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A wing and a prayer

Sightings of the ivory-billed woodpecker, a bird believed extinct for 50 years, have fired the public's imagination. But is it really alive? **Rex Dalton** joins the team trying to save this elusive bird.

The Big Woods in Arkansas is not a good place to be on a hot summer day. The swampy forest is thick with mud, poison ivy and snakes. Yet early last month, a dozen scientists slogged their way through these bottomlands towards a mesh tent abuzz with insects — the heart of an unusual US environmental project.

The group's goal is to save the ivory-billed woodpecker (*Campephilus principalis*), a magnificent bird thought to have died off at least 50 years ago as its forest habitat was chopped down. In April, a team led by ornithologists at Cornell University in Ithaca, New York, stunned the birding world by saying they had evidence that the woodpecker still lived in the Big Woods (J. W. Fitzpatrick *et al. Science* 308, 1460–1462; 2005). Now more scientists are braving the wilderness as part of a federally sanctioned 'recovery team', charged with plotting a course to produce a healthy population of the birds.

Near the Cache River National Wildlife Refuge, where the ivory-billed was reportedly rediscovered in February 2004, the team has cut the trunks of trees to create deadwood. The deadwood, in turn, should become home to insect larvae, which are the woodpecker's favourite food. If the elusive ivory-billed shows up to snack, the scientists can use the insects in the tent to identify the larvae and better

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Some ornithologists fear that sightings of the ivory-billed woodpecker (top) have actually been of the lookalike pileated woodpecker (above).

understand the bird's eating habits.

To some, the team's mission is a conservationist's dream, a chance to bring back an iconic bird from the brink of extinction. To others, it is a near-futile attempt — possibly at the expense of other worthwhile projects — to save a species that may no longer grace these woods. The problem is that no one can prove whether the woodpecker still exists.

Forest hunch

"The bird is here," Martjan Lammertink insists in the steamy Arkansas bottomlands. Lammertink, a graduate student at the University of Amsterdam, has studied rare woodpeckers from Mexico to Cuba to Borneo. He moved to

the nearby town of Brinkley so that he could devote himself to pursuing the 'Lord God bird' — named after what people would exclaim when they saw its gleaming bill, ferocious red crest, and body nearly half a metre long.

Yet not all ornithologists are as convinced as Lammertink. Several, including Jerome Jackson of Florida Gulf Coast University in Fort Myers, have repeatedly questioned the Cornell team's evidence for the bird's existence. Neither the four-second video purporting to show an ivory-billed, nor the sound recordings released last month at a bird meeting in California, satisfy this group of sceptics. Ivory-billed searchers, Jackson says, "are shooting in the dark".

The quest for the ivory-billed is steeped in politics as well as science. The Bush administration, smarting from criticism over its environmental policies, hailed the purported rediscovery as a rare piece of good news. Cornell team leader, John Fitzpatrick, had hoped that his occasional birding companion, First Lady Laura Bush, would make the announcement. But news leaks soon turned into a flood, and the secretaries of the interior and agriculture held the press conference instead — on 28 April, the day after the manuscript on the find had been accepted by *Science*.

Now, the federal government is providing an extra \$10 million to save the woodpecker's

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Using a 'bug tent' (below), bird-watchers hope to find tasty treats to entice the ivory-billed woodpecker into the open in the Big Woods in Arkansas (above).

habitat, money redirected from other conservation projects even as congressional Republicans consider cutting back on the protections of the Endangered Species Act. Researchers on the ivory-billed's recovery team face a formidable challenge — figuring out how to save a bird that may already be extinct. Even if it still lives, there may be only a handful of individuals left, not enough to save the species as a whole.

US scientists have brought other birds back from the verge of extinction, including the whooping crane (*Grus americana*) and the California condor (*Gymnogyps californianus*). But never before has the species in question been almost completely invisible. The search for the ivory-billed, one scientist says, is like looking for "a moving needle in one hell of a haystack".

Search party

Still, the hunt goes on, and last month the recovery team met for the first time in Little Rock to explore possible research fronts. Some ornithologists are developing a 'life-table model' to try to determine how many of the birds could have survived, factoring in estimated lifespan and habitat. The best guess is about 15 pairs. Other scientists are examining the chisel-like mark of the ivory-billed's beak to see if it can be discerned from that of other woodpeckers. And major efforts are under way to increase the habitat for the bird's larvae hunt — the woodpecker can roam 20 kilometres a day in search of dying trees from which to strip bark.

Such studies are rarely controversial, but the \$10-million habitat-preservation plan has

raised some eyebrows. At the same time that biologists at the Fish and Wildlife Service (FWS) saw their budgets slashed, the ivory-billed project got a cash infusion. Meanwhile, successful programmes to recover other endangered species were scaled back.

One such example is the Kirtland's warbler (*Dendroica kirtlandii*), a small bird that breeds in Michigan and winters in the Bahamas. More than 30 years ago, the warbler population included some 160 singing males. Today, after years of trapping brown-headed cowbirds (*Molothrus ater*) that parasitically use the warblers' nests, the population boasts a record number of more than 1,400 singing males. But this spring, cowbird trapping in Michigan was drastically cut back; only about 1,100 cowbirds were snared compared with about 4,000 the previous year.

Federal biologists cannot prove that the warbler programme is suffering because of the

ivory-billed woodpecker, but many find the timing curious. "It doesn't make any sense to put one species at risk to save another," says Eric Carey, parks director at the Bahamas National Trust in Nassau, who studies the warbler's winter habitat.

FWS biologist Jon Andrew, who manages federal refuges in the southeastern United States, argues that such diversions are justified given the ivory-billed's precarious situation. "There was enough evidence that we ought to be acting as if the bird was there," he says. "When you make decisions on spending money, there are winners and losers."

To the public at least, the ivory-billed woodpecker is clearly a winner. The rediscovery announcement triggered a rush of national goodwill. Headlines trumpeted the bird that seemed to have made it against all odds. Arkansas experienced a miniature tourist boom as birders flocked to the refuge.

Elvis lives

In the face of this excitement it seems hard to believe that the FWS had been in the process of declaring the ivory-billed woodpecker extinct. No one had definitively seen one in the United States since 1944, although a separate population may have held on in Cuba until at least the 1980s. When the Cornell ornithologists finally thought they had spotted an ivory-billed, they were so amazed that they called the bird 'Elvis', after Elvis Presley, who was born nearby in the Mississippi River delta, and whose fans claimed to see him long after he died in 1977.

Yet, much as for the real Elvis, evidence for Elvis the woodpecker was greeted with

R. DUTTON

scepticism. For years, rumours of ivory-billed sightings had swirled through the community but were never substantiated. In March 2003, a group of diehard ivory-billed seekers thought they heard and saw the bird in the White River National Wildlife Refuge, about 75 kilometres south of where Elvis would later be spotted.

Arizona naturalist Mary Scott posted a report of the sighting on her website, which birders monitor regularly. Among those drawn back to Arkansas was Tim Gallagher, a journalist who edits *Living Bird* magazine at Cornell. His subsequent trip and reported sighting in February 2004 launched the university's project with local birdwatchers.

Hard knocks

Over the next winter, when the trees were bare of their thick foliage, the team watched both refuges for months, using paid observers and their friends. They installed models of ivory-bills on trees, hoping to attract the real thing. They set out sound recorders to capture the woodpeckers calling or knocking on trees.

The effort echoed a similar quest 80 years earlier. By 1924, ivory-billed woodpeckers were supposed to be extinct, victim to rapid logging and to the fashion for collecting dead rare birds. But Cornell professor Arthur Augustus Allen, one of the world's leading ornithologists, photographed a pair of the birds that year in Florida. His rediscovery, which made headlines across the United States, triggered an intense effort to document the birds before they vanished for good.

Unlike Allen's group, the modern ivory-billed searchers had the benefit of videotapes and up-to-date recording techniques. After more than a year, the team had seven woodpecker sightings it considered believable, 18,000 hours of sound recordings, and one grainy video of Elvis.

When *Science* put the video on its website, it immediately provoked a sceptical reaction from some leading ornithologists. Three of them — including Jackson, who, despite his doubts, is a member of the recovery team — helped prepare a manuscript arguing that the bird in the film was probably a pileated woodpecker (*Dryocopus pileatus*), which shares similar red, black and white markings with the ivory-billed. The other co-authors on the paper were Richard Prum of Yale University in New Haven, Connecticut, and Mark Robbins of the University of Kansas at Lawrence (see *Nature* 436, 447; 2005).

On 1 August, as the journal *PLoS Biology* was close to publishing their critique of the *Science* article, Prum and Robbins withdrew the manuscript while Jackson was travelling. The Cornell team had offered them new sound recordings in support of the ivory-billed, including the bird's 'kent, kent' call and double-rap knock. The pair had heard other *Campephilus* woodpeckers in the jungles of South America make the same distinctive double-rap as on the new tape. And Cornell's

As the ivory-billed woodpecker's range dwindled (top), ornithologists in the 1930s turned to sound recordings to capture the bird's voice.

'kent, kent' call matched recordings of the bird made in 1935.

The evidence came from the modern remote recordings, only one-fifth of which have been fully examined. At a meeting of the American Ornithologists' Union in California in late August, Cornell scientists marshalled their evidence in several talks. Fitzpatrick's keynote lecture was greeted with thunderous applause.

Even so, the three sceptics say that they withdrew their *PLoS* manuscript too hastily. They are getting support from other ornithologists, including Gary Graves, the Smithsonian Institution's curator of birds, who argues that the bird shown in the crucial video may be a pileated, not an ivory-billed, woodpecker.

And some authorities say that there is unpublished evidence that helps prove that the bird in the video is a pileated woodpecker. They are referring to a 1953 film of a flying

imperial woodpecker (*Campephilus imperialis*), a species extinct in its home range of western Mexico. Some years ago, Lammertink secured a copy of the film, which had been taken by a birding enthusiast. It was among the evidence shown to ornithologist Michael Patten, research director at the University of Oklahoma's Sutton Avian Research Center in Bartlesville, when he visited Cornell in June.

Ornithologists generally agree that the imperial woodpecker is a sister bird to the ivory-billed, with many similar characteristics from coloration to the distinctive double-rap. But Patten was struck by the imperial's flight patterns. "As soon as I watched the film," he says, "I was absolutely certain they didn't have an ivory-billed woodpecker. The bird in the film flies utterly differently to the one in the Cornell video."

Sound basis?

Fitzpatrick is not troubled by the film of the imperial woodpecker, arguing that it sheds little light on whether his video shows an ivory-billed. "They are like apples and oranges," he says of the two videos, because of different camera angles and stages of the birds' flights.

To the sceptics, the strongest evidence to support the theory that Elvis lives are the sound recordings. And although Prum and Robbins are impressed by them, Jackson, Graves and Patten are more cautious. The evidence is tantalizing, they say, but not conclusive. "The sound recordings don't validate the flimsy sightings records," says Patten.

Remote sound recordings are notoriously deceptive, he points out. Blue jays (*Cyanocitta cristata*) can mimic woodpecker sounds, or gunshots can be mistaken for woodpecker raps. There are also untold copies of old ivory-billed recordings in private hands, including birders who play them back in the Arkansas refuges hoping to get a response from a live bird.

"We are 100% sure" that the new tapes don't just capture playbacks of old sounds, says Kenneth Rosenberg of the Cornell team. Analysis of the notes and sound shows that they don't match, he says. But the team acknowledges that it can't yet rule out a wily jay mimic.

For Fitzpatrick, all the evidence creates a critical mass that indicates at least one bird is out there. "There are people who need to see it to believe it," he told the ornithology meeting. "I respect that." But although he hasn't been fortunate enough to see one, he is "absolutely convinced" that Elvis lives.

Come November, Team Elvis will be back in the Arkansas woods with more observers, more acoustic recorders and an expected \$200,000 in federal funds. Already, Cornell and its partner the Nature Conservancy have raised more than \$5 million in pledges to fund the search and habitat preservation. If Elvis does indeed live, he is being offered one of the best chances ever for his species to survive. ■
Rex Dalton is *Nature's* US west coast correspondent.

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— Eric Carey