

# An overview of Ivory-billed Woodpecker (*Campephilus principalis*) sightings in eastern Arkansas in 2004–2005

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## ABSTRACT

This paper presents the field notes of observers who reported encounters with an Ivory-billed Woodpecker (*Campephilus principalis*) in the Bayou de View area of Monroe County, Arkansas in February 2004 through February 2005. These notes augment other publications on the subject by presenting sight reports and several audio contacts in greater depth.

## INTRODUCTION

A series of events that unfolded in late winter and early spring of 2004 suggested that at least one Ivory-billed Woodpecker (*Campephilus principalis*), a species not positively documented since 1948 and feared extinct, was alive in the vast bottomland hardwood forests of the White River drainage of eastern Arkansas. Initial sight records, followed by a brief video recording in April 2004, touched off an extensive

search effort in the region during the subsequent twelve months, which yielded several additional contacts with the species. A summary of the evidence supporting the presence and identification of the single Ivory-billed Woodpecker has been published (Fitzpatrick et al. 2005), and a book that treats several aspects of the search and sightings is also available (Gallagher 2005). In this article, we provide additional details on the sight reports of this species, including the initial encounters and additional sightings that took place during the subsequent organized search. We also briefly describe the search techniques employed during 2004 and 2005 in our attempt to locate additional individuals, to secure satisfactory documentation, and to determine the extent of potential habitat and feeding areas. Finally, we discuss the implications of these events for birders, including opportunities available to look for Ivory-billed Woodpeckers in eastern Arkansas and elsewhere, as well as guidelines and cautions for would-be searchers. Because these reports are likely to result in greatly increased visitation to the region by birders, with very real potential to disturb this highly endangered species, we urge all visitors to follow the highest standards of birding ethics.

## First field encounters: February 2004

On 11 February 2004, at about 1400 CST, Gene Sparling of Hot Springs, Arkansas observed a large woodpecker while kayaking along the Bayou de View within the Cache River National Wildlife Refuge in Monroe County, about 8 km west of Brinkley,

Arkansas (Figure 1). The bird landed on a tree about 20 m in front of his kayak. Though he lacked binoculars, he noticed that it looked different from Pileated Woodpecker (*Dryocopus pileatus*) and posted a description of the bird—which was observed perched on the side of a tree—to a website for kayak and canoe enthusiasts. His description included unusually large size, extensive white on the folded wing (with an “odd yellowish” color to the white at its edges), a light-colored bill, and a crest showing some red. He described the bird’s movements as jerky and animated, with a cartoonish quality. Shortly after the posting of this sighting, Mary Scott, who had been searching for Ivory-billed Woodpecker in the White River National Wildlife Refuge in southeastern Arkansas (and had privately reported a personal 10 March 2003 sighting of the species there to the Cornell Lab of Ornithology), passed word of Sparling’s sighting to Tim Gallagher, editor of *Living Bird* magazine and a long-time student of the literature on Ivory-billed Woodpecker who had been searching for the species in the Southeast for several years. Gallagher and colleague Bobby Harrison, an associate professor of art and photography at Oakwood College in Huntsville, Alabama, agreed to participate in a follow-up of Sparling’s report, as they had followed up on Scott’s earlier sight report in the White River area.

Two weeks later, on 27 February 2004, the second day of their reconnaissance, Gallagher and Harrison observed a bird they identified as an Ivory-billed Woodpecker as it flew across the main channel of the Bayou

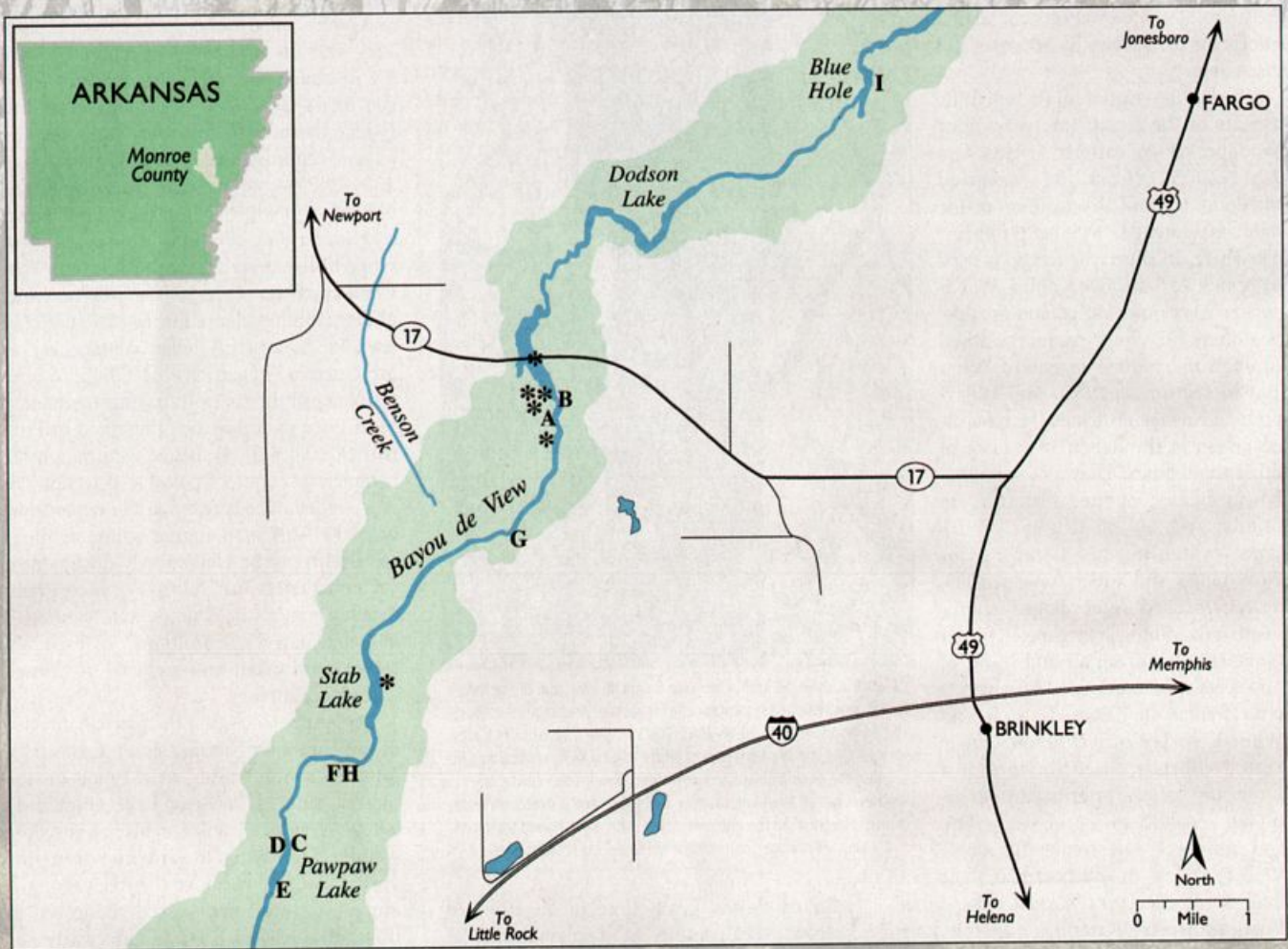


Figure 1. Locations of sight reports of Ivory-billed Woodpecker in the Bayou de View, Cache River National Wildlife Refuge, Monroe County, Arkansas. Sightings described in the present article are labeled with letters A through I. A = 11 February 2004; B = 27 February 2004; C = 5 April 2004, D = 6 April 2004, E = 10 April 2004, F = 11 April 2004, G = 25 April 2004, H = 14 February 2005. The letter "I" marks a probable audio encounter with the species 9 November 2004. Possible additional sightings are marked by an asterisk. Map by Virginia Maynard.

de View at about 1315 CST (Figure 1). Both observers carefully noted the diagnostic white trailing edge of the upper wing contrasting sharply with the glossy black plumage. The bird was within 0.5 km of the site of the 11 February sighting; it appeared to be wary and could not be relocated. A full narrative account of their sighting, along with many photographs of the search area, appears in *The Grail Bird* (Gallagher 2005), and their field notes and sketches are presented in Fitzpatrick et al. (2005).

#### Search efforts: March 2004–April 2005

These initial sight reports immediately sparked the formation of a research coalition between the Cornell Lab of Ornithology and the Arkansas Field Office of The Nature Conservancy, which over the ensuing three months (March through May 2004) deployed teams of field biologists and birders into the vicinity of these sight records. A flurry of additional sightings and a short

video obtained in April 2004 (see below) led to an expanded coalition (the Big Woods Conservation Partnership), which planned and directed a large, privately funded search effort along Bayou de View (in Cache River National Wildlife Refuge and adjacent Dagmar Wildlife Management Area), as well as farther south in the White River National Wildlife Refuge, from late autumn through the following spring (November 2004 through April 2005). Meanwhile, a small crew, including professional videographer Tim Barksdale, also remained active during the summer months in the area. This operation was kept confidential, so that the teams of biologists could conduct their studies without disturbance and so that the woodpecker or woodpeckers in the area would also remain relatively undisturbed. The primary goal was to document one or more birds to the satisfaction of the ornithological community and the world at large and generally to determine the status of the species

in the area; conclusive documentation of the species had not been seen since photographs presented by Tanner (1942) dating from 1935 in the Singer Tract of Louisiana, about 297 km (185 mi) away from Bayou de View. All sight reports subsequent to those (and even photographic material and audio recordings from the 1960s and 1970s) had been dismissed or discredited by ornithologists, making procurement of physical evidence of paramount importance. A further goal was to set in place a conservation strategy that included private fundraising to acquire critical habitats and comprehensive planning for endangered species recovery actions. The findings of the 2004–2005 search efforts were presented first to the U.S. Fish and Wildlife Service and Arkansas state wildlife agencies on 7 April 2005 and to the public, via press conference, on 28 April 2005. The choice for a public announcement was made because it was judged that discretion could no longer be maintained, given

the increasing number of people aware of the Arkansas sight reports. With the announcement of the findings, we aim to stimulate conservation and search efforts for the species in Arkansas and elsewhere.

The full description of the scientific aspects of the search for Ivory-billed Woodpecker in eastern Arkansas in 2004–2005, including detailed methodology and descriptions of the habitats searched, will be published elsewhere. In short, the methods used to search for the Ivory-billed Woodpecker were quite varied and flexible. Searchers in chest waders walked through the bayou's forests of Water Tupelo (*Nyssa aquatica*) and Baldcypress (*Taxodium distichum*) or navigated channels through it in canoes or other small boats. They also sat quietly—in canoes, on tree platforms, in blinds, and on small areas of dry land—watching and listening for Ivory-billed and other woodpeckers. Searchers used camouflaged equipment and clothing at all times. The deployment of individuals and teams of observers was coordinated by separate crew leaders in Bayou de View and White River National Wildlife Refuge. Search efforts focused on the most promising habitat, prioritized from infra-red aerial photos of the study area, and searchers were frequently mobilized to follow up on potential sightings. Some observers worked along predefined transects, others conducted point counts, others searched for and monitored cavities consistent with former roosting and nest cavities of Ivory-billeds (cf. Figures 2, 3), while others conducted stationary watches along strategic open areas such as lakes and power-line cuts, in an effort to capture an Ivory-billed on video. All searchers used GPS units to keep track of their efforts, and a complete record of searches was maintained. All searchers were provisioned with video cameras, which were kept running continuously while mounted to tripods in the canoes (Figure 4). Other efforts included the use of decoys and audio lures (Figures 5, 6), suet stations, and playback experiments, all of which were limited in extent and carefully monitored. Field activities typically started at dawn and extended until dark in an effort to monitor potential roosting cavities. In addition, Harrison and the crew used lifelike Ivory-billed Woodpecker models (Gallagher 2005), and David Luneau used video camera “traps” with motion-sensitive triggers.

In addition to over 22,000 hours of human searches, between 10 and 18 Autonomous Recording Units (ARUs) were de-



**Figure 2.** Over 150 km<sup>2</sup> of forest in Bayou de View and White River N.W.R. was searched systematically for roost or nest cavities of Ivory-billed Woodpecker in 2004–2005. This cavity in a Sugarberry (*Celtis laevigata*) in the southern part of White River N.W.R. has features fitting the description of an Ivory-billed Woodpecker cavity: the entrance has an irregular, roughly oval shape and is over 9 cm wide, which is larger than the entrance of most Pileated Woodpecker cavities. All photographs courtesy of the Cornell Lab of Ornithology.

ployed at any given time in an effort to record vocalizations or display drums of Ivory-billed Woodpecker at sites in the study area with promising habitat features and to keep around the clock vigilance at sites where Ivory-billed Woodpeckers were seen or presumably heard. Although analysis of over 18,000 hours of audio recordings is ongoing, a few potentially interesting sounds have been detected so far that give some hope that our hypothesis of a small population of Ivory-billed Woodpeckers in the region might be correct.

### Overview of sightings and other evidence

The extensive surveys of potential Ivory-billed habitat in the White River National Wildlife Refuge (counties of Monroe, Arkansas, Desha, Phillips) did not produce a sighting of the species, though several areas of what appeared to be prime habitat were located. Searches in the Bayou de View and adjacent forested areas (counties of Woodruff, Monroe, and Prairie) did not meet with success in the month immediately following the sight reports of Sparling, Gallagher, and Harrison. However, in April 2004, there were as many as four sight re-

ports 3–4 km south of the original sightings (Figure 1), and David Luneau secured videotape footage 25 April 2004 of a large black-and-white woodpecker in flight—at a place very near the original sight reports (Figure 1). Although the videotape does not show the bird's head—or the eponymous bill (which has not yet been clearly observed by anyone reporting the species in Arkansas in 2004–2005)—we maintain that the patterns of black and white on the back, upperwing, and underwing are fully consistent with Ivory-billed and not with Pileated. This video currently serves as the only potential photographic evidence for the existence of at least one living Ivory-billed Woodpecker, as presented in Fitzpatrick et al. (2005). A brief summary of the six sight records considered most unequivocal is also presented in Fitzpatrick et al. (2005). Below we give a more complete account of possible detections of Ivory-billed Woodpecker in the region during 2004–2005, including some sightings too fleeting to be conclusively documented yet nonetheless intriguing. For each event, detailed written field notes were submitted and videotaped “depositions” of each observer were taken and archived at Cornell Lab of Ornithology.

On 5 April 2004, Jim Fitzpatrick, director of the Carpenter Nature Center in Hastings, Minnesota, was sitting in a canoe on the eastern side of Pawpaw Lake (Figure 1) when he noticed a large black-and-white woodpecker flying toward him from the north, about 10 m above the tree canopy. It veered westward and passed about 100 m from his position. He could clearly see white in the trailing edge of the wing both on downstroke and upstroke of the wing, and the bird's flight appeared direct and powerful, not like the undulating flight of Pileated. His field notes are as follows:

At 10:25 am [CDST], my attention was drawn to a woodpecker flying above the tree line straight at me from the north. It appeared dark and quite large, and I thought to myself “That's a really big Pileated.” and kept watching. At the outset, [the bird] was approximately 200 meters away and coming straight down the lake comfortably above the canopy level right along the west shoreline. At approximately 3 seconds into the viewing, it banked slightly to get back of the tree line and go behind a very large cypress (behind and above). This was now putting it on a SW heading, [which] showed me a profile of the bird. My next thought was “the white is wrong” [for Pileated], because the bird showed much white on both downstroke and upstroke of the wing. The large white patch [above extended to] the body, much like the



speculum of a merganser or goldeneye. It gave the appearance of a bird more white than black, and I saw barely a hint of red at the end of its tucked in crest. As it came out from behind the large but open cypress, it began to dawn on me that this might not be a Pileated, and I realized the bird had not bounced like a woodpecker during the entire flight I had witnessed. The bird's beak did not stand out as an identifier except perhaps [in the overall] impression of a bird more white than black. I grabbed my [...] binoculars but finding them out of focus I just let them go, realizing then that in the next 2 seconds the bird would be out of sight. I followed the bird past the tree line, watching its shape disappear, hoping it would alight somewhere.

The bird was an incredibly strong flier. It did not flap any more often than a Pileated, perhaps maybe fewer times than would a Pileated. It never lost altitude on any flap. Its wings did not flap

wildly; in fact, I would call its flap somewhat reserved, 5" up above the body, 4–5" below, much like a loon. Those flaps gave it more speed than any Pileated. I got no feeling for wing shape or body shape other than that of an obvious woodpecker, except for the fact this was too big for a Pileated, perhaps by as much as 15 or 20%. [I watched two other Pileateds fly the reverse route later that day and am still struck with the size difference; having banded Pileated Woodpeckers (and photographed several that day), I am very aware of their size.] This bird was too big, too white, and flew completely differently than a Pileated.

I watched the bird in the open for just under 10 seconds, and it flew a distance of approximately 250 meters from when I first saw it until it passed beyond the tree canopy. I watched it for a few more seconds through the trees, but any detail was lost at that point. At its closest, it was above the trees across

the pond. I estimated that in its closest point on the flight path it was 100 meters from me, approximately 15 meters above and back from the tree canopy. It did not seem to flush because of me but followed the same flight path and trajectory as many herons and egrets were taking that day on their way in and out of their rookery some few miles to my SW.

I am sure of the characteristics of what I described, and I know they don't fit anything I know about Pileated Woodpecker. Having never seen a *Campephilus* woodpecker, I can't say, "yup that's like the last one I saw." But I can say that it was no Pileated.

The following day, at the same site, Ron Rohrbaugh, Field Coordinator of the Inventory Project, and David Brown, also of Cornell Lab, were concealed on the eastern side of Pawpaw Lake, near the location of Fitzpatrick's sighting. They had a brief look at a very good candidate for Ivory-billed Wood-



Figures 3a, 3b. Various rather large cavities, presumably made by large woodpeckers, were found just 100 m north of the Route 17 bridge across the Bayou de View (left) and about 1.5 km south of the bridge, not far from the February 2004 sight records. Some of these cavities showed signs of relatively recent work in early spring of 2005, but no woodpecker or other bird or animal was observed in association with them. Woodpecker cavities with entrances of 9 cm or greater in width are very scarce in the area.



Figure 4. Searchers working with the Inventory Project used digital video cameras mounted to tripods in canoes; these cameras were kept in recording mode at all times. Shown is Pawpaw Lake, an area that produced three sight reports of Ivory-billed Woodpecker.

pecker at 1203 CDST, a bird flying through the trees on the western side of the lake, about 3 m above the ground and 100 m away, which landed on a snag and moved immediately around to the back side of it. Rohrbaugh saw the dorsal surface well without binoculars, noting the extensively white remiges, reminiscent of the wing pattern of the smaller Red-headed Woodpecker (*Melanerpes erythrocephalus*). The bird could not be relocated by Rohrbaugh and Brown or by subsequent searcher that day, and Rohrbaugh and Brown did not consider their study of the bird adequate to enter it into the Project database as a positive identification of an Ivory-billed Woodpecker.

Four days later, on 10 April, Mindy LaBranche, then project leader for Urban Bird Studies at Cornell Lab who had previously studied Red-cockaded Woodpeckers (*Picoides borealis*), was sitting in a canoe along the eastern side of Pawpaw Lake when at 1224 CDST she saw what she identified as an Ivory-billed Woodpecker flying eastward above the southern end of the lake and passing into a side channel that flows to the east out of that lake. Her field notes, written minutes after the encounter, read: "large woodpecker, larger than Pileated; black and red on head; white on trailing edge of upper wing and under wing; crossed Pawpaw [Lake] about 100 m to my south, moving east; no undulation, powerful wingbeat but not fast flight; crown black on top with red crescent behind, held flat against head and back of neck; wings less rounded and with less dark than Pileated; wings seen mostly

from top, during downstroke; observed with Swarovski 10 x 42 binoculars for about 7 seconds; conditions overcast with light rain having just ended." She recorded her level of confidence in the sighting at 99% and provided a compelling sketch of the bird in flight.

The next day, at 1026 CDST, Melanie Driscoll, project leader for Cornell Lab's House Finch Disease Survey, saw a bird she identified as an Ivory-billed. It flew southward across the central portion of a powerline cut north of Pawpaw Lake, in the direction of the lake (Figure 1). Her field notes are as follows:

Saw large black-and-white bird fly out of trees from north of powerline. Flew south across powerline. My first impression was of a very large, black-and-white bird, with much of body dark and most of the white being on the wings. I saw approximately three downstrokes of the wings. On each upstroke, I saw a flash of white on the trailing edge; on each downstroke, I also saw a large white patch on the trailing edge of the near wing. I also saw a flash of red on the crest but did not see enough detail to detect shape or to see how much of the crest was red.

The bird flew straight across, with powerful wingbeats, between 100 and 150 meters to my east. The wingbeats did not seem very deep or very shallow. They were deep enough for me to clearly see both the upper and the lower surface on each wing beat. The bird

seemed a little higher than my line of sight, but because of the distance did not appear at all 'overhead'. It flew below the [level of the] canopy, at about one-half the average height of the tupelo trees along the powerline edge. It was probably 4–5 m above the water. From where I was seated, it was just beyond the second telephone pole east of me. I did not see the bill or the tail.

My immediate thought, during the first wingbeat I saw as the bird emerged from the trees, was Ivory-billed. It was larger than a Pileated and seemed to move in a more stately way. When I got binoculars [10 x 40 Swarovski] to my eyes, I was certain that the wing pattern looked like that of Red-headed Woodpecker, but the bird was much larger. There was also a distinct trace of white along the body [above]. [Shortly thereafter, Driscoll continued and clarified this last sentence: "the white along the body ran in a narrow stripe down the neck of the bird, along the side, to nearly merge with the white on the wings. The white extended much further than the white on the neck of Pileated Woodpecker."]

There were no sightings through the middle of April 2004, but on 25 April, at about 1530 CDST, David Luneau of the University of Arkansas, a professor of electrical engineering and participant in the Zeiss-sponsored searches for Ivory-billed Woodpecker in Louisiana of 2002, captured a large black-and-white woodpecker on video as it flushed from a tupelo along the Bayou de View, in an area north of the earlier April sightings (Figure 1). Although Luneau did not see the bird for more than a few seconds, the video clearly shows a large woodpecker with the wing pattern typical of Ivory-billed Woodpecker and has been used as the primary evidence in support of the existence of the species in this area (Fitzpatrick et al. 2005, Gallagher 2005). A second observer in Luneau's boat (Robert Henderson) commented on red on the bird's head as it flushed, but this color is not evident in the video.

The most recent adequately documented encounter occurred on 14 February 2005, when searcher Casey Taylor was stationed at the same powerline cut as mentioned under the 11 April 2004 sighting. Between 1557 and 1610 CST, she heard as many as nine distinctive double-rap sounds, which to her ear matched the territorial rap of Powerful Woodpecker (*Campophilus pollens*), emanating from the north side of the east end of the powerline cut. As she advanced on the area of from which the sounds appeared to have come, reviewing the audio portion of the video footage to see if the camera had picked



up the sounds, she observed a large black-and-white woodpecker, being pursued by two American Crows (*Corvus brachyrhynchos*), flying across the cut. Her notes are as follows:

I could see a distinct, large woodpecker body form and shape, a long, straight bill [color not observed, owing to angle and lighting], and black-and-white plumage. Since the camera was in playback mode, I knew I would not be able to get a good shot in time, so I reached for my binoculars instead. I got them up in time to have a good 2–4-second, clear look at the bird before it got into the trees. My first view was a lateral one, so I could see the head shape, white lines leading down the neck, as well as the smaller, rounder white patches under the wings on the leading edges; and larger blocks of nearly continuous white trailing edges above the wings. The bird, on closer view, appeared to be about the same size as the pursuing crows. As it flew into the trees, it turned enough to give me a perfect dorsal view through my binoculars. I saw a dark body with long, slender wings, which were entirely black on the leading edge and brightly white over almost the entire trailing edge of the wings. The bird was in the

trees before I could get a clear look at the tail. The crows followed the bird, which by then I was now pretty much confident was an Ivory-billed Woodpecker, into the forest. I kept track of the bird and was able to get another good look through binoculars, which for me [dispelled] any lingering doubt. I was able to see both the leading white edge underneath [and] the white trailing edge above and below very clearly. As the bird and the crows moved around in the trees, I got the camera recording but lost track of the bird.

Very soon thereafter (1730), Taylor studied a pair of Pileated Woodpeckers in this immediate area, at similar distances, which confirmed her impression that the bird pursued by crows was not a Pileated. "They were noticeably smaller than [the bird seen earlier] and clearly did not have nearly as much white in the plumage. I could see small white patches in the upper wings [primary bases] but the rest of the body was dark, though not as deeply black" as the earlier bird.

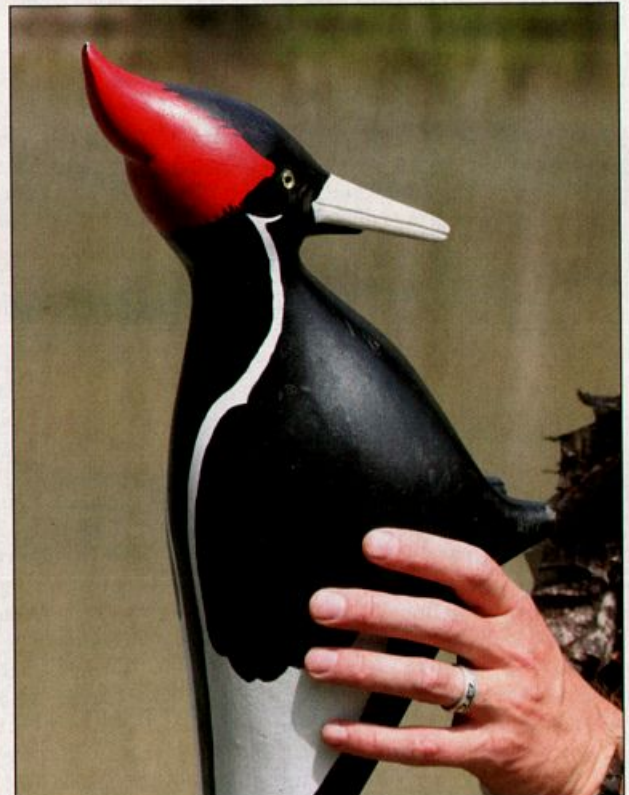
Most other sightings of potential Ivory-billeds after April 2004 have been more tentative in nature, but several observers have had brief views of birds that may well have been an Ivory-billed, and for the sake of

completeness, those potential sightings are indicated by dated asterisks in Figure 1. Original field notes and videotaped interviews describing all possible sightings are archived at Cornell Lab of Ornithology; many of these add much to the field notes and will be deposited with state and national bird records committee, along with these notes and other evidence.

On 4 September 2004, Bobby Harrison deployed a carved decoy of a male Ivory-billed Woodpecker on a tupelo trunk and set a video camera "trap" at the site. At approximately 1254 CDST, he flushed a large woodpecker off the back of a tupelo, and the bird flew in the direction of the decoy and video camera. Checking the videotape, he found that the camera had an image of a large black-and-white bird flying rapidly behind the decoy. Although this segment of videotape is even shorter and more difficult to analyze than the Luneau videotape, the bird shows mostly white remiges and is certainly intriguing. Independently, on the morning of 4 September 2004, Joan Luneau had a sighting of a good candidate for an Ivory-billed flying across the Route 17 bridge across Bayou de View, but the sighting was again brief.

#### Audio evidence and contacts

Few recordings exist of the vocalizations and



Figures 5, 6. During playback experiments and certain other experiments, models of Ivory-billed Woodpecker, both male and female, were placed on trees in an attempt to attract a real one. Because such an experiment has the possibility of disrupting the regular behavior of an Ivory-billed (as is known to be the case with the large Black Woodpecker [*Dryocopus martius*] of Europe), these experiments were carried out as carefully as possible. These models were carved by Eugene Sparling, Sr.



Figure 7. Although very old-growth habitat is patchy in its distribution in the Bayou de View, some areas have a good mix of older second growth, large cull trees, and dead and dying trees. Over 90% of the habitat in Bayou de View is difficult of access. This photograph shows typical habitat in the Bayou, mostly Water Tupelo and Baldcypress.

other sounds of Ivory-billed Woodpecker; searchers' knowledge of the species' vocalizations were limited to the recordings made by Tanner and Allen in the 1930s (Macaulay Library of Natural Sounds catalogue #6784), and to the written descriptions of early ornithologists. These descriptions include frequent mention of a double-knock or double-rap contact/territorial sound, similar to sounds made by other *Campephilus*.

On 9 November 2004, over a twelve-minute period (1635–1648 CST), Marshall J. Liff, a guide for Victor Emanuel Nature Tours, stationed in an area called “Blue Hole” (Figure 1), heard about 20 “double-rap” sounds consistent with the typical territorial rap of *Campephilus* woodpeckers, from locations approximately 150–300 m east and southeast of his position. No woodpecker was observed, and attempts to make sound recordings were unsuccessful because the microphone was switched off. His field notes are as follows:

While sitting at “Two Holes”, I heard a fairly distant (0.25–0.5 mi away) double-knock, not very crisp. I waited, then knocked back, rapped on the side of my plastic kayak, which was very resonant and very closely approximated the sound. Within 20 sec, I heard a distinct “bam-bam.” I knocked back again and started to take out the tape deck, the bird knocked two more times before I turned on the tape, then once, close, with two distinct rapid raps after I turned on the tape. I responded and got another response. In total, I heard about 20 raps; one sounded tripled, and one or two sounded like single raps.

The bird may have been moving. The first set of double-raps I heard came from a point straight out to the east of my position; but then, 30–60 sec later, 3–4 more raps, more distant, came from a point to the southeast. A final series came from the area to my east again. If the same bird was involved in making these raps, then the bird would have had to have moved some 0.25–0.5 mi, minimally, between sites, which is possible, but it is also possible that more than one bird was involved. During the encounter, I heard various single knocks in the swamp, more distant, and these distracted me on several occasions, but when the real double-knock came, I recognized it instantly.

I have heard *Campephilus* in Mexico and Central America, including Pale-billed [*C. guatemalensis*], Crimson-crested [*C. melanoleucus*], and Crimson-bellied [*C. haematogaster*]. These sounds [I heard at Blue Hole] reminded me very much of Pale-billed or Crimson-crested knocks (the Crimson-bellieds I heard gave consistently tripled knocks)—two, very rapid, resonant knocks that are very closely spaced together. In trying to imitate it, I cannot quite rap fast enough with one hand to simulate the spacing: while knocking back to the bird, I used two hands to try to more closely approximate the correct spacing. Compared to Pale-billed and Crimson-crested, these knocks were, if any different, even louder. When the sound was at its closest, it was very sharp and loud. I have

not had the same impression of force when hearing other *Campephilus* species.

Other woodpeckers were drumming all around the site. Pileated was most commonly heard, all giving their typical, rolling, rapid-fire drum. Other drums sounded like Hairy [*Picoides villosus*], Downy [*P. pubescens*], and Red-bellied [*Melanerpes carolinensis*]; earlier in the day, a Yellow-bellied Sapsucker [*Sphyrapicus varius*] had drummed. It was a good day for drumming woodpeckers, significantly warmer than 8 Nov.

I considered the possibility that the sounds might be gunshots, but in no instance did I feel that at gun could be a possible source of the sounds. I had heard gunshots in the distance occasionally during the day, and these sounded like they hung in the air longer, perhaps echoed more, and were not as crisp as the sharp, resonant double-raps. The double-raps gave the distinct impression of being on wood, and thus the sound ended abruptly, whereas the gunshots seemed to reverberate more. Furthermore, I would not expect gunshots to be so consistently doubled.

Liff later noted that in later exploration of the area, he identified the area from which most of the sounds emanated as being “at or slightly west of a secondary channel that runs east of the woods [east of the north end of Blue Hole]. On our 10 November search, we found several snags that could serve as drumming sites. In locating an edge of open field where hunting occurs, I judged the sounds to have been half again closer than the closest point of that field [to Blue Hole].” The area of the encounter is 4 km northeast of the Route 17 bridge, and older-growth tupelo-cypress habitat in this area is very similar to that in the area of the February 2004 sightings (Figure 7).

As a part of the search effort that began shortly after Liff's encounter, the Cornell Lab mounted Autonomous Recording Units (ARUs) in up to 18 locations, including Blue Hole. Although analyses of recorded sounds are still ongoing, acoustic signatures of sounds that closely match *Campephilus* double-rap have been detected from the Blue Hole area on the evening of 24 and 26 December and morning of 25 December 2004, a time when searchers had taken holiday. All of these detections are of isolated, single double-raps, which is not impossible if the drum signals were given by established paired birds, but a series of double-raps would more readily exclude the possibility of a mechanical source of the sound. The Christmas double raps were recorded during



a spell of cold weather with little bird activity, and one was recorded earlier in the pre-dawn than seems likely for a large woodpecker to have been active.

On 7 September 2004, Tim Barksdale conducted playback experiments in an area very near the February 2004 sightings. Barksdale reported two double-raps in response to the Ivory-billed recordings, given from high in the canopy at a distance of approximately 120–150 m. Due to the heavy vegetation, the bird was not clearly observed, but Barksdale believed that the sounds were produced by Ivory-billed Woodpecker. In addition, three double-raps were heard just west of Robe Bayou (Figure 1) by Casey Taylor and Matthew Sarver between 1710 and 1735 CST on 7 March 2005, and Barksdale again reported a double-rap response at Blue Hole at 1610 CST on 17 March 2005, again with no visual contact with the bird. An ARU there did not pick up this double-rap, but it did record three bird calls at Blue Hole the same evening, spectrographic analysis of which shows patterns consistent with the typical *kent* call of Ivory-billed Woodpecker. Few other observers have heard such calls in Bayou de View. Following up on Casey Taylor's 14 February sighting, however, David Luneau and Timothy Spahr, an astrophysicist at Harvard University, heard and recorded several *kent*-like calls at the east end of the powerline cut on 15 February 2005 at 0730 CST, and Sarver and Elliott Swarthout, Project Leader for the Bayou de View area, heard a *kent*-like call about 500 m away from this site at 0918 CST that day. Other observers have reported single double-rap sounds in the Bayou de View, but in some cases, these sounds have been traced to trees knocking together, to Red-bellied Woodpeckers or to Yellow-bellied Sapsuckers. The sources of some such sounds, however, have not been determined. The results of the ARU studies, once completed, will be published elsewhere.

## DISCUSSION

Our analysis of all available evidence convinces us that at minimum one Ivory-billed Woodpecker was present in Bayou de View within the Cache River National Wildlife Refuge between February 2004 and February 2005. The provenance and ecological requirements of this bird remain unknown, despite over 22,000 hours of varied and intensive search efforts in the Cache River and White River National Wildlife Refuges. Based on the ecological requirements of this species outlined by past authors, it is possible that the individual observed in Bayou de View was a transient, perhaps reaching the area from more extensive bottomland forests to the south. It is equally possible that the

area of Bayou de View in which sightings have been reported is one section of a vast but stable home range, a section that was more frequently visited in 2004 than 2005. It seems likely that the patchy distribution of older-growth forests in the Bayou de View area might provide an occasional food source for the species, allowing the bird(s) to forage for a time in the area before moving on. That this species apparently exploited ephemeral resources perhaps explains the relatively tight cluster of sight records in the first half of 2004.

Tanner (1942) postulates that Ivory-billed Woodpeckers breed for just a few years in one area before moving on, wandering as individuals or pairs in search of resources adequate for foraging and breeding. In the Singer Tract of Louisiana, Tanner (1942) remarked upon Ivory-billed's tendency to forage in areas of wooded swamp usually referred to the upper part or backwaters of the "first bottom." The lower part of the first bottom are covered with water year-round and generally comprised of cypress–tupelo forest, whereas the backwater areas, which are covered with water only part of the year, are dominated by Sweet Gum (*Liquidambar styraciflua*) and various oaks, especially Nuttall's Oak (*Quercus nuttallii*) over much of the lower Mississippi Alluvial Valley. Tanner (1942) also remarked that the species appeared to spend some time foraging in the "second bottoms" (dominated by oak–hickory forest) bordering the first bottoms and relatively little time in the lowest part of the first bottoms. Thus it is entirely possible, perhaps even likely, that the bird observed in Bayou de View spends most of its time elsewhere, such as in oak–gum habitats, or that it wanders widely. The largest historical populations of Ivory-billeds, which were documented in Florida, were in fact found in cypress bottoms (Tanner 1942). If any aspect of the species' natural history provides hope for Ivory-billed Woodpecker's continued presence in the bottomland forests of the southeastern United States, it is its mobility and its apparent flexibility in habitat usage.

Historically, Ivory-billed Woodpecker was an inhabitant of old-growth bottomland forests and wooded swamps in eastern Arkansas (James and Neal 1986), in the Mississippi Alluvial Plain in the two ecoregions defined as Northern Backswamps and Northern Holocene Meander Belts (Bailey et al. 1994). James and Neal (1986) note records as follows: 5 together, about one mile south of the mouth of the Arkansas River mouth, Chico County, 14 December 1820; 2 singles (male, female), near Marked Tree, Poinsett County, 1888–1889; and one

or more around Osceola, Mississippi County, in 1887 and Helena, Phillips County, as late as 1910. A column called "Yell" in *Field & Stream* magazine (1885) also reports that the species could be found in the nineteenth century around Newport in Jackson County. Tanner (1942) lists older, less specific reports of the species along the Canadian River in 1820, the Arkansas River in 1850, and in northeastern Arkansas in 1888. Of the five extant specimens with Arkansas labels, none has clear data on locality or date (Jackson 2002). Tanner (1942) visited the White River bottomlands briefly in June and August 1938 but could find no evidence of the species and little habitat for it; thus, the last historical report of Ivory-billed Woodpecker in Arkansas in the twentieth century comes from about 1910.

In more recent times, there have been sight reports of the species in Arkansas. Harold Hagar, a hunter and naturalist living in Tuckerman, Arkansas (north of Newport) reported seeing two Ivory-billeds near Diaz, in the Village Creek floodplain in October 1985 (J. Neal, *in litt.*). This location is between the White and the Cache River drainages and is comprised of bottomland hardwood swamp with scattered Baldcypress. It was searched by Joe Neal, Nigel Ball, and their families on 27 December 1986, but no Ivory-billeds were found (J. Neal, *in litt.*). There are also reports from neighboring Louisiana from 22 May 1971, 11 November 1974, and 1 April 1999, the latter a close observation of a perched pair (Jackson 2002). Arkansas birders conducted unsuccessful follow-up searches in 1986–1987, and Jackson (2002) searched southeastern Arkansas in 1986 and 1988, also without finding evidence of the species there. In January and March 2003, David Luneau, Guy Luneau, Bob Russell, Mary Scott, and others (*pers. comm.*) independently searched the White River National Wildlife Refuge, one year after the formal search of the Pearl River Wildlife Management Area north of Slidell, Louisiana (Knight et al. 2002, Fitzpatrick 2002) had ended, and although bark scaling and cavities indicated the presence of large woodpeckers in the area, only Pileated Woodpeckers were documented with certainty, though Scott privately described seeing a female Ivory-billed on 10 March 2003 (Gallagher 2005; T. Gallagher, *pers. comm.*).

There is still a tremendous amount to learn about Ivory-billed Woodpecker, and both skill and luck will be needed to observe this apparently wary species. Quietly paddling a canoe through the Bayou de View, one quickly realizes the enormity and complexity of the tupelo–cypress swamps and the difficulty of surveying their avifauna



na. Pileated Woodpeckers are common, easily heard and seen, often showing themselves as semaphore-like glimpses of black and white flying off into the forest. Stem density is extraordinarily high in some areas, and birding the area is difficult, especially away from main channels in the bayou. Thus the habitat and retiring habits of the birds combine to provide fleeting and distant views in many cases, even of commoner species. The Ivory-billed Woodpecker(s) apparently present in this location managed to elude a team of 20+ researchers conducting field work from dusk until dawn. Single birds were observed only briefly in flight, suggesting that the species is difficult to detect while feeding, perhaps being best looked for at dawn and dusk when it likely moves some distance across open areas (e.g., along water channels, or over tree tops) to reach feeding areas and roost cavities. Somewhat surprising was that most reports of Ivory-billed that were recorded during the search fell between 1100 and 1400 hrs, a time when little activity would be expected. Perhaps the species occasionally makes longer flights at midday after a morning's feeding in one area. Tim Spahr, an Ivory-billed searcher and Harvard astrophysicist who specializes in asteroid movements and the calculation of rare events, created an algorithm based both on James Tanner's description of the daily movements of the species in the Singer Tract and on the habitat in Bayou de View. By his calculations, a single Ivory-billed occupying that area could manage to avoid detection by 20 observers indefinitely!

### The Future

With the announcement of Arkansas's Ivory-billed Woodpecker to the public, we enter a new phase of inventory and research in which birders will play a crucial role. As the U.S. Fish and Wildlife Service puts together the endangered species recovery team that will chart the future for conservation efforts on behalf of this great bird, the federal and state agencies are also intent on providing real viewing opportunities for birders who care to visit the Big Woods region. While access to the main Bayou de View channel on Cache River N.W.R. is temporarily restricted (including all areas noted in Figure 1; see <<http://www.fws.gov/southeast/news/2005/images/BirdViewingAreas-NMap.pdf>>), access points have been created on adjacent Dagmar Wildlife Management Area, and the nearby White River N.W.R. remains open to visitors. Birders should check web sites of the Arkansas Game and Fish Commission and U.S. Fish and Wildlife Service for updates on access and other possible restrictions. Birders should also be aware that these

areas are usually open for hunting and should check agency web sites for hunting dates and locations and plan their trips accordingly. National Wildlife Refuge staff is developing plans for towers, boardwalks, and other safe viewing opportunities for birders, and hopefully these will be in place by winter 2005–2006.

Birders searching for the species should be prepared to present documentation for all sightings, and carrying a video camera is highly recommended, even crucial. The Ivory-billed Woodpecker apparently frequenting Bayou de View represents perhaps the most endangered species on earth, and, as with any rare bird, compelling evidence will be needed to confirm any report. Documentation in the form of "sight records" of this species has of course not been considered acceptable by records committees or ornithologists for many decades, and even still photographs have been discounted as evidence. Although sight reports are of interest, confirmation by photograph—especially videotape—is considered the *sine qua non* of Ivory-billed reports.

There are many areas that still hold promise for the continued existence of this species, especially given its recent discovery in a relatively unknown and small tract of previously cutover bottomland forest in Arkansas. Nesting Ivory-billeds have been noted to move long distances in order to locate foraging resources in their home range; however, the extent of a single bird's movements during the non-breeding season is a matter of speculation. It is likely that a species such as the Ivory-billed, which specializes on the ephemeral resources of newly dead or dying trees, could move long distances in its search for food, thus allowing it to disperse widely into what little suitable habitat remains. With this in mind, birders can help by searching for the species in areas that still hold promise. Rather than concentrating solely on the Bayou de View, where a large amount of disturbance will almost certainly do more harm than good (and where teams of researchers will already be present), birders might focus on other areas of interest that require extensive search efforts, including Apalachicola, Florida (see article this issue) and the older-growth bottomlands of South Carolina, Mississippi, Florida, and Louisiana. A preliminary list of such places can be found in Jerome Jackson's *In Search of the Ivory-billed Woodpecker* (Smithsonian Books, 2002). Areas worthy of search include the Big Cypress and Fakahatchee Strand, the Gulf Hammock/Wacassassa/Suwannee River areas, and the Apalachicola River basin, all in Florida; the Pearl River basin and the Homochitto National Forest/Three Rivers area (Mississippi and Louisiana); the Delta National Forest

(Mississippi); the Atchafalaya River basin (Louisiana); and the Congaree Swamp and vicinity (South Carolina).

The search for the Ivory-billed Woodpecker is not over. Plans are being assembled for a second season of intensive fieldwork in the Bayou de View and in White River N.W.R. from November 2005 through April 2006. This effort will involve a crew of full-time searchers and biologists, as well as rotating crews of volunteer searchers. In addition, Cornell Lab of Ornithology and Audubon Arkansas will be coordinating the efforts of other visiting birders, and we will be creating an eBird-like web site where birders can report where they looked, what they saw, and upload any supporting notes or photographs of possible Ivory-billeds. We hope that in the coming years, more and more birders will have the opportunity to look for and, with luck, find an Ivory-billed Woodpecker, and that the sum of this newly focused attention will contribute measurably to our knowledge of this noble bird and ultimately to its recovery.

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## Ethical Considerations for Seekers of Ivory-billed Woodpecker: Specific Applications and Amplifications of the ABA Code of Ethics

Birders reading the account of the Arkansas Ivory-billed Woodpecker will undoubtedly ponder the possibility of conducting small-scale searches of their own for the species. While the desire to travel straight to Bayou de View in hopes of glimpsing the bird might be strong, it is important to note the extreme sensitivity of the conservation effort in this location. The fragility of the situation cannot be overstated, as we know essentially nothing about the conservation of this species—even whether it still persists in eastern Arkansas. Birders must exercise the very highest degree of ethical behavior when visiting the area and understand the serious potential consequences of inappropriate and unethical behavior. The area in which this bird was reported has been little disturbed by human activity in recent decades, and large numbers of people visiting this area could seriously threaten its foothold in Bayou de View. A deluge of visitors could drive the bird away from the habitat where it appears to visit at least occasionally and could damage relations with local refuge managers, fishermen, hunters, and others. We are obliged in this situation to observe the very highest ethical standards and use clear-headed common sense, whether in the field or in contact with local people.

The First Article of the American Birding Association's "Code of Birding Ethics" reads "Promote the welfare of birds and their environment," and under this general heading, Article 1b reads "never use such methods [audio lures, playback, tape recordings] for attracting any species that is Threatened, Endangered, or of Special Concern." This cannot be stated any more clearly, but in the Bayou de View area, one could also add: "Do not make vocal or mechanical imitations of the calls or raps of Ivory-billed Woodpeckers; do not knock on trees in imitation of the species. Do not place any item in the habitat that serves as a lure, such as a decoy or model, food item, or other attractant." Article 1c, which treats the matter of publicizing rare birds, reads: "Before advertising the presence of a rare bird, evaluate the potential for disturbance to the bird, its surroundings, and other people in the area, and proceed only if access can be controlled, disturbance minimized, and permission has been obtained from private landowners. The sites of rare nesting birds should be divulged only to the proper conservation authorities." It is this clear, simple

ethical principle that guided the Cornell Lab of Ornithology and The Nature Conservancy to keep confidential its findings for almost 15 months—the time needed to research the habitat and presence of the woodpecker, formulate plans for conserving the area, and inform federal authorities of their findings and recommendations. Genuine concern for habitat disturbance (Article 1d) also undergirded the decision to maintain confidentiality regarding the findings. Anyone so fortunate as to find the bird, especially in a roost site, should inform only designated authorities—not fellow birders.

For those who do visit Arkansas, Article 2 of the Code of Ethics reads: "Respect the law and the rights of others." This means not just property rights and the regulations in various refuges and wildlife management areas (Articles 2a, 2b) but also the stipulations of the Endangered Species Act and the Migratory Bird Treaty Act. Even the slightest action interpretable as harassment could have serious legal consequences, including jail time and fines. Article 2c emphasizes "common courtesy in contacts with other people. Your exemplary behavior will generate goodwill with birders and non-birders alike." In an area where ecotourists and birders are rarities, the local citizens have a right to expect dignified, considerate behavior on the part of visitors to their favorite fishing holes and restaurants alike. We must, as birders, consider every action we take and exercise an extreme of "common sense": parking cars in a way that minimizes inconvenience for others; keeping voices down in areas where others are watching or fishing; perhaps even wearing clothes that blend in to the environment, so as not to startle the woodpecker if we come across it.

There is so much at stake here. Violations of the ethical guidelines laid out above could result in the disorientation or demise of the woodpecker; in the closure to the public of certain areas; and in legal actions against violators or even against agencies involved in protection of the habitat and the woodpecker. We may have but one reprieve, one last chance to learn more about a species on the verge of extinction, and we cannot, as a birding community and as a species, fail this bird again. There is simply no room for misbehavior in this case. If visiting in groups, birders should make absolutely certain that each member

of the group understands the ethical imperatives involved and agrees to help others in the group abide by them. In the event, however, that someone witnesses a violation of the Code of Ethics or of federal law, that person has an ethical obligation to address the situation immediately. Article 4b of the Code reads:

**If you witness unethical birding behavior, assess the situation, and intervene if you think it prudent. When interceding, inform the person(s) of the inappropriate action, and attempt, within reason, to have it stopped. If the behavior continues, document it, and notify appropriate individuals or organizations.**

On the positive side of this fragile equation, birders can clearly be of immense help in documenting Ivory-billed Woodpeckers in the United States, as the number or eyes and ears searching for the species will doubtlessly increase the likelihood of its detection and documentation. How can we as birders best contribute our resources to the search effort? How can we harness the fire that burns for this species within the collective hearts of birders and scientists to help rediscover a species at once so magnificent that it inspired every person who beheld it and yet was so thoughtlessly erased from our avifauna? The skill and determination of the birding community can surely be of great value in preserving the species and its habitat: after all, there have been no observations, despite thousands of hours of field work in the area, of a foraging Ivory-billed Woodpecker, not even so much as a clear photograph that would tell us the sex of the bird or birds. ☺

**In winter and spring 2005–2006, the Cornell Lab of Ornithology, along with its partners in the Big Woods Conservation Partnership, will again be conducting systematic searches for the Ivory-billed Woodpecker in the Cache River and White River forest systems of Arkansas. We will be staffing our research team with trained field biologists and volunteer birders. If you are interested in applying for a paid position or for a volunteer spot, please see <[www.birds.cornell.edu/About/jobs](http://www.birds.cornell.edu/About/jobs)> for details. Birding tours of the area may soon be offered—see <[www.ivorybilledexpeditions.com](http://www.ivorybilledexpeditions.com)>. For those curious to read more about the species' history, and hopefully its future, see <<http://www.birds.cornell.edu/ivory>>, which also has film footage of the woodpecker and researchers from the 1935 Cornell expedition to the Singer Tract in Louisiana.**