



NSDL/NSTA Web Seminar
Beyond Penguins and Polar Bears-
Arctic and Antarctic Birds



Tuesday, April 21, 2009
6:30 p.m. to 8:00 p.m. Eastern time



Agenda:

1. Introductions
2. Tech-help info
3. Web Seminar tools
4. Presentation
5. Evaluation
6. Chat with the presenters



<http://nsdl.org>





Supporting the NSDL Presenting Team is...

For additional Tech-help call:
Elluminate Support,
1-866-388-8674 (Option 2)



Jeff Layman
Tech Support
NSTA
jlayman@nsta.org
703-312-9384



<http://nsdl.org>



Screenshot

The screenshot displays a web browser window titled "Eliminate Live! - DEV-2". The interface is divided into several sections:

- Participants:** A list showing "Jeff Layman (Moderator, Me)" as the only participant.
- Chat:** A chat window showing a message: "Joined on January 16, 2009 at 8:48 AM".
- Audio:** A section with a microphone icon and a volume slider, indicating "Teleconference available".
- Whiteboard - Main Room (Scaled 127%):** A large whiteboard area displaying the "NSTA WEB SEMINARS" logo. The logo features "NSTA" in blue and "WEB SEMINARS" in red, with a mouse cursor icon pointing to the text. Below the logo, it says "LIVE INTERACTIVE LEARNING @ YOUR DESKTOP".

At the bottom right of the window, a status bar indicates "In session for <1 minute.".



We would like to know more
about you...

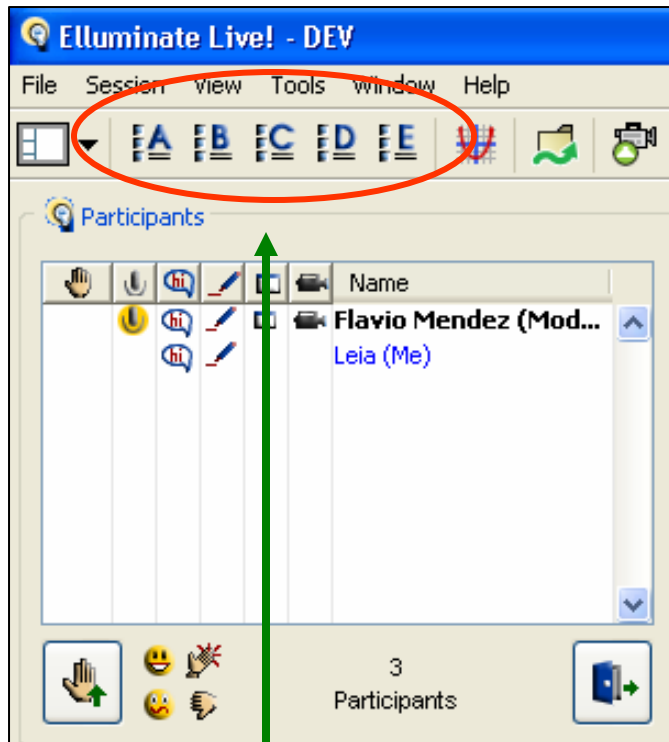


<http://nsdl.org>





How many NSTA web seminars have you attended?



A. 1-3

B. 4-5

C. More than 5

D. More than 10

E. This is my first web seminar

Use the letters A-E located at the top left of your actual screen to answer the poll



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have you attended?



- A. 1-3
- B. 4-5
- C. More than 5
- D. More than 10
- E. This is my first NSTA
web seminar



<http://nsdl.org>





Where are you now?



Note:
Alaska & Hawaii
Not to scale
www.50states.com



<http://nsdl.org>





What grade level do you teach?



- A. Elementary School, K-5.
- B. Middle School, 6-8.
- C. High School, 9-12.
- D. I teach college students.
- E. I am an Informal Educator.



<http://nsdl.org>





LIVE INTERACTIVE LEARNING @ YOUR DESKTOP

NSDL/NSTA Web Seminar
Beyond Penguins and Polar Bears-
Arctic and Antarctic Birds



Tuesday, April 21, 2009



Today's NSDL Experts



Jennifer Fee, BirdSleuth Project Leader,
Cornell Lab of Ornithology



Colleen McLinn, Education Outreach Associate,
Cornell Lab of Ornithology



Jessica Fries-Gaither, *Beyond Penguins and
Polar Bears* Project Director and Elementary
Resource Specialist, Ohio State University



<http://nsdl.org>

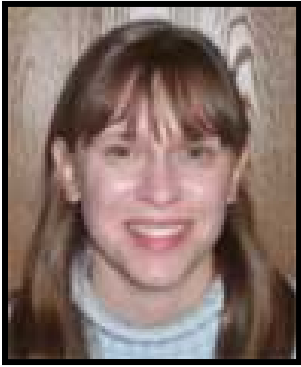


<http://beyondpenguins.nsd.org>



<http://www.birds.cornell.edu/>





Overview of Presentation

1. Teaching about birds in the classroom through inquiry
2. Teaching physical science using polar birds
3. Integrating science and literacy strategies
4. Citizen Science

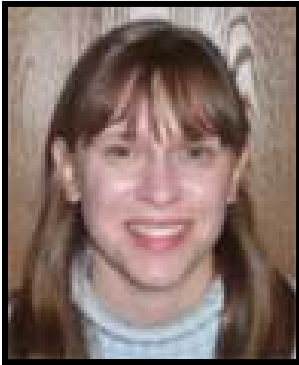


Resource list for tonight's presentation:
<http://www.diigo.com/list/nsdlworkshops/web-sem-birds>



<http://nsdl.org>





Resources from *Beyond Penguins and Polar Bears: Issue 11, February 2009*

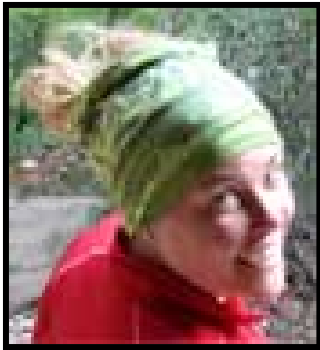
The screenshot shows the homepage of the 'Beyond Penguins and Polar Bears' website. At the top, there is a navigation bar with links for HOME, CONTRIBUTORS, STORIES FOR STUDENTS, BROWSE COLUMNS, ARCHIVE, PODCASTS, and CHANGE LANGUAGE. Below this is a search bar with a 'SEARCH' button. The main content area features a large blue banner for 'ARCTIC AND ANTARCTIC BIRDS - ISSUE 11, FEBRUARY 2009'. The banner includes a photograph of a giant petrel in flight over a snowy landscape and a short introductory paragraph. Below the banner, there are five main content sections: 'PROFESSIONAL LEARNING', 'SCIENCE AND LITERACY', 'ACROSS THE CURRICULUM', 'IN THE FIELD: SCIENTISTS AT WORK', and 'POLAR NEWS AND NOTES'. Each section lists various resources like lessons, activities, and articles. On the right side, there is a 'Contributors (View All)' section with three profiles: Jennifer Fee, Colleen McLinn, and Eleanor Lynette Rayle, each with a small portrait and a brief bio.



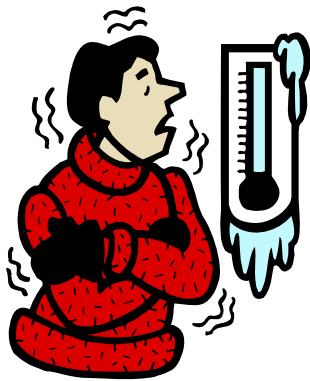
<http://nsdl.org>

<http://beyondpenguins.nsd.org>





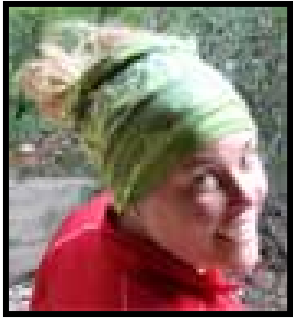
How do birds stay warm?



Do they shiver or put coats on, like humans?

Type your responses in the chat



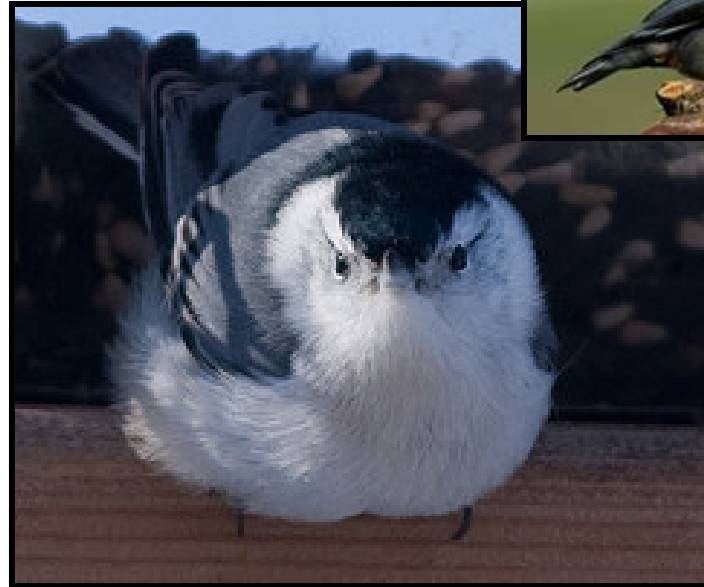


YES (sort of)

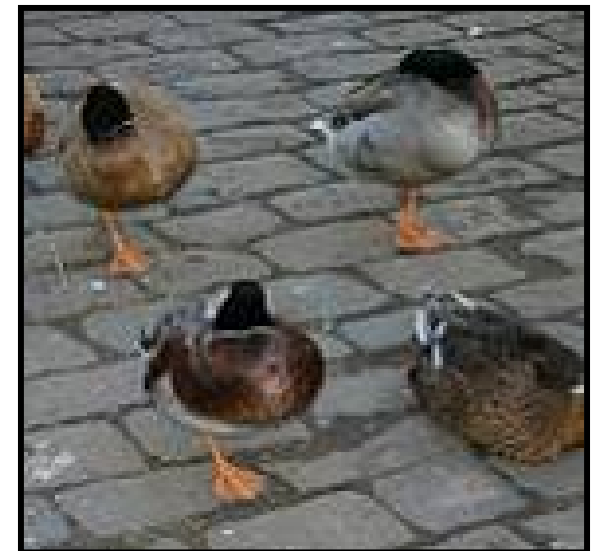
Birds' feathers provide lots of insulation!



- **Do they wear a coat?**
 - Puff up
- **Hat, scarf and gloves?**
 - Tuck their bills
 - Stand on one leg
 - A few birds have feathers on their feet



- **Do they shiver?**
 - Yes!





The South Polar skua is the most southerly bird in the world. Although they live around the coastal edge of Antarctica, they have been seen flying over the South Pole, over 1,325 km (820 miles) from the coast. Photo courtesy of Ariana Owens, National Science Foundation.

In this department, you'll increase your own content knowledge. Learn about the science of the polar regions and literacy skills that you will teach in the featured lessons and activities. Consider the many misconceptions that are held about the polar regions. Learn how to make your teaching practices accessible for all students. Professional Learning includes columns such as: Science Content Knowledge, Literacy Content Knowledge, Misconceptions, Integrating Technology, Teaching and Assessment Strategies, and Equity in the Classroom.

SCIENCE CONTENT KNOWLEDGE

[How Do Birds Stay Warm?](#)

by Jennifer Fee

LITERACY CONTENT KNOWLEDGE

[Questioning to Understand Content Area Text](#)

by Jessica Fries-Galther

MISCONCEPTIONS

[Common Misconceptions about Birds](#)

by Jessica Fries-Galther

INTEGRATING TECHNOLOGY

[Integrating Technology: Social Networking](#)

by Kimberly Lightie

TEACHING AND ASSESSMENT STRATEGIES

[Kids Becoming Scientists through Schoolyard Inquiry](#)

by Jennifer Fee

EQUITY IN THE CLASSROOM

[Strategies to Engage Boys in Reading \(and the Girls, Too\)](#)

by Jessica Fries-Galther

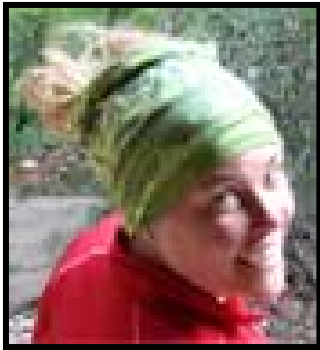
PROFESSIONAL BOOKSHELF

[Professional Bookshelf: Resources for Teachers](#)

by Jessica Fries-Galther

NSES standards

- Organisms in environments (physical and behavioral adaptations)
- Diversity and characteristics of organisms (form and function)
- Life cycles of organisms (migration)
- Characteristics and changes in populations (conservation)



Learn Through Inquiry!

We encourage kids to ask and answer their own questions!



[Arctic and Antarctic Birds - Issue 11, February 2009](#) [Professional Learning](#)



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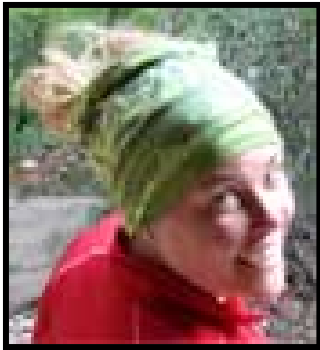
[Professional Bookshelf: Resources for Teachers](#)

by Jessica Fries-Gaither


PODCAST

[Birdwatcher's Delight: Birds and Inquiry Learning: Podcast Episode 3](#)

by Stephanie Chasteen, Jennifer Fee, Robert Payo



Kids can do their own research!




BIRDSLEUTH REPORTS
 • PRESENTING YOUR EVIDENCE •

Is House Sparrow Activity Influenced by Temperature?

by Leslie, Grade 9
Tualatin Valley Junior Academy
Hillsboro, OR
Mr. Kahler

This year I have decided to study House Sparrows at the bird blind. They can be found near where humans live, and in deserts, extensive woodlands, grasslands, and forests. What I decided to find out this year was if the temperature was a true factor in the activity and numerous seen House Sparrows at the bird feeder at my school.

My prediction is if it is 3° C (37° F) or below, then I expect to see more House Sparrows than when it is warmer, like 15° C (59° F). I chose this because in Fahrenheit, 3° C is 37°, and that is some cold.

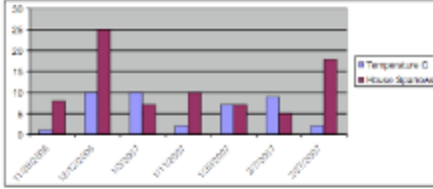


Tufted Titmouse
By Moore, Grade 4, Assumption School
Merristown, NJ, Ms. Conroy

It should be cold enough for there to be lots of House Sparrows to see if my hypothesis is right or wrong.

My study population, which is all ready known, is House Sparrows. My independent variable was the temperature, meaning what it feels like outside. My dependent variable was the number of House Sparrows seen, or how many are at the bird blind when we go down to get data.

For 7 days I observed the birds, and each time saw one or two House Sparrows or more. Before we would go down, we would collect the weather data. Each time I brought down my pencil, bird binocular with tally sheets in it, and sometimes my bird book. At the bird blind, my class and I would sit down, look at the time, and start bird watching, seeing all the different kinds of birds there at the time. Sometimes we would see a lot of birds, and sometimes we would see a few only. Every time we went down our biology teacher brought binoculars for us to use if we wanted to. At the bird blind, our biology teacher keeps the birds well fed with black oil sunflower seeds, and other wild birdseed. When we got back to the classroom, sometimes we entered our data into eBird.org. We would usually be outside for 10 to 25 minutes.




Day	Temperature (C)	House Sparrows
1/12/2008	10	5
1/13/2008	10	25
1/14/2008	9	10
1/15/2008	9	5
1/16/2008	10	5
1/17/2008	10	5
1/18/2008	10	15


On one day, there was seen 25 House Sparrows, which was the most seen on the 7 days I had observed. It was 10° C on that day. The lowest number of House Sparrows seen in my observation period was 5, and it was 9° C outside. Every day I went out I saw House Sparrows. The temperature fluctuated between 10° C to 1° C during the 7 days.

By my observations and data, the temperature did not affect the amount of House Sparrows seen on any given day. When the most were seen, it was 10° C outside! That pretty much tells me that the temperature does not affect the birds as much as I thought it would. On the day when it was 1° C, I saw 8 House Sparrows anyway. The lowest seen was 5, and it had been 9° C outside! I must reject my hypothesis because my data refutes it.

When I had started this report, I had thought that the temperature was a factor in the number of House Sparrows seen each day when I went birding at school. I really thought that if it was colder, there would be more House Sparrows, but that is not true. I can think of a few reasons why my hypothesis was rejected. One, my class is very noisy! Succeeded, on the days we went out, it wasn't just cold or warm, it may have been raining, snowing, or blowing like crazy. The temperature is part of the weather, and the weather should be considered a

continued on page 2



www.BirdSleuth.net


See our student publications:
Classroom BirdScope and *BirdSleuth Reports*
www.BirdSleuth.net/student-research



<http://nsdl.org>





Arctic and Antarctic Birds - Issue 11, February 2009 Science and Literacy



In this department, you'll discover resources that effectively combine hands-on science experiences with reading, writing, and oral discourse. Your students will enjoy reading the feature story, an engaging look at the science content of this issue that also provides an opportunity to practice comprehension strategies. Find other titles for classroom use in our virtual bookshelf. View teacher-submitted lesson plans and samples of student work, or share your own. Science and Literacy includes columns such as: Lessons and Activities, Feature Story, Classroom Vignettes, Virtual Bookshelf, and Student and Teacher Work.

LESSONS AND ACTIVITIES

[Hands-on Science and Literacy Lessons About Birds](#)
by Jessica Fries-Gaither

FEATURE STORY

[The Dance of Life](#)
by Stephen Whitt

VIRTUAL BOOKSHELF

[Birds: Virtual Bookshelf](#)
by Kate Hastings

STUDENT AND TEACHER WORK

[Students Research Bird Behavior in Cold Weather](#)
by Jennifer Fee

Students Research Bird Behavior in Cold Weather

by Jennifer Fee

Each year, the Cornell Lab of Ornithology publishes the research of students involved in the BirdSleuth program. By coming up with questions, conducting original investigations, and sharing their findings, students participate in the scientific process. This article was submitted by a fourth-grade class in New Haven, New York.

This investigation was designed and carried out by the 24 students of the 2005-06 4th grade class at New Haven Elementary School in New Haven, NY. This report was written by Nick, Kristen, Austin and Becca.

Introduction

After observing birds at our courtyard feeding station from September through December, several of us noticed that sometimes the birds, especially the Mourning Doves, would puff up their feathers. Nick wondered if cold temperatures caused this behavior and suggested the following investigation.

Hypothesis

Birds at our feeding station will puff up their feathers when the ambient temperature is below 32 degrees F.

Materials

- Outdoor thermometer
- Data sheets





Join our email list:



This material is based upon work supported by the National Science Foundation under Grant No. 0242666. Any opinions, findings, and conclusions or recommendations

Investigating Evidence

Click on each Investigation to see and download the Teacher Guide, Resource Pages, Investigator's Journal, Online Supports, and Links associated with that topic!

[Investigation 1: What is Science?](#)

Students will meet some of our Lab scientists and learn about the science process through their exciting work.

[Investigation 2: Testing Hypotheses](#)

Designing your own experiments is fun and demands creative thinking!

[Investigation 3: Show Me the Data](#)

Students learn how to share their conclusions visually through graphs.

[Investigation 4: Plan and Conduct Investigations](#)

It's an exciting challenge to plan and implement your own investigation!

[Investigation 5: Presenting Inquiry Projects](#)

Sharing what you've learned is a critical part of the science process.

**Get your FREE copy at
[www.BirdSleuth.net!](http://www.BirdSleuth.net)**



Let's pause for
questions from
the audience....



Teaching Physical Science Concepts with Polar Birds



Birds: What are they good for?





Amazing Birds lessons



AMAZING BIRDS

Brenda Neal, Lyons Central School
Jennifer Baxter, Palmyra-Macedon Central School
Sharon Bassage, Wayne-Finger Lakes BOCES
Colleen McLinn, Ph.D., Cornell Lab of Ornithology

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Wayne-Finger Lakes BOCES.
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This material is based upon work supported by the National
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findings, and conclusions or recommendations expressed in
this material are those of the authors and do not necessarily
reflect the views of the National Science Foundation.



Physical Adaptations

Lesson 2



Sound is Energy

Lesson 3



Why Birds Sing

Lesson 4



Bird Beaks

Lesson 5



Flight and Feathers

Lesson 6

<http://macaulaylibrary.org/physics>








<http://nsdl.org>

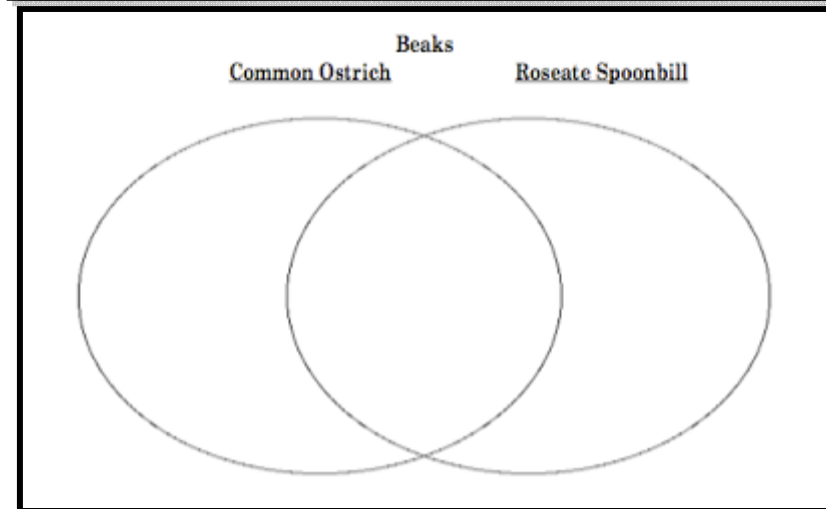




Physical Adaptations

	FEET	MOVEMENT	BEAK	COLOR
	Long talons for catching and holding food.		Hooked for tearing food.	Brown like the earth they dig in.
Hudsonian Godwit	Legs are long to get above the water and see food.	Long strides, walking.	Long, pointed beak for probing.	
American Woodcock			Long, thin beak for probing in dirt for food.	Browns and camouflaged to forest floor.
Common Ostrich	Big, wide feet so the bird won't sink in to the ground.	Long, walking or running strides.	Large, wide, strong.	
Atlantic Puffin	Wide, webbed for swimming.	Waddles, swims, flies.	Short, cone-shaped, strong for catching fish.	
Pileated Woodpecker	Two toes point opposite others for grip.		Long, strong for pecking into tree for insects.	
Roseate Spoonbill			Large, wide, spoon-shaped to scoop small food items from the water.	Pink for attracting a mate.
Mallard	Wide, webbed for swimming.	Waddles, swims, flies.		Male is colorful, female is brown and camouflaged.
White-tailed Ptarmigan	Feathered feet to deal with snow.			White in winter for camouflage with snow.
Crested Caracara	Large talons to hold the food down.		Sharp, curved for tearing food.	
Common Yellowthroat	Grasping branch.			Bright yellow chest to attract mate.
White-throated Sparrow	Uses its feet to kick up leaves to find food.	Hopping and kicking up the leaves.		Brown for camouflage.
Golden Eagle	Talons grab fish.	Flying, soaring		

Discuss: Ask some open-ended questions while watching the videos. "What are the different ways that birds get around?" "What are the different ways that birds get food?" "Which birds have you seen around your house?" "Other than eating, what do birds use their beaks for?" "What colors are the birds?" "Have you seen any of these behaviors in the birds at our feeder?"



Beaks as simple machines

Name: _____

Activity Sheet 8: Natural Tools

How does a bird's beak work like a simple machine?





1. Match the beak to the tool it is similar to.





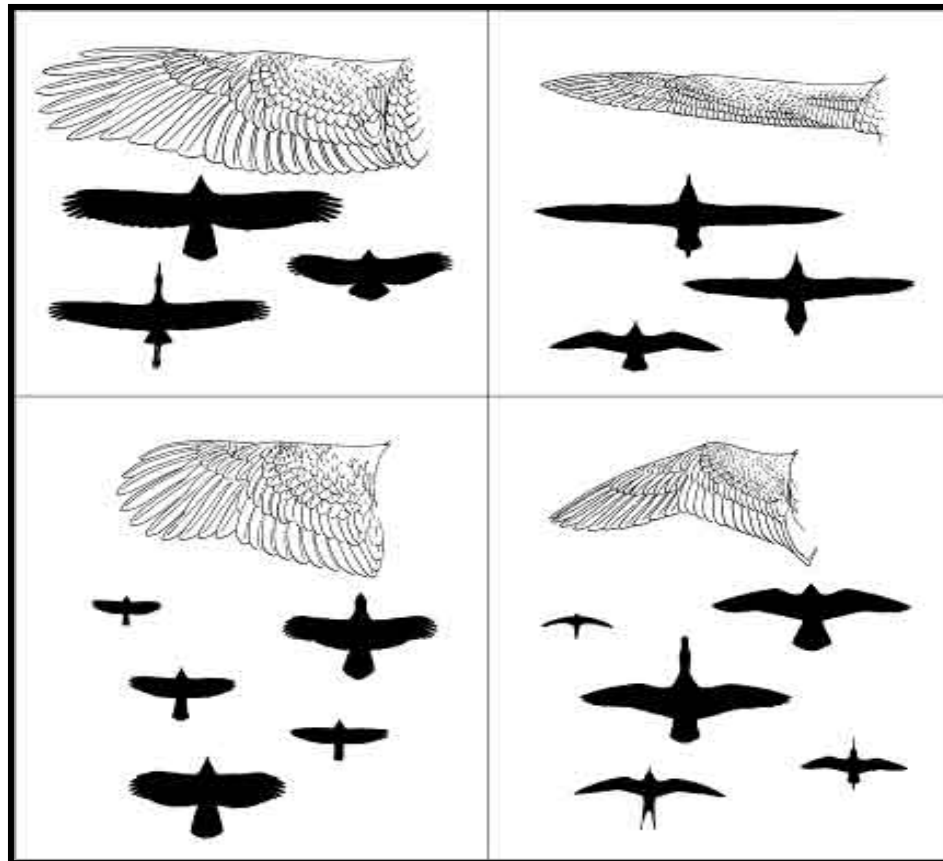
Beaks as simple machines



	PONY BEADS	RUBBER BUGS	PLASTIC LEAVES
BEAK TYPE			
 Chopsticks			
 Toothpicks			
 Tongs			
 Clothespins			

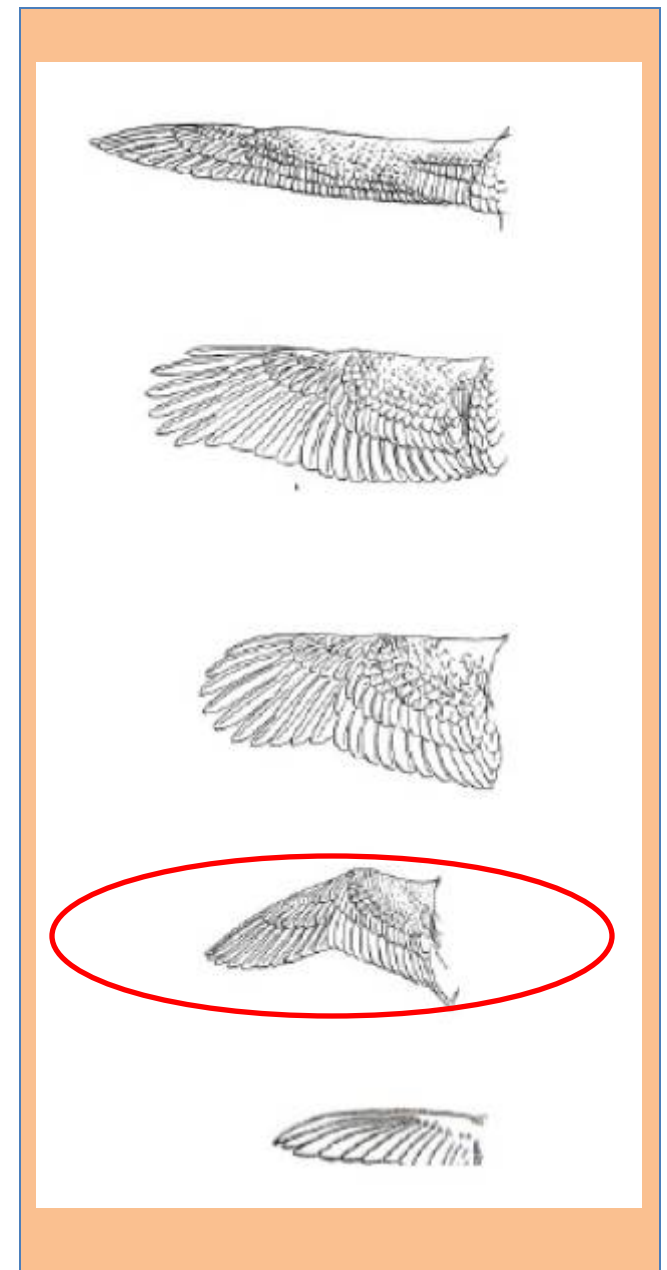


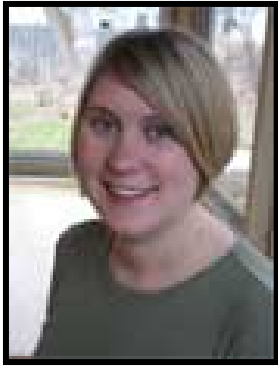
Wing shapes, flight and migration



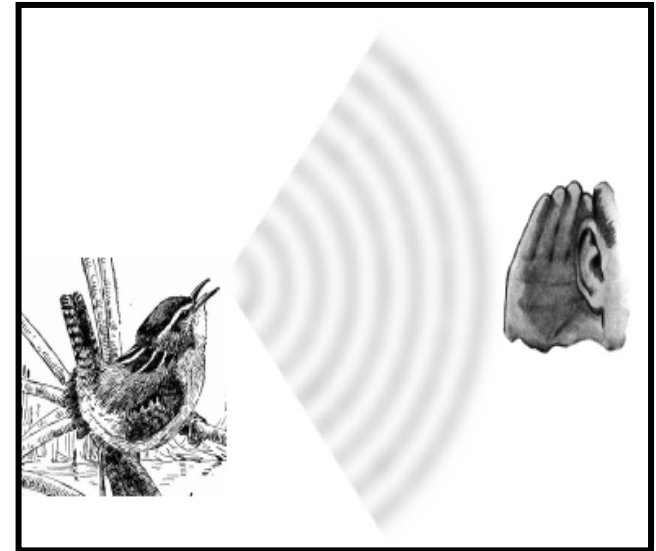
For what type of flight is the wing circled in red used? Stamp your answer

Rapid takeoff/easy turns	Soaring up high
Hovering	High Speed
Gliding over water	None of these

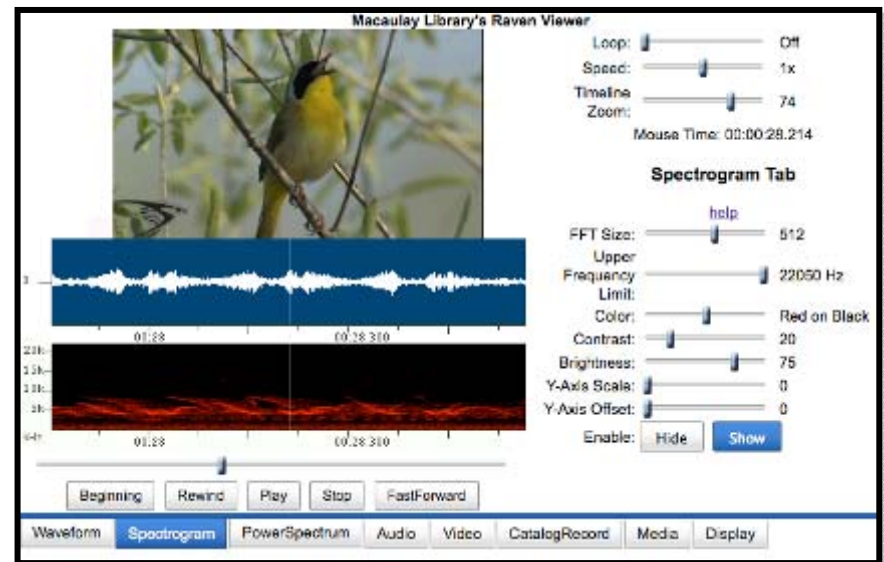




How and Why Do Birds Make Sound?

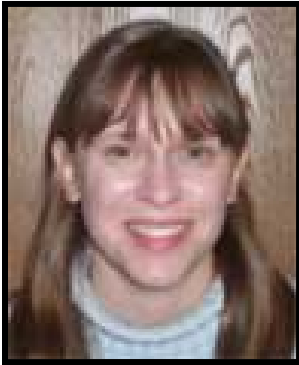


Angry	Warning
Sad	Nervous





Let's pause for
questions from
the audience....



Integrating Science and Literacy: Resources from *Beyond Penguins and Polar Bears*

The screenshot shows the homepage of the 'Beyond Penguins and Polar Bears' website. At the top, there is a navigation bar with links for HOME, CONTRIBUTORS, STORIES FOR STUDENTS, BROWSE COLUMNS, ARCHIVE, PODCASTS, and CHANGE LANGUAGE. Below this is a search bar with a 'Google Custom Search' button and a 'SEARCH' button. The main content area features a large image of a petrel in flight over a snowy landscape. To the right of the image is the title 'ARCTIC AND ANTARCTIC BIRDS - ISSUE 11, FEBRUARY 2009' and a paragraph of text describing the issue's content, including a mention of the Cornell Lab of Ornithology. Below the main content area are five columns of featured resources, each with a small icon and a list of topics. On the right side, there is a 'Contributors (View All)' section with three entries, each featuring a small portrait and a brief bio.

HOME | CONTRIBUTORS | STORIES FOR STUDENTS | BROWSE COLUMNS | ARCHIVE | PODCASTS | CHANGE LANGUAGE

BEYOND PENGUINS AND POLAR BEARS an online magazine for k-5 teachers

Google Custom Search SEARCH

PROFESSIONAL LEARNING | SCIENCE AND LITERACY | ACROSS THE CURRICULUM | IN THE FIELD: SCIENTISTS AT WORK | POLAR NEWS AND NOTES

ARCTIC AND ANTARCTIC BIRDS - ISSUE 11, FEBRUARY 2009

Sure, you've heard of emperor penguins...but what about giant petrels, skuas, or sanderlings? This issue, co-produced with the Cornell Lab of Ornithology, explores the amazing birds that live in or migrate to the polar regions. Read about how birds stay warm, or get an inside look at an expedition to record bird and other animal sounds in the high arctic. Discover professional resources about social networking and engaging boys in reading. Our featured lessons help you use the subject of birds to teach simple physics concepts.

Photo: A giant petrel in flight near Palmer Station, Anvers Island, Antarctica. Photo courtesy of Henry Malmgren, National Science Foundation.

PROFESSIONAL LEARNING

- » Science Content Knowledge
- » Literacy Content Knowledge
- » Misconceptions
- » Integrating Technology
- » Teaching and Assessment Strategies
- » Equity in the Classroom
- » Professional Bookshelf
- » Podcast

SCIENCE AND LITERACY

- » Lessons and Activities
- » Feature Story
- » Virtual Bookshelf
- » Student and Teacher Work

ACROSS THE CURRICULUM

- » Lessons and Activities
- » Virtual Bookshelf

IN THE FIELD: SCIENTISTS AT WORK

- » Researcher Stories
- » News from the Field

POLAR NEWS AND NOTES

- » Current News
- » Upcoming Broadcasts
- » Upcoming Opportunities
- » Monthly News Roundup

Contributors (View All)

JENNIFER FEE
Jennifer is interested in authentic science inquiry through urban science and schoolyard research.

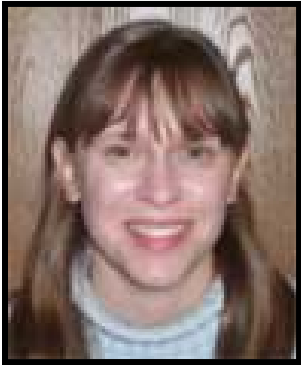
COLLEEN MCLINN
Colleen is a subject matter expert and instructional designer about bird behavior and communication.

ELEANOR LYNETTE RAYLE
Lynette is exploring interoperability of collaborative tools in the production of digital resources.



<http://nsdl.org>





 **BEYOND PENGUINS
AND POLAR BEARS** *an online magazine for k-5 teachers*

HOME | CONTRIBUTORS | STORIES FOR STUDENTS | BROWSE COLUMNS | ARCHIVE | P

Google™

PROFESSIONAL LEARNING | SCIENCE AND LITERACY | ACROSS THE CURRICULUM | IN THE FIELD: SCIENTISTS AT WORK | POLAR NEWS AND NOTES

[Arctic and Antarctic Birds - Issue 11, February 2009](#) » [Science and Literacy](#) » [Feature Story](#)

The Dance of Life

by Stephen Whitt

“Sanderlings are **migratory** birds. Each spring, they leave beaches in Florida, the Caribbean, and South America and travel to the Arctic to nest and raise their young. Some travel almost halfway around the Earth.”



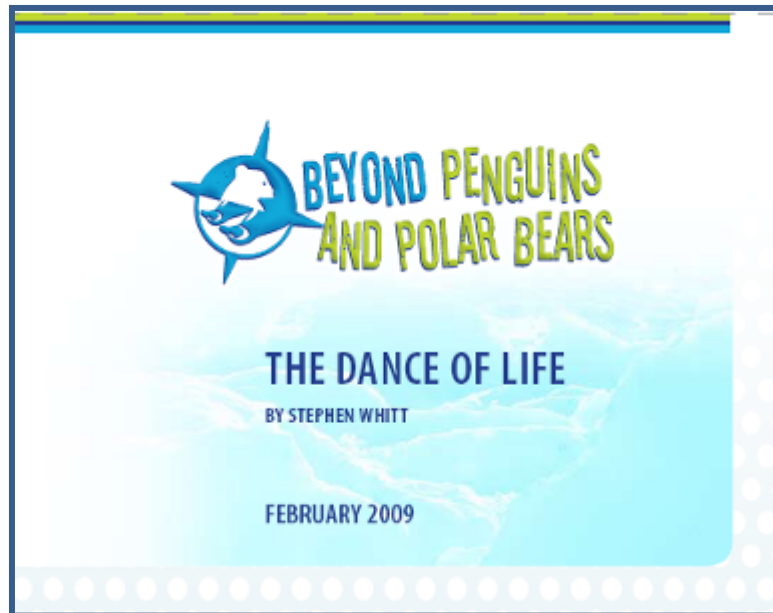
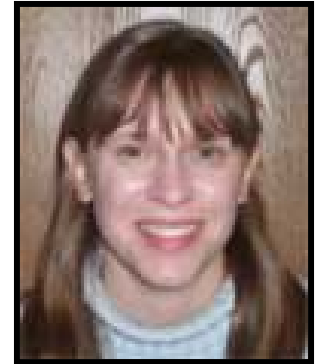
<http://nsdl.org>



Feature Story:

Available for grades K-1, 2-3, and 4-5 as:

- Text-only
- Illustrated book
- Electronic book



The Dance of Life



As the water retreats, tiny animals scurry to bury their sand-colored shells in the sand. These are mole crabs. One is caught and pulled up in a jet-black beak. The hunter, a small dusty-white bird with long legs and delicate feet, scrambles up the beach to escape the waves.



credit: Macaulay Library,
Cornell Lab of Ornithology

As she runs from the water, she swallows a mole crab whole, then turns to look for more. She is a type of shore bird called a **sanderling**.



1 2 3 4 5 6 7 8 9 10 11 12 13 14



Credit: Copyright Feb 2009, The Ohio State University



<http://nsdl.org>



Question-Answer Relationship

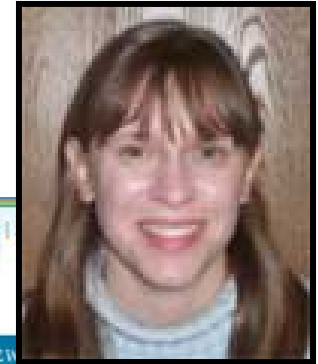
Four categories of questions

Right There

Think and Search

Author and Me

On My Own



BEYOND PENGUINS AND POLAR BEARS
an online magazine for k-5 teachers

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PROFESSIONAL LEARNING | SCIENCE AND LITERACY | ACROSS THE CURRICULUM | IN THE FIELD: SCIENTISTS AT WORK | POLAR NEWS NOTES

Arctic and Antarctic Birds - Issue 11, February 2009 » Professional Learning » **Literacy Content Knowledge**

Questioning to Understand Content Area Text

by Jessica Fries-Gaither

As teachers, we're well versed in the art of questioning. In fact, research shows that teachers typically spend anywhere from 35 to 50 percent of their instructional time asking questions. While there's no denying that this is a valuable [instructional tool](#), teaching *students* to ask their *own* questions is also critical.

Read each question, and label it with one of the four types of QARs. Then answer the question. Remember that the four types of QARs are:

- In the Book: Right There
- In the Book: Think and Search
- In My Head: On My Own
- In My Head: Author and Me

1. What do sanderlings eat?

QAR type: _____

Answer: _____

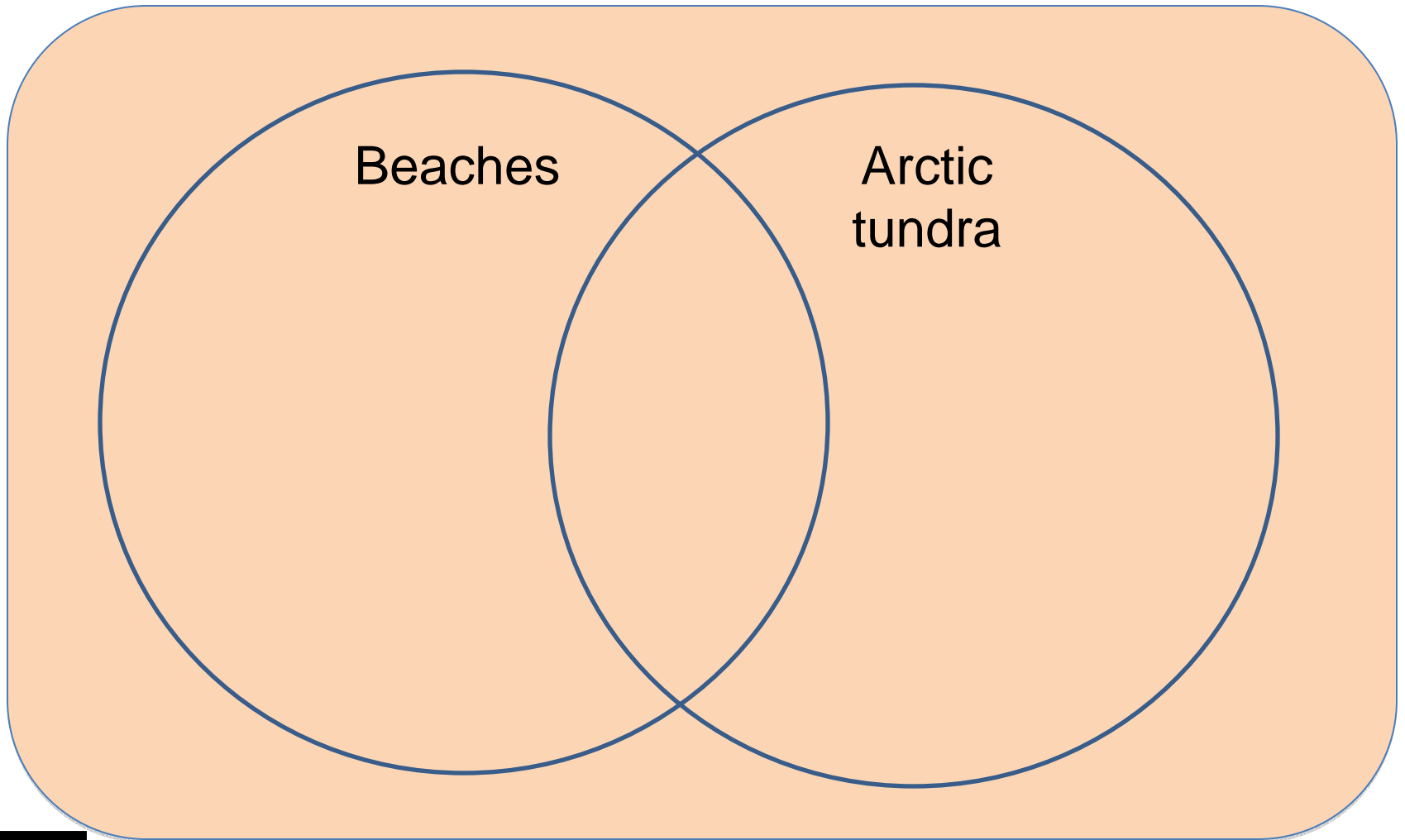
QAR template
created for use
with Feature
Story



<http://nsdl.org>

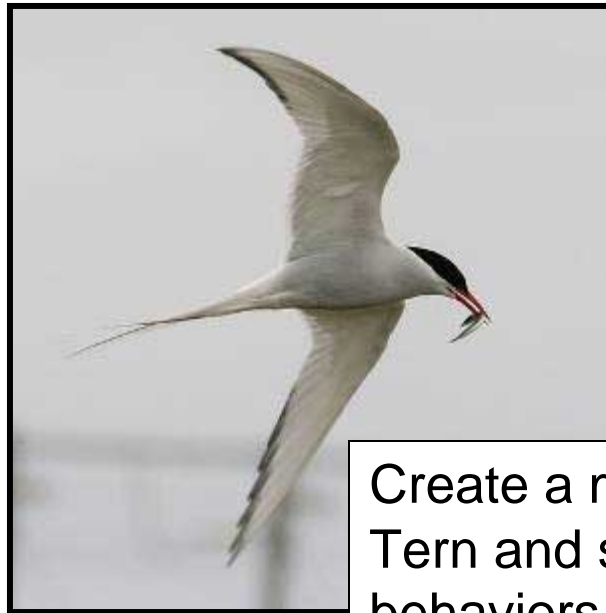


Compare and contrast sanderling habitats





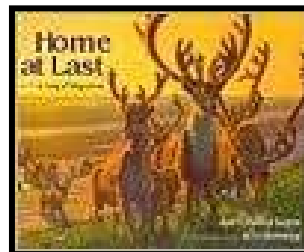
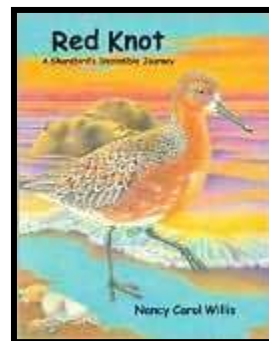
Migration



Map migration routes
and develop
geographic
awareness

Create a model Arctic
Tern and simulate
behaviors and migration

Read
children's
literature



The Dance of Life

play

terns are **migratory** birds. Each spring, they leave beaches in Florida, the Caribbean, and South America and travel to the Arctic to breed and raise their young. Some travel almost halfway around the Earth.

Summer
Migration
Winter

1 2 3 4 5 6 7 8 9 10 11 12 13 14

Credit: Copyright Feb 2009, The Ohio State University



<http://nsdl.org>

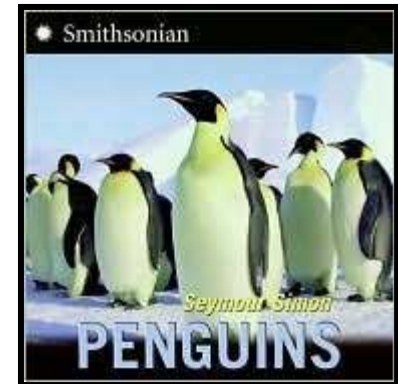
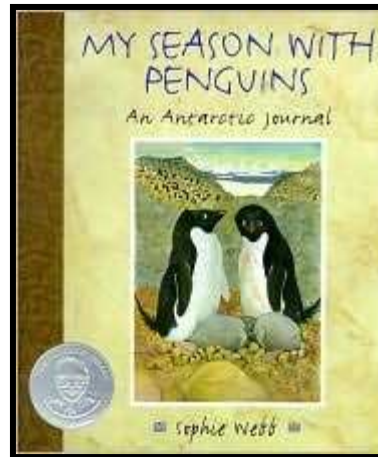
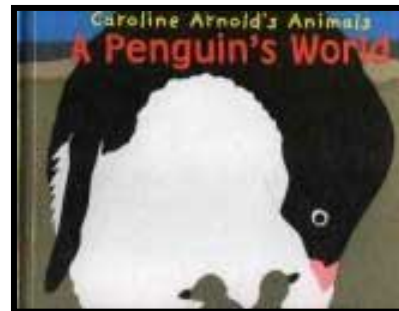
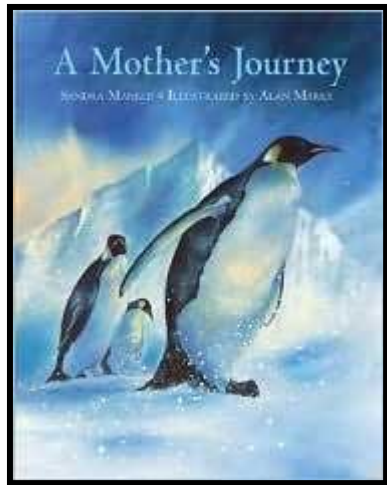
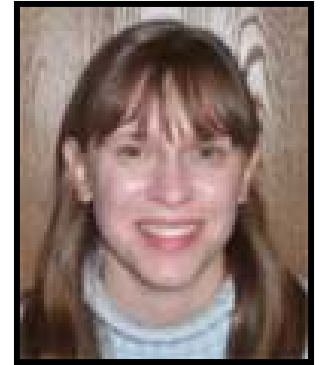




Let's pause for
questions from
the audience....

Bird study: Penguins

Titles from our virtual bookshelf.



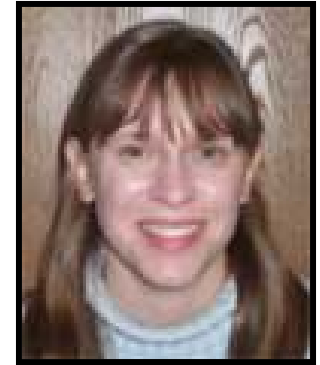
Penguins units: SeaWorld Education Department
Interdisciplinary units – science, math, geography, and language arts.

What's Happening to the Emperor Penguins?

Students consider the impact of the changing Antarctic environment on Emperor Penguin populations.

Cape Royds Nest Check

http://www.penguinscience.com/education/royds_nestcheck.php



Runs from mid-October through January.

Students follow Adelle penguin families as they raise their chicks at Cape Royds by logging in daily.

Students can create a fieldbook with weather conditions and nest status.

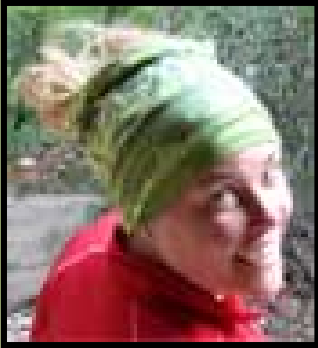
More Adelle activities at

<http://www.penguinscience.com/education/>



<http://nsdl.org>





Have you done CITIZEN SCIENCE?

- A. Yes
- B. No
- C. I don't know!



CORNELL LAB of ORNITHOLOGY

Citizen Science

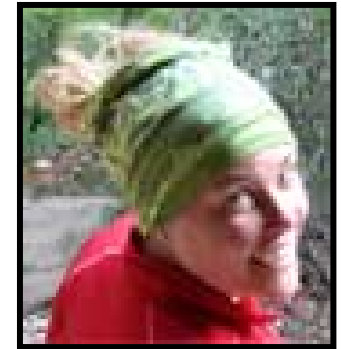

- About Citizen Science
- How to get involved
- Featured participants
- Partners
- Photos, slides, movies
- What have we learned?
- Press room
- Citizen-science projects
- More Information

Citizen Science: Anyone who watches birds, from backyards to city streets to remote forests, can help researchers better understand birds and their habits. [▶ Learn More](#)

Discover a whole new world with birds!

Click through & choose
Citizen Science
project [s]

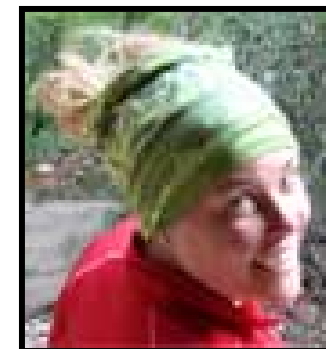
[▶ Get Started](#)



Citizen Science:
Anyone can gather data!

Your Counts Really Matter!





Arctic and Antarctic Birds - Issue 11, February 2009 [Across the Curriculum Lessons and Activities](#)

Project FeederWatch: Integrating Real-Time Science and Math

by Jessica Fries-Gaither

[Project FeederWatch](#) is a citizen science project operated by the Cornell Lab of Ornithology and Bird Studies Canada. Participants identify and count birds that visit feeders during the winter. Data is submitted to help scientists monitor bird populations across the North American continent.

In addition to involving students in real-time data collection, Project FeederWatch provides many possibilities for cross-curricular integrations. We've focused on math; many more content areas and suggestions appear on the Project FeederWatch [web site](#). A newly launched [Homeschooler's Guide](#) provides support for those participating outside a traditional classroom. Many of the activities in the guide could be modified for classroom use as well.

IDEAS FOR MATH INTEGRATION

Data Collection

Students are required to keep accurate records of bird counts as they participate in the project. Teachers can use this project to teach elements of data analysis, including the creation of data tables and use of tally marks.


Data Analysis

Teachers can also have students analyze their data by creating bar graphs showing the various species that visit the feeder, line graphs that show the number of visits over the course of a week, and so on. This is also a way to teach concepts such as mean, median, and mode (number of visits, species) with real-world data.

Ratios, Fractions, Decimals, Percents


Bird data could also be used to illustrate ratios, fractions, decimals, and percents. For example, a student might notice that out of four birds to visit the feeder on a given day, one was a cardinal. The student could then express that data as a ratio, fraction, decimal, and percent.

Project FeederWatch Homeschool Activities



**BIRD
Sleuth**

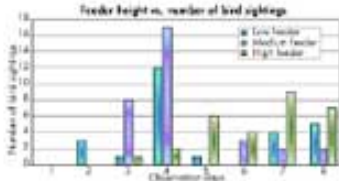
**Activity 2
Math Counts!**



Step 1: Calculate seed consumption
Have your child watch the birdseed in your feeder before and after each Project FeederWatch count—once every day for a week—and calculate how much seed was eaten or dropped. After several measurements, have your child determine the average consumption rate and predict how often the feeder used to be refilled. Discuss the variables—weather, time of day, different seed, etc.—that may affect these predictions.

Step 2: Graph bird counts
Work with your child to create data tables about the birds and numbers of birds that visit. Together, you can graph the results by hand or with a computer program such as Excel. Information about graphing and interpreting bird data can be found in the free ONLINE MODULE, *BirdSleuth: Investigating Evidence*, specifically in Investigation 3, "Show me the Data." www.birds.cornell.edu/birdsleuth/inquiry-resources



Feeder height vs. number of bird sightings

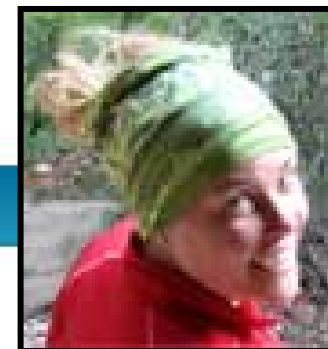


Alysa, Daniel and Shastana had three bird feeders and wondered if the height at which a bird feeder was hung would affect the number of birds that visited each feeder. They watched their feeders for eight days, collected their data, and concluded that height was not affect.

Additional resource
Compare your observations with others in your area by exploring data submitted by Project FeederWatch in your state or province! Visit the Explore Data section of the FeederWatch web site, www.feederwatch.org.

Homeschooler's Guide to Project FeederWatch



[Arctic and Antarctic Birds - Issue 11, February 2009](#) Professional Learning



The South Polar skua is the most southerly bird in the world. Although they live around the coastal edge of Antarctica, they have been seen flying over the South Pole, over 4,573 km (2,842 miles) from the coast. Photo courtesy of Arizona Owens, National Science Foundation.

In this department, you'll increase your own content knowledge. Learn about the science of the polar regions and literacy skills that you will teach in the featured lessons and activities. Consider the many misconceptions that are held about the polar regions. Learn how to make your teaching practices accessible for all students. Professional Learning includes columns such as: Science Content Knowledge, Literacy Content Knowledge, Misconceptions, Integrating Technology, Teaching and Assessment Strategies, and Equity in the Classroom.

SCIENCE CONTENT KNOWLEDGE

[How Do Birds Stay Warm?](#)
by Jennifer Fee

LITERACY CONTENT KNOWLEDGE

[Questioning to Understand Content Area Text](#)
by Jessica Fries-Gaither

MISCONCEPTIONS

[Common Misconceptions about Birds](#)
by Jessica Fries-Gaither

INTEGRATING TECHNOLOGY

[Integrating Technology: Social Networking](#)
by Kimberly Lightle

TEACHING AND ASSESSMENT STRATEGIES

[Kids Becoming Scientists through Schoolyard Inquiry](#)
by Jennifer Fee

EQUITY IN THE CLASSROOM

[Strategies to Engage Boys in Reading \(and the Girls, Too\)](#)
by Jessica Fries-Gaither

PROFESSIONAL BOOKSHELF

[Professional Bookshelf: Resources for Teachers](#)
by Jessica Fries-Gaither

PODCAST

[Birdwatcher's Delight: Birds and Inquiry Learning: Podcast Episode 3](#)
by Stephanie Chasteen, Jennifer Fee, Robert Payo

NSDL

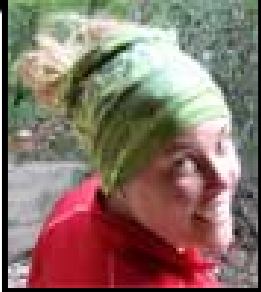
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EXPLORE

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CREATE



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**THANK
YOU!**

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<http://nsdl.org>



<http://beyondpenguins.nsd.org>

 CORNELL LAB of ORNITHOLOGY

<http://www.birds.cornell.edu/>

NTA WEB SEMINARS 

Resources from this seminar:

<http://www.diigo.com/list/nsdlworkshops/web-sem-birds>

Search for “diigo nsdl workshops birds”

Learn about new tools and resources, discuss issues related to science education, find out about ways to enhance your teaching at:

<http://expertvoices.nsdl.org/learningdigitalK12>

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Welcome to Your Professional Development

The Learning Center is NSTA's e-professional development portal to help you address your classroom needs and busy schedule. You can gain access to more than 3,300 different resources that cater to your preference for learning. Over 925 resources, such as journal articles, science objects and web seminars are available [for free](#). A suite of practical tools such as My Library, My Transcript, and My Professional Development Plan and Portfolio tool help you organize, personalize, and document your growth over time. If desired, you may review an [archived Web Seminar](#) overview of the NSTA Learning Center, or download the "[How to Guide](#)" PDF (2.7 MB).



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- *NIH: Exploring Bioethics - A New Model for Classroom Instruction*
April 22, 2009
- *SRS/NOAA/NFS: Earth Then, Earth Now: Our Changing Climate*
April 23, 2009
- *FDA: Teach Science Concepts and Inquiry with Food*
April 28, 2009

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