



The Great Ivory-billed Woodpecker Debate: Perceptions of the Evidence

“Extraordinary claims require extraordinary proof.”
— Carl Sagan

Floyd E. Hayes

Department of Biology
Pacific Union College
1 Angwin Avenue
Angwin, California 94508
floyd_hayes@yahoo.com

William K. Hayes

Department of Earth
and Biological Sciences
Loma Linda University
Loma Linda, California 92350
whayes@llu.edu



On 28 April 2005, the world was stunned by the announcement that the Ivory-billed Woodpecker had been rediscovered in Arkansas (Fitzpatrick et al. 2005). Despite a steady stream of undocumented reports, plus a few fuzzy and controversial photos, since the last remaining Ivory-bill in the Singer Tract of Louisiana was sketched by Don Eckelberry in April 1944 (Jackson 2004), most birders and ornithologists had assumed that the Ivory-bill was extinct.

Those who dared to report their sightings were often mocked (e.g., Keith 1983). Nevertheless, a small cadre of hopeful believers persisted in searching for the Ivory-bill until finally, on 25 April 2004, a clandestine team led by the Cornell Laboratory of Ornithology (CLO) succeeded in obtaining a short video sequence of a large woodpecker identified as an Ivory-bill along the Cache River of Arkansas. Although the news of the rediscovery—which had been kept secret for more than a year before it was announced—was enthusiastically embraced by the public and the media, the euphoria did not last for long.

The four-second video sequence, taken by David Luneau, became the centerpiece of evidence in an article published by John Fitzpatrick and others in *Science* claiming to “confirm the existence of at least one male” (Fitzpatrick et al. 2005). But barely two months later, news leaked that three ornithologists—Richard Prum of Yale University, Mark Robbins of the University of Kansas, and Jerome Jackson of Florida Gulf Coast University—had questioned the identity of the bird in a rebuttal scheduled to be published in *Public Library of Science*, a web-based journal. Although the paper was quickly withdrawn after the authors were presented with audio evidence (double-knocks and *kent* calls) obtained from the White River of Arkansas, a growing chorus of birders and ornithologists began to question in internet forums and blogs the identity of the woodpecker. The skeptics were bolstered by the publication of rebuttals by Jerome Jackson in *Auk* in January 2006 (Jackson 2006a) and October 2006 (Jackson 2006b) and by David Sibley and coauthors in *Science* in March 2006 (Sibley et al. 2006), who claimed that the woodpecker in the Luneau video was a normal Pileated Woodpecker, and by the inability of the CLO team to obtain conclusive photographic evidence despite extensive searches in Arkansas during the 2004–2005 and 2005–2006 field seasons. The criticisms were rebuffed by the CLO team in counter-rebuttals published in *Science* in March 2006 (Fitzpatrick et al. 2006a) and in *Auk* in April 2006 (Fitzpatrick et al. 2006b) and October 2006 (Fitzpatrick et al. 2006c).



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The video and audio evidence presented by the CLO for the persistence of the Ivory-billed Woodpecker (Charif et al. 2005, Fitzpatrick et al. 2005, Rosenberg et al. 2005) has subsequently blossomed into perhaps the greatest debate in ornithological history. Adding fuel to the fire, Michael Collins (a.k.a. FishCrow) posted details on his website <fishcrow.com> of several sightings and a blurry video sequence claiming to confirm the presence of Ivory-bills along the Pearl River of Louisiana in early 2006. In various internet forums and blogs, a handful of “believers” continue to report sightings, photographs, and other forms of evidence in several southeastern states, and quickly dismiss the criticisms and mockery by “skeptics” and “atheists”. The debate between the two sides is often acrimonious, giving the impression that two entrenched camps are pitted against each other.

Although the evidence for the persistence of the Ivory-bill has been widely analyzed, interpreted, and debated both in print and cyberspace, we wondered how the evidence was perceived by the birding and ornithological communities. We designed a survey to assess the perceptions of five forms of evidence: the (1) Luneau video, (2) double-knocks, (3) *kent* calls, and (4) sightings from Arkansas, in addition to (5) the FishCrow video from Louisiana. We also compared belief in the Ivory-bill’s persistence with the persistence and/or existence of: (1) the Eskimo Curlew, (2) the Bachman’s Warbler, (3) “Bigfoot”, and (4) the “Loch Ness

Monster”. Finally, we attempted to assess the effects of five demographic variables on responses to the above questions: (1) gender, (2) age, (3) education, (4) birding skill, and (5) ornithological training. Because our survey was conducted prior to the publication of subsequent evidence from Florida by G. E. Hill and coauthors (2006), we did not assess perceptions of the new evidence, although we intend to do so in the future as we attempt to document how perceptions of the evidence change over time.

Methods

The survey, reproduced as a WebExtra to this article <aba.org/pubs/birding/archives/vol39no2p41w1.pdf>, consisted of five questions about the evidence for Ivory-bill existence, five questions about belief in the continued existence of the Ivory-bill and other potentially extinct or nonexistent species, and five questions about the demographic profile of the respondent. We uploaded the survey on SurveyMonkey.com <surveymonkey.com> and announced its availability on the Frontiers of Bird ID listserv <listserv.arizona.edu/archives/birdwg01.html> on 24 August 2006, after which it was rapidly announced on other websites. The survey was closed on 9 September 2006. The following instructions were posted:

The Ivory-billed Woodpecker is either a critically endangered species or an extinct species of bird in the

Table 1. Percentage of responses to questions regarding the evidence for Ivory-billed Woodpecker (IBWo), existence of IBWo and other species, and the demographic questions. Percentages are rounded to the nearest whole number, which explains why some row totals differ slightly from 100. Note: $n=506$ respondents.

Evidence	Definitely not of IBWo	Probably not of IBWo	Possibly of IBWo	Probably of IBWo	Definitely of IBWo
Luneau video	9	24	35	23	10
Double-knocks	9	24	34	26	8
kent calls	9	25	33	24	9
Sightings	10	19	24	24	22
FishCrow video	15	31	36	14	4
Existence	Definitely does not exist	Probably does not exist	Possibly exists	Probably exists	Definitely exists
IBWo	4	27	27	23	21
Eskimo Curlew	6	43	38	11	3
Bachman's Warbler	10	55	27	6	2
Bigfoot	75	21	3	0	1
Loch Ness Monster	77	18	4	1	0
Age (years)	10–29	30–39	40–49	50–59	>60
	10	19	28	29	15
Gender	Male	Female			
	84	16			
Education (degree)	High school incomplete	High school diploma	Undergraduate degree	Graduate / professional degree	Ph.D.
	1	9	32	40	18
Level of birding skill	No interest	Beginner	Moderate	High	
	1	6	41	52	
Level of ornithological training	No interest	Armchair ornithologist	Amateur ornithologist	Professional, not employed	Professional, employed
	20	8	52	19	1

southeastern U. S. and Cuba. There have been recent reports in Arkansas and elsewhere. The purpose of this survey is to assess opinions on the currently available evidence for the existence of the Ivory-billed Woodpecker. If you are unfamiliar with this evidence, please do not respond to this survey until you have reviewed the evidence posted at the Cornell Lab of Ornithology [with url link] and Fishcrow [with url link] websites. The accuracy of this survey depends on your personal honesty.

The sample of 508 responses was closely scrutinized before analysis. The majority of respondents were male (83.8%), within the age classes of 40–49 (27.6%) or 50–59 years (28.6%), having an undergraduate (32.1%) or other graduate/professional (40.0%) degree, highly (52.1%) or moderately (41.2%) experienced in birding skills, and amateur ornithologists participating in surveys or research (52.4%). Of 32 duplicate responses from 12 IP addresses, we eliminated two responses that clearly were duplicates from

the same individual (similar answers with identical demographic profile; we retained the second “corrected” response in each case) and assumed the remaining responses were independent, yielding a sample of 506 responses. For the evidence (#1–5) and belief (#6–10) questions, the frequency of no answers was greater for questions regarding the FishCrow video, Eskimo Curlew, and Bachman’s Warbler (4.2–5.1%) compared to other questions (<1.2%). The demographic questions (#11–15) had relatively few missing answers (<1.6%). For evidence and belief questions (#1–10), we found 35 multiple answers (0.7% of all answers) to one or more questions; for these, we used the average score. We also located and deleted six multiple answers (0.2% of all answers) to the demographic questions (#11–15). We believe the ability to enter duplicate answers was a software glitch. Responses to each question were coded numerically such

that higher values (belief scores) reflected greater confidence <aba.org/pubs/birding/archives/vol39no2p41w1.pdf>. Age, education, birding skill, and professional training were similarly ranked, although the number of levels varied. Some responses were undoubtedly contrived, but we assumed that the signal-to-noise ratio (sincere vs. insincere responses) was more than adequate.

The survey responses were analyzed using SPSS statistical software (SPSS 2003). We applied both parametric (analyses of covariance, Pearson correlations, and independent-sample *t*-tests, with α —the critical level of significance—set at $p \leq 0.05$) and nonparametric tests, with both yielding conclusions that were similar. Here, we report only the parametric outcomes, derived primarily from two analysis of covariance (ANCOVA) models. The first model compared belief scores among the five evidence (#1–5) questions, treating evidence as a within-subjects factor, gender as a between-subjects factor, and age and birding skill as covariates. The second model compared belief

scores for the existence (#6–10) questions using the same design. Because birding skill level was positively associated with education and professional training, we excluded the latter two (redundant) variables from the ANCOVA models.

Results

Perceptions of the five types of evidence for the Ivory-bill's existence differed significantly (ANCOVA, $p=0.02$). As shown in Fig. 1 and Table 1, respondents were most confident in the sightings, less confident in the Luneau video and recordings of double-knocks and *kent* calls, and least confident in the FishCrow video. We also found a significant difference among beliefs about the existence of the Ivory-bill and four other possibly extinct or nonexistent species (ANCOVA, $p<0.001$). As shown in Fig. 2 and Table 1, respondents were most confident that the Ivory-bill persists, less confident that the Eskimo Curlew and Bachman's Warbler persist, and least confident that Bigfoot and the Loch Ness Monster exist.

Two demographic factors had a significant influence on survey responses. For all ten questions, females consistently professed greater confidence (belief scores 12–18% higher, except for Eskimo Curlew, which was 4% higher) whereas males were much more skeptical (ANCOVA, $p=0.02$ for Q1–5, $p=0.006$ for Q6–10). Women were similar to men in age and had equivalent education and ornithological training, but they reported lower birding skills (means of 3.2 and 3.5, respectively; t -test, $p<0.001$). For most questions, there was also a negative relationship between confidence and birding skill level, with novice birders more confident and experienced birders more skeptical of the evidence (ANCOVA, $p=0.007$ for Q1–5, $p=0.03$ for Q6–10). The gender and birding skill differences were

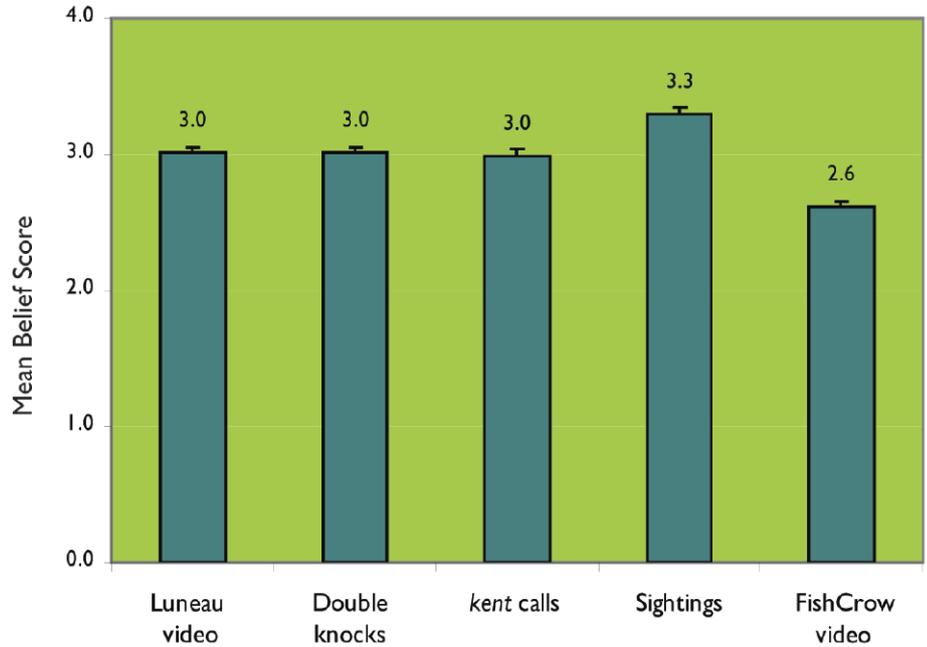


Fig. 1. Mean belief scores (± 1 standard error) for the five types of evidence analyzed in the survey for the persistence of the Ivory-billed Woodpecker. Graph by Kei Sochi.

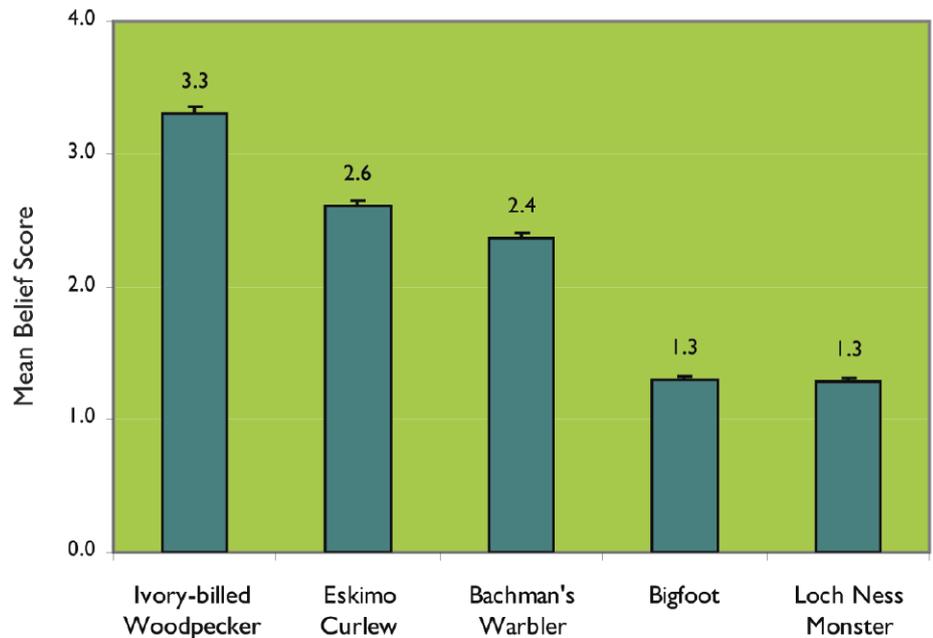


Fig. 2. Mean belief scores (± 1 standard error) for the persistence of the Ivory-billed Woodpecker, Eskimo Curlew, Bachman's Warbler, Bigfoot, and the Loch Ness Monster. Graph by Kei Sochi.

independent of each other; in other words, women were more confident regardless of their birding skills (i.e., there was not a significant interaction term). Age of the respondent had no measurable effect on any of the questions. Level of education and ornithological training did not independently influence belief scores.

Finally, there was remarkable internal consistency among the answers. The responses to each of the 10 questions were all highly correlated with each other (Pearson correlations, $r=0.18-0.91$, $p \leq 0.002$ for all inferences). In other words, optimists generally expressed optimism on all responses and skeptics consistently expressed doubt. This suggests to us that the overwhelming majority of respondents were sincere. Moreover, belief in the continued existence of the Ivory-bill was positively correlated with belief in the other four possibly extinct or nonexistent species.

Discussion

Carl Sagan is often quoted as stating, "Extraordinary claims require extraordinary proof." This statement has been a rallying cry among the Ivory-bill skeptics who demand proof. We therefore ask: Has the extraordinary claim of the Ivory-bill persisting into the 21st century been buttressed by extraordinary proof? Unfortunately, no data are available from the first year after the Arkansas "rediscovery" was first reported, when confidence in the evidence was presumably higher. But according to the results of our survey, conducted about 1.5 years later, fewer than 10% of ornithologists and birders consider the physical evidence presented thus far as "definitely" from an Ivory-bill (9.8% for Luneau video, 8.0% for double-knocks, 9.1% for *kent* calls). In the court of public opinion, the evidence presented thus far obviously falls well short of the "proof" required by science; otherwise, there would be little or no debate, and we would not have bothered to conduct this study. But science doesn't require proof in the form of opinions, and good science gets debated all the time.

In contrast to perceptions of the physical evidence, 22.1% of the respondents regard at least one or more of the sightings from Arkansas as "definitely" of an Ivory-bill and

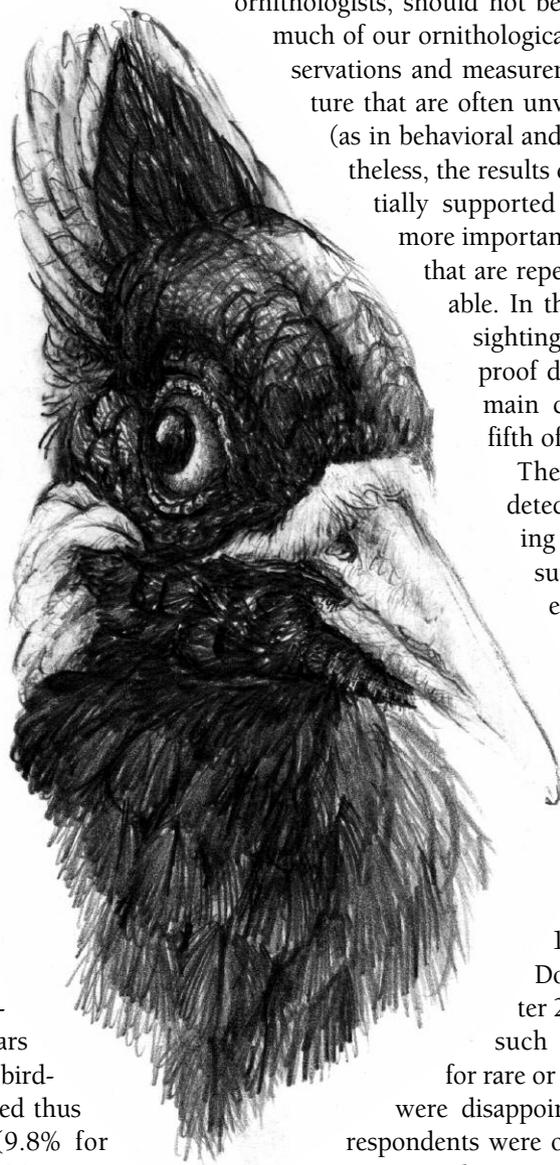
20.8% believe that the Ivory-bill "definitely" exists (the disparity suggests some respondents may have believed that an Ivory-bill seen in Arkansas was the last of its species and has since died). The greater confidence in the sightings, especially those claimed by the more experienced birders and ornithologists, should not be surprising considering that much of our ornithological knowledge is based on observations and measurements reported in the literature that are often unverified by physical evidence (as in behavioral and population studies). Nevertheless, the results of such studies are often partially supported by physical evidence and, more importantly, are obtained by methods that are repeatable and, therefore, falsifiable. In the case of the Ivory-bill, the sightings fall short of the conclusive proof demanded by science, yet remain convincing to more than a fifth of the respondents.

The demographic patterns we detected lead to several interesting conclusions. First, we were surprised to learn that females expressed more optimistic views than males regarding the evidence for the persistence of the Ivory-bill. Although a few studies have documented a tendency for women to be more trusting and less skeptical than men (e.g., Randall and Desrosiers 1980, Piper-Terry and Downey 1998, Preece and Baxter 2000), we are unaware of any such studies regarding evidence

for rare or possibly extinct animals. We were disappointed, however, that women respondents were outnumbered more than five to one by men, especially since women are more equally represented among birders in general, with estimates ranging from 37%

(Wiedner and Kerlinger 1990) to 54% (La Rouche 2003) of the total birding population. Perhaps men are disproportionately interested in controversy and have followed the Ivory-bill debate more closely. Alternatively, men may be more inclined than women to respond to online surveys.

Second, although birders with more experience expressed greater skepticism toward the evidence for and continued existence of the Ivory-bill, we were surprised



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that level of education and level of ornithological training did not show a similar correspondence. Belief in the persistence of the Ivory-bill was positively correlated with belief in the continued existence of the Eskimo Curlew, the Bachman's Warbler, Bigfoot, and the Loch Ness Monster. Of course, the three bird species formerly occurred in well-documented numbers, whereas the latter two creatures are now widely regarded as mythical. Such a correlation was earlier predicted by Laurie Binford (in Gallagher 2005:130). Birders and ornithologists alike were considerably more skeptical of the existence of Bigfoot and the Loch Ness Monster than were physical anthropologists in 1978 (13% believed in Bigfoot, 23% in the Loch Ness Monster; Greenwell and King 1981), university students in 1983 (3% believed strongly in Bigfoot, 5% in the Loch Ness Monster; Feder 1984), teens in 1985 (24% believed in Bigfoot; Gallup 1985), and the general public in 2006 (18% believed "creatures like Bigfoot and the Loch Ness Monster will one day be discovered"; Adams et al. 2006).

Contrary to the impression obtained from cyberspace that there are two entrenched camps of "believers" and "skeptics" pitted against one another, our results indicate that most birders and ornithologists (75.6%) are actually in the middle, believing that the Ivory-bill "possibly" exists or "probably" does or does not exist. Even so, the most optimistic of the believers who are convinced that the Ivory-bill "definitely" exists (20.8%) greatly outnumber the most pessimistic of the skeptics—the so-called Ivory-bill "atheists"—who believe the Ivory-bill is "definitely" extinct (3.6%). Clearly, the majority of birders and ornithologists remain undecided on whether the Ivory-bill still lives or is dead, and still cling to the hope that the Ivory-bill persists into the 21st century. But unless the extraordinary proof required to resolve the debate is obtained soon, hope will quickly fade.

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