

Gambling on a Ghost Bird

Top-notch ornithologists wagered their reputations by declaring that the ivory-billed woodpecker still exists. Two years later, the odds of its survival appear long

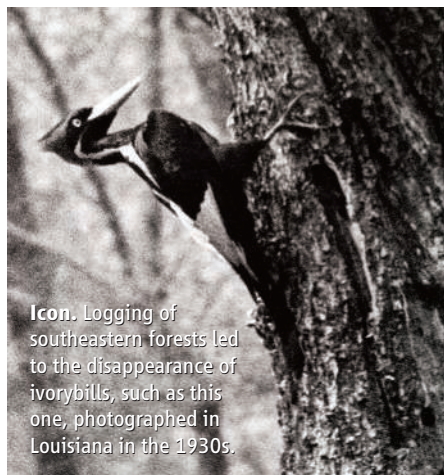
ON 28 APRIL 2005, JOHN FITZPATRICK told the world what he had been keeping secret for more than a year. At the headquarters of the Department of Interior in Washington, D.C., flanked by two Cabinet secretaries, Fitzpatrick announced a conservation miracle. The majestic ivory-billed woodpecker—an emblem of southern old-growth forests that was last seen during World War II—still persisted in the Big Woods of Arkansas. “In the world of birding,” he said, “nothing could have been more hoped-for than this Holy Grail.”

It was an extraordinary claim and a rare piece of good news in conservation. It was also a crowning achievement for Fitzpatrick, director of Cornell University’s prestigious Lab of Ornithology, who had fielded probably the most intense search for a bird ever. The 14-month stealth mission yielded several eyewitness sightings, sound recordings, and a video, published online in *Science* that day. “We have conclusive proof that the ivory-billed woodpecker has survived into the 21st century,” Fitzpatrick declared in a video released by Cornell. Private donors and federal agencies opened their wallets. The world celebrated a second chance to save the awe-inspiring bird.

And yet after more than 2 years of herculean efforts and sometimes vituperative debate, indisputable evidence of the bird’s existence has not emerged. Fitzpatrick still believes his team saw an ivorybill, although he never did himself, in the Big Woods in

both 2004 and early 2005, and he speculates that it has either flown elsewhere or died. Skeptics think the mesmerizing ivorybill was never there to begin with and that the Cornell team mistook other woodpeckers and overinterpreted a blurry video. “Why would you announce ... one of the biggest things ever in North American ornithology and not have concrete, irrefutable evidence?” asks Mark Robbins of the University of Kansas in Lawrence.

To many critics, this is a story of good intentions gone awry and the power of belief, amplified by secrecy. A top-notch team of scientists was misled by hope, it seems to them, and buoyed by confidence that more searching would bring the definitive photo. Fitzpatrick and his colleagues reject those explanations,



Icon. Logging of southeastern forests led to the disappearance of ivorybills, such as this one, photographed in Louisiana in the 1930s.

defend their objectivity, and say they have no doubts or regrets. Now, as the U.S. Fish and Wildlife Service (FWS) begins to assess the efficacy of the searches it funds, most birders and ornithologists seem resigned that even if an ivorybill was in Arkansas in 2004, the chance to save the species is past. “I want to hope against all odds,” says James Bednarz of Arkansas State University in Jonesboro. “But my scientific logic says it’s deep in the vortex of extinction.”

Fleeting glimpses

The largest woodpecker in the United States, the ivorybill (*Campephilus principalis*) lost practically all its old-growth habitat when loggers cut down the bottomland forests of the southeastern United States. As the birds became scarce in the 1880s, ornithologists and birders raced to shoot the survivors for their collections. By the 1960s, most ornithologists were convinced the ivory-billed woodpecker was extinct. Yet every few years, a hunter or birder would announce a sighting. Experts assumed that they were misidentifying a pileated woodpecker (*Dryocopus pileatus*), a large species still abundant in the bottomland forests. In 1966, bird author John Dennis reported seeing an ivorybill in a swamp in east Texas. He swam naked through the water and managed to get a close look, yet no one believed him.

Even a respected scientist caught the fever. George Lowery Jr. of Louisiana State University (LSU) in Baton Rouge, past president of



the American Ornithologists' Union, brought two photographs of ivory-billed woodpeckers to AOU's annual meeting in 1971. Lowery believed that the photos, taken by an acquaintance, were real, but other ornithologists thought the birds looked like posed specimens. His reputation was tarnished. "I wish now that I had said nothing about these birds," he later wrote.

None of this boded well for David Kulivan, a forestry student at LSU. He spotted what he thought were two ivory-billed woodpeckers while turkey hunting near the Pearl River on 1 April 1999 (not an auspicious day of the year to report seeing ivorybills). He recounted the sightings to ornithologist James Van Remsen, curator of birds at LSU's Museum of Natural Science, who was persuaded enough by Kulivan's account to organize a search. Zeiss Sport Optics funded a well-publicized effort in 2002.

Cornell also mounted a small expedition, led by Fitzpatrick. There may have been no one better placed to save the ivory-billed woodpecker than Fitzpatrick, who is shrewd, ambitious, and decisive. "Fitz never goes halfway on anything," says Frank Gill, who retired as chief scientist of the National Audubon Society in New York City. "He can move mountains in a way that no other ornithologist can do." A Harvard graduate who went on to a Ph.D. at Princeton, Fitzpatrick bushwhacked through the Amazon in the 1970s and '80s, discovering seven new species of birds. He made an even bigger

mark studying endangered Florida scrub jays and helping to create a national wildlife refuge to save scant remaining habitat. In 1983, as curator of birds at the Field Museum in Chicago, Illinois, he was awarded AOU's highest prize for research.

After a month in the Pearl River, neither group had found anything. Late-night TV comedian Jay Leno mocked the search by reading a newspaper headline: "Researchers fail to find extinct bird." Eventually, the Louisiana Ornithological Society dismissed the Kulivan sighting. Still, the Cornell team won kudos from other researchers for its cautious analysis of their sound recordings, which turned out to have captured gunshots, not the distinctive double-knocks made by ivorybills. Despite heading home empty-handed, the experience fired up Fitzpatrick. "The chance to be there was a dream come true," he says.

Secret mission

Another opportunity arose just 2 years later. Fitzpatrick was in his office at 8:30 a.m. on 1 March 2004 when Tim Gallagher came in, wild-eyed. Gallagher, an avid birder who edits Cornell's *Living Bird* magazine, had just returned from the Cache River National Wildlife Refuge in Arkansas, where he and a friend had seen an ivorybill. Fitzpatrick grilled him for details and finally asked: "What are the chances that the bird you saw was not an ivory-billed woodpecker?" Gallagher replied, "I'm absolutely positive that this bird was an ivory-billed woodpecker."

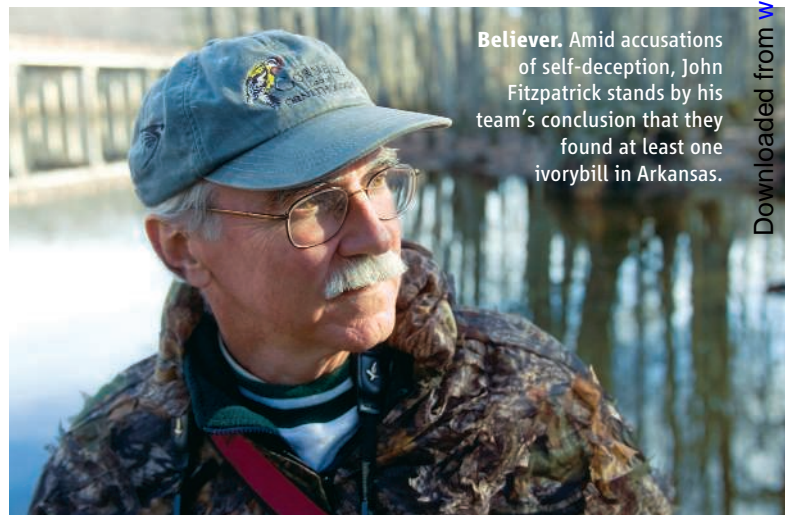
Fitzpatrick immediately sent Gallagher back to the swamp with a top graduate student. Then in mid-March, he convened a meeting of the Sapsuckers, a crack team of birders from Cornell that competes in the World Series of Birding. Several days later, they were tromping and paddling through the Arkansas swamp. But during that week, the only woodpeckers they saw were pileateds. The team was frustrated, and most of them had to return to their day jobs at the lab.

But Fitzpatrick decided to press ahead, having great confidence in Gallagher's sighting. "I have to put my faith in those people able to separate fact from fiction," he says. He

was also convinced that if he didn't act, the bird would truly go extinct. There had been no previous exhaustive searches, he points out. Cornell had the tip, the resources, and the gumption. "Nobody else had the balls to do it," Fitzpatrick says.

He insisted on secrecy—a decision that would later bring the team criticism for being insular and insufficiently skeptical. Fitzpatrick feared that if word of the search got out, "the place would become Coney Island with birders piling in all over the place." Ultimately, some two dozen police officers were ready to protect the habitat after the announcement, but there was no onslaught. The Nature Conservancy, which was involved in the search, had its own concerns. It had been buying land to conserve bottomland hardwood forest and feared that news of the search would drive up prices.

More volunteers arrived, all signing legal confidentiality documents. The cover story for curious locals was that they were doing a biological inventory for The Nature Conservancy. The bird was code-named Elvis. Between 5 and 11 April, there was a flurry of sightings, all by lone, amateur observers. Concerned about the lack of corroboration, Jeffrey Wells of Cornell, the logistical manager, decided to double up the observers. After that, there was just one more sighting. On 25 April, David Luneau—an electrical engineer at the



Believer. Amid accusations of self-deception, John Fitzpatrick stands by his team's conclusion that they found at least one ivorybill in Arkansas.

University of Arkansas, Little Rock, who participated in the Pearl River search—and his brother-in-law filmed a 4-second glimpse of a bird fleeing a tree. It has become without doubt the most analyzed bird video in history.

Like the others, Fitzpatrick was initially disappointed by the video's quality. Although the team was convinced from the sightings that the bird was there, and they had intriguing recordings of double knocks and "kent"

calls, they wanted solid evidence—clear photos or video or a nest hole that would convince skeptics. As Luneau has said, “If you have something like a picture or video or sound recording, ... then others are able to make up their minds based on science rather than on their feelings on how much they believe somebody.”

With time running out on the 2004–2005 season—the leaves would soon be emerging on the trees and it would be impossible to see anything—Fitzpatrick and the others began planning for the next field season. Fitzpatrick raised about \$4 million in cash and pledges for what would become the largest ornithological search in modern times, coupled with a concerted effort to conserve the ivorybill’s habitat. As a board member of The Nature Conservancy, Fitzpatrick had rubbed elbows with the likes of Henry Paulson, the former CEO of Goldman Sachs and now U.S. Treasury Secretary. Paulson is an avid birder and, with his wife, donated money to support the search.

At the same time, Fitzpatrick was communicating with the Department of the Interior, where he also had connections. James Tate, science adviser to Secretary Gale Norton, was a former assistant director of the Lab of Ornithology. “We wanted to get as much buy-in from the government to put money into the conservation of this area as we could,” Fitzpatrick says. He also decided they would not announce the finding until they had tangible evidence and a paper accepted for publication, probably at the end of the 2005 field season.

To the team’s disappointment, nothing better than the video turned up—despite efforts including hoisting

Field marks. Ivorybills (right) superficially resemble pileated woodpeckers (left) but are larger and have distinct plumage.



No action. Months of high-quality videotaping failed to catch an ivorybill a second time.

observers 25 meters above in a cherry picker. “It became clear that, in all probability, we were not going to obtain any more video evidence anytime soon,” says Martjan Lammertink, a woodpecker expert who joined the team that season. By February 2005, Fitzpatrick recalls, he realized that “we need to begin to act as though the Luneau video plus sightings plus sound is going to be enough.”

The team went back to the Luneau video. The more they looked, the more convinced they became that it could not be a pileated woodpecker. The wings had a white trailing edge. The wing beats seemed very fast. And the size of the bird, measured as it perched on the tree, was much too big. To bolster their argument, the group took crude models and reenacted the escape flight of the bird, albeit with stiffly flapping wings. They filmed at the exact spot Luneau had taken the video, using the same camera. “The most parsimonious and logical conclusion is that it is probably an ivory-billed woodpecker,” Lammertink says. Fitzpatrick e-mailed Don Kennedy, editor-in-chief of *Science*, about submitting a paper. In an editorial published with the paper, Kennedy recalls that he “responded in a New York second!”

The manuscript went out for reviews in early April and was scheduled to be published in mid-May.

But on Monday, 25 April, the story leaked. In preparation for an announcement by the Department of the Interior, Tate quickly flew to Florida and drove in a raging rainstorm to meet Fitzpatrick at the Archbold Biological Station to evaluate the evidence. “I’d seen George Lowery and John Dennis have their reputations ruined by naysayers,” Tate says. “I did not want that to happen to the secretary, or to me.” Tate, who had studied a kind of woodpecker called the yellow-bellied sapsucker, came away convinced.

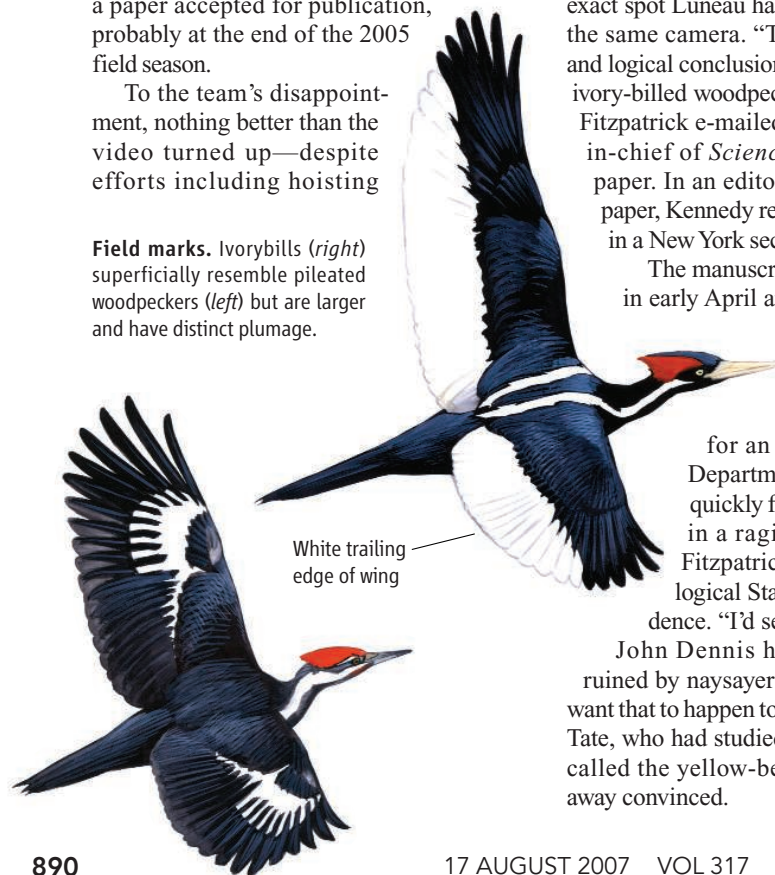
Editors at *Science* rushed the final production of the paper so that it could be published online, along with the video and the recordings, before the news broke in the media. “*Science* wanted to do this with an embargo and make a splash,” Fitzpatrick says. It worked: Stories ran in 459 U.S. newspapers, 174 television shows, and 43 radio shows. At the press conference, Interior and the U.S. Department of Agriculture announced joint funding of \$10.2 million for the conservation of the ivory-billed woodpecker and its habitat. Fitzpatrick and a few others were whisked back to Cornell on a private jet.

The powder keg explodes

The announcement, Gill recalls, provided a spark that “hit the powder keg of hope and expectations in a way that was just unprecedented. Once it got started, it really got out of control.” The town of Brinkley, Arkansas, nearest to the sightings, went wild with promotion. Some 70 experts and officials, including a brigadier general, joined the federal recovery team—a record number. Many scientists were also swayed. At first, “I was completely accepting,” recalls Geoffrey Hill of Auburn University in Alabama, who became more skeptical after taking a close look at the video. “It was *Science*, it was the Lab of Ornithology, and it was Fitz.”

But others say they looked at the video with dismay. “I was worried right from the start,” says Noel Snyder, a retired FWS biologist. He and a few others privately expressed concerns to Fitzpatrick about the strength of the evidence. But they kept quiet, not wanting to rain on a joyful and highly publicized parade.

Jerome Jackson was among the early skeptics. An ornithologist at Florida Gulf Coast University in Fort Myers, Jackson is no stranger to ivorybills, having seen more than 300 museum specimens and written a detailed history called *In Search of the Ivory-Billed Woodpecker*. And in 1986, when FWS convened a meeting to discuss



declaring the ivory-billed woodpecker extinct, Jackson argued against it and conducted a small search.

Jackson and three other scientists prepared a paper for *PLoS Biology*, arguing that the Luneau video showed a pileated woodpecker. “All we wanted to do was have everyone go, ‘Wait a minute!’ before any more money got spent,” says co-author Robbins. “We didn’t want to see precious conservation dollars wasted on something that might not be there.”

This made the Cornell team and its sponsors nervous. Not long after *The New York Times* reported the existence of the skeptical but not-yet-published paper, Jackson says, Tate called Jackson on a Saturday night and told him to “back off.” Tate denies that and says he just wanted to discuss Jackson’s criticisms. “My concern was that the skeptics would destroy our opportunity, destroy that second chance to get the biological information of what the birds needed,” Tate says.

Days before publication, and after writing a rebuttal, the Cornell team offered to play the critics additional, unpublished recordings that hadn’t been fully analyzed before the submission of the *Science* paper. The recordings convinced co-authors Richard Prum of Yale University and Robbins that at least two ivorybills were living in the Big Woods. They withdrew the paper on 1 August, saying they didn’t want to undermine conservation efforts. (In retrospect, now that it’s clear the recordings are not solid evidence, they regret the move. “I blinked,” Prum says.)

But Jackson, who had been out of town and unreachable, still thought that the doubts needed to be aired. In a long, invited article published in *The Auk* in January 2006, he accused Fitzpatrick’s team of “delving into ‘faith-based’ ornithology and doing a disservice to science.” In a March 2006 response in *The Auk*, Fitzpatrick’s group charged that the Jackson article was “a series of factual errors and poorly substantiated opinions.” Jackson, they implied, was “compromising science with sound bites.”

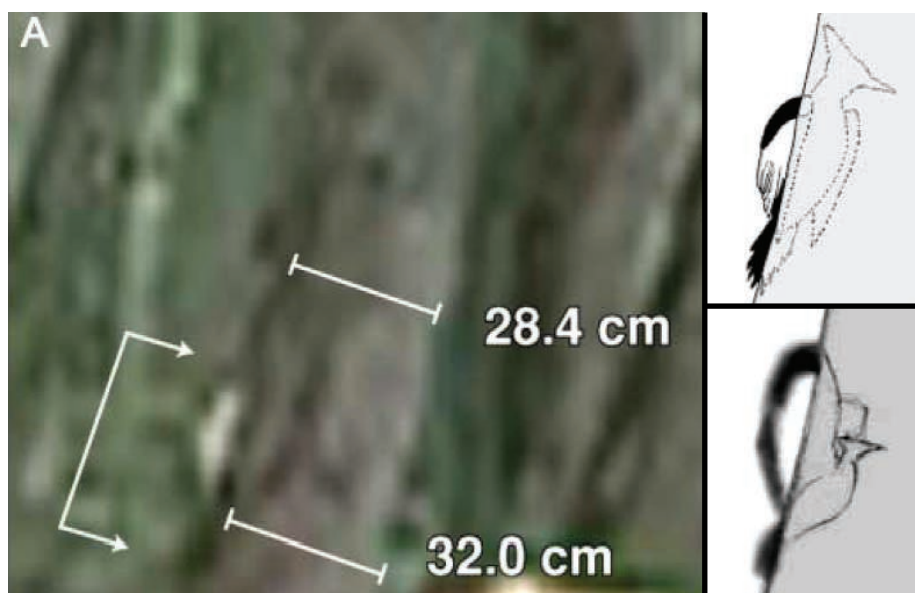
After another round of rebuttals commenced, Fitzpatrick confronted Jackson during an August 2006 meeting in South Carolina and asked him not to publish. Jackson recalls Fitzpatrick heatedly telling him, “You are going to be independently responsible for the extinction of the ivory-billed woodpecker because you are preventing me from raising money for conservation.” Shortly thereafter, Fitzpatrick contacted Jackson again and offered co-authorship on a future paper if Jackson would pull his letter. “That’s not how I operate,” Jackson told him. Fitzpatrick says he wanted to focus on the bird and avoid

another unproductive exchange: “It was not my desire to prolong and underscore resentments and personal disagreements.”

The tone was much more restrained in a Technical Comment and response published in *Science* on 17 March 2006 (p. 1555). Like the authors of the stillborn *PLoS* paper, David Sibley, who wrote and illustrated *The Sibley Guide to Birds*, thought the Luneau video showed a pileated woodpecker. In the Comment, Sibley and three co-authors argued that the white on the wings is the underside of a pileated’s wings, not the trailing edge of an ivorybill’s. Moreover, several frames show a black trailing edge, like a pileated’s. The white on the back of the torso, which Fitzpatrick had called “clearly evi-

shows an ivory-billed woodpecker until they see evidence that a pileated could look and fly like that. “Have we boxed ourselves in? Maybe so, but I don’t think it’s so unusual in science,” Lammertink says.

Skeptics, on the other hand, won’t believe in ivory-billed woodpeckers until they see clear proof, such as a roost tree where birds can be repeatedly observed. In the absence of more evidence, the American Birding Association in Colorado Springs, Colorado, continues to list the bird as “probably or actually extinct or extirpated.” The majority of birders appear to be agnostic. In an online poll by *Birding* magazine, published in April, 75% responded that the ivorybill might or might not exist.



Blurry video. Fitzpatrick’s team argues that the bird in this frame was perched (*above, right*), revealing its large size, while Sibley contends it was already in flight (*below, right*).

dent,” was actually “a vague pale blur” of just a few pixels. In addition, they asserted that the size estimate wasn’t valid, because what Fitzpatrick identified as a perched bird was instead already in flight.

The Cornell team has stuck to its guns.

Since then, other papers, one published in March in *BMC Biology* and another in *The Wilson Journal of Ornithology* in June, also found the video and acoustic evidence unconvincing. “It’s all sort of evaporating,” Snyder says. He and others aren’t interested in rehashing the Luneau video; they would rather see new evidence. It hasn’t arrived. The second massive search, during the 2005–2006 season, also came up dry.

Stalemate

Fitzpatrick and Lammertink say they will remain convinced that the Luneau video

So what made Cornell so sure? Hill thinks it is the weight they attached to the video. “In retrospect, the Luneau video may loom as one of the most unfortunate things to ever happen to the Laboratory of Ornithology,” he writes in his book, *Ivorybill Hunters*. Without it, he speculates, the Cornell team probably would have interpreted the sightings more cautiously. Instead, they threw themselves into a highly involved analysis of murky data. “It was cast as a scientific analysis of these pixels,” says Frank Gill. “It had all this pizzazz of technology. That was brilliant on Fitz’s part, but it was weird to go to this length.”

Jeffrey Walters of Virginia Polytechnic Institute and State University in Blacksburg, who says he was one of the reviewers, says he was swayed by the entire case, including the multiple sightings. He argues that it’s unlikely that all the observers were mistaken. But Sibley

counters that the odds are fairly high—if observers are hoping to see the birds. All the best sightings were from at least 20 meters away and lasted no more than 10 seconds. “It’s just a perfect recipe for your brain to fill in the gaps,” Sibley says. “You get a brief glimpse and an impression, ... and your brain turns it into an ivory-billed woodpecker.”

Conducting the analysis in secret compounded the problem, Prum says. “That process of self-convincing took place in isolation from fresh air, from people who didn’t report to the boss,” says Prum. “Frankly, I think it’s antithetical to good science.” One solution, Prum suggests, would have been to send the Luneau video to woodpecker experts and ask them to identify the bird without knowing the team’s conclusion. Fitzpatrick rejects the charge of groupthink, insisting that the team was as objective as any scientists could be. Both Fitzpatrick and *Science*’s Kennedy defend the decision to

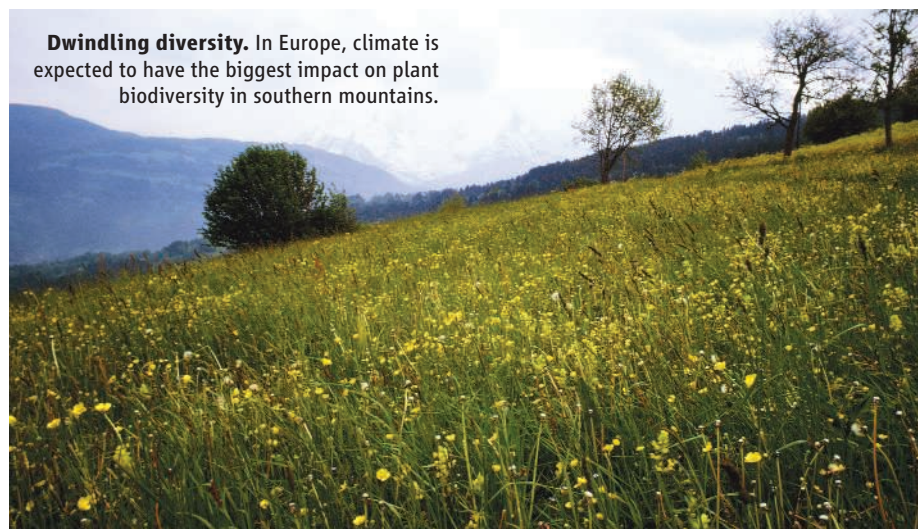
publish, noting that the paper was vetted by peer reviewers. “We got more than satisfactorily positive reviews,” says Kennedy, who adds that he wasn’t fazed by the lack of a clear video. “I thought that it was very important, even if there was some possibility that this might be wrong.”

Meanwhile, the search for the bird continues, although it has been scaled back. In the third field season, which concluded in April, Cornell conducted a smaller, mobile search. Rather than focus on a single area, Lammertink and three colleagues spent 5 months, 7 days a week, searching 16 regions by foot and canoe. In addition, FWS also supported searches by other agencies and groups in Texas, Tennessee, Florida, and South Carolina. Again, nothing conclusive turned up. Hill is convinced that he and his team saw ivorybills in 2005 and 2006 along the Choctawhatchee River in Florida, but he admits he can’t deliver enough evidence yet.

Lammertink, too, remains optimistic. “There are big areas of unexplored habitat, where on rational grounds you can see that small populations might persist.” Fitzpatrick anticipates another year or two of searching at most. “It’s just too expensive,” he says, noting that it’s become harder to raise money. Even if the team quits empty-handed, Lammertink says, it will be difficult to prove the bird is not there. “It may always remain a question mark.”

Whether that uncertainty will haunt Cornell remains to be seen. “In some people’s minds, the failure to find better evidence in the last couple of years has not been good for the reputation of the Lab of Ornithology,” says Russell Charif of Cornell. That specter doesn’t worry Fitzpatrick. “I move with the actions that I deem appropriate for the possibility that the birds are there,” he says. “And I don’t look back.”

—ERIK STOKSTAD



Dwindling diversity. In Europe, climate is expected to have the biggest impact on plant biodiversity in southern mountains.

BIODIVERSITY

Predicting Oblivion: Are Existing Models Up to the Task?

Huge numbers of species may be at risk of extinction from climate change, but coming up with precise estimates is proving tough

The most authoritative guide to today’s extinction crisis is a database known as the Red List. Later this month, a group of scientists will gather in England to consider whether the Red List should be opened up to species that, for the moment, show no signs of trouble. Many scientists suspect that the next few decades of global warming could push some species toward

oblivion. “The concern,” says the meeting’s organizer, H. Resit Akçakaya, an ecologist at ecological software company Applied Biomathematics in Setauket, New York, “is that maybe some species that are threatened by climate are not reflected on the Red List.” But Akçakaya and others caution that the meeting is unlikely to come up with firm predictions of

how many species will become extinct, let alone which ones will be particularly at risk.

The science of predicting extinctions from global warming is only a few years old, and the best models are rife with uncertainties. Experts generally agree that the models may be useful for giving a rough idea of the potential impact of global warming and may also offer guidance for planning preserves. But some scientists are concerned that policymakers will be expecting them to provide more precise estimates than they can deliver. “It’s worrying, says Miguel Araújo, an ecologist at the Spanish National Research Council in Madrid.

Much of the current debate over climate-triggered extinctions focuses on what are known as climate-envelope models. Scientists analyze all the places where a species has been recorded and look for features of the climate that those places share. The key factors may be rainfall, for example, or the temperature during the winter.

In the early 2000s, scientists began to look at what happened to these climate envelopes in the scenarios climate scientists have projected for the coming century. “A number of us were noticing that these envelopes seemed to be winking out entirely,” says Lee Hannah, chief climate change biologist at the Center for Applied Biodiversity Science at Conservation International, a nonprofit in Arlington, Virginia.

Concerned about the prospect of mass extinctions, an international team of scientists, including Hannah, combined their data into a global analysis. They estimated the size of future climate envelopes, assuming shrinking