

Historical Status of the Ivory-billed Woodpecker in Virginia

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Abstract

There is archaeological and historical evidence of the past occurrence of the Ivory-billed Woodpecker (*Campephilus principalis*) in Virginia. This paper reviews records that have been previously reported, disputes the validity of a purported collection of a specimen between the border of West Virginia and Virginia, presents newly uncovered evidence, and examines the implications of these and other records with regard to the historic range and biology of this species.

Introduction

While there is little evidence for the past occurrence of the Ivory-billed Woodpecker (*Campephilus principalis*) in Virginia and West Virginia, there are vague references in documents during the settlement era and a small number of archaeological discoveries. Jackson (2006) was skeptical about the past occurrence of the species in the states in question, but formerly obscure sources have become more accessible since that time. As members of bird records committees know, new records of rare birds can be difficult to assess. The difficulties are compounded when investigating historical material. Records of non-game bird species are especially difficult to unravel because the first settlers did not head to new areas with field guides in their pockets and were more concerned about eating than ornithology. In examining such records, it is useful to have standards for what constitutes admissible evidence and how to weigh it. There are at least eight kinds of evidence that can be entertained in a discussion of ornithological records – whether modern, historical, or archaeological (outlined in Leese 2006b). The strongest evidence includes, in descending order of strength, documented specimens in accredited museums, curated photographs or recordings, a documented sight record, or archeological evidence with clear context. Weaker evidence, in declining strength, includes a sight reference (less documentation than a full modern record), references in neighboring areas (for instance, a species that is known to occur in North Carolina is more likely to occur in Virginia than a species whose nearest record is California), and habitat suitability. In the case of the ivory-bill, habitat suitability is difficult to assess

because there is no agreed upon formula for its past habitat. Virginia's strongest level of evidence is archaeological records, although a number of sight references also exist for the commonwealth.

In the case of the Ivory-billed Woodpecker, the species' similarity to the Pileated Woodpecker (*Dryocopus pileatus*) complicates the situation further. Therefore, to qualify as a valid record or reference, historical evidence must either:

1. Provide enough description to establish identification as an ivory-bill or a pileated. For instance, a record of a "large woodpecker" does not qualify. One that specifies "large woodpecker with a white bill" would qualify; or
2. Come from an observer who has elsewhere demonstrated knowledge of the differences between the two species or whose reputation suggests enough skill to distinguish one from the other.

The historical references presented below come from many different levels of reliability, but these basic rules will help in sorting the available data.

Records from Neighboring States

Maryland: There are few records of the ivory-bill from Maryland, with most references likely dependent on Audubon's (1842) note that "now and then an individual of the species may be accidentally seen in Maryland." Audubon does not mention direct observation or collection of an ivory-bill in Maryland, so this assertion is open to question. The only other piece of evidence from Maryland comes from Parker Gillmore's *Adventures Afloat and Ashore* (1873), in which he claims to have seen one at Princess Anne, near the Chesapeake. Leese (2016a) provides a fuller review of records from Maryland, as well as New Jersey and Pennsylvania.

West Virginia: Almost all records from this state are problematic in one way or another. The most superficially promising of these is attributed to Alexander Wilson. Hall (1983) relates:

During the short time in which Alexander Wilson lived in Shepherdstown, Jefferson County, he collected an Ivory-billed Woodpecker someplace between Martinsburg and Winchester, Virginia...

On the surface, this appears to be a very strong record with location information and a collection supporting it. However, no specimen exists, and there is no mention of it in Wilson's surviving letters. Wilson's stay in the area (in 1794 or 1795) was brief, and few letters remain from that period (Hunter 1983).

This record appears to have entered the literature through Hall who misinterpreted Maurice Brooks' speculation about the location (1944):

Wilson records this species from Virginia in such a way as to make it quite possible that his reference was to that part of the Shenandoah Valley now included in Berkeley and Jefferson Counties, West Virginia. He collected between Martinsburg and Winchester, but the locality for the ivory-bill observation will probably never be determined.

Brooks (1944) did not include a bibliography in his work, instead referring to E. A. Brooks' earlier bibliography (1938). The earlier Brooks did not reference anything to suggest that Wilson encountered the ivory-bill in West Virginia.

A careful reading of Brooks (1944) shows that he merely described Virginia as the northern limit of the ivory-bill's range following Wilson's assertion: "I believe however, that few of them are ever seen to the north of Virginia, and very few even in that state" (Wilson 1828). Brooks then pointed out that in Wilson's day the northern part of Virginia included post-Civil War West Virginia. While Brooks described Wilson's collecting foray between Martinsburg and Winchester, he did not say that Wilson collected an ivory-bill, only that he collected specimens in the area. Since there is no reference elsewhere to Wilson's observation or collection of an ivory-bill in West Virginia eastern panhandle, Hall's assertion should be rejected as an unfortunate misinterpretation of Brooks.

One other putative sight record for the state is the second-hand story of Fr. C. Delaux who conversed with a farmer about the edibility of woodpeckers "like the Indian Hen, but larger with white bills" (Haller 1940). Fr. Delaux hunted for an example of the species for a few weeks before successfully killing one and not enjoying the resulting meal. Although a rather late record, it has many details that make it appear to be valid. There are two archaeological records from West Virginia, from the Fairchance Mound in Marshall County and the Buffalo site in Putnam County. The Fairchance record (Parmalee 1967) is of a lower bill, but because the site includes 49 burials along with "village debris and mound fill" (Guilday and Tanner 1969) one cannot rule out that the object arrived as a trade item. Similarly, at the Buffalo site in Putnam County "a single beak" (Guilday 1971) was removed from midden debris (although Hall, 1983 and Jackson, 2006 claim that it was a partial skull).

Middens are prehistoric trash heaps, where Native Americans left cooking remains and other refuse. There is much evidence of prehistoric trade in the crests and bills of ivory-billed woodpeckers, with some found among tribes in Wisconsin and even farther north (Leese 2006c). However, there is no clear evidence that bills had trade value farther south and east. Moreover, the fact that one of the finds involved only a lower mandible, rather than a complete bill or head, may suggest that it was a food item (Leese 2006b) rather than a ceremonial or ornamental one. The bone has not been found in the Illinois State Museum where Guilday states it was placed, nor in the collections of the University of Tennessee or the Carnegie Museum of Natural History, where Illinois curators thought it might have been placed.

Kentucky: There is firm evidence of the existence of the Ivory-billed Woodpecker in Kentucky in historical times (reviewed in Leese 2006a). According to Audubon, the species nested in Kentucky and Indiana (Audubon 1842). Later in the 19th century, Charles J. O'Malley (1884) noted the species' presence, as well as the similar Pileated Woodpecker, on Powell's Lake in Henderson and Union Counties:

The crimson-crested woodpecker (*picus principalis*) [sic] is there, too, nor is the glossy, black-coated woodcock wanting, although his species is rapidly passing away from our forests...

Tennessee: Although every state that it borders has solid records of Ivory-billed Woodpeckers, Tennessee has none, except a reference from Audubon, which is unclear as to whether the encounter was in Tennessee or across the Mississippi River (Jackson 2006).

North Carolina: Lee (1999) reviewed the few records for the state, one of which belongs to Alexander Wilson. In addition to those records, Leese (2019) notes two other records from the Carolinas: two eggs apparently collected from Wilmington, North Carolina and two skins held by the Museum für Naturkunde in Berlin, Germany that list only "Carolina" for the location of the specimens. No records from North Carolina are from areas immediately adjoining Virginia.

Virginia References from Unspecified Locations

Jefferson (1781-82) listed the ivory-bill in *Notes on the State of Virginia*, which then included present-day Kentucky and West Virginia. Holt (2013) suggested that Jefferson's list was based on personal observations. If the observation was indeed first-hand, the record would come from within the Virginia's current borders, since Jefferson never traveled south of Norfolk or west of Falling Spring, several miles east of today's West Virginia border. Audubon's (1842) assertion that the species sometimes occurred in Maryland suggests that he too counted Virginia within the range of

the species. As noted, Wilson (1828) identified Virginia as the northern limit of the ivory-bill's range. Audubon (1842) did so implicitly by naming Maryland as the northernmost limit. Wilson and Audubon may have been the basis for later Virginia claims, such as Ward (1880). One later reference may not be dependent upon Audubon and Wilson. Writing much later, Maurice Thompson (1885) notes:

I have been informed that the ivory-bill is occasionally found in the Ohio valley; but I have never been able to discover it north of the Cumberland range of mountains.

Thompson, best known as a novelist, wrote frequently about local life and lore. While not a trained ornithologist, he appears to have had sufficient knowledge of the area to make such a claim, having observed ivory-bills in Georgia and Mississippi (1885). An occurrence below or within the Cumberland range of mountains would put the ivory-bill firmly within the western area of the commonwealth.

Site-specific References

A more geographically specific reference to the species comes from the westernmost part of Virginia, in Washington County. Part of a tall tale involving James Musick and a bear hunt includes Mr. Musick's crawling out of a cave in the spring to get "a place in the sun an' watch them big white-billed peckerwoods a-maulin' on the dead trees" (in Ward 1983). The story is set in western Virginia between 1832 and 1848, the years of the family's residence there before moving to Kentucky. While any tall tale must be considered critically and cautiously, such stories can provide an insight into early fauna (Bigony 1982). The detail of "white-billed" in the story certainly suggests the ivory-bill as the bird being described, and there is no reason for embellishment on that point within the flow of the story about bears. The presence of ivory-bills in Virginia's western mountains seems plausible, especially when weighed with the archaeological evidence presented below.

Nearer the coast, another possible sight report comes from the Richmond area during the Civil War. Colonel Theodore Lyman served under General Meade of the Army of the Potomac for three years during the Civil War, including the protracted Richmond-Petersburg campaign. On November 24, 1864, Col. Lyman (1922) took a ride in the woods after his Thanksgiving meal and records:

Then there was a pileated woodpecker (not known with us), a great fowl, as big as a crow; black with white feathers in his wings, an ivory beak and a gay scarlet cockade. He thought himself of great account, and pompously hopped up and round the trunks of trees, making a loud, chattering noise, which quite drowned the wee birds, like a roaring man in a choir. The pompous old thing was very much scared when I approached, and flew away, but soon began his noise on a distant tree.

This is probably one of the few cases in which someone

seems to have confused a Pileated Woodpecker with an Ivory-billed instead of the inverse, more usual problem (although Wilson may have; see Leese 2016a). Lyman was an accomplished enough naturalist that it seems incredible that he had no knowledge of the Pileated Woodpecker, even though the species may have been extirpated from his native Massachusetts. In this letter, he seems to suggest a different variety of Pileated Woodpecker, and his further description, especially the "white feathers in his wings" and "ivory beak" shows that he likely encountered an ivory-bill. The "chattering noise" appears unusual for ivory-bills, but may match the "conversational chatter" noted by Dennis (in Jackson 2006).

Archaeological Remains

The pre-Columbian presence of the ivory-bill in the western mountains of Virginia is confirmed by archaeological evidence. Daugherty's Cave, a site in Russell County, was excavated extensively and shows signs of human occupancy across many time periods in Virginia's prehistory. Among the many bones found in a general midden deposit was a metatarsus of an Ivory-billed Woodpecker (Benthall 1990). The bone was removed from Zone A, Level 3 of the excavation, placing it in the Late Woodland time period (approximately 900-1650 CE). Because of a few misidentifications noted from this project, this bone's identity was re-confirmed by Dr. Storrs Olson of the Smithsonian in 2009.

The context of this bone suggests that it is from an individual that was killed and eaten locally. There is no evidence of trade in body parts, other than heads or bills, from anywhere in North America so this leg bone did not arrive at the site via trade. Its presence in a midden makes it virtually certain that the bird was killed and eaten locally (Leese 2006b). During prehistoric times, Ivory-billed Woodpeckers occurred in the western parts of Virginia.

Meaning for the Biology of the Ivory-billed Woodpecker

These records for Virginia, along with multiple records as far north as Ohio, Indiana, and perhaps even Michigan (Schreffler et al 2019) demonstrate that the range of the ivory-bill was wider than previously believed. One could argue that these northern records were only vagrant individuals, but the sheer number of records indicates either a resident population or an area that was used regularly by the species. Early settlers and naturalists would not have noted a vagrant species with the frequency with which the ivory-bill was noted.

An expanded range for the ivory-bill raises important and inter-related questions about the species' habitat requirements, degree of food specialization, and mobility. While there are only scraps of evidence, some observations can be made.

Habitat: The prevailing vision of the ivory-bill is as a species dependent upon old growth forests (Walters and Crist 2005, Hill et al 2006), with a fairly narrow combination of habitat factors available only in the American south. However, its documented presence in more northern forests greatly expands the possibilities of the habitat the species used; it was found not just in the gum and cypress complex of the south but also hardwood and pine forests of northern and upland habitats. Clearly, the species was capable of using habitats besides southern forests.

A more important, though not exclusive, habitat factor appears to be the presence of rivers. The species was certainly present away from rivers on occasion as noted above. But most observations in the upper Ohio valley tend to center on major rivers. Ferrall's observation in Indiana (Leese 2006b, Leese 2016b), Hopkins' in Ohio (Leese 2011), and the archaeological remains in Ohio (Leese 2006b) come from near major rivers. The assertion that rivers are key corridors for this species (Jackson 2006) seems correct. This more cosmopolitan view of the species habitat is in conflict with the prevailing public view, but not with the work of ivory-bill scholars. Tanner (1942) titles a chapter "**Habitats of the Ivory-billed Woodpecker**" (emphasis added). Jackson (2006) similarly acknowledges a wider range of habitat, and Snyder (2007) made that reality a central point of his work.

Food specialization: The clear lack of habitat specialization in the ivory-bill may encourage some to jump to the conclusion, already popular for the species, that it was also not a food specialist. But one should be careful before making such a conclusion; while food and habitat specialization appear as clear corollaries of each other, they should be separated also. A species may have a very clear food specialty, but still make use of various habitats, perhaps in different seasons of the year such as Chimney Swifts (*Chaetura pelagica*) and Common Loons (*Gavia immer*). Thus, just the establishment that the species used varied habitats is not adequate to establish that it was not a food specialist.

While the species likely favored *Cerambycid* beetles (Jackson 2006), the only three stomachs for the species ever studied actually show a majority of vegetative matter (Tanner 1942). Jackson (2006) even describes the species fully as an "opportunist" (2006), and Snyder (2007) argues that there is not enough evidence to conclude that the species was a specialist.

However, some degree of specialization in wood boring beetle larvae, albeit not without flexibility, may still be possible. Trees in all habitats weaken and die and are then used by various beetles and other insects. The decay process varies dramatically between forest types and based on human logging practices (Jackson 2006). Thus, ivory-

bills may have used various habitats in order to find their favored food. While beetle larvae were certainly not their only food source, the Ivory-billed Woodpecker seems well-adapted to making them the cornerstone of its diet, with various adaptations for that purpose (Bock and Miller 1959). Its use of various habitats may simply be evidence of that strong preference in its biology.

The historical evidence presented here is not adequate to settle the food specialization issue. Early settlers simply were not counting and identifying beetles. However, anyone arguing the species was a food specialist must account for the fact that the only stomach contents ever examined for the species suggest that it was an omnivore. Similarly, anyone arguing that it was not a specialist must account for the anatomical adaptations identified by Bock and Miller for ivory-bills and other *Campephilus* woodpeckers. The most responsible conclusion may be that the species preferred beetle larvae, especially *Cerambycids*, but made use of a variety of food resources. It is open to speculation whether or not the species relied more heavily on *Cerambycids* while raising its young.

Mobility: The ivory-bill appears to have been much more nomadic than is commonly believed, and this factor must become part of our image of the natural history of this species. Previous work on the ivory-bill lends weight to the nomadic hypothesis. Tanner (1942) suggests that because the species was highly dependent on beetles, it had to be able to leave an area if that food source declined. Tanner presented demographic evidence from bill sizes and observations of wild birds to argue that ivory-bills "were not sedentary birds" (1942). It is remarkable that even though Tanner (1942) noted evidence of the species' ability to cover long distances, he did not understand this as evidence against a habitat specialization hypothesis. Dennis (1967) rearticulated that position by describing the ivory-bill as a "disaster species," able to take advantage of a large area of decaying trees and then move on to a new locale. Steinberg (2008) also suggests that the species was more mobile than commonly accepted.

Most records from the mid-Atlantic and upper Ohio River valley are of only single birds, so one cannot posit the ivory-bill as a fully nomadic species moving around in family groups, at least not in the northern part of its range. However, it was clearly more mobile than is generally accepted, and perhaps juvenile dispersal accounts for some of these northern records. As noted above, the records are just too frequent for vagrancy to be their only source.

Final thoughts: This emerging image of the species as less of a habitat specialist than is commonly believed suggests that a different, more holistic paradigm is needed to explain its decline. The wholesale timbering of southern

forests contributed heavily to the ivory-bill's decline, but the range may have been shrinking, from north to south, even before the era of intensive logging began, and the species was adaptable enough that logging of the southern forests alone does not explain its disappearance (Snyder 2007). Snyder amplifies the work of others in questioning both the food and habitat specialization hypotheses, and he proposes human depredation as the leading factor in the species' decline (2007). The ivory-bill appears not to have been a habitat specialist, but it may have still had a strong food preference (contra Snyder) in those various habitats. These old records appear with too much frequency to be accounted for with only vagrants, and the species likely made regular use of these northern forests if they did not have a small resident population there.

Ivory-bills once flew from Florida's cypresses to Alabama's pines to Virginia's Appalachian hardwoods. Their absence leaves a hole in the various habitats that were once their home. But the reality that they once lived in Virginia leaves the commonwealth just a bit more wild and mysterious.

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