

Introduction

One fifth of the adult population in the United States regularly birdwatch and this recreational activity annually generates over \$82 billion for the US economy (Carver 2009). However, it has been shown that increased human exposure can induce stress and reduce fitness of avian species (McClung 2004).

- Playback is the use of pre-recorded birdsong to make birds in an area more visible to birders and researchers (e.g., Verner & Milligan 1971; Harris & Hatchell 2013).
- Playback is a useful survey tool for ornithologists (Verner & Milligan 1971; Wilkins & Husak 2006; Harris & Hatchell 2013).
- However, amateur playback use is controversial because of potential negative behavioral effects (Harris & Hatchell 2013).
- Despite limited peer-reviewed research, conservation organizations worldwide have pre-emptively limited the use of playback (Harris & Hatchell 2013).
- Some birders prefer vocally imitating common avian alarm calls, or pishing, as an alternative to playback.
- Increased availability of portable technologies have made playback more accessible to amateur birders.
- We evaluated the effects of playback on wintering birds in Northern Louisiana by emulating typical birder practices.

Hypotheses

Null: Pishing and playback do not significantly alter the behavior of wintering birds in Northern Louisiana.

Alternative: Pishing and/or playback cause a significant change in the behavior of wintering birds in Northern Louisiana.

Methods

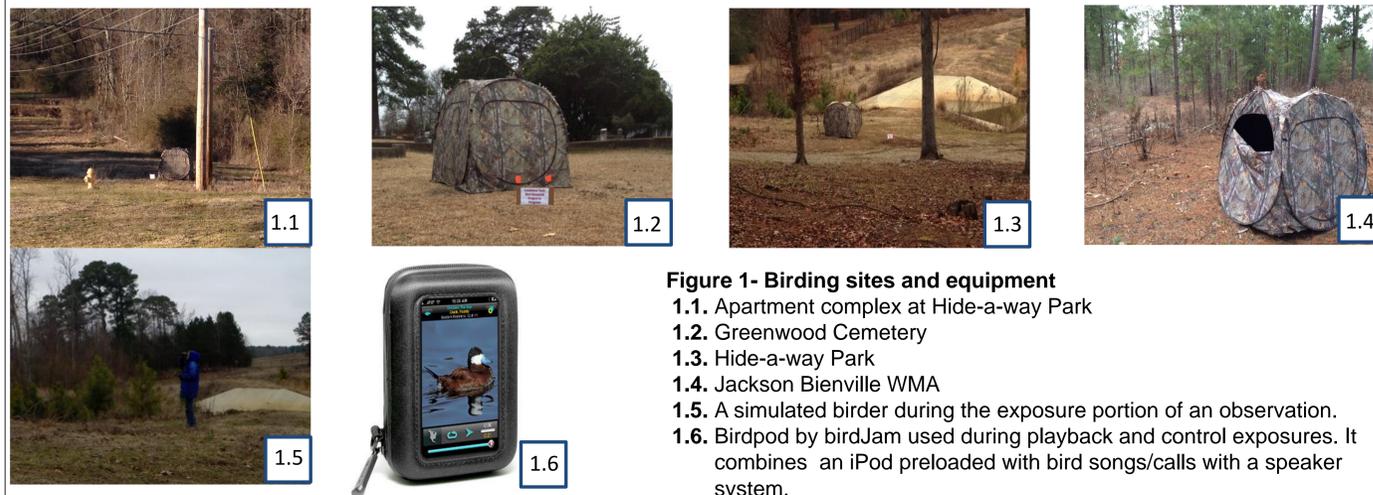


Figure 1- Birding sites and equipment

- 1.1. Apartment complex at Hide-a-way Park
- 1.2. Greenwood Cemetery
- 1.3. Hide-a-way Park
- 1.4. Jackson Bienville WMA
- 1.5. A simulated birder during the exposure portion of an observation.
- 1.6. Birdpod by birdJam used during playback and control exposures. It combines an iPod preloaded with bird songs/calls with a speaker system.

- An online survey¹ generated with SurveyMonkey (<https://www.surveymonkey.com/>) was sent to members of LABIRD, an email bulletin board dedicated to disseminating information about birds of Louisiana, to determine the habits of birders in our area. Questions included information regarding the length of birding sessions, birding location preference, and playback use.
- We selected six experimental sites² based on survey responses: three an urban area (Figs. 1.1-1.3; Hide-a-way Park and Greenwood Cemetery, Ruston, LA), three in a wildlife area (Fig 1.4 ;Jackson Bienville Wildlife Management Area).
- We used survey results (unpub. data) to design experimental protocols.
- Each site was observed (from February 10 to 18, 2014) for forty-five minute sessions split into three sections :
 - “Pre”: 15min before experimental exposure
 - “During”: 15min during experimental exposure
 - “Post”: 15min after experimental exposure
- Four different behavioral categories (self maintenance, vocalizing, foraging, and movement) of all birds in the area were noted by observers in hunting blinds (Fig1.1-1.4) at 30s intervals during the entire observation period.
- Four experimental treatments³ were performed in random order at each location:
 - Baseline exposure (no birding occurred)
 - Control exposure (birder present with playback equipment turned on, but no sound)
 - Pishing exposure (birder present, pished five times)
 - Playback exposure (birder present, playback (using birdJam iPod speaker system; Fig1.6) of Northern Cardinal (*Cardinalis cardinalis*) song (2X; species specific song) and Eastern Screech Owl (*Megascops asio*) song (1X, predator song). Each playback song was ~30s in duration.
- Total number of behaviors that occurred during the Pre, During, and Post periods were tallied separately for each exposure. Percentage of total activity per behavioral category was also calculated.
- A repeated measures ANOVA was used to detect possible treatment effects using Statistica v.12.

Results

Total activity was not affected by order of presentation or location ($F < 0.6$, $p > 0.75$; data not shown) or by treatment (Fig. 2.1; $F(6, 38) = 1.49$; $p = 0.21$). However, foraging activity significantly declined during and post pishing (Fig 2.2; $F(6, 38) = 2.41$; $p = 0.04$, partial eta-squared = 0.27), while vocalizing activity significantly increased for the same periods (Fig. 2.3; $F(6, 38) = 2.40$; $p = 0.04$, partial eta-squared = 0.26). The same significant effect was seen for playback treatment (Figs. 2.4-2.5).

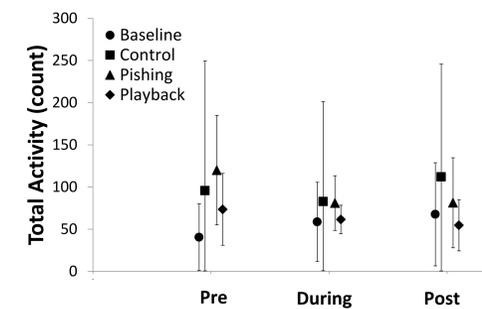


Fig. 2.1. Total activity pre, during, and post experimental exposure for each treatment. Error bars indicate 95% confidence intervals.

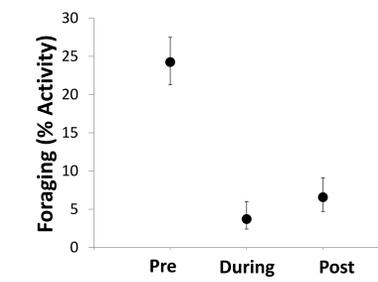


Fig. 2.2. Percentage of total activity spent foraging for pishing treatment. Error bars indicate 95% confidence intervals.

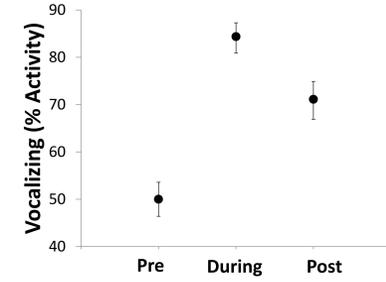


Fig. 2.3. Percentage of total activity spent vocalizing for pishing treatment. Error bars indicate 95% confidence intervals.

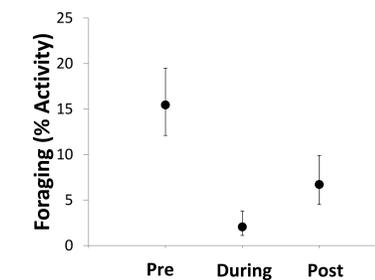


Fig. 2.4. Percentage of total activity spent foraging for playback treatment. Error bars indicate 95% confidence intervals.

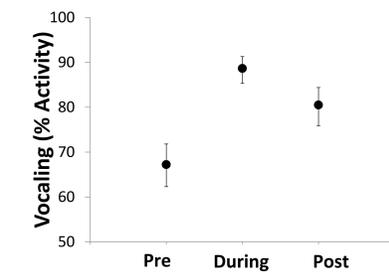


Fig. 2.5. Percentage of total activity spent vocalizing for playback treatment. Error bars indicate 95% confidence intervals.

Conclusions

Our results indicate that pishing and playback changed the behavior of wintering birds in our area. Foraging was significantly reduced both during and post treatment, a period of at least 30min. Pishing and playback increased the level of avian vocal behavior as has been found in studies of tropical (Harris & Haskell 2013) and temperate (Verner & Milligan 1971) breeding birds. Greater vocal activity may indicate an increase in excitement and aggression, resulting in high stress levels (Harris & Haskell 2013). Reduced foraging activity implies that birds spent less time gathering food, which could negatively impact subsequent overwinter survival. However, birds may compensate for decreased foraging seen here by increasing foraging activity after observations ended. Breeding birds are known to habituate to repeated playback exposure (Verner & Milligan 1971; Harris & Haskell 2013), but we cannot assess this possibility in wintering birds with our data.

Our results suggest that pishing and playback are detrimental to wintering birds, so we recommend cautionary use of playback in winter until evidence of fitness costs are clearly demonstrated.

References

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¹Approved by Human Use Committee: #HUC 1163

²We thank LaTech University Police, Ruston Police Department, Ruston Mayor's Office, Ruston Parks and Recreation, Ruston City Work Department, & LaTech Campus Recreation for access to sites in Ruston city limits, and Weyerhaeuser Co. & LDWF for public access use of Jackson Bienville WMA

³Approved by IACUC: #2013-10A