

# **Final Report**

## **March 2009 surveys for Ivory-billed Woodpecker and bird counts in the Fakahatchee Strand State Preserve, Florida**

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Fakahatchee Strand State Preserve, related to permit number 4-08-31

**Submitted by:**

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## INTRODUCTION

Surveys for Ivory-billed Woodpecker (*Campephilus principalis*) in areas of suitable habitat throughout the historical range of the species are a key action recommended by the Ivory-billed Woodpecker Recovery Team of the U.S. Fish and Wildlife Service. To assist in this task, the Cornell Laboratory of Ornithology has deployed mobile teams of field biologists in swamp forests throughout the Southeast since 2006. In addition to surveying for Ivory-billed Woodpeckers, the teams record daily numbers of birds encountered and associated effort data for the eBird project (<http://ebird.org/content/ebird>). During Spring 2008 a team worked in south Florida, including the Fakahatchee Strand State Preserve and a larger team returned for more surveys in south Florida during the winter of 2009. This report describes the study area, methods, results, and conclusions from the 2009 surveys in the Fakahatchee Strand State Preserve.

## JUSTIFICATION FOR SEARCH

Tanner (1942) considered the most promising area for Ivory-billed Woodpeckers in the Big Cypress region the Thickahatchie Swamp, which is now the Fakahatchee Strand State Preserve. Tanner's preference for the strand was based on it being the largest contiguous area of subtropical forest in south Florida and the occurrence of large trees in the strand. Tanner surveyed in the wider Big Cypress region during February 1937 and January-February 1939 for a total of 45 days. Of this effort only a small portion was spent in the Fakahatchee, presumably because of difficulty in accessing the area. The Fakahatchee Strand was logged in the 1940s. At present, the 70-year-old forest again may offer adequate habitat for Ivory-billed Woodpeckers with large second-growth cypress, maples, oaks, palm, and mahogany. Scattered, ancient trees that were not of commercial value at the time of logging still remain in the preserve. Several reports of Ivory-billed Woodpeckers emerged from or near the strand in the 1990s (Jackson 2004). Many areas of the Fakahatchee Strand State Preserve have not been adequately surveyed for Ivory-billed Woodpecker. Taking the aforementioned factors into account and conclusions

drawn from the 2008 report submitted to Michael Owen (Fakahatchee Strand Biologist), the Fakahatchee was selected as a priority search area for the Cornell mobile search team.

## METHODS

In early 2009 a team of seven field biologists worked in several areas throughout south Florida. The Fakahatchee surveys were part of this effort. The Fakahatchee surveys were conducted by M. Anderson, N. Banfield, C. Poli, and M. Piorkowski. Following recommendations from Michael Owen for rarely visited, large-tree habitat, we focused on the central area of the Fakahatchee Strand. We divided the search areas in nine patches of roughly 2-km<sup>2</sup> (Figure 1), following a national protocol for Ivory-billed Woodpecker searches (Rohrbaugh et al. 2007). Explorations and surveys were carried out from around sunrise until shortly after sunset, and consisted of slow-moving searches on foot, alternated with stationary watches of 30 to 120 minutes. Stationary watches were concentrated near sunrise and sunset, whereas active searches were usually conducted around midday. A daily GPS track was saved by each searcher, and a daily list of bird species and numbers of individuals was kept for entry in eBird. Searchers looked for large cavities and foraging sign that fit the description of IBWO activity (Tanner 1942), but coverage of areas was not sufficient to yield a complete inventory of these features. Double-knock broadcasts were done during surveys. These broadcasts involve the imitation of the double-knock drum characteristic of *Campephilus* woodpeckers by knocking on a wooden box strapped to a tree trunk with a device made of two wooden dowels that are connected at a pivoting point, resulting in a double-knock with the correct interval for a *Campephilus* woodpecker. The tool has been tested and found highly effective with three Neotropical *Campephilus* species. Double knock broadcasts were conducted by each crew member 4 – 8 times per day. The 2009 Fakahatchee surveys were staged from a temporary tent camps inside the Fakahatchee Strand, allowing for surveys during early and late daylight hours. Camp-based surveys were made possible through recommendations and permits from Mike Owen and the Fakahatchee Strand State Preserve.

## ITINERARY AND SURVEY EFFORT

The Fakahatchee Strand State Preserve was surveyed during March 2 – 8, 2009 using two teams (N. Banfield and C. Poli as Team 1; M. Anderson and M. Piorkowski as Team 2). Team 1 and Team 2 used different camp locations for the first three survey days, with Team 2 based just east of patches FAK 08 & FAK09 (Figure 1), while Team 1 was based on the East Main Tram near a small cabin. Team 2 joined Team 1 at their camp location late on the third survey day. The combined team worked the last four days in patches FAK04, FAK05, FAK06, and FAK07 (Figure 1). The understory in the Fakahatchee Strand was dense, especially in the slightly higher hammocks habitats, and there were few passable roads or trails. Walking along sloughs and the prairie/forest interface was relatively unimpeded. The total effort was 28 person-days covering 219 km in 257 hours on foot with 194 double-knock broadcast points and 35 stationary watches. Figure 2 presents the GPS tracks of the searchers and points of stationary watches and double-knock broadcasts.

## RESULTS

The nine search patches that were surveyed covered 20.2 km<sup>2</sup> of the central section of the Fakahatchee Strand. Patch 7 was difficult to reach from either camp location and received sparse coverage. The remaining eight patches were covered adequately (Figure 1). No Ivory-billed Woodpeckers were seen or heard, no responses were noted to the imitated double knocks, and no cavities with entrances with the size and shape matching cavities of Ivory-billed Woodpeckers were found. The surveyed forest areas were a mix of slough vegetation in permanently or seasonally flooded sites and hammock vegetation at higher sites. In sloughs, the trees were small in size, but formed dense overstory, which prevented the development of understory vegetation. Sloughs had occasional large remnant bald cypress (*Taxodium distichum*) (> 100 cm dbh) and frequent cut cypress stumps. There was little dead wood in these areas, occurring mostly as small snags or dead branches in otherwise living trees. Hammock areas ranged from damp to dry soils

and typically had a well developed understory. The overstory consisted of various large oaks (*Quercus. sp.*), sweetgum (*Liquidambar styraciflua*), and red maple (*Acer rubrum*). Clusters of 5-10 bald cypress all of approximately equal diameter (~ 30 cm dbh) were dispersed patchily throughout the hammock areas. The hammocks contained a high volume of standing dead wood, such as snags and large fallen trees. From the East Main Tram, which was our north-south centerline for navigation, smaller tram roads split off every 510 m to the east and west. Each tram road was laid on a road bed with a slough on either side of the mound (usually flooded). The tram roads were choked with vines, ivy, and smaller trees including Brazilian pepper (*Schinus terebinthifolius*). Roads and old tram lines were lined with large diameter (50-80 cm DBH) royal palms (*Roystonea regia*) capable of supporting an Ivory-billed Woodpecker cavity. Snags were also common along the tram roads.

A total of 75 bird species was recorded (Appendix 1). Several species of interest include Townsend's Warbler (*Dendroica townsendi*), Orange-crowned Warbler (*Vermivora celata*), Painted Bunting (*Passerina ciris*), and Sandhill Crane (*Grus canadensis*). Total woodpecker detection rates were 1.78/hr or 2.09/km. Pileated Woodpeckers (*Dryocopus pileatus*) were observed at a rate of 0.62/hr or 0.72/km, and Red-bellied Woodpeckers (*Melanerpes carolinus*) at a rate of 0.85/hr or 1.00/km. The most common warbler was Northern Parula (*Parula americana*) observed at a rate of 1.24/hr or 1.45/km. Three Black Bears (*Ursus americanus*) were observed at the southern camp site.

## Discussion

Our 2009 surveys covered the remote, central portion of the Fakahatchee Strand State Preserve, and probably were the first targeted searches for Ivory-billed Woodpecker in this section of the preserve. Combined with the coverage from 2008, we have now carried out surveys in much of the Fakahatchee Strand State Preserve (Figure 2). No Ivory-billed Woodpeckers were observed in either of the survey years. No responses were obtained to our combined total of 233 double knock broadcasts during the two years, whereas a

response would have been expected if the species were present. It is unlikely resident Ivory-billed Woodpeckers were present in the Fakahatchee Strand State Preserve during our surveys. Nevertheless, our surveys were carried out during a short time span of 9 and 7 days during the two years, and it cannot be ruled out that Ivory-billed Woodpeckers visit the preserve on an occasional basis.

High Pileated and Red-bellied woodpecker densities were reported by Tanner (1942) to be indicative of suitable habitats for Ivory-billed Woodpeckers. Encounter rates for Pileated and Red-bellied woodpeckers in the Fakahatchee Strand Preserve were similar to those in hardwood hammocks and cypress strands in the Big Cypress National Preserve, and distinctively higher than in mangrove or pine habitats in south Florida. Encounter rates of these species in the south Florida hardwood hammocks and cypress strands, including Fakahatchee, are as high as in other areas in the southeastern U.S. thought to be suitable for Ivory-billed Woodpeckers, such as the Pascagoula River in Mississippi and Congaree National Park in South Carolina (Rohrbaugh et al. 2007).

Logging disturbance in the Fakahatchee Strand State Preserve in the 1940s was high, judging from the density of tram lines, scarcity of large cypress, and clusters of cut stumps. This means that the abundance of large trees and associated cavity and foraging substrates was significantly reduced during those years. The logging trails also provided access for shooting of Ivory-billed Woodpeckers (Snyder 2007), although no specimens of Ivory-billed Woodpeckers are known from after 1932, and wanton or subsistence shooting of birds by the 1940s probably was less common than several decades earlier. As in all areas in the range of the species, the hope is that some birds made it through the combined pressure of shooting and habitat modification associated with logging.

The network of protected areas in south Florida at present contains many areas of suitable habitat for Ivory-billed Woodpeckers, including recently burnt pine forests in the northern portion of the Big Cypress National Preserve, tall mangrove forests in Everglades National Park with abundant dead trees resulting from storm damage and lightning strikes, remote cypress strands in the southwest section of the Big Cypress National Preserve, and the Fakahatchee Strand. Although the most likely areas were searched unsuccessfully during 2008-2009, we cannot rule out the continued existence of

a few Ivory-billed Woodpeckers in south Florida. If any birds remain in south Florida, the Fakahatchee Strand is a likely area to attract Ivory-billed Woodpeckers because it is the largest tract of tall forest in south Florida, with a suitable mix of hardwood and cypress forests and large royal palms mixed in. Staff and birders visiting the Fakahatchee Strand Preserve should remain alert to the possibility of occurrence of Ivory-billed Woodpecker and need to be familiar with vocalizations and double knock drum signals of the species. Additionally, one search approach that is sensible for monitoring remote areas in the Fakahatchee Strand Preserve for Ivory-billed Woodpeckers is the deployment of Autonomous Recording Units (ARUs). An ARU can record bird sounds during peak bird activity for a period of several weeks. In this way, an ARU can provide longer monitoring of remote sites, and provide better coverage of early morning hours of peak bird activity, than a human observer can. This is especially the case when the terrain prevents setting up a camp for human observers near an area of interest, such as in the central portion of the Fakahatchee Strand Preserve. ARUs have been used in several searches for Ivory-billed Woodpeckers since 2002. A new generation of ARUs is now available that records to compact flash memory cards. The new ARUs are easier to install and are more portable than earlier ARUs, and can operate for a period up to 5 weeks. We recommend deploying several ARUs in south Florida during early 2010, and would welcome discussion from Fakahatchee Strand Preserve staff about this approach.

### **Acknowledgements**

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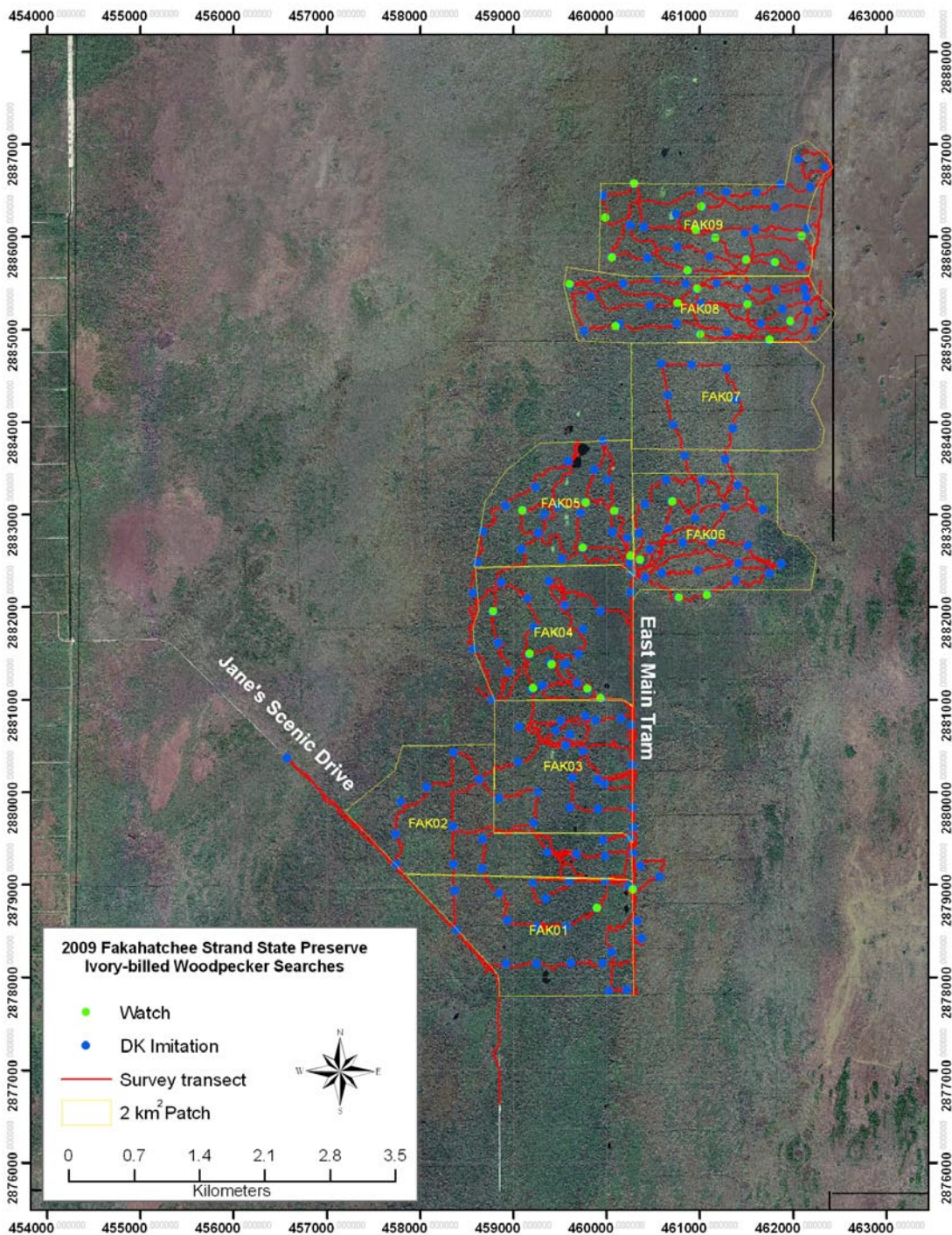
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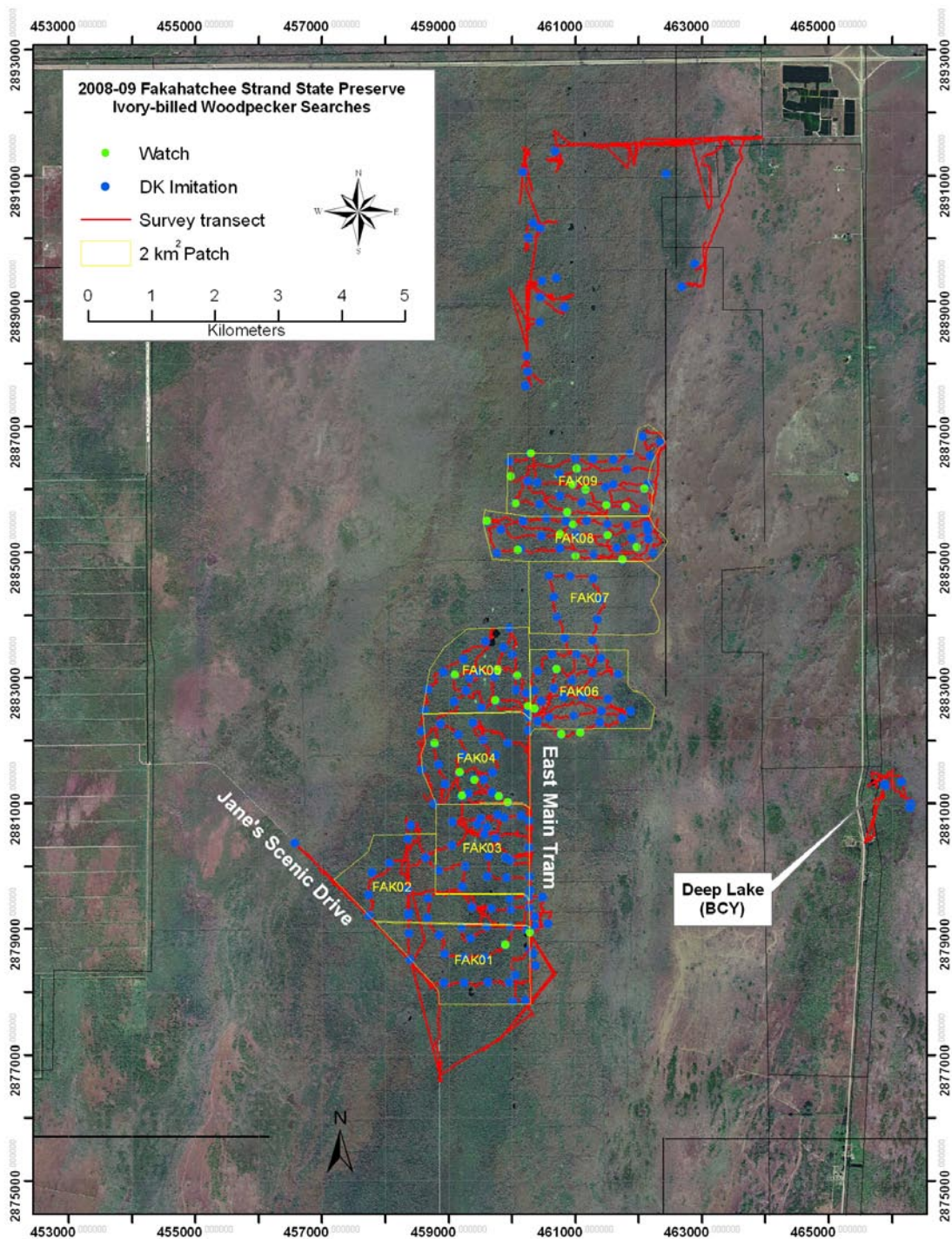
## Appendix 1

Excel sheet with bird observation data incorporated into the eBird and Avian Knowledge Network databases: Fakahatchee eBird 2009.xls (electronic file).





**Figure 1.** Survey routes, waypoints and search patches in the Fakahatchee Strand State Preserve from the Cornell Mobile Search Team in March 2009.



**Figure 2.** Survey routes, waypoints and search patches in the Fakahatchee Strand State Preserve from the Cornell Mobile Search Team: combined coverage from March-April 2008 and from March 2009.