

WILDLIFE CONSERVATION VALUES ASSESSMENT

WATERWAY GROVE

CONSERVATION
EASEMENT
PROPERTY
HORRY COUNTY,
SC



WILDLIFE CONSERVATION VALUES ASSESSMENT

WATERWAY GROVE

SANDRIDGE CONSERVATION EASEMENT PROPERTIES

Horry County, SC

Christopher R. Wilson, Conservation Ecology LLC

March 14, 2019

This report provides an assessment of the wildlife conservation values for the 30 acre Waterway Grove conservation property located near the town of North Myrtle Beach in Horry County, SC. The property is one of 6 contiguous conservation properties (Arcadian Quay, Camellia Station, Lakeshore Resort, Waterway Grove, Sanibel, and Sea Vista Resort) totaling 207 acres, which are held under easement by NALT, managed by EcoVest, and collectively referred to as the Sandridge Properties. Because the wildlife found on any one property are likely to occur on the neighboring properties, and for practical reasons, the wildlife survey results for all 6 properties are presented together here.

The Sandridge properties are characterized by very low elevations and flat topography and contain a 27 acre man-made lake, open fields, hardwood forests, scattered patches of pine forest, and frontage along the Intracoastal Waterway. Vegetation types on the property were classified in the field by NALT biologists and reported in the Baseline Documentation Report.

I visited the properties on multiple occasions between 2016 and early-2019 to perform wildlife surveys, targeting detection of birds and mammals.

Summary of Findings

- 86 vertebrate species were documented on the properties
- 64 total bird species were observed
- 54 observed bird species are likely/ potential breeders and include:
 - 24 SC SWAP priority Species (2 Highest; 8 High; 14 Moderate)
 - 17 ACJV priority species (1 Highest; 8 High; 8 Moderate)
 - 3 USFWS BCC2008 species
- The most notable conservation priority bird species breeding or potentially breeding on the properties are: Painted Bunting, Green heron, Eastern Meadowlark, Brown-headed Nuthatch, and Red-headed Woodpecker.
- 15 mammal species were observed including:
 - Southern Fox Squirrel and Eastern Woodrat (both SC SWAP Priority Species)
 - Eastern Red Bat, Northern Yellow Bat, Seminole Bat, and Tri-colored Bat (all ranked "Highest Priority" by the SC SWAP)

Interpretation of Conservation Significance of Observed Species

In order to determine the conservation significance of wildlife species found on the properties, I referred to the following conservation plans that assign priority conservation status to wildlife species in the Southeastern Coastal Plain of South Carolina (Bird Conservation Region 27, or “BCR27”). Each of these programs are government supported initiatives to guide proactive and voluntary biodiversity conservation actions (such as conservation easements). Each are independent, use different prioritization approaches, and were driven by different organizational objectives and constraints, thus their results will vary and they should be interpreted independently. For example, it would be improper to conclude that a species with a high conservation priority rank on one list is nullified by a lower priority rank on a different list. Also, the lists should be interpreted as additive; a property that contains species prioritized on multiple lists should be interpreted as supporting multiple government sponsored conservation initiatives, and thus has a stronger conservation significance and public benefit.

South Carolina’s Comprehensive Wildlife Conservation Strategy (aka. – SC State Wildlife Action Plan, or SC SWAP) - emphasizes a cooperative, proactive approach to conservation. The charge to state wildlife agencies to develop comprehensive strategies had its origins in the Wildlife Conservation and Recreation Program (WCRP) that was created in the federal Appropriations Act of 2001. Appropriations language provided that funds may be used for “...the planning and implementation of [a state’s] wildlife conservation and restoration program and wildlife conservation strategy, including wildlife conservation, wildlife conservation education, and wildlife-associated recreation projects” (114 STAT. 2762A -118 PUBLIC LAW 106–553 — APPENDIX B — Title IX). The WCRP appropriations language challenged the states to develop projects in the three major areas anticipated in the Teaming with Wildlife initiative: conservation, education, and recreation. WCRP appropriations language also provided that “Within five years of the date of the initial apportionment, [the states shall] develop and begin implementation of a wildlife conservation strategy based upon the best available and appropriate scientific information and data”.

In the 2015 revision to the SC SWAP, the SCDNR identified 825 species of flora and fauna to include on the State’s List of Species with the Greatest Conservation Need (SGCN, or “priority species”). Expert review helped to identify the current needs of wildlife in the state. These needs translate into conservation actions that can cross multiple scales, with treatments recommended at the species, habitat and regional level. Eight recurring conservation action areas were identified, including: education and outreach; habitat protection; invasive and nonnative species; private land programs; public land management; regulatory actions; survey and research needs; and urban and developing lands. All of South Carolina’s 62 priority actions to address problems and issues fall within these conservation action areas.

The Atlantic Coast Joint Venture - South Atlantic Migratory Bird Initiative (SAMB I) Implementation Plan (2006) - The ACJV is a partnership of federal, regional and state agencies and organizations focused on the conservation of habitat for native bird species in the Atlantic Flyway region of the United States. The joint venture coordinates planning and delivery of bird habitat conservation, resulting in more effective and efficient conservation and the ability to focus limited resources on continental, national, flyway and

regional bird conservation priorities. It is administered through the U.S. Fish and Wildlife Service and coordinates much of the science guiding federal grant making for conservation projects (<http://aciv.org/>)

The ACJV-SAMBI Implementation Plan (v3.1, 2006) encompasses the eastern portion of BCR 27, the Southeastern Coastal Plain. The objective of the plan is to integrate the objectives of existing and emerging bird conservation plans into a single plan that land managers, biologists, administrators, and private landowners can use to achieve common goals and objectives for bird conservation across a regional landscape. The plan identifies priority species, priority habitats, priority areas, and strategies to achieve the conservation of “all birds across all habitats” in this region. This plan is a result of the collaboration of federal, state, non-governmental, and private interests to build a cohesive strategy for bird conservation in the southeastern United States.

The Priority Bird Species list for the region is categorized as Highest, High, and Moderate priorities as follows:

- Highest priority species are those of High Continental and/or Regional Concern in need of Immediate Management Attention
- High priority species are species of Continental or Regional Concern in need of Management Attention, and
- Moderate priority species are species where monitoring is needed to ensure population persistence, and which may also include additional Federally endangered species, State listed species, and other species of conservation or management interest.

An important habitat conservation strategy identified in the plan (Strategy B.2.) is the acquisition of conservation easements: “Conservation easements with private landowners and local governments will be used to acquire legal interests to conserve and manage important wetlands and associated upland habitats and limit development while allowing some use by the landowner consistent with the easement conditions.” http://www.aciv.org/documents/SAMBI_Plan3.2.pdf

US Fish and Wildlife - Birds of Conservation Concern 2008 – The 1988 amendment to the Fish and Wildlife Conservation Act mandates the U.S. Fish and Wildlife Service (USFWS) to “identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act (ESA) of 1973.” *Birds of Conservation Concern 2008* is the most recent effort to carry out this mandate.

“The overall goal of the Birds of Conservation Concern is to accurately identify the migratory and non-migratory bird species (beyond those already designated as Federally threatened or endangered) that represent the highest conservation priorities.”

(<https://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>)

Bird Surveys

In order to develop a list of birds using the properties during each season, casual bird surveys were conducted on multiple occasions throughout the year between 2016 and 2019. In order to map the diversity of breeding birds at specific locations across the properties, I used the point-count method which entails counting all individual birds heard or visually observed while standing in one location (a point-count station) for 5-minutes. Ten point-count stations were sampled during the breeding season in late-April 2017 and each station was sampled only once. Birds observed during the year-round surveys are presented in the Observed Species table at the end of the report. Results from the point-count surveys are presented in the maps and tables below.

- Year-round bird survey:
 - 64 total bird species were observed on the properties across all seasons
 - 54 observed bird species are likely/ potential breeders
 - 24 SC SWAP priority Species (2 Highest; 8 High; 14 Moderate)
 - 17 ACJV priority species (1 Highest; 8 High; 8 Moderate)
 - 3 USFWS BCC2008 species
- Point-count surveys:
 - 36 bird species were observed during the breeding season point-count surveys (excluding likely non-breeders)
 - Priority species detected during point-counts included:
 - 15 SC SWAP priority Species (2 Highest; 5 High; 8 Moderate)
 - 10 ACJV priority species (1 Highest; 4 High; 5 Moderate)
 - 1 USFWS BCC2008 species
 - SC SWAP priority species were detected at all point-count stations, demonstrating priority species are distributed throughout the properties (see *SC SWAP Priority Bird Diversity* map below)

Notable Birds - The most notable priority bird species breeding on the properties is the Painted Bunting, which was observed during the spring of 2017 and 2018 singing along forest edges in the southern and eastern portions of the project area (on Lakeshore, Sea Vista, Sanibel, and Waterway Grove), including the treed buffer along the intercoastal waterway (see *Generalized Species Locations* map below). They are a Highest Priority species under the SC SWAP and ACJV and are on the USFWS Bird of Conservation Concern list. Painted Buntings breeding in South Carolina belong to the Eastern subspecies, *Passerina ciris* (which may eventually be described as full separate species). During the breeding season, this subspecies is restricted to four states along the Atlantic Coast: North Carolina, South Carolina, Georgia and Florida. South Carolina supports one third to one-half of the total breeding population of the Eastern subspecies. In general, the Painted Bunting utilizes a variety of habitats, primarily forest edge and shrub habitats. The greatest risk to the eastern population appears to be rapid loss of habitat along the outer Coastal Plain attributed to rapid development and other factors (see Fire Management Species Profile Painted Bunting (*Passerina ciris*), Division of Strategic Resource Management & the Division of Fire Management, USFWS, Southeast Region, Atlanta, GA <https://www.fws.gov/southeast/pdf/fire/painted-bunting-fire-management.pdf> ; William C. Hunter (USFWS) and Dean Demarest (USFWS). Supplemental Volume: Species of Conservation Concern SC SWAP 2015. <http://www.dnr.sc.gov/swap/supplemental/birds/paintedbunting2015.pdf>)

Another notable bird is the Green heron. This species is ranked Highest Priority by the SC SWAP and three individuals were observed flying together along the lake margin during a point-count on Apr 29, 2017, suggesting breeding in the area and foraging along the lake. A flyover Wood Stork was also observed in late-April but is considered a non-breeder on the property, although they do breed in Horry county.

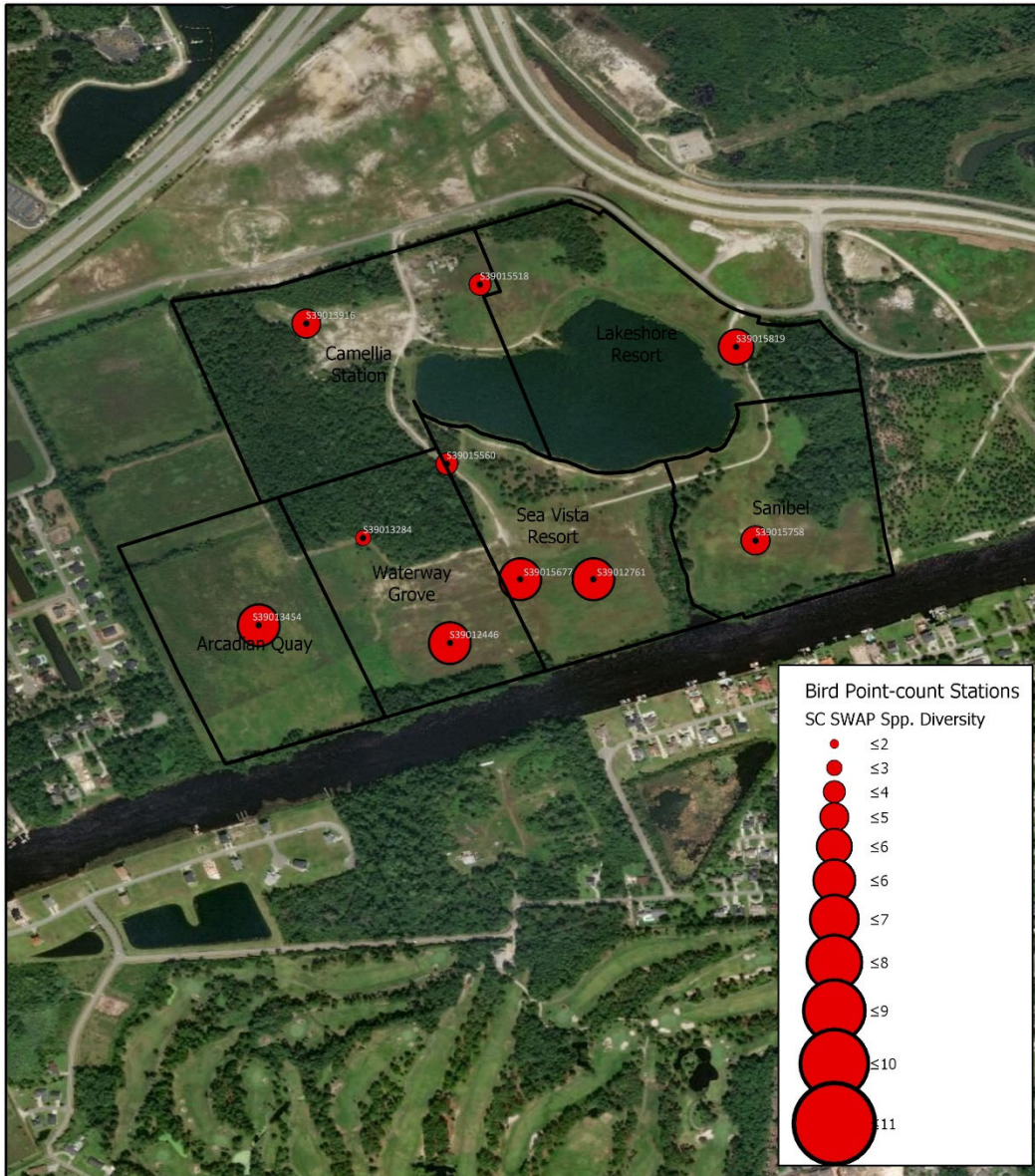
The Eastern Meadowlark is a priority species under the SC SWAP and ACJV and nests within the grasslands on the Sandridge properties. Grassland birds in general have suffered long-term population declines across the country, including the Eastern Meadowlark which has experienced a 3.2% annual rate of decrease from 1966 through 2003 in South Carolina. The meadowlark was observed displaying nesting behavior in the grassland areas of Camellia, Lakeshore Resort, Sea Vista, and Waterway Grove properties. Additional grassland bird areas, potentially suitable for Eastern Meadowlark, occur on Arcadian Quay and Sanibel.

Brown-headed Nuthatch and Red-headed Woodpecker are both priority species under the SWAP, ACJV, and BCC lists. The Brown-headed nuthatch is endemic to the pine forest of the Southeastern United States and has declined across much of its range. It utilizes open pines and available nest cavities. The Red-headed Woodpecker prefers open woods containing large trees and open understories or sparse shrub layers and has also suffered ongoing population declines.

Bird Species Observed During Breeding Season Point Counts

36 Total Spp. excluding likely non-breeders

Species	SWAP	ACIV	BCC
American Crow			
Barn Swallow			
Belted Kingfisher	1		
Blue Grosbeak	1		
Blue Jay			
Boat-tailed Grackle			
Brown Thrasher	1	1	
Brown-headed Cowbird			
Carolina Chickadee	1		
Carolina Wren	1		
Eastern Bluebird			
Eastern Kingbird	1	1	
Eastern Meadowlark	1	1	
Fish Crow			
Great Crested Flycatcher			
Green Heron	1		
gull sp.			
House Finch			
Indigo Bunting	1	1	
Killdeer			
Mississippi Kite		1	
Mourning Dove			
Northern Cardinal			
Northern Flicker		1	
Northern Mockingbird			
Northern Parula	1	1	
Northern Rough-winged Swallow			
Orchard Oriole	1	1	
Painted Bunting	1	1	1
Purple Martin	1		
Red-bellied Woodpecker	1		
Red-tailed Hawk			
Red-winged Blackbird			
Summer Tanager	1	1	
Tufted Titmouse			
Turkey Vulture			
Grand Total	15	10	1



SC SWAP Priority Bird Diversity
Bird Point-count Surveys (2016-2017)
Sandridge Conservation Properties
North Myrtle Beach, Horry County, South Carolina

0 0.2 Miles



Note: Easement and parcel boundaries
depicted on this map are for informational
purposes and do not represent legal boundary
surveys.
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3/12/2019



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Breeding Season Point Count Results with SC SWAP Priority Status

Property / Point / SC SWAP Priority / Species	Individuals Counted
Arcadian Quay	
S39013454	
High	
Brown Thrasher	1
Eastern Kingbird	1
Purple Martin	1
Moderate	
Carolina Wren	2
Northern Parula	1
Red-bellied Woodpecker	1
(blank)	
Eastern Bluebird	1
Fish Crow	1
Great Crested Flycatcher	1
Northern Cardinal	2
Red-tailed Hawk	1
Camellia Station	
S39013916	
Moderate	
Blue Grosbeak	1
Carolina Chickadee	3
Carolina Wren	2
Red-bellied Woodpecker	1
(blank)	
Blue Jay	1
Brown-headed Cowbird	1
Great Crested Flycatcher	1
gull sp.	2
Mourning Dove	1
Northern Cardinal	2
Northern Flicker	1
Northern Mockingbird	1
Tufted Titmouse	2
S39015518	
High	
Belted Kingfisher	1
Eastern Kingbird	3
Moderate	
Red-bellied Woodpecker	1
(blank)	
Barn Swallow	3
Boat-tailed Grackle	1
Brown-headed Cowbird	1
Fish Crow	1
Northern Cardinal	3
Northern Mockingbird	1
Red-winged Blackbird	5
Turkey Vulture	3
Lakeshore Resort	
S39015819	
High	
Eastern Kingbird	1
Eastern Meadowlark	2
Highest	
Painted Bunting	1
Moderate	
Carolina Wren	1
Orchard Oriole	1

(blank)	
Boat-tailed Grackle	1
Great Crested Flycatcher	1
Killdeer	1
Mississippi Kite	1
Red-winged Blackbird	1
Sanibel	
S39015758	
Highest	
Painted Bunting	2
Moderate	
Carolina Chickadee	2
Carolina Wren	1
Orchard Oriole	1
(blank)	
Barn Swallow	2
Blue Jay	1
Boat-tailed Grackle	5
Brown-headed Cowbird	1
Great Crested Flycatcher	1
gull sp.	13
Killdeer	1
Northern Cardinal	1
Red-winged Blackbird	2
Sea Vista Resort	
S39012761	
High	
Eastern Kingbird	1
Purple Martin	1
Highest	
Green Heron	3
Wood Stork	1
Moderate	
Blue Grosbeak	3
Carolina Wren	1
(blank)	
Barn Swallow	3
Boat-tailed Grackle	1
Brown-headed Cowbird	2
Great Crested Flycatcher	1
gull sp.	1
Killdeer	1
Mourning Dove	1
Northern Cardinal	1
Northern Rough-winged Swallow	1
Red-winged Blackbird	1
Tufted Titmouse	2
Turkey Vulture	1
S39015560	
High	
Eastern Meadowlark	1
Moderate	
Carolina Chickadee	1
Carolina Wren	1
(blank)	
Blue Jay	3
Great Crested Flycatcher	1
Northern Cardinal	1
Northern Mockingbird	1
Red-tailed Hawk	1
S39015677	
Highest	
Mallard	1

Painted Bunting	1
Moderate	
Blue Grosbeak	1
Carolina Wren	2
Indigo Bunting	1
Red-bellied Woodpecker	1
(blank)	
American Crow	1
Barn Swallow	2
Boat-tailed Grackle	1
Fish Crow	1
Great Crested Flycatcher	2
Killdeer	1
Northern Cardinal	1
Red-winged Blackbird	2
Tufted Titmouse	1
Turkey Vulture	1
Waterway Grove	
S39012446	
High	
Brown Thrasher	2
Eastern Kingbird	1
Highest	
Painted Bunting	1
Moderate	
Carolina Wren	1
Red-bellied Woodpecker	1
Summer Tanager	1
(blank)	
Blue Jay	1
Fish Crow	1
Great Crested Flycatcher	1
House Finch	2
Northern Cardinal	2
Turkey Vulture	2
S39013284	
Moderate	
Blue Grosbeak	1
Carolina Wren	1
(blank)	
Brown-headed Cowbird	1
Great Crested Flycatcher	2
gull sp.	2
Northern Cardinal	2



Generalized Species Locations
Sandridge Conservation Properties
 North Myrtle Beach, Horry County, South Carolina

0 0.1 0.2 Miles



Note: Easement and parcel boundaries depicted on this map are for informational purposes and do not represent legal boundary surveys.
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 3/13/2019



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Mammal Surveys

Direct Observations -The Southern Fox Squirrel was observed in an oak woodland area just west of the lake (Camellia and Sea Vista properties) on nearly every visit to the project area (see *Generalized Species Locations* map). This species is a conservation priority in the region and has declined in abundance and distribution throughout much of the southeastern US, primarily due to habitat modification and loss. Its habitat is mature pine and pine-oak forests with relatively open and herbaceous understory (minimal shrub cover) and mast producing hardwoods.

Acoustic Bat Surveys – Bats were surveyed using Wildlife Acoustics SM2BAT+ acoustic detectors with SMX-UT microphones. The microphones were mounted on 12' high painters-poles and the units were deployed at 7 locations across the 6 properties between late-April and August of 2016 & 2017 for a total of 21 detector-nights of sampling effort.

Recorder units were generally placed at the edge of forests or wooded areas within an opening (meadow, forest road, etc.) or near pooled water, where feeding bats are likely to concentrate. Acoustic filter settings and programming of the recorders followed the manufacturer's recommendations for USFWS protocol surveys for Indiana Bats (utilizing the current versions of the "Indiana.set" file). Wildlife Acoustics Kaleidoscope Pro software (5.1.8) was used to clean the full-spectrum WAV file recordings, automatically identify the bat species call, and provide a probabilistic statement about the certainty of the identification. The eastern North America classifiers (5.1.0) were used and were set to +1 More Accurate (the most conservative setting), which minimized false positive identifications. A probability of false identification value (or p-value) of <0.05 was chosen as a threshold for accepting the species identification and assuming presence on the property.

Kaleidoscope Pro Results:

- Five bat species were detected: Eastern Red Bat, Northern Yellow Bat, Seminole Bat, Evening Bat, and Tri-colored Bat
- Four species are ranked "Highest Priority" by the SC SWAP and one is under review by the USFWS for listing under the Endangered Species Act

Identifications for Eastern Red Bat, Northern Yellow Bat, and Seminole Bat had the strongest confidence for the project as a whole, whereas Evening Bat and Tricolored Bat were identified at only one location. Except for the Evening Bat, all detected species are ranked Highest Priority by the SC SWAP.

Eastern Red Bats forage and roost in a wide variety of habitats. Northern Yellow Bats are known to roost in clumps of Spanish moss or under old palm fronds near permanent water and forage over open areas such as fields and pastures and along lake and forest edges. The Seminole Bat roosts in Spanish moss or the canopy of live pines and forages over open areas. The Evening Bat is associated with deciduous forests and often forages near waterways. Tri-colored Bats are associated with forests and open woods, including early successional stands, and frequently forage over, and adjacent to water, and along forest edges. This species is currently under review by the USFWS for listing under the Endangered Species Act (Federal Register / Vol. 82, No. 243 / Wednesday, December 20, 2017 / Proposed Rules)

Eastern Red Bats and Seminole Bats are considered very difficult to distinguish using acoustic methods. However, both identifications are accepted here given both species have been captured on nearby properties and the habitat conditions on the Sandridge properties are suitable for both species.

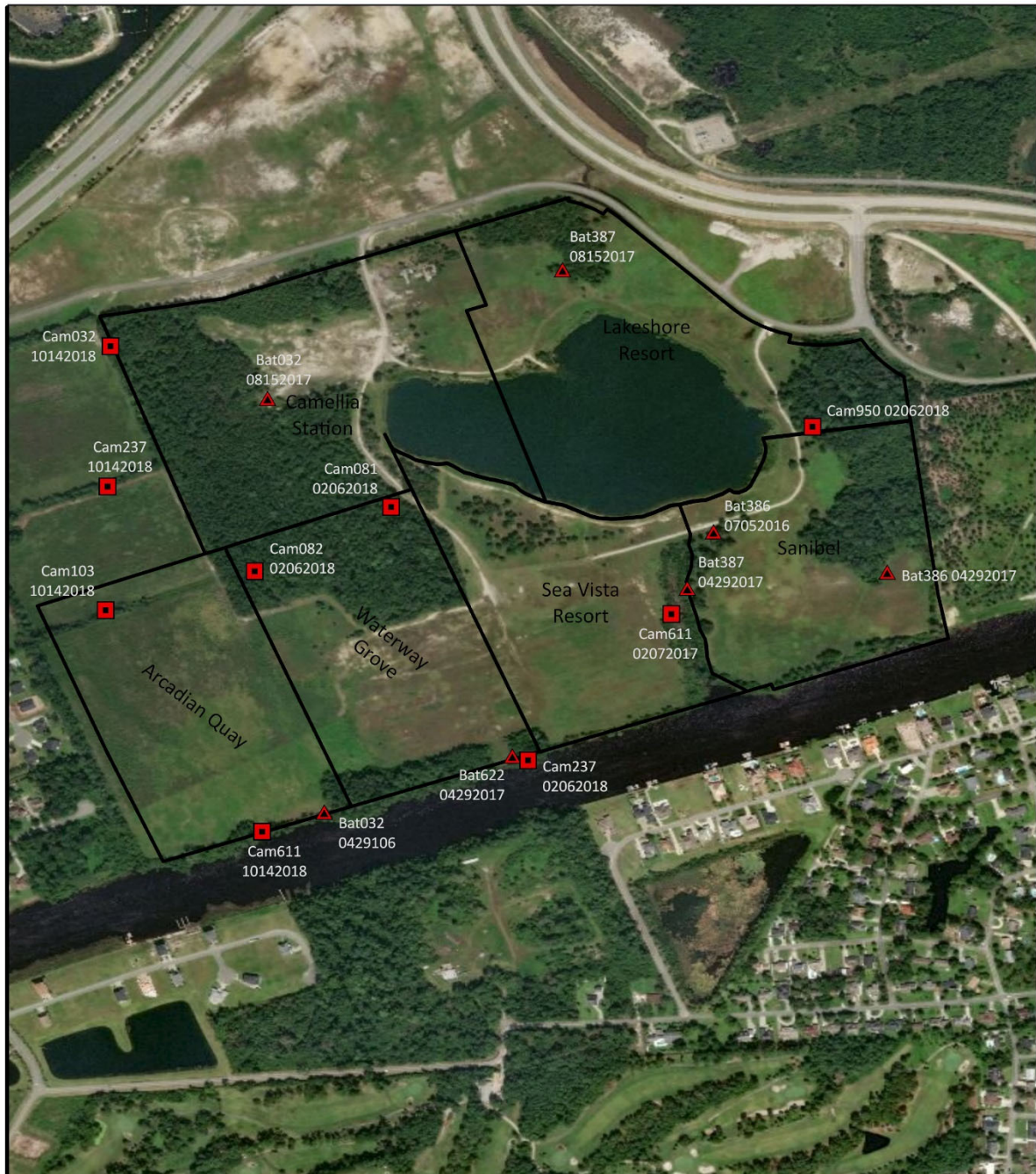
KALEIDOSCOPE 5.1.8 Bats of North America 5.1.0 S/A:+1 SANDRIDGE PROPERTIES 2016-2017															
UNIT/DATE	Big Brown Bat	Eastern Red Bat	Hoary Bat	Northern Yellow Bat	Silver-Haired Bat	Seminole Bat	Southeastern Bat	Little Brown Bat	Northern Long-Eared Bat	Indiana Bat	Tricolored Bat	Evening Bat	Brazilian Free-tailed Bat	NOID	NOISE
ALL	1	104	5	13	5	70		10			4	81		721	297
032_04292017		61	2	11	5	46		9			1	40		473	222
032_08152017												1		4	7
386_04292017		22				11						5		94	24
386_07052016	1	6	1									1		6	6
387_04292017		8	1	2		6		1				13		30	7
387_08152017						1					3	14		62	20
622_04292017		7	1			6						7		52	11
Presence P-Values:	Big Brown Bat	Eastern Red Bat	Hoary Bat	Northern Yellow Bat	Silver-Haired Bat	Seminole Bat	Southeastern Bat	Little Brown Bat	Northern Long-Eared Bat	Indiana Bat	Tricolored Bat	Evening Bat	Brazilian Free-tailed Bat		
ALL	1.00	0.00	0.10	0.00	0.20	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
032_04292017	1.00	0.00	0.68	0.00	0.05	0.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00		
032_08152017	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.55	1.00	
386_04292017	1.00	0.00	1.00	1.00	1.00	0.02	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
386_07052016	0.23	0.00	0.17	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
387_04292017	1.00	0.00	0.41	0.02	1.00	0.07	1.00	1.00	1.00	1.00	1.00	1.00	0.45	1.00	
387_08152017	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.04	0.00	1.00		
622_04292017	1.00	0.00	0.39	1.00	1.00	0.01	1.00	1.00	1.00	1.00	1.00	1.00	1.00		

Camera Trapping - I used baited camera traps to detect the presence of large- and medium size mammals. Nine camera stations were deployed across the properties during 2017 and 2018 using *Reconyx Hyperfire PC800* cameras. Each camera was attached to a tree with a cable lock approximately 2' above the ground. A perforated can of tuna was nailed to a tree approximately 3'-6' in front of the camera as bait to attract carnivore species (bears, weasels, mink, skunk, etc.). Peanut butter and jelly was also used as bait to attract rodents (woodrats, rabbits).

Ten species were detected on camera traps including Bobcat, Coyote, White-tailed Deer, and the Eastern Woodrat which is a priority species listed by the SC SWAP.

Camera Trapping Results – Sandridge Properties – 2017-2018

SPECIES	CAM611_0207 2017	CAM81_0206 2018	CAM82_0206 2018	CAM237_0206 2018	CAM950_0206 2018	CAM032_1014 2018	CAM103_1014 2018	CAM237_1014 2018	CAM611_1014 2018
Bobcat	X								
Common Raccoon	X	X	X	X	X			X	X
Coyote	X								
Deer Mouse			X						
Eastern Gray Squirrel	X			X					
Eastern Woodrat							X		
Marsh Rabbit	X								
Northern Flying Squirrel					X				
Virginia Opossum							X	X	X
White-tailed Deer						X			



Acoustic Bat and Camera Trap Surveys (2016-2018)

Sandridge Conservation Properties

North Myrtle Beach, Horry County, South Carolina



Note: Easement and parcel boundaries depicted on this map are for informational purposes and do not represent legal boundary surveys.
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3/12/2019



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Camera Trap Photographs – Sandridge Properties



CAM032_10142018 - White-tailed Deer



CAM103_10142018 – Eastern Woodrat



CAM611_02072017 - Bobcat



CAM611_02072017 - Coyote



CAM611_02072017 – Marsh Rabbit

Amphibians and Reptiles

One amphibian and five reptile species were encountered, including the American Alligator which is Federally Threatened by Similarity of Appearance. The properties certainly have many more amphibian and reptile species.

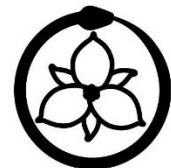
Photographs Taken On-Site by Chris Wilson
Sandridge Properties



Photograph Locations (2016-2019)
Sandridge Conservation Properties
North Myrtle Beach, Horry County, South Carolina



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1 - Painted Bunting - Sandridge Properties. April 30, 2017. 33°49'54.924" N 78° 41'36.683" W. Christopher R. Wilson



2 - Painted Bunting - Juv - Sandridge Properties. April 30, 2017. 33°50'6.078" N 78° 41'43.224" W. Christopher R. Wilson



3 - Eastern Meadowlark - Sandridge Properties. May 22, 2017. 33°49'59.442" N 78° 41'51.756" W. Christopher R. Wilson



4 - Eastern Kingbird - Sandridge Properties. May 22, 2017. 33°50'12.288" N 78°
41'52.751" W. Christopher R. Wilson



5 - Orchard Oriole - Sandridge Properties. May 22, 2017. 33°49'57.054" N 78°
41'48.641" W. Christopher R. Wilson



6 - Red-tailed Hawk - Sandridge Properties. February 16, 2019. 33°50'1.752" N 78°
42'15.516" W. Christopher R. Wilson



7 - Orange-crowned warbler - Sandridge Properties. February 16, 2019. 33°49'59.82" N 78°42'14.67" W. Christopher R. Wilson



8 - White-throated sparrow - Sandridge Properties. February 16, 2019. 33°49'59.82"
N 78°42'14.67" W. Christopher R. Wilson



9 - Savannah sparrow - Sandridge Properties. February 16, 2019. 33°50'10.985" N
78°41'50.154" W. Christopher R. Wilson



10 - Great Blue Heron - Sandridge Properties. August 15, 2017. 33°50'2.189" N 78° 41'45.17" W. Christopher R. Wilson



11 - Osprey - Sandridge Properties. August 15, 2017. 33°50'2.093" N 78°41'46.985"
W. Christopher R. Wilson



12 - Mississippi Kite - Sandridge Properties. August 15, 2017. 33°50'2.093" N 78° 41'46.985" W. Christopher R. Wilson



13 - Red-headed Woodpecker
- Sandridge Properties. August 15, 2017. 33°50'13.931" N 78°41'52.779" W.
Christopher R. Wilson



14 - Belted Kingfisher
- Sandridge Properties. February 16, 2019. 33°50'10.985" N 78°41'50.154" W.
Christopher R. Wilson



15 - Yellow-rumped Warbler - Sandridge Properties. February 16, 2019. 33°
50'13.902" N 78°42'5.79" W. Christopher R. Wilson



16 - Southern Fox Squirrel
- Sandridge Properties. February 07, 2017. 33°50'3.701" N 78°42'3.054" W.
Christopher R. Wilson



17 - Southern Fox Squirrel
- Sandridge Properties. May 23, 2017. 33°50'11.009" N 78°42'5.19" W. Christopher
R. Wilson



18 - Green anole - Sandridge Properties. February 27, 2017. 33°49'55.41" N 78° 41'49.5" W. Christopher R. Wilson



19 - Six-lined Racerunner - Sandridge Properties. April 29, 2017. 33°49'47.573" N 78° 42'9.402" W. Christopher R. Wilson



20 - Eastern Glass Lizard - Sandridge Properties. May 22, 2017. 33°50'2.477" N 78° 41'58.145" W. Christopher R. Wilson



21 - American Alligator - Sandridge Properties. May 22, 2017. 33°50'6.048" N 78°
42'5.022" W. Christopher R. Wilson

Observed Species Summary (2016-2019)

Group	Observed
Amphibian	1
Bird	65
Mammal	15
Reptile	5
Total Species	86

Observed Species (2016-2019)

Arcadian Quay, Camellia Station, Lakeshore Resort, Waterway Grove, Sanibel, and Sea Vista Resort Properties

GROUP	COMMON NAME	SCIENTIFIC NAME	FED STATUS	SC S-RANK	SC STATUS	SC SWAP PRIORITY	USFWS-BCC (BCR27)	ACJV (BCR27)	HABITAT	NOTES
Amphibian	Spring Peeper	<i>Pseudacris crucifer</i>								
Bird	American Crow	<i>Corvus brachyrhynchos</i>								
Bird	American Goldfinch	<i>Spinus tristis</i>								
Bird	American Kestrel	<i>Falco sparverius</i>				Highest	BCC27-YES	High Priority	nest cavity in large open area; extensive open areas with high perches for foraging	Winter only/ non-breeder
Bird	American Robin	<i>Turdus migratorius</i>								
Bird	Barn Swallow	<i>Hirundo rustica</i>								
Bird	Belted Kingfisher	<i>Megasceryle alcyon</i>				High			sandy vertical banks for nesting burrows; perches near water for foraging	
Bird	Black Vulture	<i>Coragyps atratus</i>								
Bird	Blue Grosbeak	<i>Passerina caerulea</i>		SNRB		Moderate			hardwood saplings or shrubs for nesting; open areas	
Bird	Blue Jay	<i>Cyanocitta cristata</i>								
Bird	Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>								
Bird	Boat-tailed Grackle	<i>Quiscalus major</i>								
Bird	Brown Thrasher	<i>Toxostoma rufum</i>		SNR		High		High Priority	moderate to dense brush and saplings	
Bird	Brown-headed Cowbird	<i>Molothrus ater</i>								

Bird	Brown-headed Nuthatch	<i>Sitta pusilla</i>		S4		Moderate	BCC27-YES	High Priority	mature, open pines for foraging; nest cavities in snags	
Bird	Carolina Chickadee	<i>Poecile carolinensis</i>		SNR		Moderate			mature woodlands with dead snags for nest cavities; will use bird boxes	
Bird	Carolina Wren	<i>Thryothorus ludovicianus</i>		SNR		Moderate			woodland thickets; leaf litter; cavities or ledges for nesting; will use bird boxes and many other human material	
Bird	Cedar Waxwing	<i>Bombycilla cedrorum</i>								
Bird	Chimney Swift	<i>Chaetura pelagica</i>		SNRB		High		High Priority	open areas for foraging; cavity for nesting (often chimneys)	
Bird	Chipping Sparrow	<i>Spizella passerina</i>								
Bird	Common Yellowthroat	<i>Geothlypis trichas</i>								
Bird	Cooper's Hawk	<i>Accipiter cooperii</i>								
Bird	Eastern Bluebird	<i>Sialia sialis</i>								
Bird	Eastern Kingbird	<i>Tyrannus tyrannus</i>		SNRB		High		High Priority	open areas with scattered trees and other perches	
Bird	Eastern Meadowlark	<i>Sturnella magna</i>		SNR		High		High Priority	short to medium-height grasses for nesting and foraging	
Bird	Eastern Towhee	<i>Pipilo erythrophthalmus</i>		SNR		High		High Priority	brushy areas; woodland margins and understory	
Bird	Fish Crow	<i>Corvus ossifragus</i>								
Bird	Golden-crowned Kinglet	<i>Regulus satrapa</i>		S4		Moderate			winter in coniferous or mixed woodlands	Winter only/ non-breeder
Bird	Great Blue Heron	<i>Ardea herodias</i>		SNRB,SNRN		Moderate			shallow water bodies or shorelines for foraging; trees over or surrounded by water for nesting	
Bird	Great Crested Flycatcher	<i>Myiarchus crinitus</i>								
Bird	Green Heron	<i>Butorides virescens</i>		SNRB,SNRN		Highest			shallow water bodies and shorelines for foraging; dense shrubs and thickets near water for nesting	
Bird	House Finch	<i>Haemorhous mexicanus</i>								

Bird	Indigo Bunting	<i>Passerina cyanea</i>		SNRB		Moderate		Moderate Priority	woodland margins; shrubby thickets in openings	
Bird	Killdeer	<i>Charadrius vociferus</i>								
Bird	Mallard	<i>Anas platyrhynchos</i>		SNRB,SNRN		Highest			freshwater boides for foraging; shallow water with accessible plants and invertebrates	Winter only/ non-breeder
Bird	Mississippi Kite	<i>Ictinia mississippiensis</i>						Moderate Priority		
Bird	Mourning Dove	<i>Zenaida macroura</i>								
Bird	Northern Cardinal	<i>Cardinalis cardinalis</i>								
Bird	Northern Flicker	<i>Colaptes auratus</i>						High Priority		
Bird	Northern Mockingbird	<i>Mimus polyglottos</i>								
Bird	Northern Parula	<i>Setophaga americana</i>				Moderate		Moderate Priority	mature, moist forests; hemlock forests in mountains and swamps or bottomlands with Spanish moss near coast	
Bird	Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>								
Bird	Orange-crowned Warbler	<i>Oreothlypis celata</i>								Winter only/ non-breeder
Bird	Orchard Oriole	<i>Icterus spurius</i>		S5?B		Moderate		Moderate Priority	orchard-like sttings; woodland margins	
Bird	Osprey	<i>Pandion haliaetus</i>								
Bird	Painted Bunting	<i>Passerina ciris</i>		SNRB		Highest	BCC27-YES	Highest Priority	woodland margins; dense thickets in openings	
Bird	Pine Warbler	<i>Setophaga pinus</i>				Moderate		Moderate Priority	typically middle to mature pine forests	
Bird	Purple Martin	<i>Progne subis</i>		SNRB		High			forage over open areas near or over water; nest in man-made houses or gourds	
Bird	Red-bellied Woodpecker	<i>Melanerpes carolinus</i>		SNR		Moderate			open, mature woods with dead snags for nest cavities; man-made poles with cavities	

Bird	Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>		SNR		Moderate	BCC27-YES	High Priority	open, mature woods with dead snags for nest cavities; man-made poles with cavities	
Bird	Red-shouldered Hawk	<i>Buteo lineatus</i>		SNR		Moderate		Moderate Priority	wet or moist hardwood forests for nesting and foraging	
Bird	Red-tailed Hawk	<i>Buteo jamaicensis</i>								
Bird	Red-winged Blackbird	<i>Agelaius phoeniceus</i>								
Bird	Ruddy Duck	<i>Oxyura jamaicensis</i>								Winter only/ non-breeder
Bird	Savannah Sparrow	<i>Passerculus sandwichensis</i>								Winter only/ non-breeder
Bird	Song Sparrow	<i>Melospiza melodia</i>								
Bird	Summer Tanager	<i>Piranga rubra</i>		S?		Moderate		Moderate Priority	dry, mixed woodlands	
Bird	Tree Swallow	<i>Tachycineta bicolor</i>								
Bird	Tufted Titmouse	<i>Baeolophus bicolor</i>								
Bird	Turkey Vulture	<i>Cathartes aura</i>								
Bird	White-eyed Vireo	<i>Vireo griseus</i>		S4?B		Moderate		Moderate Priority	dense, moist thickets	
Bird	White-throated Sparrow	<i>Zonotrichia albicollis</i>						High Priority		Winter only/ non-breeder
Bird	Wilson's Snipe	<i>Gallinago delicata</i>				High			boggy areas; wet meadows with short grass; along pond and marsh margins for probe foraging	Winter only/ non-breeder
Bird	Wood Duck	<i>Aix sponsa</i>		SNRB,SNRN,SNRM		High			nest cavities near fresh water; emergent vegetation; ponds, lakes, rivers, swamps, BEAVER PONDS	
Bird	Wood Stork	<i>Mycteria americana</i>	T	S1S2	Federally Threatened and State Endangered	Highest		Highest Priority	shallow water with concentrated prey (6-10 in. deep) for foraging; trees over or surrounded by water for colonial nesting, particularly cypress swamps and trees on small islands	Breeds in the area but not on property

Bird	Yellow-rumped Warbler	<i>Setophaga coronata</i>								Winter only/ non-breeder
Mammal	American Beaver	<i>Castor canadensis</i>								
Mammal	Bobcat	<i>Lynx rufus</i>								
Mammal	Common Raccoon	<i>Procyon lotor</i>								
Mammal	Coyote	<i>Canis latrans</i>								
Mammal	Eastern Gray Squirrel	<i>Sciurus carolinensis</i>								
Mammal	Eastern Red Bat	<i>Lasiurus borealis</i>		SNR		Highest			thinned stands; roost on smaller branches or twigs, often in the hardwood tree canopy; may roost in leaf litter	
Mammal	Evening Bat	<i>Nycticeius humeralis</i>								
Mammal	Marsh Rabbit	<i>Sylvilagus palustris</i>								
Mammal	Northern Yellow Bat	<i>Lasiurus intermedius</i>		S?	Of concern, State	Highest			forage over open areas such as fields, pastures, golf courses, marshes, and along lake and forest edges; roost in clumps of Spanish moss or under old palm fronds	
Mammal	Eastern Red Bat	<i>Lasiurus borealis</i>		SNR		Highest			thinned stands; roost on smaller branches or twigs, often in the hardwood tree canopy; may roost in leaf litter	
Mammal	Seminole Bat	<i>Lasiurus seminolus</i>		SNR		Highest			roost in large pines located near forested corridors; may roost in leaf litter	
Mammal	Southeastern Fox Squirrel	<i>Sciurus niger niger</i>		S4	Of concern, State	Moderate			cavity trees	
Mammal	Tricolored Bat	<i>Perimyotis subflavus</i>		SNR		Highest			abandoned mines and caves, bridges, buildings	
Mammal	Virginia Opossum	<i>Didelphis virginiana</i>								
Mammal	White-tailed Deer	<i>Odocoileus virginianus</i>								

Reptile	American Alligator	<i>Alligator mississippiensis</i>	T(S/A)	S5	Federal Threatened	Moderate			large river swamps, lakes, ponds, coastal impoundments, abandoned rice fields, brackish water marshes, and estuarine tidal creeks; juveniles will use Carolina bays and other seasonal wetlands; shallow waters preferred	
Reptile	Eastern Racer	<i>Coluber constrictor</i>								
Reptile	Eastern Glass Lizard	<i>Ophisaurus ventralis</i>								
Reptile	Green Anole	<i>Anolis carolinensis</i>								
Reptile	Six-lined Racerunner	<i>Aspidoscelis sexlineata</i>								