. As appropriate, include a discussion of bylaws (restrictions or regulations in our communities) in your community.

Figure 21: Worksheet

CATS AND BIRDS

A Global Problem / A Local Solution

1. On the map, identify and label North America and South America. Next, identify and write the name of the country in the available space that corresponds to the number on the map. Finally, draw a horizontal line to indicate the equator, separating the northern hemisphere from the southern hemisphere.

2. Many bird species migrate from North America to South America, as well as within North America (for example from northern Canada to Mexico). View an example of bird migration routes. Why do you think birds make these long journeys every year?

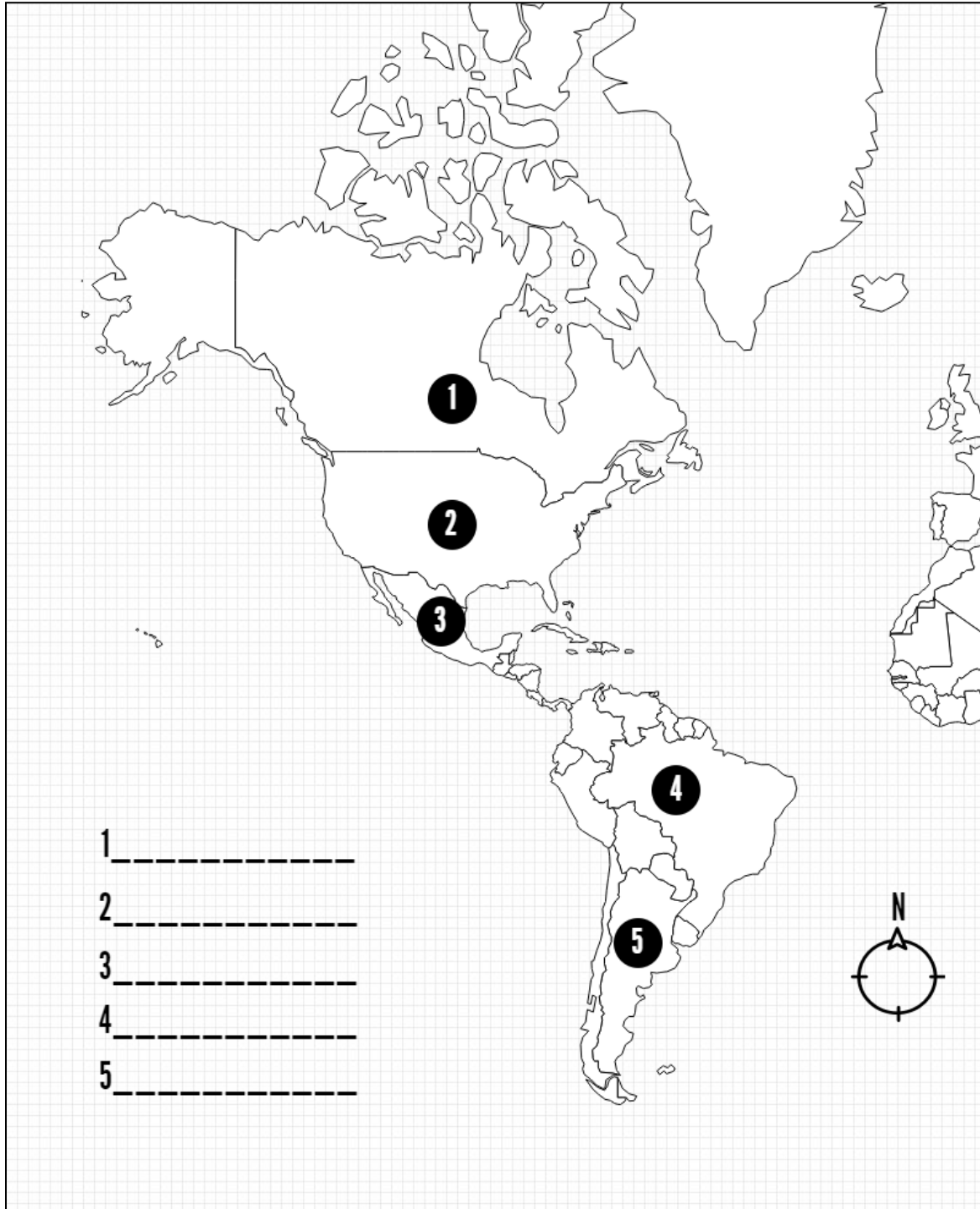
3. What threats to birds face during migration? List below:

4. Discuss with a partner or your class what would happen to migrating birds if cats across North America were allowed to roam unsupervised? How would this affect other communities these birds travel to on their migratory journey?

5. What can you do in your community to help keep cats AND birds safe? Would this action also affect the other countries you labeled on the map?

CATS AND BIRDS

A Global Problem / A Local Solution



Status of domestic cats

Safe

Owned pet cats that are kept indoors and fully supervised or enclosed when outdoors, with all needs met by a responsible owner.

Stray

Cats that roam outdoors for short to extended periods of time without human supervision; owned or semi-owned strays are regularly fed, possibly by more than one person; un-owned strays are lost or abandoned pets that may become feral; stray cats are usually comfortable interacting with humans.

Feral

Un-owned cats that are born and live outdoors full time either alone or in colonies; lost or abandoned pet cats may become feral; feral cats usually have to hunt for food, though some colonies are fed by cat-care groups and volunteers in special programs; feral cats are fearful of humans and avoid human contact.

Other Terms

Adaptation

Adjustment or changes in behaviour, physiology, and structure of an organism to become more suited or fit to an environment; process occurs by natural selection

Behavior

The actions or reactions of a person or animal in response to external or internal stimuli

Biodiversity

The variety of organisms at all levels of classification and the variety of ecosystems within a specific geographic region and globally.

Carnivore

An animal that normally eats mostly other animals. A few plants are also carnivorous.

Consumer

Organisms that feed on other organisms. Organisms that feed on green plants or decaying matter are called primary consumers. Carnivores are called secondary consumers, while those that feed on other carnivores are called tertiary consumers.

Decomposer

An organism that breaks down the bodies or parts of dead plant or animal matter into smaller pieces (decay). Decomposers, such as mushrooms, bacteria, and earthworms, are very important in food webs.

Domestic

A tame animal living within a household; domestic refers to species that have: needs provided by humans, lived closely associated with humans for generations, and altered characteristics compared to wild animals of the same species due to artificial selection.

Ecosystem

An ecosystem is the result of multiple interactions between all the living organisms (biotic) and the non-living geological, physical and chemical components (abiotic) in an area or region.

Habitat

The place where an organism lives and that provides it with the food, water, shelter, and space that it needs to survive.

Herbivore

An animal that eats plants.

Insectivore

An animal that eats insects.

Mammal

A warm-blooded, usually hairy animal that breathes air, gives birth to live offspring, and feeds milk to its young

Neuter

Lacking developed sexual organs, or having had them removed.

Omnivore

An animal that eats both plants and other animals.

Photosynthesis

The process by which green plants use the energy from sunlight to convert carbon dioxide and water into nutrients, producing oxygen as a byproduct. Photosynthesis is very important, because it produces the oxygen and carbohydrates that animals (including people) need to live.

Producer

An organism that produces new organic material from inorganic material with the aid of sunlight.

Songbirds

Group of bird species belonging to the Order Passeriformes, also referred to as perching birds. Songs or other types of vocalizations are used by all species for communication purposes.

Spay

To remove surgically the ovaries of (an animal).

Species

A group of closely related organisms that are very similar to each other and are usually capable of interbreeding and producing fertile offspring; a species name consists of two parts, the Genus and species, for example Felix catus.

Stray

To wander away, as from the correct path or from a given area.

Sustainability

A process that can be maintained without interruption, weakening, or loss of valued qualities. Sustainability ensures that a population remains within the carrying capacity of its environment.

Transition

A change from one place to another.

Vaccination

Treatment with a vaccine to produce immunity against a disease

Vulnerable

Susceptible to physical harm or damage

Wild

A species that must meet their own needs in their habitat, may or may not live near humans with minimal association, and undergoes natural selection

Source: The Ontario Curriculum grades 1-8 Science and Technology, 2007 Updated

ADDITIONAL RESOURCES

If you are looking for more activities, interested in more information, or are curious about how you or your students can get more involved, you can find more resources below.

This document has five sections: (1) additional printed materials available; (2) A Handy Fact sheet; (3) links to further information and activities, and (4) websites for more information on how you can Keep Cats Safe and Save Bird Lives and (5) colouring pages.

(1) Additional Printed Materials:

If you would like to receive paper copies of the brochures or bookmarks pictured below, please contact info@catsandbirds.ca. You can also download the brochures and Junior Birder Journal & Activity Book from:

<http://catsandbirds.ca/brochures-and-bookmarks>

<http://naturecanada.ca/wp-content/uploads/2014/02/Junior-Bird-Guide-2017.compressed.pdf>



(2) Handy Fact Sheet

Visit <http://catsandbirds.ca/> for more info.

WHO WE ARE

Keep Cats Safe and Save Bird Lives is a coalition of individuals and organizations concerned about the well-being of cats and birds. We believe all animals are important, and as humans, we owe both cats and birds protection. Our coalition includes national partners the Canadian Federation of Humane Societies, Bird Studies Canada and Earth Rangers, as well as regional and local partners. For a full list of partners, visit <http://catsandbirds.ca/who-we-are>.

BIRD FACTS

- Bird populations are declining rapidly across the country, some species **by as much as 60-90%**. (SOURCE: [State of Canada's Birds](#), Environment Canada, 2012)
- Nationally Bird **species at risk increased from 47 to 86** between 2001 and 2014 (SOURCE: [State of Canada's Birds](#), Environment Canada, 2012)
- Environment Canada estimates that, above and beyond the impact of habitat loss and climate change, . Although the numbers are not well understood, approximately 75% of that total is estimated to be due to outdoor pet and feral cats. (SOURCE: **A Synthesis of Human-related Avian Mortality in Canada**, by Anna M. Calvert, Christine A. Bishop, Richard D. Elliot, Elizabeth A. Krebs , Tyler M. Kydd Craig S. Machtans and Gregory J. Robertson, Avian Ecology)
- More than **450 species of birds** can be found in Canada
- Some of the birds in Canada that are considered vulnerable to cats include common species such as Cardinals and Goldfinches, and some are designated as species at risk, including: Bank Swallow, Wood Thrush, Barn Swallow, Eastern Meadowlark, Bobolink & Chimney Swift
- Birds provide vital [ecological services](#), including seed dispersal, insect control and soil regeneration.
- Birds vulnerable to cats include songbirds, ground-nesting birds, and birds who forage for food on the ground.

CAT FACTS

From [Cats in Canada 2017: A Report on the Cat Overpopulation Crisis](#), Canadian Federation of Humane Societies:

- 72% of Canadian cat owners keep their cats from roaming unsupervised. That's +13% over the figure from [our own research in January 2016](#) and indicates that more than 1.1 million additional cats are safe from outdoor dangers.
- There are about 9.3 million pet cats in Canada and roughly 2.6 million of those are routinely exposed to outdoor dangers by their owners.
- Nationally, cats are twice as likely to end up in shelters as dogs, despite the populations being of similar size.
- 68% of stray dogs in shelters are reclaimed by owners, but only 10% of cats are.
- In 2016, there were more than 261,000 cats in shelters that did not find new homes.
- The Canadian Federation of Humane Societies recommends cat owners keep their pets from roaming unsupervised.
- Cat owners (46%) are far less likely than dog owners (77%) to have taken their pet to the veterinarian within the last 12 months. (SOURCE: Canada's Pet Wellness Report, Canadian Veterinary Medical Association, 2011)

• [The University of Georgia 'Kittycam' Study](#) results: pet cats bring home an average of only 23% of their prey; 85% of cats exhibited at least one risk behavior (e.g. crossing the road); and 7% of cats were getting food from a second home!

RISKS TO OUTDOOR CATS:

Diseases:

- FeLV: Outdoor cats are 1.4 more likely to contract potentially-fatal Feline Leukemia (FeLV). (SOURCE: "Seroprevalence of feline leukemia virus and feline immunodeficiency virus infection among cats in Canada" by [Susan Little](#), [William Sears](#), [Jessica Lachtara](#), and [Dorothee Bienzle](#))
- FIV: Outdoor cats are 3.4 more likely to contract Feline Immunodeficiency Virus (FIV) than indoor cats. (SOURCE: "Seroprevalence of feline leukemia virus and feline immunodeficiency virus infection among cats in Canada" by [Susan Little](#), [William Sears](#), [Jessica Lachtara](#), and [Dorothee Bienzle](#))
- Other diseases to which outdoor cats are more vulnerable include Rabies and Feline Distemper, both of which can be fatal, and both of which are preventable with vaccinations.

Maybe say something about toxoplasmosis here like this:

While not a risk to cats themselves, cats are the biological carrier (vector) for the microbial parasite *Toxoplasma gondii*. This parasite can be passed through contact with a cat's feces to humans. To learn more about this disease, go to https://www.cdc.gov/parasites/toxoplasmosis/gen_info/faqs.html.

Cars

- Cars are a leading cause of sudden death in cats, particularly young cats. One study showed that 51% of sudden deaths among cats that had access to the outdoor were due to road traffic accidents. (SOURCE: Olsen, Tammy and Andrew Allen. 2001. [Causes of sudden and unexpected death in cats: a 10-year retrospective study](#). *Canadian Veterinary Journal* 42: 61-62.)

Parasites

- Fleas, ticks and worms are rarely fatal, but they can cause immeasurable misery for both the animal and the owner.

Fights

- Cats are territorial, and outdoor cats will defend their turf from other cats. There is also a risk of fights with dogs and wildlife such as raccoons or coyotes. Cats can be prey for, as well as predators of, wildlife.

Poisoning

- Many common garden plants – lilies, tulips, chrysanthemums, to name only a few – are toxic to cats. Insecticides and anti-freeze are also extremely poisonous for cats, as are some human foods and medicines, such as chocolate, coffee and aspirin.

Getting Lost

- Only 10% of stray cats in shelters are reclaimed by their owners. (SOURCE: Canadian Federation of Humane Societies, "Cats in Canada 2017". , https://www.cfhs.ca/animal_shelter_statistics_report)

(3) Links to additional information and activities:

Join the Movement to help keep cats safe and save bird lives!

<http://catsandbirds.ca/join-the-movement>

Find an organization near you to get involved with:

<http://catsandbirds.ca/who-we-are/>

Answer the call to volunteer with Nature Canada:

<http://catsandbirds.ca/wp-content/uploads/sites/3/2016/05/Volunteer-Call.pdf>

For more bird educational programs / to engage your students in learning more about birds:

<http://birdscanada.org/education/school/index.jsp>

For information on humane educational programs / to engage your students in learning more about pets: find a Humane Society or SPCA educational program near you at

https://www.cfhs.ca/find_a_member

Make identifying birds in the school yard easy with this FREE app from Cornell Lab of Ornithology:

<https://itunes.apple.com/us/app/merlin-bird-id-by-cornell/id773457673?mt=8>

Read more about Angel Cat Bird:

<http://catsandbirds.ca/blog/margaret-atwood-on-cats-birds/>

<http://catsandbirds.ca/blog/angel-catbird-volume-2/>

<http://catsandbirds.ca/blog/the-catbird-roars/>

(4) Visit these websites for more information on how you can Keep Cats Safe and Save Bird Lives:

Nature Canada's Save Bird Lives

<http://naturecanada.ca/initiatives/save-bird-lives>

Canadian Federation of Humane Societies

<http://cfhs.ca/>

Cornell Lab of Ornithology

<http://www.birds.cornell.edu/page.aspx?pid=1609>

Bird Studies Canada

<http://bsc-eoc.org/>

Earth Rangers Canada

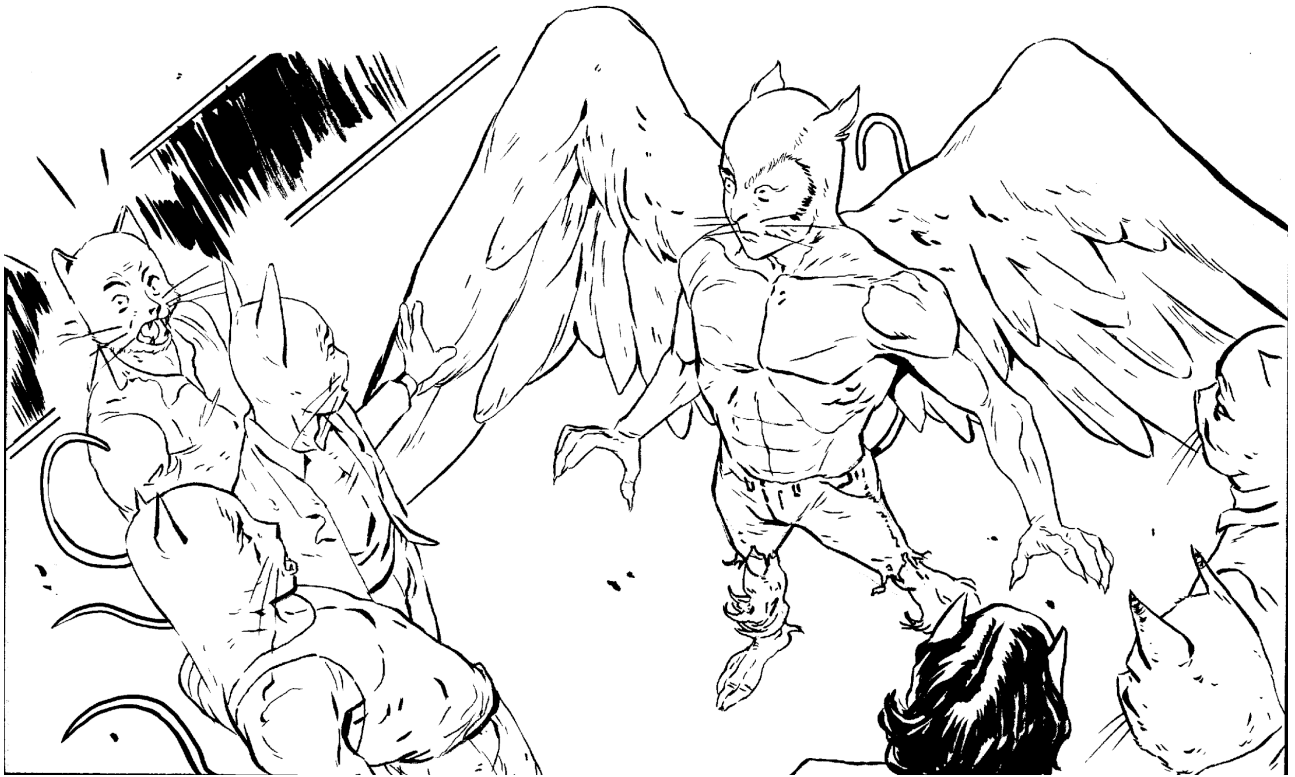
<https://www.earthrangers.com/birdfeeder>

FLAP Canada

<http://www.flap.org/>

(5) Colouring Pages, *Angel Catbird*

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CATS AND BIRDS
KEEP CATS SAFE AND SAVE BIRD LIVES



Nature
CANADA
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