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
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
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.
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 NSTA web seminar

http://nsdl.org
Where are you now?

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

**Arctic and Antarctic Birds - Issue 11, February 2009**

Sure, you’ve heard of emperor penguins...but what about giant petrels, daws, or sandgrouse? 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, 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.

http://beyondpenguins.nsdl.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!
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

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
Equity in Science: Reading Aloud in Reading (and Math, 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

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 1,400 km (870 miles) from the coast. Photo courtesy of Arianna Owens, National Science Foundation.

http://nsdl.org
Kids can do their own research!

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

http://nsdl.org
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
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!
Let’s pause for questions from the audience....
Teaching Physical Science Concepts with Polar Birds

http://nsdl.org
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

Copyright © 2009 by Cornell Lab of Ornithology and Wayne-Finger Lakes BOCES. All rights reserved. Any reproduction for commercial use or sale is prohibited.

This material is based upon work supported by the National Science Foundation under DUE 052786. Any opinions, 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.

http://macaulaylibrary.org/physics
Physical Adaptations

<table>
<thead>
<tr>
<th>FEET</th>
<th>MOVEMENT</th>
<th>BEAK</th>
<th>COLOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proislantic Godwit</td>
<td>Long, wide feet that let the bird walk on the sand.</td>
<td>Long, walking or running on the sand.</td>
<td>Legs can break through sand.</td>
</tr>
<tr>
<td>American Woodcock</td>
<td>Long, fine, pointed feet for picking.</td>
<td>Long, walking or running on the ground.</td>
<td>Legs are long for picking food.</td>
</tr>
<tr>
<td>Common Ostrich</td>
<td>Long, fine, pointed feet for picking.</td>
<td>Long, walking or running on the ground.</td>
<td>Legs are long for picking food.</td>
</tr>
<tr>
<td>Atlantic Puffin</td>
<td>Flat, webbed feet for swimming.</td>
<td>Webbed, webbed feet.</td>
<td>Legs are short for swimming.</td>
</tr>
<tr>
<td>Yellow-rumped Warbler</td>
<td>Flat, webbed feet for picking.</td>
<td>Flat, webbed feet.</td>
<td>Legs are short for picking food.</td>
</tr>
<tr>
<td>Roseate Spoonbill</td>
<td>Flat, webbed feet for swimming.</td>
<td>Flat, webbed feet.</td>
<td>Legs are flat for swimming.</td>
</tr>
<tr>
<td>Mallard</td>
<td>Flat, webbed feet for swimming.</td>
<td>Flat, webbed feet.</td>
<td>Legs are webbed for swimming.</td>
</tr>
<tr>
<td>White-tailed Ptarmigan</td>
<td>Flat, webbed feet for picking.</td>
<td>Flat, webbed feet.</td>
<td>Legs are flat for picking food.</td>
</tr>
<tr>
<td>Crested Carina</td>
<td>Large talons to hold the food down.</td>
<td>Sharp, curved for tearing food.</td>
<td>Legs are sharp for tearing food.</td>
</tr>
<tr>
<td>Common Yellowthroat</td>
<td>Grey, pointed feet</td>
<td>Grey, pointed feet</td>
<td>Legs are grey for gripping food.</td>
</tr>
<tr>
<td>White-throated Sparrow</td>
<td>Black, pointed feet</td>
<td>Black, pointed feet</td>
<td>Legs are black for gripping food.</td>
</tr>
<tr>
<td>Northern Goshawk</td>
<td>Black, pointed feet</td>
<td>Black, pointed feet</td>
<td>Legs are black for gripping food.</td>
</tr>
<tr>
<td>Golden Eagle</td>
<td>Black, pointed feet</td>
<td>Black, pointed feet</td>
<td>Legs are black for gripping food.</td>
</tr>
</tbody>
</table>

**DISCUSSION:** Ask some open-ended questions while watching the video. “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 your feeder?”
Beaks as simple machines

Name: ________________ Activity Sheet: Natural Tools

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

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

- Pelican
- Falcon
- Hummingbird
- Hummingbird
- Woodpecker
- Tweezers
- Scissors
- Pliers
- Magnifying glass
- Forceps

Stations:
- Station 1: Fruit and berries
- Station 2: Seafood
- Station 3: Insects
- Station 4: Agriculture

http://nsdl.org
# Beaks as simple machines

<table>
<thead>
<tr>
<th>BEAK TYPE</th>
<th>PONY BEADS</th>
<th>RUBBER BUGS</th>
<th>PLASTIC LEAVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chopsticks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toothpicks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tongs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clothespins</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

http://nsdl.org
Wing shapes, flight and migration
For what type of flight is the wing circled in red used? Stamp your answer

<table>
<thead>
<tr>
<th>Rapid takeoff/easy turns</th>
<th>Soaring up high</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hovering</th>
<th>High Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gliding over water</th>
<th>None of these</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
How and Why Do Birds Make Sound?

<table>
<thead>
<tr>
<th>Angry</th>
<th>Warning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sad</td>
<td>Nervous</td>
</tr>
</tbody>
</table>
Let’s pause for questions from the audience....
Integrating Science and Literacy: Resources from *Beyond Penguins and Polar Bears*

[Image: Beyond Penguins and Polar Bears website]

**ARCTIC AND ANTARCTIC BIRDS - ISSUE 11, FEBRUARY 2009**

Sure, you’ve heard of emperor penguins... but what about giant petrels, ducks, or cormorants? 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 Harry Mallgren, National Science Foundation.

[Website link: http://nsdl.org]
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.
Feature Story:
Available for grades K-1, 2-3, and 4-5 as:
- Text-only
- Illustrated book
- Electronic book

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.

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.
Question-Answer Relationship

Four categories of questions

Right There

Think and Search

Author and Me

On My Own

---

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

Beaches

Arctic tundra

http://nsdl.org
Migration

Map migration routes and develop geographic awareness

Create a model Arctic Tern and simulate behaviors and migration

Read children’s literature

Migration

The Dance of Life

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

Read children’s literature

http://nsdl.org

NSDL
THE NATIONAL SCIENCE DIGITAL LIBRARY

http://nsdl.org

NSTA WEBSeminars
Let’s pause for questions from the audience....
Bird study: Penguins

*Titles from our virtual bookshelf:*

- *A Mother's Journey*
- *Caroline Arnold's Animals: A Penguin's World*
- *My Season with Penguins: An Antarctic Journal*
- *Penguins*
- *Smithsonian*

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.

[http://nsdl.org](http://nsdl.org)
 Runs from mid-October through January. Students follow Adelie 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 Adelie activities at http://www.penguinscience.com/education/
Have you done CITIZEN SCIENCE?

A. Yes
B. No
C. I don’t know!
Citizen Science: Anyone can gather data!
Your Counts Really Matter!

http://nsdl.org
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.
Arctic and Antarctic Birds - Issue 11, February 2009  Professional Learning

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 Chastain, Jennifer Fee, Robert Payo

http://nsdl.org
Jennifer Fee
jms327@cornell.edu

Colleen McLinn
cmm252@cornell.edu

Jessica Fries-Gaither
fries-gaither.1@osu.edu

THANK YOU!
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

http://twitter.com/nsdl

Resources from this seminar:

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

Search for “diigo nsdl workshops birds”
http://www.elluminate.com
• 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
National Science Teachers Association
Dr. Francis Q. Eberle, Executive Director
Zipporah Miller, Associate Executive Director
Conferences and Programs
Al Byers, Assistant Executive Director e-Learning

NSTA Web Seminars
Paul Tingler, Director
Jeff Layman, Technical Coordinator

NSTA Web Seminars
LIVE INTERACTIVE LEARNING @ YOUR DESKTOP
Web Seminar Evaluation:

Click on the URL located on the Chat Window