



Teacher Connection

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The Newsletter of The Wild Ones
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How To Use This Newsletter

Spread The Word On Conservation And Develop Your Skills In Publication

With this issue on wetlands and colonial waterbirds, *The Wild Times* is making its debut in electronic format. The digital format gives you, the teacher, even more opportunities to use this newsletter in your teaching.

Of course you can continue using it the way you always have – as a reading and science resource in class. Here is another idea. Start your own environmental newsletter. Simply download the newsletter and use it as the center insert for your own local environmental publication. This is exactly what some of the Wildlife Trust international partners are doing!

Remember to teach your students the importance of acknowledging the source of information by including the line “Reprinted with limited permission from The Wild Ones and Wildlife Trust, © 2000” in the body of the newsletter.

Don't forget to send us a copy and let us see how *The Wild Ones* works for you!

Thanks! --- The Editors

Colonial Waterbirds and Wetlands

Colonial waterbirds are species like gulls, terns, herons, and ibises, which nest on islands or in wetland habitat. As colonial birds, they are in reproductive synchrony. They build their nests in close proximity to each other and raise their young at the same time. Some species nest on the ground, e.g. gulls, and some nest in trees, e.g. egrets. They typically feed outside the immediate nesting area, sometimes traveling great distances to acquire sufficient food to feed their offspring. Most colonies are spatially stable over time, with individuals returning annually to the same site. Some colonies, however, are more ephemeral and may undergo geographic shifts in position over time.

Waterbirds are of major conservation importance because most are at risk. The major threat to their continued existence is degradation and loss of wetland habitat. In a colony, large numbers of individuals live together in dense concentrations. Therefore, relatively small-scale changes in habitat can affect large numbers of birds at once. Consequently, colonial waterbirds are considered good bioindicators of the state, or health, of wetlands.

When periodic movement of a colony's location or a sudden abandonment of a breeding colony is caused by human disturbance, then the issue becomes greater than the loss of a

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breeding season. The issue becomes the ecological health of the habitat and the future of all living things that depend upon it. Ultimately, the health of the habitat and its wildlife will reflect what is happening to the health of humans and our ecosystem. We will discuss these types of interactions in future issues of *The Wild Times*, because one major focus of Wildlife Trust research is to examine connections among ecosystem health, wildlife health, and human health as part of an evolving discipline called Conservation Medicine.



Tri-colored heron of Biramas Swamp, Cuba
Photo by Lourdes Múgica

Wetland Indicators

When is a plot of land a wetland? It should be obvious! Swamps and marshes are easy to identify as wetlands. But what about seasonal wetlands or bogs? These areas may dry out during part of the year or simply not look very wet. It is critical to teach your students that a wetland may not be easy to recognize during all times of the year. When delineating wetlands, seasonality needs to be taken into consideration. When in doubt, remember the three wetlands indicators: evidence of water, specific types of soil, and specific types of vegetation.

1. Evidence of the Presence of Water (Hydrology)

- Standing or flowing water for seven or more consecutive days during the growing season
- Waterlogged soil: determined by digging a 12-inch-deep hole and then checking for water in the hole; or by looking for soil that glistens

with water; or squeezing water from a handful of soil.

- Water marks on trees or small piles of debris lodged in trees or piled against other objects in the direction of water movement near river systems

2. Wetland Soil Types

- Check with the County Conservation District (CD) for a soil survey and a list of soil types that occur in wetlands.
- Check for a blue or gray color about a foot below the surface. Your local CD office may describe other color characteristics to look for.
- Look for organic matter such as peat or muck. In salt-water areas, smell the soil for an odor like rotten eggs.

3. Wetland Vegetation

- More than 5,000 different plants grow in wetlands.
- Look for plants such as water lilies, cattails, arrowhead, smartweed, pondweed and other plants in standing water

- Look for grasses such as reed canary grass, barnyard grass, *Phragmites*, rushes, and sedges
- Trees such as willow, white cedar, cottonwood, silver and red maple, green ash, tamarack, pin oak, and elm

What is the Ramsar Convention?

Ramsar is a city in Iran where an intergovernmental meeting was held in 1971 to discuss wetlands. This Convention on Wetlands, popularly known as The Ramsar Convention, was a critical turning point in development of the new 'wetland ethic' of protection and preservation of habitat heretofore considered to be 'wasteland'.

The Convention was adopted in February 1971, and entered into force in 1975. The Ramsar Convention provides a framework for national action and international cooperation for the conservation and wise use of Wetlands and their resources.

Today there are 123 contracting parties to the Convention, with 1042 Wetland sites, totaling 78.4 million hectares, designated for inclusion in the Ramsar List of Wetlands of International Importance.

The Ramsar website is:
<http://www.ramsar.org/index.html>

The Wild Ones

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The Wild Ones

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Meet the Scientists

One of the unique features of *TWO* is our association with Wildlife Trust Project Leaders and conservation partners.

Your students can meet the scientists by visiting *TWO*'s web site (www.thewildones.org/scientists.html). Have your students take some time to read the biographies of the researchers as well as their research articles and other background information on featured animals and habitats posted on *TWO*'s site.

After spending time at the website, your students may email the scientists to ask them any unanswered questions they may have. Please, before they send their questions, urge your students to find the answers to basic questions on their own.

Asking The Wild Ones Scientists

Students are encouraged to ask the scientists questions via e-mail. Before questions are sent to the scientists, teachers should consider having a conversation with students about how to ask questions of experts, what kind of questions should be asked or not asked, and how to compose a letter to ask questions.

Students should carefully consider their questions. Are these questions that could be better answered through reference books, other web resources, or a video about the animal or habitat?

Questions should be direct and specific. Asking one of the scientists,

“Please send me information on the zebra,” is an impossible request to fill. However, a question like, “How many zebras exist in the wild,” is a specific question that can be answered.

Questions should be asked of the person who studies that animal or habitat. Patricia Moehlmen's work is in Africa, so asking her about animals or habitats in South America would not yield a satisfactory answer.

If more than one student in your class needs to ask questions of the same scientist, help them to compose a group letter.

Students should identify themselves by first name and grade or age. By giving only first names, the identity of minors is protected, and the age will help the person answering the questions gauge the language they will use in their response.

Make sure each message has a valid email return address. Over the years we have received several excellent questions that cannot be responded to because the return address is missing or incorrect.

Finally, let your students know that responses may take some time to receive. Keep in mind that most of the conservation biologists are field researchers. That means they can spend considerable periods away from their computer.

Wetlands and Waterbirds

Discuss the contents of this edition of *The Wild Times* with your students. If

they have questions they would like to ask the Wildlife Team, please email us at the following addresses:

Wetlands research: Lourdes Múgica
poey@comuh.uh.cu

Mapping wetlands: Ellen K. Hartig
hartig@wpti.org

Colonial Waterbirds: Susan B. Elbin
elbin@wpti.org

Impressions of Wetlands

Have your students draw pictures how they think each of the following wetland habitats looks. Then have them look up the characteristics of each habitat type and see how well they did.

Beach

Mangrove Forest

Lake

Swamp

Salt Marsh

River

Bog

Marsh

Wetland Field Trips

by Pat Delaney, Indian Mills Memorial School, Shamong, NJ

(An earlier version of this first section appeared in *The Wild Times Teacher Connection* V3N1, Fall 1997)

Wetlands occur all around the world, with the exception of desert and arctic regions. These areas are characterized by fresh, salt, or brackish water, and can occur seasonally or year-round. As a result, the plant species that grow in wetlands are water tolerant or specific to very wet conditions.

Wetland residents include animals from very simple one-celled organisms, to macro-invertebrates, to mammals and birds. Representatives from all these animal groups spend part to entire life cycles in these wet areas. It is to these wetlands that this field trip takes us.

Once you have located a wetland area, it is important to first determine that the area is public land. These include federal, state, county, or local parks, wildlife preserves or reserves. Call the proper agency to make sure the onsite activities you have planned are appropriate for the area. It is usually possible to obtain useful background information about these areas and the species that inhabit them from local rangers, naturalists, Audubon Society, or other nature groups.

Pre-Site lessons should begin with a description of wetlands, including photographs, videos, or filmstrips of the types of wading birds

the students may encounter during the field trip. Types of food, nesting sites, and migratory patterns are just a few of the topics that students will be interested in learning about. Students can brainstorm as to which other animal species will also inhabit the wetland area.

Field Trip Equipment

- insect repellent
- hand nets
- plastic sheets or large plastic basins (about 1 square meter)
- boots or old shoes
- specimen containers - transparent plastic containers or cups
- spoons or tongue depressors
- magnifying glasses
- binoculars
- field guides (Golden Books, Peterson, or Audubon Society publications, for example)
- clipboards
- notebooks
- pencils

Optional Equipment

- water quality test equipment (i.e.: dissolved oxygen, nitrate, phosphate, pH, chloride)
- thermometers
- still cameras and film
- video cameras and tape
- audio recorders and tape
- art supplies

When you first arrive at the field trip destination, have your students describe how the area fits the wetland classification. Explain the type of wetland it is (e.g. marsh, bog, forested pond, stream, or lake, vernal pond, etc.) and the source of the water (e.g. tidal, rain, groundwater, etc.). Point out and identify, or have the students identify, a few of the

plant species including trees, bushes, grasses, and sedges. Common names for plant and animals are usually specific enough for the exercise. Most students tend to be intimidated by the scientific genus-species names.

Have your students take a few water samples in the small plastic cups. Using magnifying glasses, students should make a quick search for small insects and other invertebrates. Collect samples from various depths and in varying amounts of vegetation and compare the type and variety of animals found in each sample.

Netting

The actual use of nets is one of the most exciting activities for the students and will work best with students working in groups of two or three.

Standing along the edge of the water, instruct the students to drag the nets along the bottom of the water body. On bringing the net to the surface, they are likely to catch mid-depth and surface species as well. Students should drain their nets over the body of water and then turn its contents onto a plastic sheet or basin adjacent to the water body. Using the plastic spoons, the students can carefully spread out and sort through the netted material. They must be on the look-out for any type of motion. Many species will be camouflaged and are not easily seen.

Insects, fish, and amphibians that have been captured can be placed in plastic jars or cups with water for a brief time for observation. All creatures should be handled with respect, taking care not to injure

them or allowing them to dry out. At this point specimens can be observed, sketched, identified, and released. It is really only necessary to identify general animal types (e.g. insects, snails, salamanders, fish, etc.). The netted materials that were emptied on the plastic sheet or basin must be returned to the water. There are bound to be many organisms too small or cryptic to be seen. The students will be seeing where wading birds live and, from their netted example, what types of food they may be consuming.

The final step for this exercise is to actually observe one of these birds. This could be the most difficult activity of the field trip. All the planning in the world cannot guarantee that a crane, an egret, a heron, or other wading birds will be at the site when a large group of noisy students arrives. If the students are unable to locate any wading birds, even with the aid of binoculars, you might try moving to another area of the wetland that has not been disturbed. Often, working in smaller groups will help facilitate their locating birds.

After the students and equipment are back on the bus, it still may be possible to see wading birds from the vehicle if you wind up driving along the wetland. If this is the case, a longer, more scenic route back to school might be in order. Of course, if all else fails, there is always a visit to the local zoo which might have large, graceful wading birds on exhibit.

[Pat is a member of The Wild Ones Advisory Council and teaches science at Indian Mills Memorial School, Shamong, NJ.]

Wetland Mapping

Once you have identified the wetland you will visit, adding a mapping component to the field trip should enhance the students' appreciation for the habitat. (It will also give them something to focus on if there are no animals to observe!)

Background Information

We have learned from this newsletter that wetlands are not always "wet". Ask your students how they think wetlands are mapped. Scientists not only use water as a guide, but also use diagnostic plant and soil types as wetland indicators. Water, plants, and soils all aid in how to map the boundary line between the dry land and the wetlands.

New maps of wetlands are being prepared by the United States Fish & Wildlife Service (USF&WS). Ask your students why it is important to produce new maps. The discussion should include the idea of the critical importance of exact wetland delineation for town planning: what lands need to be protected; what lands need to be preserved? Maps need to be updated for several reasons: more detail may be needed; water might flow differently now than in the past; methods for mapping the wetlands may be more accurate now.

How is the basic map plotted? Today maps are made from aerial photographs taken from low-flying airplanes. The photographs are overlapped and viewed with a special magnifying stereoscope. This allows the cartographer to see the photographs in three dimensions (3-D). With the

draft maps completed, scientists visit the wetland site to double-check their interpretations of the photographs through a process called "ground truthing". After scientists have checked them, a final set of USF&WS maps can be printed and made ready for distribution to the public. The maps can then be used in planning how to avoid building in wetlands as much as possible.

Mapping Activity Equipment

graph paper
pencil
compass

Procedure

Have your students draw a map of the wetland area you are visiting. They should draw it to scale as accurately as they can. They need to include a key and compass directions on their drawing.

Next have them draw a map of what they think it will look like in 20 years, when they take their own children there. Have each student of group of students present their maps to the class. Discuss why they think it will or will not be different.

Editor's note: There are 2 excellent websites to use along with this activity. The USA mapping option on the USFW website: http://wetlands.fws.gov/mapper_tool.htm illustrates part of the process. The Wetmap website is exceptional for a pictorial overview of wetlands in Louisiana and a demonstration of using different types of mapping. You can have your students compare aerial photographs of the same site from year to year. Click on the "resources" button.

<http://www.rac.usl.edu/wetmap/>

Wetland Type	Characteristics	Examples
Marine	ocean water and the minerals nutrients contained therein	reefs, ocean and beach, and marine aquatic beds
Estuarine	mixture of freshwater and ocean water	salt marshes, brackish tidal marshes, and mangrove swamps
Lacustrine	associated with lakes	freshwater marshes, aquatic beds, and lakeshores
Riverine	any habitat fed by water flowing through a channel	river banks, streams, freshwater marshes, and freshwater aquatic beds
Palustrine	any inland wetland which lacks flowing water and contains ocean derived salts in low concentrations (less than .05%)	inland marshes and swamps as well as bogs, fens, tundra, and floodplains

Next Issue... Human/Wildlife Conflict

As human populations increase and cities, towns, and villages grow, wildlife habitats become more fragmented and degraded. People and wildlife are, in essence, competing for the same physical space. For example, wild animals may wander out of protected parks and reserves and look for food in towns and villages. How can people and wildlife share resources so we can all have our needs met?

In the next newsletter you will learn about what Wildlife Trust researchers are doing to help resolve these problems. Please encourage your students to share their artwork, poetry, and observations!

Submissions are due by **March 1, 2000.**

Mail or email your submissions to:
 Wild Ones at Wildlife Trust
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 Palisades, NY 10964-8000 U.S.A
 elbin@wpti.org

Answers to Wetlands Word Search

Wetlands

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P R M O T C E C T A N D P N R
E S E A O R V E T H E M - O -
E K A L E - S - - - - - R -
- - O H - R - W - - - - - E -
- N T S - - T - A - - - - H -
Y - E R - - - S - M - - - - S
- - R A - - - - - P - - - I
- - G M - - - - - - - - B
- - E - - - R G N B O - G - I
- - - - - A - - O G R - - - -
S A L T M A R S H O R E - - -
- - - S - - E - - - - O T - -
- - A - - - V K C U D - V A -
- R - - - - I - - - - - E W
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Hidden Message: PROTECT AND PRESERVE THEM

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www.thewioldones.org/wwwboard/wwwboard.shtml
username: twomember **password:** tamarin