# Monitoring Avifauna Response to Forestry Wildlife Treatments in Bottomland Hardwood Forests

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## Introduction

Bottomland hardwood forests habitat loss within the Lower Mississippi Alluvial Valley (LMAV) has contributed to the decline of many wildlife species, including forest birds. Efforts to restore bottomland hardwood forests through conservation programs will require ongoing management to meet desired forest conditions for wildlife. Monitoring of treatment effectiveness and need of intermediate treatment in restored bottomland hardwood forests is critical.

Baseline data will be compared to avian community metrics captured in bottomland hardwood forests at different successional stages to identify effective management activities used in forest wildlife treatments.

## Goal and Objectives

The goal of this project is to characterize avian community structure and composition over a chronosequence in bottomland hardwood forests and determine how forest management activities and time since influences the avian community.

Specific objectives:

- Identify avian species utilizing bottomland hardwood forests in different forest classes for each treatment (**Table 1**).
- Develop a habitat occupancy model for avian species (i.e., birds listed as target species **Fig 1**).


**Fig 1.** Examples of target species are **A.)** Hooded Warbler (*Setophaga citrina*), **B.)** Prothonotary Warbler (*Protonotaria citrea*) and **C.)** Northern Parula (*Setophaga americana*).

## Methods

- 150 sites will be sampled over two breeding seasons (2021 and 2022) in the LMAV (Arkansas, Louisiana and Mississippi).
- Automated Sound Recording Units (ARUs) will be deployed to detect bird vocalizations at each site (**Fig 2**).
- ARUs will be programmed to sample 30 minutes after sunrise for 5 minutes and 1 hour after sunset for 10 minutes (15-30 May).
- Species occurrence will be detected using the Kaleidoscope© software (**Fig 3**).

**Fig 2.** Wildlife Acoustics Song Meter SM4.

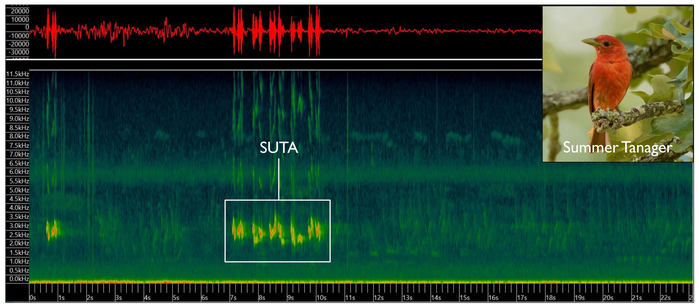


**Fig 3.** Sonogram displayed in the Kaleidoscope© software of a Summer Tanager (*Piranga rubra*).

**Table 1.** Bottomland hardwood forest reforestation categories for annual bird monitoring (2021 and 2022).

| Forest Class | Sites |
|---|---|
| A- Grass/Shrub (0-8yr age) | 8 |
| B- Closed Young (9-25yr age) | 7 |
| First Thinning Complete (25-40yr age) | |
| C- "Heavy Thin" / 0-2 yrs post | 10 |
| D- "Heavy Thin" / >2 yrs post | 10 |
| E- "Light Thin" / 0-2 yrs post | 10 |
| F- "Light Thin" / >2 yrs post | 10 |
| G- 25-40yr age, No Treatment | 10 |
| H- "Ideal" Mature Stand | 10 |
| **Total** | **75** |

## Successional Chronosequence


**Fig 4.** Examples of bottomland hardwood forest categories from **Table 1: A.)** Grass/Shrub, **B.)** Closed Young, **C.)** Heavy Thin, **F.)** Light Thin, **G.)** No Treatment, and **H.)** Ideal Mature.

## Management Implications

The project will provide forest wildlife managers with detailed information on the effectiveness of treatments in achieving desired forest conditions and the timing of intermediate treatments (i.e., thinning) to maintain optimal conditions for bird species in bottomland hardwood forests.

**Fig 5.** Treated stands form canopy gaps.

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