Together on Earth: *Emphasize* Public Awareness

5-1

Objectives

Students (K-4) use their knowledge of endangered animal species and their habitats to create a painting that emphasizes such an animal surrounded by a border of shapes and color.

Students in K to 2 propose ways that people, animals, and plants can live in greater harmony on Earth.

Students in grades 3 to 4 create a persuasive slogan or jingle to support their animal's plight for survival.

Students in grades 5 and 6 plan an ad campaign on behalf of an endangered animal species and make samples of items to be distributed during the campaign.

Students exhibit their work and explanations to raise public awareness of their animals' issues.

Multiple intelligences

Linguistic
Musical
Naturalist

Visual Arts Standard #6 Making connections between visual arts and other disciplines	**English Language Arts #12** Students use spoken, written, and visual language to accomplish their own purpose (e.g., for learning enjoyment, persuasion and the exchange of information).
	Science Standards C *Grades K-4* ***Life Science*** Organisms and environments *Grades 5-6* ***Life Science*** Diversity and adaptations of organisms

Background information

All the inhabitants of Earth are dependent upon one another for their security and survival. Scientists have identified and described almost 1.5 million plants and animals. They are unsure how many more exist. Some species existed and were never discovered before they became extinct.

Animals naturally respond to changing conditions and crises. A giant otter can be threatened by rainforest burning. The Bengal tiger, brown capuchin monkey, and gray wolf face other issues. What can humans do to help animals and habitats that are on the threshold of extinction? Where can animals get help? Today there are more than 5,000 species of animals facing extinction. Some face greater challenges than others. Categories have been created to describe the level of protection needed. These categories are based on how many animals are known to exist, their breeding habits, habitat, and if they still live in the wild or are only living in captivity.

Extinct—no reasonable doubt that the last individual of a species has died

Extinct in the Wild—when the only known members of a species live in captivity or well outside their natural range

Critically Endangered—the species is at severe risk of extinction in the wild in the immediate future

Endangered—has a high risk of extinction in the wild in the near future

Vulnerable—facing a high risk of extinction in the wild in the medium-term future

Resources

Can We Save Them? Endangered Species of North America by David Dobson
Showcases 12 plants and animals facing extinction. Explains why, what is being done, and how students at all grade levels can help.

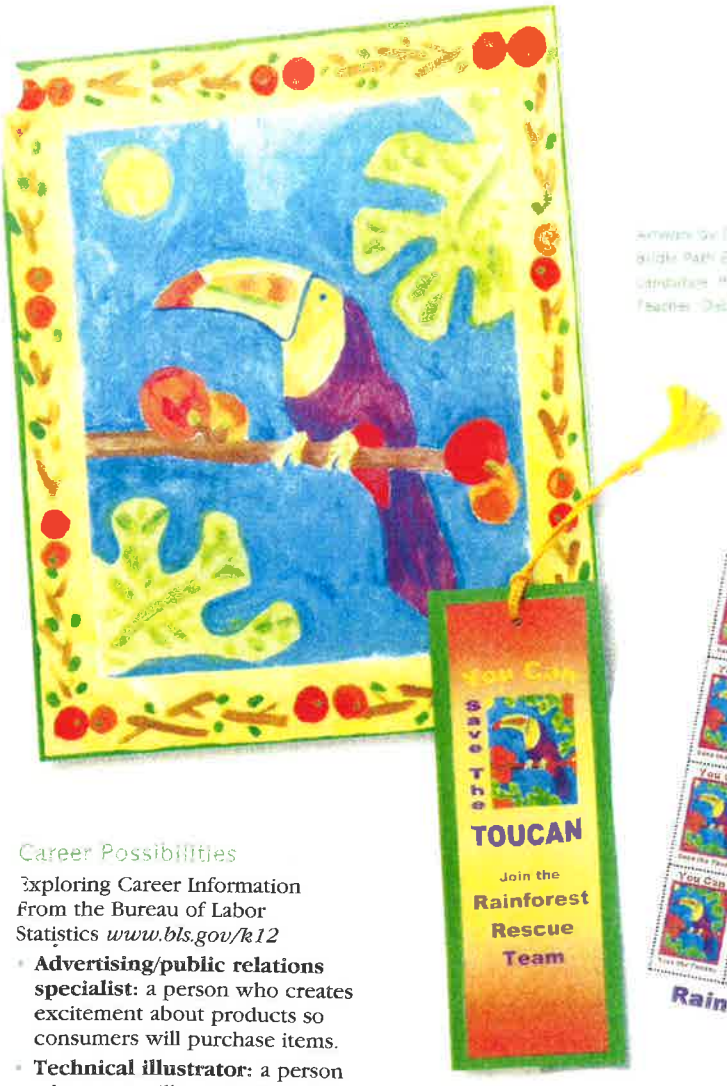
Endangered Animals by John Bonnett Wexo
Part of a Zoobooks series written for ages 4 to 11. Concentrates on endangered animals and why they are in crisis. Specific about how children can become involved in their communities.

Gone Wild: An Endangered Animal Alphabet by David McLimans
Beautifully illustrated book featuring 28 endangered animals graphically represented by the first letter of their names. Animal classes, habitats, ranges, threats, and status are highlighted.

The Penguin Atlas of Endangered Species: A Worldwide Guide to Plants and Animals by Richard MacKay
Excellent reference for students and adults. Useful in identifying species in danger of extinction in the near future.

Will We Miss Them? Endangered Species by Alexandra Wright
Wright, who wrote the book at age 11, enlightens other students about the danger of loosing various species.

www.nationalgeographic.com
A wonderful resource for information about animals and their habitats. Includes maps and open forums.



Artwork by Dan Hall
Bridle Path Elementary School
Littleton, Pennsylvania
Teacher: Deborah Wolfson

Career Possibilities

Exploring Career Information From the Bureau of Labor Statistics *www.bls.gov/k12*

- **Advertising/public relations specialist:** a person who creates excitement about products so consumers will purchase items.
- **Technical illustrator:** a person who creates illustrations with extreme attention to detail and accuracy. Often uses computers and other materials to make the work look as realistic as possible.

Vocabulary List

Use this list to explore new vocabulary, create idea webs, or brainstorm related subjects.

Advertising
Border
Campaign
Co-habitat
Compose
Conservation
Creatures
Crisis
Decorative
Emphasis
Endangered
Environment
Habitat
Illustrates
Jingle
Pattern
Persuasive
Repetition
Shapes
Surface
Survival

Artwork by students from
Otero Elementary School
Colorado Springs, Colorado
Teacher: Penny Bunting

Together on Earth: *Emphasize* Public Awareness 5-3

Suggested Preparation and Discussion

Research and discuss animals and issues faced by species in danger of extinction. Discuss habitats, physical features, food sources, and other details. Focus on animals of greatest interest to students.

Look closely at the animals' features. Identify patterns on the animals or in their environments. What pattern could they create in the frame of a picture that would emphasize their chosen animal? Would a contrasting color work well or should they consider a hue in the same color family?

Explain that students will create paintings or drawings that can be used in an imaginary "Together on Earth" advertising campaign.

Talk about simple tunes, slogans, or jingles from familiar TV programs or commercials as inspiration for writing similar attention-getters to accompany their paintings.

Talk about strategies advertisers use to reach their target audiences. What could students do to attract attention to a cause such as saving an endangered species? Research successful ad campaigns. Brainstorm ideas such as billboards, buttons, TV or magazine ads, rallies, marches, full-length movies, celebrity spokespersons, skywriting, and Public Service Announcements (PSAs).

Crayola® Supplies

- Glue
- Paint Brushes
- Tempera Paint
- Crayons
- Markers
- Scissors
- Colored Pencils

Other Materials

- Drawing paper
- Construction paper
- Paper plates
- Paper towels
- Recycled newspaper
- Rulers
- Water containers

Set-up/Tips

- Cover painting surface with newspaper.
- Use paper plates as palettes for color mixing. Place half-dollar amounts of red, yellow, blue, white, and black tempera on each plate.
- Ad motifs could be created and modified on computer and then duplicated for multiple uses.

Process: Session 1 20-30 min.

Create animal paintings

1. On 9- x 12-inch drawing paper, lightly sketch shapes that reflect an endangered animal.
2. Consider color-mixing choices:
   - two primary colors mixed together equal a secondary color (red + yellow = orange, yellow + blue = green, red + blue = violet)
   - one color + white = a tint
   - one color + a small amount of black = a shade
3. Mix colors and fill shapes with paint. Air-dry paint.

Create an ad campaign

1. Working independently or in small groups, students consider various strategies advertising agencies use to build a campaign to deliver a message to the public. Choose as many strategies as time permits to execute in a manner appropriate with lesson constraints.
2. On 9- x 12-inch drawing paper, draw a logo for the ad campaign that reflects endangered animals in crisis.

Process: Session 2 20-30 min.

4. Apply additional color to painting to show animal textures. Air-dry paint.

Create picture frames

5. Trace around 9" x 12" paper on a larger sheet to define a border. Lightly draw shapes in the border.
6. Fill shapes with colorful paint. Air-dry the frame.

Prepare campaign materials

3. Create a sample of each item to be used in the campaign, such as pins and billboards. They should have a similar design but may not have the same purpose.

Process Session 3 20–30 min.	7 Glue animal drawing in the center of the frame. Air-dry glue.		4 Create a plan for how each item is to be used, how many are needed, and where/how object is to be placed or distributed.
	8 Students present information about their animals to the class. 9 Write conservation ideas/actions that could help all living creatures to co-habitat in a balanced Earth. Exhibit these statements with the art.	8 Students briefly present information about the status of their animals. Form small groups based on animals that face similar issues. 9 Write slogans or jingles (songs) to enhance public awareness of the crises. Present jingles to group.	5 Prepare a class presentation to provide information about the animal, show samples of items for the campaign, and explain the advertising plan.
Assessment	• How well do students' frames accent the animal represented? • Is the animal facing danger of extinction? Students clearly explain their animals' situations to peers. • Student conservation ideas are based on awareness of problems faced by the animals studied.	• Does the art match the frame and presentation? Does each student have a clear understanding of each animal's plight? • How well did students collaborate in their small groups? How clearly do jingles or slogans communicate the issues?	• Students clearly explain their animals' situations to peers. • Samples of items are detailed and clearly communicate the message. Designs are similar. • Did students explain their advertising plan effectively?
	• Ask students to reflect on this lesson and write a DREAM statement to summarize the most important things they learned.		
Extensions	Explore each animal's habitat. In what region does the animal live? What resources does it need to survive? What efforts are underway to help this species? Ask local experts to describe the status of threatened animals or plants in the area. What can be done to address the problems?	Students write imaginative obituaries that include factors that caused the animal's death. Indicate why it did not survive, such as loss of habitat, pollution, or climate change. Combine writings and art from all students into a book called "Together on Earth" and share with families and other teachers. Encourage gifted students to explore other public awareness avenues, such as speaking before parent groups, displaying posters, and encouraging younger children to be more environmentally aware.	

Black Cat
Artist Unknown
Crayola Folk Art Collection

Insects: Anatomy and Ecosystems

Objectives

Students explore entomology, describe the characteristics of insects, and give examples of ways insects depend on their environments.

Students create models of imaginary insects with realistic anatomy and characteristics.

Students in grades 3-6 create an enclosed environment for the model insect and describe the characteristics of that environment which make it suitable for the survival of that species.

Students in grades 5-6 describe some adaptive characteristics necessary for the survival and reproduction of their model insect in a new or different ecosystem.

Multiple Intelligences

Naturalist

Spatial

What Does It Mean?

Artifact: objects made or used by people, such as tools and pottery found at an archaeological excavation

Ecosystem: interaction of a community of organisms with their environment

Entomology: the study of insects

National Standards

Visual Arts Standard #2
Using knowledge of structures and functions

Visual Arts Standard #6
Making connections between visual arts and other disciplines

Science Standards
Unifying Concept and Process
Evidence, models, and explanations
Science as Inquiry
Abilities to do scientific inquiry
Life Science
Grades K-6
The characteristics of organisms
Grades 3-6
Organisms and environments
Grades 5-6
Diversity and adaptations of organisms

Background Information

There are more than 800,000 identified species of insects and probably millions more not yet discovered. All insects have three major anatomical parts: a head, thorax, and abdomen. Most insects also have two antennae, six legs, and wings. They are the only invertebrates (lacking a backbone) capable of flight. They also are capable of communicating through pheromones, sounds, and visual signals. Their life spans vary from the short 6-week life cycle of a common housefly to as many as 20 to 40 years for certain termites and wood-eating beetles. Although most insects are small, there is evidence that prehistoric dragonflies had wingspans of up to 30 inches. The Goliath spider living in South America has an 11-inch leg span and feeds on small birds.

Like other organisms, insects live in ecosystems that have the conditions necessary for their species to survive. Insects are found in mountains, deserts, forests, tundra, grasslands, and fresh water. They live in both hot and cold climates and even in rocks deep beneath the Earth's surface. About the only place they are rarely found is in the sea. Some, like the beetle, are very adaptable and can live in many different biomes. According to Paul Beckman, author of *Living Jewels*, the beetle has evolved over 250 million years, adapting to every climate and landscape on Earth. It has developed a "phantasmagorical diversity of shapes and sizes, colors, patterns, and textures."

Resources

Everything Bug: What Kids Really Want to Know About Insects and Spiders by Cherie Winner
Latest information about the bizarre world of insects for ages 9 through 12. Lively writing and beautiful, appealing illustrations.

Living Jewels by Paul Beckmann
A book for all ages. Photographic study of the beauty and diversity of beetles. Fascinating and amusing factual text. Huge close-ups of beetles.

Old Cricket by Lisa Wheeler
Rich language, strong plot, and skillfully drawn characters. Provides a bug's-eye view of the world for ages 4 through 8. Detailed acrylic illustrations of crickets, katydids, ants, and grasshoppers.

The Very Clumsy Click Beetle by Eric Carle
Bold, bright, tissue-paper illustrations help tell the story of a little beetle who landed on his back and couldn't right himself. The never-give-up theme and click beetle sound effects appeal to all ages.

Vocabulary List

Use this list to explore new vocabulary, create idea webs, or brainstorm related subjects.

- Science
  - Adaptation
  - Anatomy
    - Abdomen
    - Head
    - Thorax
  - Ant farm
  - Antennae
  - Biosphere
  - Camouflage
  - Classification
  - Cleoptera
  - Ecosystem
  - Entomology
  - Environment
  - Evolution
  - Habitat
    - Manufactured
    - Natural
  - Hemiptera
  - Hypothesis
  - Insect
  - Invertebrate
  - Life cycle
  - Magnify
  - Metamorphosis
  - Observation
  - Pheromones
  - Predators
  - Prehistoric
  - Species
  - Survival
  - Terrarium
  - Wings
- Visual arts
  - Color
  - Form
  - Model
  - Pattern
  - Shape
  - Size
  - Symmetry
  - Texture

Artwork by students from
Mount Prospect Elementary School,
Basking Ridge, New Jersey
Teacher: Jennifer Braun

Artwork by students from
Madison Elementary School,
Colorado Springs, Colorado
Teacher: Judy Curtis

Insects: Anatomy and Ecosystems

	K-2	3-4	5-6
Suggested Preparation and Discussion	Display close-up photographs of insects such as those included here as well as human-made habitats in which insects are typically contained for study or observation, such as simple cages, terrariums, ant farms, or other closed containers. Include mounted insects; show live insects if possible.		
	Discuss ways in which animal bodies (including our own) differ from and are the same as insect bodies. Identify bug body parts such as the head, thorax, abdomen, and two antennae. Note that most insects also have six legs and many have wings.	Exhibit close-up photographs of insects on one half of a bulletin board and various types of natural environments where insects live on the other half. Students match the two with yarn. List attributes that make a healthy habitat for insects to thrive. Show and discuss artifacts or models that contain insects. Review the life cycles of some common insects.	
	Imagine an environment and picture an insect that might live there. Ask: What color is the insect? How large is it? How does it camouflage itself to hide from its predators? How does it move? Does it have long or short legs? How does it catch its food?	Discuss habitats that could be created inside a bottle, based on observation of insects through a magnifying glass and knowledge about their activities.	Ask: Could an insect adapt to a new environment? What adaptive characteristics might be required for survival in a different ecosystem? Ask students to invent a new species of insect that displays adaptations needed for its survival in a new environment.
Crayola® Supplies	• Glitter Glue • Markers • Model Magic® • Paint Brushes • School Glue • Scissors • Watercolors		
Other Materials	• Chenille stems • Magnifying glasses • Modeling tools such as plastic dinner knives, craft sticks, and toothpicks • Oak tag • Paper • Paper towels • Recycled newspapers • Water containers		
		• Clean, clear 1-liter bottles • Corrugated cardboard • Natural, found materials such as feathers, twigs, raffia, stones, leaves	
Set-up/Tips	• Cover art surface with recycled newspaper.		
		• Ask parent volunteers to save recycled clear plastic bottles and cut off the top 4 inches. Prepare one for each student.	

Process: Session 1 45-60 min.

Create an insect

1. Observe insects with a magnifying glass. Study their shapes, colors, textures, and patterns.
2. Cut oak tag into small rectangles and fold in half. Cut toward the fold to create symmetrical wings. Add patterns and designs to the wings.
3. Shape Model Magic compound to create an insect body with a head, thorax, and abdomen. (Older students make sure it will fit in the bottle.)
4. Place wings over the body. Apply additional compound to attach wings to the body. Glue together as needed.
5. Embed chenille stems into the insect for antennae or other features. Use modeling tools to create texture. Air-dry the insect 24 hours.

Insect Illustrations
Color plate 19
The Naturalists' Library
Collection of D. Jehle

Insectile
Artist: William Skrips
Found welded steel, including barn shutter hangers, tuning fork tines, miscellaneous materials
32" x 9" x 4"
Collection of Bill and Cara Skrips

	K–2	3–4	5–6
Process: Session 2 10–15 min.	6. Paint the insect with watercolors. Air-dry the paint.		
Process: Session 3 20–40 min.	7. Decorate the insect with glitter glue, feathers, or other craft materials. Air-dry the glue.		
		Design a natural habitat 8. Shape a Model Magic display base for the insect's habitat. Glue raffia, twigs, or other natural elements to the base. Air-dry base overnight. 9. Cut cardboard slightly larger than circumference of the bottle openings. Paint cardboard to reflect the imagined environment. Air-dry the paint.	
Process: Session 4 30–45 min.		10. Glue base to cardboard. Glue insect into habitat. Air-dry the glue. 11. Place plastic bottle over model. Apply glue around the circumference of the bottle. Wrap a coil of Model Magic compound over the glue to seal the bottle to the cardboard. Air-dry the art. 12. Write a paragraph describing the model insect and its habitat.	
			13. Imagine the model insect in a different environment. Describe that environment and explain how the insect would have to adapt to that habitat.
Assessment	• Display insect models. Children point out and verbally label the body parts of their insects. • Children describe the habitats that would be best for their insects.	• Do models accurately reflect knowledge of insect body parts? Are model insects suited to the environments created for them? • Are descriptive paragraphs detailed enough that classmates can match them to the appropriate insect models? • Can students name three characteristics of insects? Can students verbally provide two examples of ways in which insects depend on their environments?	
			• Are the adaptations described by students suitable for the survival of their model insects in the imagined new environments?
	• Ask students to reflect on this lesson and write a DREAM statement to summarize the most important things they learned about insects.		
Extensions	Students draw their insects, create names for them, and label their body parts. Create a "bug museum" and invite families to visit. Students act as museum docents.	Students design a chart to display examples of the three ways insects communicate (pheromones, sounds, and visual signals). Students research the lives of social insects. Write job descriptions for the various insect community duties.	Encourage academically talented students to research the role insects play in the web of life. How does the environment affect the life cycle (metamorphosis) and life span of an insect? If insects disappeared, how would other creatures be affected? Create "travel brochures" to lure insects to a particular habitat. Cite temperatures, food, and environmental features.
	Observe insects in their natural habitats. Locate an ant nest and watch the activities. Note what they carry into and out of the nest. What happens when ants encounter one another? Take notes, discuss, and hypothesize. Compare hypotheses with facts. Encourage students and their families to observe the behavior of fireflies at night. To enhance meaning for students with learning differences, provide a center within the classroom for observing the metamorphosis of caterpillars into butterflies. Celebrate the release of the butterflies.		

How Can You Help Save Endangered Species?

Objectives

Students research to learn how environmental changes cause some species to thrive, become ill, or perish.

Students use knowledge about endangered species and their habitats to design promotional literature that communicates, through text and illustrations, how people might take action to help save endangered species.

Multiple Intelligences

Interpersonal | Naturalist
Linguistic | Spatial

National Standards

Visual Arts Standard #5
Reflecting upon and assessing the characteristics and merits of their work and the work of others

Science Standards
Science and Technology
Abilities to distinguish between natural objects and objects made by humans
Unifying Concept and Process
Evolution and equilibrium
Science as Inquiry
Understanding about scientific inquiry

Background Information

Every day on Earth, an estimated 74 species of life forms become extinct, making it difficult to maintain balance of living things. Human behavior is often the cause for the elimination of living things. Humans can reverse their actions and help endangered species survive.

Sadly, fewer than 1,000 pandas remain in the mountainous bamboo forests of Southwestern China. The chances that the numbers of this animal will rebound are diminished by factors such as habitat destruction, poaching, and the panda's low reproductive capacity.

Sea turtles are able to migrate hundreds and sometimes thousands of miles, traveling from their feeding ground to their nesting beach, which is usually the same beach on which they were born. Out of seven species of sea turtles, four are classified as endangered: the green turtle, the leatherback, the hawksbill, and Kemp's Ridley.

Resources

Beaks by Sneed B. Collard III
Striking illustrations with painted and cut paper collage to create an amazing 3-D effect. Students in grades K to 3 learn about the uses and evolution of beaks of numerous bird species.

Our Wet World by Sneed B. Collard III
Ages 5 to 9 experience an underwater journey to 13 aquatic ecosystems. Clear descriptions and illustrations of water bodies such as rivers, marshes, streams, and shores. Excellent glossary to aid in research and report writing.

The Forest in the Clouds by Sneed B. Collard III
The 'forest in the clouds' is really a rain forest found high in the mountains. Beautifully illustrated book, written for grades 4 to 8. Identifies threats to rainforests and presents suggestions for what can be done to help. Includes glossary, map, and additional book and website suggestions.

Winged Migration—The Junior Edition by Stephanie Durand and Guillaume Poyet
Suitable for all ages. Beautifully chronicles many types of migratory birds. Some actually travel more than 100,000 miles in their flight for survival. Companion book to the film of the same name.

Vocabulary and Concept List

Use this list to explore new vocabulary and create idea webs.

- Design formats
  - Brochures
  - Mini-booklets
  - One-page flyers
  - Pamphlets
  - Tri-folds
- Endangered species
  - Survival
    - Foods
      - Pesticides
    - Habitat
      - Preservation
      - Land control
      - Destruction
    - Interdependency
    - Pollution
  - Urban sprawl
    - Communities/cities
      - Farmland
      - Green space
      - Houses
    - Government
      - EPA laws
      - National, state, and local parks
      - Reclamation
    - Planning
      - Designers
      - Environmentalists
  - Citizen responsibility
    - Advertisements
    - Awareness
    - Ecology
      - Air
      - Forests
      - Oceans
      - Wetlands
    - Promotions
    - Safety
  - Extinction
    - Perish
    - Poaching
    - Population control
    - Rebounding
- Watercolor techniques
  - Dry brush
  - Dry on wet
  - Washes
  - Wet on wet

What Does It Mean?

Contour drawing: drawing that focuses on edges and three-dimensional outlines of objects, folds, or patterns using line without shading

Dry brush: technique using paint with a minimum of water on a dry surface

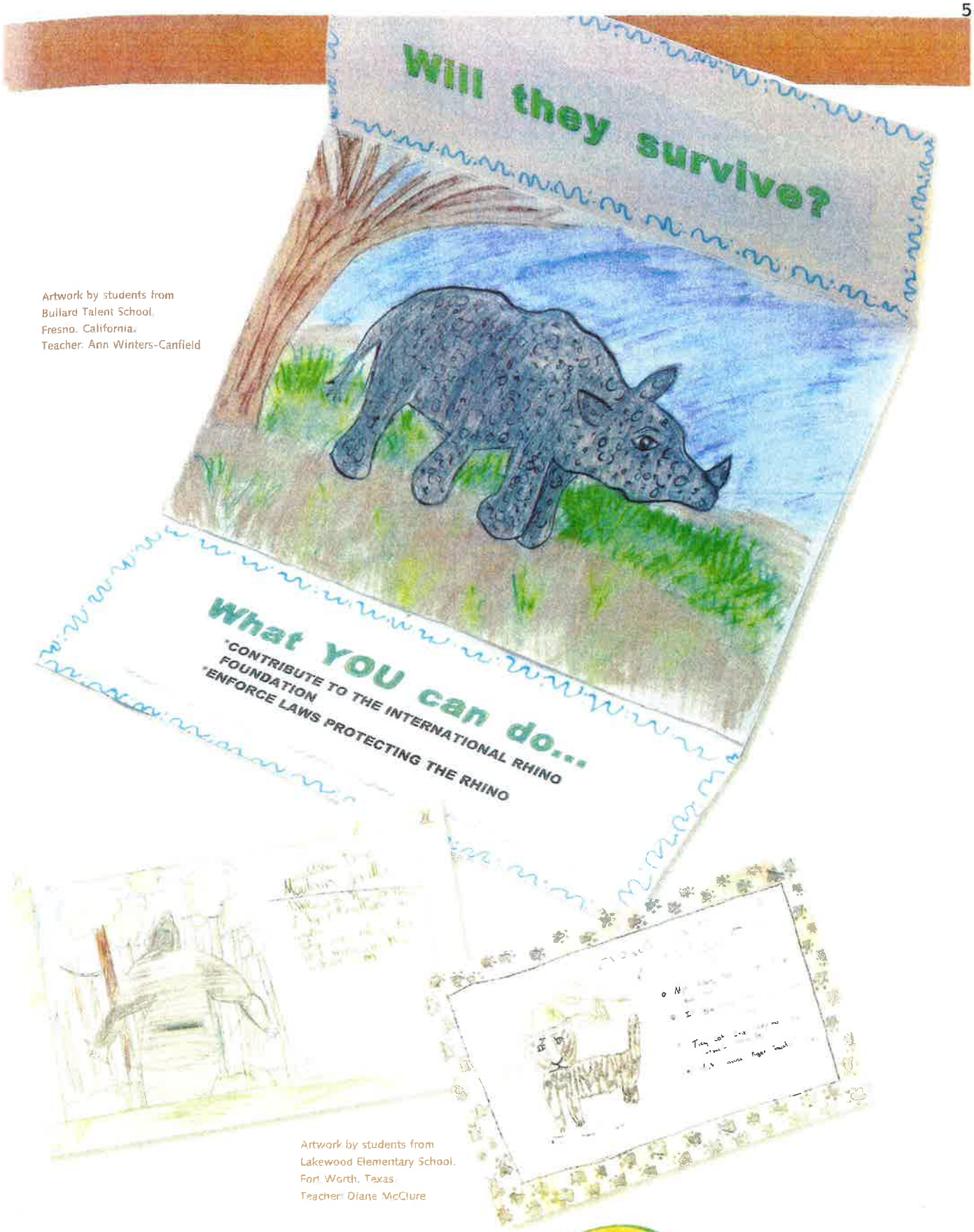
Dry on wet: technique using paint with a minimum of water on a wet surface

Endangered: plant and animal species that are in danger of becoming extinct

Extinct: plant or animal species that no longer live on Earth

Wash: technique of filling a surface with water and adding small amounts of paint

Wet on wet: technique using paint with a maximum of water on a wet surface

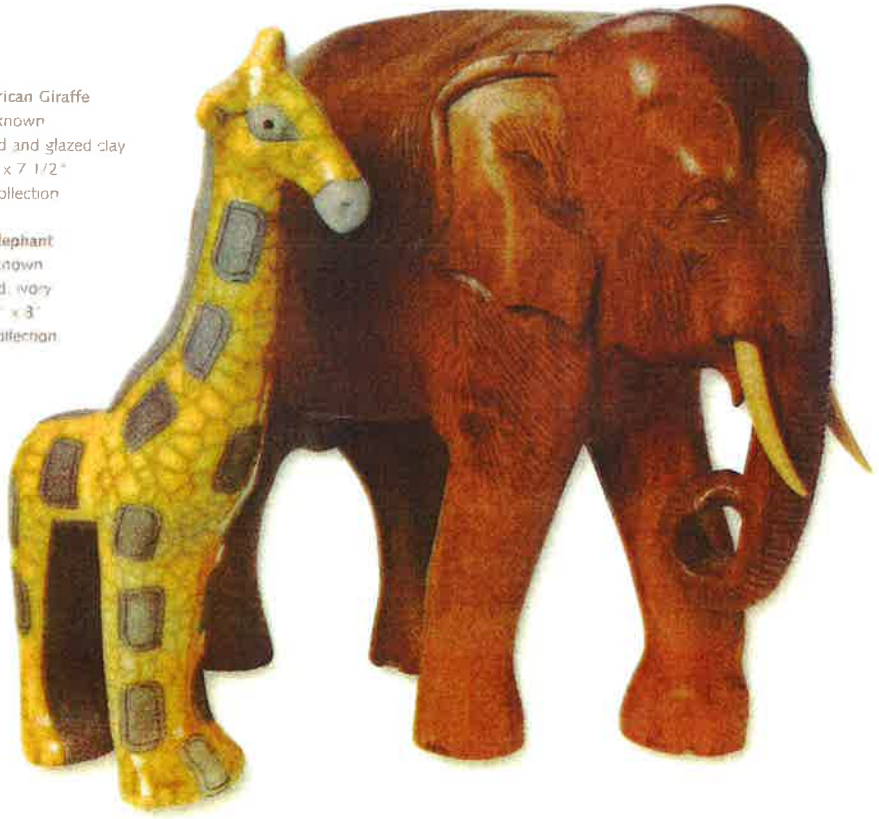


Artwork by students from
Bullard Talent School
Fresno, California.
Teacher: Ann Winters-Canfield

Artwork by students from
Lakewood Elementary School
Fort Worth, Texas
Teacher: Diane McClure

How Can You Help Save Endangered Species?

	K-2	3-4	5-6
Suggested Preparation and Discussion	Display photos of insects, plants, and animals that are on the extreme endangered species list. Read about and discuss endangered species. What could be done to preserve habitats? How could pollution be prevented? Create a web of words related to the problems surrounding endangered species and their habitats. Discuss what the words *endangered* and *extinct* mean.	With students, research display photos of insects, plants, and animals that are on the extreme endangered species list. Design a chart with two columns and about 15 rows. Label one column "Endangered Species" and the second column "Solutions to Avoid Extinction." Use the chart to begin a class discussion on the topic. Research the most critically endangered plants and animals. Invite students to add species to the chart if they can offer practical solutions that will help avoid extinction. What changes do environmentalists recommend to save endangered species? What laws would be needed to help guarantee survival of threatened species?	
	Design a display of various advertising and design formats such as tri-folds, brochures, mini-booklets, pamphlets, and one-page flyers. Demonstrate step-by-step watercolor pencil drawing and painting techniques that best illustrate Earth, sea, sky, and animals. Include dry brush, wet-on-wet, and dry-on-wet techniques. Encourage the use of contour lines and dark and light values to enhance species illustrations. Ask students to reflect on their knowledge about endangered species. Invite them to design a piece of literature whose text and illustrations call out solutions that help keep endangered species from becoming extinct. Design formats can vary.		
Crayola® Supplies	• Gel Markers • Glitter Glue • Paint Brushes • Scissors • Watercolor Colored Pencils		
Other Materials	• Construction paper • Paper towels • Recycled newspaper • Water containers • White paper		
Set-up/Tips	• Cover art surface with newspaper. • Draw with dry watercolor pencils and then apply water washes over the drawing to generate painterly effects. Repeat the process to create layered effects.		



South African Giraffe
Artist unknown
Raku fired and glazed clay
13" x 3" x 7 1/2"
Private Collection

African Elephant
Artist unknown
Rosewood, ivory
12" x 13" x 3"
Private Collection

	K-2	3-4	5-6
Process: Session 1 30-45 min.	Sketch flyers 1. Each child chooses a species on the extreme endangered list. In small groups of children who chose similar animals, generate solutions for what could be done to save the species from extinction. Brainstorm and then identify strong verbs and exciting adjectives to describe the situation and solution. 2. Use watercolor pencils to design and illustrate a flyer or brochure that informs people about these solutions.	Design promotional brochures 1. Each student selects a species listed on the extreme endangered list. Students identify possible solutions to reverse the grave situation that exists for the insect, plant, or animal. 2. Students visualize and sketch a promotional brochure to address the issues using watercolor pencils. Students clearly articulate detailed solutions so that the literature becomes an effective public relations tool and captures audience attention. Consider various design formats, styles of text, and illustrations.	
Process: Session 2 30-45 min.	Complete flyers 3. Enhance brochures by using at least two watercolor drawing and painting techniques. Air-dry the brochures.	Complete brochures 3. Include three or more watercolor drawing and painting techniques in each brochure. Air-dry the brochures.	
	4. Students analyze each other's work for its attention-getting effectiveness and attributes. 5. Arrange to exhibit the advocacy artwork at a local bank, community center, or other public venue.		
Assessment	• Children's brochures clearly identify the endangered species and present a practical solution to the dilemma. • Students use at least two watercolor drawing and painting techniques in their design. • Children verbally explain the terms *endangered* and *extinct*.	• Students critique each other's endangered species promotional brochures for compelling text, illustrations, and formats. • Students use three or more watercolor drawing and painting techniques in their design. • Students analyze solutions to identify those that have the most potential for being implemented.	
	• Ask students to reflect on this lesson and write a DREAM statement to summarize the most important things they learned.		
Extensions	Create an illustrated book of endangered species for the school library. Play endangered species charades. Children try to identify the animal being portrayed by a classmate and then read and listen to learn more. Young students and those with some types of disabilities could dictate their message for someone else to write on their brochure, or generate copy on the computer.	Students select favorite endangered species and, after identifying their characteristics, imagine changes in their behaviors, habitats, or physical forms that would improve their chances for survival. Use visual presentations to share with classmates. Create a web of life. Investigate the effect of the disappearance of one species. Find out how any species impacts its environment and fits in the web of life. Use yarn to make connections among students taking the parts of various species. Create a school-wide campaign to support a chosen species.	Contact environmental organizations such as The Audubon Society, The National Wildlife Federation, The Environmental Defense Fund, or The World Wildlife Fund to gather information about critically endangered species. Gifted students could research more about species that have become extinct, those that are currently on the threatened list, and those that have left the endangered list due to successful interventions. Students "are the species" and self-promote themselves using posters, campaign buttons, and speeches explaining their uniqueness and value to the world's ecosystem.

How Can You Contribute to a Healthy Ecology?

Students use prior knowledge and conduct research to determine the extent of the interdependence of plants, animals, humans, and the environment.

Students design and illustrate an example of an ecologically friendly home, school, neighborhood, or community environment in which people depend on each other and the environment to thrive.

Interpersonal
Naturalist
Spatial

Biosphere: any area of a planet that supports life

Crosshatching: use of lines that cross each other to shade, emphasize, and make shadows

Ecology: study of relationships between organisms and their environments

Geosphere: the solid parts of Earth

Visualize: process of recalling or imagining mental pictures

Visual Arts Standard #6
Making connections between visual arts and other disciplines

Science Standards
Unifying Concept and Process
Systems, order, and organization
Science as Inquiry
Abilities necessary to do scientific inquiry
Science in Personal and Social Perspectives
Populations, resources, and environments

Background Information

All organisms depend on their physical environments to survive. The study of the relationship between an organism and its environment is called *ecology*. Ecologists study Earth's major systems or spheres including the *atmosphere*, the *geosphere*, and the *hydrosphere*. The atmosphere is the envelope of gasses surrounding the planet. The Earth itself and the ocean crusts are referred to as the geosphere. The hydrosphere is made up of all the water on the planet. Vladimir Vernadsky is credited with first using the word *biosphere*.

The *anthrosphere* is that part of the environment made or modified by humans. Most people recognize the negative impact that humans have had on this planet. For centuries, people have been burning fossil fuels, causing a buildup of greenhouse gasses that trap heat and lead to global warming. Chemicals from agriculture and industry have contaminated the world's water resources.

Many nations and scientists are taking steps to solve these problems. Using renewable resources, finding alternative energy sources, rethinking transportation methods, and recycling products are just four ways to create a more eco-friendly environment. Nature and wildlife conservation are other important considerations. When rainforests are burned, plants and animals that may have the potential to cure diseases are destroyed.

Resources

Brother Eagle, Sister Sky: A Message From Chief Seattle by Susan Jeffers
Adaptation of a speech said to have been given by Chief Seattle. Contains profoundly beautiful words and an enduring, relevant message about the importance of living in harmony with nature.

Just a Dream by Chris Van Allsburg
Beautiful abstract images tell the story of a careless 10-year-old boy who learns a powerful dream lesson about protecting the environment. Grades 2 to 5.

The Lorax by Dr. Seuss
A timeless and compelling ecological warning about the importance of environmental preservation. Colorful images, clever word plays, and extraordinary rhymes. Ages 4 to 8.

Concept List

Use this list to explore new vocabulary, create idea webs, or brainstorm related subjects.

- Science

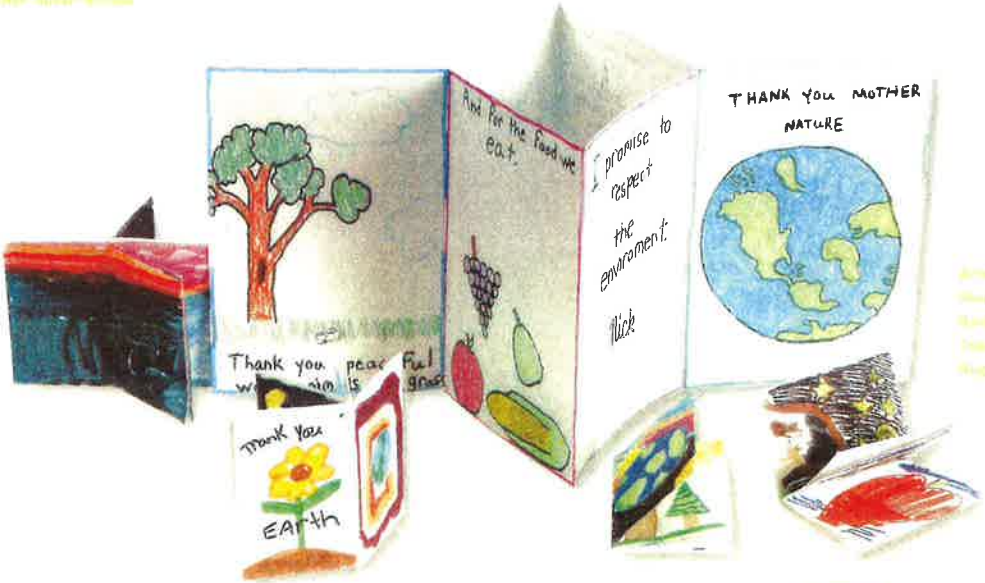
Alternative energy	Design	Organic
Anthrosphere	Eco-friendly	Organism
Atmosphere	Ecology	Ozone depletion
Biodegradable	Ecosystems	Rain forest
Biosphere	Environment	Rebuild
Compost	Global warming	Recycle
Conservation	Geosphere	Resources
Crisis	Greenhouse effect	Rethink
Decompose	Hydrosphere	Reuse
	Interdependence	

- Visual arts

Atmosphere	Light	Shapes
Color	Mood	Texture
Design	Movement	Visualize
Form	Pattern	

Artwork by Students from Lobelia Elementary School, Oak Ridge, Tennessee
Teacher: Carolyn E. Stowe

Artwork by students from
Mount Prospect Elementary School
Reading Ridge Area Unit
Teacher: Susan Brooks



Artwork by students from
Mount Prospect Elementary School
Reading Ridge Area Unit
Teacher: Susan Brooks and
Regina DeFrancesco

How Can You Contribute to a Healthy Ecology?

Create an Earth Stewardship Area. Students post information related to the greening of the planet, display examples of items made from recycled materials, and start a chart of Earth-friendly ideas.

Read the poem *Sarah Cynthia Sylvia Stout Would Not Take the Garbage Out* by Shel Silverstein. Discuss the mounting impact of garbage. Ask: Where does the garbage go? What if we ran out of places to take it? What happens to garbage after one year? Five years? Ten years?

Create a web of life. One student labels a card the sun. Other students make cards with the names of plants, animals, and insects. Form a circle. The student holding the sun card holds one end of a long piece of yarn. All life needs the sun to grow. Ask what would be next in the web of life (plants). Everyone with plant cards takes a section of the yarn. Continue until all cards have been used and everyone is holding onto the yarn. Ask what would happen if one item disappeared from the environment. One student drops out of the circle. What other items are affected? (those students also drop yarn). As the chain collapses, discuss the contributions and needs of every living thing.

Encourage discussion of ways to improve the environment. Introduce the terms rethink, reduce, reuse, and recycle and the "chasing arrows" found on many manufactured containers.

Discuss the basic needs of living organisms. Consider how various organisms depend on each other and their environments.

Research the interdependence of living things in an environment. Discuss findings about the Earth's major systems, including the atmosphere, geosphere, and hydrosphere.

Crayola® Supplies

- Markers
- Colored Pencils
- Overwriters® Markers

Other Materials

- White drawing paper

- Students draw ideas for steps they and their families can take to help solve current environmental problems.
- Add color, pattern, and texture to drawings with stripes, dots, crosshatching, and solid colors.
- Students sketch their ideas for choices they could make that would lead to an improved atmosphere, geosphere, and/or hydrosphere. Consider transportation systems, recycling, conservation, and alternative energy solutions.
- Fill sections of the drawing with Overwriters® under colors. Create lines, shapes, and textures with over colors.

- Students explain the ideas in their drawings to each other. What effect would their ideas have on the environment?
- Create a key or legend that identifies the Earth's major systems as portrayed in the drawing.
- Share solutions with classmates and/or the community.

- Children identify concrete solutions for protecting the Earth's ecology.
- Ask students to reflect on this lesson and write a DREAM statement to summarize the most important things they learned about contributing to a healthy biosphere.

- Students indicate and correctly label the ecological spheres depicted in their designs.
- Students clearly explain to each other how their solutions will help alleviate ecological problems.

With students, create an environmental display for a hall bulletin board.

Create birdhouses or feeders from recycled containers.

Take a community survey. What alternative forms of energy are used? How clean and abundant is water? What items can be recycled? What happens to hazardous waste?

Start an Ecology Club.

Watch and discuss the video *An Inconvenient Truth*.

Encourage students with good research skills and persuasive abilities to research local environmental issues. Present findings to the class and interested citizens.

Participate in the Earth Day Groceries Project. Grocers donate paper bags to schools. Students decorate sacks and return them to the stores. Clerks fill the original artwork bags with customers' groceries.

Conduct an experiment. Submerge garbage such as apple cores, aluminum foil, banana peels, foam, eggshells, and plastic in soil. Check the biodegradability months later when the items are unearthed. Discuss observations.

Visit a recycling center. How can students encourage more recycling?

Students with special needs might create collages from magazine pictures or use assistive technology.

Art & Ecology

Artists are often particularly keen observers and precise recorders of the physical conditions of the natural world. As a result, paintings can be good resources for learning about ecology. After school leaders can use these lessons to examine with students the interrelationship of geography, natural resources, and climate and their effects on daily life. These lessons also address the roles students can take in caring for the environment.

Homer in the Bahamas

Grade Level: 5–8

Winslow Homer's painting of a house in the Bahamas will introduce students to the climate and geography of this island nation. They will then break into groups to research possible pollutants and provide solutions to protect the inhabitants and land. Lastly, they will imagine daily life in the Bahamas by writing a journal entry.

Cazin in the Quarry

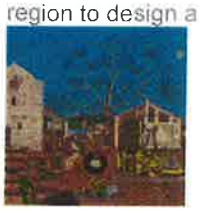
Grade Level: 5–8

Using Cazin's painting *The Quarry of Monsieur Pascal near Nanterre*, students will hypothesize about the workings, setting, and size of this French quarry. Then, applying his working method of "memory painting," they will draw or paint a setting from memory after close observation without taking notes or preparatory sketches.

Miró on the Farm

Grade Level: 5–8

Students will be introduced to farming in an arid climate through art-based inquiry of Miró's *The Farm*. Learning that his family had to implement two water collection devices, students will collect and investigate the amount of rainfall in their region to design a sketch proposal for how to best collect rainwater for their local farms.



Vuillard in the Park

Grade Level: 5–8

With Vuillard's painting of a park in Paris as a backdrop, students will explore the social concepts of parks both in this painting and their own life. They will then embody a character in the painting to write from their perspective. Lastly, they will select an outdoor scene that they will document seasonal and environmental changes through writing and sketching over a long period of time.

Inness in the Countryside

Grade Level: 5–8

Discussion of a landscape painting by George Inness will introduce students to the impact of the railroad to the countryside in mid-nineteenth century America. They will depict this same scenery as they envision it in the past and in the future. Lastly, they will write an essay on how they would preserve the environment as the head of a railroad company.

Rousseau in the Jungle

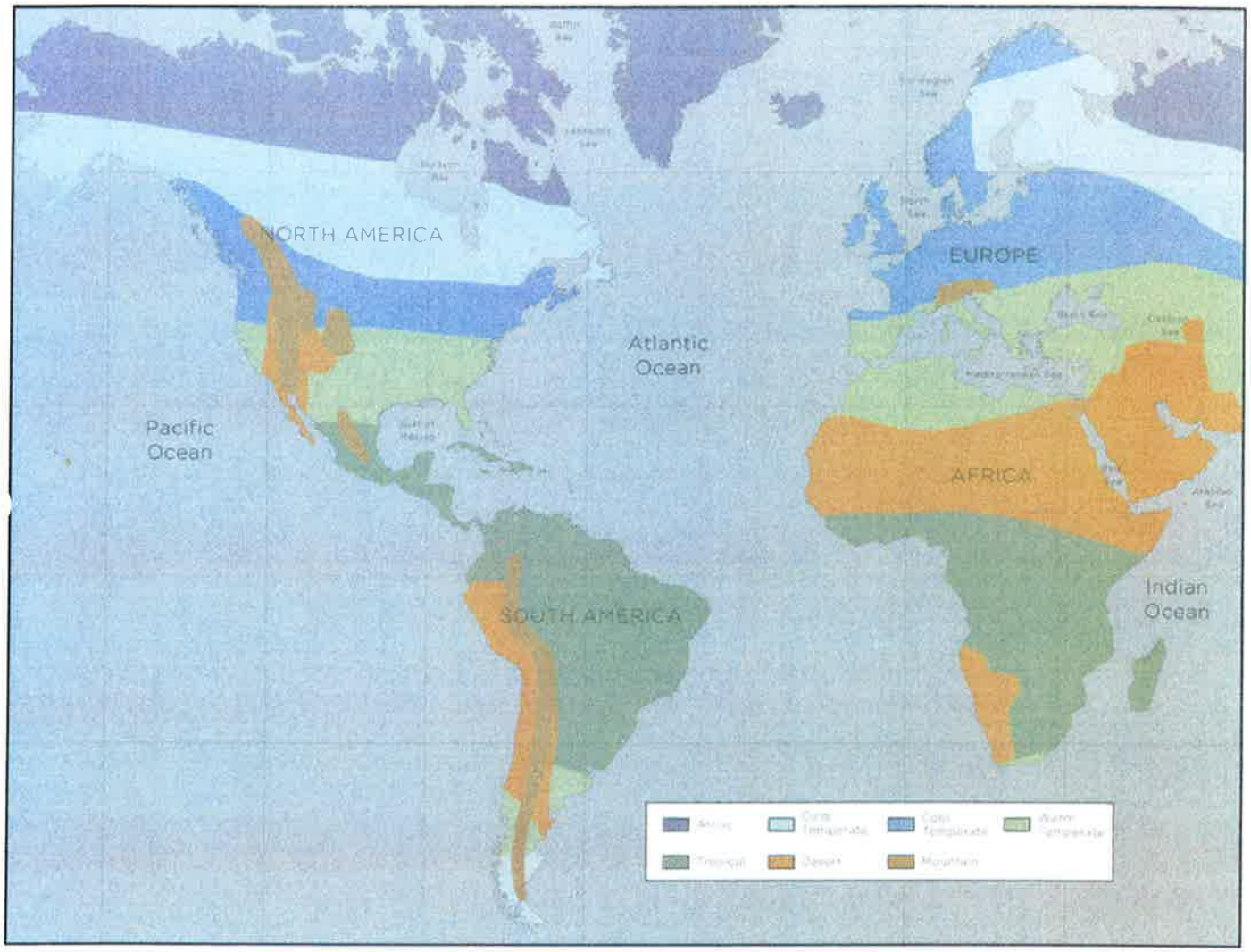
Grade Level: 5–8

While the other paintings in these lessons record actual locations, Rousseau imagined *Tropical Forest with Monkeys* from trips to botanical gardens, zoos, and illustrations in books. Students will conduct research and imagine themselves in a place other than where they live. They also will investigate the macaque monkey to compare to Rousseau's depictions.

Art & Ecology

Map Skills

NAME: **DATE:**



Homer in the Bahamas

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Winslow Homer
American, 1836–1910
Native Huts, Nassau, 1885

Materials

- World map
- Computers with internet access for student research
- Writing materials
- Copies of the "Climates Around the World" map

Warm-up Questions

What type of climate do you think this house is located in? What visual cues make you draw your conclusion?

Background

In 1884, Maine artist and illustrator Winslow Homer received a commission from Century Magazine to illustrate an article called "A Midwinter Resort" about Nassau, the port city of the Bahamas. When Homer went to the Bahamas later that year, there were only about 150 visitors at the height of the vacation season. Nassau was just beginning to develop a reputation as a destination for those suffering from illnesses made worse by the cold winters of the Northeast United States.

During the two months he stayed on the island, Homer painted more than thirty watercolors of a variety of subjects, including island architecture, sponge and coral fishing, fruit trees, and the unusual features of the landscape. He was also particularly interested in the day-to-day activities of the island's black inhabitants. They were former slaves and descendants of slaves brought by English planters to work on plantations, and their lives remained particularly difficult. In *Native Huts, Nassau*, Homer illustrated the thatched house of a black family. This style of building had been transplanted from Africa and was, according to a contemporary account, "the most sensible house covering for this climate." The house was elevated to avoid being flooded during storms. Wooden shutters protected it from strong winds and heavy rain. The shutters could be closed to keep out warm air during the hottest part of the day and opened in the cooler mornings and nights.

Native Huts, Nassau is painted in watercolor on paper. Light washes of color allow the texture of the paper to show through. In some places, the paper is not painted at all, so that its whiteness—not paint—creates the highlights of brilliant tropical sunlight.

Guided Practice

- Using a world map, have students answer the following questions: Where are the Bahamas located? What kinds of landforms are they? What kind of climate do the Bahamas have? *(Two clues are the proximity of the islands to the equator and the palm tree seen in the painting. Use the* ***"Climates Around the World" map*** *to assist students.)*
- What factors of their geography and climate make the Bahamas a popular vacation spot? In 1885, when Homer traveled to the Bahamas, what transportation would he have used to get to the port city of Nassau? *(Boat)* What about today? What about Nassau's geography makes it welcoming to boats? *(Inlets that are deep and sheltered from wind and rough seas.)*
- People often use natural resources that are plentiful and nearby for building materials. Many tropical locations have palm trees. How have palm trees been used in the building of this house? *(Leaves for thatched roof.)* Why are wooden shutters appropriate for houses in a tropical area? *(To protect from strong winds, heat, and rain; to help control interior temperature.)* Why would the house be up on blocks? *(To keep it dry during floods and storms.)*
- Some residents of the house are visible just inside the door. What are some of the daily activities you think they might do, based on the climate, natural resources, and geography of the island?
- In *Native Huts*, Winslow Homer occasionally allowed the white of the paper to show through the watercolor. Where can you see this? *(The sky, the sand.)* Why do you think he chose these areas? *(They are where the reflections are brightest.)*

Activity

Students will break into smaller groups to conduct research in order to answer the following questions:

1. Do you see any pollution in this scene?
2. What kind of pollution could affect an environment like this?
3. What are ways you could protect beaches and waterways if you lived in the Bahamas?

The following resources are a good start:

The Environmental Protection Agency's "Learn the Issues" about pollution.

The United States Geologic Survey site offers satellite images of environmental change and descriptions of issues affecting particular locations.

National Geographic's website includes hundreds of science and geography lesson plans for fifth and sixth graders. The site also features printable maps, photographs, online exhibitions, and games.

Extension

Individually, students will write a journal entry imagining daily life in the Bahamas. They may choose to write about their experience in either the present day or the time this painting was created (1885). In picturing themselves in this setting, they should consider the following questions: How would the climate affect what you wear? what you eat? the kinds of outdoor activities you would enjoy? Based on the geography and natural resources of the Bahamas, what kinds of jobs are available on the islands?

Cazin in the Quarry

Grade Level: 5–8

Using Cazin's painting *The Quarry of Monsieur Pascal near Nanterre*, students will hypothesize about the workings, setting, and size of this French quarry. Then, applying his working method of "memory painting," they will draw or paint a setting from memory after close observation without taking notes or preparatory sketches.

Jean-Charles Cazin

French, 1841–1901

The Quarry of Monsieur Pascal near Nanterre, c. 1875

Materials

- Drawing or painting materials
- Copies of the "Climates Around the World" map

Warm-up Questions

Do you have a sense of how large this quarry is? Quarries can cover hundreds of acres. How did Cazin paint Monsieur Pascal's quarry so that it looks very deep and wide? *(The people are different sizes as they recede into the distance. The wall of the quarry takes up two-thirds of the painting. All that is seen beyond the fence is the sky.)*

Background

The quarry in this painting was probably located at the foot of Mont-Valérien in Nanterre, a small town located thirteen kilometers (about eight miles) west of Paris. The area, along the River Seine, is rich with limestone. It is thought that the man wearing a suit in the left foreground of the painting is Monsieur Pascal, the owner of the quarry. It isn't known whether he commissioned Jean-Charles Cazin to paint the scene or whether the quarry simply caught Cazin's eye.

Jean-Charles Cazin

French, 1841–1901

The Windmill, probably after 1884

The Quarry of Monsieur Pascal was painted early in Cazin's career, perhaps after his return to France in 1875 after living in England for five years. He painted realistic scenes from the world around him, in addition to being a ceramist and a sculptor—this may have added to his interest in the quarry. Around 1875, he created a number of other paintings of suburban workers, including dockworkers and boat wrights. All of these paintings, like *The Quarry*, have the same palette of yellows and browns and the same overcast sky.

Cazin studied with a teacher who advocated a method called "memory painting," in which the artist relied on intense preliminary scrutiny rather than painted studies made during extended time on-site. Consequently, *The Quarry* almost certainly was painted in the artist's studio in Normandy, based solely on his memory and without the aid of sketches.

Guided Practice

- What natural resource is the subject of this painting? *(Limestone.)* The River Seine flows near Nanterre, where the quarry was located. What advantage did this quarry have by being

near the river? *(Convenient transportation of stone.)* Use your imagination to decide how the resource could be used in nearby Nanterre.

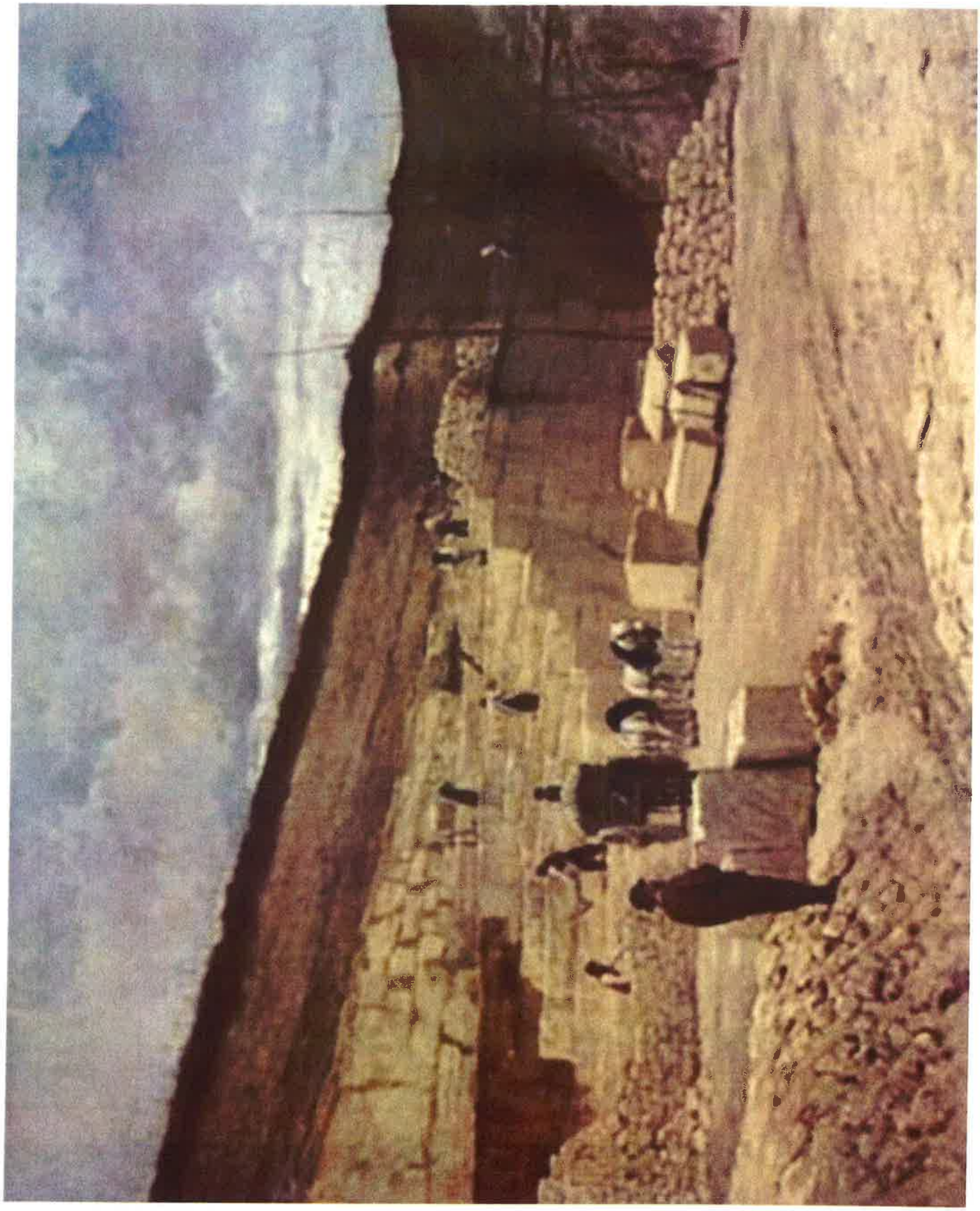
- What different jobs are depicted in this scene? What would it be like to work here? What are the horses for?
- What does the painting tell you about the kinds of technology used to quarry stone in the 1870s? In what ways could the technology be different today?
- Hypothesize about what the climate might be like in Nanterre. What clues does the artist give? *(Men dressed warmly and an overcast sky suggestive of rain indicate a cool temperate climate. Use the "Climates Around the World" map to assist students.)* How would you describe the weather in this painting?
- When people are finished quarrying a site, a huge pit is left in the ground. If you were the owner of the quarry in Nanterre, how might you refurbish the area when you are finished taking stone from it? *(One idea might be to bring in topsoil to line the floor of the quarry and grow a garden on the spot. Visit Butchart Gardens's website to see the transformation of an abandoned limestone quarry into public gardens.)*

Activity

Students will create their own "memory painting" of a place around their home, school, or neighborhood. No notes or preparatory sketches are allowed; rather they should use their keen sense of observation. Remind them the longer they look the more they will see and etch into their memory. Once they return to the classroom, they will draw or paint this scene from memory incorporating as many details as possible.

Extension

Depending on the setting of the student's work of art, the class should either go to the site or the student artist should bring in a photo of the site for comparison. Critique should begin with comparing the remembered depiction versus the actual site. Students should discuss the hurdles they faced when confronted with drawing from memory. Was it hard to remember exact colors? sizes of objects in relation to other objects? placement of shadows and highlights? What was easier to remember? Why do you think this object or area stayed clearer in your memory? Is it something that holds a special significance or a more common object one sees often?



Miró on the Farm

Grade Level: 5–8

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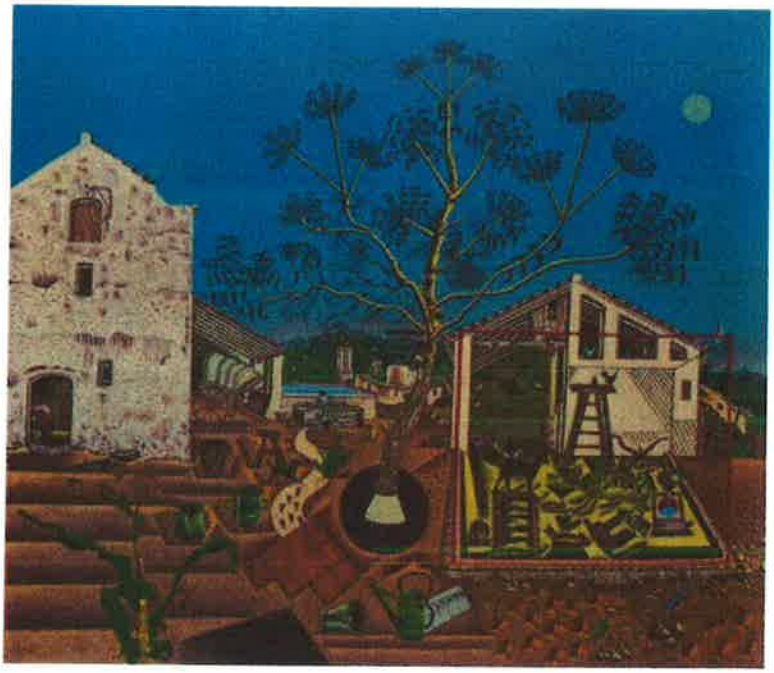

Joan Miró

Spanish, 1893–1983

The Farm, 1921–1922

Materials

- Rain gauge
- Computers with internet access for student research
- Drawing and writing materials
- Graph paper and two colored pens or pencils
- Copies of the "Climates of the World" map