Third Grade

Compared to first and second, third graders are beginning to get into the specifics of content. They are able to take notes on their own, formulate sentences, problem solve and grasp more complex scenarios. They are still conducting basic scientific investigations (observe, scientific testing, conclusions), but are able to formulate their own relevant questions based on observations as well as begin constructing simple investigations of their own. They are also able to begin describing systems (ecology), their components, how they work, and how they might be broken.

Objective: To examine the ecology and life cycle of birds.

Tools:

- Fossil (or picture)
- Picture of natural resources (water, soils-plants/food, habitat, air)
- Picture depicting evolution
- Picture displaying bird extinctions
- Picture depicting energy flow (Producers, consumers, predators and prey) and life cycles (Growth, death and decay)
- Picture of state birds
- Picture of airplane/helicopter
- Feathers
- Pellets
- Birdseed

Performance Task:

Students will understand the interrelationships of energy flow via the food chain and life cycles.
Students will understand how plants and animals change and adapt to their environment.
Conclude lesson by discussing the affects humans have on birds compared to the affects birds have on humans, and relate to sustainable solutions and possible sustainable projects.

Classroom Management:

Explain importance of remaining quiet for duration of presentation.
Moving down the list of topics, allow students to guess or share their own experiences, and no specific order of discussing topics is necessary.
Be sure to show corresponding picture/artifact while discussing each topic.
Options for engaging students:
Whole class participation-Have students write their names on a small piece of paper that the facilitator will provide (in advance three sheets pieces of paper can be folded into equal 16 pieces. Three sheets of paper should be enough for a large class size.) Collect student's names and place in a small jar/container that the facilitator should bring to the presentation. This will serve so that the facilitator can randomly call names throughout the lesson.
Group discussion- students can share questions in pairs and/or triads and facilitator can call on groups of students as well. For note-taking you can pass out a piece of paper with major topics on the left hand side and students can write notes and/or draw pictures on the right side of the page (see below).

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Fossils:
Discuss and explain how fossils show us that birds evolved from dinosaurs
Show
Adaptations:
- Plants/Animals
- How environmental factors affect organisms: Growth, reproduction, survival
- Extinctions
- (Energy & Magnetism) Pitch/Vibrations: Owls
Energy Flow:
- Producers
- Consumers
- Predators
- Prey
Life Cycles (Nutrient Cycling):
- Growth
- Death
- Decay
Humans affect birds:
- Cities (habitat encroachment)
- Cars (hit birds and cause air and water pollution)
- Climate change
- Pollution: air, water, chemicals
- Natural resource depletion
Birds affect Humans:
- Inspiration for flight
- Propagate plants (spread seeds)
- Eat bugs & rodents
- State birds (What's ours?)
- Books ("1000 paper cranes", "Are you my mother?", "The Kapok Tree", "From seed to maple tree- Following the Life Cycle")
- Art
- Food
- Bird Day!
Conclusions/Discussion:
- What did you learn from today's lesson?
- What are some themes in how we affect bird's lives?
Sustainable Solutions:
Discuss conservation: preservation, protection, safeguarding
Prompt students to predict what they can do to conserve natural resources, preserve wildlife habitat, and have less negative influence on birds.
- Reduce, reuse, recycle
- Leave environment cleaner than you left it (don't litter)
- Plant more trees & trim trees in another time of year (not spring)
- Make habitat (bird feeder, bird house, bird bath, plant trees/flowers)

- Reduce energy consumption (turn of lights, unplug anything not using)
- Don't use chemicals for pesticides, don't dump chemicals into ground
- Reduce water consumption (take showers not baths, turn off water when brushing teeth)

Possible Sustainable projects:

- Encourage students to read books inspired by birds ("1000 Paper Cranes", "Are you my mother?")
- Encourage students to make a paper crane
- Invite students to measure their water consumption for baths and showers. (Ask students to predict which uses more water: Showers or Baths. Invite them to take a bath and measure water height. The next day, have them plug the drain and take a shower, measure height and compare).
- Make a bird feeder! (Out of wood, pinecones, or oranges- for orange, peel half making a bowl, use knitting needle to stick through orange for perch).
- Invite students to make a poster about the ways to save water and encourage them to put it on their fridge to help their family conserve also.
- Invite students to create an experiment demonstrating energy conservation using a glass of warm water and a thermos of warm water. See which loses heat faster.
- Invite students to collect air pollution samples by covering an index card with petroleum jelly and leaving it somewhere for 48 hours. Take before and after pictures and compare results to different areas.
- Invite students to go on a scavenger hunt in a wildlife habitat.
- Have students imagine and draw a picture of their perfect wildlife habitat.
- Encourage students to plant trees/flowers for butterflies and birds.

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Arizona State Standards
**Strands 1, 2, and 3 are designed to be explicitly taught and embedded within each of the content Strands
4, 5, and 6, and are not intended to be taught in isolation. The processes, skills, and content of the first
three strands are designed to "umbrella" and complement the content of Life Science, Physical Science,
and Earth and Space Science.

Strand 1: Inquiry Process

Concept 1: Observations, Questions, and Hypotheses

PO 1. Formulate relevant questions about the properties of objects, organisms, and events of the environment using
observations and prior knowledge.

PO 2. Predict the results of an investigation based on observed patterns, not random guessing.

Concept 2: Scientific Testing (Investigating and Modeling)

PO 1. Demonstrate safe behavior and appropriate procedures (e.g., use of instruments, materials, organisms) in all
science inquiry.

PO 3. Conduct simple investigations (e.g., related to plant life cycles, changing the pitch of a sound, properties of
rocks) in life, physical, and Earth and space sciences.

Concept 3: Analysis and Conclusions

PO 4. Generate questions for possible future investigations based on the conclusions of the investigation.

PO 5. Record questions for further inquiry based on the conclusions of the investigation.

Concept 4: Communication

PO 1. Communicate investigations and explanations using evidence and appropriate terminology.

Strand 2: History and Nature of Science

Concept 1: History of Science as a Human Endeavor

PO 1. Identify how diverse people and/or cultures, past and present, have made important contributions to scientific
innovations (e.g., John Muir [naturalist], supports Strand 4; Thomas Edison [inventor], supports Strand 5; Mae
Jemison [engineer, physician, astronaut], supports Strand 6,; Edmund Halley [scientist], supports Strand 6).

Concept 2: Nature of Scientific Knowledge

PO 1. Describe how, in a system (e.g., terrarium, house) with many components, the components usually influence
one another.

PO 2. Explain why a system may not work if a component is defective or missing.

Strand 3: Science in Personal and Social Perspectives

Concept 1: Changes in Environments

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PO 1. Describe the major factors that could impact a human population (e.g., famine, drought, disease, improved
transportation, medical breakthroughs).
PO 2. Describe the beneficial and harmful impacts of natural events and human activities on the environment (e.g.,
forest fires, flooding, pesticides).

Strand 4: Life Science
Concept 2: Life Cycles
PO 2. Explain how growth, death, and decay are part of the life cycle.
Concept 3: Organisms and Environments
PO 1. Identify the living and nonliving components of an ecosystem.
PO 3. Explain the interrelationships among plants and animals in different environments:
• producers – plants
• consumers – animals
• decomposers – fungi, insects, bacteria
PO 4. Describe how plants and animals cause change in their environment.
PO 5. Describe how environmental factors (e.g., soil composition, range of temperature, quantity and quality of light
or water) in the ecosystem may affect a member organism's ability to grow, reproduce, and thrive.
Concept 4: Diversity, Adaptation, and Behavior
PO 1. Identify adaptations of plants and animals that allow them to live in specific environments.
PO 2. Describe ways that species adapt when introduced into new environments.
PO 3. Cite examples of how a species' inability to adapt to changing conditions in the ecosystem led to the extinction
of that species.
Strand 5: Physical Science
Concept 3: Energy and Magnetism
PO 3. Demonstrate that vibrating objects produce sound.