

New paper on ivory-billed woodpecker published

April 28 2011



The ivory-billed woodpecker was thought to have duck-like flaps in which the wings remain extended throughout the flap cycle. One of the videos revealed radically different flaps in which the wings are folded completely closed in the middle of the upstroke. The images from the video show the wing motion from two angles. The photo in the upper right, which was obtained by James Tanner in 1939, shows an Ivory-billed Woodpecker in flight and contains a clue suggesting that there had been a misconception about the flap style. Credit: Dr. Michael Collins

Dr. Michael Collins, Naval Research Laboratory scientist and bird watcher, has published an article titled "Putative audio recordings of the Ivory-billed Woodpecker (*Campephilus principalis*)" which appears in the March issue of the *Journal of the Acoustical Society of America*.

The [audio recordings](#) were captured in two videos of birds with

characteristics consistent with the Ivory-billed Woodpecker. This footage was obtained near the Pearl River in Louisiana, where there is a history of unconfirmed reports of this species. During five years of fieldwork, Collins had ten sightings and also heard the characteristic "kent" calls of this species on two occasions. Scientists working independently in three states have now published articles that report multiple sightings of and various forms of evidence for this elusive species, which is extremely difficult to observe and photograph due to its rarity, wariness, and tendency to roam over wide areas in remote swamp habitat. The two previous articles present findings from Arkansas [Fitzpatrick et al., *Science* (2005)] and Florida [Hill et al., *Avian Conservation and Ecology* (2006)].

During two encounters with an Ivory-billed Woodpecker, Collins heard high-pitched calls that seem to match the description of an alarm call that was reported by James Tanner in the 1930s but was never recorded. On both occasions, the calls came from the direction of the bird and began at a moment when the bird was alarmed. Several of these calls were captured in the first video, which received a positive assessment from an independent expert, Julie Zickefoose, whose paintings of Ivory-billed Woodpeckers have appeared on the covers of a leading ornithology journal and the leading contemporary text on this species. According to Zickefoose, the large woodpecker in the video has a large crest, large bill, long neck, and rared-back posture consistent with an Ivory-billed Woodpecker, and it has ponderous and heavy flaps and takes an unusual flapping leap that is unlike anything she has seen from a Pileated Woodpecker (the only other large woodpecker in Louisiana).

The second video shows a bird in flight with flaps that are radically different from the duck-like flaps that were expected, but a long overlooked clue in a photo from 1939 suggests that there had been a misconception about the flap style. The combination of the flap style and the size rule out all species native to Louisiana other than the two large

woodpeckers, but several characteristics rule out Pileated Woodpecker. This footage was obtained when an Ivory-billed Woodpecker flew along the bayou below a tall tree that was used as an observation platform, providing a view from an advantageous perspective of the white stripes on the back and the white patches on the wings. A little over a minute before the bird flew into view, the video captured a putative double knock that matches a putative double knock that was recorded by Hill et al. in Florida.

Collins began searching for Ivory-billed Woodpeckers in November 2005, shortly after Hurricane Katrina passed through the Pearl River. His first sighting was on February 2, 2006, and then two weeks later he discovered a "hot zone" a short distance up the same bayou, where he had five sightings (two of exceptional quality) and also heard the characteristic "kent" calls of this species on two occasions (once coming simultaneously from two directions) during a five-day period. The first video was obtained in the "hot zone" on February 20, 2006.

During the summer of 2007, Collins started climbing tall cypress trees to watch for Ivory-billed Woodpeckers flying over the treetops in the distance. The idea was to increase the encounter rate by opening up a larger field of view. Professor Steve Sillett, of Humboldt State University, and his colleagues, Jim Spickler and Michael Taylor, donated their expertise and time as well as a full set of gear for climbing trees. The approach provided results less than a year later, but not as expected. On March 29, 2008, an Ivory-billed Woodpecker flew directly beneath one of the observation trees, and Collins saw the definitive white stripes on the back and white trailing edges of the dorsal surfaces of the wings. Just over a minute before the bird flew into view, the camera recorded a putative double knock that is consistent with a putative double knock that was recorded in Florida.

Based on historical accounts of a duck-like flight, the Ivory-billed

Woodpecker was thought to have duck-like flaps in which the wings remain extended throughout the flap cycle. Although definitive fieldmarks were observed in the field, there seemed to be a contradiction when the video was inspected and found to reveal a flap style that is radically different from what was expected -- the wings are folded completely closed in the middle of each upstroke. This mystery was resolved by a long overlooked clue, a photo from 1939 of an Ivory-billed Woodpecker in flight with the wings folded closed. The observed flap style makes sense in hindsight since it is similar to that of other large woodpeckers.

The flyunder video provides the first putative footage of an Ivory-billed Woodpecker in cruising flight. Since the bird and its reflection from the still surface of a bayou are visible, it is possible to pin down the bird's position (which can't always be deduced from video footage) by triangulation. Since the bird was initially flying nearly directly toward the camera, it was possible to simultaneously extract from the video curves that define both components (horizontal and vertical) of the wingtip motion. Since the bird flew past reference objects, it was possible to estimate wingspan and obtain the first putative data on the flight speed of this species. The video also provides the first putative data on the flap rate. The combination of the wingspan and the flap style rule out all species native to Louisiana except the two large woodpeckers, and in fact an expert on the flight mechanics of woodpeckers, Professor Bret Tobalske, of the University of Montana, is "confident it is a large woodpecker." The Pileated Woodpecker is ruled out by the narrow wing shape, high flight speed, high flap rate, and large white patches on the wings, all of which are consistent with [Ivory-billed Woodpecker](#). The video also shows a trace of white on the back/neck that is consistent with the dorsal stripes that were observed in the field.

Provided by Naval Research Laboratory

Citation: New paper on ivory-billed woodpecker published (2011, April 28) retrieved 1 May 2024 from <https://phys.org/news/2011-04-paper-ivory-billed-woodpecker-published.html>

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