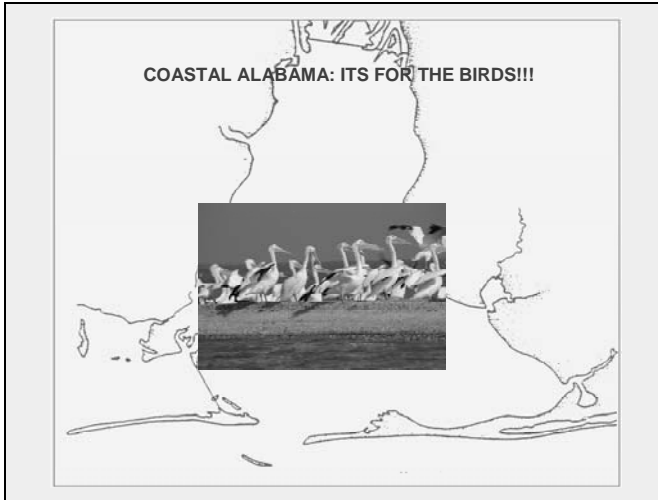


Slide 1



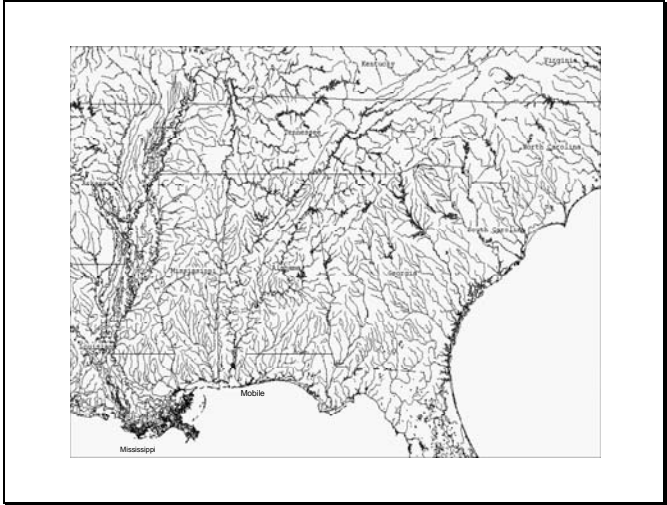
The Avian fauna constitutes the second largest class of vertebrates in the world today after Chondrichthyes and Osteichthyes (fish). There are over 8,600 species of birds in the world today occupying almost every climate and niche. Adaptations in physiological systems as well as feathers as seen in the short tiny feathers of penguins to the naked heads of vultures, has enhanced the survivability of this Class.

Slide 2



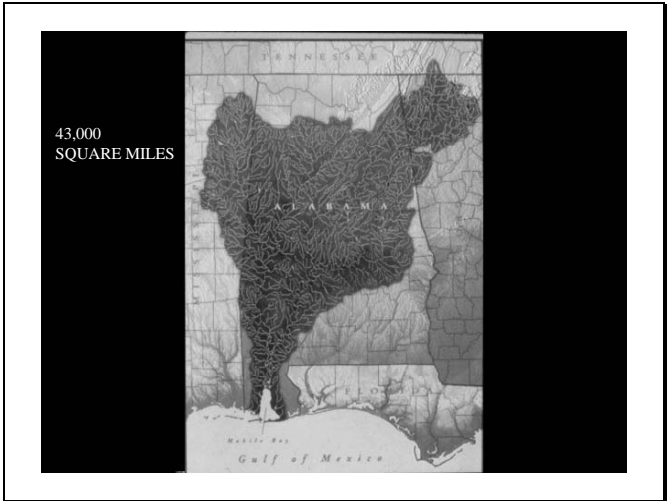
Many species of birds are known as colonial nesters. Colonial nesting indicates that the species or mixed species only nest in large numbers. Colonial nesting offers a greater protection from predators as well increasing the ability to find food resources. Most colonial nesters (herons and egrets, gulls, terns, pelicans, etc.) utilize the same nesting site year after year. In many cases the large number of nesting birds and their offspring create such a heavy nitrogen/phosphorus loading on the vegetation they are nesting on that they kill the vegetation through over fertilization and end up moving to a near-by site to reestablish the colony location. For year large wading colonial nesting herons and egrets have been considered to be good indicators of habitat quality. The demands of large colonies foraging throughout the immediate nesting area reflects the areas ability to provide quality food resources over time. In coastal Alabama there are two major colonial nesting sites, one is Cat Island which consists of large wading birds in the Order Ciconiiformes and the family Ardeidae and the Order Pelicaniformes and the family Pelecanidae. On average the adults lay two to three eggs with at least two hatching. This requires a tremendous resource to feed these young even though only one will reach fledgling stage (flight capable). Adults feed within the Mobile Bay estuarine ecosystem returning to the nest site with prey items. By testing prey items for contaminants one can get a general reflection of the chemical makeup (pollution) within the local ecosystem. The Cat Island nesting site has been established on that island for in excess of 60 years. Gaillard Island the nesting site for Brown Pelicans is a man-made island and has supported colonial nesting for the past 20 years.

Slide 3



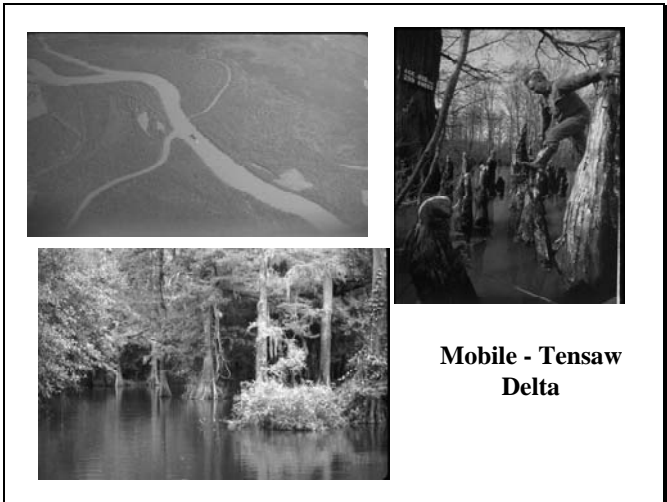
The coastal habitats of the Gulf of Mexico are not only critical to the large colonial nesters that establish colonies in the spring and nest throughout the summer but the coastal habitat is the first refuge for trans-gulf migrants. Trans-gulf migrant consists of song birds of North America such as buntings, tanagers, warblers, cuckoos and many more species that over winter in Central and South America and then fly non-stop to North America in the Spring. The next two maps show details of the large riverine systems that comprise nesting stop-over and an avenue for song birds to migrate north. On the left hand side of the map you can see the Mississippi River. This river basin is the largest in North America with its terminus end in the Gulf of Mexico. Moving to the right on the map you will notice the Mobile system. Mobile Bay's drainage basin is the 4th largest by volume in North America with 43 billion gallons of water per day terminating in Mobile Bay then the Gulf of Mexico. These two river valleys offer song birds protection from predators and an avenue north that is abundant with food.

Slide 4



The dark green area encompasses the Mobile Bay Watershed. You should note that parts of Mississippi, Georgia, and Tennessee flow into this watershed. The Mississippi and Mobile systems are drowned river valley estuaries and are noted for sediment loaded waters which causes them to be brown. These systems provide tremendous amounts of food and nutrients for coastal larval organisms. Unfortunately they also are avenues for waste water, fertilizers, insecticides and other chemical contaminants. These are but a few of the products that contribute to Dead Zones in the Gulf of Mexico.

Slide 5



The Mobile Tensaw Delta is filled with Gum trees, cypress, river maples, water oaks, and a plethora of grasses and sedges. Currently 140,000 acres of bottom-land hardwood in this basin has been set aside and is owned by the State of Alabama. It has been purchased within a program known as Forever Wild which sets large tracts of land aside for the general public for ever. This lush habitat provides an extensive food resource for avian fauna, acts as a natural filter as water moves through it and acts as a retention system during flood events.

Slide 6



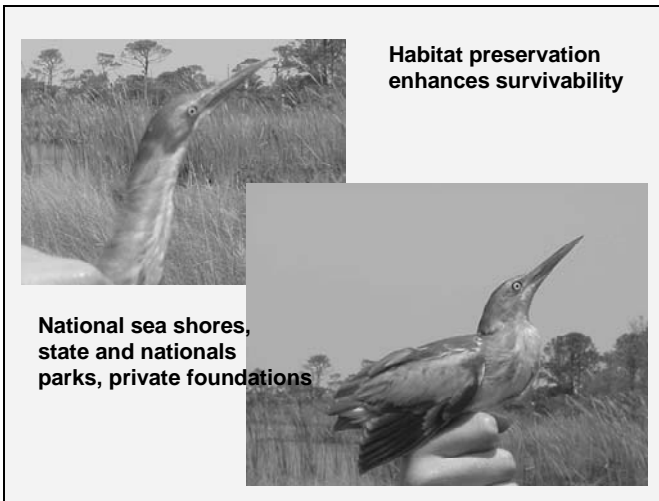
In early May these migrants, top left and right (rose breasted grosbeak, and scarlet tanager (bottom right) were resting after a non-stop flight from Central and South America. The entire chain of islands that stretch from the mouth of Mobile Bay to the Mississippi provide stop-over habitat to these birds.

Slide 7



Nightjars, member of the family of Goatsuckers represented by the common night hawk seen above, and other members of the family (Poor Will, Chick-Will's Widow, and the Whip-Poor-Will are nocturnal insect eaters. They need uninhabited space for nesting and the remote islands off Alabama and Mississippi provide this habitat.

Slide 8



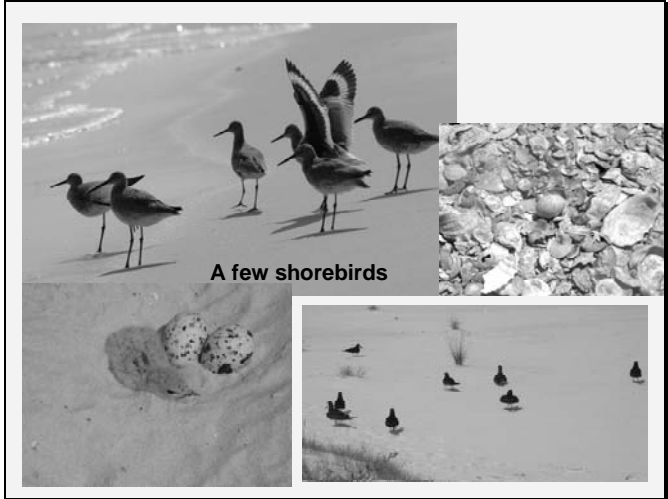
Habitat is key to maintaining breeding populations. With increased demand on coastal property more wet lands and needs to be set aside if birds such as this juvenile American Bittern are

Slide 9



The 1970's and 80's saw the decline on three unique species of birds along the Gulf of Mexico coast. The Brown Pelican, the American Osprey, and the Southern Bald Eagle populations declined to levels that would list them as threatened. This came about due to an insecticide known as DDT which breaks down in the environment into DDE which becomes persistent and incorporated in fish. These fish eating birds would accumulate this chemical resulting in a disruption of the egg-shell gland in females of this species. Egg shell thinning resulted in failed nests and no new offspring. Today, major conservation efforts and laws prohibiting the use of these chemical have resulted in large increases in these three species. In coastal Alabama there are eight Bald Eagle nests that have been established and produced offspring over the past five years. The barrier islands provide vital habitat approximately one hundred osprey and the Brown Pelican has established a nesting site on an Army Corps of Engineers dredge spoil island in the center of Mobile Bay.

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Long leg Willets, Least Tern eggs in oyster shell has and Black Skimmer chicks on the sand are all part of the coastal birds population.

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Black-necked Stilts

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**Mobile Bay National Estuary Program**  
**Colonial Nesting Sites Within the NEP**


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**Upper Delta Bottle Creek Area, Conservation Officer Keith Gauldin**



The 145,000 acres of bottom-land hardwoods found in the Mobile Tensaw delta in Alabama, the Escatapaw and the Pearl river valleys in Mississippi and the Atchafalaya river basin in Louisiana provided protection and habitat for both migrant song birds passing through, as well as nesting habitat for summer avian residents.

Slide  
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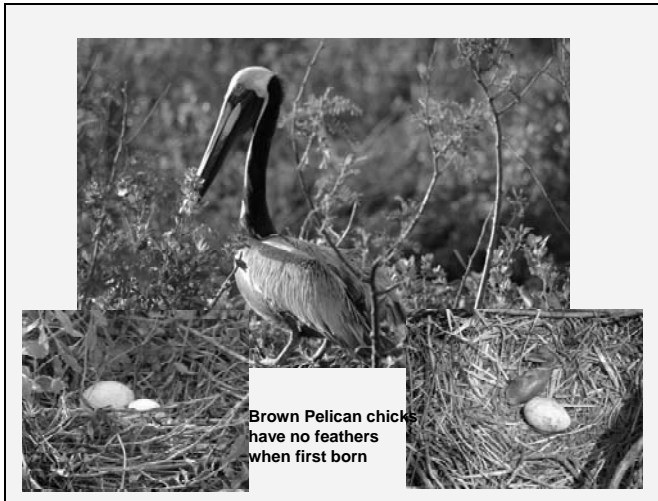
**Mixed heron and egret colony in button bush over 1,000 birds**

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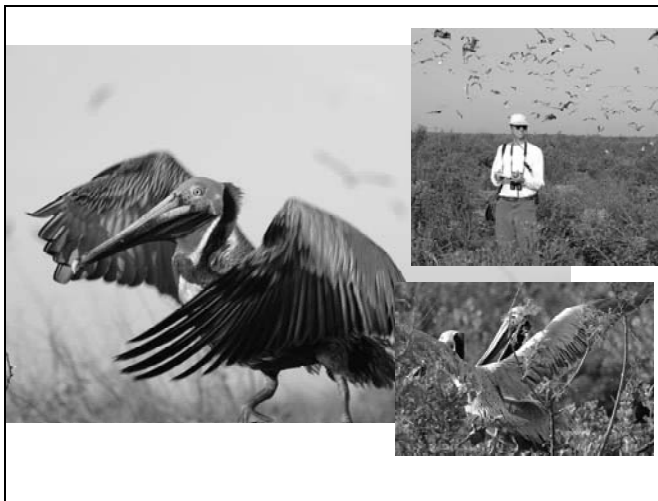


Gaillard Island, a man-made spoil island is a nesting site for 10,000 Brown Pelicans, 8,000 Terns, 2,000 Laughing Gulls and about 1,000 heron and egrets.

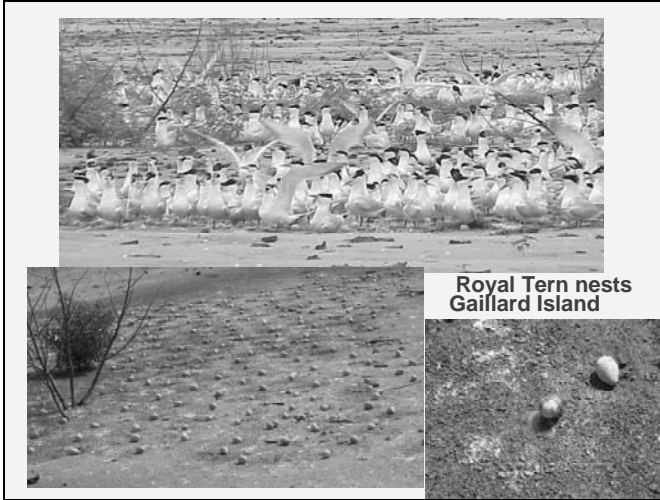
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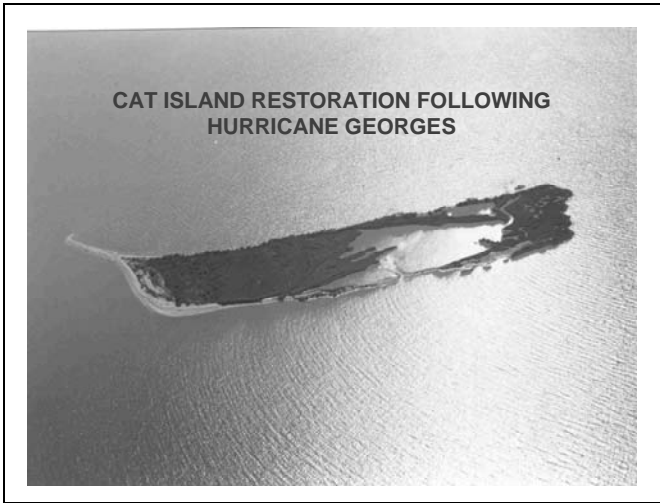


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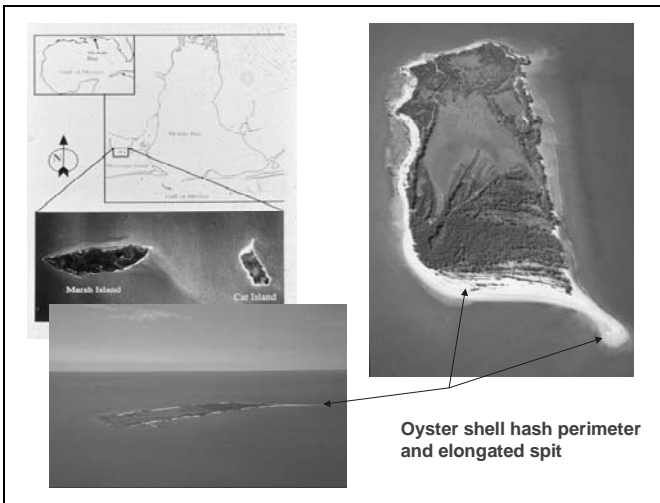
Dense colonial nesting offers protection for these Royal Terns. Those nest outside the colony are easy prey for Laughing Gulls

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Cat Island has been the site of nesting for herons and egrets for the past 80 years. Although hurricanes have affected the island over the years none were as destructive as Hurricane Georges in which the nesting vegetation itself was uprooted from the island.

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Average height of the vegetation during nesting season is six feet.

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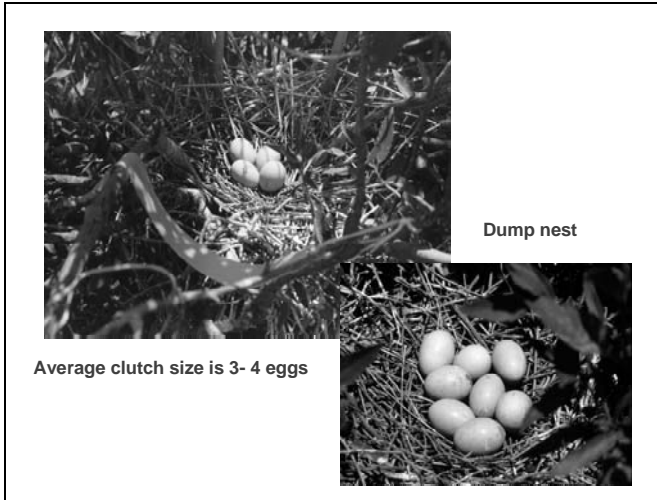


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Table 7. Percentages of nests in various clutch sizes that hatched all eggs for each species each year. Included is the mean percentage of clutches for each species for all years.

SP <sup>1</sup>	% OF 1 EGG CLUTCHES	% OF 2 EGG CLUTCHES	% OF 3 EGG CLUTCHES	% OF 4(+) <sup>3</sup> CLUTCHES
MEAN ALL YEARS				
LH	60.0 (10)	74.5 (103)	73.3 (329)	49.3 (69)
SN	55.5 (9)	73.8 (42)	72.7 (110)	57.1 (77)
CE	37.5 (8)	87.5 (48)	57.0 (121)	25.0 (8)
LB	-. (0)	83.3 (6)	70.5 (17)	70.1 (10)

<sup>1</sup>SP = Species

<sup>2</sup>( ) = Total number of nests in specific clutch size

<sup>3</sup>(+) = Clutches that contained 4 or more eggs

Clutch size is the number of eggs laid per nest. Ornithologists are concerned with the number of eggs laid versus number of chicks that hatch as compared to the number of chicks that fledge (fly out of nest).

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The species of concern in this table are (LH - Louisiana Heron, SN Snowy Egret, CE - Cattle Egret, LB- Little Blue Heron). Note the percent success in 2 egg versus 3 and 4 egg clutches.

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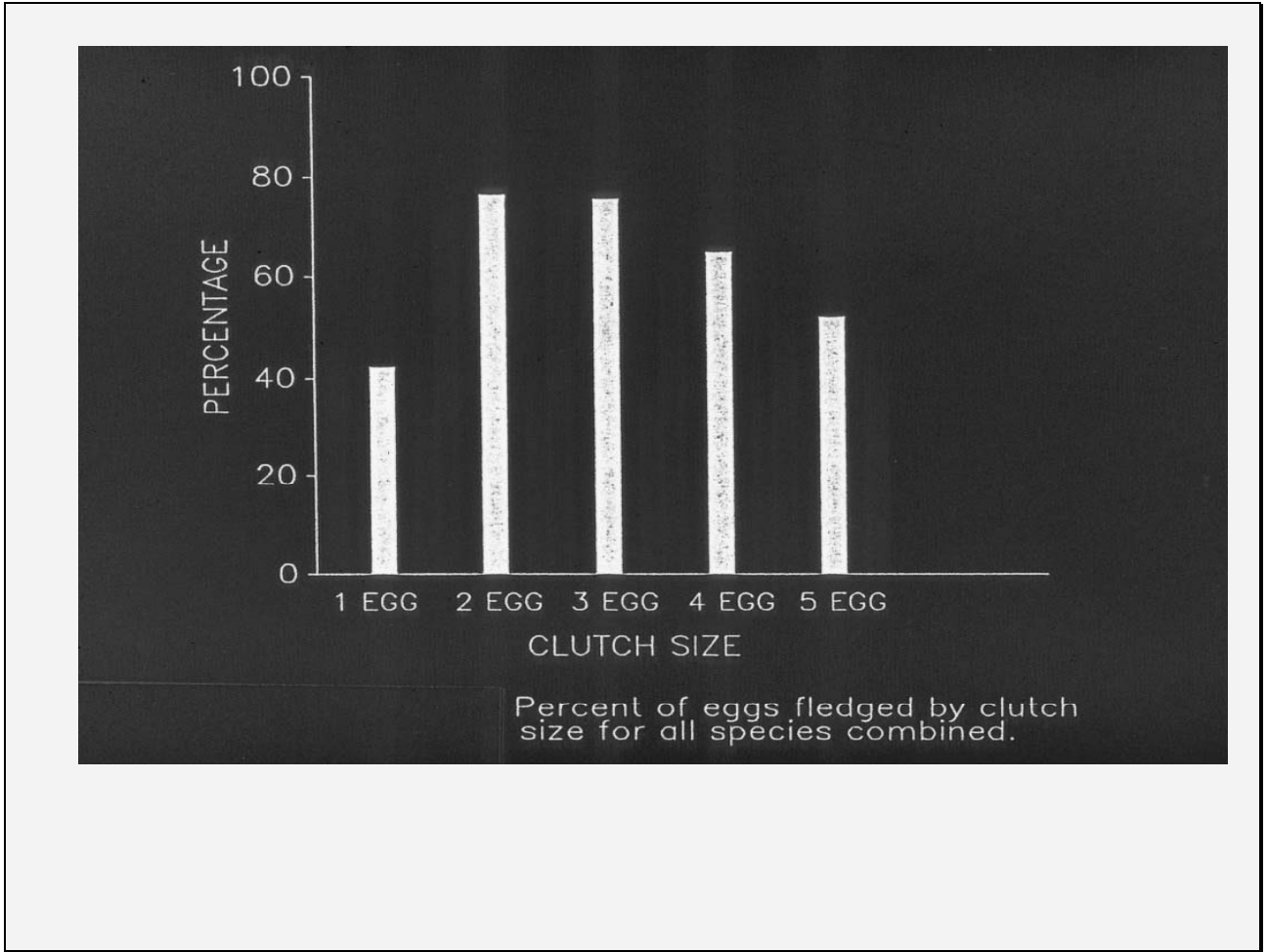


Table 5. Nests in which entire clutch failed. The total percentage of entire clutch failures compared to total nests.

SPECIES	1985	1986	1987	1988	TOTAL NESTS	% OF TOTAL NESTS
LH	6	2	6	26	511	7.8%
SN	2	4	4	5	238	6.3%
CE	11	12	6	0	185	15.6%
LB	2	0	-	2	33	12.1%

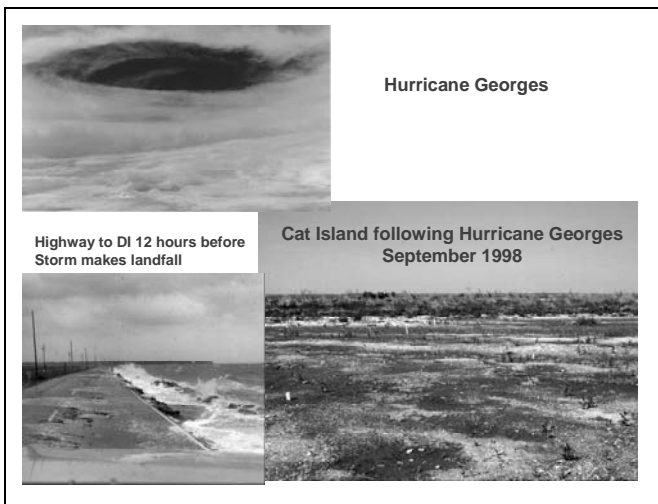
Very few species have total nest failures. In most cases total nest failures are associated with early spring thunderstorms and rain in which temperatures drop during a storm and the chicks become water logged from intense rain.

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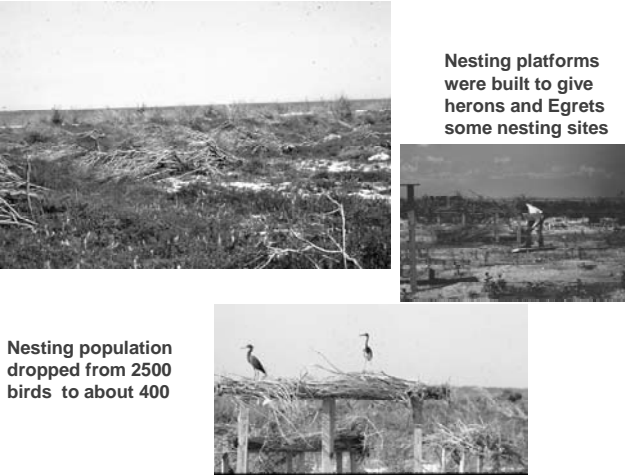
This graph shows that the greatest success is those nests that have 2,3, and 4 eggs per clutch. In the majority of colonial nesting birds the female will lay more eggs than can be supported by the adults. These birds tend to be indeterminate layers with varying number of eggs in the nest. In addition most of these birds lay eggs alternating between one and two days between laying. All of this is a strategy to insure at least one adult replacement.

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Hurricane Georges impacted Cat Island like no other recorded storm in which the nesting habitat was totally removed from the island.


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Nesting platforms were built to give herons and Egrets some nesting sites

Nesting population dropped from 2500 birds to about 400

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Groundsel tree      Marsh elder

Grow out site at the sea lab

Following the storm two plant species, Iva and Baccharis, marsh elder, and groundsel tree, were grown from cuttings in a lab in Florida and then grown out to a height of 3 feet on Dauphin Island. This resulted in planting 10,000 new plants to give the birds nesting habitat.

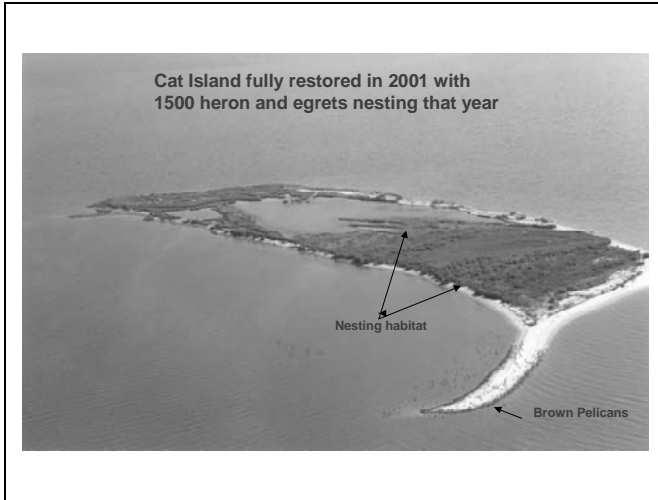
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Power auger helped reduce labor

Auburn University landscape architect class

Slide  
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Adding to the importance of colonial nesting sites, rare species can be seen periodically in these habitats.

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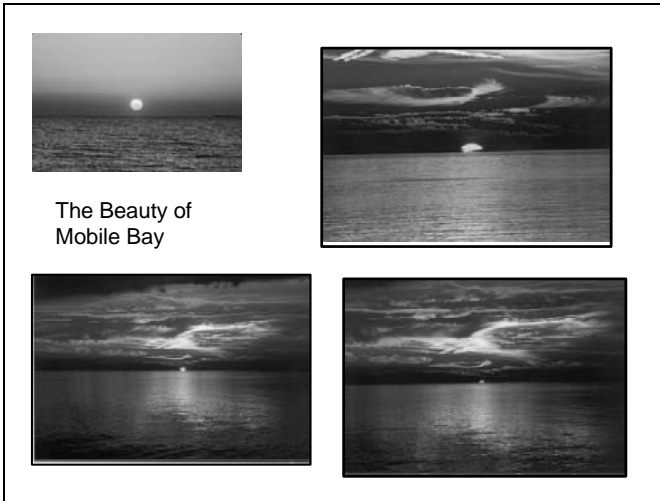
Captain Rodney Collier assists a Clapper Rail crossing West Fowl River. The White Ibis and Little Blue Heron are common nesters along the Gulf of Mexico. They are colonial nesters requiring habitat for large communities.

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From top left to bottom right, Yellow Crowned Night Heron, White Pelicans, White Ibis, Snowy Egret, and Tricolor Heron are seen on Cat Island and other barrier islands through out the Gulf of Mexico. White Pelicans utilize the barrier islands during the winter but breed in Utah, Minnesota, and Wisconsin during the summer.

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Colonial nesting birds and the sites they inhabit provide a mechanism to measure the quality of the habitat. Long term data from these sites provide base-line information that can be used to compare changes in the environment. Since colonial nesters are feeding from the immediate habitat any contaminant would be brought back to the nest and feed to the young. If a large number of chicks are found dead then testing can be done to see if its related to potential pollutants in the water. Continued success of colonial nesting also reflects the abundance and diversity of food resources from the immediate nesting habitat. It takes tons of estuarine food resources to feed the total number of young growing. Mortality normally takes place well after the birds have fledged. Repeating earlier facts, habitat is one of the most critical needs for colonial nesting birds. With the rapid and continued growth of man along all or the United States coast lines it is imperative that more habitat is set aside in perpetuity to guarantee successful colonial nesting habitats.