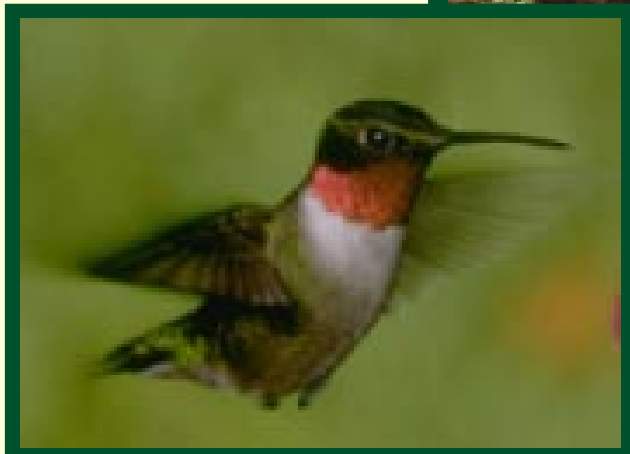
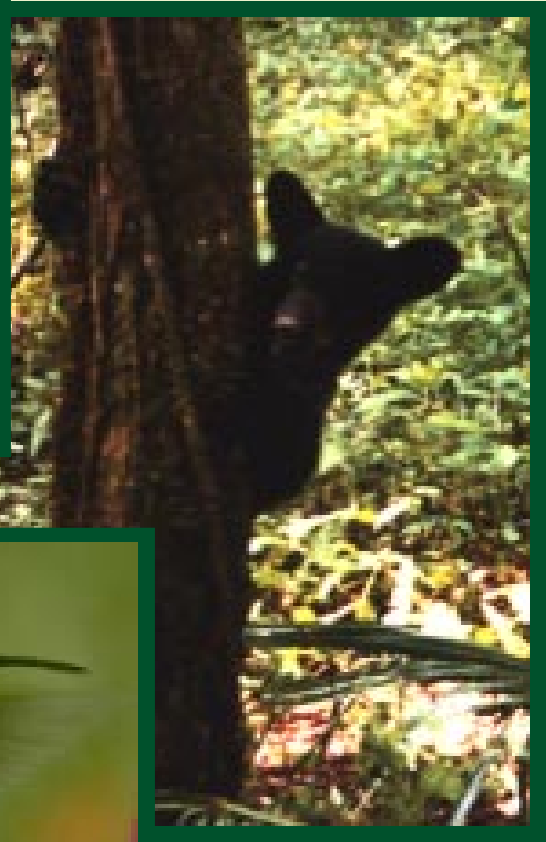




*Black Bears and Songbirds*  
of the Lower Mississippi  
River Valley



By Debra Carroll

Teachers' Guide



Dear Educator:

Let us introduce you to something new and exciting! Here is your opportunity to add another dimension to your teaching in science or social studies.

The idea for this CD ROM first emerged in the summer of 1996, when several employees of the U.S. Fish and Wildlife Service discussed the difficulties of explaining habitat fragmentation and the impacts that it has on the Louisiana black bear and Neotropical songbird migrants. It was suggested that a CD ROM could be developed that would provide students and teachers with the information they need to make informed choices as children and adults. We also hoped to spark and nurture childrens' interests in science as a profession by exposing them to what wildlife biologists do.

Teachers are often given free materials with little or no information on how to fit these materials into their mandated curricula. The accompanying teachers' guide, consequently, was developed by a practicing classroom teacher to do just that! You will find included in this guide correlations to state and national standards in science and state standards in Louisiana history. In addition, you will find objectives, recommended activities, and assessment suggestions. The only other thing you will need is an interest in preserving Louisiana's biodiversity.

Enjoy using you new CD ROM and teachers' guide, *Blackbears and Neotropical Songbirds of the Lower Mississippi River Valley*. We hope you and your students will be pleased with the content and that your students will surely want to do all they can to preserve Louisiana's Paradise.

Sincerely,

CD Development Team

## Teachers' Guide

CD ROM Purpose: To teach children about the Louisiana black bear and Neotropical songbirds of the lower Mississippi River Valley and how their habitats overlap. It also introduces the concept of habitat fragmentation and its effect on black bears and songbirds.

Purpose of Guide: To help teachers incorporate the black bears and songbirds CD into their existing fifth through eighth grade science curriculum or Louisiana History curriculum.

Possible Uses:

- Virtual field trip
- Research tool for students
- Full class or small group instruction
- Enrichment or learning-center activity
- Source of data to complement teacher lesson plans
- Culminating activity after an ecology unit or chapters dealing with the Animal Kingdom, specifically birds and mammals, animal behavior, and adaptation and classification
- Part of a fields of science or careers lesson.
- Complement to the existing Louisiana history curriculum.

Includes:

- Correlation to Louisiana and national science standards and Louisiana history standards
- Suggested activities
- General objectives for activities
- Assessment suggestions
- Glossary
- Hard copy of the quizzes found within each of the 3 sections of the CD and answers to these quizzes
- Additional resources and a list of contact persons

National Academic Science Standards:

Science as Inquiry: Content Standard A

- Students should develop an understanding of scientific inquiry.

Life Science: Content Standard C

- Students should develop an understanding of the regulation and behavior of organisms.
- Students should develop an understanding of populations and ecosystems.
- Students should develop an understanding of diversity and adaptations of organisms.

Science and Technology: Content Standard E

- Students should develop understanding about science and technology.

Science in Personal and Social Perspectives: Content Standard F

- Students should develop an understanding of populations, resources, and environments.
- Students should develop an understanding of natural hazards.

- Students should develop an understanding of risks and benefits.

#### History and Nature of Science: Content Standard G

- Students should develop an understanding of science as a human endeavor.
- Students should develop an understanding of the nature of science.

#### Louisiana Science Standards:

##### Science as Inquiry

- SI - M - A1 identifying questions that can be used to design a scientific investigation
- SI - M - A2 designing and conducting a scientific investigation
- SI - M - B1 recognizing that different kinds of questions guide different kinds of scientific investigations
- SI - M - B2 communicating that current scientific knowledge guides scientific investigations
- SI - M - B3 understanding that mathematics, technology, and scientific techniques used in an experiment can limit or enhance the accuracy of scientific knowledge
- SI - M - B4 using data and logical arguments to propose, modify, or elaborate on principles and models
- SI - M - B5 understanding that scientific knowledge is enhanced through peer review, alternative explanations, and onstructive criticism
- SI - M - B6 communicating that scientific investigations can result in new ideas, new methods or procedures, and new technologies
- SI - M - B7 understanding that scientific development and technology are driven by societal needs and funding

##### Life Science

###### Populations and Ecosystems

- LS - M - C1 constructing and using classification systems based on the structure of organisms
- LS - M - C2 modeling and interpreting food chains and food webs
- LS - M - C3 investigating major ecosystems and recognizing physical properties and organisms within each
- LS - M - C4 explaining the interaction and interdependence of nonliving and living components within ecosystems

###### Adaptations of Organisms

- LS - M - D1 describing the importance of plant and animal adaptation, including local example
- LS - M - D2 explaining how some members of a species survive under changed environmental conditions

##### Science and the Environment

- SE - M - A1 demonstrating knowledge that an ecosystem includes living and nonliving factors and that humans are an integral part of ecosystems
- SE - M - A2 demonstrating an understanding of how carrying capacity and limiting factors affect plant and animal populations
- SE - M - A4 understanding that human actions can create risks and and

- consequences in the environment
- SE - M - A5 tracing the flow of energy through an ecosystem and demonstrating a knowledge of the roles of producers, consumers, and decomposers in the ecosystem
- SE - M - A6 distinguishing between renewable and nonrenewable resources and understanding that nonrenewable natural resources are not replenished through the natural cycles and thus are strictly limited in quantity
- SE - M - A8 investigating and analyzing how technology affects the physical, chemical, and biological factors in an ecosystem

#### Louisiana History Standards:

- G - 1A - M1 identifying and describing the characteristics, functions, and applications of various maps and other geographic representations, tools, and technologies
- G - 1B - M1 explaining and analyzing both the physical and human phenomena associated with specific places, including precipitation and settlement patterns
- G - 1B - M3 identifying criteria used to define regions and explaining how and why regions change
- G - 1C - M1 predicting and explaining how physical features help shape patterns and arrangements in the physical environment
- G - 1D - M1 analyzing and evaluating the effects of human actions upon the physical environment
- G - 1B - M4 describing and explaining how personal interests, culture, and technology affect people's perceptions and uses of places and regions
- G - 1D - M4 identifying problems that relate to contemporary geographic issues and researching possible solutions
- E - 1A - M1 describing how the scarcity of resources necessitates decision making at both personal and societal levels
- E - 1A - M2 analyzing consequences of economic decisions in terms of additional benefits and additional costs

\*Each region within the state of Louisiana is in the process of developing parish curriculum standards. Please contact your supervisor or curriculum coordinator for these new parish standards.

#### General Objectives for suggested activities:

1. Student accountability for use of the CD-ROM
2. Understanding and use of vocabulary associated with the main concepts of the CD-ROM
3. Understanding fields of science and related careers
4. Identifying food chains and webs
5. Developing critical thinking skills and scientific literacy
6. Integrating science, language arts, reading, social studies, and art

## Suggested Activities:

### Activity 1

Vocabulary Tracking: have the students identify, define, and illustrate five vocabulary words from each of the three sections of the CD-ROM. \*(Objective 1, 2, 5, and 6)

### Activity 2

Vocabulary Use: from a teacher-supplied list of vocabulary words, have students pick three to five words and write a sentence showing how the words are related. An extension of this activity could be for students to combine their sentences into paragraphs and the paragraphs into an essay. \*(Objectives 1, 2, 5, and 6)

### Activity 3

Name that songbird: have students design a brochure or board game identifying songbirds of the bottomland forest, their various nesting areas, and eating habits (this would require some additional research by students). \*(Objectives 1, 5, and 6)

### Activity 4

Career Hunt: when working with the CD-ROM, have the students complete a chart listing fields of science and related careers. Refer to example provided. (Extend this activity through use of textbook and other reference materials, Internet, etc.) \*(Objectives 1 and 3)

### Activity 5

Let's Be Creative: have students draw a diagram or a cartoon series, make a diorama, or write a poem or song illustrating one of the major concepts of the CD-ROM. (for example, the nesting areas in the forest, what a bottomland forest is, how the environment affects black bears and songbirds [for example, through fragmentation] or how black bears and songbirds affect the environment.)\*(Objectives 1,5, and 6)

### Activity 6

Tutoring Book: have the students write a tutoring book for a younger person, little brother, sister, or cousin based on the information in the CD-ROM. The book should have a front and back cover, a title page, a table of contents, main contents with illustrations, a glossary with at least 10 vocabulary words, and a quiz. \*(Objectives 1, 2, 3, 5, and 6)

### Activity 7

Hungry Bear/Hungry Bird: Have the students create a food chain/food web that includes black bears and Neotropical songbirds in a bottomland forest. \*(Objectives 4, 5, and 6.)

### Activity 8

Hunt and Seek: have the students locate and bring into class the various resources listed in the resource section of this guide. Students could write a book report and/or give a class presentation on the various resources. \*(Objectives 5, 6, and provides additional resources

for class use without a great deal of teacher effort)

#### Activity 9

Read - aloud: have the teacher or an assigned student read one of the children's storybooks from the resource list. This should be done as an introductory activity.

#### Assessment:

1. Activities 1, 2, 4, 7, and 8 lend themselves to traditional assessment measures; assigning points for the number of correct answers.
2. Activities 3, 5, and 6 would be better assessed through the use of some holistic assessment method such as rubrics wherein the teacher and students can develop criteria for assessing these creative activities.

## Glossary

### Black Bear

Carnivores: meat-eating animals.

Denning sites: protected sites such as hollow cypress trees, brushpiles, or impenetrable thickets where bears go during winter months.

Dispersal: any movement outside of the area normally occupied by a population. Dispersal is the way that a species spreads to new areas; dispersal is essential to the survival of a species.

Dormancy: a period where the animal becomes relatively inactive and spends much of its time sleeping; body temperature decreases by only a few degrees.

Escape cover: thick vegetation needed for a bear to hide from its predators.

Foraging: actively searching for food.

Hard mast: fruits that are hard, such as acorns, not soft like berries.

Hibernation: a dormant sleep-like state, with a lower body temperature and slower heart and breathing rates, that is characteristic of various animals during the winter months in cold climates; this state tends to protect against cold weather and to reduce the need for food.

Home range: area regularly traveled by a bear in search of food and mates.

Mast: fruiting body of plant, for example, nuts or berries.

Monitoring: recording activity.

Muzzle: the snout or projecting nose and jaws of an animal.

Omnivorous: feeding on both plants and animals.

Predator: an animal that depends on killing other animals for some or all of its food.

Range: the geographic region in which a given plant or animal normally lives or grows.

Soft mast: fruits that are soft, such as berries, not hard like acorns.

Vertebrate animal: any animal with a backbone.

### Songbird

Acadian flycatcher: a Neotropical migratory songbird (*Empidonax vireescens*) that nests in the



canopy of the forest.

Bill: the beak of a bird.

Biologist: a scientist person who studies life and living organisms including plants, animals, and their habitats.

Bottomland hardwood: a forest that is composed of hardwood tree species (for example, sweetgum, sugarberry, Nuttall oak) and is flooded several inches or feet for at least part of the year, usually in the winter or early spring. This type of forest is found in the southern, United States.

Brown thrasher: a Neotropical migratory songbird (*Toxostoma rufum*) that nests on the forest edge and gets its name from the way it thrashes around on leaf matter.

Canopy: the uppermost layer of a forest, formed by the crowns of trees, also known as overstory.

Cheniers: long, low forested ridges that range from a few inches to 10 feet above sea level; they are no more than 1,500 feet wide and up to 30 miles long.

Eye ring: a circle of color around a bird's eye that is different from the color of the head.

Forest edge: the part of a forest next to a cleared area.

Forest interior songbird: a bird that performs most of its activities (feeding, mating, nesting) within the interior of the forest and as far from the edge as possible.

Giant cane: a tall (about 12 feet high) bamboo-like plant (*Arundinaria giganteum*) that grows in dense thickets in bottomland forests.

Greenbriar: a thorny vine (*Smilax* sp) commonly found in bottomland hardwood forests.

Hooded warbler: a bright yellow Neotropical migrant songbird (*Wilsonia citrina*) that may often nest in cane or palmetto thickets in bottomland hardwood forests.

Kentucky warbler: a bright yellow Neotropical migrant songbird (*Oporornis formosus*) that nests on or close to the ground.

Long-term pair bond: a long-term association formed between a male and a female animal during courtship and mating; usually refers to "mate-for-life" pair bonds.

Mask: a colored area that partially covers the face.

Migrate: to move between the breeding grounds and the wintering grounds.

Nearctic: the region of North America extending north of Mexico to the Arctic Circle.

Neotropical migratory songbirds: birds that breed in the United States and

Canada and winter in the Caribbean, Mexico, and Central and South America.

Nest: the structure built or used by adult birds in which they lay their eggs.

Nesting territories: the area in and around the nest.

Palmetto: a common plant (*Sabal minor*) of the bottomland hardwood forest that has a large, fan-shaped leaf; it can stand as high as 10 feet tall.

Perch: to sit, as on a branch.

Poison ivy: a vine (*Toxicodendron radicans*) that typically grows up tree trunks and looks like brown, hairy rope; it can also be found at ground level; in the fall it produces berries that are a favorite food of Neotropical migratory songbirds.

Predators: a plant or animal that depends on killing animals for some or all of its food. Typical predators that eat songbird eggs are snakes, raccoons, crows, and blue jays. Animals that feed on adult songbirds and their chicks include hawks and owls.

Pronthonotary warbler: a bright yellow Neotropical migratory songbird (*Protonotaria citrea*) which nests in cavities: nicknamed the “swamp canary.”

Songbirds: also known as perching birds or passerines; a group of small-sized birds that generally have elaborate songs that are used to attract a mates and defend a territory. They are in the Passeriformes order.

Tree cavity: a hollow area within a dead tree or limb that is used by a certain species to hold nest material, eggs, chicks, and adult birds.

Understory: the layer of forest vegetation from the ground to about 4 feet in height. Plants typically found in the understory are greenbriar, palmetto, blackberry, and various small trees.

Wetland: areas where the water table is at, near, or above the land surface long enough each year to result in characteristically wet soils and which support the growth of wetland dependent vegetation.

White-eyed vireo: a Neotropical migratory songbird (*Vireo griseus*) that nests in the shrub layer of the forest.

Wing bar: a line of color on a bird’s wing that is different from the color of the wing itself.

Woodpeckers: a group of birds that search for food (insects) by pecking on tree limbs and trunks. Woodpeckers nest in tree cavities that they create by chipping away at the tree with their sturdy bills.

## Habitat

Carrying capacity: the maximum population that a given environment can support.

Dispersal: any movement outside of the area normally occupied by a population. Dispersal is the way that a species spreads to new areas; dispersal is essential to the survival of a species.

Displaced: removed from the usual or appropriate place.

Easement: a right afforded to a person or entity to make limited use of another's real property such as is a right of way. A certain right on a property, but not the whole property; for example, the right to keep land forested forever.

erosion: a process in which material is worn away and transported from one place to another by natural agents.

Erosion control: vegetated wetlands help to hold together banks of lakes, bayous, and rivers; when vegetation is removed from the banks of waterways, the soil runs into the waterway, becoming a source of pollution. Keeping these areas vegetated provides erosion control.

Flood storage: wetlands provide natural flood control/storage by retaining flood waters and slowing flood waters.

Fragmentation: the process of breaking into small parts.

Fragmented: broken into small parts.

Incentive programs: programs that reward landowners with money or free trees.

Lower Mississippi River Valley: the lands surrounding the Mississippi River below the junction of the Ohio and Mississippi Rivers, beginning in Tennessee and ending at the mouth of the Mississippi River in Plaquemines Parish in Louisiana.

Siltation: deposition of sediment into waterways.

## Resources:

### Books

#### Fiction (Read-aloud stories)

Freschet, Berniece. *Black Bear Baby*  
Ginsburg, Mirra. *The Old Man and His Birds*  
Janosch. *The Old Man and the Bears*  
Sargent, Dave. *Brutus the Bear*  
Storms, John. *Bonnie the Black Bear*  
Turtle, Brinton. *Deep in the Forest*  
Waddell, Martin. *Let's Go Home, Little Bear*  
Waddell, Martin. *You and Me, Little Bear*  
Willis, Nancy Carol. *The Robins in Your Backyard*  
Wong, Herbert Yee. *Big Black Bear*

### Nonfiction

#### Bears

Buxton, Jane Heath. *Baby Bears and How They Grow*  
Clark, Margaret Goff. *The Threatened Florida Black Bear*  
Crewe, Sabrina. *The Bear*  
Hodge, Deborah. *Bears: Polar Bears, Black Bears, and Grizzly Bears*  
George, Jean Craighead. *The Moon of the Bears*  
Lund, Alan. *Black Bear Cub* (Smithsonian Wild Heritage Collection)  
Lynch, Wayne. *Bears, Bears, Bears*  
Penny, Malcolm. *Bears*  
Pringle, Laurence. *Bearman: Exploring the World of Black Bears*  
Stone, Lynn. *Bears*

#### Birds

Arnosk, Jim. *Crinkgroots's Guide to Knowing Birds*  
Boring, Mel. *Birds, Nests, and Eggs*  
Burnie, David and Chadwick, Peter. *Bird* (Eyewitness Books)  
Doris, Ellen. *Kids and Science: Birds*  
Hickman, Pamela M. *Birdwise: Forty Fun Feats for Finding Out About Our Feathered Friends*  
Kaufman, John. *Wings, Sun, and Stars: The Story of Bird Migration*  
Lerner, Carol. *Backyard Birds of Summer*  
Lerner, Carol. *Backyard Birds of Winter*  
Levy, Barbara Soloff. *How to Draw Birds*  
Oram, Liz and Baker, R. Robin. *Bird Migration*  
Rauzon, Mark J. *Hummingbirds* (First Book)  
Ross, Michael E. *Bird Watching with Margaret Morse Nice*  
Williams, Nick. *How Birds Fly*

#### Habitats

Chapman, Gillian and Robson, Pam. *Art from Wood: with Projects Using Branches, Leaves, and Seeds*  
Doris, Ellen. *Kids and Science: Woods, Ponds, and Fields*  
Goldstein, Natalie. *Rebuilding Prairies and Forests*

Gore, Shelia, and Burns, Robert. *Swamps (Our Planet)*  
Hirschi, Ron. *Save Our Forest*  
Hirschi, Ron. *Save Our Wetlands*  
Kittinger, Jo S. *Dead Log Alive*  
Lerner, Carol. *On the Forest Edge*  
Llamas, Andreu. *Vegetation of Rivers, Lakes and Swamps*  
Sayre, April Pulley. *Temperate Deciduous Forest*

#### Magazines

Animal liberation (Louisiana at large). Richard Baudoin. *Louisiana Life* 14(4):14, Winter 1994/95.  
Feds praise state's bear recovery program (Louisiana in the field). Glynn Harris. *Louisiana Game and Fish*, 1996(8):56, Aug. 1996.  
Louisiana black bears (Louisiana in the field). Don Dubuc. *Game and Fish* 1992(12):12, Dec. 1992.  
Louisiana Office of Forestry. *Louisiana's Stream and River Bottomland Hardwoods*.  
Neotropical birds on decline. Bill Vermillion. *Louisiana Conservationist* 46(2):14-17, Mar/Apr. 1994.  
Nuisance bear relocated (Louisiana in the field). Glynn Harris. *Louisiana Game and Fish* v1993 n12 p12, Dec. 1993.  
Sherrouse, Diane. *Louisiana Conservationist* 46(6):10-13, Nov./Dec. 1994.  
Silent shadows: Stalking the Louisiana black bear in one of its last haunts.  
The plight of the Louisiana black bear (Louisiana at large). *Louisiana Life* 12(1):11, Feb./Mar. 1992.

#### Internet Sites

The Louisiana Department of Fish and Wildlife Service  
<http://www.fws.gov/>  
United States Geological Service  
<http://www.usgs.gov>  
The Louisiana Department of Wildlife and Fisheries  
<http://www.wlf.state.la.us/>  
The North American Bear Center  
<http://www.bear.org>  
The American Bear Association  
<http://www.americanbear.org/indes.html>  
The Smithsonian Migratory Bird Center  
<http://www.si.edu/natzoo/zooview/smbchome.htm>  
The Wildlife Preservation Trust International  
<http://www.thewildones.org/teachers.html>  
The American Birding Association  
<http://www.americanbirding.org>  
The Black Bear Conservation Committee  
<http://www.bbcc.org>

Contact Persons

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US Fish and Wildlife Service

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