

U.S. Fish & Wildlife Service

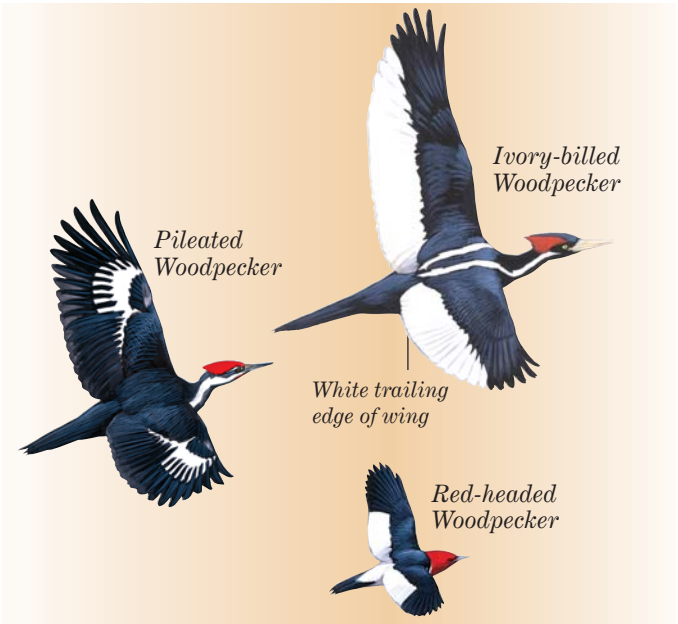
The Ivory-billed Woodpecker



On February 11, 2004, kayaker Gene Sparling caught a glimpse of a large and majestic woodpecker in the Cache River National Wildlife Refuge of Arkansas. The encounter spurred an extensive scientific search for a species that many feared extinct. Additional sightings and a video from the search have shown that the Ivory-billed Woodpecker — what John James Audubon referred to as the “great chieftain of the woodpecker tribe” — has cheated extinction and so given future generations a chance to view this majestic species.

Description

At 20 inches in length, the Ivory-billed Woodpecker (*Campephilus principalis*) is among the world's largest woodpeckers. The wings show a white trailing edge from above and below. These white wing patches fold to form a white "shield" or "saddle" on the black back when the bird is perched. A white line forms below the eye, runs down the neck, and onto the back of the bird. The face is largely black, as is the chin. Males have a prominent red crest; the female's crest is black.



The Ivory-billed Woodpecker resembles its more common, but slightly smaller cousin, the Pileated Woodpecker (*Dryocopus pileatus*). Often seen in suburban as well as more forested settings, the Pileated Woodpecker averages 17 inches in length, has black trailing edges on the wings, a solid black back, and red and white on the face. By comparison, the Red-headed Woodpecker (*Melanerpes erythrocephalus*) is only nine inches long. Adults have a solid red head without a crest, while immatures have a mottled gray head.

Cover photo: USFWS/
Larry Richardson;
illustrations above:
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*Cache River National Wildlife Refuge
USFWS/Larry Richardson*



Male
Ivory-billed
Woodpecker



Male
Pileated
Woodpecker

Illustrations above:
© David Allen Sibley



James Tanner's photo of an Ivory-billed Woodpecker at the Singer Tract, Louisiana, 1935, Arthur A. Allen/ courtesy of David Allen.

Life History and Reproductive Biology

Knowledge about Ivory-billed Woodpeckers is limited because there have been few in-depth studies of the species. Most of the information known about the species comes from a three-year study conducted by James Tanner of a population of Ivory-billed Woodpeckers from what was known as the Singer Tract in northeast Louisiana. Tanner found that the ivory-bill is usually territorial, but when resources dictate it can be nomadic. He estimated a home range varying from one pair per six square miles to one pair per seventeen square miles. The ivory-bill needs a much larger range as compared to the Pileated Woodpecker (six pairs per one square mile) or Red-bellied Woodpecker (21 pairs per one square mile). In poorer foraging habitat, Ivory-billed Woodpeckers' home range size may be even larger.

Most ornithologists who studied the Ivory-billed Woodpecker, beginning with Audubon and continuing through Tanner, believed that it mated for life. Ornithologists today speculate that the birds may live between 10 and 15 years.

It is thought that breeding is initiated between January and April. A pair excavates a cavity that is 15 to 70 feet high in a dead tree or the dead portion of a live tree where fungus has softened the wood. A site under a broken limb may be favored for the protection it offers from sun, rain and predators. The nest entrance is oval, taller than wide, and larger than a typical Pileated Woodpecker's entrance. The clutch size is two to four eggs and only one clutch is laid in a year. Both sexes incubate the eggs and feed their young, which remain with the parents through the summer and in some cases until the following nesting season.

Vocalizations

The call of the ivory-bill is a nasal-sounding *kent* – often described as sounding similar to the toot of a tin horn. Ivory-bills are also known for the unique double-knock they make when striking a tree with their beaks. Ornithologists believe this double-knock is used for family groups or mated pairs to keep in contact, for announcing territorial boundaries to other ivory-bills in the vicinity, and to locate a mate. Most woodpeckers in the ivory-bill's genus (*Campephilus*) make a similar double-knock.

The call of the ivory-bill was originally recorded during the 1935 Brand-Cornell University-American Museum of Natural History Ornithological Expedition, organized by Dr. Arthur Allen, founder of the Cornell Lab of Ornithology. The 1935 sounds and video of the ivory-bill were captured on the Singer Tract in Louisiana by Peter Paul Kellogg, who used a movietone system. These 1935 recordings are still used today for playback by ivory-bill searchers. They are also the sounds against which modern recordings of possible *kent* calls are checked.

Today researchers are using devices called autonomous recording units (ARUs). The ARU, which was invented by the Cornell Lab of Ornithology's Bioacoustics Research Program, includes a small hard drive that is programmed to run at peak times of activity for ivory-bills. During the 2004–2005 search in the Big Woods of Arkansas, 24 ARUs were used to capture more than 18,000 hours of sounds. Cornell researchers believe that a number of sounds captured on these Arkansas recordings may be those of the ivory-bill.



Above: J.J. Kuhn (left) and Paul Kellogg record sounds of the Ivory-billed Woodpecker at the Singer Tract in Louisiana during the 1935 Ornithological Expedition organized by Arthur A. Allen of Cornell, courtesy James Tanner.

Below: Ron Rohrbaugh, director of the Ivory-billed Woodpecker Research Project at Cornell, puts up an autonomous recording unit (ARU) in the Big Woods of Arkansas, Cornell Lab of Ornithology/ Melanie Driscoll.

Diet and Foraging Behavior

Ivory-bills are specialists in their feeding habits and feed frequently on beetle larvae associated with recently dead and dying trees. The birds use their chisel-like bills as wedges to pry bark to obtain the beetle larvae located underneath. The ivory-bill seems to prefer members of the long-horned beetle family, *Cerambycidae*, and other wood

boring beetle larvae. Birds may range widely in search of recently dead trees that harbor these larvae. Various nuts (pecans) and fruits (hackberry, persimmon, and grapes) are part of the diet as well. Events that kill large numbers of trees such as hurricanes, ice storms, floods, drought, fires, disease and insect infestations are believed to provide excellent habitat for ivory-bills.

Historical Distribution and Abundance

Ivory-bills once inhabited large blocks of mature forests in the southeastern United States, from North Carolina to Florida and west to eastern Texas and Arkansas. They were also known to inhabit old-growth pine forests in Cuba. Ornithologists believe the species was never abundant since populations were limited by the availability of dying and recently dead trees for foraging and trees large enough to support cavities for roosting and nesting.



The ivory-bill's precipitous decline began in the latter half of the 19th century as forests were cut to support a growing demand for wood products and cleared for settlement and agriculture. Technology and the resource demands of two world wars increased the logging rate in the 20th century, further decimating essential habitat. In addition, excessive collection of birds for commercial, recreational,

scientific, and educational purposes also contributed to declines as the range became restricted. By 1939, James Tanner estimated that 22–24 birds remained in the United States. Only widely scattered, large remnants of mature, seasonally flooded forest provide the best potential for habitat today. Recent decades of reforestation and improved forest management practices should provide more habitat as stands mature.

Timber harvest near White River National Wildlife Refuge in Arkansas, 1940, USFWS.



The Singer Tract and the Disappearance of the Ivory-bill

By the 1920s, ornithologists believed that only a few Ivory-billed Woodpeckers remained and that the species was headed for extinction. Rumors of a population along the Tensas River in northeast Louisiana proved true when a Louisiana state legislator shot one in 1932 on an 80,000-acre tract owned by the



James Tanner on the Singer Tract in the 1930s. Photo from Tanner's collection.

Singer Sewing Machine Company. Word of this 'rediscovery' spread, giving ornithologists hope that if the Singer Tract could be protected, the species might survive.

Sponsored by the National Audubon Society, James Tanner, a doctoral student at Cornell University, conducted a

detailed study of the species' biology, ecology, and distribution from 1937–1939. Tanner wrote the definitive book on Ivory-billed Woodpeckers based on his findings.

The same year Tanner began his research, the Singer Company sold logging rights on their property to the Chicago Mill and Lumber Company. In 1938, logging began. Tanner believed that logging and the ivory-bill could co-exist, and outlined a land management plan for the Singer Tract that would reserve some areas, selectively cut others, and clear cut others. He provided this plan to Chicago Mill, but his recommendations were ignored. During his years at the Singer Tract, Tanner saw the population decline to only six birds.

John Baker, president of the National Audubon Society, appealed to President Franklin Roosevelt, who directed the Secretary of Interior to try to save the land. Baker secured a \$200,000 pledge from Louisiana Governor Sam Jones to purchase the

property. Jones, along with the governors of Tennessee, Mississippi, and Arkansas, wrote to Chicago Mill asking them to conserve the habitat to save the bird. Despite these efforts, the company refused to cooperate.



Donald Eckelberry's painting of what has until now been believed to be the last Ivory-billed Woodpecker in the United States. Eckelberry painted the bird flying across the cutover forest of the Singer Tract in April, 1944. Courtesy Jerome A. Jackson.

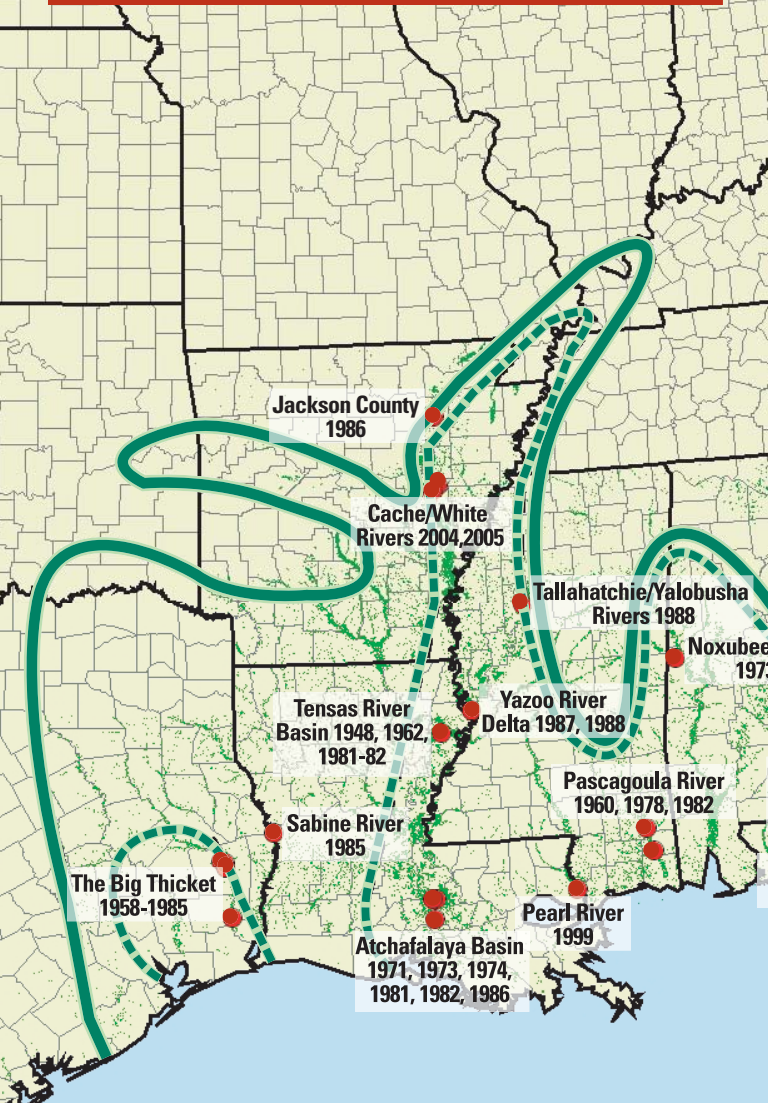
Running out of options, Baker sent National Audubon Society's Richard Pough to the Singer Tract in December 1943 to search for another bird. At a place called John's Bayou, Pough sighted what was until now believed to be the last Ivory-billed Woodpecker in the United States. Artist Don Eckelberry, who also worked for the National Audubon Society, visited the same spot in April 1944 and drew one final sketch of the bird as logging crews devastated the forest near the bird's roost tree.



Above: a tree with bark and wood stripped. Below: expanded view of woodpecker bill marks found on bark-scaled tree in the White River National Wildlife Refuge. Possible evidence of the presence of the Ivory-bill. Both USFWS/Steve Holzman.



Possible Encounters of Ivory-billed Woodpeckers 1944 to present



Legend

- Possible encounters 1944-present
- Bottomland hardwoods
- Original range
- - - Range in 1885



Since the ivory-bill's last confirmed sighting in the United States at the Singer Tract in 1944, there have been many unconfirmed reports of the bird. Data taken from *"In Search of the Ivory-billed Woodpecker"* by Jerome A. Jackson and USFWS files.

Post 1940s sightings

The last widely-accepted sightings of the birds in the United States were those that took place at the Singer Tract. However, there have been numerous intriguing reports of ivory-bills since that time.



Tim Barksdale (Birdman Productions) and Marc Dantzker (Cornell Lab of Ornithology), videographers for the ivory-bill search team, Cornell Lab of Ornithology, Elliott Swarthout.

John Dennis was a prominent woodpecker biologist who in 1948 snapped the last scientifically accepted photographs ever taken of an ivory-bill in Cuba. In 1966, Dennis reported seeing a female ivory-bill in The Big Thicket of east Texas, but his sighting could not be confirmed by subsequent searchers.

While other promising reports, including fleeting glimpses and possible calls, have come from places like the Atchafalaya Basin in Louisiana, the Okefenokee Swamp in Georgia, the Yazoo River in Mississippi, the Pearl River in Louisiana and the Santee Basin in South Carolina, none of these sightings have resulted in conclusive physical evidence.

Rediscovery, 2004

On February 11, 2004, kayaker Gene Sparling observed a huge and unusual woodpecker in the Cache River National Wildlife Refuge of Arkansas. Tim Gallagher of Cornell University and Bobby Harrison of Oakwood College visited the swamp with Sparling two weeks later and had a close-up sighting of presumably the same bird. This was the first time



in more than 60 years that two qualified observers together had identified an Ivory-billed Woodpecker in the United States. These sightings spurred an extensive scientific search, launched in March 2004 by the Big Woods Conservation Partnership which includes the Cornell Lab

Bobby Harrison searches for Ivory-billed Woodpeckers in the Cache River National Wildlife Refuge. He and colleague Tim Gallagher identified an ivory-bill there on February 27, 2004. The Nature Conservancy/Mark Godfrey.

of Ornithology, The Nature Conservancy, Arkansas Game and Fish Commission and the U.S. Fish and Wildlife Service.

The search team included more than 100 individuals who spent up to 14 hours a day in canoes looking for the bird in the swampy bayous of eastern Arkansas. The team's work was focused at Cache River and White River Refuges and nearby wildlife management areas managed by the Arkansas Game and Fish Commission.

This initial five-month search season resulted in at least seven credible sightings of an Ivory-billed Woodpecker, and a brief video filmed by David Luneau of the University of Arkansas at Little Rock. After extensive analysis, the video was determined to be an ivory-bill. More than 18,000 hours of audio recordings during the combined 2004 and 2005 search periods also captured what researchers believe is the 'double-knock' and *kent* call of the ivory-bill.

From Discovery to Recovery

Although the ivory-bill was listed as an endangered species in 1967, it was the rediscovery in 2004 in the Big Woods of Arkansas that prompted the formation of a federal recovery team. The purpose of the recovery team is to prepare a comprehensive recovery plan for the species, advise stakeholders on conservation actions, and assist with implementing recovery actions. The recovery plan is the document that summarizes everything that is known about the biology, ecology, and distribution of the species. It also describes the conditions necessary for removing the bird from the endangered species list, outlines recovery actions, and identifies research needs. Much about the species remains to be discovered, including the current population status and distribution. Therefore, an effective search strategy is another component of the plan. The recovery plan is scheduled to be completed by June 2007.

Habitat Management and Conservation

Degradation and loss of habitat led to the rapid decline of the Ivory-billed Woodpecker. Conservation and management of adequate habitat will be key to the bird's recovery. Quality habitat includes both upland and lowland sites with very extensive, continuous, multi-species, uneven aged forest cover. Quality forest habitat would include large trees and a continuous supply of stressed and dying trees.

Forest management practices on federal and state lands are undergoing review and revision to enhance habitat for the species. Federal cost-share programs, such as the USDA Farm Service Agency's Conservation Reserve and Enhancement Program and the Natural Resource Conservation



Sara Barker and Elliott Swarhout of the Cornell Lab of Ornithology map out their search for the bird, Cornell Lab of Ornithology/Ken Rosenberg.

Service's Wetlands Reserve Program, are available for private landowners in priority areas who wish to provide habitat on their property. Allowing dying and dead trees to remain standing is encouraged to provide foraging, nesting and roosting habitat.



Federal Land Acquisition and the Duck Stamp

As part of the recovery strategy, the U.S. Fish and Wildlife Service may also acquire additional lands from willing

sellers using funds from a number of programs. One key acquisition program is the Federal Migratory Bird Hunting and Conservation Stamp program, commonly known as "Duck Stamp." This \$15 stamp is one of the most successful conservation programs in the country, investing 98% of funds generated into land conservation. While all waterfowl hunters age 16 and older are

required to purchase and carry Duck Stamps, anyone can purchase one to invest in conservation. Since its inception in 1934, the sale of Federal Duck Stamps has generated more than \$670 million, resulting in the purchase or lease of over 5.2 million acres of waterfowl habitat in the U.S. In fact, more than 44,000 acres at Cache River National Wildlife Refuge were purchased using Federal Duck Stamp funding.

Conserving Arkansas' Big Woods

While the Ivory-billed Woodpecker Recovery Team will examine the needs of the species throughout its historic range, much of the initial conservation and recovery focus will be centered on the Big Woods of Arkansas.



Scott Simon (right), The Nature Conservancy's Arkansas State Director; and naturalist filmmaker Timothy R. Barksdale search for Ivory-billed Woodpeckers in the Cache River National Wildlife Refuge, The Nature Conservancy/Mark Godfrey.

Long before the Ivory-billed Woodpecker was rediscovered in the Big Woods of Arkansas, conservation agencies, non-profit organizations and private landowners have worked together to protect this ecosystem. Partnerships among The Nature Conservancy, U.S. Fish and Wildlife Service, Arkansas Game and Fish Commission, Arkansas Natural Heritage Commission, Bureau of Land Management, U.S. Army Corps of Engineers, Potlatch Corporation, legislators and private individuals led

to protection, acquisition, and enhancement of hundreds of thousands of acres over the last 20 years. At 550,000 acres, the Big Woods of Arkansas is the largest corridor of bottomland hardwood forest remaining in the Mississippi Delta north of the Atchafalaya River.

In 1989, Cache River and White River National Wildlife Refuges and all Arkansas Game and Fish Commission Wildlife Management Areas located in the lower White and Cache River basins were recognized by the 49 nations of the United Nations' Ramsar Convention as a "Wetland of International Importance." These lands joined the ranks of other internationally renowned ecosystems worthy of protection such as the Okefenokee Swamp, the Florida Keys, and the Chesapeake Bay. The Cache-Lower White Rivers area is also recognized as an "Important Bird Area" by the National Audubon Society.



Two recent partnerships will help conserve the Arkansas Big Woods for future generations. **The Big Woods Conservation Partnership** was officially formed on April 7, 2004. The partnership is working to restore or conserve 200,000 additional acres of forest habitat and rivers in the Big Woods over the next 10 years.

Another group working to conserve this area is the **Corridor of Hope Conservation Team**. Through public and private partnerships, the Corridor of Hope Conservation Team will develop and implement conservation plans for the Ivory-billed Woodpecker. The Team advises the recovery team and helps with outreach to local communities to ensure a collaborative process. Members of the team are civic leaders, decision makers, elected officials and other local stakeholders.



*White River National Wildlife Refuge
USFWS/Larry Richardson*

Historic Time Line for Ivory-billed Woodpeckers

- 1820 Naturalist John James Audubon collects Ivory-billed Woodpeckers along the Ohio, Arkansas and Mississippi Rivers.
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- 1870s Laws protecting much of the southern forests are dropped and forests cut to meet demand for wood products. Much remaining Ivory-billed Woodpecker habitat is purchased and cleared for agriculture and land settlement.
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- 1906 President Theodore Roosevelt, on a hunting trip to northeastern Louisiana, sees three ivory-bills.
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- 1924 Arthur A. Allen, founder of the Cornell Laboratory of Ornithology, discovers a pair in Florida. Even at this early date, many ornithologists had already considered the species to be extinct. Tragically, two local taxidermists hear of Allen's discovery and shoot both birds — legally.
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- 1935 A team from the Laboratory of Ornithology, including Arthur A. Allen, Peter Paul Kellogg, George Miksch Sutton, and James T. Tanner, locates three woodpecker nests in the Singer Tract, Louisiana. They produce the first motion pictures and sound recordings ever obtained of the species.
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- 1935 White River National Wildlife Refuge is established on 113,000 acres in eastern Arkansas.
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- 1937 James Tanner conducts field work in the Southeastern United States over a three-year period focusing on the Singer Tract. He collects information for his doctoral dissertation, which is published by the National Audubon Society. He estimates that only 22 ivory-bills exist in the United States.
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- 1941 National Audubon Society launches a campaign to preserve the Singer Tract.
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- 1944 National Audubon Society sends artist Don Eckelberry to the Singer Tract to sketch and document the last confirmed Ivory-billed Woodpecker in the U.S.
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- 1966 Texas birdwatchers Olga Hooks Lloyd and John Dennis report seeing an Ivory-billed Woodpecker in the Big Thicket area of east Texas.
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- 1967 The Ivory-billed Woodpecker is added to the endangered species list.
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Historic Time Line for Ivory-billed Woodpeckers

- 1968 James Tanner spends two weeks searching in the Big Thicket but finds no evidence of the birds.
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- 1972 The U.S. Army Corps of Engineers begins work on the Cache River Drainage Project, which would have channelized 232 miles of the river. Bayou DeView, where the 2004-2005 Ivory-billed Woodpecker sightings have been concentrated, would have been drained. Rex Hancock, a Stuttgart, Arkansas dentist, helps organize the Citizens Committee to Save the Cache.
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- 1978 After Hancock's six-year effort, federal funding for the Cache River Drainage Project ends.
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- 1980 Tensas River National Wildlife Refuge is established on the former Singer Tract — 40 years too late to save the Ivory-billed Woodpecker here.
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- 1986 The Cache River National Wildlife Refuge is established when the U.S. Fish and Wildlife Service purchases 1,395 acres of land from The Nature Conservancy with \$646,000 in Federal Duck Stamp funding. The refuge was established by legislation supported by Senators Dale Bumpers and David Pryor.
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- 1989 The Cache River and White River National Wildlife Refuges, and Arkansas Game and Fish Commission WMAs located in the Cache River and lower White River basins are designated as "Wetlands of International Importance" by the Ramsar Convention of the United Nations.
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- 1992 A massive land exchange of 41,000 acres is orchestrated by The Nature Conservancy, Senator Bumpers, the U.S. Fish and Wildlife Service, the Bureau of Land Management and the Potlatch Corporation (which owned the land) to create a protected corridor connecting the Cache River National Wildlife Refuge with the White River National Wildlife Refuge. The land exchange, valued at more than \$20 million, is accomplished at virtually no cost to the taxpayer.
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- 1996 With support from The Nature Conservancy and state agencies, Arkansas voters approve a 1/8th of one percent sales tax to be used by the Arkansas Game and Fish Commission and the Arkansas Natural Heritage Commission to purchase and protect lands in the Arkansas Delta and elsewhere.
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Historic Time Line for Ivory-billed Woodpeckers

- 1999 David Kulivan, a forestry student at Louisiana State University, reports seeing a pair of Ivory-billed Woodpeckers in the Pearl River region of Louisiana. The sighting leads to renewed efforts to find the bird.
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- 2002 An expedition is launched in the Pearl River region, but no birds are found. Although the search team does find large tree cavities and peeled bark on trees, suggesting the possible presence of Ivory-billed Woodpeckers in the area, there are no definite sightings.
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- 2004 Gene Sparling of Hot Springs, Arkansas, spots an Ivory-billed Woodpecker while kayaking through the Cache River National Wildlife Refuge. When confirmed by a subsequent sighting by Bobby Harrison of Oakwood College and Tim Gallagher of the Cornell Lab of Ornithology, a search is launched, resulting in numerous eyewitness accounts as well as video evidence, filmed by David Luneau, showing that the species still lives. The Big Woods Conservation Partnership is formed.
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- 2005 A federal endangered species recovery team is formed. The search in Arkansas continues as a collaborative effort by the Cornell Lab of Ornithology, U.S. Fish and Wildlife Service, The Nature Conservancy, Arkansas Game and Fish Commission, Audubon Arkansas, Arkansas Natural Heritage Commission, and other partners.

Ivory-billed Woodpecker Websites:

<http://www.fws.gov/ivorybill>

Information on the recovery of the Ivory-billed Woodpecker

<http://www.agfc.com/ivorybilled>

Arkansas Game and Fish Commission

<http://www.birds.cornell.edu/ivory>

Search updates and online sightings form

<http://nature.org/ivorybill>

The Nature Conservancy

<http://www.ivorybill.org>

The Big Woods Partnership

<http://www.audubon.org>

The National Audubon Society

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