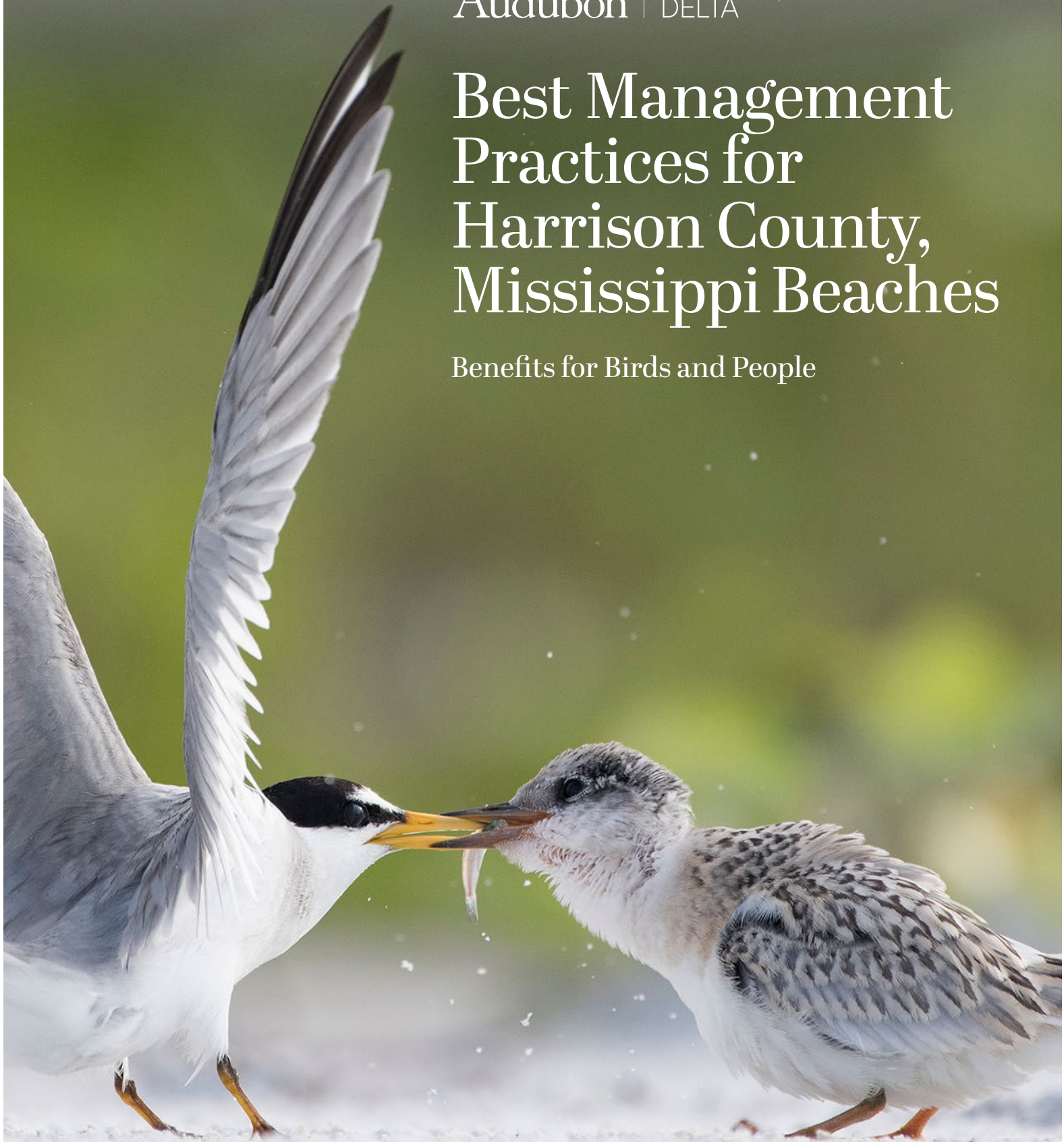




Audubon | DELTA

Best Management Practices for Harrison County, Mississippi Beaches

Benefits for Birds and People



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Statement of Purpose

Audubon has been monitoring beach-nesting birds in coastal Mississippi since June 2014, following the receipt of a grant funded by Deepwater Horizon Oil Spill settlement money to implement monitoring and stewardship along the coast. In this time, Audubon has developed a robust, science-driven monitoring and stewardship program, with a key focus on the large Least Tern populations of Harrison County, Mississippi. Audubon's core responsibilities include twice-weekly monitoring of breeding colony status, placing and maintaining signs and ropes to protect active nesting colonies, and training seasonal staff and volunteers that station themselves at the colonies for 4-hour shifts in order to engage with the public. Audubon has identified additional management practices, involving partnerships with other agencies, that would benefit beach-nesting birds in Harrison County. This document outlines six Best Management Practices that Audubon currently believes are the top priorities for ensuring protection of Harrison County's beach-nesting birds.

Cover: Least Tern with chick. Photo: Anja Trepper/Audubon Photography Awards

These practices include actions to be undertaken by Audubon itself to strengthen and improve its existing work, as well as proposed actions that would require additional funding and collaboration with outside agencies. This is not intended to be an exhaustive document, but rather a blueprint for prioritizing conservation actions to benefit beach-nesting birds, and will need regular review and updates for maximum benefit.

Introduction

Now in its second century, the National Audubon Society (Audubon) is a 501(c)3 non-profit organization dedicated to protecting birds and the places they need, today and tomorrow. Guided by the principle that what is good for birds is good for people, Audubon works throughout the Americas using science, advocacy, education, and on-the-ground conservation. Across coastal Mississippi and beyond, Audubon protects beach-nesting birds by providing stewardship and community outreach, and Audubon's scientists have used staff- and volunteer-collected data to show how stewardship

actions benefit beach-nesting bird populations^{1,2}. Beach-nesting birds such as Least Terns are charismatic species that draw birders, photographers, and other nature enthusiasts, which supports a multi-billion dollar wildlife-watching industry that is growing across the U.S. In Mississippi alone, which hosts some of the country's largest Least Tern colonies, nature tourism generates \$2.8 billion dollars annually in consumer spending³.

Least Terns and the Beaches of Harrison County

Harrison County, Mississippi has 26 miles of sandy mainland man-made beach that is regularly groomed (“raked”) using heavy machinery to remove litter, wrack (washed-up organic debris), and vegetation, which leaves the beach in a sparsely-vegetated, sandy condition. These sandy beaches are attractive to beach-nesting birds, coastal birds that lay their eggs directly into shallow depressions in the sand and rely on camouflage to protect their eggs and chicks (Figure 2). Audubon has designated the beaches of Harrison County as an Important Bird Area (IBA) due to the



Figure 1. Audubon staff educating a family about beach-nesting birds. Photo: Jeremiah Stelljes.



Figure 2. Least Tern with chick. Photo: Jim Verhagen/Audubon Photography Awards

large numbers of Least Terns that breed on these beaches every summer; an IBA is identified using an international set of criteria as being globally important for the conservation of bird populations. Up to 2,300 pairs of Least Terns nest on these beaches⁴, representing 21% of the Northern Gulf of Mexico population⁵ and forming one of the densest concentrations of this species in the world. Up to half of the Black Skimmers that nest on Mississippi beaches join the Harrison County Least Tern colonies to nest each year.

Terns begin setting up nesting colonies on Harrison County beaches in mid-April, about three weeks after the first birds arrive from their wintering grounds in South America. The terns pair up and make nests or “scrapes” in the sand where several eggs will be laid. Chicks that hatch and survive will take their first flights nearly three weeks later. Generally breeding season on Mississippi beaches lasts through mid-August.



Figure 3. Black skimmers in flight. Photo: Susan Allen/Audubon Photography Awards

THREATS

Beach-nesting birds face a multitude of threats throughout their breeding season. Many of these threats involve unintentional disturbance of nesting areas, which can result nests or chicks being abandoned or killed. Repeated disturbance can result in adults abandoning their breeding areas, or in eggs and chicks overheating or succumbing to predators, and therefore partial or complete breeding failure. Common threats are:

- Beach visitors walking near or through nesting areas
- Off-leash dogs
- Fireworks
- Kites
- Trash bins (which can attract predators)

Without proper safeguards in place to help balance the needs of beach visitors and beach nesting birds, Least Terns and Black Skimmers may fail to fledge enough chicks to ensure their populations remain healthy into the future.

BEST MANAGEMENT PRACTICES

The good news is that there are Best Management Practices (BMPs) available that benefit both the birds and the people who enjoy Harrison County beaches. These practices primarily involve actions that reduce or eliminate the risk of direct trampling to eggs and chicks, excessive disturbance of breeding adults, and reduce the attractiveness of breeding areas for potential predators.

1. Protect nesting areas using signs and symbolic fencing

Birds begin courting and creating nest scraps in early April, and these behaviors are the first signs that an area should be protected. Audubon closely coordinates with Harrison County Sand Beach Authority (HSBA) throughout the nesting season.

Current Strategies:

- Audubon staff place pink flags around the area with nest scraps and communicate their locations to HSBA.
- As birds begin to lay eggs, the perimeter of the nesting area should be protected using symbolic fencing with educational signage to alert beachgoers and prevent public entry into the colony.
- The effectiveness of this protection is increased by stationing seasonal staff or volunteers at the colonies in order to ensure compliance and to provide public outreach.

Proposed Actions:

- Hold annual training in February/March for stakeholders such as HSBA, Harrison County law enforcement, etc. before nesting season begins
- Develop a communications strategy for new or temporary stakeholders, such as in the event of storm-related response and cleanup
- Develop a short informational video about sharing the beach with Least Terns, and print new signs with a QR code that links to the video

2. Keep dogs on leash at all times and off the beach

Dogs are not allowed anywhere on Harrison County beaches and are to be kept on leash on the seawall and parking areas. It is especially important to keep dogs from running loose around nesting colonies, where they disturb nesting birds and can harass adults or consume eggs and chicks, resulting in breeding failure.

Proposed Actions:

- Increase public awareness and enforcement of beach ordinances related to dogs
- Place additional signs at piers and nesting colony areas
- Work with local vet clinics and humane societies to provide rack cards containing information about county dog ordinances

3. Protect nesting colonies from fireworks

Harrison County allows personal fireworks to be used on the beaches on Independence Day holiday. Fireworks can be terrifying to nesting birds and can lead to abandonment of eggs and chicks.

Current Actions:

- During the month prior to Independence Day, Audubon staff communicates with local fireworks vendors about locations of active colonies and encourage them to post flyers that encourage the public to keep fireworks away from these locations
- “No Firework Zone” signs around colony perimeter at least one week before Independence Day
- Volunteer stewards and police officers are recruited during Independence Day activities to ensure public compliance

Proposed Actions:

- Use the “No Firework Zone” signs to create a 100-yard buffer around nesting colonies
- Print new signs in reflective material to increase visibility at night
- Explore the possibility of prohibiting fireworks on the beach except for in designated firework zones



Figure 5. Example of a “No Firework Zone” sign along a beach-nesting bird colony boundary. Photo: Melinda Averhart/Audubon Delta

4. Reduce beach trash and predator access to food waste

Trash and unconsumed food attracts predators such as gulls and crows, which can then target nesting colonies and consume large numbers of eggs and chicks. Certain types of trash such as fishing line can also pose direct threats to birds via entanglement or accidental ingesting.

Proposed Actions:

- Install trash bins with wildlife-proof lids to prevent predator access and to prevent wind-blown trash
- Add bins for fishing line in areas where needed
- Promote existing volunteer beach cleanup events and/or schedule additional beach cleanups

5. Adaptive management of colony boundaries

The terns do not understand the purpose of the symbolic fencing provided to them, and a growing colony will frequently expand their nesting efforts outside of the border. Additionally, mobile chicks will wander outside of the colony, where they are easy to overlook. Disturbance from heavy machinery at one side of the colony can cause hordes of chicks to run outside the colony border on the opposite side.

Proposed Actions:

- Install 3-foot-tall “chick fencing” made from dune or snow fencing on the north, east, and west sides of colonies with large numbers of chicks
- Work with HSBA to set up buffer zones between raking activity and colony borders

6. Training and guidelines for beach driving

Harrison County does not allow personal vehicle use on the beaches, but permission is given to certain agencies to use ATVs, trucks, or heavy equipment for patrolling and working on the beaches.

Proposed Actions:

- Provide annual training to stakeholders permitted to drive on the beach that provide guidelines for reducing the risk of disturbance or direct trampling when navigating around an active colony
- Provide stakeholders with early-season and regular updates with maps of active nesting colony locations

7. Bird-friendly lighting and building design

Buildings with large reflective surfaces and artificial light at night pose significant hazards to migratory songbirds, resulting in 365-988 million bird deaths⁶ per year in the U.S. Effects of artificial light on nesting terns is less well-documented, but has the potential to disrupt hormone levels or lead to increase nocturnal depredation of eggs and chicks.

Proposed Actions:

- Conduct a study on the effects of artificial lighting on Least Tern behavior and productivity
- Promote the use of bird-friendly building design and lighting as outlined at ms.audubon.org/BFB



Least Tern. Robert Blanchard/Audubon Photography Awards

How You Can Help

Audubon offers volunteer opportunities to help monitor and conserve coastal birds year-round. We are always looking for more volunteers to help steward Least Tern colonies in Harrison County during the summer months, particularly on busy holiday weekends such as Memorial Day and Independence Day. If you are interested, please give us a call or send an email using the contact information at the end of this document.

Laws and Ordinances

MIGRATORY BIRD TREATY ACT

<https://www.fws.gov/laws/lawsdigest/migtrea.html>

Least Terns, Black Skimmers, and other beach-nesting birds are federally protected under the Migratory Bird Treaty Act. This Act prohibits intentional or accidental take (killing or capturing birds or their eggs) of protected bird species without prior authorization from the U. S. Fish and Wildlife Service.

HARRISON COUNTY SAND BEACH ORDINANCES

co.harrison.ms.us

- No motor vehicles, except those permitted by the Sand Beach Authority
- No animals of any kind
- No fireworks, except by permit approved by the Sand Beach Authority
- No loud or unusual noise

References

- ¹ Darrah, A. J. 2020. Mixed evidence for effects of stewardship on Least Tern reproductive success in coastal Mississippi. *Condor: Ornithological Applications* 122:1-13.
- ² Michel, N. L., S. P. Saunders, T. D. Meehan, and C. B. Wilsey. In press. Stewardship increases protected area effectiveness for coastal birds. *Conservation Biology*. <https://doi.org/10.1111/cobi.13698>
- ³ U.S. Department of Commerce, Bureau of Economic Analysis. 2019. Outdoor Recreation Satellite Account. <https://outdoorindustry.org/state/mississippi/>
- ⁴ Audubon Mississippi. 2021. Audubon Mississippi Coastal Program – 2020 Breeding Season Summary. Unpublished report. Prepared for Mississippi Department of Environmental Quality and National Fish and Wildlife Foundation.
- ⁵ Remsen, J. V., B. P. Wallace, M. A. Seymour, D. A. O'Malley, and E. I. Johnson. 2019. The regional, national, and international importance of Louisiana's coastal avifauna. *Wilson Journal of Ornithology* 131:221-434.
- ⁶ Loss, S. R., T. Will, S. S. Loss, and P. P. Marra. 2014. Bird-building collisions in the United States: Estimates of annual mortality and species vulnerability. *Condor: Ornithological Applications* 116:8-23.



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- Mississippi Coast Audubon Society
- Mississippi Department of Environmental Quality
- Mississippi Department of Marine Resources
- National Oceanic and Atmospheric Administration
- Office of the Mississippi Secretary of State
- U.S. Fish and Wildlife Service
- Wildlife Mississippi