PHASE II: PRESENT LEVELS OF BIRDS AND MAMMALS IN THE COASTAL ZONE

Dan C. Holliman, Ph.D.
Department of Biology
Birmingham-Southern College
Birmingham, Alabama 35254

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ABSTRACT

Section A. Status and habitat of the Alabama gulf coast beach mouse (Peromyscus polionotus ammobates and P.p. trissyllepsis). The range for these two subspecies has been determined. Estimations of population size and description of habitat is given. The status of this species is discussed. A management plan is recommended.

Section B. Breeding bird survey. Density, diversity and distribution data is given for the 1982 breeding season. Population indices are given for 91 species. Locations of critical habitats are given.

Section C. Wintering bird survey. Density and diversity data have been correlated with habitat preference for 98 species. Acreage values and other ecological parameters have been computed.

FINAL REPORT

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SECTION A.

Status and habitat of the Alabama Gulf Coast Beach Mouse (*Peromyscus polionotus ammobates* and *P. p. trissyllepsis*)

INTRODUCTION

More concrete information is needed concerning the distribution and biology of beach mice along the Alabama gulf coast. Their habitat is being impacted by development and recreational activities. The storm of September 13, 1979, has contributed to the alteration and destruction of sand dunes and hence the survival of sea oats which is the principal food of this mammal. Historically, the beach mouse has been recorded along the sand dune system closest to the beach between Mobile Bay and the Alabama-Florida state line. Howell (1909, 1921) first described this rodent as being confined to the "drifting sand dunes" along the Baldwin County coast. He recorded it around the outer beach near Bon Secour, but did not trap this species from Dauphin Island or any location west of Mobile Bay. Anderson (1960) collected 23 specimens from the Gulf Shores-Romar Beach area that were referable to *P.p. albifrons*. Holliman (1963) collected seven specimens of *P.p. albifrons* from the Fort Morgan area. Bowen (1968) later reworked this group and assigned the population from Mobile Bay to Alabama Point and on Ono Island to *P.p. ammobates*. He referred the population east of Perdido Inlet = Florida Point to the Alabama-Florida state line to

P. p. trissyllepsis. Linzey (1970) collected three specimens of P. p. ammobates at the Gulf Shores State Park south of Alabama highway 182. He did not locate trissyllepsis west of the Alabama-Florida state line. Both ammobates and trissyllepsis were listed as endangered on the state list by Keeler (1972) and later by Boschung (1976) because of the lack of distributional and ecological data. Holliman (1979) included ammobates and trissyllepsis as two of four endangered mammalian species occurring in the Alabama Coastal zone and recommended that research be accomplished relative to their habitat preference and population dynamics. Humphrey and Barbour (1981) cited locations for 19 specimens of trissyllepsis that were collected in Alabama. During their pre-storm study, they estimated that 26 trissyllepsis lived in 2.6-km of habitat of Gulf Beach State Park (Florida Point), Alabama, and that 52 individuals lived in 10.4-km of habitat at Gulf Island National Seashore, Florida. It was the opinion of these authors that these 78 individuals comprised the entire subspecies of trissyllepsis. Fujita et al (1980) and Holliman (1981) described the September 13, 1979, storm damage to coastal habitat.

The purpose of this study was to: (a) locate the remaining range of these two populations and (b) to assess their status in Alabama.

DESCRIPTION OF HABITAT

A digital plaimeter at the NASA facility at Bay St. Louis, Mississippi was used to quantify the pre-storm beach-dune complex as mapped by Vittor and Stout, Table 1.

Post storm maps and aerial photography were correlated with ground truth surveys to plot the surviving vegetative cover. The acreage values (Table 2) for these unflooded areas were measured from USGS storm maps (1980).

The September 13, 1979 storm either reworked or destroyed the Alabama dune system. Sand displacement was generallly towards the northwest with redepositions occurring on the mainland slopes of secondary and tertiary dune lines. In Alabama, washovers from the Gulf completely destroyed the primary sand dune system at Romar Beach, Gulf Shores State Park, Gulf Shores, Pine Beach, Gulf Highlands, and Fort Morgan. Only remnants of the secondary and teritary lines were left with sand moved inland beyond the beach-dune complex. At Perdido Inlet=Florida Point (U.S. Geologic Survey, 1980), the maximum water level during the storm reached 3.9-m with a 2.44-m level being sustained for two hours. In Gulf Shores, the maximum water level was 3.38-m with a 2.74-m level being maintained for two hours. The maximum water level for the Fort Morgan area was 2.96-m with a 2.44-m level being recorded for three hours. The plant communities on all dunes less than 3.5-m were destroyed. Dune ridges that exceeded 3.5-m were left relatively undisturbed. It was only on the unflooded elevations (Table 2) that beach

Table 1. Pre storm acreage of beach-dune habitat in Alabama

Location		Hectares	(acres)
Ono Island		105.3	(260.0)
Florida Point to Alabama-Florida state line		43.0	(106.0)
Alabama Point to Little Lagoon (Part)		1,089.7	(2,692.0)
Little Lagoon (Part) to Fort Morgan (Part)		796.4	(1,967.0)
Fort Morgan (Part)		49.0	(121.0)
	Total	2,083.4	(5,146.0)

Table 2. Acreage values for unflooded areas along Alabama Coast, September 13, 1979

Location		Hectares	(acres)
Fort Morgan State Park		11.9	(29.4)
Gulf Highlands		40.2	(99.3)
Pine Beach		45.8	(113.1)
Gulf State Park - Romar Beach		14.9	(36.8)
Florida Point - Ono Island		47.0	(116.1)
	Total	159.8	(394.7)

mouse habitat remains.

FORT MORGAN STATE PART

The majority of this tract is located within the Fort Morgan State Park. It extends eastward beyond the park boundary for approximately 3/4 kilometers. Here it is limited by an area of beach front houses. A single and sometimes a double row of low dunes (less than 2-m) parallel the Gulf Beach. These low dunes are 50-70-m from the high tide line. Uniola paniculata and Panicum amarum are the most common plants. A vegetated flood basin on the mainland side of these dunes supports Panicum amarum, Panicum repens, Andropogon maritimus (virginicus ?), Distichlis spicata, Serenoa repens. This area is inundated at times by standing water. A relic line of sand dunes (14-m high) borders the northern limits of this vegetated flood basin. Large blow outs are conspicuous on the sides of most of them. The woody vegetation on these relic dunes is predominantly Quercus myrtifolia.

GULF HIGHLANDS

Eastward this habitat is continuous with the Pine Beach tract. Extensive stretches of bare sand separate two lines of isolated secondary dunes (12-m high) that are predominantly vegetated with Uniola paniculata, Panicum amarum, Serenoa repens and Quercus myrtifolia. A residential area is located within this tract.

PINE BEACH

This is the largest, uninterrupted tract of habitat along the Alabama coast. It is composed of a low line of secondary

dunes (12-m high) that is vegetated with Uniola paniculata and Panicum amarum. A line of isolated tertiary dunes, separated by bare sand areas, are covered with communities of Andropogon maritimus, Serenoa repens, Quercus virginiana var. maritima, Quercus myrtifolia, Uniola paniculata, Panicum amarum, Chrysoma pancifloscula, Paronychia sp. and Heterotheca subaxillaris. Several beach houses are located at the west end of this habitat. There is minimal human disturbance. The eastern end of Pine Beach is part of the Bon Secour National Wildlife Refuge.

GULF STATE PART - ROMAR BEACH

Scattered segments of this habitat are seaward of Alabama Highway 182 with small isolated areas north of the road. The secondary dunes (6-m high) are characterized by Andropogan maritimus, Uniola paniculata, Panicum amarum, Ceratiola ericeides and Euphorbia ammanniodes. On the crests of the higher tertiary dunes are found clumps of Quercus virginicus and Quercus myrtifolia. The secondary dunes (10-m high) support Geratiolia ericoides, Conradina canescens, Asclepias humustrata, Heterotheca subaxillaris, Baldunia augustifolia, Hydrocotyle bonariensis, Panicum amarum, Chrysoma paucifloscula, Polygonella gracilis, Paronychia sp., Quercus virginicus var. maritimus and Quercus myrtifolia. This tract is fragmented by beach houses, trailer parks and state park facilities. Human use is heavy.

FLORIDA POINT

The beach dune complex on Florida Point=Perdido Key south of Alabama Highway 188 was completely sanded by the Gulf surge

during the storm. Thin stands of Uniolo paniculata and Panicum amarum have begun to grow on low dunes. North of the road is a vegetated flood basin. In this shallow depression are two spoil ponds. Around these impoundments grow Typha latifola, Bacchar-is sp., and Spartina patens. The shore line of Old River supports sparse growths of Uniola paniculata and Panicum amarcum. Numer-ous beach trails have been worn through the dune lines by fisher-men and swimmers. Human use is heavy.

ONO ISLAND

The gulf side of Ono Island is an almost continuous primary sand dune (15-m high) that has been eroded on the east and west ends. Blow outs are evident along its length. The crest of the dune supports fragmented communities of Quercus virginiana var. maritima, Quercus myrtifolia, Pinus clausa, Pinus ellioti, Polygonella gracilis, Solidago pancifloscula, Serenosa repens, Ceratiola ericoides and Conradina canescens. At the seaward base of the dunes are found Uniola paniculata, Panicum amarum, Spartina patens, Andropogon maritimus, Panicum repens and Serenoa repens. This sand dune has been subdivided for a resi-dential area and is in the process of being developed.

TRAPPING

METHODS

Known localities of beach mice were identified from both published and unpublished records and from museum specimens. The entire coastal beach-dune systems were searched for polionotus habitat. All areas of potential beach mouse habitat were trapped. Distribution was determined by live trapping. The areas between the known ranges were covered by cities, beach front development or washed away by beach erosion. Efforts were concentrated where tracks, burrows, scat, and runways were found. Sherman live traps baited with peanut butter, rolled oats, sunflower seeds, or mixed grains were used. Pine Beach was chosen for a population study site. Initial trapping suggested that the population here was continuous and uniform. One sample area was established. See Plate 2, Site F for exact location. This sample area consisted of a transect 350-m long. It was located along the first continuous dune line closest to the ocean. Traps were placed in the center of 10x10-m grids at 10-m intervals. Trapping was conducted for three consecutive nights, April 29, 30, and May 1, 1982. Beach mice were toe-clipped and released. Direct enumeration was used for estimating the trappable population. The number of potential mammalian predators was estimated by counting fresh sets of individual tracks when the traps were checked each morning. The presence of potential non-mammalian predators was noted. The period of the study extended from

January to July, 1982.

RESULTS

Trapping results are given in Table 3. In 1,456 trap nights, 156 ammobates were captured. Other rodents trapped within the range of ammobates were 9 Peromyscus gossypinus and 11 Sigmodon hispidus. In 110 trap nights, 1 trissyllepsis was captured. No other rodents were trapped within the range of trissyllepsis.

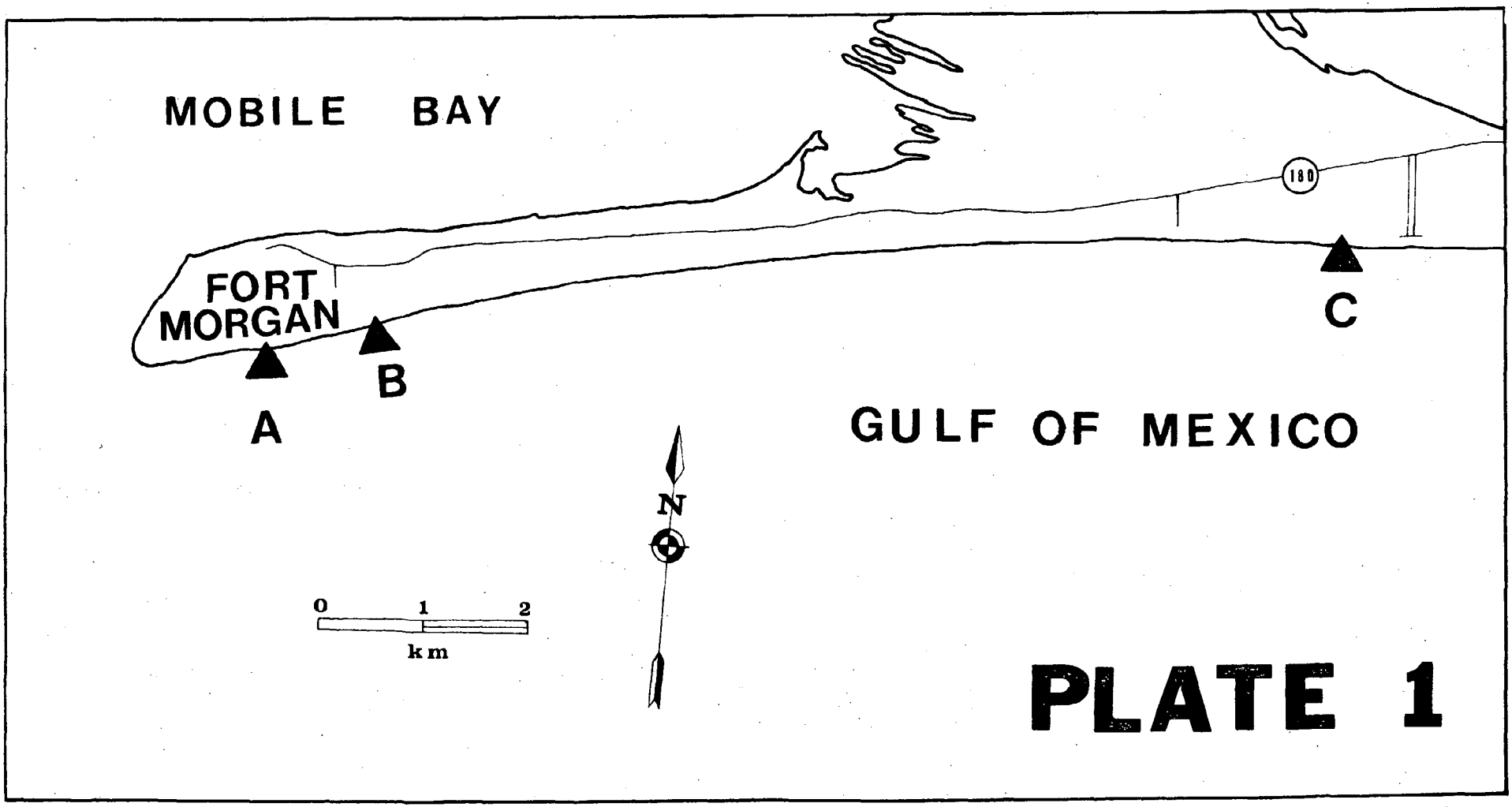
TABLE 3. Results of rodent trapping in the ranges of the two subspecies of *Peromyscus polionotus*. Site letters are as in plates 1-4. Number of recaptures of mice in Pine Beach study are in parenthesis.

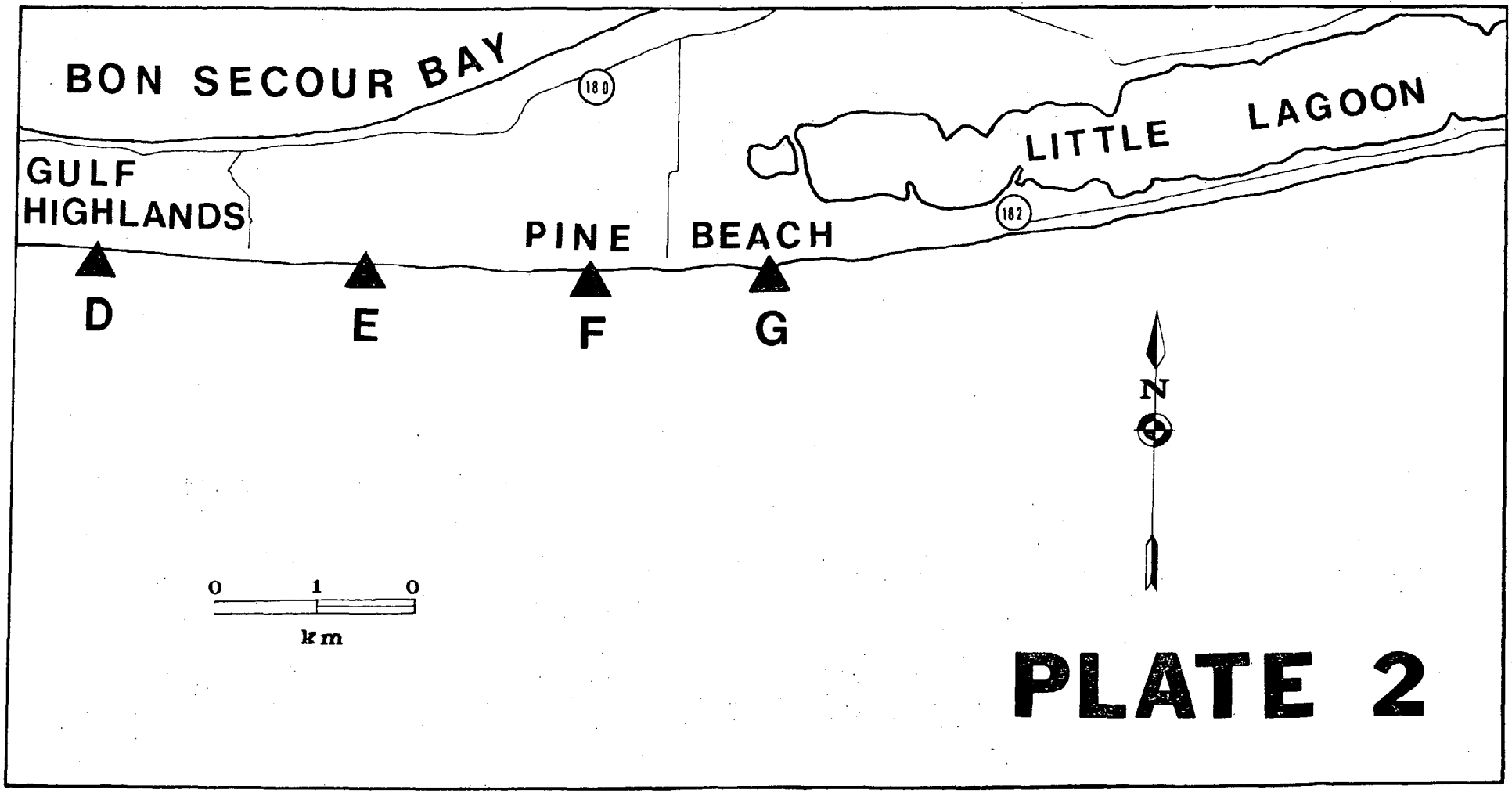
TRAPPING SITES	DATE OF TRAPPING	TRAPNIGHTS	NUMBER OF CAPTURES (INDIVIDUALS) PEROMYSCUS POLIONOTUS	SIGMODON HISPIDUS	PEROMYSCUS GOSSYPINUS
Areas trapped for *P. p. ammobates*					
A	05-18-82	100	10	0	0
B	03-25-82	99	6	2	0
C	04-24-82	100	1	3	1
D	07-13-82	50	9	0	0
E	04-03-82	96	9	0	0
F	03-10-82	99	6	0	0
	03-14-82	149	23	0	0
	04-29-82	28	17	0	0
	04-30-82	28	21 (10)	1	0
	05-01-82	28	19 (17)	0	0
G	04-17-82	100	12	0	4
H	02-20-82	14	0	0	2
I	05-26-82	100	1	1	2
J	02-18-82	50	4	0	0
	02-20-82	66	14	2	0
	02-22-82	99	4	0	0
K	01-29-82	50	0	2	0
L	02-04-82	50	0	0	0
M	01-30-82	50	0	0	0
N	01-05-82	50	0	0	0
O	01-20-82	50	0	0	0

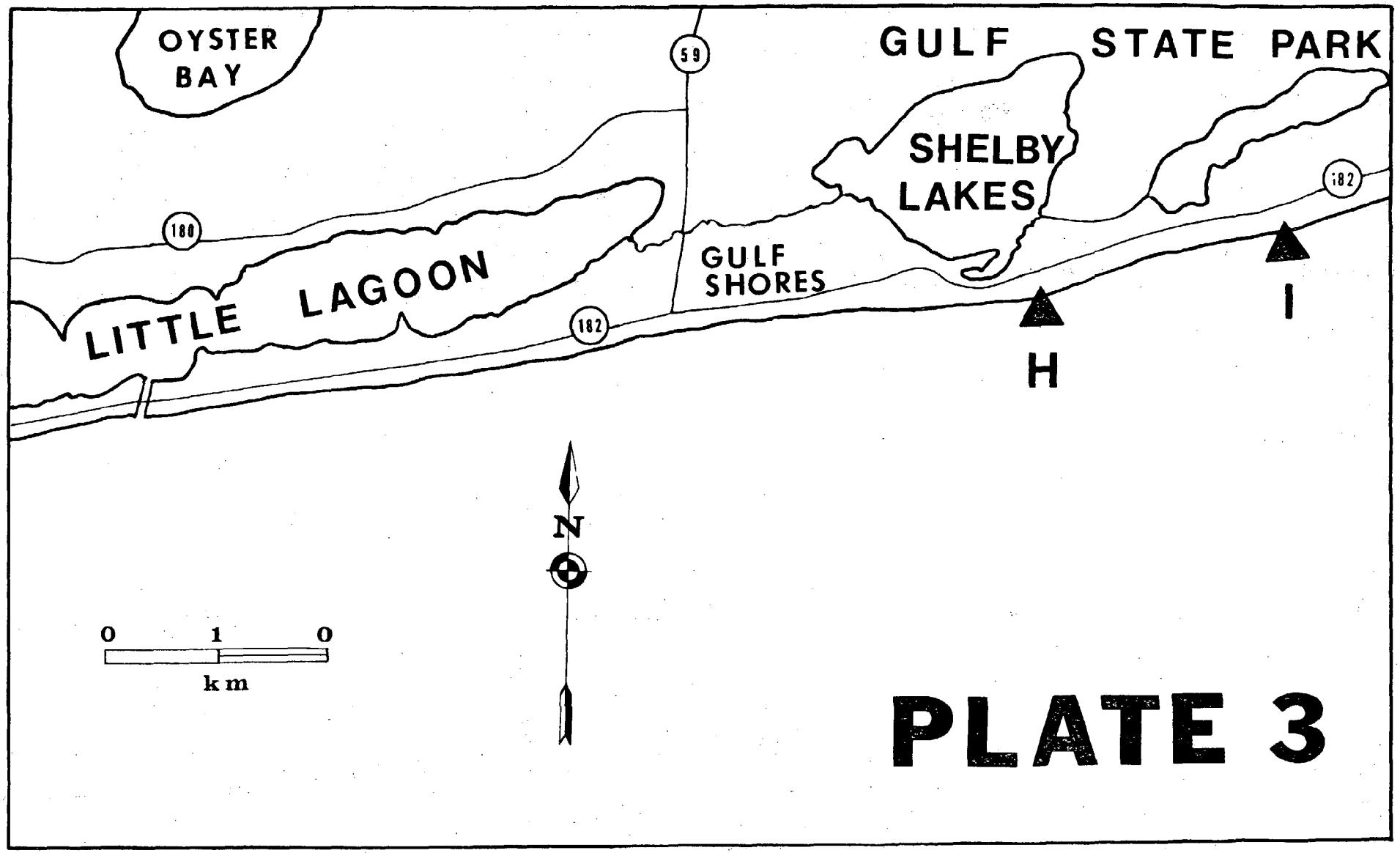
TABLE 3. (continued)

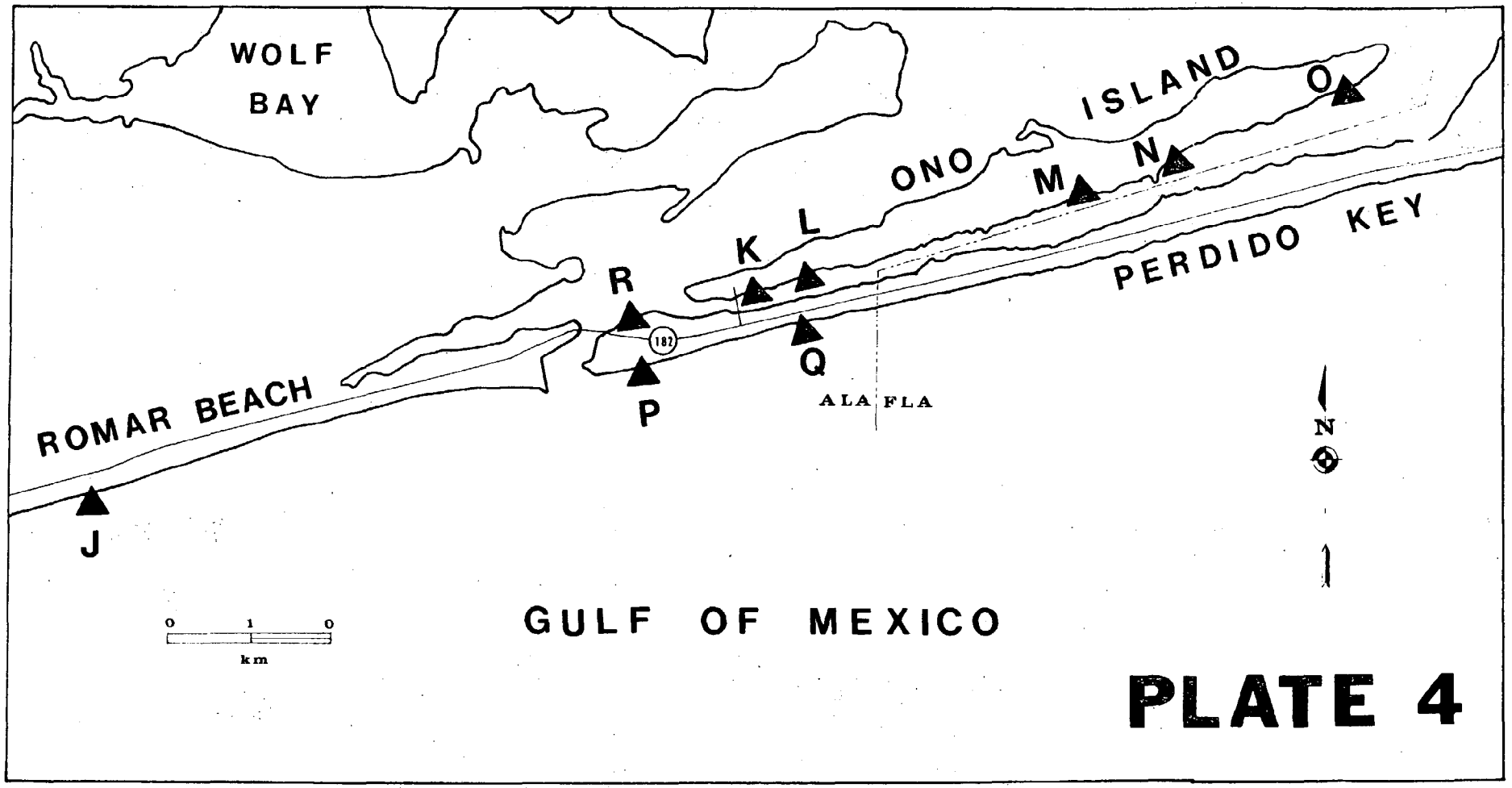
TRAPPING SITES	DATE OF TRAPPING	TRAPNIGHTS	NUMBER OF CAPTURES (INDIVIDUALS) PEROMYSCUS POLIONOTUS	SIGMODON HISPIDUS	PEROMYSCUS GOSSYPINUS
Areas trapped for P. p. trissyllepsis					
P	02-14-82	25	0	0	0
Q	04-14-82	30	1	0	0
	06-18-82	30	0	0	0
R	02-14-82	25	0	0	0

All trapping sites were surveyed for predators. The mean number for mammalian track counts in the beach-dune complex was .2 Vulpes fulva (red fox), .2 Procyon lotor (raccoon), .01 Mustella frenata, (long tailed weasel), .3 Mephitis mephitis (striped skunk), and .5 Felis domesticus (house cat) per trapping site per night (n=25 trap nights). The mean number of avian predators was 1.3 per observer hour for Falco sparverius (American Kestrel), and .3 per observer hour for Circus cyanceus (northern harrier) in all study areas on January 29, 1982 (n=6 observer hours). An unidentified snake drag, Crotalus adamanteus? (Eastern diamond-backed rattle snake) was seen in the eastern Pine Beach tract.


MOBILE BAY
FORT MORGAN
A
B
C
180
GULF OF MEXICO
N
0
1
2
km
PLATE 1


BON SECOUR BAY
180
LITTLE LAGOON
GULF HIGHLANDS
182
PINE BEACH
D
E
F
G
N
0 1 0
km
PLATE 2


OYSTER BAY
59
GULF STATE PARK
SHELBY LAKES
182
180
LITTLE LAGOON
GULF SHORES
182
H
I
N
0 1 0
km
PLATE 3


WOLF
BAY
ISLAND
O
N
M
L
K
ONO
PERDIDO KEY
R
182
Q
P
ALA FLA
ROMAR BEACH
J
N
0 1 0
km
GULF OF MEXICO
PLATE 4

DISCUSSION

The White-fronted Beach Mouse (P.p. ammobates) and the Forala Beach Mouse (P.p. trissyllepsis) were selected for this study for two reasons.

First, more concrete information is needed concerning the role of beach mice as they relate to dune stabilization. It is common knowledge that there is a relationship between these mice and Sea Oats (Uniola paniculata) along the Alabama and Florida coasts. This study has brought forth evidence for the first time in Alabama that the White-fronted Beach Mouse utilizes Bitter Panic Grass (Panicum amarum). This was recorded on the Fort Morgan tract. Both Sea Oats and Bitter Panic Grass are recognized sand stabilizers that are instrumental in maintaining dune structure. Beach mice are ecologic indicators that are found in Alabama only where these two grasses occur. These "habitat specialists" depend almost entirely upon these plants for food and nesting material. In the course of extending their range, Beach Mice propogate these pioneering grasses at the location of their feeding stations and nest cavities. By monitoring the extentions of the Fort Morgan habitat, useful information should be gained relative to beach mouse - dune grass relationships and hence the management of dune barriers that serve as water retarding structures.

Second, current population levels and range data are needed before the federal status of these mammals can be determined.

Presently, they are afforded only state protection. In 1975, these animals were listed as endangered by the State of Alabama. They qualified for state protection as endangered species because they are in danger of extinction throughout all or a significant portion of their range in Alabama. Endangered species are those whose prospects for survival are in immediate jeopardy. An endangered species must have help or extinction and/or extirpation from Alabama will probably follow (Boschung, 1976). Since 1975, their habitat has been further reduced by increased residential development and recreational activities. The storm of September 13, 1979, has also destroyed or altered much of the existing habitat. Because of these changes within the last seven years, the U.S. Fish and Wildlife Service now considers these Alabama mammals, along with three other closely related subspecies in Florida that have experienced similar pressures, to be prime candidates for the Federal Register of Endangered Species. This study has contributed density and distribution data that should be useful in determining their status and in making management decisions.

On dunes closest to the ocean, beach mice were associated with Uniola paniculata and Panicum amarum. In these locations mouse burrows and ghost crab tunnels were evident. On dunes, beyond the first berm, mice were commonly found in communities of Ceratiola ericoides, Quercus sp., Pinus clausa, and Serenoa repens. In some instances they were trapped on severely eroded secondary and tertiary dunes several hundred meters from the primary dune line. These higher dunes probably served as a refuge for the population during the storm.

I estimated the total number of beach mice in occupied range by area extrapolations from sample data. I believed this to be the most appropriate method since beach mice were taken in excess of 50-m from the beachward boundary of dune vegetations. Humphrey and Barbour (1981) used the linear method because of the narrowness of the occupied habitat along the Florida beaches. The farthest inland that they captured beach mice was 50-m from the gulf edge of vegetation. Extrapolations from the data and the area of occupied range indicated that 13 Peromyscus polionotus ammobates lived on 2.0 ha (4.9a) on the Pine Beach tract. The population estimate for this study showed that there was 6.5 beach mice/ha or 2.7 beach mice/acre. This estimate exceeds that calculated by Blair (1951). His data fluctuated around 2.2 beach mice/ha or 1 beach mouse/acre. The population that I sampled was probably concentrated due to extensive loss of habitat during the storm. Blair (1951) more-

TABLE 4. Estimates for beach mice per acre for the Alabama Coastal Zone

SUBSPECIES	ACRES OF HABITAT	TOTAL IND.	MICE/ ACRE
Peromyscus polionotus ammobates	336.6	909[a/]	2.7
Peromyscus polionotus trissyllepsis	58.1	1[b/]	0.02

a/ estimate by area extrapolation

b/ estimate based on 110 trap nights on four different occasions.

over studied areas that were not homogeniously productive habitat. My figures probably underestimate the total population size of P. p. ammobates since all of the marked individuals were not caught on the last night of trapping. Hence the total population of this subspecies must exceed ~~1,066~~ 909 for the estimated 336.6 acres of post storm habitat. Ammobates is a trappable population with a 11 percent capture rate (n=1,456 trapnights).

A study by area extrapolation was not initiated in the range of P. p. trissyllepsis because of the lack of habitat. A careful search of the 58.1 acres of the existing dunes was made. A total of one hundred and ten trap nights on four different occasions yielded one specimen. This single mouse was captured 30-m seaward of Alabama Highway 182 in a sparse stand of Uniola paniculata. It is of considerable interest that this area was under 2.44-m of water for two hours during the storm. It can only be speculated that this mouse and possibly others found a fortuitous refuge during the storm.

Red fox has been recorded throughout the Alabama Gulf coast since the late 1940's (Holliman, 1963). In this study, red fox were recorded only from the Fort Morgan area. This agrees with Humphrey and Barbour (1981) who said that there has been a decrease of red fox citings since the early 1950's. Weasel and house cats were encountered only on Ono Island. Bowen (1968) described weasel and house cat predators at this locality and suggested that there was an imminent threat of extripation of this mouse by the cat population. Howell (1921)

reported the striped skunk to be common, and data from this study indicates that this mammal still occurs throughout this coastal region. Urocyon cinereoargenteus (gray fox) and Lynx rufus (bob cat) are prevalent north of the beach-dune complex but were not tracked during this study.

At the time of Howell's work (1921) the beach-dune system was continuous and extended for 55-km from Bon Secour Bay to Ono Island. There now remains approximately 21-km of non contiguous dunes from the Fort Morgan peninsular to the Alabama-Florida state line. In this study beach mice were found in localities that ranged from being severely disturbed by off-road vehicles and humans on foot (Perdido Key) to small tracks of habitat fragmented by beach front development and access roads to the beach (Pine Beach). Most of the remaining areas (Romar Beach - Gulf State Park) are deteriorating because of developmental encroachment and heavy recreational use. Although other sites exist on public lands (Fort Morgan State Park and Bon Secour National Wildlife Refuge) little concerted effort has yet been made in these areas to ensure dune preservation. Beach mice were absent from areas where the habitat was altered by residential and commercial development. My data indicates that P. p. ammobates live on disjunct tracts of the beach-dune system along the Alabama coast from the Fort Morgan State Park to the Romar Beach area. This subspecies was not found on Ono Island. Trisyllepsis is probably extant on Perdido Key but is on the verge of extinction.

Four non-exclusive hypotheses have been proposed by other

workers to explain the disappearance of beach mouse populations. (1) Loss of populations is a direct result of habitat loss (Bowen, 1968; Ehrhart, 1978a, 1978b). My data supports this assertion and confirms the significance of severe tropical storms on beach mouse habitat in Alabama. The U. S. Geologic Survey (1980) has estimated Hurricane Frederick's maximum tide to have a recurrence interval of about 25 to 30 years. This means that the Alabama coast line may be reworked on the average of about 40 times in a thousand year period. Heavy vehicular traffic and foot paths within the beach-dune complex have resulted in the destruction of grass communities to an extent that many dunes will eventually disappear. These factors have contributed to the isolation of polionotus populations. (2) Beach mice succumb to competition from house mice that accompany human settlement (Humphrey and Barbour, 1981). House mice (Mus musculus) were not collected in beach mouse habitat during this study. Municipal areas were not trapped during this study. My data suggests that house mice may be allopatric. This hypothesis should be tested more thoroughly in Alabama. (3) Beach mouse populations are extirpated by predation from house cats (Bowen, 1968; Ehrhart, 1978b). The predator data from Ono Island suggests that house cats may be responsible for the absence of this insular population of beach mice. (4) Overwintering savanna sparrows, (Passerculus sandwichensis) may impact beach mouse populations through competition for food (Gentry, 1966). Our few data are not adequate to support this hypothesis. The mean number of savanna sparrows was .5 per

observer hour for all study areas on January 29, 1982 (n=6 observer hours).

RECOMMENDATIONS

A sound resource plan will become increasingly important in view of projected potential dangers to the beach-dune complex. This habitat will become more sensitive to land development. Habitat alterations and loss will adversely affect the distribution and abundance of this mammal. This plan should be a long range effort involving civic, state and federal agencies. The basic philosophy relative to the implementation of the resource plan (Table 4) should contain three elements. These elements are:

1. Research and management programs should be range-wide rather than confined by state boundaries. This is particularly important in the case of P. p. trissyllepsis whose range may extend into Florida.
2. Cooperation with educational institutions should be encouraged, particularly in those institutions that are related to the Sea Grant Program. Specific jobs could be accomplished on a cost sharing basis.
3. On-going state and federal land use programs in Baldwin County should be utilized to accomplish related jobs.

TABLE 4. Recommendations for a Resource Plan for *P. p. ammobates* and *P. p. trissyllepsis*

MAJOR PROGRAM OR AREA FOR FUNDING	SPECIFIC JOBS WITHIN EACH PROGRAM	RESEARCH OR MANAGEMENT (R or M)	JOB PRIORITY	CONTINUING JOB
Habitat Acquisition	Preservation of critical habitat with surrounding buffer areas.	M	1	Yes
Habitat Protection	Construct walk way over dunes at Florida Point	M	1	No
	Enforce existing laws that regulate vehicles in beach-dune complex	M	1	Yes
Habitat Studies	Improve habitat.	M	1	Yes
	Evaluate and inventory habitat.	M	2	Yes
Public Education	Expand educational efforts relative to dune preservation.	M	1	Yes
Population Dynamics	Live trapping to determine the demographic characteristics of beach mice in beach-dune habitat.	R	1	Yes
	Live trapping to determine the biology of dune invasions by other rodents (i.e. house mice), including the maximum distance of populations from structured refuges.	R	2	Yes

TABLE 4. (Continued)

MAJOR PROGRAM OR AREA FOR FUNDING	SPECIFIC JOBS WITHIN EACH PROGRAM	RESEARCH OR MANAGEMENT (R or M)	JOB PRIORITY	CONTINUING JOB
Population Dynamics (contd)	Controlled experiments to determine food competition and other behavioral interactions of beach mice and dune populations of other rodent and wintering savanna sparrows.	R	3	No
	Continued evaluation of the role of house cat predators on beach mice.	R	4	Yes

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SECTION B.

Breeding Bird Survey

INTRODUCTION

Within the last decade Baldwin and Mobile counties have experienced drastic changes in land management practices and environmental pollution. With the expanding human population an even greater intensity of land use and decadency of wildlife habitat can be anticipated. These factors, along with local weather patterns and biological cycles, influence the density and diversity of birds in the Alabama coastal zone. If closely monitored the condition of the coastal breeding bird population will reflect local environmental and biological changes. The breeding bird survey effectively collects baseline data that allows the uniform measurement of a normative population. By determining the normative level, inference can be made relative to unknown factors that affect a population. Data gathered by these surveys establish a sample index of a population. These indices are statistically valid because of the strict adherence to a given set of techniques and rules that produce comparable samples gathered by competent observers from a large area during an extended period of time. Such information can be useful in policy making and in formulating environmental risk assessments.

These Coastal Area Board (CAB) surveys are patterned after

the Breeding Bird Surveys of the U. S. Fish and Wildlife Service (USFW). (See Appendix). These federally sponsored surveys have accumulated sample indices over a contiguous 12 year period in Baldwin and Mobile Counties. Four CAB routes were specifically designed to provide more complete coverage of representative habitat in proportion to their occurrence in the Alabama Coastal Zone. The USFW supplements this current work. In the CAB study there are three mainland routes and one river route. Each route is 41.6-km (25 miles) long and has 50 stops with each stop 1/2 mile apart. Birds are recorded during a 3-minute interval at each stop. These four routes cover a total of 166.4-km (100 miles) in the coastal zone. For a detailed account of route locations, stop descriptions and other survey techniques refer to Phase I: Present Levels of Birds and Mammals in the Coastal Zone, Final Report (CAB-81-04), April 30, 1981.

RESULTS

Table 1 summarizes density and diversity data for the coastal breeding bird survey routes. Ninety-one species have been recorded. The BIRDS PER ROUTE is the total number of birds for that particular route. STOPS PER SPECIES refers to the total number of stops at which a particular bird was recorded for all four routes. The 1982 LEVEL (MEANS) is the average number of birds recorded for the four routes. The AMERICAN ORNITHOLOGICAL UNION NUMBER (AOU) is listed for computer indexing.

TABLE 1. Density and Diversity Data for Coastal Breeding Bird Survey Routes.

AOU NO.	NAME	BIRDS PER ROUTE				STPS. PER SPECIES	TOT. IND.	1982 LEVEL MEANS
		GULF SHORES	EAST MOBILE BAY	WEST MOBILE BAY	TOMBIGBEE MOBILE RIVERS			
126	Brown Pelican	11	32	0	0	3	43	10.75
194	Great Blue Heron	6	0	3	4	9	13	3.25
201	Green Heron	5	0	5	8	17	18	4.50
200	Little Blue Heron	2	0	0	0	1	2	0.50
2001	Cattle Egret	0	5	0	0	1	5	1.25
196	Great Egret	1	1	0	2	4	4	1.00
197	Snowy Egret	1	0	4	1	5	6	1.50
199	Louisiana Heron	1	0	1	0	2	2	0.50
203	Yel-c. Night Heron	0	0	0	34	14	34	8.50
191	Least Bittern	0	1	0	0	1	1	0.25
184	White Ibis	0	0	0	203	3	203	50.75
144	Wood Duck	1	7	0	10	9	18	4.50
339	Red-s Hawk	0	0	0	2	2	2	0.50
343	Broad-wing Hawk	0	0	0	1	1	1	0.25
289	Bobwhite	16	6	48	2	40	72	18.00

TABLE 1. (Continued)		GULF SHORES	EAST MOBILE BAY	WEST MOBILE BAY	TOMBIGBEE MOBILE RIVERS	STPS. PER SPECIES	TOT. IND.	1982 LEVEL MEANS
211	Clapper Rail	1	0	3	0	4	4	1.00
286	A. Oyster Catcher	0	0	1	0	1	1	0.25
248	Sanderling	3	0	0	0	1	3	0.75
258	Willet	0	0	2	0	2	2	0.50
051	Herring Gull	0	1	0	0	1	1	0.25
054	Ring-billed Gull	0	2	0	0	1	2	0.50
058	Laughing Gull	10	40	33	6	17	89	22.25
063	Gull-billed Tern	5	0	0	0	2	5	1.25
069	Forster's Tern	3	0	2	0	3	5	1.25
074	Least Tern	114	6	13	0	11	133	33.25
065	Royal Tern	4	0	14	0	5	18	4.50
064	Caspian Tern	2	2	0	0	4	4	1.00
080	Black Skimmer	0	0	1	0	1	1	0.25
3131	Rock Dove	0	0	6	0	2	6	1.50
316	Mourning Dove	20	8	4	0	17	32	8.00
387	Yel-b. cuckoo	2	2	2	12	6	18	4.50
416	Chuck-wills-widow	0	3	8	0	6	11	2.75
420	Com. Nighthawk	10	0	0	0	6	10	2.50
423	Chimney Swift	14	67	6	18	42	105	26.25

TABLE 1. (Continued)		GULF SHORES	EAST MOBILE BAY	WEST MOBILE BAY	TOMBIGBEE MOBILE RIVERS	STPS. PER SPECIES	TOT. IND.	1982 LEVEL MEANS
390	Belted Kingfisher	0	0	0	2	2	2	0.50
412	Yel-shaft Flicker	3	3	0	1	6	7	1.75
405	Pil. Woodpecker	2	1	0	8	11	11	2.75
409	Red-b.Woodpecker	18	17	10	17	53	62	15.50
406	Red-hd.Woodpecker	2	2	1	0	5	5	1.25
393	Hairy Woodpecker	0	1	0	1	2	2	0.50
394	Downy Woodpecker	1	3	0	1	4	5	1.25
444	E. Kingbird	4	4	2	0	7	10	2.50
452	Gt-c.Flycatcher	24	21	11	7	45	63	15.75
465	Acadian Flyc.	0	0	0	2	2	2	0.50
461	E. Wood Pewee	0	0	0	1	1	1	0.25
617	Rough-wing Swallow	0	1	0	11	7	12	3.00
613	Barn Swallow	6	18	19	0	12	43	10.75
611	Purple Martin	82	69	139	17	72	307	76.75
477	Blue Jay	22	76	28	14	64	140	35.00
488	Common Crow	0	0	0	86	29	86	21.50
490	Fish Crow	61	29	39	2	66	131	32.75
736	Caro Chickadee	5	6	5	2	11	18	4.50
731	Tufted Titmouse	0	5	8	19	23	32	8.00

TABLE 1. (Continued)		GULF SHORES	EAST MOBILE BAY	WEST MOBILE BAY	TOMBIGBEE MOBILE RIVERS	STPS. PER SPECIES	TOT. IND.	1982 LEVEL MEANS
729	Brown-hd. Nuthatch	2	3	0	0	4	5	1.25
718	Carolina Wren	66	30	15	85	106	196	49.00
703	Mockingbird	92	77	69	3	117	241	60.25
704	Gray Catbird	0	0	0	1	1	1	0.25
705	Br. Thrasher	14	6	3	0	20	23	5.75
761	American Robin	0	0	1	1	2	2	0.50
766	E. Bluebird	0	0	1	0	1	1	0.25
751	Blue-gray Gnatcher	1	0	0	20	18	21	5.25
622	Loggerhead Shrike	0	0	8	0	4	8	2.00
493	Starling	28	29	22	0	24	79	19.75
631	White-eyed Vireo	1	2	7	49	33	59	14.75
628	Yellow-thr. Vireo	0	0	0	11	11	11	2.75
624	Red-eyed Vireo	0	0	0	5	5	5	1.25
636	Blk. & Wht. Warbler	0	0	0	1	1	1	0.25
637	Protho. Warbler	0	1	0	10	9	11	2.75
638	Swain. Warbler	0	0	0	1	1	1	0.25
648	N. Parula Warbler	1	0	0	3	4	4	1.00
652	Yellow Warbler	0	0	0	1	1	1	0.25
663	Yellow-thr. Warbler	1	2	0	8	11	11	2.75

TABLE 1. (Continued)		GULF SHORES	EAST MOBILE BAY	WEST MOBILE BAY	TOMBIGBEE MOBILE RIVERS	STPS. PER SPECIES	TOT. IND.	1982 LEVEL MEANS
671	Pine Warbler	1	3	2	0	6	6	1.50
677	Kentucky Warbler	0	0	0	5	5	5	1.25
681	Com. Yellthroat	13	6	4	5	20	28	7.00
683	Yellow-br. Chat	1	0	9	12	24	22	5.50
684	Hooded Warbler	0	1	2	4	7	7	1.75
687	American Redstart	0	0	0	11	11	11	2.75
6882	House Sparrow	0	36	60	0	15	96	24.00
501	E. Meadowlark	2	3	17	0	14	22	5.50
498	Red-wg. Blackbird	41	22	116	2	43	181	45.25
506	Orchard Oriole	5	16	12	1	27	34	8.50
513	Bt-tail. Grackle	14	10	0	0	7	24	6.00
511	Common Grackle	132	133	144	55	96	464	116.00
495	Brown-hd. Cowbird	19	18	7	2	27	46	11.50
610	Summer Tanager	4	3	1	2	9	10	2.50
593	Cardinal	15	35	55	76	86	181	45.25
598	Indigo Bunting	1	1	4	1	7	7	1.75
587	Rufous-side Tow.	51	20	22	9	59	102	25.50
560	Chipping Sparrow	1	0	0	0	1	1	0.25
563	Field Sparrow	0	0	1	1	2	2	0.50
	TOTALS	968	896	1000	879		3743	

The following tables analyze each route according to the number of birds recorded during increments of ten stops. Each set of STOP TOTALS represent a page total from the field sheets. The TOTAL INDIVIDUALS for each species is listed. STOPS PER SPECIES refer to the number of stops at which a particular bird was recorded for that route. The AMERICAN ORNITHOLOGICAL UNION NUMBER (AOU) is given for computer indexing.

TABLE 2. Analysis of Gulf Shores Route

AOU NO.	SPECIES	STOP TOTALS 1-10	11-20	21-30	31-40	41-50	TOTAL INDIVIDUALS	STOPS PER SPECIES
126	Brown Pelican	2				9	11	2
194	Great Blue Heron	4	1		1		6	5
201	Green Heron	5					5	4
200	Little Blue Heron	2					2	1
196	Great Egret			1			1	1
197	Snowy Egret	1					1	1
199	Louisiana Heron	1					1	1
144	Wood Duck			1			1	1
289	Bobwhite		6	3	4	3	16	10
211	Clapper Rail	1					1	1
248	Sanderling					3	3	1
058	Laughing Gull	5				5	10	4
074	Least Tern	3				111	114	4
065	Royal Tern					4	4	2
063	Gull-billed Tern	4	1				5	2
069	Forster's Tern					3	3	2
064	Caspian Tern	1				1	2	2
316	Mourning Dove	13			2	5	20	9
387	Yellow-B. Cuckoo	1			1		2	2
420	Com. Nighthawk	7	2			1	10	6
423	Chimney Swift	1	2	4	2	5	14	8
412	Yel-Shaft Flicker	2			1		3	2
405	Pileated Wdpkr.	2					2	2
409	Red-Bellied Wdpkr.	2	1	6	6	3	18	15

TABLE 2. (Continued)		STOP TOTALS 1-10	11-20	21-30	31-40	41-50	TOTAL INDIVIDUALS	STPS. PER SPECIES
406	Red-hd. Wdpkr	1			1		2	2
394	Downy Woodpecker			1			1	1
444	E. Kingbird	2				2	4	2
452	Gt. Crest. Flyc.	2	5	9	8		24	17
613	Barn Swallow	6					6	3
611	Purple Martin	10	10	5	6	51	82	22
477	Blue Jay	3	4	8	4	3	22	15
490	Fish Crow	15	17	15	7	7	61	26
736	Carolina Chick.		3	2			5	3
729	Brown-hd. Nuthatch		1			1	2	2
718	Carolina Wren	12	16	23	13	2	66	33
703	Mockingbird	35	12	4	21	20	92	36
705	Brown Thrasher	3	5	1	2	3	14	12
751	Bl-Gr. Gnatcher			1			1	1
493	Starling		1		1	26	28	6
631	White-eyed Vireo			1			1	1
648	N. Par. Warbler				1		1	1
663	Yellow-thr. Warb.			1			1	1
671	Pine Warbler			1			1	1
681	Com. Yel.throat	1	4	4	2	2	13	10
683	Yellow-br. Chat.					1	1	1
501	E. Meadowlark	2					2	1
498	Red-wg. Blackbird	15	10	1		15	41	13
506	Orchard Oriole			1	3	1	5	4
513	Boat-tail Grackle					14	14	3
511	Com. Grackle	42	16	26	28	20	132	29

TABLE 2. (Continued)		STOP TOTALS 1-10	11-20	21-30	31-40	41-50	TOTAL INDIVIDUALS	STPS. PER SPECIES
495	Br-hd. Cowbird	5	5	6	1	2	19	10
610	Summer Tanager	3		1			4	3
593	Cardinal	1	3	6	4	1	15	11
598	Indigo Bunting	1					1	1
587	Rufous-side Towhee	11	17	16	5	2	51	24
560	Chipping Sparrow			1			1	1

TABLE 3. Analysis of East Mobile Bay Route

AOU NO.	SPECIES	STOP TOTALS 1-10	11-20	21-30	31-40	41-50	TOTAL INDIVIDUALS	STOPS PER SPECIES
126	Brown Pelican	32					32	1
2001	Cattle Egret	5					5	1
196	Great Egret					1	1	1
191	Least Bittern	1					1	1
144	Wood Duck	7					7	2
289	Bobwhite		1	2	3		6	5
051	Herring Gull					1	1	1
054	Ring-billed Gull					2	2	1
058	Laughing Gull	1	28	1		10	40	7
074	Least Tern					6	6	3
064	Caspian Tern		1			1	2	2
316	Mourning Dove	4		3		1	8	5
387	Yellow-bil.Cuckc.		2				2	2
416	Chucks-wills-widow	3					3	2

TABLE 3. (Continued)		STOP TOTALS 1-10	11-20	21-30	31-40	41-50	TOTAL INDIVIDUALS	STPS. PER SPECIES
423	Chimney Swift		17	26	15	9	67	19
412	Yel-shaft Flicker					3	3	3
405	Pileated Wdpkr.				1		1	1
409	Red-bellied wdpkr.	1	4	3	5	4	17	13
406	Red-hd. Wdpkr.		1	1			2	2
393	Hairy Wdpkr.				1		1	1
394	Downy Wdpkr.			1		2	3	2
444	E. Kingbird	2			2		4	3
452	Gt. Crest. Flyc.	3	5	6	5	2	21	14
617	Rough-wg. Swallow					1	1	1
613	Barn Swallow			1		17	18	3
611	Purple Martin	21	7	12	8	21	69	23
477	Blue Jay	2	18	22	28	6	76	28
490	Fish Crow	9	5	8	7		29	19
736	Carolina Chick.		3	2	1		6	4
731	Tufted Titmouse		4		1		5	3
729	Br-hd. Nuthatch		3				3	2
718	Carolina Wren	11	4	6	6	3	30	18
703	Mockingbird	13	24	16	16	8	77	40
705	Brown Thrasher	2	3		1		6	5
493	Starling	9	2	6		12	29	8
631	White-eyed Vireo			2			2	1
637	Prothonotary Warb.	1					1	1
663	Yellow-thr. Warb.			2			2	2
671	Pine Warbler		1	1	1		3	3
681	Com. Yellowthroat	6					6	2

TABLE 3. (Continued)		STOP TOTALS 1-10	11-20	21-30	31-40	41-50	TOTAL INDIVIDUALS	STPS. PER SPECIES
684	Hooded Warbler					1	1	1
6882	House Sparrow			18	15	3	36	8
501	E. Meadowlark			3			3	1
498	Red-wg. Blackbird	18	1			3	22	6
506	Orchard Oriole	2	2	8	3	1	16	11
513	Boat-tail. Grackle					10	10	4
511	Common Grackle	31	48	36	10	8	133	27
495	Brown-hd. Cowbird	4	9	1	3	1	18	9
610	Summer Tanager	1	1			1	3	3
593	Cardinal	15	7	2	5	6	35	20
598	Indigo Bunting				1		1	1
587	Rufous-side Towhee	5	10		4	1	20	14

TABLE 4. Analysis of West Mobile Bay Route

AOU NO.	SPECIES	STOP TOTALS 1-10	11-20	21-30	31-40	41-50	TOTAL INDIVIDUALS	STOPS PER SPECIES
194	Gr. Blue Heron	2	1				3	3
201	Green Heron	1	2	2			5	5
197	Snowy Egret	2			2		4	3
199	Louisana Heron		1				1	1
289	Bobwhite	4	13	16	5	10	48	23
211	Clapper Rail	2	1				3	3
286	Oyster Catcher		1				1	1
258	Willet		2				2	2
058	Laughing Gull	5	28				33	4

	TABLE 4. (Continued)	STOP TOTALS 1-10	11-20	21-30	31-40	41-50	TOTAL INDIVIDUALS	STPS. PER SPECIES
069	Forster's Tern					2	2	1
074	Least Tern	2	10		1		13	4
065	Royal Tern		12		2		14	3
080	Black Skimmer	1					1	1
3131	Rock Dove	4	2				6	2
316	Mourning Dove			2		2	4	3
387	Yellow-bil.Cuckoo		1	1			2	2
416	Chuck-wills-widow	8					8	4
423	Chimney Swift		2		1	3	6	5
409	Red-bellied Wdpkr.		2	3	2	3	10	10
406	Red-hd. Wdpkr.				1		1	1
444	E. Kingbird			2			2	2
452	Gt. Crest. Flyc.	5		2	3	1	11	9
613	Barn Swallow	2	16			1	19	6
611	Purple Martin	87	18	18	2	14	139	24
477	Blue Jay	5	6	1	5	11	28	14
490	Fish Crow	10	12	5	7	5	39	19
736	Carolina Chick.	5					5	2
731	Tufted Titmouse	4			1	3	8	6
718	Carolina Wren	2	2	4	6	1	15	12
703	Mockingbird	17	19	11	11	11	69	38
705	Brown Thrasher		1	1	1		3	3
761	American Robin		1				1	2
766	E. Bluebird				1		1	1
622	Loggerhead Shrike			3	2	3	8	4
493	Starling	8	6	8			22	10

	TABLE 4. (Continued)	STOP TOTALS 1-10	11-20	21-30	31-40	41-50	TOTAL INDIVIDUALS	STPS. PER SPECIES
631	White-eyed Vireo	1	2	2	1	1	7	6
671	Pine Warbler				2		2	2
681	Com. Yellowthroat		3	1			4	4
683	Yellow-br. Chat.	2	3	2		2	9	12
684	Hooded Warbler		1		1		2	2
6882	House Sparrow	47	4	2	1	6	60	7
501	E. Meadowlark		8	6	3		17	12
498	Red-wg. Blackbird	44	44	21	7		116	23
506	Orchard Oriole	4	4		3	1	12	11
511	Common Grackle	52	19	16	14	43	144	22
495	Brown-hd. Cowbird		3	4			7	6
610	Summer Tanager	1					1	1
593	Cardinal	15	12	12	9	7	55	23
598	Indigo Bunting	2	1	1			4	4
587	Rufous-side Towhee	1	6	4	7	4	22	13
563	Field Sparrow				1		1	1

TABLE 5. Analysis of Tombigbee-Mobile Rivers Route

AOU NO.	SPECIES	STOP TOTALS 1-10	11-20	21-30	31-40	41-50	TOTAL INDIVIDUALS	STOPS PER SPECIES
194	Great Blue Heron	4					4	1
201	Green Heron			2	5	1	8	8
196	Great Egret			1		1	2	2
197	Snowy Egret				1		1	1
203	Yel-cr. Night Her.	22	3	3	4	2	34	14
184	White Ibis	203					203	3
144	Wood Duck	1	4	1	1	3	10	6
339	Red-sh. Hawk		1			1	2	2
343	Broad-wg. Hawk					1	1	1
289	Bobwhite		1			1	2	2
058	Laughing Gull	2			4		6	2
387	Yel-bil. Cuckoo	2	3	3	1	3	12	12
423	Chimney Swift	6	2	7	3		18	10
390	Belted Kingfisher		2				2	2
412	Yel-shaft. Flicker		1				1	1
405	Pileated Wdpkr.	1	1	1	2	3	8	8
409	Red-bellied Wdpkr.	4	5	2	1	5	17	15
393	Hairy Woodpecker	1					1	1
394	Downy Woodpecker		1				1	1
452	Gt. Crest. Flyc.	2	1		1	2	7	5
465	Acadian Flycatcher	1	1				2	2
461	E. Wood Pewee	1					1	1
617	Rough-wg. Swallow	1	3	3		4	11	6

TABLE 5. (Continued)		STOP TOTALS					TOTAL INDIVIDUALS	STPS. PER SPECIES
		1-10	11-20	21-30	31-40	41-50		
611	Purple Martin				17		17	3
477	Blue Jay		5	6	3		14	7
488	Common Crow	31	24	14	15	2	86	29
490	Fish Crow					2	2	2
736	Carolina Chick.				2		2	2
731	Tufted Titmouse	1		2	8	8	19	12
718	Carolina Wren	27	19	15	15	9	85	40
703	Mockingbird		2	1			3	3
704	Gray Catbird			1			1	1
761	American Robin				1		1	1
751	Bl-gr. Gnatcatcher	5	6	3	3	3	20	17
631	White-eyed Vireo	17	11	10	4	7	49	27
628	Yellow-thr.Vireo	3	2	2	3	1	11	11
624	Red-eyed Vireo	1	2	2			5	5
636	Blk & Wht. Warbler	1					1	1
637	Prothonotary Warb.	8	1		1		10	8
638	Swainson's Warb.	1					1	1
648	N.Parula Warb.	2		1			3	3
652	Yellow Warbler					1	1	1
663	Yellow-thr. Warb.	7	1				8	8
677	Kentucky Warbler	2	2	1			5	5
681	Com. Yellowthroat	2	1		1	1	5	4
683	Yellow-br. Chat.	5	3	4			12	11
684	Hooded Warbler	2			2		4	4
687	Am. Redstart	7	3	1			11	11
498	Red-wg. Blackbird	2					2	1

TABLE 5. (Continued)		STOP TOTALS 1-10	11-20	21-30	31-40	41-50	TOTAL INDIVIDUALS	STPS. PER SPECIES
506	Orchard Oriole	1					1	1
511	Common Grackle		5	20	20	10	55	18
495	Brown-hd. Cowbird		1			1	2	2
610	Summer Tanager		2				2	2
593	Cardinal	11	17	17	15	16	76	32
598	Indigo Bunting	1					1	1
587	Rufous-side Towhee	5	1	2	1		9	8
563	Field Sparrow			1			1	1

The following table lists other survey and summary data for each of the four routes. The LINE ITEM suggests a title for computer indexing.

TABLE 6. Survey and Summary Data for Breeding Bird Surveys

LINE ITEM	GULF SHORES	EAST MOBILE BAY	WEST MOBILE BAY	TOMBIGBEE - MOBILE RIVERS
Total species	56	52	51	57
Total individuals	968	896	1000	879
Month - Day	06-08	06-09	06-03	06-04
Time - Start	0516	0516	0520	0537
Time - Finish	0915	0920	0915	1011
Temperatures				
Start	72	72	74	75
Finish	86	91	85	86
Wind (Beaufort Scale)				
Start	2	2	0	0
Finish	0	2	1	1
Sky (Beaufort Scale)				
Start	0	0	1	1
Finish	0	2	1	1
Observer Hours - Minutes	4'-00"	4'-04"	3'-55"	4'-34"
Name of Observer	Peavy	Peavy	Holliman	Holliman

Environmental factors often determine what birds are present in a particular area. Conversely, the physical environment may be evaluated by the kind of birds that frequent a habitat. Certain birds, as ecological indicators, are important in habitat analysis since they often reflect exacting ecological parameters. There are two types of ecological indicators.

Generally, "steno" species (stenotopic species) make much better indicators than "eury" species (eurytopic species). Stenotopic species are usually less abundant members of a community and require more precise ecological conditions. As a result they tend to be more restricted geographically and ecologically. They are bound to an area because of nesting and food requirements. As a rule, permanent residents make better indicators since they spend their entire life in an area. Unfortunately, stenotopic species are also good "candidates" for extinction since they cannot tolerate a wide range of changes. Eurytopic birds, on the other hand, usually comprise the largest percentage of a given assemblage of species, and can occupy a number of different environments in a given area during a given time. They can nest in different places and can have a varied diet. Also, they are usually more widespread geographically. They are most often transients, wintering and/or summering birds that come from other areas. They are successful in terms of survival and sometimes tolerate extreme environmental changes. The following table lists selected birds

that may be used as ecological indicators. An indication of their preferred habitat and certain environmental conditions that render them vulnerable are listed. Site locations show critical habitats for selected species in the Alabama Coastal Zone. The accompanying map does not show the habitat for all coastal birds, but only a few selected species that live in critical habitats. Shaded areas on the map show current location for Spartina alterniflora marshes. All of these marshes support some S. alterniflora. Point aux Pins and Isle of Herbs have almost "pure" S. alterniflora marshes in certain places.

TABLE 7. Selected avian ecological indicators for the Alabama Coastal Zone. Habitat preferences with a notation of the type of human perturbations are given. Site letters refer to locations of habitat on accompanying map. S = Stenotopic; E = Euryotopic Indicator. This table and accompanying map describes the critical habitat for only selected bird species that may occur in the Alabama Coastal Zone.

SPECIES	SITE LOCATION	TYPE OF INDICATOR (S or E)	DESCRIPTION OF HABITAT/ ACTIVITIES/ECOLOGICAL REQUIREMENTS	ADVERSE ACTIVITIES
Open Water-Gulf				
Gannet, Booby, Common Goldeneye, Scoter, Loon	1	E	Feeds on schooling fish, will enter bay and sound to search for food	Oil pollution
Beach-dune Complex				
Snowy Plover a/	2	S	Nests on isolated sand islands, Sand Island is probably the only nesting site in Alabama	Human Disturbance
Oystercatcher c/	3	S	Nests on isolated sand/shell islands	Human Disturbance
Least tern, Black Skimmer, Royal Tern, Caspian Tern, Common Tern, Gull-billed Tern	4	E	Nests on isolated islands, gulf side of Dauphin Island, spoil islands, prefers large tracts of sand for nesting with some ground cover.	Human disturbance, vegetation removal
Bay, Sound Waters				
Brown Pelican a/ White Pelican, Frigate bird	5	E	Feeds on schooling fish, pelicans require shallow waters; Brown Pelicans now utilizing spoil island in Mobile Bay for feeding; White Pelicans usually winter at head of Mobile Bay.	Oil pollution, siltation, human harrassment while fishing

TABLE 7. (Continued)

SPECIES	SITE LOCATION	TYPE OF INDICATOR (S or E)	DESCRIPTION OF HABITAT/ ACTIVITIES/ECOLOGICAL REQUIREMENTS	ADVERSE ACTIVITIES
Bay, Sound Waters (Continued)				
Lesser Scaup, Red-breasted Merganser, Redhead, Ring-neck Duck, Canvasback, Pied-billed Grebe	6	E	Feeds on small fish, some aquatic vegetation, largest wintering population in Alabama located in Bon Secour Bay	Oil pollution, siltation, human disturbance
Salt Marshes				
Clapper Rail, Seaside Sparrow	7	S	Lives in almost "pure" Spartina alterniflora marshes - feeding, nesting - concentrated in several areas.	Sedimentation, dredge, filling
Herons, Egrets, Ibises, Bitterns, Reddish Egret b/	8	E	Lives in "mixed" and "pure" Spartina alterniflora marshes - feeding, nesting for some.	Diking, ditching, dredge, filling
Herons, Egrets, Ibises	9	S	Nesting, feeding, nesting colony of 2500-3000 birds on Cat Island is largest colony in the state.	Human disturbance
Mixed Marshes				
Herons, Egrets Ibises, Bitterns, Boat-tailed Grackle, Red-winged Blackbird, Marsh Wren	10	E	Feeding, nesting, resting	Vegetative removal, dredging, filling, ditching

TABLE 7. (Continued)

SPECIES	SITE LOCATION	TYPE OF INDICATOR (S or E)	DESCRIPTION OF HABITAT/ ACTIVITIES/ECOLOGICAL REQUIREMENTS	ADVERSE ACTIVITIES
Mixed Marshes (continued)				
Mottled Duck b/	11	S	Isolated areas needed for nesting, probably on Cat or Dauphin Island.	Human disturbance, vegetation removal
Black Rail c/	12	S	Isolated areas needed for nesting, unflooded edge of marshes.	Human disturbance, vegetation removal
Shallow Water, Swamps				
Wood Duck, Mallard, Black Duck, Pintail, Hooded Merganser	13	E	Feeding, resting, throughout delta	Timbering, sedimentation
Ospreys a/	14	E	Appropriate nesting trees, feeding areas needed	Oil pollution, timbering
Mixed Bottom land Forest				
Pileated Woodpecker, Warblers, Vireos, Carolina Wren, White-breasted Nuthatch	15	S	Nesting, feeding throughout delta	Timbering
White Ibis	16	S	Nesting, feeding, isolated colonies	Timbering
Yellow-crowned Night Heron	17	S	Nesting, feeding, isolated colonies	Timbering
Black-crowned Night Heron c/	18	S	Nesting, feeding, isolated colonies	Timbering

TABLE 7. (Continued)

SPECIES	SITE LOCATION	TYPE OF INDICATOR (S or E)	DESCRIPTION OF HABITAT/ ACTIVITIES/ECOLOGICAL REQUIREMENTS	ADVERSE ACTIVITIES
Mixed Bottom Land Forest (continued)				
Wood Duck	19	E	Nesting, feeding throughout delta	Timbering
Little Blue Heron c/	20	E	Nesting, feeding in isolated colonies	Timbering
Pine				
Red-cockaded Woodpecker a/	21	S	Nesting, feeding, mature pine woodlands	Timbering
Brown-headed Nuthatch	22	S	Nesting, feeding, pine woodlands	Timbering

a/ Endangered Species -- Federal and State list

b/ Threatened Species -- State list only
Birds that are likely to become endangered in the foreseeable future throughout all or a significant portion of its range.

c/ Special Concern Species -- State list only
Birds that lack adequate information relative to survival status. These species need to be monitored.

DISCUSSION

Ninety-one species were recorded during the breeding bird survey. The ten most prevalent species are as follows. They are listed in the order of their abundance.

1. Common Grackle
2. Purple Martin
3. Mockingbird
4. White Ibis
5. Carolina Wren
6. Red-winged Blackbird
7. Cardinal (tied with Red-winged Blackbird)
8. Blue Jay
9. Least Tern
10. Fish Crow

These ten birds are typical of a species grouping that is characteristic of the gulf coastal plain. Over an extended period of time this ecological stratification should, more or less, remain the same for this region. At times demographic changes can be detected by shifts of diversity and density data. Better measurement of change can be obtained by the use of ecological regions than by combining data on a state or province basis, because many species vary greatly in abundance in different parts of the same state or province.

The data indicates that the most widespread species is the Mockingbird with 241 individuals being recorded at 117 stops. The most abundant species is the Common Grackle with 464 individuals. The White Ibis and Least Terns are species with large numbers being clustered in small areas where breeding occurs. Yellow-crowned night Herons breed in the upper delta. Post breeding dispersal movements will extend their range southward

where they will be found during July and August. Other long-legged waders such as Cattle Egrets, Louisiana Herons, American Egrets and Snowy Egrets weren't detected in significant numbers because they were breeding on Cat Island in Mississippi Sound. An aerial survey on June 24, 1982 was made along the Alabama coast. Twenty-five hundred to three thousand breeding herons were observed on Cat Island during this flight. Brown Pelican numbers will probably increase during subsequent years. One thousand-one hundred and eighty individual birds were counted along the Alabama coast during this aerial survey. This is a record high number for this time of the year. Six hundred twenty-five birds are presently using the spoil island in Mobile Bay for nesting and feeding grounds. Timbering practices if esculated in the upper delta will alter riparian habitat. These changes will be reflected in downward trends of wood duck, heron and warbler numbers. A single Eastern Bluebird was recorded from the West Mobile Bay Route. The paucity of this bird is probably due to the lack of nest cavities near agricultural regions. Bobwhites were found in crop lands and their numbers compare favorably with those of up state populations in similar habitats. Mourning Dove numbers are low. Banding returns have shown that most doves harvested by the hunter in the coastal zone have been produced in other parts of their range.

I recommend that these routes be surveyed again next year and that a computer facility be made available to store and manipulate this data.

SECTION C.

Wintering Bird Survey

INTRODUCTION

Dauphin Island was selected as the location for a wintering bird survey because of its central position and its characteristic vegetative patterns. The island was divided into three survey plots. The terrestrial habitat was measured and characterized. Diversity data was gathered from the wintering bird population and related to each habitat type. In future years, the mean value will be calculated for each species and correlated with the bird's preferred habitat. This base line data will be placed in a computer bank and used to predict trends relative to the number of birds and quality of wintering bird habitat along the Alabama coast. Refer to Phase I: Present Levels of Birds and Mammals in the Coastal Zone Final Report (CAB-81-04), April 30, 1981, for detailed account of location and survey techniques. The American Ornithological Union Number (AOU) is listed for computer indexing.

TABLE 1. 1982 Density and Diversity Data for Wintering Birds with Habitat Preference for each Species.

AOU NO.	SPECIES	1982 LEVEL	HABITAT PREFERENCE *
7	Loon, Common	41	e
3	Grebe, Horned	16	e
6	Grebe, Pied-billed	13	e
126	Pelican, Brown	174	e
117	Gannet, Northern	360	e,f
120	Cormorant, Double-crested	1881	e,f
194	Heron, Great Blue	42	a,e
197	Egret, Snowy	18	a,e
199	Heron, Louisiana	14	a,e
190	Bittern, American	3	a
132	Mallard	17	a,e
147	Canvasback	10	e
149	Scaup, Lesser	360	e
151	Goldeneye, Common	37	e
163	Scoter, Black	1	e,f
129	Merganser, Red-breasted	294	e
333	Hawk, Cooper's	1	b
337	Hawk, Red-tailed	3	b
339	Hawk, Red-shouldered	2	b
331	Harrier, N. (Marsh Hawk)	9	a
364	Osprey	1	a,b
356	Falcon, Peregrine	1	a
360	Kestrel, American	48	b,d

TABLE 1. (Continued)		1982 LEVEL	HABITAT PREFERENCE *
289	Bobwhite	3	b
210	Rail, Clapper	28	a
274	Plover, Semipalmated	17	c
277	Plover, Piping	18	c
273	Killdeer	16	c
270	Plover, Black-bellied	42	c
283	Turnstone, Ruddy	3	c
229	Snipe, Common	3	a,c
258	Willet	51	c
254	Yellowlegs, Greater	3	c
242	Sandpiper, Least	7	c
243	Sandpiper, Dunlin	139	c
231	Dowitcher, Short-billed	24	c
247	Sandpiper, Western	8	c
248	Sanderling	201	c
51	Gull, Herring	160	e
54	Gull, Ring-billed	440	e
58	Gull, Laughing	976	e
60	Gull, Bonaparte's	12	e
69	Tern, Forster's	36	e
65	Tern, Royal	48	e
64	Tern, Caspian	25	e
313	Dove, Rock	24	d
316	Dove, Mourning	93	b,d
320	Dove, Common Ground	2	b
390	Kingfisher, Belted	24	a

TABLE 1. (Continued)		1982 LEVEL	HABITAT PREFERENCE *
412	Flicker, Common	1	b
409	Woodpecker, Red-bellied	21	b
406	Woodpecker, Red-headed	4	b
402	Sapsucker, Yellow-bellied	1	b
393	Woodpecker, Hairy	1	b
447	Kingbird, Western	1	b
456	Phoebe, Eastern	3	b
477	Jay, Blue	46	b
490	Crow, Fish	108	a,b,c
736	Chickadee, Carolina	3	b
729	Nuthatch, Brown-headed	23	b
726	Creeper, Brown	1	b
721	Wren, House	14	b
722	Wren, Winter	1	b
718	Wren, Carolina	15	b
725	Wren, Marsh	2	b
703	Mockingbird	19	b,d
704	Catbird, Gray	4	b
705	Thrasher, Brown	1	b
761	Robin, American	1159	b
766	Bluebird, Eastern	2	b
751	Gnatcatcher, Blue-gray	4	b
749	Kinglet, Ruby-crowned	8	b
697	Pipit, Water	3	c
622	Shrike, Loggerhead	2	b
493	Starling	87	b,d

TABLE 1. (Continued)		1982 LEVEL	HABITAT PREFERENCE *
629	Vireo, Solitary	2	b
655	Warbler, Yellow-rumped (Myrtle)	168	b
671	Warbler, Pine	22	b
681	Yellowthroat, Common	2	b
688	Sparrow, House	33	d
501	Meadowlark, Eastern	24	a,b
498	Blackbird, Red-winged	332	a,b
511	Grackle, Common	15	a,b
593	Cardinal	34	b
597	Grosbeak, Blue	1	b
598	Bunting, Indigo	1	b
529	Goldfinch, American	13	b
587	Towhee, Rufous-sided	10	b
542	Sparrow, Savannah	10	a
549	Sparrow, Sharp-tailed	1	a
550	Sparrow, Seaside	7	a
552	Sparrow, Lark	3	b
560	Sparrow, Chipping	18	b
563	Sparrow, Field	23	b
558	Sparrow, White-throated	2	b
583	Sparrow, Lincoln's	1	b
584	Sparrow, Swamp	21	b
581	Sparrow, Song	4	b

* HABITAT PREFERENCE LEGEND

a. Marsh (brackish, mixed)

b. Mixed upland forest, edge, swamp

c. Beach, pine hills, dunes, intertidal zone, shoreline complex

d. Developed areas (residential, municipal, dredge, fill)

e. Inshore water (tidal pools, bays, sounds)

f. Pelagic (open water)

TABLE 2. Survey and Summary Data for Wintering Census

Total species	98
Total individuals	8,030
Month - Day	0109
Time - Start	0600
Time - Finish	1730
Temperatures	
Start	18
Finish	52
Wind (Beaufort Scale)	
Start - Finish	1-2
Sky (Beaufort Scale)	
Start - Finish	1-2
Observer hours	52.5
Number of observers	5
HABITAT	
Terrestrial:	
a. Marsh (brackish, mixed)	528 acres
b. Mixed upland forest, edge swamp	1160 acres
c. Beach, pine hills, dunes intertidal zone, shoreline complex	1619 acres
D. Developed areas (residential, Municipal, dredge, fill)	576 acres
Aquatic: (acreage not estimated)	
e. Inshore water (tidal Pools, bays, sounds)	-
f. Pelagic (open water)	-

DISCUSSION

The winter of 1982 may be an unusual year in the southeastern United States as far as numbers of birds are concerned. Initial reports from major bird counts in other parts of the south indicate an abnormally low number of individuals. Adequate data, on a range wide basis, is not available to formulate a reasonable explanation at this time. One of the most dominating forces that has influenced wintering bird habitat on Dauphin Island has been the September 13, 1979, storm. Most of the beach-sand dune complex has been severely altered, if not destroyed, along the Gulf side. However, along the Mississippi Sound shore, new tidal pools and sand spits have been created making available new shore bird habitat. If left undisturbed by human interference, the west end of Dauphin Island will provide excellent wintering bird habitat for both shore birds and waders. Hurricane Frederick caused wide spread destruction of both live oak and pine trees. Many trees that are now dead, but left standing, should provide future habitat for woodpeckers and other cavity nesting birds. Disturbance created by construction of the new bridge has reduced the number of diving ducks normally seen in this area. With the completion of this high rise bridge and with the lack of accessibility for vehicles onto Little Dauphin Island, shore bird numbers will increase and many wintering duck species will return. On the island proper, any reduction in woodland, marsh or shore habitats will mitigate bird diversity and numbers.

Concomitantly, any increase in these acreages should enhance the diversity and numbers. Large concentrations of certain bird species that prefer extensive, uninterrupted wintering areas will be missed on Dauphin Island during these winter surveys. For example, most of Alabama's coastal diving duck population over winters in the Bon Secour Bay and Little Point Clear areas. The Spartina meadows at Point aux Pins and Isle of Herbs support sizeable populations of clapper rails. White pelicans are found at this time of year at the head of Mobile Bay in prime feeding areas. Snowy plovers frequent small off-shore sand islands well beyond the mainland. Even though large concentrations of certain species may be missed on Dauphin Island, the data gathered from this sample survey area is indicative of the wintering birds that depend upon the Alabama coast.

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PLANT LIST FOR PEROMYSCUS POLIONOTUS HABITAT

The following plants characterize beach mouse habitat in Alabama:

Cerattiola ericoides (Rosemary)

Chrysoma pauciflosculosa (Seaside Goldenrod)

Conradina canescens (Seaside Balm)

Iva imbricata (Dune Elder)

Pinus clausa (Sand Pine)

P. elliottii (Slash Pine)

Quercus myrtifolia (Myrtle Oak)

Q. virginiana var. maritima (Live Oak)

Serenoa repens (Saw Palmetto)

Andropogon maritimus (Seaside Beard Grass)

Asclepias humistrata (Sand Milkweed)

Cakile harperi (Sea Rocket)

Cenchrus tribuloides (Sand Bur)

Helianthemum arenicola (Sand Rock-Rose)

Heterotheca subaxillaris (Golden Aster)

Hydrocotyle bonariensis (Pennywort)

Ipomoea stolonifera (Beach Morning Glory)

Oenothera humifusa (Dune Evening Primrose)

Panicum amarum (Bitter Panic Grass)

P. repens (Torpedo Grass)

Phragmites australis (Reed)

Physalis angustifolia (Ground Cherry)

PLANT LIST. (Continued)

Polygonella gracilis (Slender Jountweed)

Sesuvium portulascastrum (Seaside Purslane)

Siphonychia corymbosa (Whitlow Wort)

Sporobolus virginicus (Dropseed Grass)

Uniola paniculata (Sea Oats)

ANNOTATED LIST OF BIRDS FOUND DURING THE BREEDING AND WINTERING STUDY SEASONS

The following two tables list the birds that may be expected to occur during these study periods. A description of each bird's occurrence is listed as follows:

Permanent Residents: These are birds that spend the entire year in this region and have confirmed breeding records in Baldwin and/or Mobile counties.

Entire Year: These are birds that may spend the entire year in this region and have confirmed breeding records in Baldwin and/or Mobile counties. Many of these birds breed in other parts of their range.

Dates: These are inclusive dates during which the bird may be expected to occur. For an example, the following notation may be given: March 1 - August 25, November 1. This means that a bird normally occurs between March 1 - August 25 and that there was a single record of this bird being observed on November 1. The word "breeds" after the dates of occurrence indicates that it breeds in the coastal region.

Irregular Visitor: This category describes a bird that may occur occasionally in the coastal zone. These birds may be "wanderers" or forced into the area by extreme weather conditions.

Status Unknown: We still have a few birds with incomplete distributional data concerning nesting and migration. They

occur in Baldwin and Mobile counties but live in critical environments. More work is needed on these species.

TABLE 1. Breeding season check list. All of these birds have two or more acceptable records during the last two weeks in May and/or for the month of June in Mobile and Baldwin counties.

SPECIES	DATES OF OCCURRENCE/STATUS
Loon, Common	Oct. 8 - May 27
Grebe, Pied-billed	Permanent resident
Pelican, White	Entire year, common in Sept.
Pelican, Brown	Entire year, common in Aug.
Booby, Brown	Irregular visitor, (spring and summer)
Cormorant, Double-crested	Oct. 1 - May 1
Anhinga	Permanent resident
Frigatebird, Magnificent	Feb. 1 - Dec. 31
Heron, Great Blue	Permanent resident
Heron, Green	Permanent resident
Heron, Little Blue	Permanent resident
Egret, Cattle	Permanent resident
Egret, Reddish	Jan. 1 - Dec. 28
Egret, Great	Permanent resident
Egret, Snowy	Permanent resident
Heron, Louisiana	Permanent resident

TABLE 1. (Continued)

SPECIES	DATES OF OCCURRENCE/STATUS
Heron, Black-crowned night	Permanent resident
Heron, Yellow-crowned night	Permanent resident
Bittern, Least	Permanent resident
Ibis, Glossy	Permanent resident
Ibis, White	Permanent resident
Ibis, White-faced	Permanent resident
Duck, Mottled	Permanent resident
Teal, Blue-winged	Permanent resident
Duck, Wood	Permanent resident
Scaup, Lesser	Oct. 4 - June 2
Merganser, Red-breasted	Entire year
Vulture, Turkey	Permanent resident
Vulture, Black	Permanent resident
Kite, Swallow-tailed	Mar. 1 - Aug. 8, breeds
Kite, Mississippi	Mar. 29 - Oct. 17, breeds
Hawk, Cooper's	Permanent resident
Hawk, Sharp-shinned	Sept. 14 - Apr. 7
Hawk, Red-tailed	Permanent resident
Hawk, Red-shouldered	Permanent resident
Hawk, Broad-winged	Permanent resident
Eagle, Bald	Irregular visitor
Osprey	Permanent resident
Kestrel, American	Permanent resident
Bobwhite	Permanent resident

TABLE 1. (Continued)

SPECIES	DATES OF OCCURRENCE/STATUS
Turkey	Permanent resident
Crane, Sandhill	Oct. 26 - Mar. 20
Rail, King	Permanent resident
Rail, Clapper	Permanent resident
Rail, Virginia	Aug. 16 - May 2
Rail, Black	Status unknown
Sora	Aug. 20 - May 3
Gallinule, Purple	Mar. 15 - Nov. 25, breeds
Gallinule, Common	Permanent resident
Coot, American	Permanent resident
Oystercatcher, American	Permanent resident
Plover, Semipalmated	Entire year
Plover, Snowy	Status unknown
Plover, Wilson's	Mar. 11 - Nov. 6, breeds
Killdeer	Permanent resident
Plover, Black-bellied	Aug. 1 - May 30
Turnstone, Ruddy	July 30 - May 30
Woodcock, American	Permanent resident
Sandpiper, Spotted	Mar. 29 - June 5
Yellowlegs, Greater	Mar. 1 - Dec. 26
Yellowlegs, Lesser	Feb. 1 - May 30
Willet	Permanent resident
Knot, Red	July 15 - June 3
Sandpiper, White-rumped	Apr. 23 - June 16

TABLE 1. (Continued)

SPECIES	DATES OF OCCURRENCE/STATUS
Sandpiper, Least	July 28 - May 22
Sandpiper, Semipalmated	Sept. 10 - June 1
Sandpiper, Western	July 25 - May 25
Sanderling	July 25 - June 3
Dowitcher, Short-billed	June 30 - May 25
Sandpiper, Stilt	May 11 - May 27
Stilt, Black-necked	Permanent resident
Avocet, American	Aug. 28 - May 21
Gull, Herring	Entire year
Gull, Ring-billed	Entire year
Gull, Laughing	Entire year
Tern, Gull-billed	Permanent resident
Tern, Forster's	Entire year
Tern, Common	Permanent resident
Tern, Sooty	Irregular visitor
Tern, Bridled	Irregular visitor
Tern, Least	Apr. 4 - Oct. 22, breeds
Tern, Royal	Permanent resident
Tern, Sandwich	Mar. 19 - Nov. 29, breeds
Tern, Caspian	Permanent resident
Tern, Black	Apr. 20 - Oct. 22
Skimmer, Black	Permanent resident
Dove, Rock	Permanent resident
Dove, Mourning	Permanent resident

TABLE 1. (Continued)

SPECIES	DATES OF OCCURRENCE/STATUS
Dove, Common Ground	Permanent resident
Cuckoo, Yellow-billed	Mar. 25 - Nov. 9, breeds
Owl, Barn	Permanent resident
Owl, Common Screech	Permanent resident
Owl, Great Horned	Permanent resident
Owl, Barred	Permanent resident
Chuck-will's-widow	Mar. 5 - Oct. 24, breeds
Nighthawk, Common	Apr. 6 - Nov. 5, breeds
Swift, Chimney	Mar. 10 - Nov. 4, breeds
Hummingbird, Ruby-throated	Permanent resident
Kingfisher, Belted	Permanent resident
Flicker, Common	Permanent resident
Woodpecker, Pileated	Permanent resident
Woodpecker, Red-bellied	Permanent resident
Woodpecker, Red-headed	Permanent resident
Woodpecker, Hairy	Permanent resident
Woodpecker, Downy	Permanent resident
Woodpecker, Red-cockaded	Permanent resident
Kingbird, Eastern	Mar. 12 - Oct. 7, breeds
Kingbird, Gray	Apr. 11 - Oct. 30, breeds
Kingbird, Western	Aug. 27 - May 17
Flycatcher, Great Crested	Mar. 7 - Oct. 26, breeds
Flycatcher, Acadian	Mar. 26 - Oct. 17, breeds
Pewee, Eastern Wood	Apr. 6 - Nov. 8, breeds

TABLE 1. (Continued)

SPECIES	DATES OF OCCURRENCE/STATUS
Swallow, Rough-winged	Mar. 9 - Jan. 2, breeds
Swallow, Barn	Mar. 10 - Nov. 8, breeds
Martin, Purple	Jan. 17 - Oct. 20, breeds
Jay, Blue	Permanent resident
Crow, Common	Permanent resident
Crow, Fish	Permanent resident
Chickadee, Carolina	Permanent resident
Titmouse, Tufted	Permanent resident
Nuthatch, White-breasted	Permanent resident
Nuthatch, Brown-headed	Permanent resident
Wren, Carolina	Permanent resident
Wren, Marsh	Permanent resident
Mockingbird	Permanent resident
Thrasher, Brown	Permanent resident
Robin, American	Permanent resident
Thrush, Wood	Mar. 3 - Nov. 9, breeds
Bluebird, Eastern	Permanent resident
Gnatcatcher, Blue-gray	Permanent resident
Shrike, Loggerhead	Permanent resident
Starling	Permanent resident
Vireo, White-eyed	Permanent resident
Vireo, Yellow-throated	Mar. 13 - Nov. 1, breeds
Vireo, Red-eyed	Mar. 15 - Nov. 6, breeds
Warbler, Prothonotary	Mar. 8 - Sept. 29, breeds

TABLE 1. (Continued)

SPECIES	DATES OF OCCURRENCE/STATUS
Warbler, Swainson's	Mar. 23 - Oct. 27, breeds
Warbler, Northern Parula	Feb. 26 - Nov. 26, breeds
Warbler, Yellow	Mar. 20 - May 31
Warbler, Magnolia	Apr. 11 - May 26
Warbler, Cerulean	Mar. 26 - Sept. 16
Warbler, Blackburnian	Mar. 21 - May 26
Warbler, Blackpoll	Apr. 10 - May 26
Warbler, Yellow-throated	Entire year
Warbler, Pine	Permanent resident
Warbler, Prairie	Mar. 3 - Oct. 27, breeds
Thrush, Louisiana water	Mar. 5 - May 16
Ovenbird	Mar. 17 - May 22
Warbler, Kentucky	Mar. 15 - Oct. 20, breeds
Yellowthroat, Common	Permanent resident
Chat, Yellow-breasted	Mar. 1 - Dec. 22, breeds
Warbler, Hooded	Mar. 3 - Nov. 21, breeds
Redstart, American	Mar. 26 - Nov. 8, breeds
Sparrow, House	Permanent resident
Meadowlark, Eastern	Permanent resident
Blackbird, Red-winged	Permanent resident
Oriole, Orchard	Mar. 4 - Sept. 10, breeds
Grackle, Boat-tailed	Permanent resident
Grackle, Common	Permanent resident
Cowbird, Brown-headed	Permanent resident

TABLE 1. (Continued)

SPECIES	DATES OF OCCURRENCE/STATUS
Tanager, Summer	Mar. 17 - Nov. 7, Dec. 12, breeds
Cardinal	Permanent resident
Grosbeak, Blue	Mar. 18 - Dec. 9, breeds
Bunting, Indigo	Mar. 5 - Nov. 28, Dec. 23-Feb. 28, breeds
Bunting, Painted	Mar. 26 - Nov. 1, breeds
Towhee, Rufous-sided	Permanent resident
Sparrow, Seaside	Permanent resident
Sparrow, Bachman's	Entire year
Sparrow, Chipping	Permanent resident

TABLE 2. Wintering season check list. All of these birds have two or more acceptable records during the last two weeks of November, and/or for the months of December, January, and February.

SPECIES	DATES OF OCCURRENCE/STATUS
Loon, Common	Oct. 8 - May 27
Loon, Red-throated	Irregular visitor
Grebe, Red-necked	Irregular visitor
Grebe, Horned	Oct. 3 - May 22
Grebe, Eared	Oct. 15 - Apr. 29
Grebe, Pied-billed	Permanent resident

TABLE 2. (Continued)

SPECIES	DATES OF OCCURRENCE/STATUS
Pelican, White	Entire year, common in Sept.
Pelican, Brown	Entire year, common in Aug.
Booby, Blue-faced	Irregular visitor
Gannet, Northern	Irregular visitor
Cormorant, Great	Irregular visitor
Cormorant, Double-crested	Oct. 1 - May 1
Anhinga	Permanent resident
Frigatebird, Magnificent	Feb. 1 - Dec. 31
Heron, Great Blue	Permanent resident
Heron, Green	Permanent resident
Heron, Little Blue	Permanent resident
Egret, Cattle	Permanent resident
Egret, Reddish	Jan. 1 - Dec. 28
Egret, Great	Permanent resident
Egret, Snowy	Permanent resident
Heron, Louisiana	Permanent resident
Heron, Black-crowned Night	Permanent resident
Heron, Yellow-crowned Night	Permanent resident
Bittern, Least	Permanent resident
Bittern, American	Aug. 26 - May 1
Ibis, White	Permanent resident
Ibis, White-faced	Permanent resident
Swan, Whistling	Irregular visitor
Goose, Canada	Oct. 10 - Apr. 22

TABLE 2. (Continued)

SPECIES	DATES OF OCCURRENCE/STATUS
Goose, White-fronted	Oct. 17 - Apr. 24
Goose, Snow	Sept. 12 - May 9
Mallard	Permanent resident
Duck, Black	Oct. 20 - Apr. 13
Duck, Mottled	Permanent resident
Gadwall	Oct. 3 - May 29
Pintail, Northern	Sept. 24 - Apr. 12
Teal, Green-winged	Aug. 16 - May 13
Teal, Blue-winged	Permanent resident
Wigeon, American	Oct. 3 - May 25
Shoveler, Northern	Oct. 6 - May 29
Duck, Wood	Permanent resident
Redhead	Sept. 26 - May 19
Duck, Ring-necked	Oct. 26 - May 26
Canvasback	Oct. 4 - Apr. 21
Scaup, Greater	Oct. 23 - Apr. 18
Scaup, Lesser	Oct. 4 - June 2
Goldeneye, Common	Nov. 23 - Apr. 28
Bufflehead	Nov. 6 - Apr. 22
Oldsquaw	Nov. 5 - Apr. 7
Scoter, White-winged	Oct. 15 - Apr. 13
Scoter, Surf	Nov. 8 - Apr. 20
Scoter, Black	Irregular visitor
Duck, Ruddy	Oct. 13 - May 29

TABLE 2. (Continued)

SPECIES	DATES OF OCCURRENCE/STATUS
Merganser, Hooded	Nov. 4 - Apr. 10
Merganser, Common	Nov. 20 - Apr. 24
Merganser, Red-breasted	Entire year
Vulture, Turkey	Permanent resident
Vulture, Black	Permanent resident
Goshawk	Irregular visitor
Hawk, Sharp-shinned	Sept. 14 - Apr. 7
Hawk, Cooper's	Permanent resident
Hawk, Red-tailed	Permanent resident
Hawk, Red-shouldered	Permanent resident
Hawk, Broad-winged	Permanent resident
Hawk, Rough-legged	Oct. 18 - Feb. 2
Eagle, Golden	Irregular visitor
Eagle, Bald	Irregular visitor
Harrier, N. (Marsh Hawk)	Aug. 27 - May 14
Osprey	Permanent resident
Falcon, Peregrine	Sept. 11 - May 1
Merlin	Sept. 6 - May 16
Kestrel, American	Permanent resident
Bobwhite	Permanent resident
Turkey	Permanent resident
Crane, Sandhill	Oct. 20 - Mar. 20
Rail, King	Permanent resident
Rail, Clapper	Permanent resident

TABLE 2. (Continued)

SPECIES	DATES OF OCCURRENCE/STATUS
Rail, Virginia	Aug. 16 - May 2
Rail, Sora	Aug. 20 - May 3
Rail, Black	Status Unknown
Gallinule, Common	Permanent resident
Gallinule, Purple	Mar. 15 - Nov. 25
Coot, American	Permanent resident
Oystercatcher, American	Permanent resident
Plover, Semipalmated	Entire year
Plover, Piping	July 15 - May 3
Plover, Snowy	Status unknown
Killdeer	Permanent resident
Plover, Mountain	Irregular visitor
Plover, Black-bellied	Aug. 1 - May 30
Turnstone, Ruddy	July 30 - May 30
Woodcock, American	Permanent resident
Snipe, Common	Aug. 24 - May 2
Whimbrel	Apr. 3 - Jan. 7
Sandpiper, Spotted	Mar. 29 - July 12
Sandpiper, Solitary	Feb. 21 - May 20
Willet	Permanent resident
Yellowlegs, Greater	Mar. 1 - Dec. 26
Yellowlegs, Lesser	Feb. 1 - May 30
Knot, Red	July 15 - June 3
Sandpiper, Pectoral	Jan. 2 - May 29

TABLE 2. (Continued)

SPECIES	DATES OF OCCURRENCE/STATUS
Sandpiper, Least	July 28 - May 22
Sandpiper, Semipalmated	Sept. 10 - June 1
Sandpiper, Dunlin	Sept. 10 - June 1
Dowitcher, Short-billed	June 30 - May 25
Dowitcher, Long-billed	Mar. 24 - May 16, Nov. 5
Sandpiper, Western	July 25 - May 25
Godwit, Marbled	Irregular visitor
Sanderling	July 27 - June 3
Avocet, American	Aug. 28 - May 21
Phalarope, Red	Irregular visitor
Jaeger, Pomarine	Irregular visitor
Jaeger, Parasitic	Irregular visitor
Gull, Great Black-backed	Irregular visitor
Gull, Herring	Entire year
Gull, Ring-billed	Entire year
Gull, Laughing	Entire year
Gull, Bonaparte's	Oct. 1 - May 14
Tern, Gull-billed	Permanent resident
Tern, Forster's	Entire year
Tern, Common	Entire year
Tern, Royal	Permanent resident
Tern Caspian	Permanent resident
Tern, Sandwich	Mar. 19 - Nov. 29
Tern, Black	Apr. 20 - Oct. 22

TABLE 2. (Continued)

SPECIES	DATES OF OCCURRENCE/STATUS
Skimmer, Black	Permanent resident
Dove, Rock	Permanent resident
Dove, White-winged	Irregular visitor
Dove, Mourning	Permanent resident
Dove, Common Ground	Permanent resident
Ani, Groove-billed	Irregular visitor
Owl, Barn	Permanent resident
Owl, Common Screech	Permanent resident
Owl, Great Horned	Permanent resident
Owl, Barred	Permanent resident
Owl, Long-eared	Irregular visitor
Owl, Short-eared	Irregular visitor
Chuck-will's widow	Mar. 5 - Oct. 24, Feb. 17
Whip-poor-will	Sept. 8 - Apr. 23
Hummingbird, Ruby-throated	Permanent resident
Hummingbird, Rufous	Irregular visitor
Kingfisher, Belted	Permanent resident
Flicker, Common	Permanent resident
Woodpecker, Pileated	Permanent resident
Woodpecker, Red-bellied	Permanent resident
Woodpecker, Red-headed	Permanent resident
Sapsucker, Yellow-bellied	Oct. 6 - May 17
Woodpecker, Hairy	Permanent resident
Woodpecker, Downy	Permanent resident

TABLE 2. (Continued)

SPECIES	DATES OF OCCURRENCE/STATUS
Woodpecker, Red-cockaded	Permanent resident
Kingbird, Western	Aug. 27 - May 17
Flycatcher, Scissor-tailed	July 4 - May 15
Phoebe, Eastern	Sept. 9 - Apr. 18
Flycatcher, Vermilion	Oct. 4 - Mar. 11
Swallow, Tree	Aug. 10 - May 16
Swallow, Rough-winged	Mar. 9 - Jan. 2
Swallow, Barn	Mar. 10 - Nov. 8
Martin, Purple	Jan. 17 - Nov. 20
Jay, Blue	Permanent resident
Crow, Common	Permanent resident
Crow, Fish	Permanent resident
Chickadee, Carolina	Permanent resident
Titmouse, Tufted	Permanent resident
Nuthatch, White-breasted	Permanent resident
Nuthatch, Red-breasted	Sept. 27 - May 5
Nuthatch, Brown-headed	Permanent resident
Creeper, Brown	Oct. 16 - Apr. 2
Wren, House	Sept. 19 - May 2
Wren, Winter	Oct. 10 - Mar. 26
Wren, Bewick's	Oct. 6 - Apr. 12
Wren, Carolina	Permanent resident
Wren, Marsh	Permanent resident
Wren, Sedge	Oct. 5 - May 13

TABLE 2. (Continued)

SPECIES	DATES OF OCCURRENCE/STATUS
Mockingbird	Permanent resident
Catbird, Gray	Sept. 8 - May 16
Thrasher, Brown	Permanent resident
Robin, American	Permanent resident
Thrush, Hermit	Sept. 24 - Apr. 22
Bluebird, Eastern	Permanent resident
Gnatcatcher, Blue-gray	Permanent resident
Kinglet, Golden-crowned	Oct. 17 - Apr. 1
Kinglet, Ruby-crowned	Sept. 13 - May 1
Pipit, Water	Oct. 6 - Apr. 27
Pipit, Sprague's	Nov. 7 - Apr. 13
Waxwing, Cedar	Sept. 6 - May 31
Shrike, Loggerhead	Permanent resident
Starling	Permanent resident
Vireo, White-eyed	Permanent resident
Vireo, Yellow-throated	Mar. 13 - Nov. 1
Vireo, Solitary	Sept. 6 - Apr. 23
Warbler, Black-and-White	July 3 - June 4
Warbler, Orange-crowned	Sept. 19 - Apr. 16
Warbler, Northern Parula	Feb. 28 - Nov. 26
Warbler, Yellow-rumped (Myrtle)	Nov. 1 - Apr. 25
Warbler, Black-throated, green	Mar. 18 - May 13, Feb. 1
Warbler, Yellow-throated	Entire year
Warbler, Pine	Permanent resident

TABLE 2. (Continued)

SPECIES	DATES OF OCCURRENCE/STATUS
Warbler, Prairie	Mar. 3 - Oct. 27
Warbler, Palm	Sept. 3 - May 5
Waterthrush, Northern	Mar. 5 - May 16, Feb. 12
Yellowthroat, Common	Permanent resident
Chat, Yellow-breasted	Mar. 1 - Dec. 22
Sparrow, House	Permanent resident
Meadowlark, Eastern	Permanent resident
Meadowlark, Western	Oct. 26 - Mar. 22
Blackbird, Red-winged	Permanent resident
Oriole, N. (Baltimore)	Apr. 4 - May 23, Nov. 7
Blackbird, Rusty	Oct. 21 - Apr. 13
Blackbird, Brewer's	Oct. 31 - Apr. 10
Grackle, Boat-tailed	Permanent resident
Grackle, Common	Permanent resident
Cowbird, Brown-headed	Permanent resident
Tanager, Western	Aug. 30 - Oct. 16, Feb. 17
Tanager, Summer	Mar. 17 - Nov. 7, Dec. 12
Cardinal	Permanent resident
Grosbeak, Rose-breasted	2 individuals have wintered
Grosbeak, Black-headed	Sept. 29 - May 3
Grosbeak, Blue	Mar. 18 - Dec. 9
Bunting, Indigo	Mar. 5 - Nov. 28, Dec. 23 - Feb. 28
Dickcissel	July 1 - June 9

TABLE 2. (Continued)

SPECIES	DATES OF OCCURRENCE/STATUS
Grosbeak, Evening	Dec. 18 - May 10
Finch, Purple	Nov. 9 - Apr. 26
Siskin, Pine	Oct. 26 - May 4
Goldfinch, American	Sept. 28 - May 4
Towhee, Rufous-sided	Permanent resident
Sparrow, Savannah	Oct. 5 - May 14
Sparrow, Grasshopper	Oct. 8 - Apr. 26
Sparrow, LeConte's	Oct. 25 - Apr. 22
Sparrow, Henslow's	Oct. 17 - Mar. 30
Sparrow, Sharp-tailed	Sept. 9 - May 16
Sparrow, Seaside	Permanent resident
Sparrow, Vesper	Sept. 9 - Apr. 13
Sparrow, Lark	Apr. 14 - Nov. 30
Sparrow, Bachman's	Entire year
Junco, Northern (state-colored)	Oct. 6 - Apr. 8
Sparrow, Chipping	Permanent resident
Sparrow, Clay-colored	Sept. 13 - Jan. 18
Sparrow, Field	Aug. 28 - May 1
Sparrow, Harris'	Dec. 28
Sparrow, White-crowned	Oct. 5 - May 25
Sparrow, White-throated	Sept. 14 - May 22
Sparrow, Fox	Oct. 24 - Mar. 11
Sparrow, Lincoln's	Oct. 6 - Apr. 20
Sparrow, Swamp	Sept. 23 - May 7
Sparrow, Song	Oct. 12 - Apr. 21

TABLE 3. Summary Data Dauphin Island Route, 040, 1966-1973

AOU NO.	SPECIES	1966	1967	1968	1969	1970	1971	1972	1973
006	Pied-billed Grebe	0	0	1	0	0	0	0	1
120	Double-C. Corm.	0	0	0	0	0	0	0	0
126	Brown Pelican	8	4	3	4	0	0	0	2
128	Mag. Frigate	0	0	0	0	0	0	0	0
194	Great Blue Heron	0	0	0	0	1	0	2	2
201	Green Heron	1	2	1	2	1	6	0	1
200	Little Blue Heron	2	0	0	1	3	0	0	3
2001	Cattle Egret	0	7	0	7	2	2	5	0
196	Great Egret	0	1	0	0	0	0	0	0
198	Reddish Egret	0	0	0	0	0	0	0	0
197	Snowy Egret	0	2	1	21	16	0	2	58
199	Louisiana Heron	2	5	2	16	8	4	1	16
202	Black-cr. Night Hawk	0	0	0	0	0	0	0	0
203	Yellow-cr. Night Hawk	1	0	0	0	0	0	4	0
191	Least Bittern	2	0	1	0	0	2	2	1
184	White Ibis	0	0	1	0	0	0	0	0
140	Blue-wing Teal	0	0	0	0	0	2	2	0
144	Wood Duck	0	0	0	0	0	0	0	0
329	Mississippi Kite	1	0	0	0	0	1	0	0
343	Broad-wing Hawk	2	1	1	0	2	0	1	0
289	Bobwhite	21	25	35	35	50	44	39	28
208	King Rail	0	0	0	0	0	1	0	0
211	Clapper Rail	2	3	9	17	6	5	3	4
214	Sora	1	0	0	0	0	0	0	0

TABLE 3. (Continued)		1966	1967	1968	1969	1970	1971	1972	1973
216	Black Rail	0	0	0	0	0	0	0	0
218	Purple Gallinule	1	0	0	0	0	0	0	0
219	Com. Gallinule	1	0	0	0	0	0	0	0
286	American Oystercat.	0	0	0	0	0	0	0	0
280	Wilson's Plover	0	0	0	0	0	0	0	0
283	Ruddy Turnstone	0	0	2	0	2	3	0	0
228	American Woodcock	0	0	0	0	0	0	1	0
258	Willet	4	11	1	2	3	3	2	1
051	Herring Gull	0	0	0	0	4	0	3	0
054	Ring-billed Gull	0	0	2	0	0	0	0	0
058	Laughing Gull	0	3	1	3	0	6	22	0
063	Gull-billed Tern	0	0	0	0	0	0	0	0
069	Forster's Tern	0	0	3	3	0	1	0	0
067	Sandwich Tern	0	0	0	0	0	0	0	0
074	Least Tern	51	75	32	16	0	6	5	4
065	Royal Tern	0	0	4	4	0	0	0	0
064	Caspian Tern	1	0	0	0	0	0	0	0
080	Black Skimmer	5	2	9	0	2	5	4	0
3131	Rock Dove	0	1	0	0	0	0	0	0
316	Mourning Dove	4	7	3	8	1	6	3	3
320	Ground Dove	0	0	0	0	0	0	1	0
387	Yellow-b. Cuckoo	4	1	1	2	5	3	2	5
373	Screech Owl	0	1	0	0	1	1	0	0
416	Chuck-wills-widow	0	3	2	3	20	3	6	5
420	Common Night Hawk	1	0	1	2	1	0	1	0
423	Chimney Swift	7	28	4	27	8	14	7	10

TABLE 3. (Continued)		1966	1967	1968	1969	1970	1971	1972	1973
428	Ruby-th. Hummingbird	1	0	1	0	0	0	0	0
390	Belted King	0	0	0	1	1	0	1	0
412	Yellow-s. Flick	5	8	0	4	3	4	1	2
405	Pileated Woodpecker	1	2	2	0	1	0	0	0
409	Red-bellied Woodpecker	7	6	9	3	8	11	2	2
406	Red-headed Woodpecker	4	4	8	8	3	4	5	4
394	Downy Woodpecker	2	1	2	1	1	1	0	1
393	Hairy Woodpecker	0	0	0	0	0	0	0	0
444	Eastern Kingbird	4	2	5	10	1	1	1	0
452	Great-c. Flycatcher	2	7	11	14	17	3	8	12
465	Acadian Flycatcher	0	1	0	0	0	0	0	0
617	Rough-w. Swallow	0	33	0	3	3	3	5	4
613	Barn Swallow	0	1	0	0	0	0	1	0
611	Purple Martin	88	59	53	28	26	57	48	26
477	Blue Jay	24	48	51	39	36	53	35	36
488	Common Crow	12	27	45	12	9	20	17	12
490	Fish Crow	106	67	106	88	72	49	74	91
736	Carolina Chickadee	0	2	2	0	1	3	1	1
731	Tufted Titmouse	1	11	8	0	5	14	3	0
729	Brown-h. Nuthatch	3	6	21	2	5	7	9	4
718	Carolina Wren	8	15	24	10	15	19	10	10
725	Long-b. Marsh Wren	1	3	2	1	1	5	1	2
703	Mockingbird	40	75	87	56	50	53	49	57
705	Brown Thrasher	2	9	4	4	4	9	9	9
761	American Robin	0	0	0	2	0	0	0	0
755	Wood Thrush	0	0	0	0	0	0	0	0

TABLE 3. (Continued)		1966	1967	1968	1969	1970	1971	1972	1973
756	Veery	0	0	0	0	0	0	0	0
766	Eastern Bluebird	1	1	1	2	0	0	0	0
751	Blue-g. Gnatcatcher	0	0	0	0	1	0	0	0
622	Shrike	4	0	2	1	1	2	2	1
493	Starling	1	1	4	6	4	11	13	12
631	White-eyed Vireo	1	18	12	9	2	3	2	7
628	Yellow-throated Vireo	0	0	1	0	0	0	2	0
624	Red-eyed Vireo	1	0	0	2	1	2	2	1
637	Protho. Warbler	0	0	0	1	2	0	2	1
648	Parula Warbler	0	0	0	0	1	0	0	0
671	Pine Warbler	3	0	3	1	0	0	0	0
681	Yellowthroat	1	2	1	0	0	3	2	4
683	Yellow-br. Chat	1	0	0	0	1	1	0	0
684	Hooded Warbler	0	0	1	0	0	0	0	0
6882	House Sparrow	4	31	22	6	14	26	25	10
501	E. Meadowlark	2	4	10	9	5	2	1	1
498	Red-wg. Blackbird	94	155	164	148	90	68	82	67
506	Orchard Oriole	5	4	13	8	10	19	15	13
513	Boat-tailed Grackle	0	0	0	0	0	0	0	0
511	Common Grackle	23	46	24	39	39	21	43	58
495	Brown-headed Cowbird	2	1	2	3	0	3	1	0
610	Summer Tanager	0	1	0	1	2	0	0	2
593	Cardinal	19	34	28	30	34	49	32	22
597	Blue Grosbeak	2	2	0	0	1	0	2	0
598	Indigo Bunting	0	0	0	0	0	0	0	0
587	Rufous-side Towhee	21	37	14	17	17	33	11	15

TABLE 3. (Continued)		1966	1967	1968	1969	1970	1971	1972	1973
550	Seaside Sparrow	8	19	22	8	13	17	6	12
	TOTAL INDIVIDUAL -	626	925	885	750	636	694	641	643
	TOTAL SPECIES -	57	55	58	53	57	53	58	47

TABLE 4. Summary Data Dauphin Island Route, 040, 1974-1979, 1981

AOU NO.	SPECIES	1974	1975	1976	1977	1978	1979	1981
006	Pied-billed Grebe	0	0	0	1	2	0	0
120	Double-C. Corm.	0	0	0	0	0	0	1
126	Brown Pelican	68	77	304	40	0	149	51
128	Mag. Frigate	0	0	0	0	0	0	1
194	Great Blue Heron	2	2	1	1	0	0	0
201	Green Heron	5	2	1	0	2	2	1
200	Little Blue Heron	1	0	0	0	0	0	0
2001	Cattle Egret	0	0	11	0	4	10	0
196	Great Egret	0	0	1	2	0	1	0
198	Reddish Egret	0	0	0	0	0	1	3
197	Snowy Egret	2	2	2	9	24	7	2
199	Louisiana Heron	6	4	5	3	7	7	4
202	Black-cr. Night Herron	0	0	1	0	0	0	0
203	Yellow-cr. Night Herron	0	0	0	0	0	1	0
191	Least Bittern	1	1	1	1	0	0	0
184	White Ibis	0	0	0	0	0	0	0
140	Blue-wing Teal	0	0	0	0	0	2	0

TABLE 4. (Continued)		1974	1975	1976	1977	1978	1979	1981
144	Wood Duck	0	2	0	0	0	0	0
329	Mississippi Kite	0	0	1	1	0	0	0
343	Broad-wg. Hawk	4	1	0	1	0	0	1
289	Bobwhite	35	32	40	36	22	55	54
208	King Rail	0	0	0	0	0	0	0
211	Clapper Rail	2	1	6	1	1	4	6
214	Sora	0	0	0	0	0	0	0
216	Black Rail	0	0	0	0	0	0	1
218	Purple Gallinule	0	0	0	0	0	0	0
219	Common Gallinule	0	0	0	0	0	1	0
286	Am. Oystercatcher	0	2	0	0	0	2	0
280	Wilson's Plover	0	0	0	0	0	0	1
283	Ruddy Turnstone	0	0	0	0	0	0	0
228	American Woodcock	0	0	0	0	0	1	0
258	Willet	0	2	6	2	2	5	7
051	Herring Gull	1	1	1	2	2	0	2
054	Ring-billed Gull	1	2	4	0	0	0	0
058	Laughing Gull	2	28	8	18	181	30	50
063	Gull-billed Tern	0	0	0	0	0	0	11
069	Forster's Tern	0	1	0	0	0	0	0
067	Sandwich Tern	0	0	0	0	0	4	24
074	Least Tern	7	0	41	9	41	16	89
065	Royal Tern	9	1	12	0	0	35	32
064	Caspian Tern	0	0	8	0	0	4	7
080	Black Skimmer	2	3	3	0	2	0	22
3131	Rock Dove	0	0	0	0	2	0	0

TABLE 4. (Continued)		1974	1975	1976	1977	1978	1979	1981
316	Mourning Dove	3	2	6	3	9	7	16
320	Ground Dove	0	0	0	0	0	0	1
387	Yellow-b. Cuckoo	2	2	0	2	2	1	7
373	Screech Owl	0	1	0	1	1	0	0
416	Chuck-wills-widow	1	6	8	5	3	5	3
420	Common Night Hawk	0	0	0	0	0	0	0
423	Chimney Swift	4	6	12	4	2	5	11
428	Ruby-th. Hummingbird	1	1	0	0	0	0	0
390	Belted King	3	0	0	0	1	0	0
412	Yellow-s. Flick	5	1	3	3	4	1	3
405	Pileated Woodpecker	0	0	1	1	2	2	0
409	Red-bellied Woodpecker	4	5	7	3	10	7	8
406	Red-headed Woodpecker	4	3	3	2	4	3	3
394	Downy Woodpecker	0	1	0	1	0	1	0
393	Hairy Woodpecker	0	0	0	0	1	0	0
444	Eastern Kingbird	0	3	3	1	1	0	4
452	Great-c. Flycatcher	8	1	2	2	6	3	13
465	Acadian Flycatcher	0	0	0	0	0	0	0
617	Rough-w. Swallow	0	2	0	3	1	4	0
613	Barn Swallow	0	3	1	0	1	2	33
611	Purple Martin	44	45	95	58	41	46	62
477	Blue Jay	12	43	38	29	16	56	18
488	Common Crow	5	20	9	25	10	17	0
490	Fish Crow	78	171	149	98	88	136	85
736	Carolina Chickadee	1	4	1	2	0	4	0

TABLE 4. (Continued)		1974	1975	1976	1977	1978	1979	1981
731	Tufted Titmouse	3	5	0	3	0	13	0
729	Brown-h. Nuthatch	5	1	3	4	0	5	1
718	Carolina Wren	14	31	33	31	4	24	16
725	Long-b. Marsh Wren	3	8	3	4	4	3	2
703	Mockingbird	81	108	71	62	44	51	42
705	Brown Thrasher	8	5	6	3	7	5	2
761	American Robin	0	0	0	0	0	0	0
755	Wood Thrush	0	1	0	0	0	0	0
756	Veery	0	0	1	0	0	0	0
766	Eastern Bluebird	0	0	0	2	0	0	1
751	Blue-g. Gnatcatcher	0	0	0	0	0	0	0
622	Shrike	2	2	1	2	1	0	1
493	Starling	24	18	2	8	1	18	15
631	White-eyed Vireo	4	9	15	4	0	6	0
628	Yellow-throated Vireo	0	0	0	0	0	0	4
624	Red-eyed Vireo	0	1	0	0	1	0	0
637	Proth. Warbler	0	0	0	0	0	0	1
648	Parula Warbler	0	0	0	0	1	0	0
671	Pine Warbler	0	0	0	0	0	2	0
681	Yellowthroat	1	0	5	1	0	3	4
683	Yellow-br. Chat	0	0	1	0	0	0	4
684	Hooded Warbler	0	0	0	0	0	0	0
6882	House Sparrow	2	13	10	31	12	56	9
501	Eastern Meadowlark	0	2	0	2	0	0	2
498	Red-wg. Blackbird	42	38	158	66	46	90	52

TABLE 4. (Continued)		1974	1975	1976	1977	1978	1979	1981
506	Orchard Oriole	9	3	9	3	4	5	13
513	Boat-tailed Grackle	0	0	0	2	0	10	2
511	Common Grackle	50	109	46	71	42	82	58
495	Brown-headed Cowbird	4	3	0	2	1	1	6
610	Summer Tanager	3	0	2	0	0	0	0
593	Cardinal	26	41	45	37	35	36	29
597	Blue Grosbeak	0	0	0	0	0	1	0
598	Indigo Bunting	0	1	1	0	0	1	0
587	Rufous-side Towhee	15	13	26	11	8	14	19
550	Seaside Sparrow	34	12	12	9	6	11	15
	TOTAL INDIVIDUALS -	653	908	1252	722	715	1074	941
	TOTAL SPECIES -	50	58	55	54	48	58	59

TABLE 5. Summary Data Alabama Point Route, 041, 1966-1971

AOU NO.	SPECIES	1966	1967	1968	1969	1970	1971
006	Pied-billed Grebe	0	0	0	0	0	0
126	Brown Pelican	2	0	0	4	0	0
120	Double-cr. Corm.	0	0	0	0	0	0
194	Great Blue Heron	3	26	8	6	24	4
201	Green Heron	1	2	0	2	2	10
200	Little Blue Heron	3	3	0	0	0	1
2001	Cattle Egret	0	0	0	0	0	0
196	Great Egret	0	0	0	0	3	0
199	Louisiana Heron	0	0	0	0	0	0
184	White Ibis	0	0	0	0	0	0
191	Least Bittern	0	0	0	0	0	0
343	Broad-wing Hawk	0	0	0	0	0	0
364	Osprey	0	1	0	1	0	0
289	Bobwhite	20	15	26	17	12	28
211	Clapper Rail	0	0	0	0	0	0
212	Virginia Rail	0	0	0	0	0	0
218	Purple Gallinule	0	0	0	0	0	0
219	Common Gallinule	0	0	0	0	0	0
221	American Coot	1	0	0	0	0	0
280	Wilson's Plover	0	0	0	0	0	0
258	Willet	2	0	0	0	0	0
246	Semipal-sand.	0	0	0	0	0	11
051	Herring Gull	0	0	0	0	0	0
054	Ring-b. Gull	0	0	0	0	0	0

TABLE 5. (Continued)		1966	1967	1968	1969	1970	1971
058	Laughing Gull	0	2	1	0	0	0
069	Forster's Tern	0	0	0	3	0	1
074	Least Tern	0	0	0	2	1	0
065	Royal Tern	0	0	2	0	0	1
064	Caspian Tern	0	0	2	0	6	0
077	Black Tern	0	0	0	0	1	0
3131	Rock Dove	0	0	0	0	0	0
080	Black Skimmer	0	0	0	0	0	0
316	Mourning Dove	2	4	0	0	0	7
320	Ground Dove	1	2	0	0	0	2
387	Yellow-b. Cuckoo	4	1	0	3	2	15
416	Chucks-wills-widow	0	0	0	0	0	0
420	Common Night Hawk	15	2	1	1	4	13
423	Chimney Swift	3	19	20	34	19	46
412	Yellow-s. Flick	1	6	4	5	0	1
405	Pileated Woodpecker	2	0	0	1	0	2
409	Red-b. Woodpecker	19	6	7	6	0	7
406	Red-h. Woodpecker	6	5	2	7	7	4
393	Hairy Woodpecker	0	0	0	1	0	1
394	Downy Woodpecker	2	2	1	3	2	1
395	Red-c. Woodpecker	0	0	0	0	0	0
444	Eastern Kingbird	5	6	3	5	3	11
445	Gray Kingbird	0	0	0	0	0	0
452	Great-c. Flycatcher	13	11	7	15	15	15
456	Eastern Phoebe	0	0	0	0	0	0

TABLE 5.(Continued)		1966	1967	1968	1969	1970	1971
465	Acadian Flycatcher	0	0	2	0	1	0
613	Barn Swallow	1	2	0	0	0	0
611	Purple Martin	30	80	101	59	114	149
477	Blue Jay	22	28	42	43	39	24
488	Common Crow	1	0	0	0	15	1
490	Fish Crow	72	76	92	73	49	85
736	Carolina Chickadee	6	5	4	2	11	6
731	Tufted Titmouse	10	17	14	19	26	24
729	Brown-h. Nuthatch	5	3	0	4	11	4
718	Carolina Wren	25	14	22	19	22	13
725	Long-b. Marsh Wren	0	0	0	0	0	0
703	Mockingbird	65	70	87	109	90	112
705	Brown Thrasher	7	4	2	4	3	7
755	Wood Thrush	0	0	0	0	0	3
751	Blue-g. Gnatcatcher	0	0	0	0	0	0
622	Shrike	0	2	0	0	0	0
493	Starling	3	2	1	8	6	0
631	White-eyed Vireo	3	7	5	10	12	13
624	Red-eyed Vireo	4	1	1	0	3	4
637	Protho. Warbler	2	2	1	3	4	0
648	Parula Warbler	4	1	2	3	2	12
663	Yellow-throated Warbler	0	0	0	0	0	0
671	Pine Warbler	5	11	7	13	14	30
677	Kentucky Warbler	0	0	0	0	0	0
681	Yellowthroat	19	21	10	4	0	19

TABLE 5. (Continued)		1966	1967	1968	1969	1970	1971
683	Yellow-br. Chat	0	0	0	1	0	2
684	Hooded Warbler	2	0	1	0	2	2
6882	House Sparrow	3	7	11	19	25	29
501	Eastern Meadowlark	1	3	2	0	2	3
498	Red-Wg. Blackbird	45	58	42	49	74	88
506	Orchard Oriole	1	4	1	1	8	3
513	Boat-tailed Grackle	6	11	13	13	12	13
511	Common Grackle	91	63	74	60	100	103
495	Brown-headed Cowbird	2	4	13	3	0	3
608	Scarlet Tanager	0	0	0	0	0	0
610	Summer Tanager	7	5	2	5	0	9
593	Cardinal	14	19	16	28	41	76
587	Rufous-side Towhee	66	50	72	49	40	61
	TOTAL INDIVIDUALS -	627	683	724	712	827	1079
	TOTAL SPECIES -	48	45	40	43	40	48

TABLE 6. Summary Data Alabama Point Route, 041, 1972-1973, 1975, 1977, 1980-1981

AOU NO.	SPECIES	1972	1973	1975	1977	1980	1981
006	Pied-billed Grebe	0	0	1	0	0	0
126	Brown Pelican	11	3	7	0	0	5
120	Double-cr. Corm.	0	0	0	1	0	0
194	Great Blue Heron	7	16	8	21	1	1
201	Green Heron	5	4	1	3	1	0

TABLE 6.(Continued)		1972	1973	1975	1977	1980	1981
200	Little Blue Heron	0	0	0	0	4	0
2001	Cattle Egret	0	0	0	0	10	0
196	Great Egret	0	0	0	0	0	0
199	Louisiana Heron	0	0	0	0	2	0
184	White Ibis	0	0	0	0	1	0
191	Least Bittern	0	0	2	0	0	0
343	Broad-wing Hawk	0	0	0	1	1	0
364	Osprey	3	0	0	5	0	2
289	Bobwhite	7	10	17	46	12	15
211	Clapper Rail	0	3	2	1	2	1
212	Virginia Rail	0	0	0	0	1	0
218	Purple Gallinule	3	0	3	2	0	0
219	Common Gallinule	0	1	0	1	0	0
221	American Coot	4	0	0	0	0	0
280	Wilson's Plover	1	2	0	0	0	0
258	Willet	0	0	0	0	0	1
246	Semipal-sand.	0	0	0	0	0	0
051	Herring Gull	4	0	0	0	0	0
054	Ring-b. Gull	0	0	1	0	9	0
058	Laughing Gull	8	5	0	4	6	0
069	Forster's Tern	0	0	0	13	0	1
074	Least Tern	9	4	12	4	28	12
065	Royal Tern	3	2	0	0	0	3
064	Caspian Tern	0	0	0	0	0	0
077	Black Tern	2	0	0	0	0	0
3131	Rock Dove	0	0	0	0	0	6

TABLE 6. (Continued)		1972	1973	1975	1977	1980	1981
080	Black Skimmer	5	0	0	0	3	0
316	Mourning Dove	0	0	1	4	3	2
320	Ground Dove	2	5	5	5	0	1
387	Yellow-b. Cuckoo	4	0	1	12	0	2
416	Chucks-wills-widow	0	0	0	1	0	0
420	Common Night Hawk	1	4	1	9	1	3
423	Chimney Swift	10	3	38	12	26	15
412	Yellow-s. Flick	0	1	10	5	3	0
405	Pileated Woodpecker	0	0	0	0	2	1
409	Red-b. Woodpecker	1	2	8	9	12	10
406	Red-h. Woodpecker	5	9	5	0	0	3
393	Hairy Woodpecker	1	0	0	0	0	0
394	Downy Woodpecker	0	0	3	3	0	2
395	Red-c. Woodpecker	3	0	0	2	0	0
444	Eastern Kingbird	3	5	0	3	0	0
445	Gray Kingbird	1	0	2	0	0	0
452	Great-c. Flycatcher	2	8	9	10	11	1
456	Eastern Phoebe	0	0	0	0	0	1
465	Acadian Flycatcher	0	0	0	0	0	0
613	Barn Swallow	3	7	9	11	1	3
611	Purple Martin	39	93	102	112	108	97
477	Blue Jay	9	15	20	16	28	35
488	Common Crow	0	28	18	2	0	22
490	Fish Crow	33	51	34	72	96	72
736	Carolina Chickadee	2	4	6	2	5	2

TABLE 6. (Continued)		1972	1973	1975	1977	1980	1981
731	Tufted Titmouse	5	3	6	14	5	2
729	Brown-h. Nuthatch	5	7	6	6	2	2
718	Carolina Wren	16	31	11	15	19	6
725	Long-b. Marsh Wren	0	2	0	0	0	0
703	Mockingbird	60	87	127	98	55	52
705	Brown Thrasher	8	4	2	3	1	3
755	Wood Thrush	2	4	0	1	0	0
751	Blue-g. Gnatcatcher	0	0	0	0	1	0
622	Shrike	0	0	0	8	1	0
493	Starling	8	0	3	2	5	13
631	White-eyed Vireo	3	2	11	5	3	1
624	Red-eyed Vireo	1	3	3	0	0	0
637	Protho. Warbler	6	5	0	2	0	0
648	Parula Warbler	5	11	8	8	0	0
663	Yellow-throated Warbler	0	0	1	0	0	0
671	Pine Warbler	7	8	10	0	4	3
677	Kentucky Warbler	0	0	0	1	0	0
681	Yellowthroat	2	16	16	0	1	2
683	Yellow-br. Chat	1	0	1	0	0	0
684	Hooded Warbler	2	2	0	0	0	0
6882	House Sparrow	16	19	6	13	3	11
501	Eastern Meadowlark	1	0	1	2	0	0
498	Red-wg. Blackbird	61	80	81	65	28	44
506	Orchard Oriole	1	0	7	11	1	0
513	Boat-tailed Grackle	20	21	28	18	1	32

TABLE 6.(Continued)		1972	1973	1975	1977	1980	1981
511	Common Grackle	48	77	94	64	129	42
495	Brown-headed Cowbird	0	0	6	0	1	0
608	Scarlet Tanager	0	0	0	1	0	0
610	Summer Tanager	2	8	7	4	0	0
593	Cardinal	29	35	20	42	31	3
587	Rufous-side Towhee	43	57	44	52	74	63
	TOTAL INDIVIDUALS -	543	767	825	827	741	598
	TOTAL SPECIES -	54	45	50	52	44	42

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