



Suggested Curriculum and Instruction:



Wetland and Riparian Areas

Let us know what you think of our curriculum at kwatson@montana.edu.

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- A Guide to Goals and Resources
- WOW: Wonders of Wetlands Educator's Guide

The WOW! Wonders of Wetlands Book is available for purchase at <http://store.projectwet.org/index.php/catalogsearch/result/?q=wow&x=0&y=0> OR for rent by contacting us at kwatson@montana.edu.

Background Information

Become an Instant Wetlands Wizard

This is the basic information you will need to conduct nearly all of the lessons in this binder. Additional background information is provided with the activity itself, if necessary.

What are wetlands?

Wetlands are permanently or temporarily wet areas that support plants and animals specially adapted to wet conditions.

The types of plants and animals found in wetlands depends on:

- the water, for example, the amount, depth, permanence, temperature and the chemicals found in it
- its source, for example, groundwater, surface water or rainwater.

What makes wetlands special?

Wetlands are important storage areas for floodwaters. Think of a wetland as a giant sponge. Wetland plants slow the flow of water off the land, soaking up excess floodwater, and then slowly releasing it to maintain summer water flows.

Wetlands also act like 'kidneys' by filtering and cleaning the water that flows through them. Wetland plants trap sediment suspended in water, improving water quality. In riparian areas, their roots hold riverbank soil together, reducing erosion. Bacteria living in wetland soils absorb and break down nitrogen from farm run-off and leaching, improving water quality.

Healthy peat wetlands are important sinks for excess carbon, implicated in potential global warming. Find out more about how the drainage of peat releases large amounts of carbon dioxide (CO₂).

Get your class to think about what other functions wetlands might perform. Ideas could include:

- recreational activities, such as fishing, hunting, photography or birdwatching
- a place where historical artifacts, such as plant fossils are preserved in the peat
- a nursery for fish, insects and nesting birds.

Types of wetlands

Wetlands come in many shapes and sizes. They range from ponds, swamps, bogs and slushy areas in paddocks to lagoons, estuaries, ditches and water races. The water they contain can be fresh, brackish, or salty.

Wonderful Wetland Activities for All Ages



The Function of Wetlands¹

Grades: 5 through 12

Objective: Teach students about the functions of wetlands.

Duration: 45 minutes to one hour.

Materials:

Part One: Bill Nye Wetlands DVD (included), DVD player and TV/projector

Part Two: water, gallon size container, vinegar, food coloring, vegetable oil, Oreo cookie

Procedure:

Part One

1. Show the Bill Nye the Science Guy Wetlands Video (26 minutes)
2. Review the function of wetlands
 - Store water
 - Buffer against erosion during flooding
 - Natural filter of pollutants
 - Breeding ground for birds, fish, and insects
 - Natural habitat for wildlife
 - Feeding and resting grounds for migrating birds
3. Discuss how you could demonstrate water storage, buffering against erosion during flooding, and natural filtering of pollutants.
4. Discuss the difficulty that humans would have trying to replicate the natural function of wetlands.
5. Discuss the difficulty in creating a filter system to accomplish what wetlands accomplish naturally.
6. Discuss the difficulty wetlands would have removing “unnatural pollutants” such as oil.
7. Compare and contrast this method of cleaning water with water filtration systems, city water/sewer facilities, etc.

Part Two

1. Make a one gallon mixture of a variety of substances. One popular mixture is vinegar, food coloring vegetable oil, Oreo cookies and water. Do not tell the the students what is in the mixture.
2. Tell students that they have three days to come up with the best “artificial wetland” filtration system that they can make using household materials. (take home portion)
3. Hold a brief competition to see whose “wetland” does the best job of filtering out the pollutants. Allow each student the opportunity to explain the design before you pour the mixture into their model.
4. Discuss the challenges students faced during the construction period.
5. Discuss the attributes of the wetland that each student sought to replicate with their model.

¹ Adapted from “Wetlands: An Interdisciplinary Exploration” (Summer 2004) Wilson Company. Available at: http://www.utoledo.edu/education/departments/ci/DOCS/czerniak_wetlands.pdf

Shrinking Wetlands²

GRADES: 4-12

SUBJECTS: Communications, Earth Science, Government, Science, Social Studies

SKILLS: application, comparison, discussion, inference, interpretation, observation

DURATION: 1 hour

GROUP SIZE: at least 12 students

SETTING: indoor or outdoor play area

CONCEPTUAL FRAMEWORK: Awareness and Appreciation of Wildlife, Human Values and Wildlife, Wildlife and Ecological Systems, Wildlife Conservation, Cultural and Social Interaction with Wildlife, Wildlife Issues and Trends: Alternatives and Consequences, Wildlife, Ecological Systems, and Responsible Human Actions

KEY VOCABULARY: wetland

MATERIALS

- 4 orange cones or boundary markers set up in 50'x50' (approx) square
- 1 soft dodge ball for primary; 2 or more, soft dodge balls for intermediate
- 3 armbands or bandannas
- stick-on labels
- 1 stopwatch
- 1 whistle

OBJECTIVES: The student will be able to:

1. Describe a wetland.
2. Identify plants and animals of a wetland.
3. Identify human occupations that can shrink wetlands.
4. Describe the effects of a shrinking wetland on its plants and animals.

METHOD: Students simulate a wetland that is shrinking.

² Adapted from “Wild About Wetlands” (2005). Available at:
<http://idahoptv.org/dialogue4kids/season6/wetlands/classroom.cfm>

BACKGROUND

The United States has lost more than half of its wetlands, and the loss continues today. These habitats depend on a complex and sensitive balance of hydrology. When that balance is upset, wetlands suffer. One of the chief ways to upset this balance is through reducing the size of wetlands. Direct means of reduction include the following: Farmers and ranchers drain or fill wetlands to convert the land to croplands or pasture; urban development drains or fills wetlands to create land for buildings, roads, and other construction; industrial logging compacts the soil with machinery or alters the vegetation; mining compacts soil, alters vegetation, digs up or fills wetlands. Wetlands also shrink through indirect means. For example, a logging operation may construct a road uphill from an inland wetland. The road doesn't directly impact the wetland, but it blocks water from flowing into the wetland, and thus the wetland eventually shrinks. Irrigation can destroy area wetlands by withdrawing ground water that wetlands may depend on. Often times, people who impact wetlands don't realize the effects of their actions. But many people and programs exist to help landowners, developers, and others find out if wetlands exist on their property and how to protect these habitats. Federal, state, and local laws require that wetlands be identified and protected, or that damage to them be mitigated somehow. The public can assist in this effort by knowing the laws and regulations, and paying attention to what is happening in their communities.

PROCEDURE

1. Discuss wetlands and their value with the students.
2. With the class, make a list of plants and animals that live in wetlands. Then make a list of pollutants that occur in wetlands. Post these lists where students can see them.
3. Tell the class that they will have to divide into two teams with equal numbers of students. The teams have the following roles:

Wetland Team:

- 1 wildlife agency employee
- 1 biologist
- 1 informed citizen
- Each remaining student chooses a plant or animal from the list.

Developer Team:

- 1 person in agriculture
- 1 urban developer
- 1 logger
- 1 miner
- Each remaining student chooses a polluting factor from the list.

4. Ask all the students to label themselves or otherwise visually identify themselves. The three "human" members of the Wetland Team are the only students who can wear armbands. The rest can mark themselves with stick-on labels, etc.

5. Have the students set up the playing area, and mark an area where students who are out of the activity will gather.

6. Give the students these instructions:

A. The Developer Team members stand outside the perimeter of the playing area. They will try to hit members of the Wetland Team with the ball.

B. The plant and animal members of the Wetland Team have to dodge the ball. If they are hit, they are out.

C. The "human" members of the Wetland Team defend the plants and animals by trying to catch the ball. If they catch the ball, the Developer who threw the ball is out.

7. Begin the activity. When a few members of the Wetland Team are out, stop the activity and adjust the boundaries. Have the Developer Team take a step forward; this sets the new boundaries. Do as many rounds as you need to show the shrinking wetlands.

8. End the activity with enough time left to discuss the results.

- A. Review the numbers of each team that were out in the first part of the activity, and then with each successive reduction in wetlands area. Discuss what this may mean for a real wetland.
- B. Discuss where each of the "out" members would go if this were a real wetland. Where would a bird go? An orchid? A salamander? Where would a logger go to make a living? A miner?
- C. Could the occupations represented by the Developer Team be continued next to a wetland without destroying the wetland? How?

EVALUATION: Have the students write a description of this activity, complete with explanations and discussion.

EXTENSIONS:

1. You can make this a competitive activity by timing how long it takes to get each team member out. Compare the times for the two teams. Discuss how the times change as the wetland shrinks. Discuss how this simulates true wetlands situations.
2. Choose a local wetland and find out if it is shrinking and if so, why.

Hold the Load³

GRADES: 4-12

SUBJECTS: Science, Earth Science

SKILLS: communication, comparison, discussion, inference

DURATION: 1 hour

GROUP SIZE: at least 20 students

SETTING: outdoors

CONCEPTUAL FRAME WORK: Wildlife and Ecological Systems

KEY VOCABULARY: contaminant, load, pollutant, sediment, wetland

MATERIALS:

- large outdoor area
- paper grocery bags, 6-7; cut them to one-half their normal height
- dozens of objects about the size of a tennis ball (balls of any kind, half-pint milk cartons, individual yogurt containers, sponges, wads of paper) enough to fill each bag to overflowing
- Rules for the 3 Roles: Water, Soil, Plants

OBJECTIVES: The student will be able to:

1. Describe typical pollutants of waterways.
2. Describe how wetlands remove these pollutants.
3. Explain why wetlands are essential to clean water.

METHOD: Students simulate the movement of pollutants into and through a wetland.

^{3 3} Adapted from “Wild About Wetlands” (2005). Available at:
<http://idahoptv.org/dialogue4kids/season6/wetlands/classroom.cfm>

BACKGROUND: As water moves through agricultural and urban land, it picks up many contaminants. Examples include excess phosphorus and nitrogen, which are components of fertilizers used on croplands and on lawns; and sediment. When a stream is cloudy due to extra sediment, it is said to be carrying a "heavy sediment load." These contaminants wash into waterways during storm events, floods, and through normal irrigation and other types of watering. Wetlands play an important role in reducing the load of contaminants in water. As a stream or river flows into a wetland, the dense vegetation slows the water. As water slows, sediment and contaminants settle out. Wetland plants absorb some of these contaminants and wetland soils neutralize others. Water that flows out of a wetland is cleaner than when it came in. But as it continues through its cycle, it will undoubtedly pick up more contaminants and carry those contaminants until it flows through another wetland.

PROCEDURE:

1. Discuss types of pollutants- nutrients, metals, etc.-that might occur in a stream or lake .
(Do not discuss wetlands; this is part of the last step of this activity.)
2. Explain the term "load," which is a term used to describe the amount of pollutants in water. (See background for an explanation of this and other terms.)
3. Explain that each of the dozens of objects in the paper bags represent a type of load.
4. Make sure the bags are overflowing with "loads."
5. Mark an area at least 30' x 60' outdoors. Tell the students that the area within the boundary is a lowland. The area outside the boundary is an upland.
6. Ask 6-7 students to be water; 2 to be soil. The rest will be plants.
7. Hand out the rules for each position, and make sure the students understand the rules for each position, not just their own. (One way to do this is to have each group of players explain their rules to the entire group.)
8. **Conduct the activity:**

A. **ROUND ONE:** Ask the plant players to observe this round. Ask the two soil players to enter the lowland. Position the water players in the upland and instruct them to run through the lowland three times. (Make sure the students run! Their loads should spill out.) When all the water players have completed their runs, assemble the students and record the amount and locations of the loads.

B. **ROUND TWO:** Ask half the plant players to position themselves in the lowland. Return the soil players to the lowland. This time, instruct the water players to walk through the lowland three times. Repeat the evaluation at the end of the round.

C. **ROUND THREE:** As per Round Two, but with all the plants in the lowland.

9. List two or three questions about this activity so that all students can see them. The questions provided can also help guide the discussion in the last step.

10. Ask the students to divide themselves into three groups and discuss the questions you have listed and to list five more questions of their own about what happened in this activity.

11. Regroup and discuss the questions. Introduce the concept of wetlands.

EVALUATION

Give the students 15 minutes in their small groups to devise a way of explaining what happened in this activity. They can sketch out a poster, outline a narrative, record a mock interview, etc.

EXTENSIONS

1. Apply the principles of this activity to a wetland in your area.

2. Have students apply the principles of this activity to one of the major types of wetlands.

PLANTS

1. Your objective is to collect "load" from the water players.
2. You must pick one place to stand and remain rooted there. You cannot move your feet, but you can bend and lean and reach with your arms.
3. When you tag a water player or a "water " bumps into you, you will receive one piece of "load" from that player.
4. Every other piece of "load" that you receive you must throw away. Try to aim for the upland, but don't worry if some fall within the lowland boundary

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SOIL

1. Your objective is to collect "load" from the water players.
2. Because "soil" is everywhere, you are free to walk or run all around the lowland area.
3. When you tag a water player, you will receive one piece of "load" from that player.
4. You cannot immediately retag that player; you must pursue another water player.
5. You must hold all of your "load" any way you can as you continue pursuing water players. If you drop a piece, you must pick it up. You can use your pockets, etc., to hold the pieces.

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WATER

1. Your objective is to carry your bag through the lowland without losing any of your "load."
2. If a "load" falls on the ground, you must leave it there.
3. If you are tagged by "soil" or "plant," you must give a "load" to that player.
4. When you get to one edge of the playing field, you must step outside the boundary and walk through the upland area back to the starting line.
5. As you walk through the upland area, refill your bag.
6. You can run if no "plants" are present.
7. You must walk if "plants" are present.

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K to 4



One Day Unit



Choose One (table 1):

- WOW: Introducing Wetlands (one of the ideas)
- WOW: Let the Cattail Out of the Bag!
- WOW: Wetland Metaphors
- WOW: Wetlands in the Classroom!

Table 1: Correlations to state content standards and benchmarks.

	Introducing Wetlands	Let the Cattail Out of the Bag	Wetland Metaphors	Wetlands in the Classroom
Page #	71	78	85	80
Info Lit/ Library Media Benchmarks	1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6			
Math Benchmarks	1.3			
Reading Benchmarks	1.2, 1.3		2.3	
Science Benchmarks		1.1		1.1, 1.2, 1.4, 3.1, 3.2, 3.4
Social Studies Benchmarks	1.1, 1.2, 3.3, 3.4, 3.7, 4.1			
Technology Benchmarks	1.1, 1.2, 1.3, 1.4			1.1, 1.2, 1.3, 1.4, 1.5
Writing Benchmarks				4.2, 4.3

Three Day Unit



Choose One (table 2):

- WOW: Introducing Wetlands (one of the ideas)
- WOW: Let the Cattail Out of the Bag!
- WOW: Wetland Metaphors
- WOW: Wetlands in the Classroom!

Choose Two (table 2):

- WOW: Introducing Wetlands (Springo!)
- WOW: Do You Dig Wetland Soil?

Table 2: Correlations to state content standards and benchmarks.

	Introducing Wetlands	Let the Cattail Out of the Bag	Wetland Metaphors	Wetlands in the Classroom	Do You Dig Wetland Soils?
Page #	71	78	85	80	231
Info Lit/ Library Media Benchmarks	1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6				
Math Benchmarks	1.3				
Reading Benchmarks	1.2, 1.3		2.3		
Science Benchmarks		1.1		1.1, 1.2, 1.4, 3.1, 3.2, 3.4	1.1, 1.2, 1.3, 1.4, 1.5, 2.2, 4.2
Social Studies Benchmarks	1.1, 1.2, 3.3, 3.4, 3.7, 4.1				
Technology Benchmarks	1.1, 1.2, 1.3, 1.4			1.1, 1.2, 1.3, 1.4, 1.5	
Writing Benchmarks				4.2, 4.3	

Ongoing Unit



Choose Three or More (table 3):

- WOW: Introducing Wetlands (one of the ideas)
- WOW: Let the Cattail Out of the Bag!
- WOW: Wetlands in the Classroom!
- WOW: Wetland Metaphors
- WOW: Salt Marsh Players
- WOW: Nutrients: Nutrition or Nuisance (Part I or Parts II and III)
- WOW: What a Boat!

Choose Two or More (table 4):

- WOW: Introducing Wetlands (Springo!)
- WOW: Do You Dig Wetland Soil?
- WOW: Water We Have Here?
- WOW: Wet 'n' Wild
- WOW: Whose Clues?
- WOW: Nature's Recyclers

Table 3: Correlations to state content standards and benchmarks.

	Introducing Wetlands	Let the Cattail Out of the Bag	Nutrients: Nutrition or Nuisance	Salt Marsh Players	Wetland Metaphors	Wetlands in the Classroom	What a Boat!
Page #	71	78	188	165	85	80	278
Info Lit/ Library Media Benchmarks	1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6			1.1, 1.2, 1.3, 2.1, 2.3, 2.4, 2.5, 2.6			1.1, 1.2, 1.3, 2.1, 2.3, 2.4, 2.5, 2.6, 5.3
Math Benchmarks	1.3						
Reading Benchmarks	1.2, 1.3				2.3		
Science Benchmarks		1.1	1.4, 3.2, 3.4, 5.2, 5.4	1.4, 3.2, 3.4		1.1, 1.2, 1.4, 3.1, 3.2, 3.4	
Social Studies Benchmarks	1.1, 1.2, 3.3, 3.4, 3.7, 4.1			3.6			1.1, 3.3, 3.7, 4.1, 4.3, 4.5, 4.7, 5.6, 6.4
Technology Benchmarks	1.1, 1.2, 1.3, 1.4			1.1, 1.2, 1.3		1.1, 1.2, 1.3, 1.4, 1.5	1.1, 1.2, 1.3, 1.4, 1.5, 3.5, 4.1
Writing Benchmarks				1.2, 2.1, 2.5, 4.2, 4.3, 5.2, 6.2		4.2, 4.3	1.2, 2.1, 4.1, 4.3, 6.2, 6.4

Table 4: Correlations to state content standards and benchmarks.

	Introducing Wetlands	Do You Dig Wetland Soils?	Water We Have Here?	Wet'n'Wild	Whose Clues	Nature's Recyclers
Page #	71	231	174	99	104	226
Info Lit/ Library Media Benchmarks	1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6					
Math Benchmarks	1.3		1.5, 5.1, 5.2, 5.3, 5.4, 6.1, 6.2			
Reading Benchmarks	1.2, 1.3		4.2, 4.3			
Science Benchmarks		1.1, 1.2, 1.3, 1.4, 1.5, 2.2, 4.2	1.1, 1.2, 1.3, 1.5, 2.2, 4.2	1.1, 1.2, 1.3, 2.2, 3.1, 3.4, 3.5	1.1, 1.2, 1.3, 3.5	1.1, 1.2, 1.3, 3.4
Social Studies Benchmarks	1.1, 1.2, 3.3, 3.4, 3.7, 4.1		1.1			
Technology Benchmarks	1.1, 1.2, 1.3, 1.4					
Writing Benchmarks						1.1, 1.2, 4.1, 4.3, 5.2

Wetlands Reading List



Introduction

The *Wetlands Reading List* is an annotated list of printed material that will supplement lesson plans and provide students with suggestions for independent reading on wetlands. The goal of the list is to encourage students to explore and develop a respect, understanding and appreciation for wetlands. This is an attempt to foster our appreciation of our nation's remaining wetlands.

The intention is to reach the whole student, to transcend her/his intellectual understanding and to instill an arts and humanity awareness of a valuable natural resource. It is hoped that reading the books will motivate students to pursue further reading about the wetlands resource and encourage them to learn about wetlands through the arts and sciences and through applied hands-on experiences.

Books contained in the *Wetlands Reading List* include different types of literature. Factual, nonfiction, picture books and fiction titles are provided. Entries are listed alphabetically by grade level in the *Wetlands Reading List*: primary (pre-kindergarten to grade 2), elementary (grades 3 to 5), intermediate (grades 6 to 8) and secondary (grades 9 to 12). Grade level refers to reading level and not the level for being read to, except for some books described at the primary level which may be better read to the child. They are listed here because their large and abundant pictures and easy to follow story make them suitable for the primary grade level.

The target age of many books extends beyond the one grade level in which they have been placed. It is recommended the educator does not limit her/himself to the grade she/he teaches but to consider books in adjacent grade categories. A list of these books and the grade level under which they are discussed is located at the end of each section. The number of entries under each section varies, as does the information for each listing. Each title cites the author, publisher, date published, page length and grade range, and is classified by a special code as indicated below:

- E = Easy Reader (picture books)
- F = Fiction
- NF = Nonfiction
- SC = Story Collection, Anthologies

Following the citation is a *summary and comment*. The *summary*, written in phrases, sentences or sentence fragments, is intended to capture the essence of the book, be it plot or factual material. The *comment* provides more in-depth background information on the book and its significance in respect to the wetlands resource. Quotes are often included with an entry.

Most important is where one might find the books listed in the *Wetlands Reading List*. An asterisk (*) after a title indicates a book is in print and available through a book shop. If it is not on the shelf, many bookstores will special order a book. Many of the books may be obtained at a children's library, local public library, a school library, county or city park or environmental education center, children's book store or nature section in a book shop. Some are available through organizations such as the Sierra Club or the National Geographic Society.

The *Wetlands Reading List* is not intended to be inclusive of every book ever written on wetlands or to endorse the books listed here. There are many other excellent publications for children on wetlands. For example, the *Wetlands Reading List* does not begin to list every book - and there are many good publications-written on dragonflies. Titles serve as suggestions for starting points for the inquiring student and teacher seeking information on wetlands. Students and teachers are encouraged to expand their horizons beyond the list, to refer to other books by the same and other authors and to search out books covering similar subjects as those contained herein. A list of suggested topics and key words is provided in the back.

Key Wetland Topics

The books that are described in the "Wetlands Reading List" are only a few of the many that exist on wetlands and wetlands related topics. Readers unable to locate any of the books identified in the "Wetlands Reading List," will want to look for other books that may cover the same topic. Numerous more books have been and continue to be written on wetlands. A few key words for finding additional books on wetlands topics are listed below:

<i>alligators</i>	<i>insectivorous plants</i>
<i>amphibians</i>	<i>Lewis and Clark</i>
<i>bayou</i>	<i>lily pad</i>
<i>beaver</i>	<i>marshes</i>
<i>birds</i>	<i>muskrats</i>
<i>boating</i>	<i>nature writers</i>
<i>bogs</i>	<i>pitcher plants</i>
<i>carnivorous plants</i>	<i>ponds</i>
<i>cattail marsh</i>	<i>rivers</i>
<i>dragonflies</i>	<i>Seminole Indians</i>
<i>ducks</i>	<i>snails</i>
<i>estuaries</i>	<i>spring peepers</i>
<i>Everglades</i>	<i>streams</i>
<i>explorers</i>	<i>sloughs</i>
<i>fens</i>	<i>swamp</i>
<i>fish</i>	<i>toads</i>
<i>frogs</i>	<i>water</i>

Primary Level (Pre-Kindergarten through Grade 2)

Box Turtle at Long Pond, William T. George
Come Out, Muskrats, Jim Arnosky
Common Frog, Oxford Scientific Films
Dragonflies, Cynthia Overbeck
Fish Eyes, Lois Ehleert
If You Were a Wild Duck Where Would You Go?, George Mendoza
Let's Find Out About Frogs, Corrine J. Naden
Lily Pad Pond, Bianca Lavies
The Lorax, Dr. Seuss
Make Way for Ducklings, Robert McCloskey
The Noisy Counting Book, Susan Schade and Jon Butler
Old Mother West Wind, Thornton W. Burgess
Puddles and Ponds, Rose Wyler
Rain Drop Splash, Alvin Tresselt
A River Dream, Allen Say
River Parade, Alexandria Day
The Seminole, Emilie U . Lepthier
Spring Peepers, Judy Hawes
The Ugly Duckling, Hans Christian Anderson
Willa in Wetlands, Peyton Lewis and Rory Chalcraft

List of Additional Books for Primary Students

The sections describing these additional books are in parenthesis:

Animals of the Ponds and Streams, Julie Becker (elementary)
Explore a Spooky Swamp, Wendy W. Cortesi (elementary)
Frogs, Toads, Lizards and Salamanders, Nancy Winslow Parker and Joan Richards Wright (elementary)
Green Darner, Robert M. McClung (elementary)
In the Middle of the Puddle, Mike Thaler (elementary)
Marshes and Swamps, Linda M. Stone (elementary)
Wetlands: Bogs, Marshes and Swamps, Lewis Buck (elementary)

Primary Level (Pre-Kindergarten through Grade 2)

BOX TURTLE AT LONG POND*, William T. George. Greenwillow Books, New York; 1989; 30 p.; E

Summary: Compelling paintings of pond and surrounding community will captivate and appeal to children as favorite place to visit. Begins with box turtle emerging from its home in log to spend busy day in pond community looking for food, avoiding being eaten and finding shelter during rain.

Comment: Many ponds, including their shallow vegetated edges, are wetlands. Like many wetland environments, there are numerous animals and plants that are residents of the pond community. It is important to note that similar to other wetlands, many of the paintings in Box Turtle at Long Pond do not show water. Many wetlands like the bottomland community along the pond are wet only part of the year. They are considered wetlands because they are wet during the growing season long enough to support plants that occur in other wetlands.

COME OUT, MUSKRATS*, Jim Arnosky. Lothrop, Lee and Shepard Books, New York; 1989; 28 p.; NF

Summary: Colorful, realistic, pastel illustrations of wetlands. In late afternoon, muskrats come out of houses to swim in shallow wetlands and eat green water weeds, swim between water lilies and race among cattails until dawn.

Comment: Award winning artist, writer and naturalist presents the picture story, Come Out, Muskrats in his typical, accurate style. The muskrats are depicted as part of the wetland community with other Wildlife naturally found in wetlands, such as the Common Yellowthroat (a warbler), Wood Ducks and sunfish, as well as other animals such as deer and a fox, that frequent wetlands during the day to feed or drink. Muskrats commonly inhabit wetlands, including fresh, brackish, or saltwater marshes, ponds, lakes and rivers.

COMMON FROG, Oxford Scientific Films. G.P. Putnam's Sons, New York; 1971; 24 p.; NF

Summary: Superb breathtaking close-up photographs with simple, one sentence captions presenting life cycle of the common frog. A kindergartner could follow the story which is preceded by a more detailed introduction describing the physical habits, characteristics and environment of this species of frog occurring in Europe and United States.

Comment: Common Frog was prepared by a British team of renowned zoologists and photographers. Frogs and other amphibians, such as toads and newts, live on land and in water, and often occur in wetlands. Readers are encouraged to seek out other books on frogs and amphibians in general. The illustrated portion of the book begins with a scene of a wetland and a caption that common frogs live in dam areas, which is typical wetland habitat.

DRAGONFLIES, Cynthia Overbeck. Lerner Publications, Minneapolis; 1982; 48 p.; grades 1 to 3; glossary and index; NF

Summary: Attractive and informative. Provides easy to understand information on dragonflies, common members of wetlands communities. Explains the three stage process of development these insects undergo beginning in wetlands and other water bodies. Emphasizes the value of dragonflies and that they are not harmful.

Comment: Children are naturally curious about insects and dragonflies are no exception. It is important to remind children dragonflies are not harmful but rather very helpful as they feed on mosquitos. Dragonflies are found in many wetlands; some are indicators of good water quality. They are part of the food chain.

FISH EYES*, Lois Ehleert. Harcourt Brace Jovanovich, New York; 1990; 34 p.; pre-kindergarten to grade 1; E

Summary: Simple, easy to understand and written for the very young reader as she or he learns to count the brilliantly colored fish swimming through the pages. Actively involves the student in the lives of fishes while teaching the child to count the many fish as they begin their life cycle in wetlands. Invites reader to put on a suit of scales, fins and tail, then swim downriver (from where she or he is born into as a fish, perhaps in wetland adjacent to a river).

Comment: Wetlands serve as nurseries for many fish. Fishes are important members of the animal kingdom. They are also important to the food chain and the fishing industry. In *Fish Eyes*, Lois Ehleert introduces the student to the world of fishes.

IF YOU WERE A WILD DUCK WHERE WOULD YOU GO?*, George Mendoza. Stewart, Tabori & Chang, Inc., New York; 1990; 32 p.; pre-kindergarten to grade 2; E

Summary: A sophisticated picture with superb drawings and good text. A wild duck narrator looks at the past when the environment was bountiful and searches today through the polluted environment for a home.

Comment: With our wetlands rapidly disappearing, a wild duck has fewer and fewer places to choose for its home. Many that remain, are polluted. *If You Were a Wild Duck Where Would You Go?* will encourage readers to place value in saving and restoring our wetlands for the future.

LET'S FIND OUT ABOUT FROGS, Corrine J. Nadeen. Franklin Watts, Inc., New York; 1972; 44 p; grades 1 to 3; NF

Summary: Nice illustrations of frogs in wetlands habitats. Contains factual material about frogs in easy reading format suitable for children in the latter months of grade one to grade three, with information on: differences between frogs and toads, growth stages from egg to tadpole to adult frog and the community in which they live.

Comment: *Let's Find Out About Frogs* is one of many books on frogs, animals that - like other amphibians - live part of their life on land and part on water. All frogs must return to water to breed. They are commonly found in wetlands, making wetlands important to the life cycle of frogs. Other related book topics to look for are tadpoles, amphibians, salamanders, and toads.

LILY PAD POND*, Bianca Lavies. Dulton; 1989; 30 p.; kindergarten to grade 2; E

Summary: Colorful, eye-catching book with excellent pictures. Contains good ration of pictures to white spaces and text - an important feature in capturing the very young reader. Has nothing specific about mammal and little on plant life. Introduces concept of food chain at an easy to understand level.

Comment: Organisms are correctly named. In *Lily Pad Pond*, the colorful scenes of ponds and other wetlands are entertaining and depicted by easy to understand captions.

THE LORAX*, Dr. Seuss. Random House, New York; 1971; 68p.; pre-kindergarten to grade 3; E

Summary: A Dr. Seuss book - this one on the impact of environmental pollution. In the days when the grass is green and the ponds still wet, Once-ler comes to the glorious places and sees the glorious Truffula Trees growing mile after mile with their bright-colored tufts. In his beloved style, Dr. Seuss writes about the pond - "From the ripulous pond came the comfortable sound of the Humming- Fish humming while splashing around."

The Once-ler chops down the trees for their tufts, despite the warning of the Lorax, " a sort of man...shortish...oddish...mossy..." Then, the Once-ler builds a factory and cuts down more tufts, selling more and more tufts he makes into the ever-popular "Thneed." Unfortunately, his factory polluted the lands, even the pond:

"You're glumping the pond where the Humming-Fish hummed. No more they hum, for their gills are gummed. So, I'm sending them off. Oh, their future is dreary. They'll wall on their fins and get woefully weary in search of some water that isn't so smeary."

The final pages impart the message that the future of the environment is up to individuals as wisened Once-ler tosses the last Truffula seed to a passerby, saying:

"Plant a new Truffula. Treat it with care...Unless someone like you cares...nothing is going to get better. Then the Lorax and all his friends come back."

Comment: Like his other classics, Dr. Seuss writes in his true whimsical style but the message is the impact of greed and human development on the environment. The pond and its fishes and swans are impacted and forced to seek other homes to live if possible. Wetlands, like other resources, are limited. Only when individuals care for and protect wetlands in their community will they be conserved and restored.

MAKE WAY FOR DUCKLINGS*, Robert McCloskey. The Viking Press, Inc., New York; 1971; 72 p.; kindergarten to grade 2; E

Summary: Simple, well-illustrated drawings of mallards are very realistic. Begins with "Mr. and Mrs. Mallard" looking for a safe home to raise their family and attempting to nest in Boston Garden which quickly reveals many dangers. Ducks settle in a cozy spot along Charles River. Once ducklings hatch, Mr. Mallard departs for Boston Garden. Later, Mrs. Mallard leads ducklings across traffic and town to join Mr. Mallard at island in Boston Garden.

Comment: *Make Way for Ducklings* is a classic story for young children about a family of ducks. Ducks and other waterfowl are just one group of wildlife that breeds in wetlands. The loss of wetlands as nesting habitat for ducks through human activity such as draining and filling wetlands has greatly reduced the duck population.

Over ten percent of the Charles River Watershed in the Boston area consists of wetlands such as grassy marshes, swamps and damp meadows. The Charles River Watershed Association was founded in 1965 in response to increasing public concern over the environment and poor condition of the Charles River. One of the many programs sponsored by the Charles River Watershed, the Adopt-A- Brook program, enables schools and other organizations to care for the wetlands of the Charles River.

THE NOISY COUNTING BOOK, Susan Schade and Jon Butler. Random House, New York; 1987; 8 p.; pre-kindergarten to grade 1; E

Summary: Part of series, *A Just Right Book*; super-sturdy pages. Counting book with delightful, attractive and funny illustrations of a boy who goes to fish in a quiet pond but soon becomes frustrated as rising noise disrupts quiet when first one frog says, "Ga-Dunk," then two ducks say, "Wak," and noise increases until six mosquitos say, "Bzzz," at which point boy hollers, "QUIET!"

Comment: *The Noisy Counting Book* contains excellent representations of a pond that captures the essence of one type of wetlands with animals and plants that occur naturally in these areas.

OLD MOTHER WEST WIND*, Thornton W. Burgess. Heary Holt and Co., New York; 1990; 90 p.; pre-kindergarten to grade 4; F

Summary: Full color edition with extraordinary illustrations of this classic, the first of the *Old Mother West Wind* series, which was first published in 1910, will stimulate children's imagination. Stories involve many characters living in wetlands and other bodies of water: Jerry Muskrat, Billy Mink, Little Joe Otter, Spotty the Turtle and many more. The following is a passage from chapter, "Little Joe's Slippery Slide at the Smiling Pool," which children will enjoy:

"Peter Rabbit kept coming nearer and nearer until finally he stood at the top of the slippery slide. Billy Mink crept up behind him very softly and gave him a push. Peter Rabbit's long legs flew out from under him and down he sat with a thump on the slippery slide. "Oh," cried Peter Rabbit, and tried to stop himself. But he couldn't do it and so away he went down the slippery slide, splash into the Smiling Pool."

Comment: Stories from *Old Mother West Wind* with their mischievous characters like Billy Mink (above) are part of an American childhood. A major influence on children's literature, Thornton Burgess has written over 50 books for children, many on the lives of animals living in wetlands. Look for other titles of T. Burgess on individual animals from *Old Mother West Wind* that inhabit wetlands. His works emphasize the importance of wetlands to the lives of many animals. Burgess' books are ideal for reading to prekindergarten children.

PUDDLES AND PONDS*, Rose Wyler. J. Messner, New York; 1990; 32 p.; grades 1 to 3; NF

Summary: Attractively illustrated; describes some of the many living things inhabiting or visiting puddles and ponds. Information generally accurate. Suggested hands-on activities throughout book.

Comment: Bodies of water such as puddles and ponds are often wetlands. Often wetlands are areas that are so shallow that plants grow completely across them or that may be dry during long periods of the year. *Puddles and Ponds* is also about wetlands. Some activities are well-suited to the primer reader, ages 6 to 8, while others lack sufficient instructions, and could end in failure. Teachers need to be careful and suggest the reader seek assistance if difficulties arise.

RAIN DROP SPLASH*, Alvin Tresselt. Lothrop, Lee and Shepherd Co., New York; 1965; 17 p; kindergarten to grade 2; E

Summary: Picture book, simple story; raindrops begin to fall and eventually form a puddle which then becomes a pond with water lilies and fish. Raindrops continue as pond spills over into lake with bigger fish and pickerel weed, and Red-winged Blackbirds. Raindrops flood farms, roads and cities and impact all life, people included.

Comment: In addition to *Rain Drop Splash*, Alvin Tresselt also wrote *Beaver Pond*, a wetland book. *Rain Drop Splash* illustrates one very important benefit of wetlands: their natural ability to retain rainwater and reduce flood levels during rainstorms. It demonstrates the impact of heavy rains and flooding with illustrations depicting wetlands absorbing water run-off during rain. Natural wetlands reduce flood peaks during storms. Their loss can increase flooding.

A RIVER DREAM*, Allen Say. Houghton Mifflin Company, Boston; 1988; 32 p.; grades 1 to 3; E

Summary: Breath-taking color illustrations! Fun tale of boy Mark whose dreams and reality merge as he lies in bed with a fever and opens a prize box from an uncle. Mayflies flutter out of the box and Mark follows them outdoors to find a river has replaced his street. He climbs into a boat. Rowing, he sees his uncle fishing, joins him, catches magnificent trout in the shallow waters and faces a tough choice whether to keep the trout or release it and leave the river as he found it.

Comment: Many wetlands occur along rivers. *A River Dream* brings together a touching story of a boy's adventure and step toward maturity with two of the many opportunities rivers, wetlands and other bodies of water provide: fishing and boating. The shimmering paintings reveal the intrinsic beauty of wetlands and rivers.

RIVER PARADE*, *Alexandria Day*. Viking, New York; 1990; 36 p.; kindergarten to grade 2; E

Summary: Great splashes of shimmering watercolor mirroring the hot summer day on the river. Young boy rides up a river with his father on a hot summer day, with his toys. One by one, each toy falls into the water, and finally, so does the boy, finding it wonderful swimming.

Comment: *River Parade* contains nice representations of wetlands along the river, with marshy vegetation, fish and mallard ducks. It depicts important wetlands values, including good water quality, plant and animal life, and recreation.

THE SEMINOLE*, *Emilie U. Lepthier*. Children's Press, Chicago; 1985; 48 p.; grades 1 to 2; index; NF

Summary: Easy reading with abundant photographs from the *New-True-Book Series*. Traces the history of the Seminole Indians, who were originally from the Creek Tribe in Georgia and Alabama but were forced to Florida swamps, to the Everglades and Big Cypress Swamp. Describes events of the three Seminole Wars in the 1800's and the tactics used by the Seminoles to strike at the settlers then disappear in the swamps. Depicts the life of the Seminoles in Florida today.

Comment: Author Emilie U. Lepthier describes the Seminole way of life in the swamp, including information on their education and government, village life, ability to sustain themselves by hunting and fishing, handicrafts and present way of life. (This is not the same book as the one listed by same title under *Elementary Level* by Martin Lee.)

SPRING PEEPERS, *Judy Hawes*. Thomas Y. Crowell Company, New York; 1975; 34 p.; kindergarten to grade 2; NF

Summary: Attractively illustrated with large colorful drawings of peepers. Describes the peeper, how to look for peepers, the different kinds of peepers or tree frogs in the United States and even includes the song of the tiny Coqui of Puerto Rico, "ko- Kee, ko-Kee."

Comment: *Spring Peepers* is actually about tree frogs that return to the water, particularly wetlands, to mate in the spring and can be heard in the evening in marshy, wet places, including puddles and ditches. *Spring Peepers* is highly recommended for learning about life in wetlands. Wetlands play an important role in the life cycle of spring peepers, for this is where many hatch into tadpoles, emerge as tree frogs and return to breed.

THE UGLY DUCKLING*, Hans Christian Anderson, English text by Anne Stewart, Greenwillow Books, New York; 1982; grades 1 to 3; F

Summary: Captivating, newly illustrated and interpreted. Classic fairy tale of badly treated ugly duckling which later emerges as a swan. Begins in a country surrounded by lakes and pools; newly hatched duckling is mocked and laughed at, retreats to a great swamp with wild ducks, is nearly killed by hunters and somehow survives the winter in a swamp. Duckling leaves home among the reeds in swamp in spring and finds himself in a "forest of rushes and water" where he looks into his reflection into the water and finds he has emerged as a swan.

Comment: The beloved classic, *The Ugly Duckling*, is easily read to pre-kindergarten children and can be read by children beginning late in the first grade. Many of the settings throughout the tale are in wetlands, such as the swamp and the forest of rushes where the three swans appear floating on the water (known as forested wetlands). Waterfowl such as the ducks and swans, are true inhabitants of wetlands.

WILLA IN WETLANDS*, Peyton Lewis and Rory Chalcraft. National Children's Theatre for the Environment; Washington, D.C.; 1991; 28 p.; pre-kindergarten to grade 2 to view play and grades 3 to 5 for viewing and reading; E

Summary: A very creative, funny and engaging play, with catch, upbeat songs. Includes players, Willa the student, Sherman and Shirley the pink Shrimp, Johnny Rockfish with sunglasses, Wild Rice, Blue Heron and many other treasures in the wetland. Begins with Willa announcing her decision to go the wetland because her teacher had mentioned to her that day "there was a treasure in the wetland" and she's going to look for it until she finds it, but soon discovers: "looking for a treasure in a swamp or marsh is a hard job. I see nothing that looks the least bit priceless."

Discovering that treasures she finds were not what she expected, her search leads her to a Bald Eagle, the Muskrat lodge, the fiddling Fiddler Crabs and many more. Willa continues: "I came here looking for gold and silver but I think I've learned what the real treasure is. Everyone I met was a jewel."

Comment: As play continues, Willa and the audience become aware of the impending threat of the constant "Great Sound" of development in the background to the homes of Willa's new friends in the wetlands. *Willa in Wetlands* does more than highlight the priceless treasures of wetlands as it presents realistically the real threats to wetlands and offers practicable ways children might help in reducing the loss by sharing wetlands and their treasures with others. Copies of *Willa in Wetlands* are available at no charge from the Wetlands Information Hotline. Call toll free 1-800-528-7828. Accompanying teacher's guide also available.

Elementary Level (Grades 3 through 5)

Animals and Plants That Trap, Philip Goldstein
Animals of the Ponds and Streams, Julie Becker
Beaver Valley, Walter D. Edmonds
Dragonflies, Hilda Simon
Explore a Spooky Swamp, Wendy W. Cortesi
Frogs, Toads, Lizards and Salamanders, Nancy Winslow Parker and Joan Richards Wright
From Pond to Prairie, Laurence Pringle
Green Darner, Robert M. McClung
In the Middle of the Puddle, Mike Thaler
Island of the Loons, Dayton O. Hyde
Marshes and Swamps, Linda M. Stone
The Mystery of the Great Swamp, Marjorie A. Sapf
Pond and River, Steve Parker
The Pond Book, Albro Gaal
Scoots the Bag Turtle, Judy Cutchins and Ginny Johnston
The Seminole, Martin Lee
Small Water Mammals, Maxwell Knight
Snails of Land and Sea, Hilda Smith
Swan Lake, Mark Helprin
Water Insects, Sylvia A. Johnson
Wetlands, Linda M. Stone
Wetlands: Bogs, Marshes and Swamps, Lewis Buck
Wonders of the Fields and Ponds at Night, Jacquelyn Berrill
The World of Fishes, Thomas D. Fagely

List of Additional Books for Elementary Students:

The section describing the following books is in parenthesis:

Common Frog, Oxford Scientific Films (primary)
Dragonflies, Cynthia Overbeck (primary)
Estuaries, Where Rivers Meet the Sea, Laurence Pringle (intermediate)
Everglades Country, Patricia Lauber (intermediate)
Exploring the Great Swamp, George Laycock (intermediate)
Let's Find Out about Frogs, Corrine J. Naden (primary)
The Lorax, Dr. Seuss (primary)
Misty of Chincoteague, Marguerite Henry (intermediate)
Pitcher Plants: The Elegant Insect Traps, Carol Lerner (intermediate)
Puddles and Ponds, Rose Wyler (primary)
A River Dream, Allen Say (primary)
The Snow Goose, Paul Gallico (intermediate)
The Ugly Duckling, Hans Christian Anderson (primary)
Willa in Wetlands, Peyton Lewis and Rory Chalcraft (primary)

Elementary Level (Grades 3 through 5)

ANIMALS AND PLANTS THAT TRAP, Philip Goldstein. Holiday House, New York; 1974; 128 p.; grades 4 to 6; NF

Summary: Well-written with clear explanations. Devotes entire chapters to the carnivorous Venus fly trap, sundew and pitcher plant. Explains how bladderworts living in quiet ponds and bogs capture small creatures with underwater leaves covered with miniature traps that function automatically.

Comment: *Animals and Plant That Trap* is comprehensive in covering plants that trap insects, many of which occur in wetlands. Wetlands soils are often poor in nutrients. Carnivorous (insect-eating) plants thrive in these conditions with special adaptations that trap insects to obtain the nutrients that are unavailable in the soil.

ANIMALS OF THE POND AND STREAMS, Julie Becker. EMC Corporation, Minneapolis; 1977; 55 p.; grades 2 to 4; NF

Summary: Lots of pictures, photographs and drawings to hold student's attention. Describes ten animals inhabiting ponds and streams: turtle, blue heron, crayfish, otter, mallard duck, frog, beaver, catfish and dragonfly. Suggests child visit pond or stream and watch quietly to observe the many inhabitants.

Comment: *Much of the area within a pond or an entire pond may be so shallow it is classified as a wetland. Many wetlands also occur along streams. Animals of the Ponds and Streams demonstrates one of the important values of waters, including wetlands: they are home to an abundant number of wildlife.*

BEAVER VALLEY, Walter D. Edmonds. Little, Brown and Company, Boston; 1971; 70 p.; grades 3 to 5; F

Summary: Easy to read. Narrates a tale of a quiet, peaceful valley containing streams and wetlands, of a beaver colony constructing a dam and impacting lives of deer, mouse and others in valley. Contains vegetation and wildlife associated with wetlands.

Comment: *One valuable function of wetlands is they provide homes for many wildlife species. The author of Beaver Valley presents a story in which the wetland is changed by beaver activity. The author alludes to the similarity between the beaver and humans who both have the ability to impact wetland environments.*

DRAGONFLIES, Hilda Simon. *The Viking Press, New York; 1972; 95 p.; index; grades 4 to 6; NF*

Summary: Provides information on an important group of insects commonly found in wetlands. Discusses this spectacular, often very colorful, group of insects: their origins, mating rituals and life cycles, including the underwater nymphal stages.

Comment: Colorful drawings illustrate dragonflies in many wetland habitats. Hilda Simon has included a guide to dragonflies of North America in Dragonflies.

EXPLORE A SPOOKY SWAMP*, Wendy W. Cortesi. *National Geographic Society: Books for Young Children, Washington, D.C.; 1978; 32 p.; grades 2 to 4; NF*

Summary: Colorful and attractive with lots of photographs. Invites young reader to explore a swamp through the experience of two children as they venture into the Okefenokee Swamp in Georgia. Describes their adventures in a small boat as they observe the plants and animals along their path.

Comment: Photographs from Explore a Spooky Swamp are very realistic as they depict the boy and girl in a swamp, providing the reader the opportunity for an imaginative journey into a swamp.

FROGS, TOADS, LIZARDS AND SALAMANDERS*, Nancy Winslow Parker and Joan Richards Wright. *Greenwillow, New York; 1990; 48 p.; grades 2 to 6; NF*

Summary: Outstanding, colorful book about a group of animals common to wetlands. Great pictures and wonderfully funny text that can be read by grades four to six and read to grades one to two. Easy reading; scientific names included. Contains picture glossary and range maps indicating distribution of species.

Comment: Children are fascinated by frogs, toads, and salamanders, animals which belong to the class known as amphibians. They require water to begin life and after migrating to land following metamorphosis, must return to water to reproduce. Students may find them in wetlands during their early water dependent stages and sometimes in their adult stage as well. Following is a sample from Frogs, Toads, Lizards and Salamanders:

"Grant's aunt was picking flowers in a drainage ditch occupied by a fat snakelike, Two-toed Amphiuma. Amphiumas are aquatic. Amphiumas live in rivers, streams, swamps, bayous, and drainage ditches."

FROM POND TO PRAIRIE, Laurie Pringle. The MacMillan Company, New York; 1972; 34 p.; grades 3 to 5; index; NF

Summary: Accurate illustrations of plants such as bladderworts (insect-eating plants), water lilies and sedges, and animals including catfish, dragonfly nymphs, herons and Pintail Ducks. Describes successive changes of ponds as they evolve into marshes and prairies over hundreds or thousands of years. Explains the loss of wetlands to farmlands through human disturbances.

Comment: Just like everything else in nature, wetlands are changing. A pond may be evolving into a marsh. However, contrary to *From Pond To Prairie*, it is now known that bodies of water such as wetlands do not naturally become dry upland prairies. A low-lying depression that creates a wetland will generally remain, although the type of wetland may change. Only outside disturbances such as drainage or filling, may cause a wetland to disappear.

GREEN DARNER, Robert M. McClung. William Morrow and Company, New York; 1980; grades 2 to 4; 34 p.; NF

Summary: Newly illustrated edition of this accurate, popular nature book. Illustrates wetland habitats with accurate drawings of wetland animals, such as salamanders and water bugs, and wetland vegetation, such as arrowhead. Introduces reader to Green Darner, a dragonfly, following the story of a dragonfly's life as it grows from a tiny nymph through molting periods to adulthood at a meadow pond.

Comment: *Green Darner* is highly recommended. Its drawings are excellent, realistic representations of wetlands. It covers the life cycle of a dragonfly from nymph to adulthood, including the many threats encountered while maturing to an adult. Following is an excerpt on the food chain at the meadow pond:

"The Green Darner nymphs... ate little one-celled creatures called "protozoans" and tiny water fleas... Other animals ate some of the Green Darner nymphs too. A baby salamander ate the water bug, and a little pickerel ate the salamander. A bullfrog ate the pickerel, and a big snapping turtle ate the bullfrog! In the pond, many animals get eaten by animals bigger than they are."

IN THE MIDDLE OF THE PUDDLE*, Mike Thaler. Harper and Row, New York; 1988; 32 p.; grades 2 to 4; NF

Summary: Good illustrations of different habitats as a puddle changes to a pool, a pond, and larger bodies of water because of rains and floods. Illustrations depict true vegetative and animal characteristics for each stage. Author relates a fun story about two friends in the middle of puddle, Fred the Frog and Ted the Turtle. Recounts the two friends' experiences with rain and flood, the ensuing changes of the puddle into a pond, then a lake and finally a sea before the rain stops and the sea recedes to a lake, then a pond, and finally a puddle.

Comment: Wetlands may or may not be wet all year. Many may even be dry for many months. Like the flood of *In the Middle of the Puddle*, animals occurring in wetlands have specially adapted to these sometimes extreme fluctuations.

ISLAND OF THE LOONS, Dayton O Hyde. Atheneum, New York; 1984; 155 p.; grades 4 to 7; F

Summary: Captivating and exciting adventure of orphan Jimmy who is captured by a convict and taken to an uninhabited island in Lake Superior where they fend together for several months, including winter. There, Jimmy senses the convict's unfamiliarity with wilderness and realizes the more useful he is, the greater his chances of survival. Descriptive wetland settings include sphagnum plants and leatherleaf bogs. Jimmy's resourcefulness extends to creating brews from wetland plants: pitcher plants, cattails and lady slippers.

Comment: Wetlands occur in shallow depressions or alongside river and lakes, as on the island in Lake Superior in *Island of the Loons*. Dayton O. Hyde blends together a tale of a man who finds himself.

MARSHES AND SWAMPS*, Linda M. Stone. Children Press, Chicago; 1983; 48 p.; grades 2 to 4; NF

Summary: Attractive, accurate, and well-illustrated. Describes three different types of wetlands: marshes, bogs, and swamps, including information on their functions and values.

Comment: In *Marshes and Swamps*, author Stone provides excellent information about wetlands and their values and functions. She has written several other books on wetlands, including one entitled, *Wetlands*, also contained in this reading list.

THE MYSTERY OF THE GREAT SWAMP, Marjorie A. Sapp. Atheneum, New York; 1967; 167 p.; grades 4 to 7; F

Summary: Captivating tale with colorful description of the swamp. Presented by the Weekly Reader Children's Book Club. Takes place in the Okefenokee Swamp in Georgia. Recounts adventures of boy Jeb in swamp, particularly his unexpected encounters with the Indians that were not all driven from the swamp years ago, as early settlers had thought.

Comment: In *The Mystery of the Great Swamp*, the author refers to true, realistic elements of the swamp throughout the story including: herons, alligators, waving reeds, grasses, tall spotted pitcher plants, cypress trees and tupelo trees. Trees are important for distinguishing a swamp from a marsh as marshes are dominated by soft-stemmed (known as herbaceous) plants.

POND AND RIVER*, *Steve Parker*. Alfred A. Knopf, Inc., New York; 1988; 64 p., grades 3 to 5; NF

Summary: Very well-illustrated, in color and indexed. Describes the types of plants and animals that characterize ponds and rivers, with a special emphasis on these habitats as they change during the different seasons of the year.

Comment: Pond and River provides good information on ponds, rivers and wetlands. A pond may be defined as a body of water so shallow that plants may grow completely across it. As such, many ponds are also wetlands. Also, many wetlands occur along rivers and are known as riverine wetlands.

THE POND BOOK, *Albro Gaal*. Van Rees Press, New York; 1955; 136 p.; grades 3 to 4; NF

Summary: Easy to read and understand. Gaal provides interesting and fun activities for children to learn about wetlands using applied, hands-on approach.

Comment: Ponds are vegetated shallow bodies of water and may be considered just one of many different types of wetlands. One chapter in The Pond Book is about setting up a "teacup aquarium," which, as the name indicates, can be done in the home. This would allow the student to watch activities of the tiny living things that may be found in a nearby pond.

SCOOTS THE BOG TURTLE*, *Judy Cutchins and Ginny Johnston*. Atheneum MacMillan Publishing Company, New York; 1989; 32 p.; index; grades 3 to 5; NF

Summary: Excellent! Identifies and describes bogs as rare, unique and fragile wetlands occurring in cooler climates of the north and on mountains. Explains unique adaptations of the bog turtle which is specially adapted to bog habitat.

Comment: Like other plant and animal inhabitants of bogs, the bog turtle is easily threatened by human disturbances. Scoots the Bog Turtle follows the life of imaginary Scoots, the little bog turtle at Duck Potato Bog. All plants and animals in the story commonly occur in bogs in the North Carolina mountains.

THE SEMINOLE*, *Martin Lee*. Franklin Watts, New York; 1989; 64 p.; grades 3 to 5; index; NF

Summary: Historical and modern account of Seminole Indians of the Florida swamps. Tells the background of the Seminole Indians who lived in Georgia and Alabama but were forced into Florida in the 1700's, some north of Big Cypress Swamp. Descriptions of the Seminole Wars and of their leader Osceola hiding his people in swamps of southern Florida after a fight. While many Seminoles were killed or moved to reservation in West, a few choose to continue to live in the southern Florida environment, in traditional chickees (huts) in small villages.

Comment: *The Seminole* and other titles on Seminole Indians (or Indians in general), provides information on how native Americans learned to live in unison with a wetland environment - in this instance a swampland - and their customs of food gathering, assembling homes, and preparing garments of materials using resources found in the wetlands environment.

(NOTE: This is not the same book as the one listed by same title under Primary Level by Emilie U. Lepthier.)

SMALL WATER MAMMALS, Maxwell Knight. McGraw-Hill Book Co., New York; 1968; 32 p.; grades 3 to 5; NF

Summary: Good background information on water mammals. Identifies and describes specific water mammals, including the water shrew, muskrat and beaver - mammals often found in wetlands. Describes each animal's requirements in terms of food, home, and breeding.

Comment: Mammals (wildlife) represent one of the many values wetlands provide. They are part of the food chain. Students may observe mammals such as a muskrat or beaver by sitting patiently and quietly alongside a marsh which shows signs of muskrat or beaver activities (stumps along the edge of or a lodge in the marsh) at dusk.

SNAILS OF LAND AND SEA, Hilda Smith. The Vanguard Press, New York; 1976; 143 p.; grades 4 to 7; index; NF

Summary: Attractive, color illustrations. Discusses the evolution, anatomy, structure of the shell and growth of the entire class of snails, including freshwater snails. Describes the characteristics of major groups of snails, such as swamp snails which may live in ponds, pools and other shallow waters.

Comment: Students are urged to seek out *Snails of Land and Sea* and other titles on snails to learn about these highly successful animals that are common in wetlands. Snails are important food in some countries and have been economically useful as currency and in creating dyes and culturally important in jewelry and artifacts.

SWAN LAKE*, Mark Helprin. Briel Books, Houghton-Mifflin Co., Boston; 1989; 84 p.; grades 2 to 5; F

Summary: Beautifully illustrated classic, an original fable with insightful text that reveals the story behind Tchaikovsky ballet. Tale is of an orphaned princess and a young prince. The prince is posed with a choice of the world of the court or the peaceful world of nature. Critical scenes occur along a lake and other bodies of water, centering around swans.

Comment: *Swan Lake* flows with the grace of Tchaikovsky's music. Wetlands, such as those found in the tundra and prairie potholes of the Midwest, are the nurseries for a HGH percentage of ducks, geese and swans.

WATER INSECTS, Sylvia A. Johnson. Lerner Publications, Minneapolis; 1990; 48 p.; grades 3 to 7; glossary; NF

Summary: Well-designed and illustrated in a style that appeals to children without oversimplifying or sacrificing accuracy. Water Insects focuses predominantly on insects occurring in ponds and wetlands, with photographs highlighting every aspect of insect life.

Comment: As with other volumes from Lerner Natural Sciences Series, Water Insects is easy to understand and thorough. Many children are fascinated by insects. Water Insects draws on their natural curiosity and will invite them to visit ponds and other wetlands to observe water insects.

WETLANDS*, Linda M. Stone. Rourke Enterprises, Inc., Vero Beach; 1989; 48 p.; grades 3 to 5; glossary maps and index; NF

Summary: Attractive and well-illustrated with excellent information on wetlands! Part of Ecozones Series. Wetlands information addresses their curious appeal, the different types of wetlands that occur, formation of wetlands, and the plants and animals wetlands support.

Comment: As with Marshes and Swamps listed earlier, Wetlands is another wonderfully written book on ecosystems by distinguished children's author, Linda M. Stone. Wetlands contains several hands-on activities, such as creating a collage of wetlands plants and animals. The author includes a list of outstanding wetlands to visit.

WETLANDS: BOGS, MARSHES, AND SWAMPS, Lewis Buck. Parents Magazine Press, New York; 1974; 64 p.; grades 2 to 4; index; NF

Summary: Attractive, light and well-written for young children. Identifies and describes three of the more familiar types of wetlands: bogs, marshes, and swamps. Examines the Prairie Pothole region in the Midwest and central Canada, the breeding grounds for one-third of the North American waterfowl population in the chapter, "Life in a Duck Factory."

Comment: Wetlands: Bogs, Marshes and Swamps mentions all wetlands are changing from water to dry land, a belief once commonly accepted that we now know does not always occur. Wetlands are created by hydrology and many wetlands do not develop into uplands with the passage of time as once was thought but remain wetlands as long as hydrology remains.

WONDERS OF THE FIELDS AND PONDS AT NIGHT, Jacquelyn Berrill. Dodd, Mead and Co., New York; 1962; 80 p.; grades 3 to 5; index; NF

Summary: Easy to read and informative. The chapter devoted to ponds, "Night at the Pond," has sections on some of the animals inhabiting ponds, many of which are wetlands. Information included on frogs, water shrews and muskrats, all of which occur in wetlands.

Comment: *Most animals are nocturnal and those inhabiting shall ponds and wetlands are no exception. In Wonders of the Field and Ponds at Night, author Berrill presents this other less understood period of living world, nighttime, when mammals are most active in and around wetlands.*

THE WORLD OF FISHES*, **Thomas D. Fagely.** Dodd, Mead and Co., New York; 1978; grades 3 to 5; index and bibliography; NF

Summary: Informative, easy to understand. Presents overview on fishes and their importance as food and as a source of recreation. Provides general facts on fishes, including: senses, mating and habitat; individual chapters on different kinds of fish - gamefish, panfish, salt and freshwater fish; information on endangered fish; and information on the effects of pollution.

Comment: *The World of Fishes* and books on brackish or saltwater as well as freshwater fish contain information on animals that may breed, hatch, feed, and live their whole life in wetlands. Wetlands are necessary to many fishes during some or all of their life. One final chapter has information on creating one's own "pond" or aquarium.

5 to 8



One Day Unit



Choose one (table 1)

- WOW: Introducing Wetlands (one of the ideas)
- WOW: Wetland Metaphors
- WOW: Hear Ye! Hear Ye!
- WOW: Hydropoly! (advanced students)
- WOW: Marsh Market (advanced students)
- WOW: Marsh Mystery (advanced students)
- WOW: Treatment Plants
- WOW: Soak It Up!

Table 1: Correlations to state content standards and benchmarks.

Activity Title	Page #	Info Lit/ Library Media Benchmarks	Reading Benchmarks	Science Benchmarks	Social Studies Benchmarks	Technology Benchmarks
Introducing Wetlands	71	1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6	1.2, 1.3		1.1, 1.2, 3.4,	1.1, 1.2, 1.3, 1.4
Wetland Metaphors	85		2.3			
Hear Ye! Hear Ye!	253		1.3, 1.4, 2.2, 5.3		2.2, 2.4, 2.6, 2.7, 3.3, 5.2, 5.4	
Hydropoly	260	1.1, 1.2, 1.3, 2.1, 2.3, 2.4, 2.5, 2.6, 3.1, 3.2		1.4, 5.2	1.3, 3.3, 3.7, 5.2, 5.4	
Marsh Market	109	1.1, 1.2, 1.3, 2.1, 2.3, 2.4		3.2, 3.4, 5.2, 5.4		
Marsh Mystery	116	1.1, 1.3, 2.1, 2.3, 2.4, 2.5		1.2, 1.3, 1.4, 5.2, 5.4	1.1, 1.3, 2.4, 2.6, 2.7, 3.2, 3.3, 3.7, 5.4	1.1, 1.3
Treatment Plants	120					
Soak It Up!	162			1.3, 1.4	3.1, 3.6	

Three Day Unit



Choose Two (table 2)

- WOW: Introducing Wetlands (one of the ideas)
- WOW: Wetland Metaphors
- WOW: Hear Ye! Hear Ye!
- WOW: Hydropoly! (advanced students)
- WOW: Marsh Market (advanced students)
- WOW: Marsh Mystery (advanced students)
- WOW: Treatment Plants
- WOW: Soak It Up!

Choose One (table 3)

- WOW: How Thirsty is the Ground?
- WOW: Runoff Race
- WOW: This Plant Key is all Wet!
- WOW: Water We Have Here?
- WOW: Wet 'n' Wild and Whose Clues?
- WOW: Wetland in a Pan
- WOW: Wetland Weirdos
- WOW: Wetland Wheel

Table 2: Correlations to state content standards and benchmarks.

Activity Title	Page #	Info Lit/ Library Media Benchmarks	Reading Benchmarks	Science Benchmarks	Social Studies Benchmarks	Technology Benchmarks
Introducing Wetlands	71	1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6	1.2, 1.3		1.1, 1.2, 3.4,	1.1, 1.2, 1.3, 1.4
Wetland Metaphors	85		2.3			
Hear Ye! Hear Ye!	253		1.3, 1.4, 2.2, 5.3		2.2, 2.4, 2.6, 2.7, 3.3, 5.2, 5.4	
Hydropoly	260	1.1, 1.2, 1.3, 2.1, 2.3, 2.4, 2.5, 2.6, 3.1, 3.2		1.4, 5.2	1.3, 3.3, 3.7, 5.2, 5.4	
Marsh Market	109	1.1, 1.2, 1.3, 2.1, 2.3, 2.4		3.2, 3.4, 5.2, 5.4		
Marsh Mystery	116	1.1, 1.3, 2.1, 2.3, 2.4, 2.5		1.2, 1.3, 1.4, 5.2, 5.4	1.1, 1.3, 2.4, 2.6, 2.7, 3.2, 3.3, 3.7, 5.4	1.1, 1.3
Treatment Plants	120					
Soak It Up!	162			1.3, 1.4	3.1, 3.6	

Table 3: Correlations to state content standards and benchmarks.

Activity Title	Page #	Info Lit/ Library Media Benchmarks	Math Benchmarks	Reading Benchmarks	Science Benchmarks	Social Studies Benchmarks	Technology Benchmarks
How Thirsty Is the Ground?	239		1.1, 1.2, 1.5, 6.1, 6.2, 6.3, 6.5, 7.1, 7.3		1.1, 1.2, 1.3, 1.4, 1.5, 2.2, 5.2		
Runoff Race	210				1.4, 5.2		
This Plant Key is All Wet!	123	2.3, 2.4			1.2, 3.5		
Water We Have Here?	174	1.1, 1.3, 2.1, 2.3, 2.4	1.5, 5.1, 5.2, 5.3, 6.1, 6.2	4.3	1.2, 1.3, 1.5, 2.2	1.1	1.2, 1.3
Wetland in a Pan	212				1.4, 5.2, 5.4		
Wetland Weirdos	94			1.2, 1.4	1.2, 3.2, 3.4		
Wetland Wheel	129	1.2, 1.3, 2.1, 2.3, 2.4			1.2, 3.5		1.2, 1.3
Wet'n'Wild	99				1.2, 2.2		
Whose Clues	104				1.2, 1.3, 3.5		

Ongoing Unit



Choose Two or More (table 4)

- WOW: Introducing Wetlands (one of the ideas)
- WOW: Wetland Metaphors
- WOW: Hear Ye! Hear Ye!
- WOW: Hydropoly! (advanced students)
- WOW: Marsh Market (advanced students)
- WOW: Marsh Mystery (advanced students)
- WOW: Treatment Plants
- WOW: Soak It Up!

Choose One or More (table 5)

- WOW: How Thirsty is the Ground?
- WOW: Runoff Race
- WOW: This Plant Key is all Wet!
- WOW: Water We Have Here?
- WOW: Wet 'n' Wild and Whose Clues?
- WOW: Wetland in a Pan
- WOW: Wetland Weirdos
- WOW: Wetland Wheel

Choose Two or More (table 6)

- WOW: A Rottin' Experiment
- WOW: Helping Wetland Habitats
- WOW: Life in the Fast Lane
- WOW: Marsh Munchies
- WOW: Nature's Filter
- WOW: Nutrients: Nutrition or Nuisance (Part III)
- WOW: Over Hill and Dale
- WOW: Recipe for Trouble
- WOW: Run for the Border
- WOW: Tracking Plants and Keeping Tracks
- WOW: Water Under Foot
- WOW: Wetlands in the Classroom!

Table 4: Correlations to state content standards and benchmarks.

Activity Title	Page #	Info Lit/ Library Media Benchmarks	Reading Benchmarks	Science Benchmarks	Social Studies Benchmarks	Technology Benchmarks
Introducing Wetlands	71	1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6	1.2, 1.3		1.1, 1.2, 3.4,	1.1, 1.2, 1.3, 1.4
Wetland Metaphors	85		2.3			
Hear Ye! Hear Ye!	253		1.3, 1.4, 2.2, 5.3		2.2, 2.4, 2.6, 2.7, 3.3, 5.2, 5.4	
Hydropoly	260	1.1, 1.2, 1.3, 2.1, 2.3, 2.4, 2.5, 2.6, 3.1, 3.2		1.4, 5.2	1.3, 3.3, 3.7, 5.2, 5.4	
Marsh Market	109	1.1, 1.2, 1.3, 2.1, 2.3, 2.4		3.2, 3.4, 5.2, 5.4		
Marsh Mystery	116	1.1, 1.3, 2.1, 2.3, 2.4, 2.5		1.2, 1.3, 1.4, 5.2, 5.4	1.1, 1.3, 2.4, 2.6, 2.7, 3.2, 3.3, 3.7, 5.4	1.1, 1.3
Treatment Plants	120					
Soak It Up!	162			1.3, 1.4	3.1, 3.6	

Table 5: Correlations to state content standards and benchmarks.

Activity Title	Page #	Info Lit/ Library Media Benchmarks	Math Benchmarks	Reading Benchmarks	Science Benchmarks	Social Studies Benchmarks	Technology Benchmarks
How Thirsty Is the Ground?	239		1.1, 1.2, 1.5, 6.1, 6.2, 6.3, 6.5, 7.1, 7.3		1.1, 1.2, 1.3, 1.4, 1.5, 2.2, 5.2		
Runoff Race	210				1.4, 5.2		
This Plant Key is All Wet!	123	2.3, 2.4			1.2, 3.5		
Water We Have Here?	174	1.1, 1.3, 2.1, 2.3, 2.4	1.5, 5.1, 5.2, 5.3, 6.1, 6.2	4.3	1.2, 1.3, 1.5, 2.2	1.1	1.2, 1.3
Wetland in a Pan	212				1.4, 5.2, 5.4		
Wetland Weirdos	94			1.2, 1.4	1.2, 3.2, 3.4		
Wetland Wheel	129	1.2, 1.3, 2.1, 2.3, 2.4			1.2, 3.5		1.2, 1.3
Wet'n'Wild	99				1.2, 2.2		
Whose Clues	104				1.2, 1.3, 3.5		

Table 6: Correlations to state content standards and benchmarks.

Activity Title	Page #	Info Lit/ Library Media Benchmarks	Math Benchmarks	Science Benchmarks	Social Studies Benchmarks	Technology Benchmarks	Writing Benchmarks
A Rottin' Experiment	245			1.1, 1.2, 1.3, 1.4, 1.5, 5.2			
Helping Wetland Habitats	288			5.2, 5.3, 5.4	1.1, 1.2, 1.3, 3.1, 3.2, 3.3, 3.5, 3.6, 3.7, 4.3, 5.2, 5.4	1.1, 1.2, 1.3, 1.4, 1.5, 3.5, 4.1	
Life in the Fast Lane	152	1.1, 1.2, 1.3, 2.1, 2.3, 2.4, 2.5, 2.6	5.1, 5.2, 5.4, 6.1	1.2, 1.3, 1.4, 3.2, 3.4		1.1, 1.2, 1.3, 1.5	1.1, 1.4, 2.5, 6.2
Marsh Market	109	1.1, 1.2, 1.3, 2.1, 2.3, 2.4		3.2, 3.4, 5.2, 5.4			
Marsh Munchies	192	1.1, 1.2, 1.3, 1.4, 2.1, 2.3, 2.4, 2.5, 2.6	1.1, 1.3, 1.4, 1.5, 2.1, 5.1, 5.2	1.4, 3.2		1.1, 1.2, 1.3, 1.5	1.2, 4.3, 5.2
Nature's Filter	250			1.1, 1.2, 1.3, 1.4, 1.5			
Nutrients: Nutrition or Nusiance?	188			1.4, 3.2, 5.2			
Over Hill and Dale	220			1.4, 5.2, 5.3	1.1, 1.2, 1.3, 3.1, 3.2, 3.3, 3.5, 3.7		

Table 6 (con't): Correlations to state content standards and benchmarks.

Activity Title	Page #	Info Lit/ Library Media Benchmarks	Math Benchmarks	Science Benchmarks	Social Studies Benchmarks	Technology Benchmarks	Writing Benchmarks
Recipe for Trouble	199			1.1, 1.2, 1.3, 1.4, 1.5, 5.2, 5.4			
Run for the Border	143			1.2, 1.3, 3.2, 3.4, 3.5, 4.2			
Tracking Plants and Keeping Track	138		6.1	1.1, 1.2, 1.3, 3.5			
Treatment Plants	120						
Water Purifiers	215	2.3, 2.4		1.2, 1.3, 1.4, 1.5, 5.2, 5.4		1.2, 1.3, 1.4, 1.5	
Water Under Foot	204	2.1		1.4, 5.2, 5.4	3.1, 3.2	1.1, 1.2, 1.3	
Wetlands in the Classroom	80					1.1, 1.2, 1.3, 1.4, 1.5	4.2, 4.3

Wetlands Reading List



Introduction

The *Wetlands Reading List* is an annotated list of printed material that will supplement lesson plans and provide students with suggestions for independent reading on wetlands. The goal of the list is to encourage students to explore and develop a respect, understanding and appreciation for wetlands. This is an attempt to foster our appreciation of our nation's remaining wetlands.

The intention is to reach the whole student, to transcend her/his intellectual understanding and to instill an arts and humanity awareness of a valuable natural resource. It is hoped that reading the books will motivate students to pursue further reading about the wetlands resource and encourage them to learn about wetlands through the arts and sciences and through applied hands-on experiences.

Books contained in the *Wetlands Reading List* include different types of literature. Factual, nonfiction, picture books and fiction titles are provided. Entries are listed alphabetically by grade level in the *Wetlands Reading List*: primary (pre-kindergarten to grade 2), elementary (grades 3 to 5), intermediate (grades 6 to 8) and secondary (grades 9 to 12). Grade level refers to reading level and not the level for being read to, except for some books described at the primary level which may be better read to the child. They are listed here because their large and abundant pictures and easy to follow story make them suitable for the primary grade level.

The target age of many books extends beyond the one grade level in which they have been placed. It is recommended the educator does not limit her/himself to the grade she/he teaches but to consider books in adjacent grade categories. A list of these books and the grade level under which they are discussed is located at the end of each section. The number of entries under each section varies, as does the information for each listing. Each title cites the author, publisher, date published, page length and grade range, and is classified by a special code as indicated below:

- E = Easy Reader (picture books)
- F = Fiction
- NF = Nonfiction
- SC = Story Collection, Anthologies

Following the citation is a *summary and comment*. The *summary*, written in phrases, sentences or sentence fragments, is intended to capture the essence of the book, be it plot or factual material. The *comment* provides more in-depth background information on the book and its significance in respect to the wetlands resource. Quotes are often included with an entry.

Most important is where one might find the books listed in the *Wetlands Reading List*. An asterisk (*) after a title indicates a book is in print and available through a book shop. If it is not on the shelf, many bookstores will special order a book. Many of the books may be obtained at a children's library, local public library, a school library, county or city park or environmental education center, children's book store or nature section in a book shop. Some are available through organizations such as the Sierra Club or the National Geographic Society.

The *Wetlands Reading List* is not intended to be inclusive of every book ever written on wetlands or to endorse the books listed here. There are many other excellent publications for children on wetlands. For example, the *Wetlands Reading List* does not begin to list every book - and there are many good publications-written on dragonflies. Titles serve as suggestions for starting points for the inquiring student and teacher seeking information on wetlands. Students and teachers are encouraged to expand their horizons beyond the list, to refer to other books by the same and other authors and to search out books covering similar subjects as those contained herein. A list of suggested topics and key words is provided in the back.

Key Wetland Topics

The books that are described in the "Wetlands Reading List" are only a few of the many that exist on wetlands and wetlands related topics. Readers unable to locate any of the books identified in the "Wetlands Reading List," will want to look for other books that may cover the same topic. Numerous more books have been and continue to be written on wetlands. A few key words for finding additional books on wetlands topics are listed below:

<i>alligators</i>	<i>insectivorous plants</i>
<i>amphibians</i>	<i>Lewis and Clark</i>
<i>bayou</i>	<i>lily pad</i>
<i>beaver</i>	<i>marshes</i>
<i>birds</i>	<i>muskrats</i>
<i>boating</i>	<i>nature writers</i>
<i>bogs</i>	<i>pitcher plants</i>
<i>carnivorous plants</i>	<i>ponds</i>
<i>cattail marsh</i>	<i>rivers</i>
<i>dragonflies</i>	<i>Seminole Indians</i>
<i>ducks</i>	<i>snails</i>
<i>estuaries</i>	<i>spring peepers</i>
<i>Everglades</i>	<i>streams</i>
<i>explorers</i>	<i>sloughs</i>
<i>fens</i>	<i>swamp</i>
<i>fish</i>	<i>toads</i>
<i>frogs</i>	<i>water</i>

Elementary Level (Grades 3 through 5)

Animals and Plants That Trap, Philip Goldstein
Animals of the Ponds and Streams, Julie Becker
Beaver Valley, Walter D. Edmonds
Dragonflies, Hilda Simon
Explore a Spooky Swamp, Wendy W. Cortesi
Frogs, Toads, Lizards and Salamanders, Nancy Winslow Parker and Joan Richards Wright
From Pond to Prairie, Laurence Pringle
Green Darner, Robert M. McClung
In the Middle of the Puddle, Mike Thaler
Island of the Loons, Dayton O. Hyde
Marshes and Swamps, Linda M. Stone
The Mystery of the Great Swamp, Marjorie A. Sapf
Pond and River, Steve Parker
The Pond Book, Albro Gaal
Scoots the Bag Turtle, Judy Cutchins and Ginny Johnston
The Seminole, Martin Lee
Small Water Mammals, Maxwell Knight
Snails of Land and Sea, Hilda Smith
Swan Lake, Mark Helprin
Water Insects, Sylvia A. Johnson
Wetlands, Linda M. Stone
Wetlands: Bogs, Marshes and Swamps, Lewis Buck
Wonders of the Fields and Ponds at Night, Jacquelyn Berrill
The World of Fishes, Thomas D. Fagely

List of Additional Books for Elementary Students:

The section describing the following books is in parenthesis:

Common Frog, Oxford Scientific Films (primary)
Dragonflies, Cynthia Overbeck (primary)
Estuaries, Where Rivers Meet the Sea, Laurence Pringle (intermediate)
Everglades Country, Patricia Lauber (intermediate)
Exploring the Great Swamp, George Laycock (intermediate)
Let's Find Out about Frogs, Corrine J. Naden (primary)
The Lorax, Dr. Seuss (primary)
Misty of Chincoteague, Marguerite Henry (intermediate)
Pitcher Plants: The Elegant Insect Traps, Carol Lerner (intermediate)
Puddles and Ponds, Rose Wylar (primary)
A River Dream, Allen Say (primary)
The Snow Goose, Paul Gallico (intermediate)
The Ugly Duckling, Hans Christian Anderson (primary)
Willa in Wetlands, Peyton Lewis and Rory Chalcraft (primary)

Elementary Level (Grades 3 through 5)

ANIMALS AND PLANTS THAT TRAP, Philip Goldstein. Holiday House, New York; 1974; 128 p.; grades 4 to 6; NF

Summary: Well-written with clear explanations. Devotes entire chapters to the carnivorous Venus fly trap, sundew and pitcher plant. Explains how bladderworts living in quiet ponds and bogs capture small creatures with underwater leaves covered with miniature traps that function automatically.

Comment: *Animals and Plant That Trap* is comprehensive in covering plants that trap insects, many of which occur in wetlands. Wetlands soils are often poor in nutrients. Carnivorous (insect-eating) plants thrive in these conditions with special adaptations that trap insects to obtain the nutrients that are unavailable in the soil.

ANIMALS OF THE POND AND STREAMS, Julie Becker. EMC Corporation, Minneapolis; 1977; 55 p.; grades 2 to 4; NF

Summary: Lots of pictures, photographs and drawings to hold student's attention. Describes ten animals inhabiting ponds and streams: turtle, blue heron, crayfish, otter, mallard duck, frog, beaver, catfish and dragonfly. Suggests child visit pond or stream and watch quietly to observe the many inhabitants.

Comment: *Much of the area within a pond or an entire pond may be so shallow it is classified as a wetland. Many wetlands also occur along streams. Animals of the Ponds and Streams demonstrates one of the important values of waters, including wetlands: they are home to an abundant number of wildlife.*

BEAVER VALLEY, Walter D. Edmonds. Little, Brown and Company, Boston; 1971; 70 p.; grades 3 to 5; F

Summary: Easy to read. Narrates a tale of a quiet, peaceful valley containing streams and wetlands, of a beaver colony constructing a dam and impacting lives of deer, mouse and others in valley. Contains vegetation and wildlife associated with wetlands.

Comment: *One valuable function of wetlands is they provide homes for many wildlife species. The author of Beaver Valley presents a story in which the wetland is changed by beaver activity. The author alludes to the similarity between the beaver and humans who both have the ability to impact wetland environments.*

DRAGONFLIES, Hilda Simon. *The Viking Press, New York; 1972; 95 p.; index; grades 4 to 6; NF*

Summary: Provides information on an important group of insects commonly found in wetlands. Discusses this spectacular, often very colorful, group of insects: their origins, mating rituals and life cycles, including the underwater nymphal stages.

Comment: Colorful drawings illustrate dragonflies in many wetland habitats. Hilda Simon has included a guide to dragonflies of North America in Dragonflies.

EXPLORE A SPOOKY SWAMP*, Wendy W. Cortesi. *National Geographic Society: Books for Young Children, Washington, D.C.; 1978; 32 p.; grades 2 to 4; NF*

Summary: Colorful and attractive with lots of photographs. Invites young reader to explore a swamp through the experience of two children as they venture into the Okefenokee Swamp in Georgia. Describes their adventures in a small boat as they observe the plants and animals along their path.

Comment: Photographs from Explore a Spooky Swamp are very realistic as they depict the boy and girl in a swamp, providing the reader the opportunity for an imaginative journey into a swamp.

FROGS, TOADS, LIZARDS AND SALAMANDERS*, Nancy Winslow Parker and Joan Richards Wright. *Greenwillow, New York; 1990; 48 p.; grades 2 to 6; NF*

Summary: Outstanding, colorful book about a group of animals common to wetlands. Great pictures and wonderfully funny text that can be read by grades four to six and read to grades one to two. Easy reading; scientific names included. Contains picture glossary and range maps indicating distribution of species.

Comment: Children are fascinated by frogs, toads, and salamanders, animals which belong to the class known as amphibians. They require water to begin life and after migrating to land following metamorphosis, must return to water to reproduce. Students may find them in wetlands during their early water dependent stages and sometimes in their adult stage as well. Following is a sample from Frogs, Toads, Lizards and Salamanders:

"Grant's aunt was picking flowers in a drainage ditch occupied by a fat snakelike, Two-toed Amphiuma. Amphiumas are aquatic. Amphiumas live in rivers, streams, swamps, bayous, and drainage ditches."

FROM POND TO PRAIRIE, Laurie Pringle. The MacMillan Company, New York; 1972; 34 p.; grades 3 to 5; index; NF

Summary: Accurate illustrations of plants such as bladderworts (insect-eating plants), water lilies and sedges, and animals including catfish, dragonfly nymphs, herons and Pintail Ducks. Describes successive changes of ponds as they evolve into marshes and prairies over hundreds or thousands of years. Explains the loss of wetlands to farmlands through human disturbances.

Comment: Just like everything else in nature, wetlands are changing. A pond may be evolving into a marsh. However, contrary to *From Pond To Prairie*, it is now known that bodies of water such as wetlands do not naturally become dry upland prairies. A low-lying depression that creates a wetland will generally remain, although the type of wetland may change. Only outside disturbances such as drainage or filling, may cause a wetland to disappear.

GREEN DARNER, Robert M. McClung. William Morrow and Company, New York; 1980; grades 2 to 4; 34 p.; NF

Summary: Newly illustrated edition of this accurate, popular nature book. Illustrates wetland habitats with accurate drawings of wetland animals, such as salamanders and water bugs, and wetland vegetation, such as arrowhead. Introduces reader to Green Darner, a dragonfly, following the story of a dragonfly's life as it grows from a tiny nymph through molting periods to adulthood at a meadow pond.

Comment: *Green Darner* is highly recommended. Its drawings are excellent, realistic representations of wetlands. It covers the life cycle of a dragonfly from nymph to adulthood, including the many threats encountered while maturing to an adult. Following is an excerpt on the food chain at the meadow pond:

"The Green Darner nymphs... ate little one-celled creatures called "protozoans" and tiny water fleas... Other animals ate some of the Green Darner nymphs too. A baby salamander ate the water bug, and a little pickerel ate the salamander. A bullfrog ate the pickerel, and a big snapping turtle ate the bullfrog! In the pond, many animals get eaten by animals bigger than they are."

IN THE MIDDLE OF THE PUDDLE*, Mike Thaler. Harper and Row, New York; 1988; 32 p.; grades 2 to 4; NF

Summary: Good illustrations of different habitats as a puddle changes to a pool, a pond, and larger bodies of water because of rains and floods. Illustrations depict true vegetative and animal characteristics for each stage. Author relates a fun story about two friends in the middle of puddle, Fred the Frog and Ted the Turtle. Recounts the two friends' experiences with rain and flood, the ensuing changes of the puddle into a pond, then a lake and finally a sea before the rain stops and the sea recedes to a lake, then a pond, and finally a puddle.

Comment: Wetlands may or may not be wet all year. Many may even be dry for many months. Like the flood of *In the Middle of the Puddle*, animals occurring in wetlands have specially adapted to these sometimes extreme fluctuations.

ISLAND OF THE LOONS, Dayton O Hyde. Atheneum, New York; 1984; 155 p.; grades 4 to 7; F

Summary: Captivating and exciting adventure of orphan Jimmy who is captured by a convict and taken to an uninhabited island in Lake Superior where they fend together for several months, including winter. There, Jimmy senses the convict's unfamiliarity with wilderness and realizes the more useful he is, the greater his chances of survival. Descriptive wetland settings include sphagnum plants and leatherleaf bogs. Jimmy's resourcefulness extends to creating brews from wetland plants: pitcher plants, cattails and lady slippers.

Comment: Wetlands occur in shallow depressions or alongside river and lakes, as on the island in Lake Superior in *Island of the Loons*. Dayton O. Hyde blends together a tale of a man who finds himself.

MARSHES AND SWAMPS*, Linda M. Stone. Children Press, Chicago; 1983; 48 p.; grades 2 to 4; NF

Summary: Attractive, accurate, and well-illustrated. Describes three different types of wetlands: marshes, bogs, and swamps, including information on their functions and values.

Comment: In *Marshes and Swamps*, author Stone provides excellent information about wetlands and their values and functions. She has written several other books on wetlands, including one entitled, *Wetlands*, also contained in this reading list.

THE MYSTERY OF THE GREAT SWAMP, Marjorie A. Sapp. Atheneum, New York; 1967; 167 p.; grades 4 to 7; F

Summary: Captivating tale with colorful description of the swamp. Presented by the Weekly Reader Children's Book Club. Takes place in the Okefenokee Swamp in Georgia. Recounts adventures of boy Jeb in swamp, particularly his unexpected encounters with the Indians that were not all driven from the swamp years ago, as early settlers had thought.

Comment: In *The Mystery of the Great Swamp*, the author refers to true, realistic elements of the swamp throughout the story including: herons, alligators, waving reeds, grasses, tall spotted pitcher plants, cypress trees and tupelo trees. Trees are important for distinguishing a swamp from a marsh as marshes are dominated by soft-stemmed (known as herbaceous) plants.

POND AND RIVER*, *Steve Parker*. Alfred A. Knopf, Inc., New York; 1988; 64 p., grades 3 to 5; NF

Summary: Very well-illustrated, in color and indexed. Describes the types of plants and animals that characterize ponds and rivers, with a special emphasis on these habitats as they change during the different seasons of the year.

Comment: Pond and River provides good information on ponds, rivers and wetlands. A pond may be defined as a body of water so shallow that plants may grow completely across it. As such, many ponds are also wetlands. Also, many wetlands occur along rivers and are known as riverine wetlands.

THE POND BOOK, *Albro Gaal*. Van Rees Press, New York; 1955; 136 p.; grades 3 to 4; NF

Summary: Easy to read and understand. Gaal provides interesting and fun activities for children to learn about wetlands using applied, hands-on approach.

Comment: Ponds are vegetated shallow bodies of water and may be considered just one of many different types of wetlands. One chapter in The Pond Book is about setting up a "teacup aquarium," which, as the name indicates, can be done in the home. This would allow the student to watch activities of the tiny living things that may be found in a nearby pond.

SCOOTS THE BOG TURTLE*, *Judy Cutchins and Ginny Johnston*. Atheneum MacMillan Publishing Company, New York; 1989; 32 p.; index; grades 3 to 5; NF

Summary: Excellent! Identifies and describes bogs as rare, unique and fragile wetlands occurring in cooler climates of the north and on mountains. Explains unique adaptations of the bog turtle which is specially adapted to bog habitat.

Comment: Like other plant and animal inhabitants of bogs, the bog turtle is easily threatened by human disturbances. Scoots the Bog Turtle follows the life of imaginary Scoots, the little bog turtle at Duck Potato Bog. All plants and animals in the story commonly occur in bogs in the North Carolina mountains.

THE SEMINOLE*, *Martin Lee*. Franklin Watts, New York; 1989; 64 p.; grades 3 to 5; index; NF

Summary: Historical and modern account of Seminole Indians of the Florida swamps. Tells the background of the Seminole Indians who lived in Georgia and Alabama but were forced into Florida in the 1700's, some north of Big Cypress Swamp. Descriptions of the Seminole Wars and of their leader Osceola hiding his people in swamps of southern Florida after a fight. While many Seminoles were killed or moved to reservation in West, a few choose to continue to live in the southern Florida environment, in traditional chickees (huts) in small villages.

Comment: *The Seminole* and other titles on Seminole Indians (or Indians in general), provides information on how native Americans learned to live in unison with a wetland environment - in this instance a swampland - and their customs of food gathering, assembling homes, and preparing garments of materials using resources found in the wetlands environment.

(NOTE: This is not the same book as the one listed by same title under Primary Level by Emilie U. Lepthier.)

SMALL WATER MAMMALS, Maxwell Knight. McGraw-Hill Book Co., New York; 1968; 32 p.; grades 3 to 5; NF

Summary: Good background information on water mammals. Identifies and describes specific water mammals, including the water shrew, muskrat and beaver - mammals often found in wetlands. Describes each animal's requirements in terms of food, home, and breeding.

Comment: Mammals (wildlife) represent one of the many values wetlands provide. They are part of the food chain. Students may observe mammals such as a muskrat or beaver by sitting patiently and quietly alongside a marsh which shows signs of muskrat or beaver activities (stumps along the edge of or a lodge in the marsh) at dusk.

SNAILS OF LAND AND SEA, Hilda Smith. The Vanguard Press, New York; 1976; 143 p.; grades 4 to 7; index; NF

Summary: Attractive, color illustrations. Discusses the evolution, anatomy, structure of the shell and growth of the entire class of snails, including freshwater snails. Describes the characteristics of major groups of snails, such as swamp snails which may live in ponds, pools and other shallow waters.

Comment: Students are urged to seek out *Snails of Land and Sea* and other titles on snails to learn about these highly successful animals that are common in wetlands. Snails are important food in some countries and have been economically useful as currency and in creating dyes and culturally important in jewelry and artifacts.

SWAN LAKE*, Mark Helprin. Briel Books, Houghton-Mifflin Co., Boston; 1989; 84 p.; grades 2 to 5; F

Summary: Beautifully illustrated classic, an original fable with insightful text that reveals the story behind Tchaikovsky ballet. Tale is of an orphaned princess and a young prince. The prince is posed with a choice of the world of the court or the peaceful world of nature. Critical scenes occur along a lake and other bodies of water, centering around swans.

Comment: *Swan Lake* flows with the grace of Tchaikovsky's music. Wetlands, such as those found in the tundra and prairie potholes of the Midwest, are the nurseries for a HGH percentage of ducks, geese and swans.

WATER INSECTS, Sylvia A. Johnson. Lerner Publications, Minneapolis; 1990; 48 p.; grades 3 to 7; glossary; NF

Summary: Well-designed and illustrated in a style that appeals to children without oversimplifying or sacrificing accuracy. Water Insects focuses predominantly on insects occurring in ponds and wetlands, with photographs highlighting every aspect of insect life.

Comment: As with other volumes from Lerner Natural Sciences Series, Water Insects is easy to understand and thorough. Many children are fascinated by insects. Water Insects draws on their natural curiosity and will invite them to visit ponds and other wetlands to observe water insects.

WETLANDS*, Linda M. Stone. Rourke Enterprises, Inc., Vero Beach; 1989; 48 p.; grades 3 to 5; glossary maps and index; NF

Summary: Attractive and well-illustrated with excellent information on wetlands! Part of Ecozones Series. Wetlands information addresses their curious appeal, the different types of wetlands that occur, formation of wetlands, and the plants and animals wetlands support.

Comment: As with Marshes and Swamps listed earlier, Wetlands is another wonderfully written book on ecosystems by distinguished children's author, Linda M. Stone. Wetlands contains several hands-on activities, such as creating a collage of wetlands plants and animals. The author includes a list of outstanding wetlands to visit.

WETLANDS: BOGS, MARSHES, AND SWAMPS, Lewis Buck. Parents Magazine Press, New York; 1974; 64 p.; grades 2 to 4; index; NF

Summary: Attractive, light and well-written for young children. Identifies and describes three of the more familiar types of wetlands: bogs, marshes, and swamps. Examines the Prairie Pothole region in the Midwest and central Canada, the breeding grounds for one-third of the North American waterfowl population in the chapter, "Life in a Duck Factory."

Comment: Wetlands: Bogs, Marshes and Swamps mentions all wetlands are changing from water to dry land, a belief once commonly accepted that we now know does not always occur. Wetlands are created by hydrology and many wetlands do not develop into uplands with the passage of time as once was thought but remain wetlands as long as hydrology remains.

WONDERS OF THE FIELDS AND PONDS AT NIGHT, Jacquelyn Berrill. Dodd, Mead and Co., New York; 1962; 80 p.; grades 3 to 5; index; NF

Summary: Easy to read and informative. The chapter devoted to ponds, "Night at the Pond," has sections on some of the animals inhabiting ponds, many of which are wetlands. Information included on frogs, water shrews and muskrats, all of which occur in wetlands.

Comment: Most animals are nocturnal and those inhabiting shall ponds and wetlands are no exception. In *Wonders of the Field and Ponds at Night*, author Berrill presents this other less understood period of living world, nighttime, when mammals are most active in and around wetlands.

THE WORLD OF FISHES*, Thomas D. Fagely. Dodd, Mead and Co., New York; 1978; grades 3 to 5; index and bibliography; NF

Summary: Informative, easy to understand. Presents overview on fishes and their importance as food and as a source of recreation. Provides general facts on fishes, including: senses, mating and habitat; individual chapters on different kinds of fish - gamefish, panfish, salt and freshwater fish; information on endangered fish; and information on the effects of pollution.

Comment: *The World of Fishes* and books on brackish or saltwater as well as freshwater fish contain information on animals that may breed, hatch, feed, and live their whole life in wetlands. Wetlands are necessary to many fishes during some or all of their life. One final chapter has information on creating one's own "pond" or aquarium.

Intermediate Level (Grades 6 through 8)

Estuaries, Where Rivers Meet the Sea, Laurence Pringle
Everglades Country, Patricia Lauber
Exploring the Great Swamp, George Laycock
Look What I Found, Marshal T. Case
Misty of Chincoteague, Marguerite Henry
The Mystery of the Bog Forest, Lorus J. Milne and Margery Milne
A Naturalist's Sketchbook, Claire Walker Leslie
Of Men and Marshes, Paul L. Errington
Pitcher Plants: The Elegant Insect Traps, Carol Lerner
Pond Life, George K. Reid
The Snow Goose, Paul Gallico
Wild and Scenic Rivers, National Geographic Society
The Wind in the Willows, Kenneth Grahame
The Yearling, Marjorie Kinnan Rawlings

List of Additional Books for Intermediate Students

The section describing the following books are in parenthesis:

Amazon: The Flooded Forest, Michael Goulding (secondary)
Animals and Plants That Trap, Philip Goldstein (elementary)
The Birder's Handbook: A Field Guide to the Natural History of North American Birds, Paul R. Erlich, David S. Dobkin, and Darryl Wheye (secondary)
Dragonflies, Hilda Smith (elementary)
Frogs, Toads, Lizards and Salamanders, Nancy Winslow (elementary)
Island of the Loons, Dayton O. Hyde (elementary)
Life and Death of the Salt Marsh, John and Mildred Teal (secondary)
The Pond, Robert Murphy (secondary)
A Sand County Almanac, Aldo Leopold (secondary)
Through the Eyes of a Young Naturalist, Bill Sipple (secondary)
Walking the Wetlands, Janet Lyons and Sandra Jordan (secondary)
Wandering Through Winter, Edwin Way Teale (secondary)
Water Insects, Sylvia A. Johnson (elementary)

Intermediate Level (Grades 6 through 8)

ESTUARIES, WHERE RIVERS MEET THE SEA, Laurence Pringle. The MacMillan Co., New York; 1973; 56 p.; glossary; grades 5 to 7; NF

Summary: Superb photographs and simple, concise text. Explores bays and salt marshes, with descriptions of plant and animal life above and below water, including the complex, interrelationships between tides, grasses, crabs, fishes and birds.

Comment: Estuaries are among the most productive ecosystems in the world, some producing twenty times as much food as an equal area of open sea. Salt marshes may produce ten tons of plants a year compared to the best wheat fields which yield only seven tons. The following passage from *Estuaries, Where Rivers Meet the Sea* indicates how valuable estuaries are to all of us:

"Whether you live close to an estuary or far away, your life is tied to salt marshes and eelgrass meadow. Whenever you eat scallops, oysters, clams, sole or many other kinds of seafood, your body receives energy from estuaries."

EVERGLADES COUNTRY, Patricia Lauber. The Viking Press, New York; 1973; 125 p.; grades 5 to 8; NF

Summary: Very informative and accurate. Provides an account of the Florida Everglades, with its unique plant and animal life. Author refers to Everglades National Park as a "huge reach of grassy water." Describes this internationally unique and valuable wetlands system known as the Everglades as well as the constant, heavy pressure to develop this area. It includes discussions of the defeat of proposed construction for an expansive airport, and ongoing irrigation for agricultural practices that have changed the "grassy water to barren land.

Comment: *Everglades Country* provides the student with a respect, understanding and appreciation for this special environment, its inhabitants and the threats to its existence. Perhaps it will encourage students to identify ways to actively conserve wetlands.

EXPLORING THE GREAT SWAMP, George Laycock. David McKay Company, Inc.; 1978; 58 p.; grades 5 to 8; NF

Summary: *Very Informative and well illustrated. Author Laycock conveys sense of intrigue and adventure as the author defines wetlands and some of their values and functions. Describes swamps, including the history and vegetative communities that comprise some swamps of North America. In Exploring the Great Swamp, George Laycock investigates scientifically accurate facts, eye-witness accounts, history and legends of the great swamps such as the Great Dismal Swamp located on the border between Virginia and North Carolina, the Okefenokee Swamp in Georgia and the Alakai on a Hawaiian mountaintop.*

Comment: *Exploring the Great Swamp* presents good information about swamps in different areas of the country. The reader will learn that while these places are all swamps, each swamp is unique and differs widely from other swamps.

LOOK WHAT I FOUND*, **Marshal T. Case**. The Chatham Press, Inc., Riverside; 1971; 95 p.; grades 5 to 7; NF

Summary: Contains useful information on setting up an aquarium either at home or in the classroom, for studying plant and animal life, including those found along the edge of wetlands. Discourages disturbing wetlands, and encourages students to release living things they capture to their native habitats once finished with them.

Comment: In *Look What I Found*, author Michael T. Case provides information for students to learn first hand what constitutes a wetland through building a model of a wetland either at home or in the classroom.

MISTY OF CHINCOTEAGUE*, **Marguerite Henry**. Rand McNally and Co., Chicago; 1946; 176 p.; grades 5 to 8; F

Summary: Fiction based on fact; occurs along the barrier islands of Maryland and Virginia; Assateague Island, where according to legend shipwrecks in colonial times occurred and stranded fifteen ponies in wild, grassy marshlands; and neighboring Chincoteague Island, home of children Maureen and Paul. Classic narrative of Paul and Maureen's adventures acquiring three ponies: a wild mare, stallion and colt during annual round-up and lessons learned in the process.

Comment: Many students love horse stories. Assateague Island is a National Wildlife Refuge where ponies still roam free and every year there is a round-up like the one described in *Misty of Chincoteague*. All the incidents in the story are real and happened at one time or another along the barrier islands and grassland marshes. Accurate descriptions of the marshes and barrier islands are incorporated.

THE MYSTERY OF THE BOG FOREST, **Lorus J. Milne and Margery Milne**. Dodd, Mead and Company, New York; 1984; 128 p.; grades 5 to 7; index; NF

Summary: Attractive, well-done and accurate, with index. Explains the origins of bogs, their special attractions and their unique plant and animal life. Lists plants and animals occurring in wetlands, providing scientific name and range. Describes the formation of bogs from peat moss as it spreads out from shore, and the usually harsh, physical characteristics that limit the plant community to life forms specially adapted to wetlands, emphasizing the adaptation of carnivorous plants.

Comment: *The Mystery of the Bog Forest* provides helpful background information on bogs and their unique and unusual types of vegetation. A student may want to visit a bog after reading this book. Bogs are great to investigate in groups. Authors Margery and Lorus Milne also describe the very old artifacts found deep in bogs.

A NATURALIST'S SKETCHBOOK, Clare Walker Leslie. Dodd, Mead and Company, New York; 1987; 121 p.; grades 7 to 12; NF

Summary: Creative, new method for studying wetlands. Leslie presents a calendar year of pages taken from ten naturalist journals daily covering the period 1977 to 1987. Provides helpful notes on drawing, demonstrating a new way of seeing nature. Drawings of waterfowl, paddling painted turtle and hooded mergansers in a pond with notes describes author's experiences during the day in margins.

Comment: *A Naturalist's Sketchbook*, like Leslie's earlier, *Nature Drawing: A Tool for Learning* is simply about developing a new tool for learning and is highly recommended for learning to see and study nature in a new way. It is an excellent tool for experiencing and learning about marshes and other wetlands through "seeing."

OF MEN AND MARSHES, Paul L. Errington. The Iowa State University Press, Ames; 1957; 150 p.; grades 7 to 10; NF

Summary: Accurate but not too technical description as dedicated naturalist unveils little known world of wetlands life; encompasses prairie marshes and marsh-dwelling animal societies such as muskrat (Errington is "The muskrat expert") and water birds in glaciated regions of Midwest and far West, and Southeast. Portrays ducks filling skies and covering waters, shorebirds running on mudflats, fishes in shallows; describes living things adjusting to changes such as muskrats during flood and drought, waterfowl in migration during a snow storm.

Comment: *Of Men and Marshes* takes a humanistic and historic perspective to describe human impacts on marsh communities. By paralleling human to marsh societies, Errington expresses the need for reverence toward the ancient interrelationships of native plants, animals, soils, and climates. He suggests man demonstrates he is civilized by preventing unnecessary destruction of the remaining marshlands and other existing wild places.

"Greater familiarity with marshes on the part of more people could give man a truer and more wholesome view of himself in relation to Nature. In marshes, Life's undercurrents and unknowns and evolutionary changes are exemplified with a high degree of independence from human dominance as long as the marshes remain in marshy condition. Marshes comprise their own form of wilderness. They have their own life-rich genuineness and reflect forces that are much older, much more permanent, and much mightier than man."

Note: Since this book is out of print, it may be hard to find.

PITCHER PLANTS: THE ELEGANT INSECT TRAPS, Carol Lerner. William Morrow and Company, New York; 1983; 63 p.; grades 5 to 8; NF

Summary: Excellent drawings, paintings and text. Contains a glossary, an index and a list of places with collection of pitcher plants and other carnivorous (insect-eating) plants. Portrays a group of plants known as pitcher plants which are unique to bogs along the East coast. These unusual plants are unable to obtain nutrients from acidic soils conditions and have adapted by consuming insects to live.

Comment: Pitcher Plants: The Elegant Insect Traps and similar books on insectivorous or carnivorous plants are highly recommended for learning about these unusual and rare plants, and will enable students to gain an understanding of the unique adaptations plants and animals make in response to the special ecological conditions found in wetlands systems.

POND LIFE*, George K Reid, Ph.D. Western Publishing Company, Inc.; New York; 1967; 160 p.; grades 6 to 10; index; NF

Summary: Popular, accurate and informative book in the Golden Guide Series. Describes and illustrates in color some of the most common of the thousands of animals and plants that inhabit ponds and other wetlands, lakes and streams. First section includes valuable information on the characteristics of ponds, examining several of the many different types of ponds and wetlands (cypress swamps, bogs, and mountain bogs). Discusses water characteristics and the different habitats found in freshwater systems, including the littoral or wetland habitat extending from the water's edge outward as far as rooted plants grow. Suggestions for when to visit, where to look, how to make exciting discoveries, and how to observe, collect and release live specimens.

Comment: Pond Life defines ponds as quiet bodies of water so shallow that rooted plants may grow completely across them. By definition, ponds are one type of wetland. Although there are many different kinds of wetlands and each is unique, *Pond Life* explains well the physical and biological factors common to most wetlands, as well as how plants and animals live in community together.

THE SNOW GOOSE*, Paul Gallico. Alfred A. Knopf, Inc., New York; 1940; 56 p.; grades 5 to 12; NF

Summary: Haunting, moving and tender account during World War II. Setting is an abandoned lighthouse on a low, far-reaching desolate expanse of grass, reeds, and half-submerged meadowlands on the Essex coast of England. Snow Goose wanders from home in Canada to England and is wounded by hunters in nearby marsh. Twelve year old girl, Fritha, daringly brings wounded Snow Goose to lonely, deformed man, Rhayader, who cares for wild, wounded animals. Once healed, "Great White Bird" returns annually. When war breaks out, Rhayader sets out across the sea to rescue marooned men in bad weather, unknowing of Snow Goose overhead. Remainder of story is a mystery but fragmentary and is based on words from pub and local residents: Rhayader is successful, however, what became of him is unknown and of the Snow Goose it is written:

"The Great White Bird with the black-tipped pinions that saw it all from the beginning has returned to the dark, frozen silences of the northlands from whence it came." (p. 56)

Comment: *The Snow Goose* is a true story that occurs along the coastal wetlands of Great Britain and is garnered from many sources and many people. Apparently, the hero was last seen rowing soldiers across the sea to safety time and again, with the Snow Goose accompanying him. Following is a passage from *The Snow Goose*:

"The Great Marsh lies on the coast between the village of Chelmbury and the ancient Saxon oyster-fishing hamlet of Wickaeldroth. It is one of the last wild places of England, a low, far-reaching expanse of grass and reeds and half-submerged meadowlands ending in the great saltings and mud flats and tidal pools near the restless sea." (pages 3-4)

WILD AND SCENIC RIVERS, National Geographic Society. Washington, D.C.; 1983; 200 p.; grades 6 to 9; NF

Summary: Stunning photographs and informative text on America's rivers, including many riverine wetlands as those along the Little Pee Dee River in South Carolina, the floodplain wetlands of Minnesota's Big Fork River, and the Bayou Penchant, a 30-mile marsh environment in Louisiana.

Comment: *Many wetlands occur along rivers. Wetlands also often occur at the headwaters of rivers. For example, Wild and Scenic Rivers cites the source or headwaters of Wisconsin's Riverer Noire or Black River as bogs and swamps. The book describes state and national efforts to preserve these and other riverine systems, as well as people who work to protect them.*

THE WIND IN THE WILLOWS*, Kenneth Grahame. Charles Scribener's Sons, New York; 1908; 259 p.; grades 6 to 10; F

Summary: Classic, delightful story featuring adventures of animals along a riverbank, wetlands habitats and other low-lying areas. Star characters include Mole, Rat, Toad and Badger. Whether it is the adventures boating with Rat or Toad in his motor car, wetlands are never far off: along the river, besides the meadows, on the bank where Rat's house is found or beside the pools where Otter hides. Below is an excerpt from a conversation between Mole and Rat, as Mole speaks about enjoying boating and water:

"What?" Cried the Rat, open-mouthed; "Never been in a-you never-well, I -what have you been doing then?"

"Is it so nice as all that?" asked the Mole shyly.

"Nice? It's the only thing," said the Water Rat solemnly, as he leaned forward for his stroke.

"Believe me, my young friend, there is nothing - absolutely nothing - half so much worth doing as messing about in boats." (pages 6-7)

Comment: *The Wind In The Willows* is for those who are or remain young at heart. Wetlands occur along the rivers, and many of us enjoy activities in riverine wetlands, much like the characters in this book. *The Wind In The Willows* portrays the interconnectedness of wetlands, rivers, meadows, woods, and the lives of animals and humans.

THE YEARLING*, *Marjorie Kinnan Rawlings*. Charles Scribner's Sons, New York; 1938; 428 p.; grades 7 to 10; F

Summary: This cherished classic that takes place in the shallow springs and pools, sawgrass rivers and adjacent meadows and wooded swamps in and around the Florida Everglades. Story is about a boy growing up in a poor family, his attachment to adopted, semi-tame fawn, the fawn's repeated invasion of his father's corn field, the tragedy that follows, and the painful maturing these experiences bring. Excellent characters, realistic experiences and accurate descriptions of landscapes.

Comment: *The Yearling* mirrors author M.K. Rawling's own, real life experiences when she emigrated from the bustling life of the city to write in a country surrounded by the Florida Everglades. It is based on her personal relationship with a neighboring family and a youth who faced the very real trials of growing up in a poor, rural family with a father attached to the bottle. Her writings also describe the surrounding wetlands, typical of the Florida Everglades, as indicated in the quote below:

"There was suddenly a strip of hammock land, and a place of live oaks and scrub palmettos. The undergrowth was thick, laced with cat-briers. Then hammock, too, ended and to the south and west lay a broad open expanse that looked at first to be a meadow. This was the saw-grass. It grew knee-deep in water, its harsh saw-edged blades rising so thickly it seemed a compact vegetation." (pages 32-33)

Students are encouraged to read M.K. Rawling's autobiography, *Cross Creek*, which also has much on wetlands. Both *The Yearling* and *Cross Creek* have been made into movies.

9 to 12



One Day Unit



Choose One (table 1):

- WOW: Hear Ye! Hear Ye!
- WOW: Hydropoly
- WOW: Water Purifiers
- WOW: Wetland Address
- WOW: Wetland Habitats

Table 1: Correlations to state content standards and benchmarks.

Activity Title	Page #	Info Lit/ Library Media Benchmarks	Reading Benchmarks	Science Benchmarks	Social Studies Benchmarks	Technology Benchmarks	Writing Benchmarks
Hear Ye! Hear Ye!	253		1.3, 1.4, 2.2, 5.3		2.5a, 2.6, 2.7, 3.7, 5.1		
Hydropoly	260	1.1, 1.2, 1.3, 2.1, 2.3, 2.4, 2.5, 2.6, 3.1, 3.2		1.4	1.3, 3.3, 3.7, 5.2		
Water Purifiers	215	2.3, 2.4		1.2, 1.3, 1.4, 1.5		1.2, 1.3, 1.4, 1.5	
Wetland Address	147	1.1, 1.2, 1.3, 2.1, 2.3, 2.4, 2.5, 2.6			1.1	1.1, 1.2, 1.3, 1.4	2.1, 2.5, 6.2
Wetland Habitats	87		4.7				

Three Day Unit



Choose Two (table 2):

- WOW: Hear Ye! Hear Ye!
- WOW: Hydropoly
- WOW: Water Purifiers
- WOW: Wetland Address
- WOW: Wetland Habitats

Choose One (table 3)

- WOW: Get Involved!
- WOW: Helping Wetland Habitats
- WOW: Water We Have Here?

Table 2: Correlations to state content standards and benchmarks.

Activity Title	Page #	Info Lit/ Library Media Benchmarks	Reading Benchmarks	Science Benchmarks	Social Studies Benchmarks	Technology Benchmarks	Writing Benchmarks
Hear Ye! Hear Ye!	253		1.3, 1.4, 2.2, 5.3		2.5a, 2.6, 2.7, 3.7, 5.1		
Hydropoly	260	1.1, 1.2, 1.3, 2.1, 2.3, 2.4, 2.5, 2.6, 3.1, 3.2		1.4	1.3, 3.3, 3.7, 5.2		
Water Purifiers	215	2.3, 2.4		1.2, 1.3, 1.4, 1.5		1.2, 1.3, 1.4, 1.5	
Wetland Address	147	1.1, 1.2, 1.3, 2.1, 2.3, 2.4, 2.5, 2.6			1.1	1.1, 1.2, 1.3, 1.4	2.1, 2.5, 6.2
Wetland Habitats	87		4.7				

Table 3: Correlations to state content standards and benchmarks.

Activity Title	Page #	Info Lit/ Library Media Benchmarks	Science Benchmarks	Social Studies Benchmarks	Technology Benchmarks
Get Involved!	310	1.1, 1.2, 1.3, 2.1, 2.3, 2.4, 2.5, 5.3, 5.4		1.1, 1.2, 1.3, 2.1, 2.5, 2.6, 2.7, 3.1, 3.5, 3.7, 4.3, 4.5, 6.1, 6.3, 6.6	1.1, 1.2, 1.5, 3.5, 4.1
Helping Wetland Habitats	288		5.2, 5.3, 5.4	1.1, 1.2, 1.3, 3.1, 3.2, 3.3, 3.5, 3.7, 4.3, 4.5, 5.3, 5.4	1.1, 1.2, 1.3, 1.4, 1.5, 3.1, 3.2, 3.5, 4.1
Water We Have Here?	174	1.1, 1.3, 2.1, 2.3, 2.4	1.2, 1.3, 1.5	1.1	1.2, 1.3

Ongoing Unit



Choose One or More (table 4):

- WOW: Hear Ye! Hear Ye!
- WOW: Hydropoly
- WOW: Water Purifiers
- WOW: Wetland Address
- WOW: Wetland Habitats

Choose Two or More (table 5)

- WOW: A Rottin' Experiment
- WOW: Chrysti the Wordsmith on Wetlands
- WOW: People of the Bog
- WOW: Recipe for Trouble
- WOW: Regulation Rummy
- WOW: Water Under Foot

Choose Two (table 6)

- WOW: Get Involved!
- WOW: Helping Wetland Habitats
- WOW: Over Hill and Dale
- WOW: Run for the Border
- WOW: Tracking Plants and Keeping Track
- WOW: Water We Have Here?

Table 4: Correlations to state content standards and benchmarks.

Activity Title	Page #	Info Lit/ Library Media Benchmarks	Reading Benchmarks	Science Benchmarks	Social Studies Benchmarks	Technology Benchmarks	Writing Benchmarks
Hear Ye! Hear Ye!	253		1.3, 1.4, 2.2, 5.3		2.5a, 2.6, 2.7, 3.7, 5.1		
Hydropoly	260	1.1, 1.2, 1.3, 2.1, 2.3, 2.4, 2.5, 2.6, 3.1, 3.2		1.4	1.3, 3.3, 3.7, 5.2		
Water Purifiers	215	2.3, 2.4		1.2, 1.3, 1.4, 1.5		1.2, 1.3, 1.4, 1.5	
Wetland Address	147	1.1, 1.2, 1.3, 2.1, 2.3, 2.4, 2.5, 2.6			1.1	1.1, 1.2, 1.3, 1.4	2.1, 2.5, 6.2
Wetland Habitats	87		4.7				

Table 5: Correlations to state content standards and benchmarks.

Activity Title	Page #	Info Lit/ Library Media Benchmarks	Reading Benchmarks	Science Benchmarks	Social Studies Benchmarks	Technology Benchmarks
A Rottin' Experiment	245			1.1, 1.2, 1.3, 1.4, 1.5		
Chrysti the Wordsmith on Wetlands	280	1.2, 1.3, 2.1, 2.3, 2.4, 2.5, 2.6, 5.3, 5.4	2.1, 2.6		1.1, 1.2, 6.1, 6.2, 6.4	1.2, 1.3, 1.4, 1.5, 3.1, 3.2, 3.5, 4.1
People of the Bog	266	1.2, 1.3, 2.2, 2.3, 2.4, 2.5			3.1, 3.2, 3.5	1.2, 1.3, 1.4, 1.5, 3.5, 4.1
Recipe for Trouble	199			1.1, 1.2, 1.3, 1.4, 1.5, 5.4		
Regulation Rummy	270	1.2, 1.3, 2.3, 2.4, 2.5, 2.6	1.2, 4.4		2.6, 3.3, 3.6, 3.7, 5.4, 6.3	1.2, 1.4, 1.5, 3.5, 4.1
Water Under Foot	204	2.1, 2.3, 2.4		1.4		1.1, 1.2, 1.3

Table 6: Correlations to state content standards and benchmarks.

Activity Title	Page #	Info Lit/ Library Media Benchmarks	Science Benchmarks	Social Studies Benchmarks	Technology Benchmarks
Get Involved!	310	1.1, 1.2, 1.3, 2.1, 2.3, 2.4, 2.5, 5.3, 5.4		1.1, 1.2, 1.3, 2.1, 2.5, 2.6, 2.7, 3.1, 3.5, 3.7, 4.3, 4.5, 6.1, 6.3, 6.6	1.1, 1.2, 1.5, 3.5, 4.1
Helping Wetland Habitats	288		5.2, 5.3, 5.4	1.1, 1.2, 1.3, 3.1, 3.2, 3.3, 3.5, 3.7, 4.3, 4.5, 5.3, 5.4	1.1, 1.2, 1.3, 1.4, 1.5, 3.1, 3.2, 3.5, 4.1
Over Hill and Dale	220			1.1, 1.2, 1.3, 3.1, 3.2, 3.3, 3.5, 3.6, 3.7, 4.3	
Run for the Border	143		1.2, 1.3		
Tracking Plants and Keeping Track	138				
Water We Have Here?	174	1.1, 1.3, 2.1, 2.3, 2.4	1.2, 1.3, 1.5	1.1	1.2, 1.3

Wetlands Reading List



Introduction

The *Wetlands Reading List* is an annotated list of printed material that will supplement lesson plans and provide students with suggestions for independent reading on wetlands. The goal of the list is to encourage students to explore and develop a respect, understanding and appreciation for wetlands. This is an attempt to foster our appreciation of our nation's remaining wetlands.

The intention is to reach the whole student, to transcend her/his intellectual understanding and to instill an arts and humanity awareness of a valuable natural resource. It is hoped that reading the books will motivate students to pursue further reading about the wetlands resource and encourage them to learn about wetlands through the arts and sciences and through applied hands-on experiences.

Books contained in the *Wetlands Reading List* include different types of literature. Factual, nonfiction, picture books and fiction titles are provided. Entries are listed alphabetically by grade level in the *Wetlands Reading List*: primary (pre-kindergarten to grade 2), elementary (grades 3 to 5), intermediate (grades 6 to 8) and secondary (grades 9 to 12). Grade level refers to reading level and not the level for being read to, except for some books described at the primary level which may be better read to the child. They are listed here because their large and abundant pictures and easy to follow story make them suitable for the primary grade level.

The target age of many books extends beyond the one grade level in which they have been placed. It is recommended the educator does not limit her/himself to the grade she/he teaches but to consider books in adjacent grade categories. A list of these books and the grade level under which they are discussed is located at the end of each section. The number of entries under each section varies, as does the information for each listing. Each title cites the author, publisher, date published, page length and grade range, and is classified by a special code as indicated below:

- E = Easy Reader (picture books)
- F = Fiction
- NF = Nonfiction
- SC = Story Collection, Anthologies

Following the citation is a *summary and comment*. The *summary*, written in phrases, sentences or sentence fragments, is intended to capture the essence of the book, be it plot or factual material. The *comment* provides more in-depth background information on the book and its significance in respect to the wetlands resource. Quotes are often included with an entry.

Most important is where one might find the books listed in the *Wetlands Reading List*. An asterisk (*) after a title indicates a book is in print and available through a book shop. If it is not on the shelf, many bookstores will special order a book. Many of the books may be obtained at a children's library, local public library, a school library, county or city park or environmental education center, children's book store or nature section in a book shop. Some are available through organizations such as the Sierra Club or the National Geographic Society.

The *Wetlands Reading List* is not intended to be inclusive of every book ever written on wetlands or to endorse the books listed here. There are many other excellent publications for children on wetlands. For example, the *Wetlands Reading List* does not begin to list every book - and there are many good publications-written on dragonflies. Titles serve as suggestions for starting points for the inquiring student and teacher seeking information on wetlands. Students and teachers are encouraged to expand their horizons beyond the list, to refer to other books by the same and other authors and to search out books covering similar subjects as those contained herein. A list of suggested topics and key words is provided in the back.

Key Wetland Topics

The books that are described in the "Wetlands Reading List" are only a few of the many that exist on wetlands and wetlands related topics. Readers unable to locate any of the books identified in the "Wetlands Reading List," will want to look for other books that may cover the same topic. Numerous more books have been and continue to be written on wetlands. A few key words for finding additional books on wetlands topics are listed below:

*alligators
amphibians
bayou
beaver
birds
boating
bogs
carnivorous plants
cattail marsh
dragonflies
ducks
estuaries
Everglades
explorers
fens
fish
frogs*

*insectivorous plants
Lewis and Clark
lily pad
marshes
muskrats
nature writers
pitcher plants
ponds
rivers
Seminole Indians
snails
spring peepers
streams
sloughs
swamp
toads
water*

Secondary Level (Grades 9 through 12)

Adopting a Stream: A Northwest Handbook, Steve Yates
The Adventures of Huckleberry Finn, Mark Twain
Amazon: The Flooded Forest, Michael Goulding
Beautiful Swimmers, William W. Warner
The Birder's Handbook.- A Field Guide to the Natural History of North American Birds, Paul R. Erlich, David S. Dobkin, and Darryl Wheye
Caesars of the Wilderness, Peter C. Newman
Chesapeake, James A. Michener
Company of Adventures - The Story of the Hudson's Bay Company, Peter C. Newman
The Everglades: River of Grass, Marjory Stoneman Douglas
Lewis and Clark: Pioneering Naturalists, Paul Russell Cartright
Life and Death of the Salt Marsh, John and Mildred Teal
The New Book of Oxford Canadian Verse, compiled by Margaret Atwood
Pilgrim at Tinker Creek, Annie Dillard
The Pond, Robert Murphy
The Portable Thoreau, revised edition by Carl Bode
Runes of the North, Sigurd F. Olson
A Sand County Almanac, Aldo Leopold
Swamp Fox, Robert Duncan Bass
This Incomparable Lande, Thomas J. Lyon
Through the Eyes of a Young Naturalist, William A. Sipple
Walking the Wetlands, Janet Lyons and Sandra Jordan
Wandering Through Winter, Edwin Way Teale
The Water is Wide, Pat Conroy
Water Pollution, Kathlyn Gay
Wetlands, William Niering
Wetlands, Max Firlaison and Michael Moser

List of Additional Books for Secondary Students

The section describing these additional books are in parenthesis:

A Naturalist's Sketchbook, Claire Walker Leslie (intermediate)
The Snow Goose, Paul Gallico (intermediate)
The Wind in the Willows, Kenneth Grahame (intermediate)
Wild and Scenic Rivers, National Geographic Society (intermediate)
The Yearling, Marjorie Kinnan Rawlings (intermediate)

Secondary Level (Grades 9 to 12)

ADOPTING STREAM: A NORTHWEST HANDBOOK*, Steve Yates. University of Washington Press; Seattle; 1989; 144 p.; grades 10 to 12; NF

Summary: Primarily a handbook for the older student and adults. Author provides helpful information for teachers and older students interested in working with a group of high school students to adopt and improve a stream and adjacent or isolated wetlands. Contains information about streams but is applicable to wetlands, too.

Comment: Although primarily about streams, *Adopting A Stream: A Northwest Handbook* is an excellent reference for anyone interested in initiating a stream or wetlands clean-up and monitoring project. Adopting a wetland could be a challenging but rewarding class endeavor.

THE ADVENTURES OF HUCKLEBERRY FINN*, Mark Twain. Airmont Publishing Co., Inc., New York; 1962; 318 p.; grades 10 to 12; F

Summary: Humorous yet complex classic often cited as Mark Twain's best. Begins with rigid aunt and abusive, drunk father from whom Huck Finn soon escapes. Aunt accuses slave Jim who had disappeared of murdering Huck. Story unfolds as Huck and Jim soon meet, build a raft and flee together down the Mississippi River. Novel depicts their journey of adventure and humor, cruelty and injustice, and preserves the essence and spirit of an important era in American history.

Comment: *The Adventures Of Huckleberry Finn* contains more of one of America's favorite writers, Mark Twain, than any of his other novels. It is also important river/wetlands literature because the setting is the Mississippi River, a watershed which drains waters from about a third of the United States. Experience highlight the interconnectedness between man and the environment. Twain brings to the novel his own personal experiences with the river and once extensive adjacent wetlands as riverboat pilot along the great river. Another book by Mark Twain that contains information on the Mississippi and her wetlands is *Life on the Mississippi*.

AMAZON: THE FLOODED FOREST, Michael Goulding. Sterling Publishing Co., New York. 1990; 208 p.; grades 8 to 12; NF

Summary: Spectacular photographs, many of wetlands. Complements television series by Partridge Films, Ltd., for the British Broadcasting Company (BBC). Provides natural history of Amazonian rivers and rainforests. Three main features of Amazonian floodplains are described: flooded forests, open water bodies and floating meadows of herbaceous plants. Information is included on species of trees specially adapted to survive long period of flooding.

Comment: The Amazon is a very special place and much of this large area is a wetland. It floods to a depth of 30 feet then drains to a shallow marsh annually. The variety of plant and animal life that has adapted to the extreme conditions of the Amazon is extraordinary, as is evident in *Amazon: The Flooded Forest*.

BEAUTIFUL SWIMMERS*, William W. Warner. Little, Brown and Company, Boston; 1976; 304 p.; grades 9 to 12; NF

Summary: Well written and interesting. Contains information on the Atlantic blue crab and is a study of the Chesapeake Bay, the continent's largest estuary, including its history, winds and tides, gradations of depth, temperature and salinity with an interesting account on those who earn their living by chasing the blue crab. It follows the seasons of crabbers' year from autumn one year to Labor Day Crab Derby the next.

Comment: Warner writes in the manner of the great naturalists Rachel Carson and Annie Dillard, and is a must for learning about the Chesapeake, crabbing and estuaries. *Beautiful Swimmers* identifies additional reading sources and suggests sites to visit in the Chesapeake Bay in the "Afterword."

THE BIRDER'S HANDBOOK: A FIELD GUIDE TO THE NATURAL HISTORY OF NORTH AMERICAN BIRDS*, Paul R. Erlich, David S. Dobkin, and Darryl Wheye. Simon and Schuster, Inc., New York; 1988; 785 p.; grades 8 to 12; NF

Summary: Excellent guide and reference to all birds known to nest regularly on the continent, including all those that nest or inhabit wetlands. A significant portion is devoted to birds often found in wetlands. These include, but are not limited to ducks, geese, egrets, herons, loons, plovers, ospreys, and rails.

Comment: *The Birder's Handbook* is an identification guide with specific treatments of 650 species of birds, with fascinating and informative essays on each species. Type of nest, nest location, and major types of food eaten during the breeding season are included in the information provided.

CAESARS OF THE WILDERNESS, Peter C. Newman. Viking-Penguin, Inc.; 1987; 452 p.; grades 9 to 12; NF

Summary: Historical descriptions of the Hudson Bay Company (fur trading) empire established in Canada and the United States to harvest beaver and other fur animals in the vast wetlands of the two countries during the 1700's and 1800's.

Comment: The presence of water (hydrology) determine whether or not an area is a wetland. It influence the type of vegetation and type of soil that occurs. Collectively these three criteria - hydrology, soils and vegetation- are used to identify a wetland. In *Caesar of the Wilderness*, author Newman emphasizes Canada's historical dependence on water. Wetlands are habitat (home) to many furbearers, and are particularly important to beaver, muskrat, and mink.

CHESAPEAKE*, James A. Michner. Random House, New York; 1978; 865 p.; grades 9 to 12; F

Summary: Excellent descriptions of life surrounding the magnificent estuary habitat of Chesapeake Bay in the historical novel by acclaimed author. Contents are arranged chronologically. The section titled "Voyages" contains an abundance of material devoted to wetlands. Voyage One: 1583, "The River," focuses on Chesapeake Indian tribes including fictitious Petaquod observing a marshland bird, "Fishing-long-legs" (an egret?). In Voyage: 1636, "The Marsh," pirate Turloch learns to view the marsh not only as a hiding place but as:

"an empire, a reservoir of considerable richness populated by larger and tastier fish. He did not bother to differentiate the rushes and the various kinds of minute inedible crabs, nor did he have the knowledge to comprehend how the contrasting elements of life fitted together, each supporting the other; that complicated awareness would not come in his century. But what he could understand was the marsh constituted a kind of outlaw state from which he could thumb his nose at the Steeds and any others who sought to enslave him in their ordered ways."

Comment: In preparing *Chesapeake*, James Michner did a lot of field research into the Chesapeake Bay estuary, including its marshlands and tributaries, herons and ospreys, Indians, oysters, and more. Although it is a novel with imaginary characters and locales, *Chesapeake* documents the unique character and flavor of the Chesapeake Bay.

COMPANY OF ADVENTURES - THE STORY OF THE HUDSON'S BAY COMPANY, Peter C. Newman. Viking-Penguin, Inc., New York; 1985; 448 p.; grades 10 to 12; NF

Summary: Provides historical background of the giant Hudson's Bay Company that played a central role in settling the North American Continent.

Comment: *Company of Adventures* is recommended reading gaining a knowledge of the early pioneers and the undeveloped land, much of which included wetlands. Furs and the wealth they brought to the Hudson's Bay Company is a story that covers one-twelfth of the earth's surface - much of it wetlands.

THE EVERGLADES: RIVER OF GRASS*, Marjory Stoneman Douglas. Mockingbird Books, Inc., St. Simons Island; 1947; 308 p.; grades 9 to 12; NF

Summary: First comprehensive study of Florida's Everglades. Commences with a description of the natural setting followed by the coming of the Indian and later the Europeans. Includes descriptions of the natural history of the Everglades including its waters which form a seventy mile wide, shallow river, and grasses, particularly the saw grass. Accounts of the discoverers, conquerors and peoples that have affected the Everglades and present threats to their existence.

Comment: *The Everglades: River of Grass* portrays human history spanning the time from ancient Indian cultures to modern times, investigates the natural phenomenon of the seventy-mile wide river flowing through the saw grass to the sea and comments on the present and future threats to the Everglades.

LEWIS AND CLARK: PIONEERING NATURALISTS*, Paul Russell Cartright. University of Illinois Press, Chicago; 1969; 506 p.; grades 10 to 12; appendices and index; NF

Summary: Natural history account of the famous expedition of Merriwether Lewis and William Clark. Expedition originates on the Potomac River, traverses the Missouri and Columbia River watersheds to reach the Pacific coast and concludes with their return to St. Louis. The expedition occurred between 1802 and 1806, under the direction of then president, Thomas Jefferson. Includes appendices of plants and animals discovered by Lewis and Clark along rivers and riverine wetlands, and lists of Lewis and Clark journals, maps and other reference materials.

Comment: The mission of Lewis and Clark as explained in *Lewis and Clark: Pioneering Naturalists* was to explore the Missouri River and its principle streams and the waters of the Pacific for the purpose of commerce, to record the diverse vegetation and animal life, and to identify the aboriginal (Indian) nations. Their remarkable journey took place along major watersheds, including the Columbia Estuary and riverine wetlands. Descriptions of vegetation occurring in wetlands habitats include the broad-leaved arrowhead (*Sagittaria latifolia*) in the Northwest with its nutritious, white starchy tubers that contributed significantly to the welfare of coastal Indians.

Regarding the tremendous numbers of ducks, geese, brant, cranes, swans, and other aquatic birds, Clark comments: "I could not sleep for the noise kept (up) by the Swans, White and black brants..." (III 199) on page 239. This and other accounts of Lewis and Clark are excellent references revealing the rich, pristine landscape and abundance of life along our rivers and wetlands prior to European settlement.

LIFE AND DEATH OF THE SALT MARSH*, John and Mildred Teal. Ballantine Books, New York; 274 p.; 1969 grades 8 to 12; index; NF

Summary: Well written and illustrated, accurate and easy to understand. Documents the birth and death of marshes, ecology of salt marshes, and their conservation needs. Author describes salt marshes along the East Coast from Newfoundland to Florida, including: the development of these marshes, the plants and animals inhabiting them and their interrelationships, their contributions to human welfare and the often negative impact of human civilization on salt marshes.

Comment: Written long before many ever heard of the term "wetlands," *Life and Death of the Salt Marsh* is recommended reading for any student desiring to learn about wetlands in coastal areas. The environment of the salt marsh is unique in that plants and animals inhabiting them have had to adapt to fluctuating tides, to be covered with water one moment and exposed the next. At low tide the salt marsh is a vast flat meadow of grasses. High tide is similar but with water showing between the spears of grass where land was earlier. The authors discuss the negative impact of civilization on salt marshes and present solutions and suggestion emphasizing it is important for people to decide together to reduce the continuing losses and actively work toward the preservation of salt marshes.

THE NEW BOOK OF OXFORD CANADIAN VERSE, *Compiled by Maragaret Atwood.* Oxford University Presss, New York; 477 p.; grades 9 to 12; SC

Summary: Nice selections on wetlands, "The Blue Heron" by Theodore Goodridge Roberts, 1926, refers to a species of bird common in wetlands and has a very nice poetic description of a wetland, perhaps a fresh or salt water marsh. Following is a sample from his poem:

*"In a green place lanced through
With amber and gold and blue -
A place of water and weeds,
And ranks of lush young reeds
And grasses straightly withdrawn
From graven ripples of sands.
The still blue heron stands."*

Comment: This and other poems in *The New Book of Oxford Canadian Verse*, such as "Beaver Pond" (p. 165) or "Dark Pines Under Water" (p. 389) or "The Bull Moose" (p.299) are other poetry included on wetland-related topics. Students are encouraged to browse this and other anthologies for poetry and on related wetlands topics.

PILGRIM AT TINKER CREEK*, *Annie Dillard.* Bantam Books, New York; 1974; 280 p.; grades 9 to 12; NF

Summary: Highly recommended! Encompasses many levels and disciplines, including natural science, poetry, and philosophy. A sensory, revealing and magical excursion into the natural and mystical world of wetlands at Tinker Creek. Description of experiences in author-naturalist's world in wetlands at Tinker Creek include: author's experiences in chapter entitled, "Seeing," as she stalks the bank of cattail marsh and observes a muskrat, turtle, and swallow; and an excellent account of flood and its "tyrannical dominance" over the landscape including humans and other living things.

Comment: Annie Dillard received the Putlizer Prize for *Pilgrim at Tinker Creek*. A pilgrim watching for signs and keys to the natural world, the author's excellent manipulation of words in hands-on, experiential style enables the reader to feel, hear and smell the world of the naturalist. The chapter on the flood is relevant to the economic importance of wetlands because wetlands help reduce flood levels. From the author's perspective, Tinker Creek in Virginia represents the universe and its spiritual complexity.

THE POND, *Robert Murphy.* E.P. Dutton and Co., Inc., New York; 1964; 254 p.; grades 7 to 12; F

Summary: Reflective narrative portraying interaction between 14-year-old Joey, Mr. Ben and other characters Joey meets. Excellent characterizations describing Joey's observations when getting away from home to spend time with Mr. Ben, an elderly caretaker, in an obscure land near Richmond, Virginia, where he develops an appreciation for the wildlife he encounters.

Comment: *The Pond* contains excellent descriptions, including when Joey befriends a maltreated dog and Joey's interactions with two boys he meets and their deformed, crippled brother. Murphy sympathetically contrasts their world with Joey's. Reading *The Pond*, one will experience Joey's adventures; the development and molding of emotions, Joey's progress towards maturity; and an appreciation for life in the swamp, ponds and woods.

THE PORTABLE THOREAU*, Revised edition by Carl Bode. Viking Penguin, New York; 1982; 697 p.; grades 9 to 12; SC

Summary: Excellent nature writing. Contains writings on wetlands, including sections from *Walden*, *The Maine Woods* and *A Week on the Concord and Merrimac Rivers*. Editor writes of nature's claims on Thoreau, "that it presented a sympathetic setting for his thoughts, a drapery for his dreams." There was no human element to intrude. "What he saw in *Walden* was that 'sweet solitude my spirit it seemed so early to require' to invite his noblest thoughts" Following is an excerpt from *Walden*:

"Not a fish can leap or an insect fall on the pond but it is thus reported in circling dimples, in lines of beauty, as it were the constant welling up of its fountain, the gentle pulsing of its life, the heaving of its breast. The thrills of joy and thrills of pain are indistinguishable."

Comment: Henry David Thoreau is one of America's most influential nature writers. He wrote about his thought inspired by his detailed observations of the natural environment including wetlands. It is recommended that the reader not limit her or himself to any one work of Thoreau or other nature writers to gain insights into ponds, wetlands, and other natural resources.

RUNES OF THE NORTH*, Sigurd F. Olson. Alfred A. Knopf, Inc., New York; 1963; 256 p.; grades 7 to 12; NF

Summary: Legends, yarns and reflections drawn from northern Canada and Alaska. Many chapters such as "Cranberry Bog," "Wild Rice" and "The Swamp," contain interesting descriptions of wetlands. Two sections of *Runes of the North*, "Le Beau Pays" and "Pays d'en Haut" reveal descriptions of man's lore of the land, rushing white water streams and lost lakes.

Comment: *Runes of the North* depicts a wilderness, a large percentage consisting of lakes, rivers, and wetlands. Author Olson's runes (i.e. a tale of magic and mystery) will evoke the appeal of the wilderness. Sigurd Olson was a notable woodsman with thirty years of experience as a wilderness guide in northern Minnesota and Ontario. He has the gift of skillfully weaving together descriptions of nature, such as a cranberry bog, with deep insights into man's innerworld. The text reinforces that wetlands are ubiquitous. They can occur just about anywhere water collects, from a meter-wide puddle in the backyard, to an expansive freshwater marsh remote from man and civilization.

A SAND COUNTY ALMANAC*, Aldo Leopold. Ballantine Books, New York; 1970; 270 p.; grades 9 to 12; NF

Summary: A classic by a highly acclaimed author-naturalist! This edition combines *A Sand County Almanac* (first published in 1949) with essays from *Round River* (1953). Journal writing of seasonal changes in nature over the period of one year with abundant material on wetlands, such as "Come High Water" (p.25), "Great Possessions" (p.47) and "Manitoba" (p.169). Text includes essays from different areas around the continent, such as Arizona and Oregon but focuses primarily on Leopold's home in the Midwest. Leopold addresses man's destructive interference with nature and concludes with a plea for a conservation land ethic.

Comment: *A Sand County Almanac* is a must for anyone interested in things wild and free, and protection of the land on which they (and we) depend. Leopold reveals the interdependence between living things in the environment, particularly the critical and inseparable role wetlands play in the delicate balance of living systems and the earth. Below is a passage from "Marshland Elegy":

"A dawn wind stirs on the great marsh. With almost imperceptible slowness, it rolls a bank of fog across the wild morass. Like the white ghost of a glacier, the mists advance, riding over phalanxes of tamarack, sliding across bog meadows heavy with dew. A single silence hangs from horizon to horizon." (p. 101)

SWAMP FOX*, Robert Duncan Bass. Henry Holt and Company, New York; 1959; 275 p.; grades 9 to 12; NF

Summary: Historic account of Francis Marion's activities during Revolutionary War when he regained eastern South Carolina from the British and later, with Nathaniel Greene, drove the British from South Carolina. Historic documentation includes many swamp experiences.

Comment: The swamp provided a good hiding place for the resourceful Swamp Fox and his troops. Descriptions of swamps abound throughout the text, painting a picture in the reader's eyes of real wetlands. The author, Robert Duncan Bass, describes Little Peedee Swamp as:

"...giant cypress trees rearing their fronds into the sky, their knees protruding from the black loam and their limbs draped with streaming Spanish moss. From all around came the sour, pleasant smell of decaying vegetation and mucky soil."

THE INCOMPARABLE LANDE*, Thomas J. Lyon. Houghton Mifflin Company, Boston; 1989; 495 p; grades 10 to 12; SC

Summary: Begins with a history of nature writing in America and a discussion of major writers; an "Anthology of American Nature Writing" follows with a comprehensive selection from these authors including those who have written material, such as William Bartram's "East and West Florida" and John James Audubon's, "The Great Pine Swamp."

Comment: Works of the great nature writers in *The Incomparable Lande* provdies excellent descriptions of natural history and reveal a sense of oneness with nature. It touches on Man's ethical responsibility towards the land and its vital wetlands. For example, Thoreau speaks about human consciousness not being a separate human state but a partnership with nature.

Below is an exmple from *The Incomparable Lande* by one of the early nature writers, John James Audubon (1785-1851). Artist, ornithologist and writer, Audubon walked and rode through the recently settled states, alert to more than birds, particularly the beauty and inexplicable magnetism of wilderness and the diverse assortment of human characters he met in the black country. The following represents his most direct, concrete style:

"It was the month of October. The Autumnal tints already decorated the shores of that queen of rivers, the Ohio. Every tree was hung with clustered fruits of varied brilliancy, their rich bronzed carmine mingling beautifully with the yellow foliage, which now predominated over the yet green leaves, reflecting more lively tints from the clear stream than ever landscape painter portrayed or poet imagined." (p.47)

THROUGH THE EYES OF A YOUNG NATURALIST, William A. Sipple. Gateway Press, Inc., Baltimore; 1991; 204 p.; grades 9 to 12; NF

Summary: Anecdotal and nostalgic account of author's outdoor natural history experiences as youngster, teenager and young adult in New Jersey from 1951 to 1971. Author provides numerous autobiographical accounts of activities within the New Jersey countryside, beginning with advertures of the author as a young birder. Includes accounts of hunting, fishing trapping and camping in the New Jersey Pine Barrens, on the Hackensack Meadows and along the New Jersery Coast.

Comment: *Through the Eyes of a Young Naturalist* is written for a wide variety of outdoor and natural history enthusiasts both young and old, amateur, and professional. It documetns Sipple's changing interests, his environemental ethic and societal changes in attitudes and behavior toward natural resources. Part V "Evolving Ethics" elaborates on the author's personal perspective on the outdoors and the public's changing attitudues towards one of his favorite natural environments - wetlands.

Available from William S. Sipple, 512 Red Bluff Court, Millersville, Maryland 21108

WALKING THE WETLANDS*, Janet Lyons and Sandra Jordan. John Wiley and Sons, Inc., New York: 1989; 222 p.; index; bibliography; NF

Summary: Written as a hiker's guide to identify plants and animals that inhabit marshes, bogs and swamps. Includes full-page pen drawings accompanied by written descriptions of livign organisms in freshwater wetlands of the United States. Individual profiles contain concise descriptions of range of habitat, and informative essays on the natural history of wetland habitats.

Comments: *Walking The Wetlands* is a handy resource guide for the field. Although not comprehensive (e.g. herons are included, but not egrets), it reveals the value of wetlands through descriptions of the individual organisms found there. The appendix lists wetland areas in the National Park and National Refuge Systems. It is important to note that many species described in the text are not limited to wetlands (like raccoons and mink), but nonetheless frequent wetland habitats.

WANDERING THROUGH WINTER*, Edwin Way Teale. Dodd, Mead and Company, New York; 1965; 370 p.; grades 6 to 12; NF

Summary: Excellent material on wetlands throughout text. Opens in the southern tip of California as naturalist Teale travels north and east to northern Maine, describing his experiences with nature along the zigzag route of his wandering 20,000 mile journey. Teale describes the remarkable adaptations of the common cattail, and its use by Indians both for weaving mats and moccasins, and as an important food source. In the chapter, "The Great Swamp," the author discusses the value of the northern wetlands to deer for providing shelter and forage as they "yard up" in groups to survive winter in the chapter, "The Deer Yard."

"Each year, as soon as the snow begins to pile up in the north woods, these animals gather into bands...choosing some area protected from the cold winds and provided with such food as twigs, bark, tree lichens and evergreen boughs, settle down for the winter. Most frequently, cedar swamps are selected." (pp. 325-326)

Comment: *Wandering Through Winter* is the fourth of a series by respected artist, writer and naturalist, Edwin Way Teale, on traveling cross country with the seasons. Teale writes about the natural history of each season during his journeys. His other titles about the seasons are: *North With The Spring*, the narration of a 17,000 mile journey from Florida to Canada as author keeps pace with the advance of spring; *Journey into Summer*; and *Autumn America* follow. All four books contain material on wetlands and are recommended reading for learning about wetlands.

THE WATER IS WIDE*, Pat Conroy. Houghton Mifflin Co., Boston; 1972; 260 p.; grades 10 to 12; NF

Summary: Powerful and inspiring true account of Pat Conroy who chose to spend a year of his life teaching black children on an impoverished island on the South Carolina coast. Although its inhabitants have been living proudly off the sea, industrial waste had made its waters, including many wetlands, unsafe, threatening their lives- until one day when Pat Conroy walked into the office of the superintendent and offered to teach on the island which had no teacher. This is the account of that moving and incredible experience.

Comment: *The Water is Wide* is a must! The setting, Yamacraw, is an island off the South Carolina coast not far from Savannah, Georgia. There, wetlands abound as "undulating marshes" fringe the southern coast with "dark, threatening silences of the swamps in the heart of the island." Already familiar with wetlands, his father's pursuits had led Pat into swamplands of the East Coast.

WATER POLLUTION*, *Kathlyn Gray*. "Impact Books" Series, Watts, Kirkwood; 1990; 128 p.; grades 10 to 12; NF

Summary: *Balanced, well-written and well organized with clear, detailed scientific explanations. Provides information on the water cycle, sources of water, water pollution, attempts at clean-up and how to prevent continued misuse of this natural resource. Explains the importance of wetlands in terms of ecology and water systems, absorption of toxic compounds, prevention of aquifer contamination, and flood control.*

Comment: *Water Pollution* is a fine resource for the student who wants to understand the unique properties of water, the key characteristic of wetlands and the pervasive problems resulting from water pollution as it affects wetlands and other natural resources.

WETLANDS*, *William Niering*. Alfred A. Knopf, Inc., New York; 1985; 640 p.; grades 9 to 12; index; NF

Summary: *Well-written field guide published by National Audubon Society. Contains wetlands information including descriptions of different kinds of wetlands; dynamics of wetlands; discussions of ecosystems such as bogs, marshes and shrub swamps; colorplates of wetlands in the United States; photographs; descriptions of plants and animals; glossary bibliography; and index.*

Comment: *Wetlands* is an excellent guide for learning about wetlands! It is comprehensive but not overly technical. Niering has provided distribution maps of different kinds of wetlands; range maps for animals and plants. Below is an excerpt from *Wetlands*:

"A typical flooded marsh is often a mosaic of emergents, submergents and floating plants, interspersed with areas of open water. The marsh plants, the primary producers, are at the base of the food chain...Among the primary consumers are muskrats, ducks and even people, when they harvest Wild Rice." (pp. 46-47)

WETLANDS, *Max Firlaison and Michael Moser*, (General Editors). Facts on File Limited; New York; 1991; 224 p.; grades 10 to 12; NF

Summary: *Glossy, spectacular book prepared by the International Waterfowl and Wetlands Research Bureau (IWRB). A documented account of the status of the world's major wetlands by continent. Wetlands and their values opens the volume by defining wetlands, describing major types (swamps, peatlands, mangroves are a few), and discussing their vulnerability and the need for conservation of these internationally important resources.*

Comment: *Wetlands* is very comprehensive. It presents the world's wetlands as they are found on each continent. It addresses the impacts of recreation, pollution and agriculture. This book emphasizes that the threat to wetlands may be due to activities elsewhere in the basin.

Resources



Educating Young People About Water⁴

Educating Young People About Water (EYPAW) guides and water curricula database provide assistance for developing a community-based, youth water education program. These resources target youth and link educators to key community members to build partnerships to meet common water education goals. The EYPAW resources are full of ideas, checklists, references, partner lists, and community action education materials that will help you:

Find and select water education curricula.

Use the [Educating Young People About Water database](#) to find a curriculum that is appropriate for learners. Curricula listings include education topics and goals, and other unique resources useful in creating a water education opportunity or event.

Work in partnership with local experts.

See [A Guide to Program Planning and Evaluation](#). Use this guide to create a water education program that directly related information and skills to community water issues and inspires personal action to address community needs. Learn to forge links with community partners and identify community or school-ground natural settings where students can practices and reinforces skills taught in the classroom.

Develop a program strategy appropriate to your situation.

See [A Guide to Unique Program Strategies](#). This guide provides brief case studies of 30 unique water education programs that have occurred around the country in a variety of settings including after-school clubs, summer programs, museums, nature center, festivals, and campaigns.

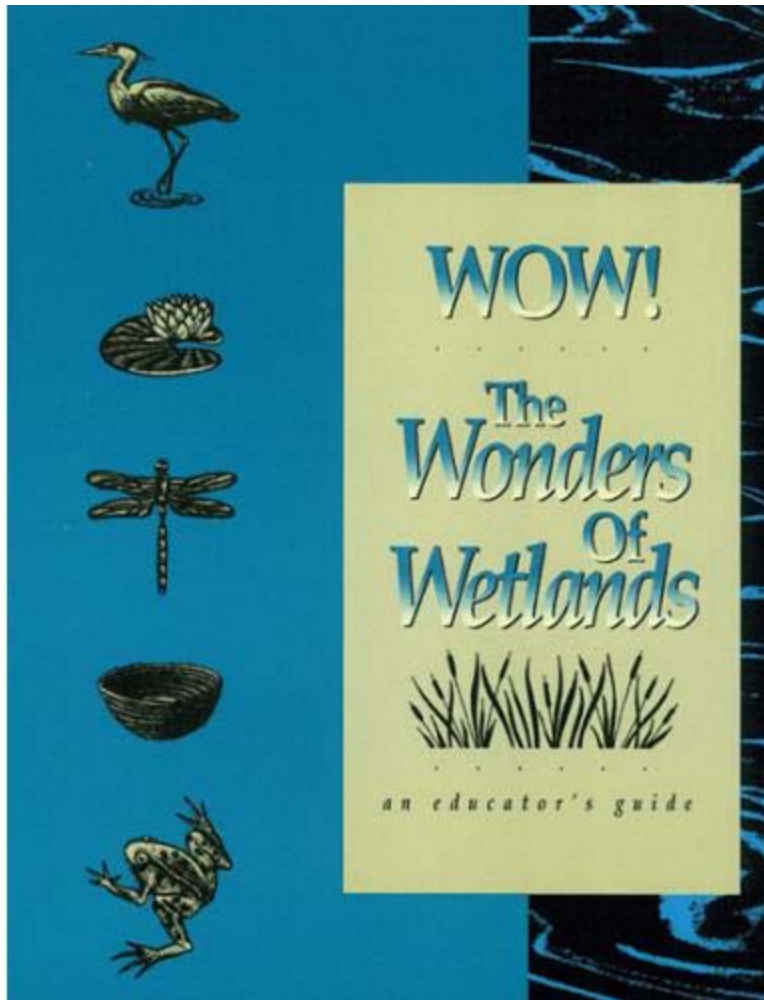
Set goals and find materials to match your program plan.

See [A Guide to Goals and Resources-With an Emphasis on Nonformal and School Enrichment Settings](#). This guide offers a checklist of goals for youth programs that will lead to their understanding of key water concepts.

Train others to design community-based, youth water programs.

Order the video, [Program Leadership Workshop Guide and Planning for Fun and Success!](#) These resources showcases eight youth water education programs and highlights why they were successful. See the [Program Leadership Workshop Guide](#). This guide will show you how to get started in a local planning process.

⁴ Information taken from <http://www.uwex.edu/erc/ey paw/>



The WOW! Wonders of Wetlands Book is available for purchase at:
<http://store.projectwet.org/index.php/catalogsearch/result/?q=wow&x=0&y=0>

OR

for rent by contacting us at kwatson@montana.edu.