Alabama Coastal Bird Stewardship Program:

Study Areas

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The Alabama Coastal Bird Stewardship Program is a comprehensive conservation and research program focused on protecting shorebirds and their habitats along the Alabama Gulf Coast funded with Deepwater Horizon natural resource damage settlement funds provided by the Alabama Trustee Implementation Group. This project is further supported by the National Audubon Society through funding from the Alabama Department of Conservation and Natural Resources. Additional support was provided by the USFWS Northern Gulf Coastal Program.

Alabama Audubon and the City of Orange Beach monitor beach-nesting birds and conduct nonbreeding season surveys across much of the Alabama coast. Below are brief descriptions of breeding season sites and Audubon Coastal Bird Survey routes. Symbols near the site name denote if it was surveyed during the breeding season (BNB) and/or if it was an Audubon Coastal Bird Survey route (ACBS). All state, federal, town and private properties are surveyed with all necessary permits and permissions.

MOBILE COUNTY

One of Alabama's most historically important nesting sites along the coast is Dauphin Island. Dauphin Island is a barrier island ~22 km in length. Since the start of the Alabama Coastal Bird Stewardship Program (ALCBSP), we have been monitoring specific sections of the island known for breeding activity as well as looking for activity in more obscure locations. Sites that were regularly monitored on Dauphin Island this season included: Pelican Island, Public Beach West, Public Beach East, Dauphin Island West End, Katrina Cut, and Far West End (Figures 1 and 2).

Pelican Island Peninsula

Pelican Island is a ~4 km long peninsula on the southern side of Dauphin Island located near the public pier (Figure 1). It consists primarily of open sand beach and dune habitat with a small section of marsh to the northeast. The southern tip of the peninsula is a tidal flat rich in marine invertebrates that tends to attract many species of shorebirds throughout the year. This section of beach has moderate to low human presence, with more activity during summer months. Least terns have been observed nesting and staging on Pelican Island. Snowy plover chicks and breeding adults have also been observed using the peninsula for refuge and foraging during the breeding season.

Public Beach West RACBS

Public Beach West is a 1.7 km long public beach located west of Pelican Island (Figure 1). It consists of open sand beach and dune habitat, with some development to the north. Snowy plovers have used this beach for nesting. Human disturbance is generally moderate to high along this beach, especially during summer months. Symbolic fencing is used when necessary and individual signs are also placed in critical habitat being used by the birds throughout the fledging process. This is a breeding season monitoring site and an ACBS route.

Public Beach East



Public Beach East is a 2.8 km section of public beach on the eastern section of Dauphin Island (Figure 1). This site primarily consists of open sand beach and dune habitat, and is backed by a maritime forest to the north. This location also has a campground access and a small residential area on the western edge. Human presence ranges from low to moderate with more activity observed during summer months. We documented our first breeding pair of snowy plovers with a nest at this location in the summer of 2020, when COVID-19 restrictions significantly reduced the amount of

human activity on the beach. Federal shorebird nesting signs are placed near pathways leading from the beach to the campground to reduce foot traffic through dunes throughout the year. This is a breeding season monitoring site and an ACBS route.

Sound Side Beach

Sound Side Beach is located on the west end of Dauphin Island, east of Dauphin Island West End (Figure 2). The area is residential and highly developed. Houses border the Mississippi Sound and are located on sparsely vegetated, sandy lots. Permission from private landowners has to be granted to monitor any nesting activity that is observed. Least terns have attempted to breed on one of the lots in recent years. This is a breeding season monitoring site.

Dauphin Island West End

Dauphin Island West End is 2 km long and begins on the northern shore of Dauphin Island along the Mississippi Sound going west, then wraps around to the southern shore along the Gulf of Mexico (Figure 2). The northern section contains a thin sandy shoreline with salt marsh to one side and open bay on the other. The route crosses salt marsh on the southern shoreline, which consists of some open beach and vegetation to the north. This section has moderate human presence primarily on the easternmost shoreline along the Gulf. Snowy plovers and least terns have attempted nesting at the site in past years.

Katrina Cut

Katrina Cut is the 2.4 km middle section of the west part of Dauphin Island that was cut through during hurricane Katrina in 2005 (Figure 2). This section is a renourished flat beach with little to no vegetation braced by a storm wall on the Mississippi Sound side. This section of beach experiences low human disturbance with the majority of foot traffic along the gulf shore. Least terns and snowy plovers have nested along this section of the island.

Far West End BNB ACBS

Far West End is a ~11.8 km stretch of beach making up the western most end of Dauphin Island and starts at the west end of Katrina Cut (Figure 2). This section of Dauphin Island primarily consists of beach and dune habitat. Patches of marsh and dense shrub vegetation habitat make up the area on the Mississippi Sound side to the west of the cut. The site has low to moderate human presence, with most occurring on the further western tip via boat landings. Snowy plovers, least terns, and American oystercatchers have nested at the Far West End in recent years.

Little Dauphin Island



Little Dauphin Island is a ~5 km long island that borders the Gulf of Mexico and is separated from Dauphin Island by an inlet (Figure 1). Different sections of the island are owned and managed by Bon Secour National Wildlife Refuge and the Army Corps of Engineers. The site is only accessible by boat and was broken into three sections by Hurricane Sally in the fall of 2020. The island is made up of sandy beaches with some sections of marsh and maritime forest on the southwest side that borders the inlet. Little Dauphin Island is undeveloped and has little to no human presence. Least terns and black skimmers have attempted to nest on the island in past years. This was an ACBS route until 2021, and is now only monitored during the breeding season.

Pelican Bay

Pelican Bay is a 1.8 km route that wraps around the eastern side of Pelican Bay, located on the southern side of Dauphin Island (Figure 1). The site is primarily open sand beach and dune habitat with small marshes at the north west end of the route. There is no development along the route and there is little human presence. Pelican Bay is monitored during the breeding season, although there

Pelican Hook

Pelican Hook is a ~ 0.80 km stretch of beach and dune habitat located on the southern end of the Pelican Bay route (Figure 1). There is scrub and dense vegetation along the north eastern section, and residential development to the east. There is little human activity at the site, however the western peninsula is sometimes used by fishermen. The site is monitored during the breeding season, though there has not been any nesting activity in the years we have been monitoring.

has not been any nesting activity at the site during the years we have been monitoring (2018–2022).

Lightning Point

Lightning Point is a recently completed (2020) restoration site located in Bayou La Batre where $\sim 0.16 \text{ km}^2$ of marsh, tidal creeks, and upland forest has been created (Figure 3). The land adjacent to the restoration area is owned by TNC, the city of Bayou La Batre, Mobile County, and Forever Wild. The area is restricted; however, it does experience some human disturbance as people have been observed fishing along the jetty wall. Least tern, Wilson's plover, and American oystercatcher breeding activity was documented at this location.

Cat Island BNB ACBS

Cat Island is $\sim 0.01 \text{ km}^2$ and privately owned (Figure 3). The island consists primarily of an open sandy beach with oyster shell ridges and a small amount of shrub habitat in the center. This site has very little to no human presence and is only accessible by boat. Several species consistently nest on Cat Island including American oystercatcher, black skimmer, least tern, gull-billed tern, royal tern, caspian tern and sandwich tern.

Coffee Island BNB ACBS

Coffee Island (Isle aux Herbes) is ~1.5 km² and only the western side is accessible (Figure 3). A 0.7 km route that runs along this side of the island includes the majority of observed breeding activity by colonial and solitary nesting species. The shoreline consists mainly of oyster shell hash and the center is lined by shrub habitat. Coffee Island also has a significant amount of marsh habitat. The island is only accessible by boat and experiences very little to no human disturbance. Several species

have used the island for nesting in recent years including black skimmers, least terns, caspian terns, royal terns, gull-billed terns, American oystercatchers, reddish egrets, great egrets, white ibis, and tricolored herons.

Marsh Island - Portersville Bay

Marsh Island is $\sim 0.20 \text{ km}^2$ and consists of marsh and mudflat habitat with some sections of sparsely vegetated sand (Figure 3). Marsh Island was part of a restoration project to restore saltmarsh habitat along the coast after the Deepwater Horizon oil spill. Dredge material and native plants were added on the northern section of the island and breakwaters were implemented on the southern side to prevent further erosion. This island is undeveloped and experiences little to no human disturbance throughout the year. Historically the island has provided breeding habitat for several colonial and solitary nesting species including some of our priority species. In 2022 we documented nesting activity by laughing gulls, royal terns, tricolored herons, and white ibis.

Tern Island BNB ACBS

Tern Island (Sand Island) is ~0.06 km² and was once part of Pelican Island (Figure 1). It consists of open sand beach with sparse vegetation. The island has a low elevation, although in the past two years it has built up slightly. During severe storm events in past years, the entire island was overwashed by high tides. Tern Island is managed by the Alabama Department of Conservation and Natural Resources and public activity is discouraged during the breeding season. Federal and Alabama Audubon nesting signs are deployed around the perimeter of the island prior to nesting activity. Human disturbance ranges from low to high; highest on Memorial Day and Fourth of July holiday weekends when boaters often anchor along the shore. The island supports nesting least terns, black skimmers, gull-billed terns, and American oystercatchers. It is also an important loafing and foraging area; over 30 species were documented on the island in one day during fall 2022.

Cedar Point/Heron Bay

Cedar Point is a \sim 2.0 km stretch of beach located just off of the Dauphin Island bridge (Figure 4). The site has very little beach and no dune habitat with marsh and inlets to the east. There is a small pier at the southern point but there is little to no human disturbance along the route. A small group of least terms attempted nesting at the site in 2022 but were not successful.

Murder Point

Murder Point is a small peninsula on the eastern side of Portersville Bay (Figure 4). It is primarily made up of marsh habitat with patches of oyster shell hash on the western edge. It is remote and experiences little to no human disturbance. American oystercatchers were observed with scrapes at the site in 2022 but no nests were found.

Marsh Island - Grand Bay

Marsh Island in Grand Bay is $\sim 0.04 \text{ km}^2$ of marsh and scrub habitat, with a small oyster shell ridge on the southeast side (Figure 5). This island was used for nesting by one pair of American oystercatchers in 2022.

BALDWIN COUNTY

Beach Club Resort & Spa

Beach Club Resort and Spa is located in Gulf Shores, and consists of a ~ 0.02 km² gravel lot surrounded by residential buildings (Figure 6). Small ponds are scattered throughout the resort. Due to the location of the lot within the resort, the colony experiences frequent disturbance from passing vehicles and walkers. Symbolic fencing is set around sections of the lot each year to dissuade people from walking through the lot. This site was used as a breeding location for a least tern colony each year since the coastal program began monitoring the site in 2018.

Gulf Highlands

Gulf Highlands is located in Gulf Shores just to the west of the Beach Club Resort and Spa (Figure 6). It was previously owned by Beach Club, however it was acquired by the Alabama Department of Conservation and Natural Resources in 2022. It contains ~ 0.21 km² of beach and dune habitat, with thick vegetation and brush to the north. The beach experiences moderate human disturbance as it is located between two large beach resorts. There is a path through the dunes used as a beach access for private properties located to the north, though the rest of the dunes are largely undisturbed. Least terns and killdeer were recorded nesting at the site in 2022.

Gulf State Park BNB ACBS

Gulf State Park is a \sim 3.60 km stretch of beach located in Gulf Shores (Figure 7) and has beachfront and dune habitats. The site has medium to high human presence, especially throughout the summer months. The highest density of human presence occurs on the eastern and western most ends of the site, as the eastern end contains a pavilion and the western end has a lodge and fishing pier. Signs are up year round on the site to dissuade visitors from entering the dunes, however symbolic fencing is used as needed during the breeding season to ensure minimal disturbance to nesting species. The state park has been used as a nesting site for species such as least terns, snowy plovers, common nighthawks, and killdeer.

Piggly Wiggly Rooftop

Least terns have attempted to nest on the rooftop of a Piggly Wiggly supermarket each year since monitoring of the site began in 2019. The building is located in Fairhope, ~2.5 km east of Mobile Bay (Figure 8). About 0.5 km to the southeast is a small pond, which is believed to be a foraging area for the colony. The site has an almost constant presence of laughing gulls and crows, and is surrounded by commercial and residential buildings.

Fairhope Public Beach

Fairhope Public Beach is a ~0.40 km long ACBS route along the eastern shore of Mobile Bay (Figure 8). It contains sandy beaches and is bordered by upland forests to the west. It experiences medium to high human disturbance.

Mayday Park ACBS



Mayday Park is a ~ 1.6 km long ACBS route in Daphne (Figure 9). The route runs along the sandy shore of Mobile Bay and is bordered by an upland forest. The surrounding area is very similar to the habitat found at Bayfront Park.

Bayfront Park BNB ACBS

Bayfront Park is a $\sim 1 \text{ km} \log \text{ACBS}$ route located on the eastern shore of Mobile Bay (Figure 9). The beach is fine open sand next to the open water of the bay on one side and upland forest and high marsh on the other. In 2022 least terns attempted nesting on the open beach area, so this site was also monitored during the breeding season.

Orange Beach

The Orange Beach route is a ~2.1 km stretch of beach located just west of the Perdido Pass and Alabama Point West (Figure 10). It consists of open sandy beach and is lined with condos to the north. The site experiences very high human disturbance, especially during the summer months.

Alabama Point East



Alabama Point East is ~2.2 km long located on the east side of the Perdido Pass in Orange Beach and is part of Gulf State Park (Figure 10). It contains both beachfront and dune habitats. This beach has a very high human presence, especially during the summer months. A fairly large least tern colony nests at the site each year. Symbolic fencing is set along the entire stretch of beach prior to the arrival of the terns in an effort to dissuade visitors from entering the dunes.

Alabama Point West

Alabama Point West is a small area of private beach ~0.01 km² located on the west side of the Perdido Pass in Orange Beach (Figure 10). The site experiences high human disturbance, especially during summer months. Least tern colonies have been successful at this site in the past, however in recent years there has been an increase in coyote and feral cat presence which led to the failure of a colony in 2018. The terns have not attempted nesting at the site in the past three years due to the increased predator pressure, though we continue to monitor the site in the event that a colony does attempt to nest. Symbolic fencing was utilized at the site during 2018–2020.

No Fly Zone

The No Fly Zone consists of several residential private properties and vacant lots encompassing $\sim 0.03 \text{ km}^2$ of beach and dune habitats (Figure 10). The site is surrounded to the east and west by large condos and has a very high human presence during summer months. Monitoring of a least tern colony began in 2018, however they have been known to nest on the site for years before monitoring began. Symbolic fencing is set prior to the arrival of the terns each year with permission from the property owners to dissuade beach goers from entering the colony.

Shallow Lot

Shallow Lot is a privately owned empty lot consisting of $\sim 0.03 \text{ km}^2$ of dune habitat (Figure 10). The site has a high human presence during summer months and beachgoers often walk through the lot to get onto the beach. Least terns have been monitored nesting on the site since 2018, however they are known to have nested on the site in years prior as well. Staff were unable to enter the property to conduct surveys so all monitoring was done from the beach and roadside.

Summer Salt

Summer Salt is a construction site encompassing $\sim 0.03 \text{ km}^2$ and is composed primarily of sandy lots and paved roads (Figure 10). It is located 0.6 km north of the Gulf and is surrounded to the north and south by wetlands. Work on the site was paused when least tern nests were first observed. Human presence at the location is low, with few cars using the paved roads. The lot will likely be fully constructed with over 60 residential homes before the 2022 breeding season.

Walker Island

Walker Island is located in the Perdido Pass and is owned by the City of Orange Beach (Figure 10). The island encompasses $\sim 0.02 \text{ km}^2$ and is composed primarily of sandy shorelines and thick vegetation in the center. This island does not allow the beaching of boats and is surrounded by seagrass beds. This island is a sanctuary for many loafing birds as well as least terns that are part of the rooftop colonies in the area. It is frequently washed over during storms and high tides, so it has not supported any active colonies and nesting attempts have not been successful.

Robinson Island

Robinson Island is located in the Perdido Pass and is owned by the City of Orange Beach (Figure 10). The island encompasses $\sim 0.04 \text{ km}^2$ and is composed of small areas of sandy beach all along the shore. The interior of the island is composed of a large marsh area with several different types of vegetation. This island supports a very large rookery of great blue herons on the north side. The rookery remains fenced year round to prevent disturbance. This island has never had any successful nests nor has it supported a colony since we began documenting least tern activity in 2018.

Bird Island BNB ACBS

Bird Island is owned by the State of Alabama and encompasses ~ 0.04 km². It is composed primarily of sandy shorelines used for boating recreation. This island is the most southern island of the three

islands located within the Lower Perdido Islands system (Figure 10). The center of the island is composed of thick vegetation with a few sandy areas. This area remains fenced off all year to prevent foot traffic. The last successful nesting attempt by least terns occurred in 2018.



Figure 1. Dauphin Island eastern sites.



Figure 2. Dauphin Island western sites.



Figure 3. Location of Portersville Bay sites.



Figure 4. Location of Cedar Point, Murder point, and Heron Bay.

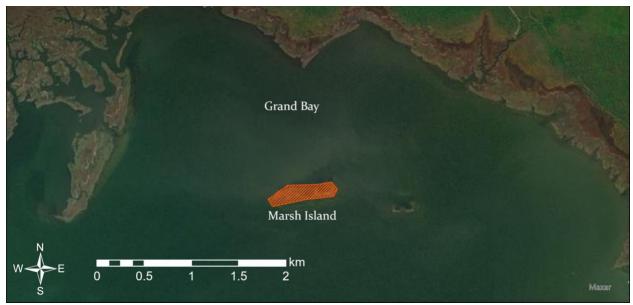


Figure 5. Location of Marsh Island in Grand Bay.

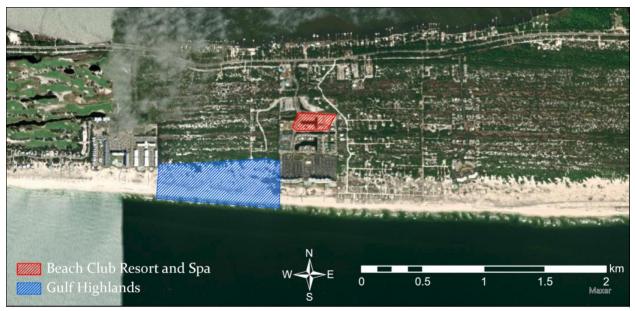


Figure 6. Location of the Beach Club Resort and Spa on Fort Morgan peninsula.



Figure 7. Location of Gulf State Park sites.



Figure 8. Location of Fairhope Public Beach and the Piggly Wiggly in Fairhope, Alabama.



Figure 9. Location of Bayfront Park and Mayday Park on the eastern shore of Mobile Bay.



Figure 10. Location of City of Orange Beach sites.