RHODY CRITTER KITS

FEATHERED FRIENDS



RHODE ISLAND FISH & WILDLIFE

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Rhode Island Division of Fish and Wildlife Outdoor Education

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RHODE ISLAND FISH & WILDLIFE

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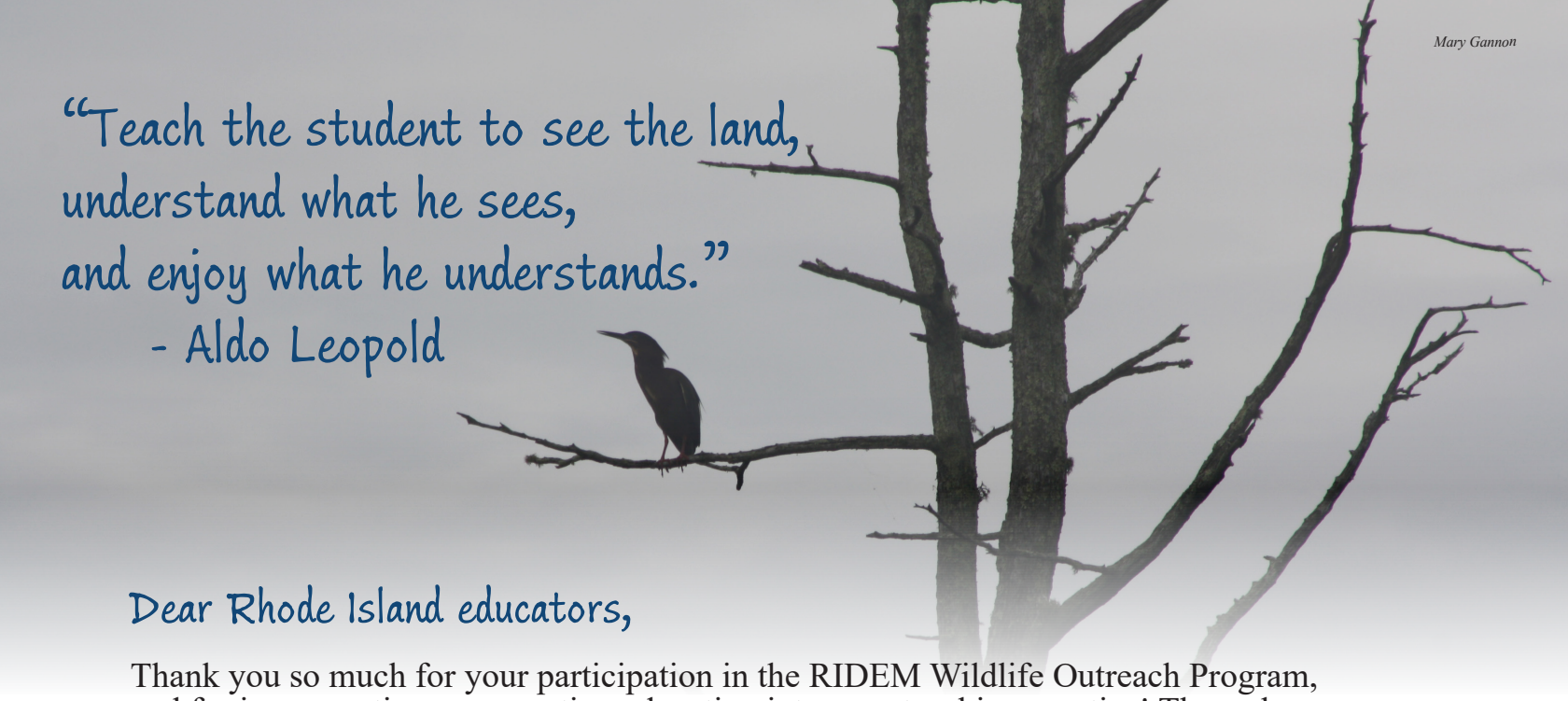
U.S. FISH & WILDLIFE SERVICE

Office of CONSERVATION INVESTMENT

Partnering to fund conservation and connect people with nature

WILDLIFE & SPORT FISH RESTORATION

Cover: Gerald Krausse; Inside cover: Mike Stultz



Mary Gannon

"Teach the student to see the land,
understand what he sees,
and enjoy what he understands."
- Aldo Leopold

Dear Rhode Island educators,

Thank you so much for your participation in the RIDEM Wildlife Outreach Program, and for incorporating conservation education into your teaching practice! Through your participation in this program, you are nurturing the growth of our next generation of environmental stewards and advocating for Rhode Island's diverse and amazing wildlife. On behalf of our wild creatures, big and small, thank you!

The Wildlife Outreach Program has grown in leaps and bounds since its inception in 2017. Coordinating this program has been the most enjoyable and rewarding whirlwind I could imagine. In the wake of the COVID-19 pandemic, our team created these the Rhody Critter Kits to connect with teachers and kids, and keep Rhode Islanders engaged with our natural resources. Now more than ever, it's critical to get children outdoors, engaged with the world around them. It's been a joy to help facilitate these connections and to see this program grow! With your help, we've been able to connect thousands of students from diverse communities to our local wildlife, a feat which could not be accomplished by our tiny team alone.

These kits are not limited just to science lessons, but can be incorporated into art, reading, writing, and social studies lessons as well. We built them with room for flexibility and creativity, so you can tailor them to fit your individual class's needs. We hope the design of the kits inspires you, and encourage you and your students to have FUN with them!

When we create connections to nature in a memorable, enjoyable way, we inspire responsible stewardship and care. As educators, you are incredibly important cultivators of those connections. Every time I meet with educators who have used these kits, I am encouraged and inspired by your dedication. Thank you again!



Best wishes,
Mary Gannon

Wildlife Outreach Coordinator
Rhode Island Department of Environmental Management
Division of Fish and Wildlife

If you have any questions, please do not hesitate to reach out!
Mary.Gannon@dem.ri.gov | 401-782-3700



Gabrielle DeMeillon

Hello wonderful educators!

We couldn't be more excited to introduce you to our Rhody Critter Kit Program! While we always enjoy visiting schools in person, there are only two of us, and so many students who deserve to learn about the interesting and important wildlife that inhabit our state.

Necessity drove us to create these kits, and thank goodness it did. We strive to reach every community in Rhode Island and have now created a fun and interactive way to do so! We all rely on the resources that nature provides and are all responsible for conserving it, no matter our age. Introducing these important concepts to students today will help shape caring and responsible individuals in the future.

The Rhody Critter Kits aim to encourage students to explore the natural world around them with an open mind and observational eye. The resources provided are designed to be adapted to individual class needs, so please use them however you see fit!

Since joining the RIDEM Fish & Wildlife Outreach Team, I have had the opportunity to share our conservation work with students across the state and see their eyes grow wide with inspiration. Seeing misinformation and fear turn into awe and curiosity is one of the greatest transformations to witness. Through these kits, I hope your students are able to learn and grow in the same way. After all, knowledge is the key to growth!

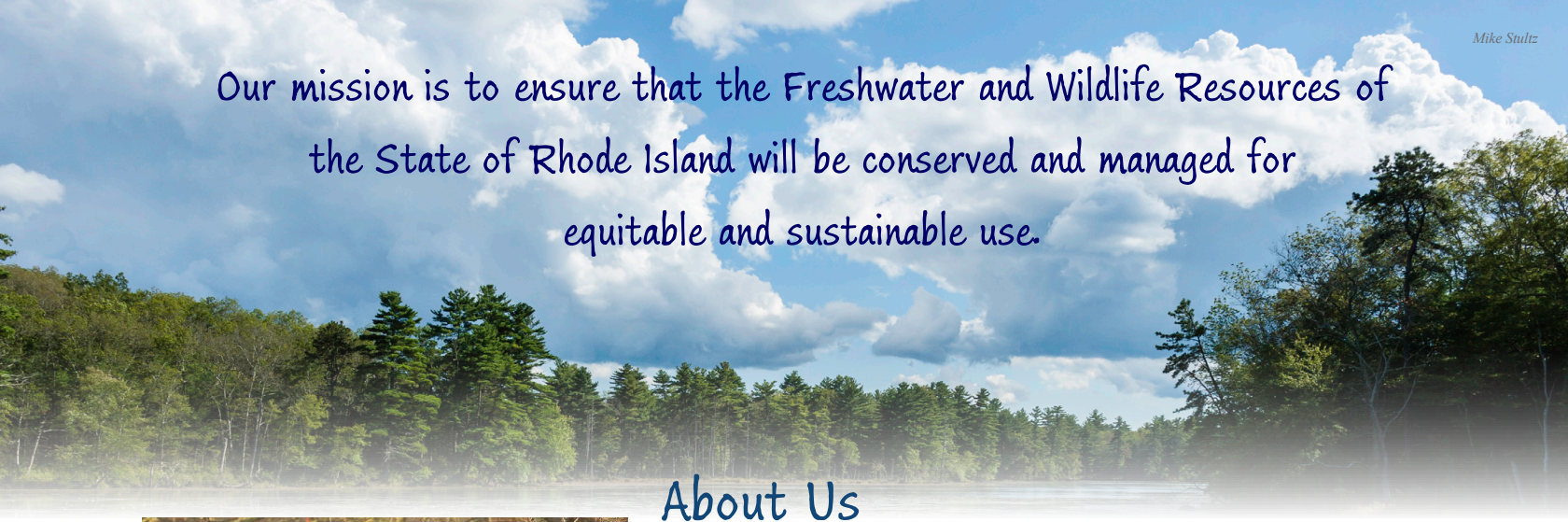
Thank you for sharing in the education of future conservationists through our Rhody Critter Kit Program and we hope you have fun!



Kind regards,
Gabrielle DeMeillon

Biological Technician
Rhode Island Department of Environmental Management
Division of Fish and Wildlife

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About Us


D. Birch

The Division of Fish and Wildlife (DFW) protects, restores, and manages the freshwater and wildlife resources of the state. We share management responsibility of more than 60,000 acres of land, including 25 State Management Areas, and are responsible for thousands of species. We serve a wide and diverse segment of the public from outdoor recreationists (e.g., hunters, hikers, mountain bikers, wildlife watchers) to the general public (e.g., backyard birders, public concerned with nuisance wildlife, municipalities, legislators). In addition, we are responsible for the State's public hunter education programs and overseeing all hunting and trapping in the state. This includes setting seasons, size limits, hunting methods, and daily limits for the harvest of game species like white-tailed deer, wild turkey, waterfowl, and furbearers.


S. Petrarca

As part of a larger network of recreational opportunities in Rhode Island, hunting and fishing play an important role in connecting people with nature, supporting quality of life and family traditions, and attracting tourism. Anglers and hunters purchase around 70,000 licenses, permits, stamps, and tags each year and contribute more than $235 million to Rhode Island's economy. Revenue generated from license and permit sales support Rhode Island fish and wildlife conservation programs.

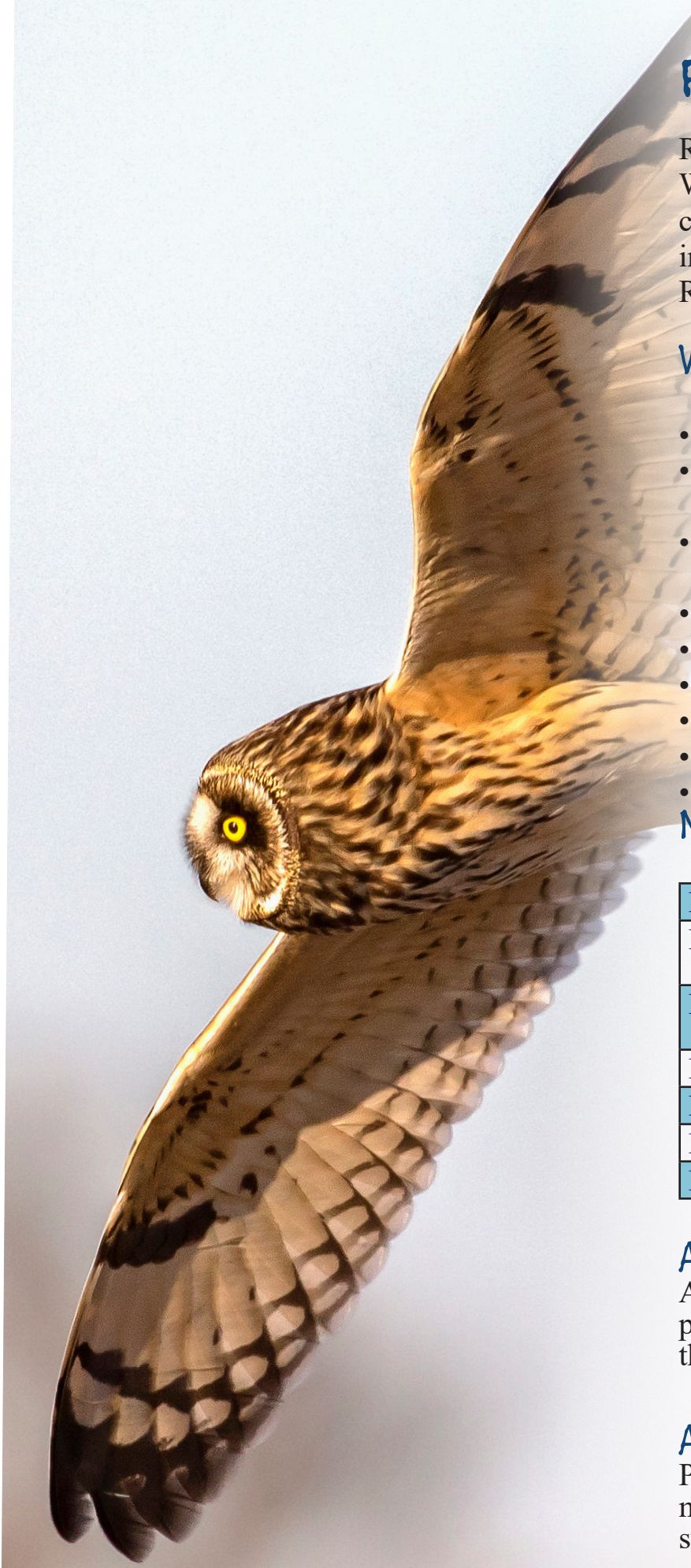
The DFW is primarily funded through the Federal Wildlife and Sport Fish Restoration Program (WSFR), which is administered through the U.S. Fish & Wildlife Service's Office of Conservation Investment. This program uses taxes placed on firearms, ammunition, and archery equipment to help fund avian and mammalian research and conservation programs, habitat acquisition, and outreach and education programs.


C. Raithel

Annual appropriations for WSFR's State Wildlife Grants (SWG) Program provide an additional, smaller, yet less restricted pot of money that can be put toward conservation of all Species of Greatest Conservation Need (SGCN) as identified in the RI Wildlife Action Plan. The list of SGCN includes game and non-game species, and also provides much needed attention to amphibians, reptiles, and invertebrates. It is our goal to responsibly manage and steward our state's wildlife resources, safeguarding them in perpetuity.

Kit Materials

Item	Talking Points
Laminated bird scavenger hunt cards	Hang these cards around the classroom, school, or playground for a fun scavenger hunt! This is a great way to get familiar with native birds and their calls. A sample scavenger hunt sheet is included, but feel free to get creative and make your own!
Laminated bird bingo cards	These can be used for the RI Bird Bingo game (there is also a slideshow), or can be used simply to introduce students to RI's wide array of bird species.
2D skull models	These models can be used with the Bird Beak Detective activity, or for observation during Lesson 2.
Small laminated bird cards	These 7 small cards can be used for the Bird Beak Buffet activity.
Wild turkey egg replica	Pass around this life-sized egg model and ask students to make some observations. How might the color and shape of the egg fit in with the wild turkey's natural habits?
Bird skull replicas	These replicas are to scale and anatomically accurate. They are made of plastic, but are still fairly delicate. Please keep them inside of their cases while handling. Encourage students to take a close look at the diversity of adaptations!
Birdology	This book is filled with great information about birds, as well as 30 different activities you can easily do with your class.
Peterson Field Guide to Birds	This guide is a great place to start exploring the diversity of RI's native bird species. Use it on bird walks, in the classroom, or make it available for students to flip through in their downtime.
Cornell folding guides (*Nests & Eggs, Basic Waterfowl ID, Dabbling & Diving Ducks*)	These colorful, well-organized guides are also useful for outdoor observations, or just for casual reading.
Household tools	These tools are intended to be used for the Bird Beak Buffet activity.
Beads, marbles, and yarn	These items are also intended for the Bird Beak Buffet activity.
Loose wild turkey feathers	Use these for hands-on learning during Lesson 2. Allow students to handle the feathers and take a close look at them.
Display box of feathers	This box contains a diverse collection of feather types, found on the ground and collected by RIDFW staff. Please keep these feathers in the box. *Note: Feathers are able to be collected and possessed by RIDFW for scientific and educational purposes. The collection and possession of feathers by the public is prohibited by the Migratory Bird Treaty Act. If you find a feather outdoors with your class, take some time to observe it, and then leave it in nature.*



Short-eared owl, Peter J. Ryan

Feathered Friends

Rhode Island is home to some amazing birds! With the materials in this kit, you'll be able to connect your students to the diversity of birds in their own backyards, bird conservation in Rhode Island, and how they can help.

What's included in this kit?

- Information about Rhode Island's birds
- Information on bird conservation history and current work in Rhode Island
- Resources on how to help birds at home or at school
- Sample lesson plans
- PowerPoints
- Photos and videos
- Show and tell items
- Fun bird-related activities
-

Next Generation Science Standards

LS1A	Structure and Function
LS2A	Interdependent Relationships in Ecosystems
LS2C	Ecosystem Dynamics, Functioning, and Resilience
LS4C	Adaptation
LS4D	Biodiversity and Humans
ESS3A	Natural Resources
ESS3C	Human Impacts on Earth Systems

Are you using this kit online only?

After using these materials in your classroom, please fill out our feedback form, available on the Rhody Critter Kits page.

Are you borrowing the physical kit?

Please be sure to fill out the feedback form and materials checklist (included in the bin) to ensure all items have been returned.



Ruby-throated hummingbird, Dean Birch

Introduction: Birds are Beautiful!

Birds have captured the attention and affection of people for millennia, with their bright colors, amazing adaptations, and beautiful songs. Rhode Island is home to many diverse bird species. Our forests, coastlines, agricultural land, and even cities provide important habitat for resident and migratory birds.

Birds fill many important **niches** in the environment, from predators and prey, to seed dispersers and pollinators. Birds are indicators of habitat quality, and by managing habitat with particular birds species in mind, we're creating and maintaining habitat for mammals, reptiles, amphibians, insects, and native plants.

Birds also have many different values to humans. Gamebirds like the wild turkey, Canada goose, and mallard are valued for food by hunters, along with the recreation that accompanies harvesting the birds during the hunting season. Birds have great non-consumptive value to birdwatchers too. Whether you watch your neighborhood birds from the window, or hit the trails with your binoculars at the crack of dawn, seeing birds is always enjoyable!

In Rhode Island, we're working hard to conserve our bird populations through habitat management, population research and monitoring, and data collection with the help of citizen scientists.

Read on to learn more about birds!

Bird Fun Facts

	World	North America	Rhode Island
Families	243	87	55
Species	~10,000*	931	242

Did you Know?

- Many of a bird's bones are hollow, and have criss-crossing structures inside to provide support for the bone. This reduces body weight, which helps birds fly!
- Birds do not have teeth.
- Birds have a crop, a pouch in their throats to store food. They also have a gizzard, a structure which grinds up food for digestion.
- Birds evolved with dinosaurs in the Jurassic period 160 million years ago!

*New studies suggest that there may be closer to 18,000 species worldwide, based on updated genetic data.



Great egrets, Gerald Krausse

Bird Conservation History in America

Today, many people appreciate and admire birds. We watch them through our windows, search for them with binoculars, and place feeders in our yards to attract our feathered friends. In America's past, people also appreciated and admired birds, but that admiration unfortunately led to the deaths of millions of America's birds. Over-harvest through unregulated **market hunting** caused a decline in America's **gamebird** populations, while the trend for fancy, feathered hats decimated other **non-game** bird populations. One species that was particularly affected by the fashion industry was one of Rhode Island's most iconic salt marsh species, the great egret, pictured above. The egret's beautiful, long plumes made it a target for the hat market. Due to these unprecedented levels of harvest, several American bird species went **extinct**. One of the most well-known examples is the passenger pigeon, once so abundant that observers claimed the flocks darkened the sky like clouds.

Eventually, Americans began to notice the severe decrease in many bird populations, and decided it was time to take action! The **Lacey Act** of 1900 was the first federal law written to protect wildlife, and was passed in response to the effects of market hunting. The Lacey Act made it *"unlawful to import, export, sell, acquire, or purchase fish, wildlife or plants that are taken, possessed, transported, or sold."* The **Migratory Bird Treaty Act** of 1918 closely followed. This monumental act protects birds from a wide array of dangers posed by humans.

The Migratory Bird Treaty Act states:

"...it is unlawful to pursue, hunt, take, capture, kill, possess, sell, purchase, barter, import, export, or transport any migratory bird, or any part, nest, or egg of any such bird, unless authorized under a permit issued by the Secretary of the Interior. Some regulatory exceptions apply."

Exceptions:

- Scientific studies
- Native American religious ceremonies
- Regulated hunting of specified game species



Mallards, Alex Feuti

The Duck Stamp Act & The Pittman-Robertson Act

In the 1930s, the United States government made enormous strides in bird conservation legislation. In 1934, President Franklin D. Roosevelt signed the **Duck Stamp Act**. This act made it a requirement of all waterfowl hunters ages 16 and up to purchase a Federal Duck Stamp each year. The proceeds of Duck Stamp sales (98 cents out of every dollar), goes towards purchasing or leasing wetland habitat for the National Wildlife Refuge system. Professional artists submit their work each year to be selected for the Duck Stamp. There is also a Junior Duck Stamp program for young artists to submit their artwork for the State Duck Stamp. After winning the state competition, their artwork is submitted to the national Junior Duck Stamp competition. Proceeds from the sale of the Junior Duck Stamp go towards supporting this educational youth art program. In Rhode Island, waterfowl hunters are required to purchase both the Federal and State Duck Stamps. In its over 80 year history, the Federal Duck Stamp has contributed $800 million to habitat conservation across the country, protecting more than 5.7 million acres of wetland habitat! You don't have to be a hunter to purchase a Duck Stamp; many people purchase them as collectors' items, out of appreciation for these miniature works of art.

Following the Duck Stamp was a similar act passed in 1937, the **Pittman-Robertson Act.** Also signed by President Roosevelt, this act placed an excise tax on firearms and ammunition, with a later extension to archery equipment. The proceeds of this excise tax, paid by the manufacturers, are allocated to each state by the United States Fish and Wildlife Service. The funds acquired must be used for habitat acquisition, management, and restoration, research and monitoring of bird and mammal species, and hunter education. Today, this program is known as the Wildlife and Sport Fish Restoration Program, and has contributed millions of dollars to wildlife conservation across the country. In Rhode Island, this is how we fund the vast majority of our conservation programs.



Northern flicker, Matt DiMaio III

General Groups of Birds

Due to their high level of diversity, categorizing birds can get very in-depth. Officially, birds are grouped into scientific orders and families based on shared physical and genetic characteristics. For beginners and students, the following groups are the most common and recognizable. If you would like to go more in depth with your students, take a look at the field guides included in the kit.



Harlequin ducks, Richard Leach

Waterfowl

This group includes ducks, swans, and geese. There are about 160 species in this group worldwide. Most of the birds in this group have webbed feet, live in wetland habitats, and seasonally migrate.



Wild turkey, Paul Topham

Upland Game Birds

This group includes birds that are traditionally hunted for food in upland habitats (forest, meadow, etc.). In Rhode Island, we have several common upland game birds: wild turkey, American woodcock, and ring-necked pheasant (a non-native species stocked for hunting from captive-breeding facilities). Rarer native upland game birds in Rhode Island include the ruffed grouse and Northern bobwhite quail. These are ground nesting birds, and the chicks are able to leave the nest within 24 hours of hatching.



Great blue heron, Gerald Krausse

Wading Birds

This group includes long-legged birds that wade in the shallow water of marshes, swamps, and mudflats. Examples in Rhode Island include herons, egrets, and ibises (pictured on the front cover).



Black-throated blue warbler, Jay Osenkowski



Great horned owl, Peter J. Ryan

Raptors

This group includes birds of prey: eagles, owls, hawks, vultures, and falcons. Raptors have sharp, hooked beaks, strong talons, and excellent eyesight. All of these adaptations make them incredible hunters (or scavengers in the case of vultures).



Piping plover, Dean Birch

Shorebirds

This group includes smaller coastal birds like sandpipers, oystercatchers, and plovers. These birds can be found along sandy and rocky shores, and migrate long distances. For example, the piping plover migrates from New England to South America each year.



Eastern bluebird, Richard Leach

Passerines

Also called “perching birds,” this group includes songbirds. It is an enormous group, accounting for about half of all bird species! Perching birds have feet with three toes in the front, and one toe in the back. At birth, chicks are featherless, blind, and helpless.

Other Bird Groups

There are many other groups of birds that are more specific than the six listed above. Loons, grebes, hummingbirds, swifts, cuckoos, terns, skimmers, gulls, nightjars, kingfishers, cormorants, rails, coots, storm petrels, skuas, and jaegers sit in their own taxonomic groups. All of these can be found in Rhode Island at some point during the year, or just offshore in our coastal waters. ***Learn about these groups with your students by assigning a group of birds to several students to research, and then share what they learned!***



Peregrine falcon, Peter J. Ryan

Rhode Island Wildlife Action Plan

What is a Wildlife Action Plan?

The State and Tribal Wildlife Grants (SWG) program was created by Congress in 2000 to fund actions to conserve declining fish and wildlife species before they become threatened or endangered. In order to be eligible for these matching grants, states must complete a State Wildlife Action Plan (SWAP) every 10 years. These proactive plans assess the health of each state's wildlife and habitats, identify the threats they face, and outline actions needed to conserve them over the long term.

Rhode Island's first-ever Wildlife Action Plan (formerly Comprehensive Wildlife Conservation Strategy) was adopted by the RI DEM and approved by the US Fish and Wildlife Service in 2005. It was part of an unprecedented national framework of similar plans developed by every US state and territory that together presented a national action agenda for preventing wildlife from becoming endangered.

Rhode Island Wildlife Action Plan

RIDEM, with assistance from the Rhode Island chapter of The Nature Conservancy and the University of Rhode Island, was the first state in the nation to publish its 10-year revision. The 2015 RI WAP is a comprehensive plan that provides direction to and coordination of wildlife conservation efforts over the coming decade. Rhode Island is home to almost 900 vertebrate and an estimated 20,000 invertebrate wildlife species that range from the scenic coastline to upland and wetland forests. Included in this natural diversity are a suite of mammals, birds, reptiles and amphibians, fish and invertebrates that the State has identified as Species of Greatest Conservation Need (SGCN). Benefits that the RI WAP brings to the state include:

- A comprehensive approach to wildlife conservation
- Millions of dollars in matching funds for the conservation of non-game species and their habitats
- New local and regional partnerships and increased support for statewide conservation priorities

For more information and to learn about current updates to the Rhode Island Wildlife Action Plan, visit dem.ri.gov/wildlifeactionplan.



Belted kingfisher, Richard Leach

Bird Conservation in Rhode Island: RI Bird Atlas 2.0

What is the RI Bird Atlas 2.0?

This project was completed between 2015 and 2019 by the RI DFW in collaboration with the University of Rhode Island and over 200 volunteers. The purpose of this project was to document all of the bird species in Rhode Island, and where they occur in the state. To do this, the state was split into 165 blocks, and volunteers were assigned to each block to collect data. This is the second bird atlas Rhode Island has produced; the first atlas ran from 1982-1987. Rhode Island's habitats and bird populations have certainly changed since then, so it was time to update our data!

What have we learned from the RI Bird Atlas 2.0?

The completion of this second bird atlas is very exciting, because we now have information on Rhode Island's breeding birds, but also information about migration periods, and wintering bird populations. In this case, Rhode Island's small size works to our advantage. Volunteers were able to cover the entire state and collect an enormous amount of data, making this the most complete and comprehensive bird atlas ever completed! The breeding atlas confirmed 173 breeding species in the state; across the breeding, migration, and winter atlases, a total of 242 species were documented in Rhode Island. The data for each species has three maps: presence/absence in each block, where each species has been confirmed breeding, and the hotspots for each species (where they seem to congregate the most). We also have information about the most important habitats for each species.

How will this help birds in Rhode Island?

Knowing all this information will help RI DFW make informed habitat management decisions with birds in mind. Knowing the hotspots for each species can guide our land conservation strategies. For example, if there is an opportunity to purchase and conserve land for the Management Area system, it will be useful to know the areas that are critically important for RI's bird Species of Greatest Conservation Need. This data will also be available to the public, to be used by town land trusts and non-profit organizations for the benefit of birds on their properties. In short, the more we know, the better we can help RI's amazing array of birds!



Annual Canada goose banding, Sarah Petrarca

Bird Conservation in Rhode Island: Waterfowl Banding

What is banding?

"**Banding**" is the term used to describe the capture, marking, and release of birds for scientific research. Birds are captured by biologists, and marked with a lightweight, aluminum band on their leg. Bird bands are made in different sizes appropriate for different groups of birds. They are designed to fit comfortably like a loose bracelet, and do not harm the bird. Each band has an individual and unique number on it that is registered with the U.S. Fish and Wildlife Service.

How do we band waterfowl in Rhode Island?

We complete two major waterfowl banding projects per year. The first focuses on American black ducks and occurs during January and February. The ducks are captured before sunrise as they forage for food in coastal salt marshes. Biologists use a net that is fired above the flock with small rockets. Ducks are banded, and biologists determine their age and sex based on wing feather wear and beak color. Males have a bright yellow beak, and females have an olive-brown beak. The ducks are then released back onto the marsh. Mallards are also banded during the fall and winter.

The second banding project focuses on Canada geese and happens during June and July. During this time, geese are **molting** their feathers, and are therefore flightless. Geese are herded by staff members and volunteers paddling kayaks, and guided into a temporary pen. Data collection includes banding, determining the sex of the bird, and recording the bird's age (hatch year or adult). We band geese all across the state for this project, in rural, suburban, and urban habitats. This project requires considerable staff time in the field, and requires the help of multiple staff and volunteers.

Why do we band waterfowl?

Bird banding has a long and valuable history. Information gained through these efforts such as survival, number of offspring born, age, and sex distribution is used in models that guide the management and conservation of waterfowl. Hunters who harvest a banded bird are required to submit the band number to a database maintained by the U.S. Fish and Wildlife Service. This data helps us decide the length and timing of hunting seasons, and the number of birds each hunter is allowed to harvest (**bag limit**).



White-winged scoter, Peter Paton

Bird Conservation in Rhode Island: Sea Duck Research

What is a sea duck?

Sea ducks are a unique group of birds that spend much of their time on salt water. They are amazing divers, and dive down 10-65 feet deep to feed on aquatic plants, shellfish, invertebrates, and small fish. During the summer breeding season, most species of sea ducks nest in the far northern reaches of Canada, along the coast and on large lakes in the remote regions of Canada's boreal forest. For the rest of the year, they **migrate** south along both the Atlantic and Pacific coasts, where they spend the winter.

Why are we interested in studying sea ducks?

Studying these birds on the breeding grounds is very difficult because of their remote nature. In recent years, several sea duck species have experienced significant population decline. Rhode Island's coastline and the Narragansett Bay provide key wintering habitat for many species of migratory sea ducks. Sea ducks are valued by hunters and bird watchers alike, and we want to make sure that they continue to return to Narragansett Bay for years to come.

How have we learned more about sea ducks in Rhode Island?

Since 2010, the Atlantic and Great Lakes Sea Duck Migration Study, in coordination with the USFWS Sea Duck Joint Venture, has tracked local and regional movements of these high-priority sea ducks in eastern North America using **satellite transmitters**. The transmitters are surgically implanted by a veterinarian underneath the skin of captured birds, which are then released. The transmitters send signals to satellites, which allow biologists to see the birds' movements on a map. This partnership has involved Rhode Island DFW staff and URI researchers, along with state, U.S. Federal, and Canadian agencies throughout eastern North America. Combined with individual efforts by research partners dating back to 2002, this project has resulted in one of the most comprehensive datasets on long-distance movements of five species (common eider, black scoter, surf scoter, white-winged scoter, and long-tailed duck), with over 200,000 locations from 672 individuals! To date, we have focused on the movements of each species and overall seasonal movements. This dataset also provides a unique opportunity to compare year-round movement patterns across species, and to identify key sites with broad conservation importance. In the future, we plan to use telemetry data to analyze how individual species share resources in common habitat areas and identify important landscape features selected by sea ducks during different seasons. This will help guide strategies for conserving sea duck habitats and populations in eastern North America. Participating in this long-term, collaborative project has helped Rhode Island make important conservation decisions, such as selecting the best site for the Block Island offshore wind farm to avoid negatively impacting our winter sea ducks.



Eastern towhee, Matt DiMaio III

Bird Conservation in Rhode Island: Young Forest Habitat

What is a young forest?

A **young forest** is characterized by small, young trees that are about 10 to 20 years old. They grow very close together, and there are lots of shrubs and briar thickets growing in the **understory** of the forest. Trees like birches, aspens, oaks, and maples are the most common trees you'll see in a young forest. These tree species prefer to grow in areas with lots of sun. You won't see too many aspens or birches in an old forest that is shaded by big pine or beech trees. In a **mature forest**, the understory has very few plants, and the trees are spaced far apart. Young forests grow as the result of some type of **disturbance** on the landscape, like fire, intense storms, or logging. If left undisturbed, forests age into mature forest habitat. The tree species and the structure of a forest influences the bird species that you'll find in that forest.

Which bird species live in young forest habitats?

In the Northeast, more than 40 bird species need young forest habitat, and are considered Species of Greatest Conservation Need. The dense thickets of young forest habitat provide lots of food for these birds, including insects and fruits, as well as cover and protection from predators. Warblers (like the black-and-white warbler and chestnut-sided warbler), sparrows (like the white-throated sparrow), ruffed grouse, whip-poor-will, Eastern towhee, black-billed cuckoo, and American woodcock all require young forest. And that's just a few species! Even birds that live in the mature forest will spend time in young forest searching for food or getting ready for migration at the end of the summer.

What are we doing in Rhode Island to manage young forest habitat?

In Rhode Island, we are focusing on creating and managing young forest habitat across our State Management Areas. We have performed selective **clear cuts** at some sites, with plans to do more. Each cut is strategically placed on a set number of acres that is relatively small in comparison to the rest of the property. For example, a 2017 cut at the Great Swamp Wildlife Management Area only affected 37 of the 3,600 total acres that make up the management area. Our habitat biologist and foresters carefully select which trees will be cut, and which trees will remain to provide healthy seeds to naturally replant the area. We make brush piles with the branches of the cut trees to provide cover for rabbits, snakes, and other small animals. We also leave standing dead trees, or snags, for woodpeckers, owls, bats, and other wildlife. Cuts are strategically placed near previous cuts to create a network of forest patches that are all different ages. This **connectivity** and age diversity benefits the wildlife that use young forest habitat.



Wild turkeys, Paul Topham

Bird Conservation in Rhode Island: Wild Turkey Community Scientist Surveys

What is a community scientist?

A community scientist is a volunteer who helps collect biological data. You don't have to have any background in science to participate. You just need to care about wildlife! There are community scientist projects all over the world, including right here in Rhode Island!

How can I help?

Every year, we ask Rhode Islanders to submit observations of wild turkeys in July and August. We ask for observations of males, females, and baby turkeys (poults). You don't have to go anywhere special to gather these observations. If you see a turkey in your yard, neighborhood, or while you're out and about, you can submit your data. Information about this project is circulated via social media and a press release from the RIDEM.

Why are we gathering this information?

The data that is collected from these observations allows RI DFW biologists to estimate the number and distribution of turkeys in the state each year. Looking at the data from years past can give us an idea of how our turkey population is doing. Are there more turkeys than last year? Less? Can we see any trends? By asking these questions, biologists can determine if our population is healthy or if we need to take steps to manage turkeys, such as allowing a higher bag limit, lower bag limit or take other management actions, like protecting or restoring habitat. Turkeys disappeared from the state once before and we don't want that to happen again. They are highly valued as a food source and play an important role in the ecosystem. By monitoring their numbers through this community science project and our spring gobbler surveys, we can help maintain a healthy turkey population in Rhode Island.



Common tern, Sam Miller

Narragansett Bay Colonial Nesting Bird Survey

What is a colonial nesting bird?

A colonial nesting bird is any species of bird that nests in groups. In Rhode Island, we especially focus on colonial waterbirds. These are birds that nest in groups (or colonies) along the coast or on islands. Shorebirds, like plovers and oystercatchers, are territorial, solitary nesters. They do not share their nesting space with other birds of the same species, so their nests are generally hundreds of feet apart or more. There are a few benefits to this strategy. They don't have to share their resources (like food) with other families and can rely on camouflage to avoid depredation of the nests and chicks. Conversely, colonial nesting waterbirds rely on numbers to avoid depredation. They also, like the shorebirds in Rhode Island, opt to nest on islands or isolated habitats, which are less vulnerable to terrestrial predators. Examples of colonial waterbirds are gulls, cormorants, terns, and wading birds, like herons, egrets, and ibises. By nesting in large groups, they overwhelm predators. If coyotes or crows find the nesting colonies, these predators may eat some of the eggs, but they will fill up before they eat all of the eggs, so there will be many eggs and chicks that survive. Nesting in large numbers also allows colonial waterbirds to team up to harass predators within the colonies. Common terns are known for being especially vicious toward unwanted visitors, dive bombing, pecking, and pooping on intruders. Believe it or not, they have excellent aim!

How do we survey for these birds?

Biologists visit the islands and habitats throughout Narragansett Bay to get a nest count of each species. Visits to the colonies are short, and biologists keep their distance from the birds as best as they can. Some colonies are on islands that biologists can hop off the boat and walk around on, while others are on big rocks in the ocean that can't be accessed at all. At these trickier spots, biologists count the birds from the safety of the boat using binoculars. The use of drones to capture images of the colonies from above has been immensely helpful in adding another layer of accuracy when compared to on-the-ground counts. Drones are flown high above the colonies so birds are not disturbed.

Why are we gathering this information?

This information is gathered in Rhode Island and all along the Atlantic Coast of the United States so that we can monitor trends in the population. If we see obvious changes in the numbers of nesting birds or shifts in where birds are nesting along the coast, these become signals. The signals help us to address and research any environmental stressors which might be causing these changes. In some cases, these changes can also alert us to changes in the availability of fish or presence of environmental toxins. In these cases the birds become environmental indicators.



Bird nest, Gabrielle DeMeillon

Helping Birds

There are lots of ways that we all can help birds right in our own backyards. Many of these can be extended to the schoolyard as well! Here are some common do's and don'ts for responsibly helping birds:

Create a welcoming habitat - Planting native trees, shrubs, and wildflowers is one of the best ways to provide habitat for birds. Native plants are the most useful to wildlife, and can provide appropriate, natural shelter and food (fruits, seeds, nuts, nectar). Landscape plants can be useful as well, but try to incorporate as many natives as possible.

Leave dead stumps (or trees, if safe) - Dead trees (snags), rotting logs, and stumps are full of insects, perfect for woodpeckers. Many species of birds will use tree cavities for nesting as well.

Build nest boxes - Building nest boxes is a great way to provide shelter for birds, especially if you don't have a bunch of tree cavities nearby. There are lots of templates available online. Check the Quick Links page for more information.

Feed birdseed, fruit, suet, or clear sugar water - There are a lot of things you need to do to properly feed birds. Bird feeders should be cleaned properly with hot water and a diluted vinegar/water or bleach/water solution. Birds can get sick if bird feeders are not cleaned properly. Old seeds and wet food should be removed to avoid mold growth, which can be toxic to birds. Hummingbird feeders should contain a 1:4 sugar to water ratio, and the liquid should NOT contain any dyes or coloring. Hummingbird feeders should be hung up in a shady area, and should only be filled halfway. The water should be changed every 2-3 days to avoid mold growth, which can be toxic to hummingbirds. Feeders should be thoroughly rinsed and scrubbed with hot water when refilled to keep clean. If all of this seems like too much work, you can always plant flowers for hummingbirds, or shrubs that produce fruits for other birds! In the long run, it's actually more beneficial to birds to provide food via habitat than through feeders.

Take down your bird feeders from March through November - Rhode Island has had an increase in black bear observations, and bird feeders are a major attractant for bears. Birds are perfectly fine finding their own food, as are bears. There's no need to turn your bird feeder into a bear feeder! This can lead to bears becoming habituated with human sources of food, which is something we want to avoid for the safety of bears and people.

DON'T feed birds bread, food scraps, or other snacks - Bread is notoriously unhealthy for birds, providing no nutritional value, and causing growth deformities. Old bread can also contain toxic mold, and can cause birds to choke or die from digestive distress.

DON'T kidnap baby birds - If you find a baby bird that is hopping on the ground and has feathers, leave it be! It is a fledgling learning to hop and fly, and its parents are nearby ready to care for it. If the baby bird is in a dangerous situation, like in a road or driveway, you can certainly move it out of harm's way, to a safe place close to where you found it. Baby birds that have few feathers and open eyes are called nestlings, while those with no feathers and closed eyes are called hatchlings. If found on the ground, they should be placed back in the nest, if it can be found. **If you are concerned about a baby bird or find an injured baby bird, you can call the Wildlife Rehabilitators Association of Rhode Island for assistance at 401-294-6363.**



Northern cardinal, Mary Gannon

Connecting Students with Birds

The best thing about birds? You don't have to travel far to observe them! As illustrated by the Rhode Island Bird Atlas 2.0, every city and town in Rhode Island is home to dozens of bird species! To see them, all it takes is a little patience and setting aside the time to look. Here are some tips for birdwatching with students:

Use whatever space you have available - What do the outdoors look like at your school? Don't worry if your school is not in a wooded area, birds are everywhere! Is there a spot where you can quietly sit with your students to conduct observations? Do you have a place where you could walk, even if it's just around the school building? If your school is within walking distance of a local park, take advantage of the nearby green space. More and more schools are adding outdoor classrooms. This is an excellent opportunity to make a bird-friendly space at your school! Maybe you can work with your students on ways to make your schoolyard a small bird habitat.

For equipment, focus on the bare minimum - You don't need to go out and buy 30 pairs of binoculars for your students in order to have a successful birding experience. If your school will support you in buying binoculars, then by all means, go for it! However, there are other materials that are more economical and just as useful. Investing in some bird field guides for your classroom is a good first step. There are many field guides on the market for different audiences. Whatever guide you decide on, we suggest getting one that focuses on Eastern North America or New England.

Take advantage of technology - Cornell Lab of Ornithology has an amazing, FREE bird identification app called Merlin. This app is great for beginners, because you can plug in a few observations (bird size, color, habitat, etc.), and it will give you some options on what the bird you are observing might be. It also has an excellent library of bird calls and songs, which is a great way to get your students started. A lot of data collection on birds can be based on sounds; knowing bird sounds can also increase your students' observational skills by using multiple senses.

Don't just go birdwatching once - Rhode Island is home to birds year-round, which means that birdwatching doesn't need to be limited only to the spring and summer. Going out multiple times a year can increase students' awareness of seasonal changes and how wild animals survive these changes. Taking multiple bird walks will also build students' confidence in identifying birds; maybe by the end of the school year, they might want to birdwatch in their own yards and neighborhoods over the summer! If you can set aside some time for a bird walk even just once a month, the experience will be more impactful to your students.

Don't worry about knowing everything - If you personally do not know much about birds, don't let that stop you! You don't have to be an expert to go birdwatching. Learning alongside your students can be just as rewarding as teaching.

Bird Vocabulary

Banding - a method of marking and numbering birds for research; fitting a lightweight aluminum band (ring) to a bird's leg and then releasing it

Crop - the pouch in a bird's throat used to store and carry food

Disturbance - an event that dramatically changes the landscape, such as a storm, fire, or human activities like logging or building

Duck Stamp Act - A conservation act passed in 1934 that requires all waterfowl hunters ages 16 and up to purchase a federal Duck Stamp. 98 cents of every dollar goes to the Migratory Bird Conservation Fund to buy wetland habitat for federal refuges

Extinct - a species that has no living individuals left

Gamebird - a bird that can be legally hunted during a regulated season

Gizzard - the part of a bird's stomach that is designed to grind food

Lacey Act- the first federal law passed to protect wildlife (1900), making it "unlawful to import, export, sell, acquire, or purchase fish, wildlife or plants that are taken, possessed, transported, or sold"

Market hunting - unregulated hunting in the 19th and early 20th centuries; hunters harvested large numbers of wild animals to sell for income

Mature forest - a forest that has reached its last stage of succession, characterized by low disturbance, large, older trees, and species that prefer to grow in the shade

Migrate - to seasonally move from one place to another

Migratory Bird Treaty Act - passed in 1918 in response to the sharp decline of bird populations due to overharvest for sale; made it illegal to take, possess, import, export, transport, sell, purchase, barter, and offer for sale/purchase/barter any birds, feathers, nests, or eggs

Molting - seasonal shedding and regrowth of feathers

Niche - the role or function of a species in the ecosystem

Non-game - an animal that is not harvested by hunters

Passerine - "perching" birds or "songbirds;" largest group of birds in the world, characterized by 1 backward-facing and 3 forward-facing toes

Bird Vocabulary (cont.)

Pittman-Robertson Act - a conservation act passed in 1937 which placed a federal tax on firearms/ammunition/archery equipment in order to generate funding for wildlife conservation in each state; funds must be used for projects pertaining to bird/mammal conservation, research, management, and habitat

Population - the number of individuals of a certain species in a given place

Raptor - bird of prey, with sharp talons and a hooked beak

Satellite transmitter - a device used by biologists to track animals; the transmitter is attached to the animal either internally by a veterinarian or externally on a collar, and sends signals to a satellite. This records the animal's location and movements so biologists can learn more about the animal's habits and needs

Sea duck - duck that spends much of its time in salt water and that feeds by diving underwater

Shorebird - smaller, migratory bird with long, straight beak used for probing for food in beach sand and coastal areas

Waterfowl - group of birds that includes ducks, swans, and geese

Understory - the assemblage of plants that grow beneath the trees in a forest



Sanderlings, Dean Birch

Quick Links

The Young Forest Project
Learn about efforts to manage young forest habitat for birds across New England. There are also resources on bird species that use young forest habitat.
https://youngforest.org/

Merlin App
Learnhow to identify birds by sight and sound on this free app from the Cornell Lab of Ornithology. You can even record bird calls in your area, and the app will identify them in real time!
https://merlin.allaboutbirds.org/

eBird
Use this interactive map to click on birding "hotspots" to see what bird species have been seen there. A great way to see which birds have been spotted close to your school!
https://ebird.org/hotspots?hs=L3997605&yr=all&m=

Cornell Lab of Ornithology: All About Birds
An incredible, expansive online resource about the birds of North America!
https://www.allaboutbirds.org/news/

All About Birds: Bird Guide
Identification and information for over 600 North American bird species
https://www.allaboutbirds.org/guide/

All About Birds: Bird Academy Play Lab
Play fun, interactive games with your students to build their knowledge of birds!
https://academy.allaboutbirds.org/learning-games/?utm_source=aab#_ga=2.131732943.1359691417.1579884658-968972601.1579884658

All About Birds: Feeding Birds
Information on how to safely feed birds in your backyard (types of food, how to properly clean bird feeders, etc.)
https://www.allaboutbirds.org/news/browse/topic/feeding-birds/

All About Birds: Live Cams
Tune in to live cameras across the world to watch different kinds of birds.
https://www.allaboutbirds.org/cams/all-cams/

Cornell Lab: K-12 Education, Spanish Language Resources
Bilingual resources related to birds and the outdoors
https://www.birds.cornell.edu/k12/spanish-language/

3 Billion Birds
Recent studies show that nearly 3 billion birds have been lost across North America since 1970. This link shares the findings of the study and how everyone can help bring birds back.
https://www.birds.cornell.edu/home/bring-birds-back/



Canada geese, Dean Birch

Lesson 1: Bird Conservation History

Theme

America's bird populations once experienced severe declines due to lack of protection and over-harvest. Today, birds are protected and many species have made a huge comeback!

Learning Objectives

In this lesson, students will learn about the history of humans' use of birds as a natural resource, the eventual overexploitation of birds, and the early conservation actions taken to save America's birds. Students will also learn about how the RIDEM Division of Fish and Wildlife monitors both game and non-game bird species to keep our bird populations stable and protected.

Corresponding Activities for this Lesson

- Create Your Own Duck Stamp

Materials

- Lesson 1 PowerPoint

Lesson

1. **Start by asking students what they know about humans' interactions with wildlife.**
   - How did people and wild animals interact in the past? Why might wild animals have been valuable to people a long time ago?
   - Show students the drawing of European settlers and Native Americans trading pelts.
   - Explain that Indigenous peoples relied on wildlife for food and clothing, but when Europeans arrived, they did not understand that an animal could become endangered or extinct. The Europeans also relied on wildlife for survival, but also extirpated predators, and over-harvested game, which caused the decline of many wild species.

2. **Show students the pictures of market hunters.** ***Note: The pictures depict harvested ducks at a distance. If you feel as if these images will upset your students, skip this slide. You can still talk about market hunting without showing the pictures.***
   - Explain to students that after a while, people began hunting large numbers of animals to sell at the market for food. Ducks were one of the groups of birds that were harvested. Hunters would go out and harvest 50 - 100 ducks a day.
   - Ask students if they think that hunting this many animals at a time is a good idea. What do they think would happen over time?
   - Explain that this style of hunting caused huge declines in duck populations across America, because there were no hunting rules.

3. **Show students pictures of Victorian women wearing feathered hats.**
   - Ask the students what they think of the hats. Are they pretty, weird, silly?

- Explain that the hat trade in the late 1800s and early 1900s was devastating to bird populations in America. Thousands upon thousands of birds were killed just to be put on hats.
- How does that make everyone feel? Do you think this was ok to do?
- Explain that many people felt this was not right, and started to let their voices be heard. Many women gathered together to form bird conservation and education groups, and began the first chapters of the Audubon Society. In 1918, the Migratory Bird Treaty Act was signed.
- Explain that this act prevented people from possessing, harming, killing, disturbing, trading, buying, selling (etc.) birds, bird parts, eggs, feathers, or nests. This is still in effect today.
- Ask students what migratory means.
- Explain that the Migratory Bird Treaty Act involves Canada, the United States, Japan, and Russia. Ask students why America would involve other countries in this act. If students don't guess, explain that migratory birds don't know the difference between countries, and don't follow a human-made map! Many of our birds from New England spend their winter in Central and South America. Some birds from the West Coast and Alaska fly across the Pacific. Some birds spend their summer in Canada and winter in New England. It makes sense that countries should work together towards bird conservation because we share birds!

4. **Explain to students that things have changed drastically for birds since then!**
   - Show students the slide with pictures of Narragansett Bay's nesting colonies.
   - Details about the Division of Fish and Wildlife's annual monitoring efforts of these colonial nesting species are included in the notes section of the slide.

5. **Show students the Duck Stamp Act slide and explain that America's hunters became a big part of the conservation and restoration of bird populations and habitats.**
   - Details about the Duck Stamp Act are included in the notes section of the slide.
   - Ask students how conserving wetland habitats for ducks could perhaps help other birds/wildlife.

6. **Show students the pictures of RI's annual goose banding project.**
   - Details about goose banding are included in the notes section of the slide.
   - Ask students why they think counting and tracking birds (especially gamebirds) is important.

7. **Explain to students that hunters were made further responsible for wildlife conser vation with the signing of the Pittman-Robertson Act.**
   - Details about the Pittman-Robertson Act are included in the notes section of the slide.

8. **Wrap up: Review with students the timeline of events in this story of bird conservation.**
   - Ask what they think needs to happen to continue this story, to conserve and protect birds in the future. A KWL chart would work great with this lesson!



Harlequin ducks, Richard Leach

Create Your Own Duck Stamp

Background

In the 1930s, the United States government made enormous strides in bird conservation legislation. In 1934, President Franklin D. Roosevelt signed the Duck Stamp Act. This act made it a requirement of all waterfowl hunters ages 16 and up to purchase a Federal Duck Stamp each year. The proceeds of Duck Stamp sales (98 cents out of every dollar), goes towards purchasing or leasing wetland habitat for the National Wildlife Refuge system. Artists submit their work each year to be selected for the Duck Stamp.

There is also a Junior Duck Stamp program for young artists to submit their artwork for the State Duck Stamp. After winning the state competition, their artwork is submitted to the national Junior Duck Stamp competition. Proceeds from the sale of the Junior Duck Stamp go towards supporting this educational youth art program. To learn more about participating in the Rhode Island Junior Duck Stamp contest, **click here**.

In Rhode Island, waterfowl hunters are required to purchase both the Federal and State Duck Stamps. In its over 80 year history, the Federal Duck Stamp has contributed $800 million to habitat conservation across the country, protecting more than 5.7 million acres of wetland habitat! You don't have to be a hunter to purchase a Duck Stamp; many people purchase them as collectors' items, in appreciation for these miniature works of art.

How to

- Explain to students that they are going to create their own duck stamp, and provide some background information about the Duck Stamp program.
- Write the names of Rhode Island's waterfowl species (listed below) on scraps of paper and ask students to pick their species from a basket. For younger students, you could print out small photos of the waterfowl.
- Each student is now assigned a species to research. Ask students to find out the answers to the questions on the Duck Stamp worksheet below. This worksheet is geared towards upper elementary/middle school, but could be scaled for younger students.
- Encourage students to use a bird field guide or online resources for their research. Cornell Lab of Ornithology's **All About Birds online guide** is a great place to start.
- After students have finished their research, they will draw their own Duck Stamp on the template provided below.
- Once all students have finished their stamps, ask everyone to share their artwork and what they learned about the species. You could also project photos of each bird and play their calls. Students may be surprised that not all ducks say "Quack!" A gallery walk is another great way for students to share their artwork and what they've learned about their waterfowl species.

Rhode Island Waterfowl Species

Diving Ducks

These are ducks that actively dive and swim to find their food. Many diving duck species are considered "sea ducks," and spend most of their time in saltwater. Some diving ducks can also be found in freshwater.

- Common eider
- Long-tailed duck
- White-winged scoter
- Black scoter
- Surf scoter
- Hooded merganser
- Common merganser
- Red-breasted merganser
- Harlequin duck
- Canvasback
- Redhead
- Ring-necked duck
- Greater scaup
- Lesser scaup
- Common goldeneye
- Barrow's goldeneye
- Ruddy duck
- Bufflehead

Geese & Swans

Rhode Island has two common goose species (Canada goose and brant), but can also have some uncommon visitors such as the snow goose or cackling goose. The mute swan is a non-native invasive species introduced from Europe.

- Brant
- Canada goose
- Mute swan
- Snow goose
- Cackling goose

Dabbling Ducks

These are what most people picture when they think of a duck. Dabblers tip their heads down into shallow water with their tails up in the air when foraging for food. They do not actively swim underwater, and can be found in marshes and ponds (freshwater and saltwater).

- Mallard
- American black duck
- Northern pintail
- American wigeon
- Wood duck
- Northern shoveler
- Blue-winged teal
- Green-winged teal

RHODY CRITTER KITS

DEM RHODE ISLAND

Name: _____

My Duck Stamp

Which species are you drawing?

Where in the world does it live?

What kinds of habitats does it like?

What does it eat?

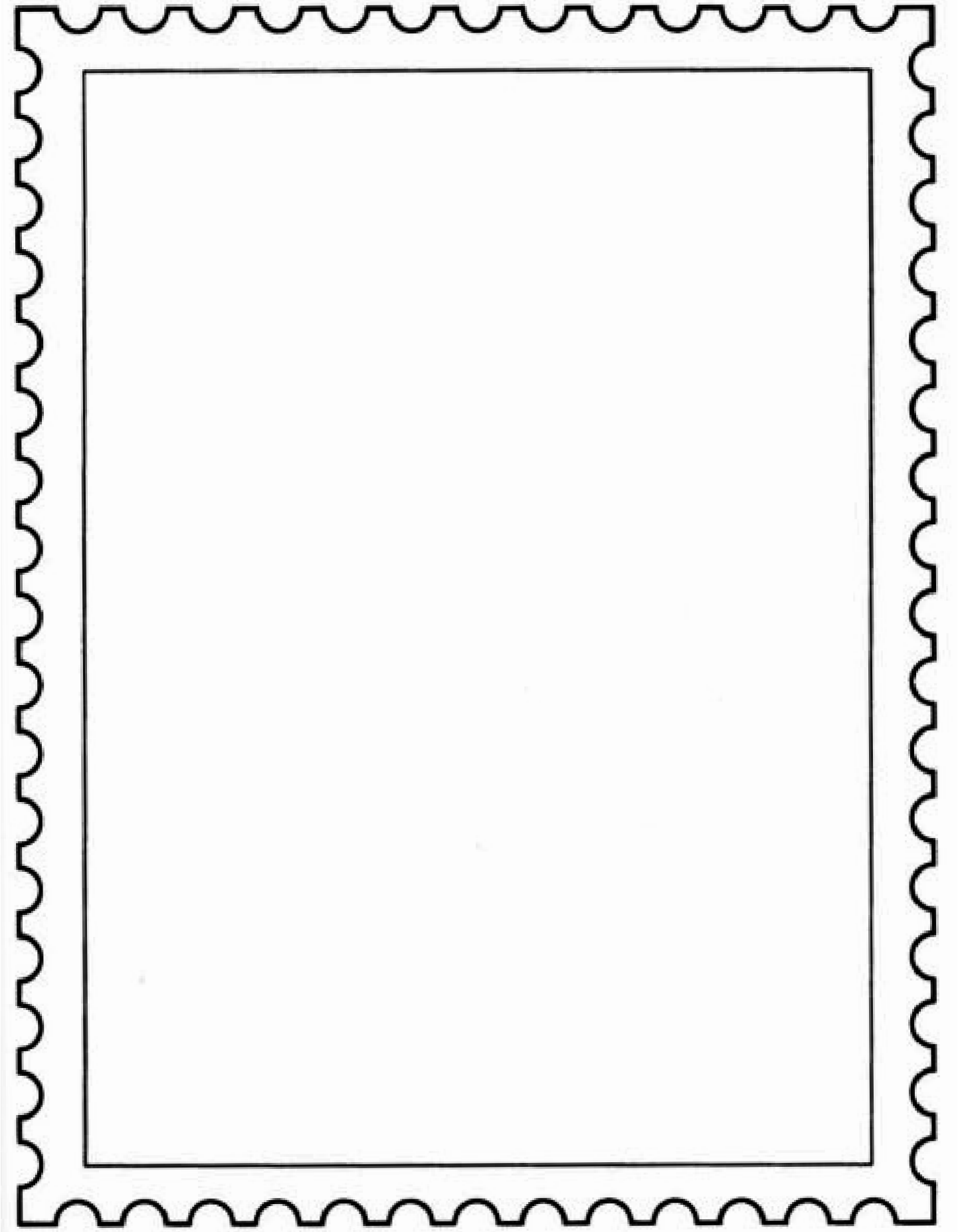
How does it build its nest?

How many eggs does it lay?

Does it have any predators?

What are some threats to this species? Is it endangered?

Share your favorite fact about this species!





Osprey, Matt DiMaio III

Lesson 2: Bird Adaptations & Niches

Theme

Birds are very diverse and have a lot of cool adaptations! All of these adaptations help birds fill various niches in the environment. It's important to keep track of our bird diversity here in Rhode Island so we can make informed decisions to help our birds in the future.

Learning Objectives

In this lesson, students will learn about the basic adaptations of birds and general groups of birds. Students will also learn about the Rhode Island Bird Atlas 2.0.

Corresponding Activities for this Lesson

- Bird Beak Buffet
- Bird Beak Detectives
- Create Your Own Bird Atlas

Materials

- Lesson 2 PowerPoint
- Bird skull models and replicas
- Feathers

Lesson

1. **Show students the collage slide of Rhode Island birds and ask for some ideas about what makes birds different from other animals.**
   - Write down students' answers on the board, or let students write them.
   - Ask students to look for some common themes in their answers. A KWL chart would work well at the start of this lesson.
   - Hopefully students will have touched on some of the following characteristics of birds: Birds have feathers, lay eggs, are warm-blooded, don't have teeth, have hollow bones

2. **Pass around the loose feathers included in the kit. Ask students to be gentle with the feathers as they explore.**
   - Ask students what they think bird feathers are made of, and if all feathers are the same. How do feathers stay together?
   - Ask students why they think birds have feathers, other than to fly?
   - Show students the pictures of the blue jay, fluffed up to stay warm, and the duck, with beads of water on its feathers. Explain that some feathers are designed to protect birds against the weather.
   - Show students the pictures of the wood duck and American woodcock. Explain that many birds use brightly colored feathers to attract a mate, while others use their feathers to camouflage.

3. **Show students the photo of the structure of a feather and the different types of feathers.** *Details about feather structure and function can be found in the notes section of the PowerPoint.*
   - Ask students to guess the function of each feather type based on its structure.

4. **Ask students to list some things that birds might eat. Record the list on the board.**
   - When students have finished, compare their list to the list on the slide. Were there any correct guesses? Any silly guesses?

5. **Show students the collage of photos showing different bird beak shapes. This is a great time to let students look at the bird skull replicas and models.** Explain that what a bird eats depends on its beak shape. Ask students to think about why the shape of the beaks in the photos corresponds to what that bird is eating in the photo. For example, the great blue heron is eating a fish. What about the heron's beak makes it a good tool for catching fish? For the great horned owl and the crow, ask students to make a prediction about what these birds might eat, based on their beak shape. Students should be able to guess the owl's diet easily, but may have to think a little bit about the crow, which is a generalist that eats all sorts of things.

6. **Explain to students that each bird on this slide fills a particular niche.**
   - Ask students if they have ever heard the word niche before.
   - Ask them to take a guess about what that word means in the context of what they were just discussing regarding bird beak shapes.

7. **Explain that a niche is an animal's role, or job, in the ecosystem. All of the niches fit together like a puzzle, making up the big picture of the ecosystem.**

8. **Explain that in Rhode Island, we're very interested in learning about the diversity of birds living here, and the habitats they're using.**
   - Show students the Rhode Island Breeding Bird Atlas 2.0 slide. *Notes about the Bird Atlas can be found in the PowerPoint.*
   - After learning about the Bird Atlas, work together to create your own bird atlas for the outdoor space around the school!



Double-crested cormorant, Peter J. Ryan

Bird Beak Buffet (Modified from Project WILD)

Materials

- Beak tools → Chopsticks, tongs, tweezers, strainers, scissors, lemon juicers, pipettes
- "Food" items → Yarn, large decorative marbles, beads, *small bottles or cups of water, large bowls of water, small leaves/grass, Play-Doh, jellybeans, strips of paper**
- Bird photos → Sandpiper, heron, woodpecker, duck, hawk, finch, hummingbird

**Not included in kit*

Prep

Ask if anyone has observed birds eating? What were the birds eating? What kind of habitat were they in? Explain to students that birds have different shaped beaks based on what they eat, and the niche that they fill in the environment. Explain that a niche is a particular animal's function in the ecosystem. Think of it like the animal's job. All of those jobs fit together and interact, making the ecosystem function properly. Explain to students that they are going to use their imaginations and pretend to forage for food like birds using different tools.

How to

- Pass around bird photos. Ask students to make some predictions about what each bird might eat.
- Show students the array of tools they will be using as "beaks." Can they match the tools to the photos of the birds? Don't reveal the answers just yet!
- Set up stations around the room. There is a table on the next page for guidance. Allow students to rotate through each station in small groups to "forage."
- Debrief with the whole class. Which tools were easiest to use? How about the most difficult? Ask students to share their thoughts and observations. Ask the students if they can now guess which tools matched with each bird, and what that bird would eat in real life, based on their experience using the tools. Now you can reveal the answers! Ask students what habitat each bird would require, based on their food specializations. If you're able, take a walk outside to look for birds foraging for food.

Bird	Diet	Tool	Food Items
Hawk	Small mammals, other birds, snakes	Scissors	**Play-Doh** → Students will cut up pieces of dough just like a hawk would tear and cut meat with its sharp, hooked beak
Hummingbird	Nectar, tiny insects	Pipette	**Water** → Students will "sip" nectar (water) from a small bottle just like a hummingbird would from flowers. ***Extension:*** Fill several bottles with water, and dye each a different color with food coloring. Have students pipette from the colored bottles into a bowl of uncolored water. Watch how the colors all muddle together in the bowl. This is an analogy of how hummingbirds spread pollen from flower to flower as they drink the nectar!
Woodpecker	Insects in tree bark	Tweezers	**Beads** → Students will use the tweezers to pick up the beads just like a woodpecker would pick insects out of tree bark. ***Extension:*** If you have access to a log or a piece of tree bark, you can spread the beads in the grooves of the bark. You could also use grains of rice for a super challenge!
Heron	Fish, frogs, snakes, small mammals	Tongs	**Large decorative marbles** → Students can imagine that the marbles are shiny, slippery fish in a river or pond. They will snatch them from a large bowl of water with the tongs just like a heron would grab a fish or frog from a wetland.
Sandpiper	Small invertebrates and insects	Chopsticks	**Beads hidden underneath a tangle of yarn or strips of paper** → Students will probe for beads like a sandpiper would use its beak to search for insects and small critters in the wrack (washed up seaweed) and sand on the beach.
Duck	Aquatic plants/ seeds	Strainer	**Leaves and beads** → Students will strain leaves and beads from the bowl of water like a duck would filter through wetland muck and water for plants and seeds.
Finch	Seeds	Lemon juicer	**Jelly beans** → Students will crush the jelly beans with the lemon juicer like a finch would crush the shells of seeds. (You may want to get an extra bag of jelly beans for students to snack on, or else the supply of "seeds"may disappear!)

About Project WILD

Project WILD's mission is to provide wildlife-based conservation and environmental education that fosters responsible actions toward wildlife and related natural resources. All curriculum materials are backed by sound educational practices and theory, and represent the work of many professionals within the fields of education and natural resource management from across the country.

To attend a FREE training workshop, email kimberly.sullivan@dem.ri.gov.

RHODY CRITTER KITS

DEM RHODE ISLAND

Great Blue Heron



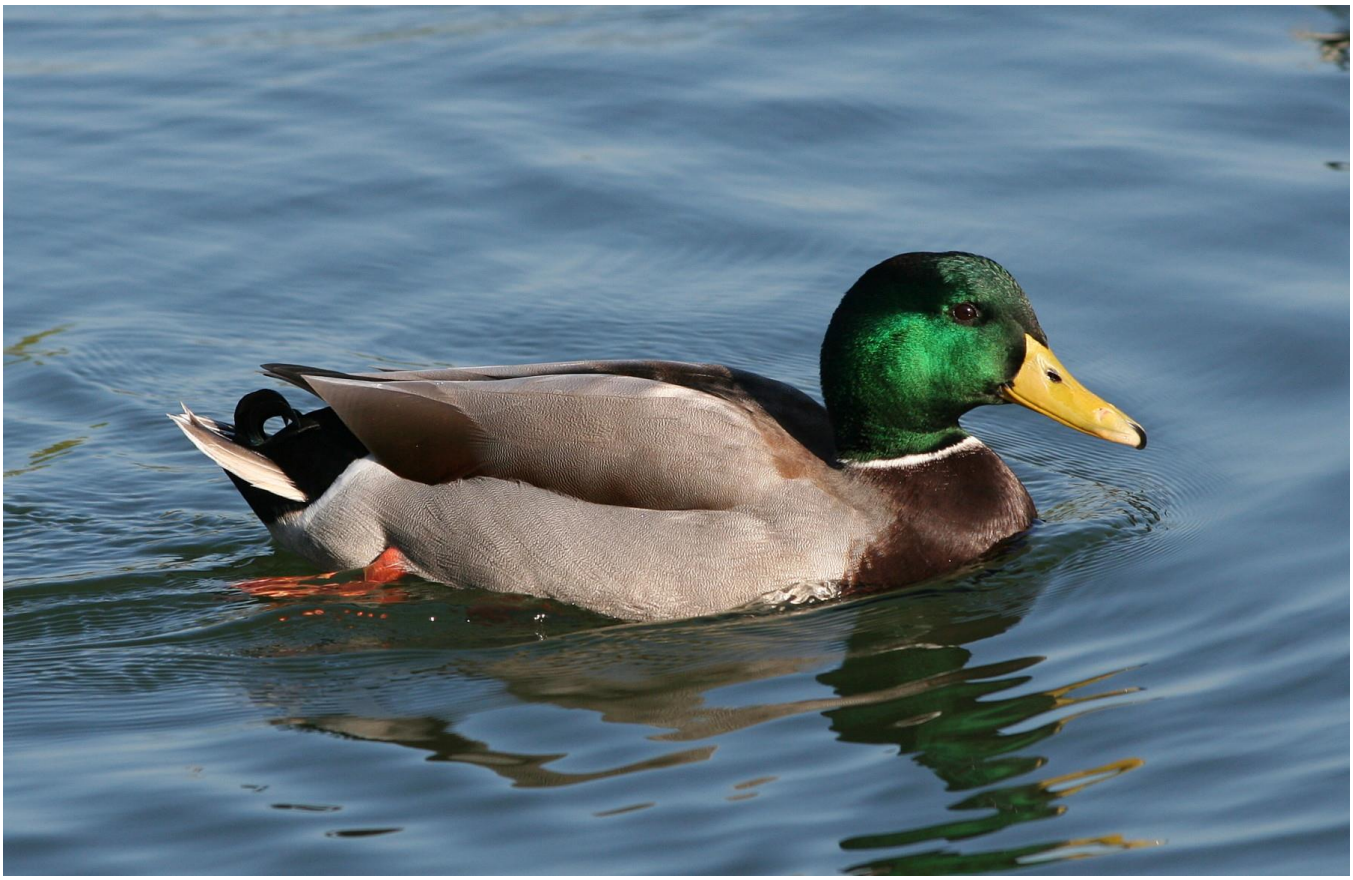
Sanderling



Ruby-throated Hummingbird



Mallard



White-throated Sparrow



Red-tailed Hawk



Red-bellied Woodpecker





American oystercatchers, Matt DiMaio III

Bird Beak Detectives

Materials

- 2D bird skull replicas
- Detective observation sheet (below)
- Bird Beak Detectives PowerPoint and projector

Prep

Explain to students that birds have different shaped beaks based on what they eat, and the niche that they fill in the environment. Explain that a niche is a particular animal's function in the ecosystem. Think of it like the animal's job. All of those jobs fit together and interact, making the ecosystem function properly. Explain to students that they are going to be bird beak detectives, and will have to do some sleuthing to identify seven different bird skulls.

How to

- Place the bird skull replicas on different desks or tables around the room. You can split students into pairs or groups, depending on the size of your class and what will work best for your students. Place a sticky note with the number of that station next to each replica. There are 9 skull replicas. Here is the identification key:
    - #1: Northern cardinal
    - #2: Bald eagle
    - #3: Cormorant
    - #4: Wild turkey
    - #5: Canada goose
    - #6: Pileated woodpecker
    - #7: Common raven
    - #8: Great blue heron
    - #9: Barn owl

- Ask a group or several groups to gather around one skull station. There should be students gathered at all 9 stations. Give students some time to examine the skull and write down some observations on their detective sheets.

- Ask the students to proceed to the next skull station to record observations about the next skull. Repeat until all students have visited all 9 stations.

- Ask students to sit at their desks, and go through each of the stations. Ask students to share their observations about Skull #1. Ask for some predictions about the identity of the bird.

- Project the solution slide. After sharing observations/predictions, for Skull #1, ask students to make a final deduction as detectives. Click to reveal the identity of Bird #1. Repeat for stations 2-9. (Numbers will appear on the slide with each click, so only click when students have settled on a final deduction to avoid revealing the answers too soon!)

Be a Bird Beak Detective!

Station Number	Write down 3 things you notice about this skull.	What do you think this bird eats?	Guess which bird this is!	The correct answer is...
1				
2				
3				
4				

Station Number	Write down 3 things you notice about this skull.	What do you think this bird eats?	Guess which bird this is!	The correct answer is...
5				
6				
7				
8				
9				

1



2



3



4



5



6



7



8



9



1



4



7



2



5



8



3



6



9





Pileated Woodpecker



Bald Eagle



Cormorant



Northern Cardinal



Barn Owl



Great Blue Heron



Wild Turkey



Common Raven



Canada Goose



American goldfinch, Gabrielle DeMeillon

Create Your Own Bird Atlas

Background

The Rhode Island Division of Fish and Wildlife, in partnership with the University of Rhode Island, has completed collecting data for the Rhode Island Bird Atlas 2.0. This project involved biologists, field technicians, and over 200 volunteers. The goal? Document all of the bird species in Rhode Island across all seasons and habitats, and figure out how our bird populations have changed, for better or for worse, since our first atlas efforts in the 1980s. By knowing which species are here, and the habitats they're using, we can make informed, thoughtful conservation decisions to help our birds in the years to come, particularly our Species of Greatest Conservation Need. To do this, we split the state up into 165 blocks. Volunteers visited each block and recorded all of the birds that they saw or heard there between 2015 and 2019. A total of 242 bird species were documented across Rhode Island! That means that no matter where you live in this beautiful little state of ours, you can bird watch.
To learn more about the RI Bird Atlas 2.0, visit www.ribirdatlas.com.

A great way to connect students with birds is to conduct bird observations right at school. Creating a miniature bird atlas of the schoolyard, nearby park, or neighborhood allows students to collect and summarize their own data, and learn more about the wildlife right outside their window. Obviously, this project is not as complex as the Rhode Island Bird Atlas 2.0, but it will give students an idea of what it was like for biologists and volunteers to complete this huge dataset.

Materials

You don't need to go out and buy 30 pairs of binoculars for your students in order to have a successful birding experience. If your school will support you in buying binoculars, that's wonderful! However, there are other materials that are more economical and just as useful. Investing in some bird field guides for your classroom is a good first step. There are many field guides on the market for different audiences. For example, The Sibley Guide to Birds is very advanced, and may not be the best option for a second grade class. Whatever guide you decide on, we suggest getting one that focuses on Eastern North America or New England.

RHODY CRITTER KITS

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RHODE ISLAND FISH & WILDLIFE

Guidelines for creating your own bird atlas

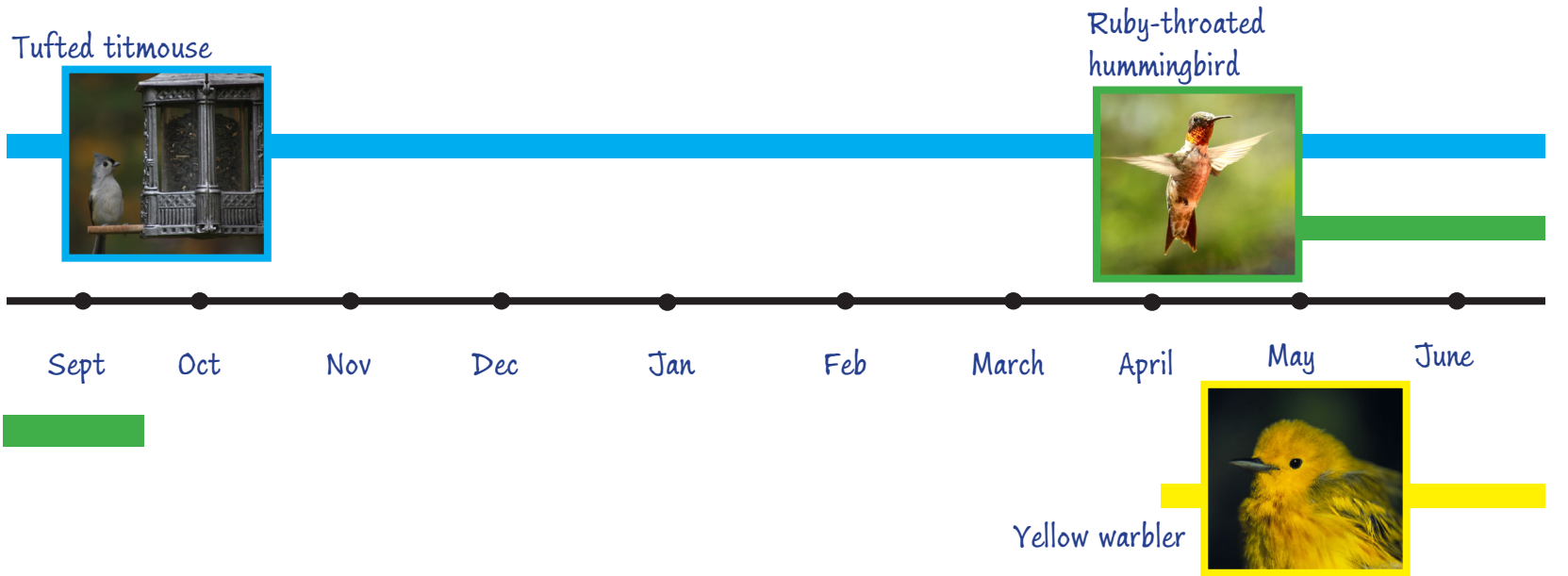
Prepare before venturing out: Give students some time to do a little preliminary research. Flip through field guides or play Rhode Island bird bingo (included in this kit). You can always contact your friendly RI Wildlife Outreach Coordinator for information about the atlas block in which your school is located! Having a preliminary list of the birds that were actually documented in your block can give you an idea of what you can expect to see. Try to learn some of the calls of the birds on your block list. Even having just a little bit of information before heading outside will give students a confidence boost as citizen scientists.

Use a data sheet: There is a template data sheet included in this kit. This is just a guideline to use. Depending on the age of your students, you can add or remove elements of the data sheet. One thing to remember is to use the same data sheet each time you conduct an atlas survey.

Decide on your survey protocol: For the RI Bird Atlas 2.0, observers conducted point counts and transect surveys. To do point count, sit or stand in one place, and record all of the birds that you hear or see over a set period of time at that spot. For a transect survey, walk along a selected pathway and stop at predetermined intervals (i.e. every 25 feet) to look and listen. Choose whichever method works best for the space that you have available. Select whatever method works for your particular group's needs.

Conduct multiple surveys: Try to find a regular time to conduct surveys based on your schedule. Maybe you can go out once a week, or maybe just once a month or even once a season. Repeating your observations will give students a broader dataset.

Summarize your data: Depending on the age of your students, your data summary methods could vary. With older students, you could summarize data using graphs, or even GIS mapping. K-12 schools can access GIS mapping software through esri for free. For younger students, you could simply list all of the birds you saw over the course of your atlas efforts, create a wall mural with pictures of the birds observed, or use a hallway wall to create a timeline, showing when different birds were observed and for how long. For example, if you ran your surveys from September through June, you might have seen and heard tufted titmouse throughout that entire time period, but only saw yellow warblers in May and June. You can also document when species leave in the fall and when they return in the spring, like the ruby-throated hummingbird, represented by the green bars on the timeline. Here is a sample of what your timeline might look like:



Nest Notes



Did you see any nests on your hike?

What was it made out of?

Where was the nest?
Circle one: in a TREE on the GROUND in a BUSH

Bird Observations

Observer (your name):
Date:
Time:
Location:
Weather:

List all of the bird species you saw:

Sightings



Draw a bird that you saw:

Describe the color and size:

What was the bird's behavior (what was it doing)?

Songs



Close your eyes and LISTEN

What did you hear?

How many different birds do you think were calling?

Can you make up a phrase that sounds like a bird song you heard?



Lesson 3: How Can I Help Birds?

Theme

All wildlife benefit from quality habitat and connectivity. The conversion of urban green spaces and suburban yards into more welcoming habitat can make a big difference for birds. Small actions add up!

Learning Objectives

In this lesson, students will learn about ways to create bird habitat in their own yards and communities, the proper way to feed birds, a community science opportunity with wild turkeys, and how the Division of Fish and Wildlife is managing habitat with birds in mind.

Corresponding Activities for this Lesson

- Migration Madness

Materials

- Lesson 3 PowerPoint

Lesson

1. **Review from the last lesson that Rhode Island's birds fill lots of different niches and live in a variety of habitats.**
   - Ask students to think of some different habitats in which birds might live.
   - Show students the collage of habitat photos (all taken in Rhode Island).
   - Explain that a bird's adaptations determine the habitat in which it lives, and the niche that it fills. Some species have only adapted to live in one type of habitat, while others are less picky about where they live.
   - Can students think of an example of a bird that only lives in a certain type of habitat? How about a bird that can live in lots of different habitats?

2. **Show students the map of Rhode Island, explaining that one of the big goals in our state is to protect as much diverse habitat as possible.** The more habitat we conserve/manage, and the more diverse habitats we protect (forest, coastline, wetlands, etc), the better for our birds.
   - In Rhode Island, we have approximately 60,000 acres of land conserved in our State Management Areas (green shapes on the map).
   - Rhode Island's birds have most definitely benefited from State conservation land, as well as from State Parks and other conservation land throughout RI (Audubon, Nature Conservancy, town land trusts).

3. Explain that one of the habitats RI DFW is focusing on for birds is young forest.

- How old do students think the trees might be in a young forest? Are they big or small? Why might a bird like young forest habitat?
- *Details about young forest habitat and the bird species that benefit from this habitat type are in the notes section of the PowerPoint. If you would like to go more in depth learning about young forest habitat, activities and resources focused on this habitat type are available in the "Home Sweet Habitat - Forests" kit.*

4. Explain to students that you don't have to have a big piece of land like a Wildlife Management Area to create bird habitat.

- Ask students what they think are some ways that we can create bird habitat in our own yards, neighborhoods, and cities. Are there things that we could do right at home? How about at school? In our town or city?
- After brainstorming some ideas, review the components of habitat (food, water, shelter, space). Explain to students that we can help provide all of these things right at home with nest boxes, gardens with native plants, birdbaths, and bird feeders.

5. Ask students what they think are appropriate foods for birds. *There is extensive information about how to properly feed birds in the Lesson 3 PowerPoint.*

- Explain to students that bread and food scraps are not healthy for birds. These foods are not naturally part of birds' diets and can cause health issues.
- Imagine if you only ate potato chips for your entire life. Would you be healthy? Probably not! It's the same with birds and bread. The bread, crackers, and other processed human foods people often leave out for birds taste good, but are not healthy for them.They can actually make birds very sick!

6. Ask students why they think bird feeders should be taken down in the spring and summer.

- Explain that birds know how to feed themselves year-round. We want birds to live a natural life foraging for their own food.
- We also have black bears in Rhode Island. Bears love to eat pretty much anything, so leaving out seeds, suet, or fruit for birds is an open invitation for a bear to stop by for breakfast or a late night snack. To avoid habituating bears to bird feeders, and also to keep your bird feeder from being squashed by a bear, it's best to take bird feeders down from March through November.

7. Ask students what they think they should do if they find a baby bird out of the nest.

- Show students pictures of baby birds at different stages. *Instructions on how to handle baby birds and how to tell if they need your help are included in the notes section of the PowerPoint.*

8. Ask students if they have ever heard of a community scientist.

- Explain that there are lots of opportunities for people who may not have a science background to still participate in scientific studies. One opportunity is the annual wild turkey observation project with the RI Division of Fish and Wildlife! *Details about this project are in the notes section of the PowerPoint.*



Black-throated blue warbler, Jay Osenkowski

Migration Madness

Materials

10 - 12 hula hoops or floor spots (you could also draw “habitat” circles in sidewalk chalk)

Prep

This game demonstrates the importance of habitat connectivity for migrating birds. When birds migrate, they need resting places (called staging sites) to stop and refuel for the next leg of their journey. This game can be modified for any group of migratory birds. For example, the hoops could represent patches of forest for songbirds as they make their way from Rhode Island to the South American rainforest each fall, or wetlands and coastal areas for migrating waterfowl.

Give a brief overview of migration and why birds need to stage during migration before beginning. Ask students if they think they could hike from Rhode Island to Florida in one day. What would they have to do to make that journey on foot? They would probably need to rest, sleep, and eat. It would take them a lot longer than one day to get to their destination! That is exactly what birds have to do on their long migration journeys.

How to



Place 7 to 10 hula hoops in a straight line about 6 inches apart. Have the class line up on one end. Explain to students that they are migrating songbirds spending the winter in the rainforests of Central and South America. It’s springtime, which means it is time to make the long journey to Rhode Island for the summer. Explain that the hula hoops are habitat patches where the birds can stop to rest. Students must hop (with two feet) from hula hoop to hula hoop until they reach Rhode Island (no running starts). Then return to the end of the line. *Make sure the first student reaches “Rhode Island” before the next begins.* Once they reach Rhode Island, the birds can fly around, look for food, or build a nest!

Round One: Have the entire class go through, then ask was that easy or hard (should be easy). That's great! All of the birds survived!

Round Two: But now, someone has decided to build lots of houses right in the middle of the forest (take away one hoop), so this year you will have to skip that one to make it back to Rhode Island! Go through the line again, some students won't make it. Tell them to wait on the side. Ask again, was that easy or hard (you should get a mixed response or maybe still too easy). Oh no! Some of our birds didn't make it!



Round Three: This year someone dumped chemicals and polluted one of the stopover sites where the birds rest on their way to Rhode Island. The pollution has severely affected the food sources that the birds need to refuel. (Take away the hoop that is right next to the first gap.) Let's see if our birds can make it this year. Most likely no students will make the jump (maybe one very athletic one!) Ask again, was that easy or hard? (Most might say impossible.) How did that make you feel? Explain that this is exactly how real birds feel, it is impossible for them to make it on their migration if there is nowhere for them to rest. Ask students if there is anything they could do to make it better?



Round Four: If time allows, explain a group of people came along and decided to restore the habitat, maybe not in the same location but somewhere between where the last 2 habitats disappeared (Place a hoop back in the middle of the gap). Have all of the students go through again, most everyone should make it. Explain that it is possible to restore habitat for wildlife and this is one huge way we can help!



Wrap Up

Why is it important to protect not just the breeding and winter habitats of birds, but all the places they stop in between? Why do birds need to migrate? What are some of the ways humans can help? What are some of the ways YOU can help?

Additional Resources & Activities









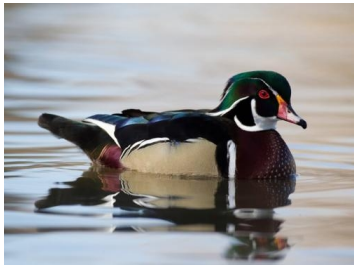






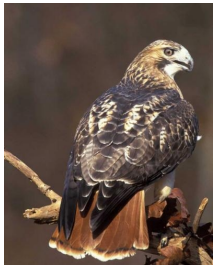




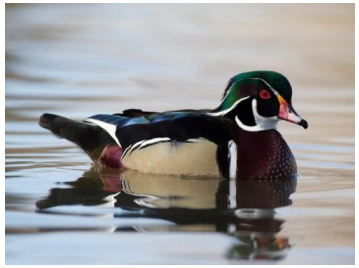




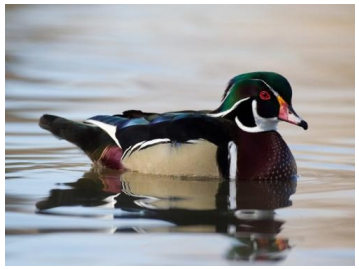
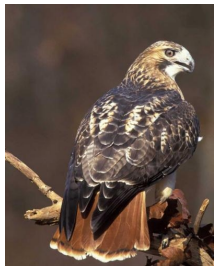




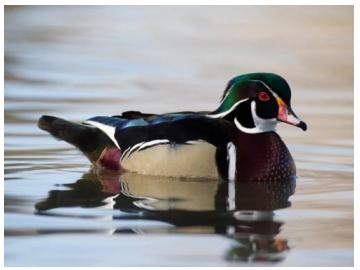
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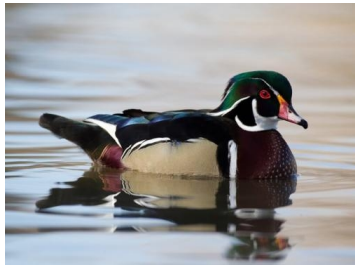
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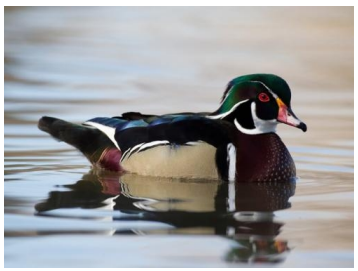








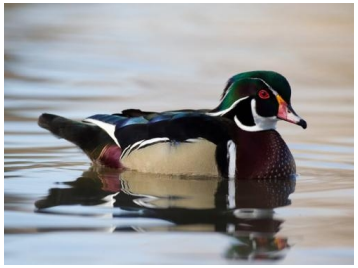







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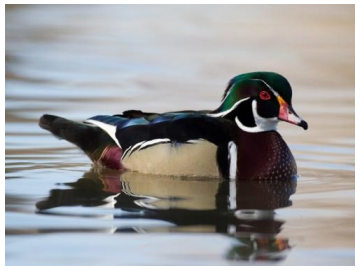














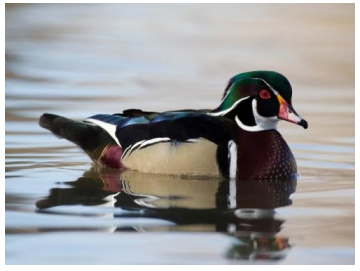




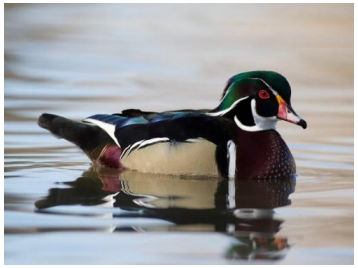




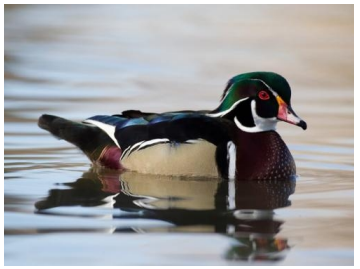

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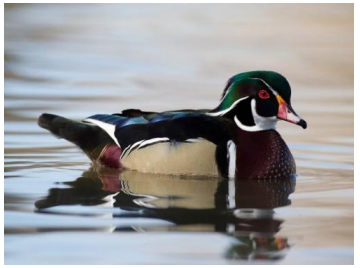
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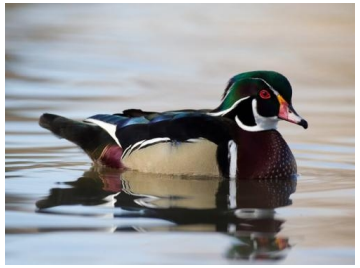
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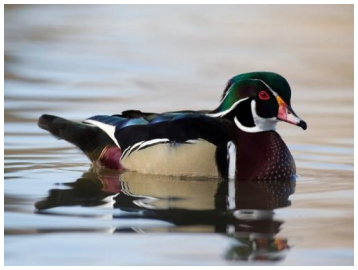
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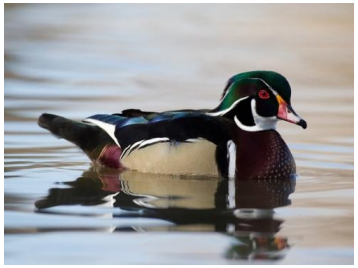
				
				
				
				
				

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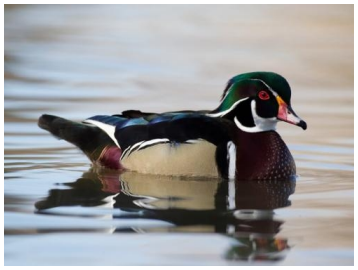




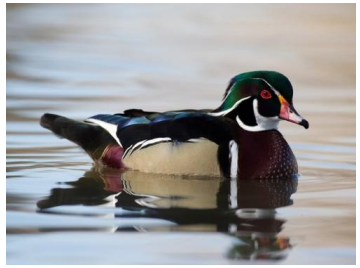





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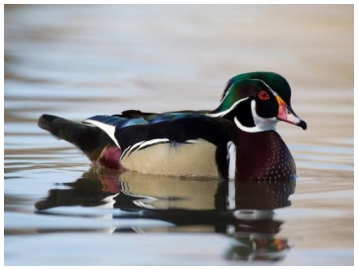
















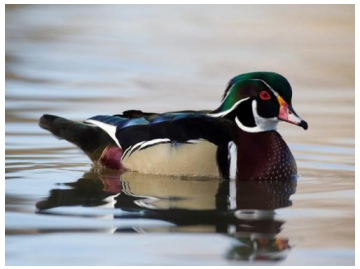




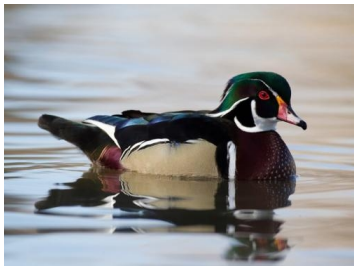




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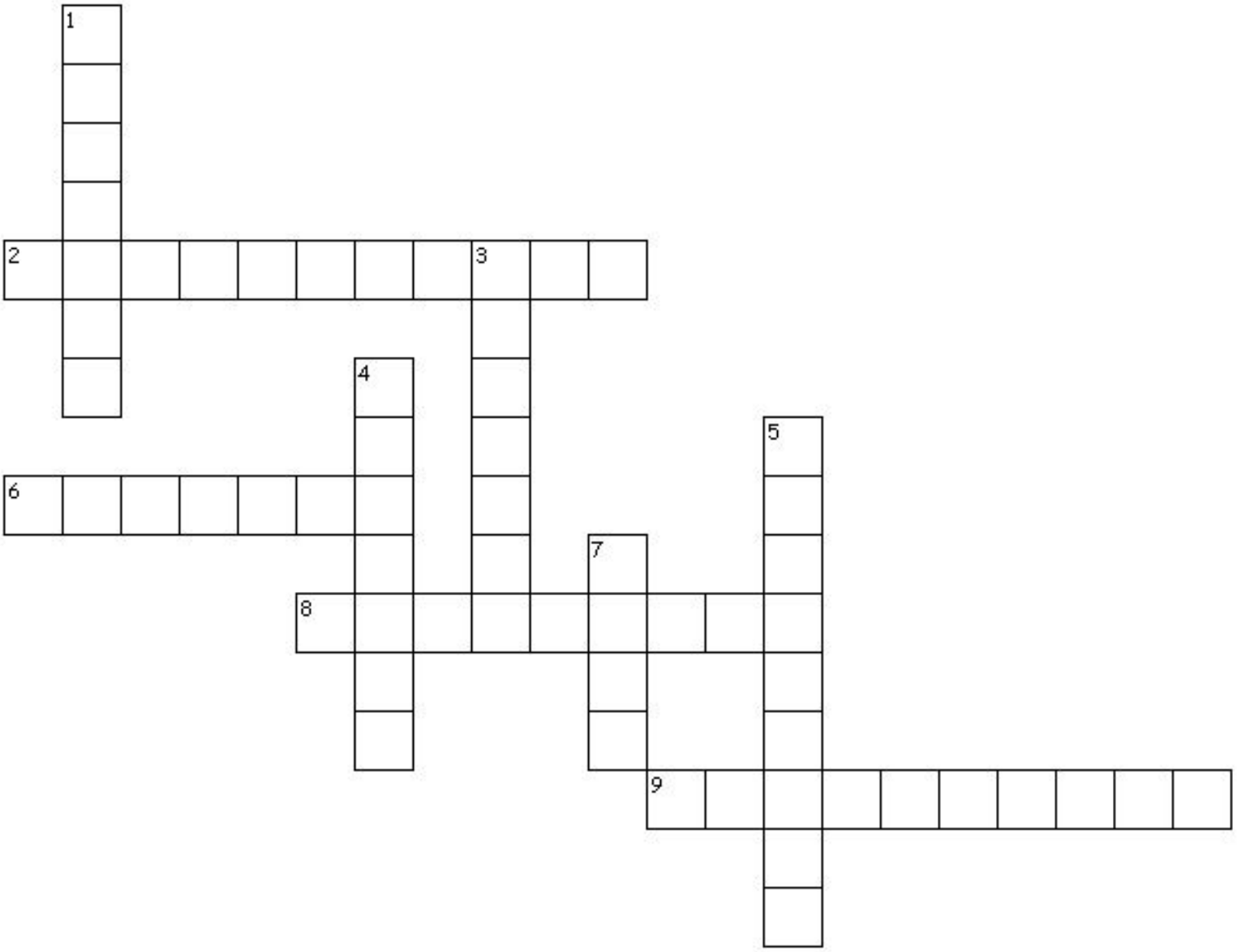
				
				
				
				
				

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Bird Crossword Puzzle



Solve this puzzle to become a bird nerd!

Across

2. Birds with long legs that usually live in wetland habitats
6. A method of marking and numbering birds for research
8. The group name for "perching" birds or "songbirds"
9. Smaller, migratory birds that live in coastal habitats

Down

1. The part of a bird's stomach that is designed to grind food
3. Birds of prey
4. To seasonally move from one place to another
5. Ducks, geese, and swans
7. The pouch in a bird's throat used to store and carry food



Great horned owl, Peter J. Ryan

Bird Crossword Puzzle Answer Key

Across

2. Wading birds
6. Banding
8. Passerines
9. Shorebirds

Down

1. Gizzard
3. Raptors
4. Migrate
5. Waterfowl
7. Crop

Bird Word Search

X N L T W M W H L Z G M A V D Y Q L Q P S K H B G
B O I W H U G W H P A R L Y O R A R K C U D A E S
R J A C R A O S E T M E Y M W F A L C Q I F D X K
P J J Y H F M E U N E H X K H B P Z Y R O F V I B
Q D W I R E K R H J B T C F Q B M A Z A B R S R Q
O P D E W E E W H V I A H P V H A D R I E P O G O
B O T R M F W V C U R E O J C F T Q R E G T N W V
J A F D O C K M H A D F R V R B S N D X P W I K J
W A N R A T S E R O F G N U O Y K C D A M J A S T
L O E G C V A Z N X I X N X P J C W R I S H T O M
U S X F H G I B S Y F Z N G E H U D G C X X K G V
T D Y B C Y K D Y H O Z O G C D D R D P D F I Y R
I P A S S E R I N E O M N B X P A P P A I R A I B
S F U N A N K O I Z W R D B E T K I J X K A N T E
Z B L Q K R A Q T L Q G E Z E P Y G J M H J V X W
I F C O R B E O G S T Z W B I Q C K O W A B K A V
I W F U W F P N L J R R C I I Z J T N I X M N D I
C J Q W P U A Y N O E E F W K R J U Y T N Z W B P
X V G F U Z I O G M M L D T R D D W M S O M O F J
O D H R C G Y E I I K S G N P B U K E G R J S V P
S H L F A J J D O H N C K R U V C Z J O U Q M E F
N R M V P X P O J Y S L D V W C D V S Y R K B E H
P G J T N Y C O L D W M L L K O E P D A B G S D M
U P L A N D W D F O E X B S O K U Z V T L E H R G
N Y O C P C F B F A I H X A O H J S P C K M U C Y

Find all of these bird words to become a bird nerd!

Crop
Duck Stamp
Feather
Gamebird
Mature Forest
Migrate
Niche
Passerine
Raptor
Sea Duck
Shorebird
Understory
Shorebird
Waterfowl
Young Forest
Upland

RHODY CRITTER KITS
DEM RHODE ISLAND

Bird Scavenger Hunt

Clue	Bird
Find a bird with a white eyebrow.	
Find a bird with stripes.	
Which bird is black and white and red all over?	
Can you spot 3 warblers?	
Find a bird with a yellow belly.	
Find a bird that likes to sing about tea!	
Find a bird that really loves their teacher at school!	
Which bird asks a lot of questions?	
Find a bird that has good camouflage.	
Which bird loves Canada?	
Which bird likes to say its own name?	
Find a bird wearing a mysterious black mask!	

RHODY CRITTER KITS

DEM RHODE ISLAND

Hide these bird cards around your learning space for a fun scavenger hunt. Participants will have to solve the little riddles on the scavenger hunt sheet to identify the birds!


DRINK YOUR TEEEEAAA!
DRINK!
Eastern Towhee

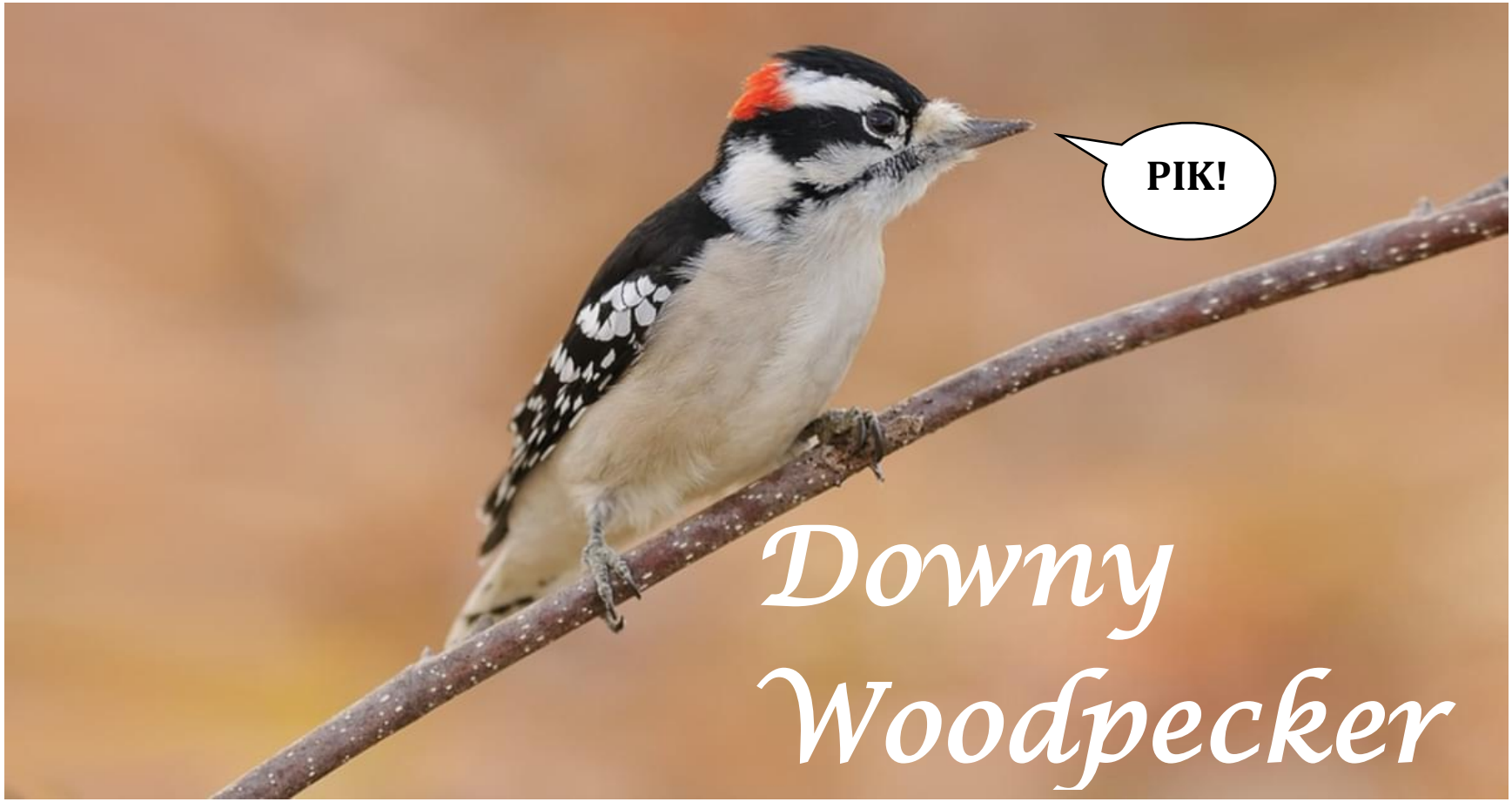

American Woodcock
PEENT!


Ovenbird
Tea-CHER,
Tea-CHER,
Tea-CHER


SWEET, SWEET, SWEET, I'M SO SWEET!
Yellow Warbler


Common
Yellowthroat
WITCHETY
WITCHETY
WITCHETY!


Song Sparrow
MAIDS MAIDS MAIDS!
Put the tea kettle-ettle on!


PIK!
Downy
Woodpecker

Common Raven




TEA KETTLE
TEA KETTLE
TEA KETTLE!
Carolina
Wren


WHEE-EEP!
Great Crested Flycatcher


White-throated Sparrow
Oh-sweet-Canada-Canada


WHA
WHA
WHA
WHA
WHA!
White-breasted
Nuthatch


Tufted Titmouse
PETER!
PETER!
PETER!
WAIT WAIT!


Black-capped Chickadee
Feee beee!
CHICKA dee dee dee!

Pine Warbler

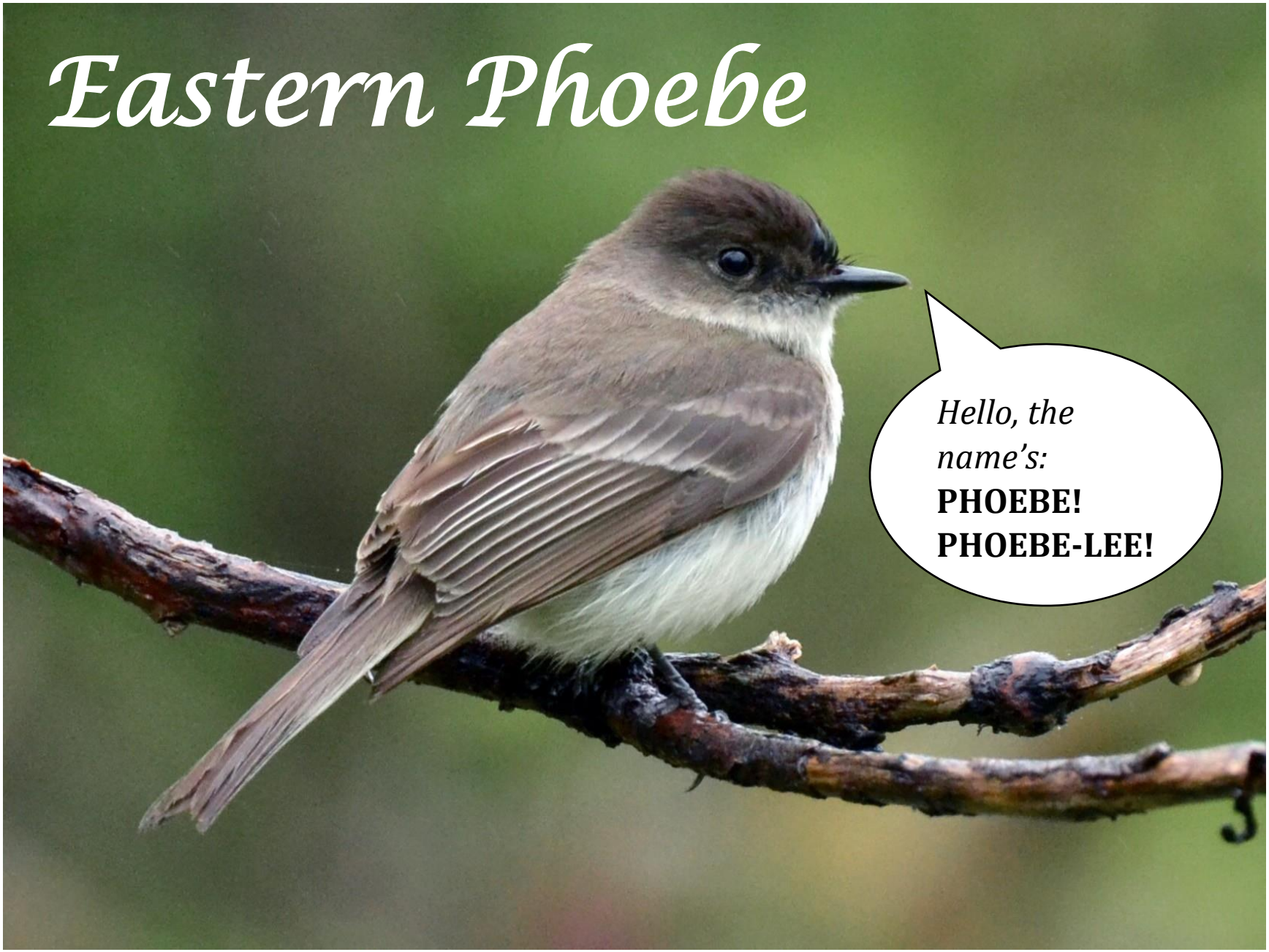



WUKWUK
WUKWUK
WUK WUK!
Pileated Woodpecker


Prairie Warbler
insert mini firework/ spaceship sound here


Where are you? .....Here I am!
Red-eyed Vireo


Black-and-white Warbler
insert squeaky wheelbarrow sound here


Eastern Phoebe
Hello, the name's:
PHOEBE!
PHOEBE-LEE!