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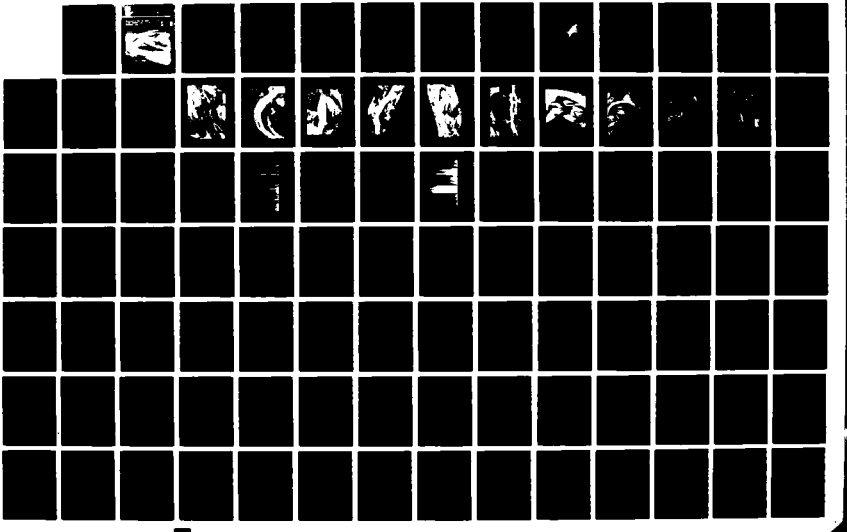

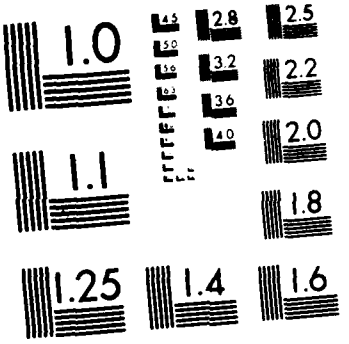

U.S. Army Corps of Engineers
Mississippi River Commission

EVALUATION OF BIRD AND MAMMAL UTILIZATION OF DIKE SYSTEMS ALONG THE LOWER MISSISSIPPI RIVER

LOWER MISSISSIPPI RIVER ENVIRONMENTAL PROGRAM
REPORT 10
NOVEMBER 1987

PREPARED FOR: PRESIDENT, MISSISSIPPI RIVER COMMISSION
PO BOX 80
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A bird and mammal survey was conducted on 10 dike systems in the Lower Mississippi River (river miles 377 to 885, AHP) in the late summer and fall of 1984 as part of the Mississippi River Commission Lower Mississippi River Environmental Program. The totals recorded during the 3-month survey were comprised of 126,612 birds in 92 species and 599 mammals in 11 species.

Results of the survey indicated frequent use of these areas by migrating and resident populations of birds. Mammals did not use the dike systems to any great extent. Greater numbers of birds and mammals were noted at dike systems containing open areas interspersed with woods and pools. Monthly bird concentrations were strongly influenced by migrants, especially swallow and blackbird species. These two categories constituted approximately 90 percent of the total bird observations. Large dike systems, such as Redman-Robinson Crusoe, Island 62, and Ashport-Golddust, provided large acreages and habitat diversity, which in turn resulted in greater numbers of sightings throughout the survey.

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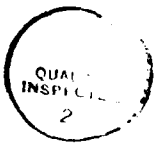
PREFACE

The Lower Mississippi River Environmental Program (LMREP) is being conducted by the Mississippi River Commission (MRC), US Army Corps of Engineers. It is a comprehensive program of environmental studies of the leveed floodplain of the Lower Mississippi River and features of the mainstem Mississippi River and Tributaries (MR&T) Project. The purposes of the program are to develop environmental inventory data and environmental design considerations for the navigation and flood control features of the MR&T Project.

A bird and mammal study was one component of the LMREP Dike System investigation. This report contains the results of monthly surveys of bird and mammal utilization of 10 dike systems in the late summer and early fall of 1984. Physical and hydrological characteristics of the dike systems, species of birds and mammals observed, and the total number of species observations by dike system for the survey period are included in the report.

This report was prepared by Mr. James M. Sigrest and Mr. Stephen P. Cobb of the MRC. Assistance with interpretation of physical data on the dike systems was provided by the Potamology Section, Engineering Division, MRC, especially Mr. Charles M. Elliott. The field data on birds, mammals, and vegetation were collected by personnel of the US Army Engineer Waterways Experiment Station, Environmental Laboratory.

The study was managed by the Environmental Analysis Branch, Planning Division, and was sponsored by the Engineering Division, MRC. Mr. Cobb was the Program Manager for the LMREP. The work was conducted under the direction of the President of the MRC, MG Thomas A. Sands, CE.



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Evaluation of Bird and Mammal Utilization of Dike Systems along the Lower Mississippi River

PART I: INTRODUCTION

Area Investigated

1. The Mississippi River drains approximately 41 percent of the contiguous United States and Canada. This area represents 1,245,000 square miles and is exceeded in size only by the Amazon, Congo, and Nile River basins.

2. The Lower Mississippi River flows from the confluence of the Ohio and Middle Mississippi Rivers at Cairo, Illinois, to the Gulf of Mexico, a distance of approximately 975 river miles (RM). At Vicksburg, Mississippi (RM 437), approximately midway along the Lower Mississippi River, the mean annual discharge of the river is 552,000 cubic feet per second (cfs); the mean monthly maximum and minimum flows are 948,000 cfs in April and 261,000 cfs in September, respectively. The maximum flow recorded at the Vicksburg, Mississippi, gage was 1,806,000 cfs during the flood of 1927; the discharge during this flood has been estimated to have been 2,278,000 cfs if the main-line levees upstream of Vicksburg had not crevassed (Tuttle and Pinner 1982). The difference in river stage between the average minimum discharge and the average maximum discharge is about 27 ft on the Vicksburg, Mississippi, gage although river stage may fluctuate more than 45 ft in stage in a particular year. Suspended sediment transported by the river averages 161 million tons per year (Keown, Dardeau, and Cousey 1981).

3. Flooding along the river may occur during the fall, winter, and spring and varies considerably in time, stage, and duration from year to year. Highest stages are typically reached from March through May; peak flows occur in April on the average.

4. The approximately 2.5 million acres of leveed floodplain are composed of 81 percent land and 19 percent water, including abandoned channels, oxbow lakes, levee borrow pits, and the main river channel (Ryckman, Edgerley, Tomlinson and Associates 1975). The floodplain of the Lower Mississippi River is leveed along both banks. The main-stem levees are continuous on the west bank except at the confluences of the St. Francis River and the Arkansas-White Rivers. Levee segments and naturally occurring high bluffs alternate on the east bank. A system of dikes and revetments is being constructed throughout the river for navigation and flood control purposes.

5. The dike systems investigated are found in the Lower Mississippi River between RM 377 and 885, Above Head of Passes (AHP). This reach encompasses the jurisdictional area of the US Army Engineer District (USAED), Vicksburg, and the US Army Engineer District (USAED), Memphis (Figures 1 and 2).

Mississippi River and Tributaries (MR&T) Project

6. Along the course of the Lower Mississippi River and on the associated floodplain, flooding has historically been a major deterrent to development. For example, destructive floods occurred in 1849, 1858, 1882, 1897, 1912, 1913, 1916, 1922, 1927, 1937, and 1973. The Mississippi River Commission (MRC) was established by Congress in 1879 to develop and carry out flood control and navigation measures for the Lower Mississippi River that would be financed by the Federal Government.

7. The devastating flood of 1927, the flood of record, destroyed many existing levees, flooded large areas of farmland and numerous municipalities, and caused loss of livestock and human life in the Lower Mississippi Valley. This flood motivated the Congress to pass the Flood Control Act of 1928, which authorized the MR&T Project. The MR&T Project is a comprehensive plan for flood control and navigation works on the main-stem Lower Mississippi River and tributary streams and consists primarily of levee systems, channel improvement works, and floodways. The MRC is responsible for carrying out the project.

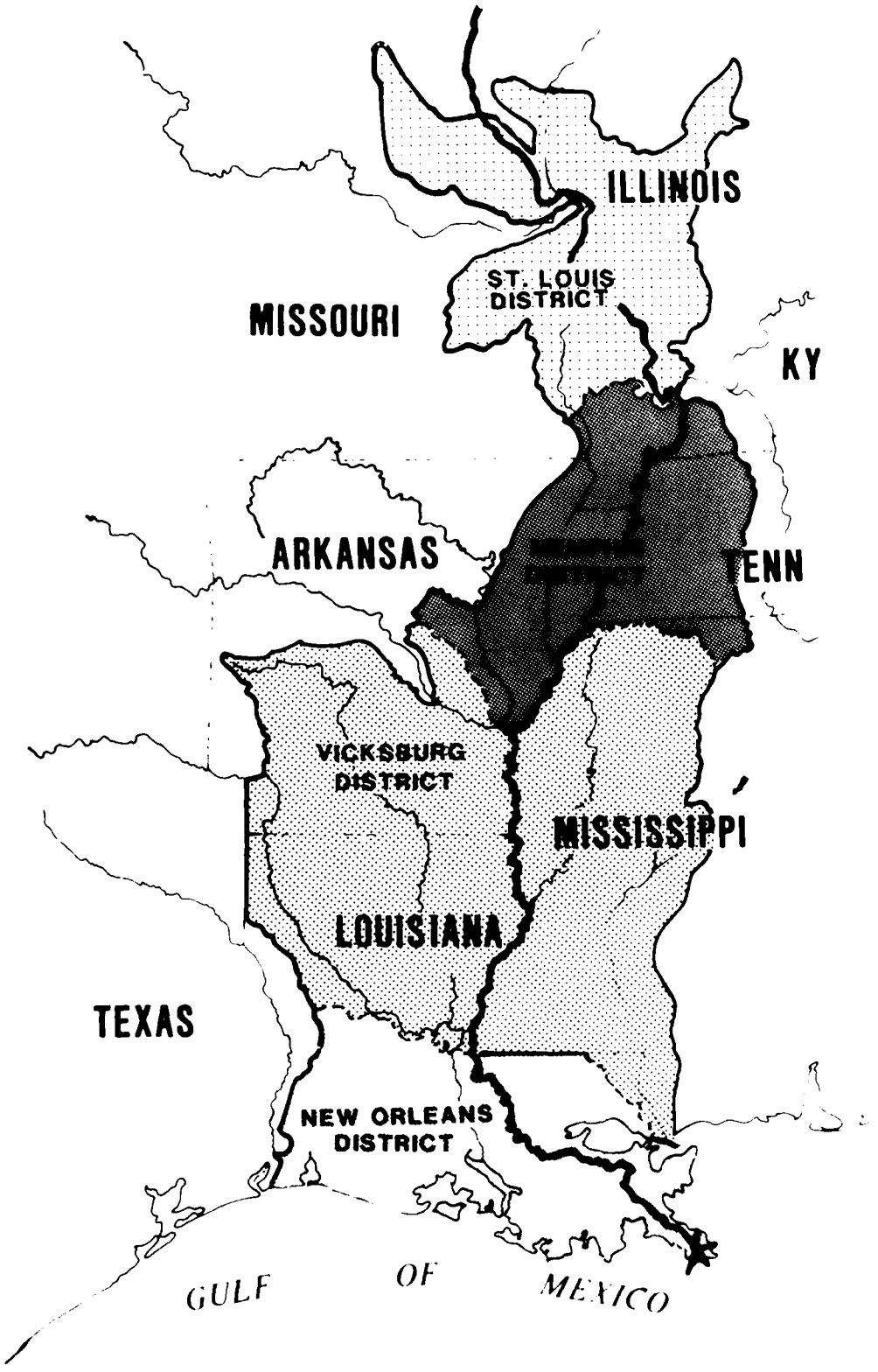

Figure 1. Lower Mississippi Valley Division

1. Kentucky Point, RM 885L
2. Forked Deer, RM 797L
3. Ashport-Golddust, RM 794R
4. Redman-Robinson Crusoe, RM 737R
5. Porter Lake, RM 701R
6. Montezuma Bar, RM 656R
7. Island 62, RM 637R
8. Island 70, RM 607L
9. Chicot Landing, RM 561R
10. Waterproof, RM 377R

Figure 2. Schematic view of the Lower Mississippi River, showing the location of the 10 dike systems

Lower Mississippi River Environmental Program (LMREP)

8. The LMREP is being conducted by the MRC. This 7-year program has as objectives the development of baseline environmental resources data on the river and associated leveed floodplain and the formulation of environmental design considerations for channel training works (dikes and revetments) and the main-stem levee system. The LMREP was initiated in fiscal year 1981 and is scheduled for completion in fiscal year 1987. Fishery and wildlife populations and habitat are the main focus of the LMREP. The LMREP is made up of five work units: levee borrow pit investigations, dike system investigations, revetment investigations, habitat inventories, and development of the Computerized Environmental Resources Data System (CERDS), a Geographic Information System (GIS) containing environmental data.

Dike System Ecological Investigation

9. The ecological investigation of dike systems in the Lower Mississippi River has two objectives:

a. To develop an understanding of the ecological characteristics and function of dike structures and systems in the riverine ecosystem of the Lower Mississippi River.

b. To formulate environmental design considerations for dike systems in the Lower Mississippi River.

10. The dike system investigation (DSI) consists of four major studies or tasks: a physical and hydrologic description of the habitat formed by dike systems, fishery and aquatic habitat studies, bird and mammal use studies, and development of environmental design considerations. The DSI is scheduled for completion in fiscal year 1987. This report discusses the habitat conditions of the dike systems (RM 377 to 885, AHP) and the associated avian and mammal use of these dike systems.

Lower Mississippi River Dike Systems

Purpose

11. The navigation project for the Lower Mississippi River in the study reach (RM 377 to 885) is a minimum navigation channel 300 ft wide and 9 ft deep. Although main channel dimensions are significantly greater than those of the authorized navigation channel at most locations throughout the year, during low-flow conditions shallow crossings and other troublesome areas of the channel may require maintenance dredging to allow navigation traffic to pass. Dike systems are constructed within the top banks of the river channel to contract the width and increase the depth of the main channel at low flows, reduce divided flow conditions, adjust channel alignment, and increase channel stability (MRC 1977). These actions are designed to produce a self-maintaining navigation channel, i.e., a main channel that would require little or no maintenance dredging. The master plan for the MR&T channel improvement feature presently calls for the construction of 296 miles of dike structures in the lower river AHP to accomplish project purposes; 206.5 miles of dikes had been constructed through fiscal year 1984 (MRC 1985).

12. In reality, dike systems are typically constructed at a specific site for multiple purposes. Hence, each dike system is unique in some ways depending on the problem to be corrected and ambient hydraulic and geomorphic conditions. For example, a dike system may be built either to eliminate divided flow conditions and stabilize a point bar or a single dike may be used to reduce flows in a secondary channel and stabilize channel alignment by preventing development of the secondary channel into the main channel.

General description

13. Dikes constructed in the Lower Mississippi River are large linear structures composed of limestone rock. Average dike length in the study reach, excluding the bankhead section, is 2,445 ft. Dikes built since the 1960's are of three basic types: transverse, L-head, and vane. Some older pile dikes constructed of wooden materials have been stone filled

and remain as functional structures (Cobb and Magoun 1985). The pilings are now in various stages of deterioration or covered by stone. Dikes are typically constructed in a series called a dike system or field, designed to achieve particular purposes.

14. Probably the most significant feature of the dike system is the dike field pools created at the river stages too low for water to flow through the system or over the dikes. At relatively low water stages, below +15 ft Lower Water Reference Plane (LWRP), the majority of the dike fields contain standing water either between the dikes or within the dike fields. The size and permanence of the pools are determined by the controlling elevation of the structures, degree of sedimentation of the pools from bed material, dike field topography, river stage, and other factors. Water is impounded in scour channels and plunge pools between the dikes and in chutes downstream of the last dikes in the system (Cobb and Magoun 1985).

15. Dike field pools are generally the only slack water or low current velocity habitat available at low river stages in the main channel. These pool areas represent approximately two-thirds of the surface area of abandoned channel lakes that are confluent with the river channel during low flows (Cobb and Clark 1981). Physical dimensions such as pool surface area, volumes, and depths vary extensively among dike fields depending upon individual dike field hydrologic and geomorphic factors (Cobb and Magoun 1985). Pool habitat in some dike fields can increase 135 percent in surface area and 207 percent in volume with a 15-ft rise in river stage from 0 to +15 LWRP (Cobb and Magoun 1985).

16. Dike field pools, when isolated from the river channel, tend to exhibit limnological characteristics similar to floodplain lakes but are hydrologically unstable and highly variable. The frequent inundation by rising river stages and change from slack water to flowing water conditions tend to result in dike field pools that exhibit ephemeral characteristics (Cobb and Magoun 1985).

17. Water contained in dike field pools tends to clear rapidly as sediment falls out and clearing of nutrient rich channel water results in the production of phytoplankton and benthic algae. In addition, settling of suspended silts and clays tend to enhance production of available benthic invertebrates, especially in pools with sand and gravel substrate (Cobb and Magoun 1985).

18. Riverine fish assemblages inhabit the environments formed by dike systems at all river stages (Schramm and Pennington 1981; Pennington, Baker, and Bond 1983; Nailon and Pennington 1984). The pools contained in dike fields at low stages are probably important nursery and feeding areas during the summer and fall when these are the major slack water areas of main river channel. Macrobenthic assemblages, distributed according to substrate type, are similar to those found in other riverine habitats (Cobb and Magoun 1985).

19. Sandbars associated with dike systems in the study area are extensive. Physical characteristics of sandbars associated with dike systems are similar to naturally occurring sandbar and probably ecologically indistinguishable. The acreage of available sandbar habitat increases with decreasing river stages. Shallow water habitat, i.e., dike field pools and shallow channel edges, associated with sandbar habitat increases significantly with falling river stages (Cobb and Magoun 1985).

PART II: METHODS AND MATERIALS

Physical Characteristics of Dike Systems

20. Ten dike systems were selected by the USAED, Lower Mississippi Valley (LMVD) and the Waterways Experiment Station (WES), Environmental Laboratory. These dike systems are within the reaches of the Lower Mississippi River from Waterproof, Louisiana, at RM 377 to 885 at New Madrid, Missouri (Figure 2). The 10 dike systems were selected based on distribution throughout the diked reach of the lower river and were representative of an array of dike system habitats and characteristics common to dike systems of the Lower Mississippi River (Table 1).

21. A dike system was divided into two sections for physiographic evaluation: pool and sandbar. The pool area was defined as the area circumscribed by the bank line, a line connecting the channelward tips of the dikes and traversing at a 45° angle from the tip of the upstream or first dike in the system to the bank with the boundary being completed by a line extending from the tip of the downstream dike along the current pattern created by the dike system until it intersects the bank line. The sandbar area associated with each dike field was defined as the bar area developed within the pool boundary and either attached to the top bank or a separated bar within the pool boundary (Figure 3). Any separated sandbars in the area influenced by the dike field were considered a feature of the dike system. The dike system features were further broken down into habitat types: dike field pools, channel water, shoreline sandbar, and island sandbar and woods (Figure 4). Habitat types for each dike system were planimetered with a Textronix 4956 Graphic Table using September 1984 and 1985 black and white 1:20,000 photographs (Figures 5 to 13). Corresponding LWRP river stages for the photographs and sampling period is presented in Table 2. Acreages were simultaneously calculated by the Textronic 4052 computer using a program of area-coordinates developed by the Potamology Section of LMVD.

22. Habitat types and acreage vary dramatically with rising and falling river stages. The planimetered acreages represent only the habitat acres available at a single river stage. The September 1984 and

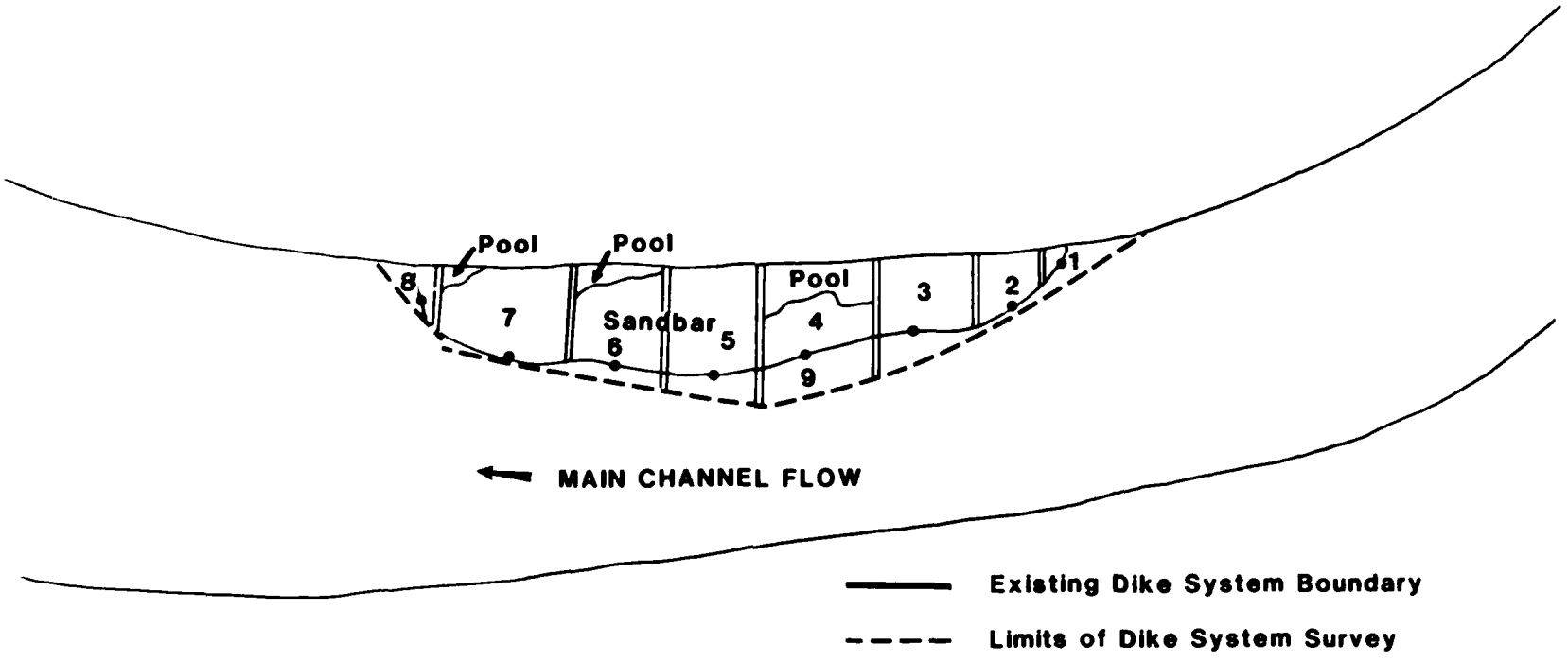

Figure 3. Schematic drawing showing typical dike system, numbering system used for data collection and limits of dike system surveyed

Figure 4. Aerial view of Island 70 dike system showing example of habitat types

Figure 5. Aerial view of Kentucky Point dike system, RM 885

Figure 6. Aerial view of Forked Deer dike system, RM 797

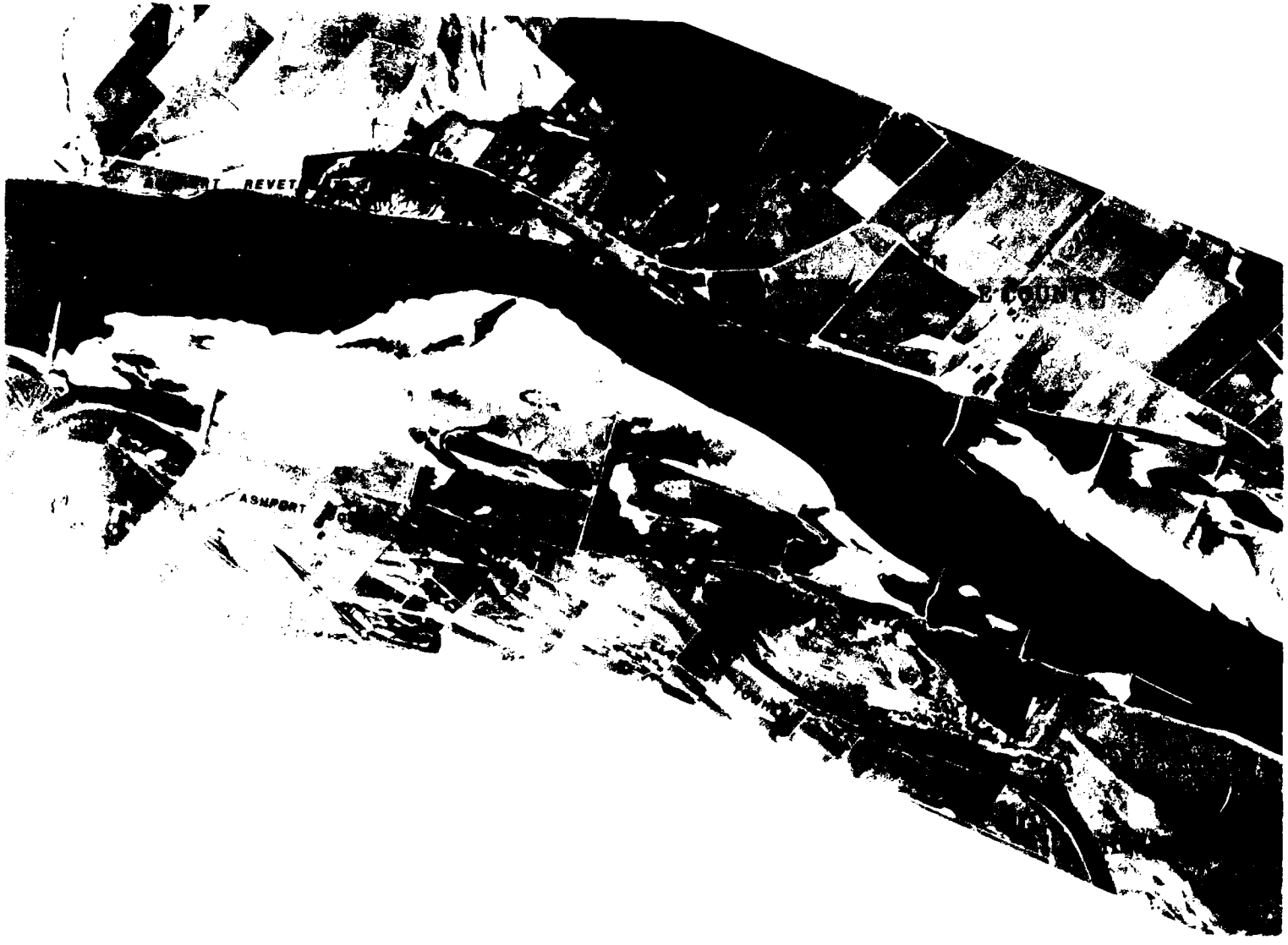

Figure 7. Aerial view of Ashport-Golddust dike system, RM 794

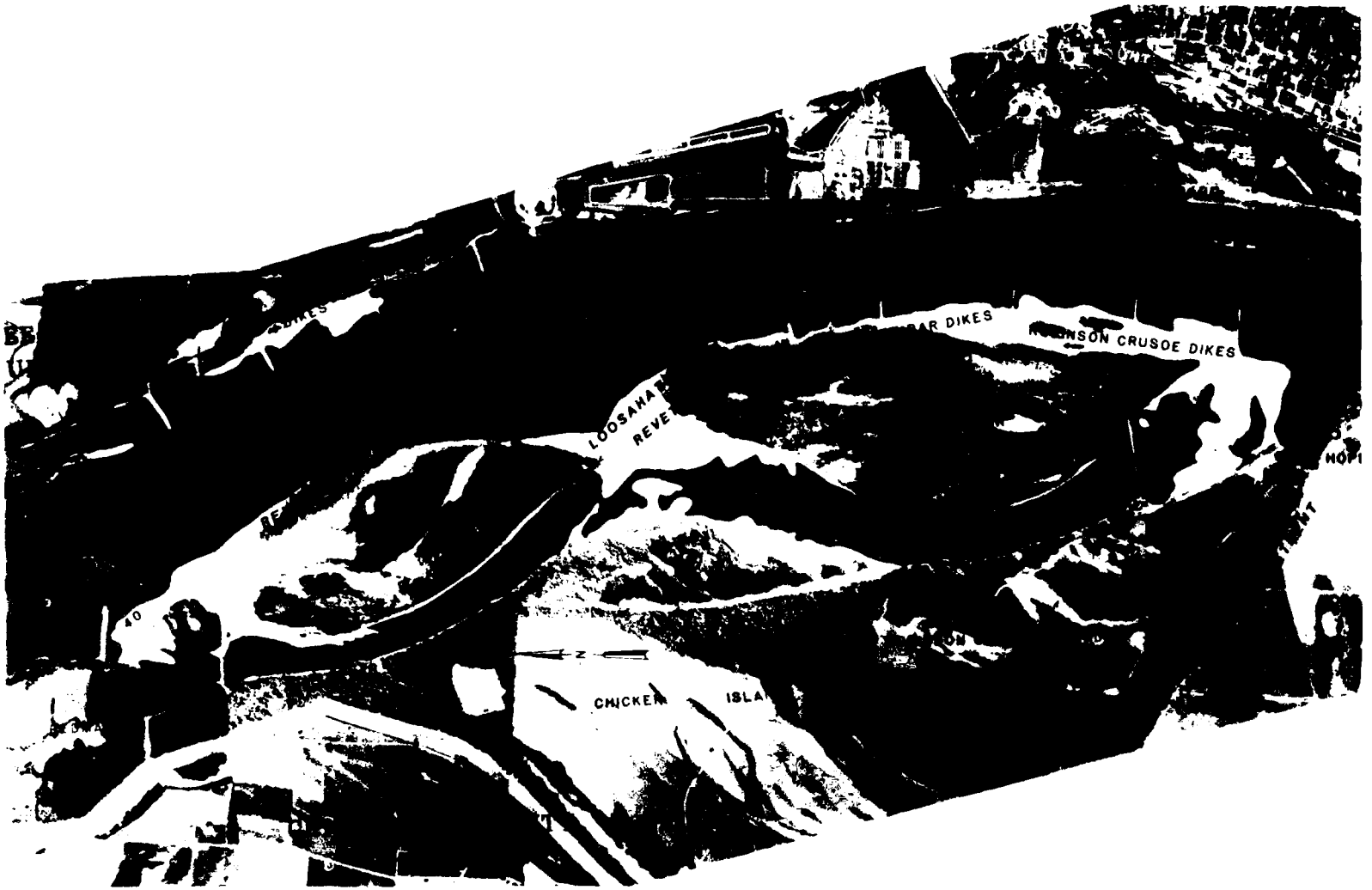

Figure 8. Aerial view of Redman-Robinson Crusoe dike system, RM 737

Figure 9. Aerial view of Porter's Lake dike system, RM 701

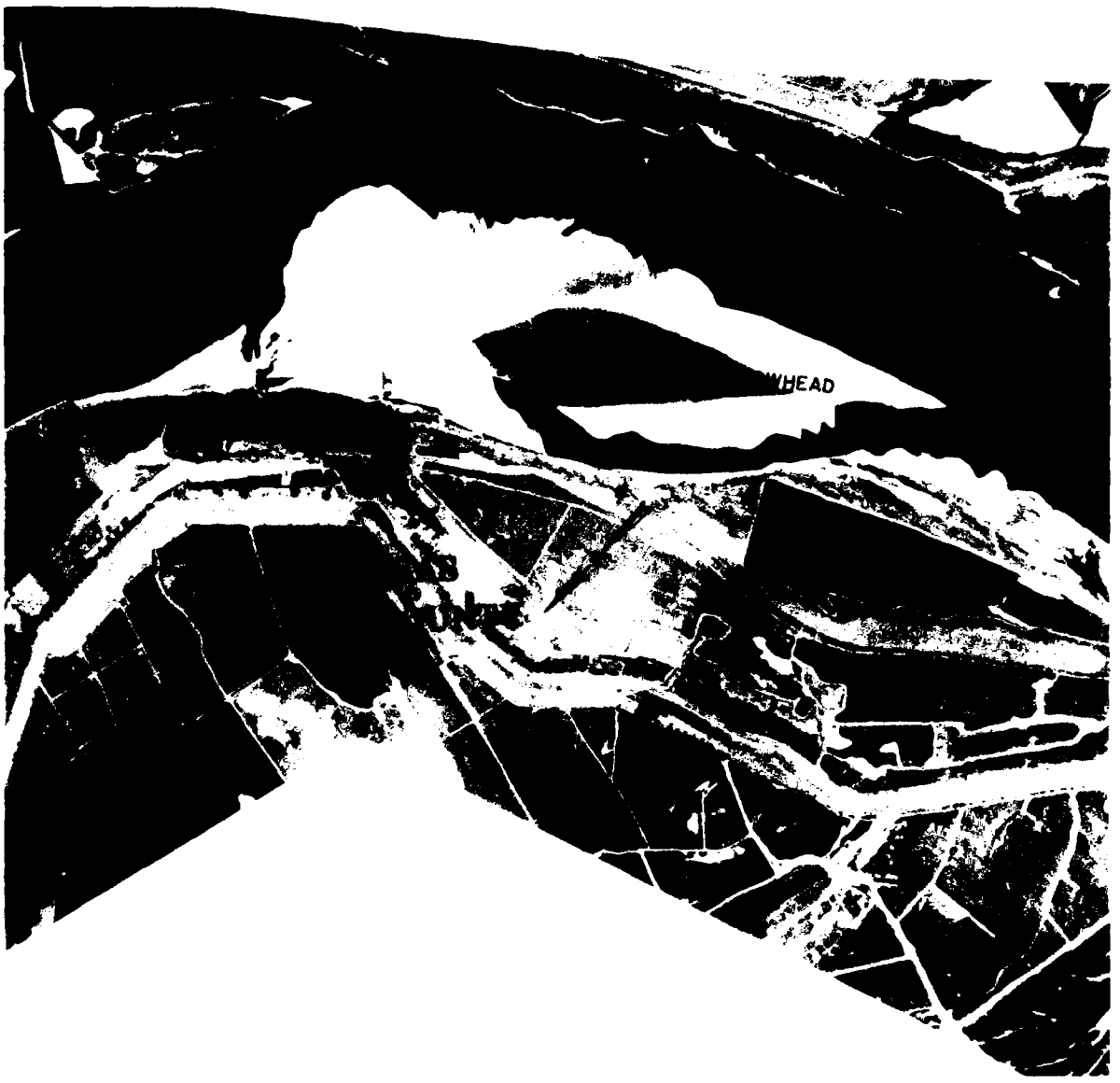

Figure 10. Aerial view of Montezuma Bar dike system, RM 656

Figure 11. Aerial view of Island 62 dike system, RM 637

Figure 12. Aerial view of Chicot Landing dike system, RM 561

Figure 13. Aerial view of Waterproof dike system, RM 377

1985 photographs were determined to be the most representative of actual habitat conditions present during sampling. Acreages by habitat type and dike system as shown on Table 3.

General Observations

23. Observations of bird and mammal use were scheduled for August through November of 1984 (this is the usual low water period). However, sampling was not conducted in November due to abnormally high river stages. In each dike system eight daylight hours were spent for each monthly observation period. Systematic observation points were selected (along top bank) for each pool. All birds and mammals observed for a 1-hr period at each point were classified and counted. The remaining observation time during the daylight hours was spent at additional vantage point(s). Large dike systems usually required additional observation points due to the expansive area and the obstruction of vision by trees or other features. Data were collected according to the schedule shown in Table 4. Visits to each dike system were made on the same dates each month, weather permitting. When possible, observations were made only on clear to partly cloudy days since rainfall was thought to significantly alter animal movements. Birds and mammals were counted and classified using 7 X 50 binoculars. Identification of species were based on Lowery (1981), Murie (1974), and Scott (1983).

24. Birds were placed in commonly recognized groups, including wading birds, waterbirds, shorebirds, gulls and terns, waterfowl, coots, raptors, nonperching land birds, and others (swallows, songbirds, and blackbirds, crows and starlings). Mammals were not specifically separated according to groups.

25. Six groups of birds were analyzed in detail. These groups were selected because the member species are water-oriented and were expected to utilize the habitats created as a result of dike construction. The groups analyzed included wading birds, waterbirds, shorebirds, gulls and terns, waterfowl and coots.

26. Pearson's product movement and Spearman's rank correlation methods (SAS Institute, Inc. 1985) were utilized to evaluate relationships between bird species and group counts and physical habitat variables. The physical variables used were: (a) habitat acreage, (b) water $\leq$ 2 ft deep by month, (c) mean acreage of water $\leq$ 2 ft deep for all months, (d) percent of water $\leq$ 2 ft deep by month, and (e) mean percent of water $\leq$ 2 ft deep for all months. The bird variables used were the number of individuals per species and group for each month and total number of individuals per species and groups for all months. Stepwise regression was also used to analyze the relationship between bird numbers and habitat characteristics. The level of entry for a variable into the regression equation was 0.15.

PART III: RESULTS

27. During the study, 103 species of birds and mammals were observed and a total of 127,211 individuals were counted. Ninety-two species of birds and eleven mammal species were recorded (Tables 5, 6, and 7).

Birds

28. Ninety-two species of birds (126,612) were recorded in the 10 dike systems. The most bird species and numbers were observed at the Redman-Robinson Crusoe and Island 62 dike systems (DS). Larger numbers of bird species were sighted in September during the migration season than either in August or October. More birds were found within the dike systems than either in areas immediately upstream, downstream, or in the channel. Total numbers of individuals were greater along the shore on the channelward edge of the dike system. Total bird numbers were dominated by migrating swallows. Dike systems with an interspersion of sandbars, woody vegetation, and pools had the highest concentration of birds and species diversity.

Wading birds

29. Five species of herons and egrets were frequently observed. A total of 1,748 individuals were recorded with great blue herons (52 percent) and great egrets (32 percent) comprising the majority of this group. Greater species diversity was noted at Waterproof and Ashport-Golddust DS. More species were recorded in August; September had the second highest monthly counts. The Ashport-Golddust DS also had the greatest number of wading birds. The greatest number of wading birds occurred in September (Figure 14). Wading birds were frequently observed feeding in dike system pools and along the shallows on the channelward side of the dike system.

30. Great blue herons occurred in greater numbers at Kentucky Point DS, but were common in all dike systems. Great blue heron numbers were greatest in September. Great egrets were most abundant at Island 62 DS, but were present at the other dike systems. Monthly great egret counts were largest in September. Snowy egrets and little blue herons occurred frequently, but in lesser numbers than great blue herons or great egrets.

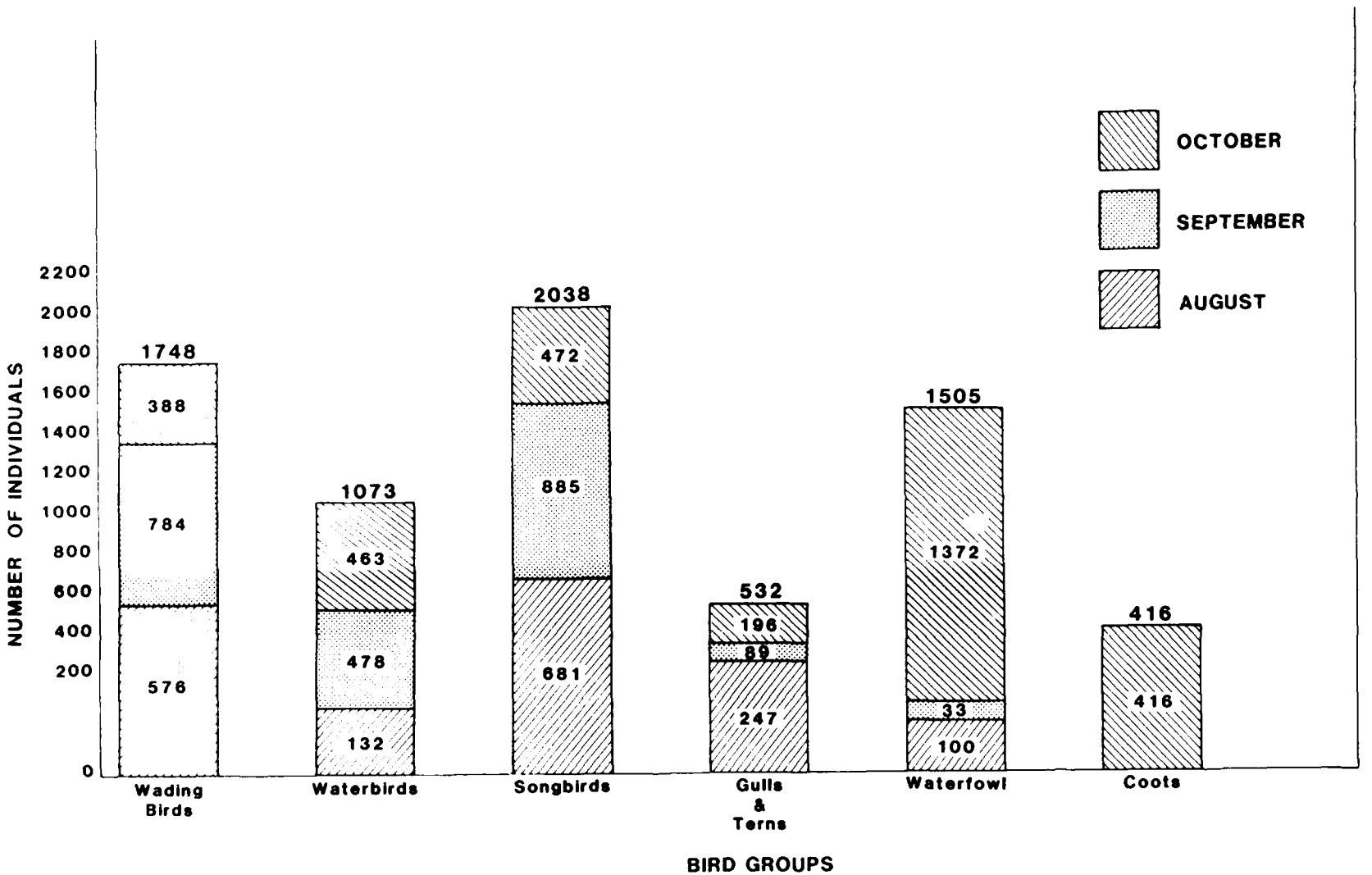

Figure 14. Temporal distribution of bird numbers at 10 dike systems in the Lower Mississippi River

Greenbacked herons occurred infrequently in five of the dike systems. Heron and egret utilization appeared to be the greatest in dike systems that provided a diversity of terrestrial and aquatic habitat.

31. There was a significant correlation between total number of wading birds and the acreage of dike field water and pool water $\leq$ 2 ft deep for October (Table 8). The regression analysis showed that 55 percent (Table 8) of the variation among dike system in total bird numbers for all months was explained by the acreage of dike system water.

Waterbirds

32. Eight species of waterbirds (1,073 individuals) were found. Cattle egrets were included in this group because they generally feed in terrestrial areas. Wood storks and white ibises were also included in this group. Species diversity was greatest at Waterproof and Redman-Robinson Crusoe DS. The largest numbers of individuals occurred in September. Greater waterbird numbers were recorded at Redman-Robinson Crusoe and Porter's Lake DS (Figure 15). Waterbird species composition in September and October were similar. Greater numbers of waterbirds were recorded in dike systems comprised of open areas, deep water pools and woody vegetation. Neither the correlation nor regression analyses showed any significant relationships between waterbird concentrations and dike system physical and hydrologic characteristics.

Shorebirds

33. Eight species of shorebirds, totaling 2,038 individuals, were found. More species and individuals were recorded at Island 62 than at any other dike system. Diversity and numbers were highest in September. Seven of eight shorebird species were present in September and greater numbers occurred this month for all species except the semipalmated plover. Killdeer and least sandpipers were present in all 10 dike systems and in all months. Largest shorebird numbers were recorded in dike systems consisting of large sandbars, and numerous shallow-water pools and woody vegetation.

34. A significant positive correlation was found between the total number of shorebirds and the acreage of shoreline sandbars. Stepwise regression showed that 67 percent of the variation among dike systems in total number of shorebirds for all months was accounted for by the acreage

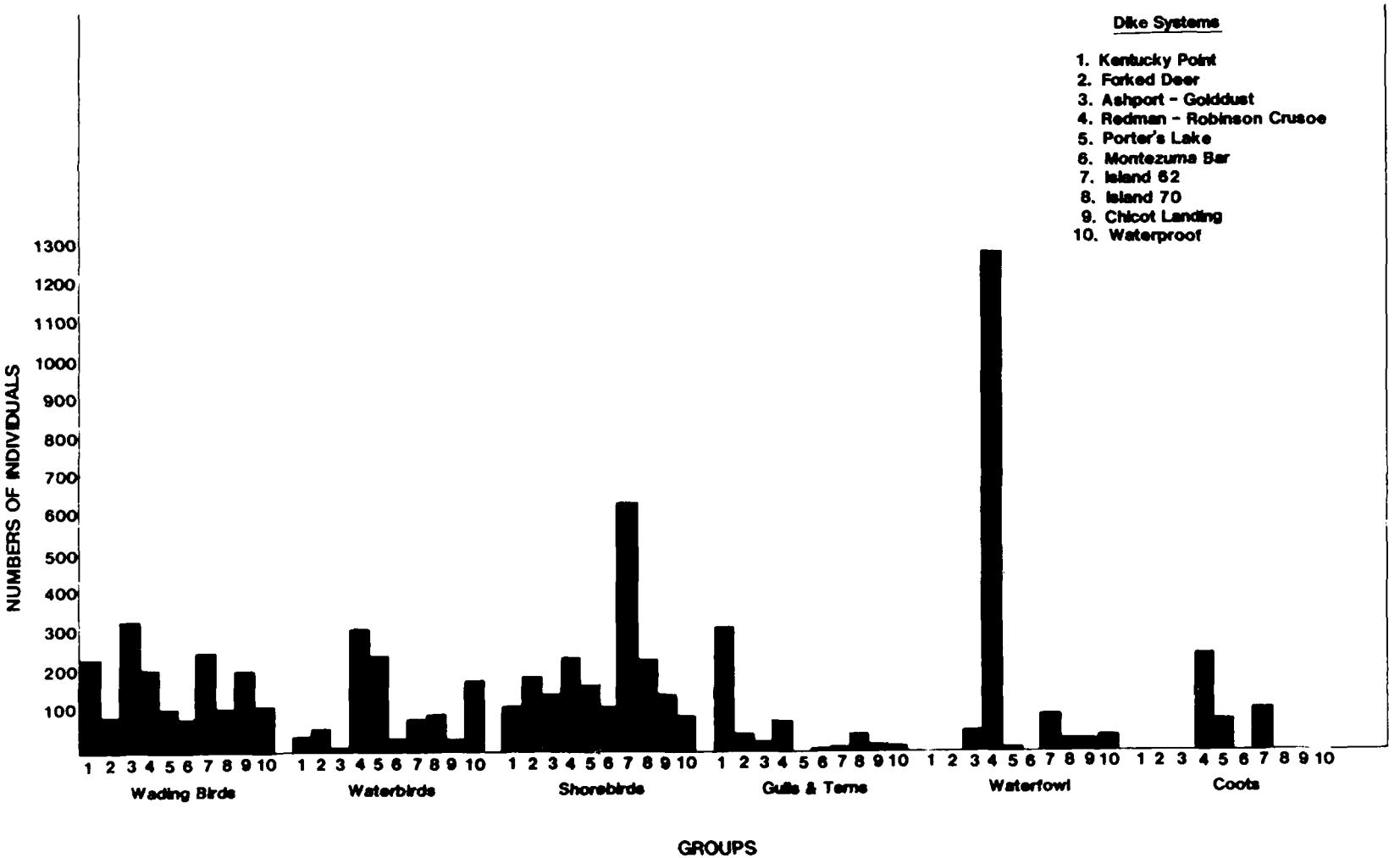

Figure 15. Distribution and abundance of water dependent birds at 10 dike systems in the Lower Mississippi River

of shoreline sandbars and pool water. Stepwise regression also indicated a significant relationship between the shorebird numbers during August and September and the acreage of shoreline sandbars and dike field water.

Gulls and terns

35. A total of 532 individuals comprised of 235 interior least terns, 17 black terns, and 280 ring-billed gulls were counted. Kentucky Point DS had the greatest number of individuals for the total group and the greatest number of individuals for each species of the group. Nesting and migrating interior least terns comprised the majority of the sightings in August and migrating ring-billed gulls accounted for 99.5 percent of sightings in October. The individuals of this group were most frequently observed in dike system habitat interspersed with sandbars and open water pools. The data analysis indicated no significant correlation or regression relationships between gulls and terns and dike system physical variables.

Waterfowl

36. Seven species of waterfowl (1,505) were found. Waterfowl diversity was greatest at Island 62 DS. More individuals (1,277) were observed at Redman-Robinson Crusoe DS, where large rafts of migrating lesser scaup and other waterfowl species were present in October. The largest numbers of waterfowl occurred in October. No waterfowl were recorded at Montezuma Bar, Forked Deer, or Kentucky Point DS. No significant relationships were found between waterfowl abundance and physical and hydrologic features.

Coots

37. Coots (416) occurred in three of the 10 dike systems with the greatest numbers (249) found at Redman-Robinson Crusoe DS. All individuals counted occurred in October. Neither the correlation nor stepwise regression analyses showed any meaningful relationships between coot numbers and physical habitat variables.

Raptors

38. Raptors occurred in all dike systems except Kentucky Point. A total of 200 individuals were recorded. Redman-Robinson Crusoe DS had the greatest number of species, whereas, Chicot Landing DS had the greatest number of individuals (Figure 16). More species were observed in October, but greater numbers of individuals occurred in August. Northern harriers were the most frequently observed species of raptor, but Mississippi kites were the most abundant (70 individuals).

Nonperching land birds

39. A total of 478 individuals of this group were recorded. The chimney swift (151) was the most abundant species; the downy woodpecker, ruby-throated hummingbird, and pileated woodpecker occurred infrequently in some of the dike systems. Species diversity was greatest in August, but larger numbers occurred in September. The Redman-Robinson Crusoe DS contained the greatest number of species and individuals.

Others

40. This category contains the remaining groups of birds: swallows, songbirds, and a collective group comprised of blackbirds, starlings, and crows. A total of 43 species and 118,622 individuals of this group were counted, the largest group recorded in the study. The most species and largest numbers of this group occurred in September.

41. Swallows were migrating down river during the survey period and constituted the majority of this group (100,488 individuals). Tree swallows had the largest number of individuals recorded (82,731). Northern rough-winged swallows (12,511 individuals) occurred in significant numbers in all 10 dike systems. Five of the six species of swallows were observed in nine of the dike systems with four of the six species present in all dike systems. Island 62 represented the greatest number of individual sightings.

42. Blackbirds, starlings, and crows were second in abundance. This group was comprised of 15,636 individuals with red-winged blackbirds representing 63 percent of the group or 9,882 individuals. Common grackles were the second largest group with 1,939 individuals. The greatest number of species and individuals for this group was recorded at the Redman-Robinson Crusoe DS.

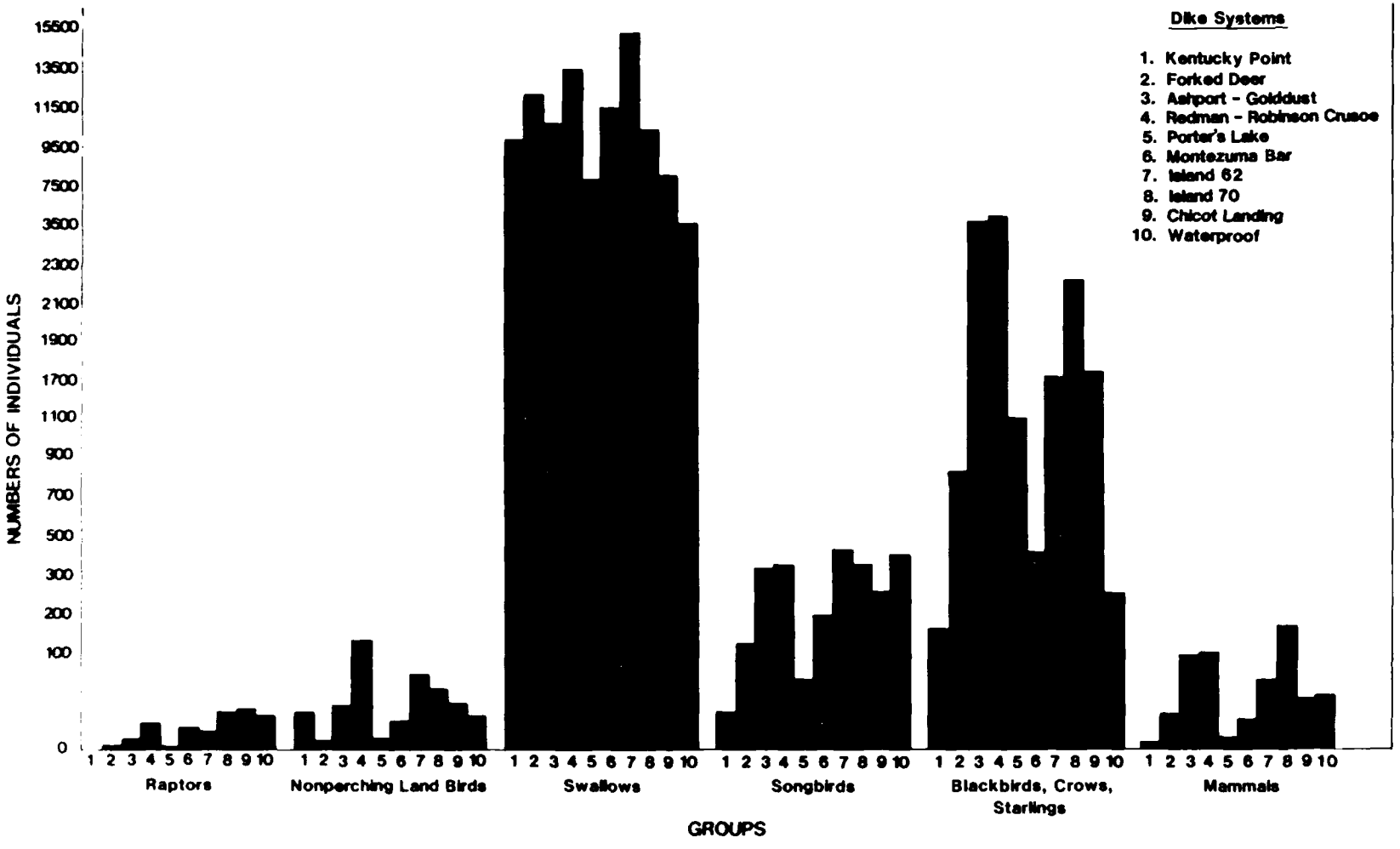

Figure 16. Distribution and abundance of mammals and non-water dependent birds at 10 dike systems in the Lower Mississippi River

43. A total of 2,498 songbirds was recorded in the 10 dike systems. The Ashport-Golddust DS contained the largest number of songbird species, whereas, diversity was highest at Island 62 DS. Songbirds occurred in greater numbers in dike systems providing interspersed areas of sandbars, woody vegetation, and dike system pools. Mourning doves, blue jays, field sparrows, indigo buntings, and Northern cardinal comprised 79 percent of the songbirds recorded with mourning doves and blue jays representing 40 and 27 percent of this total, respectively.

Mammals

44. Eleven species of mammals totaling 599 individuals were recorded. The white-tailed deer was the most abundant species found (218 individuals). Beaver, raccoon, and white-tailed deer accounted for 77 percent of the total number of mammals observed. Island 70 DS had the greatest number and diversity of mammals (158 individuals and nine species). Eight of the 10 dike systems contained seven or more mammal species. The lowest numbers of mammals were found at Kentucky Point and Porter's Lake DS. Significantly more individual species were observed in August, but total numbers were comparable in August and September. More mammals were observed in dike system habitats interspersed with open areas, woody vegetation, and dike field pools.

Vegetation

45. Seventy-five plant species were found in the 10 dike systems (Table 9). Black willows (Salix nigra) and sandbar willows (Salix interior) were the only common or abundant plants. Kentucky Point DS had the lowest plant diversity recorded (11) and Redman-Robinson Crusoe and Ashport-Golddust DS has the highest diversity (77 and 75 percent, respectively, of the number of species found).

46. An unidentified sedge (Cyperus sp.), morning glory (Ipomoea purpurea), cottonwood (Populus delfoides), sandbar willow (Salix interior), black willow (Salix nigra), and cocklebur (Xanthium strumarium) occurred in all 10 dike systems. False indigo (Amorpha fruticosa), day flower (Commelina diffusa), goose grass (Eleusine indica), pokeweed (Phytolacca americana), poison ivy (Rhus radicans), and duck potato (Sagittoria latifolia) were uncommon species representing a single occurrence in the 10 dike systems. Presence or absence of any particular plant species appeared to be directly related to the characteristics of the sandbar substrate and the duration and frequency of inundation.

PART IV: DISCUSSION

47. Numerous individuals of water dependent species such as herons, egrets, shorebirds, waterfowl and terns were frequently observed in the dike systems. These species utilized the dike systems with varing degrees of frequency and intensity depending upon specific habitat composition. Greater numbers of individuals were recorded at dike systems with a diversity of interspersed habitats, i.e., sandbars, woody vegetation, and dike system pools. These conditions were most prevalent in large dike systems such as Island 62, Island 70, Redman-Robinson Crusoe, and Ashport-Golddust.

48. Analysis of the data indicated a significant positive relationship between wading birds and the amount of dike system water. There was also a significant relationship noted between shorebirds and the acreages of dike system water and shoreline sandbars.

49. Wading birds were frequently observed utilizing the shallow water within the dike system pools and along the edges of the secondary and main channels. Greater numbers of wading birds were recorded in dike systems with substantial pool acreages. In addition to the habitat acreages associated with the 10 dike systems, approximately 12,400 acres of other riparian habitat were available for wading bird use within the same river reaches. Wading bird use varied throughout the day, suggesting utilization of dike system habitat as well as natural riparian habitat.

50. Analysis of the data strongly suggest that shorebirds preferred large dike systems with significant acreages of water and shoreline sandbars. The positive correlation between shorebird abundance and the amount of dike system water and shoreline sandbars supported the expected relationship between shorebirds and the amount of these habitat types. It was obvious by the large numbers recorded that the dike systems provided habitat that attracted shorebirds and was comparable or supplementary to naturally occurring riparian habitat. Fifty-four percent of the total number of shorebirds were found on Island 62, Island 70, and the Redman-Robinson Crusoe dike systems. These were large dike systems consisting of significant amounts of pool water and shoreline sandbars. Pool water and

shoreline sandbars accounted for 78, 64, and 48 percent, respectively, of the total acreage of habitats in these three dike systems. Waterproof, a dike system comprised of < 1 percent of these habitats, had only 4 percent of the total shorebirds recorded.

51. While some statistically significant relationships were found, no ecologically meaningful associations were identified between dike system physical variables and the other four bird groups. It is felt that the lack of meaningful relationships could in part be attributed to the narrow time frame of the study. Some significant correlations were an artifact of sampling or coincidental. The significance of some relationships could be explained by the occurrence of large numbers of a single species in one particular dike system during a specific month.

52. Dike system aquatic habitats are continually changing in size and availability on time scales of weeks, days, and hours as a function of river stage and discharge fluctuations and are relatively unstable (Cobb and Magoun 1985). The physical instability of the habitat in these systems makes it extremely difficult to make positive statements about the relationships between habitat variables and bird utilization.

53. The riparian habitats provided by dike systems at low to medium (0 to +10 LWRP) river stages in the fall are inhabited by large numbers of wading birds, particularly the great blue heron and the great egret. Wading birds appear to utilize shallow or slack-water areas within and along the channelward side of dike systems for feeding and resting. Shallow-water areas likely provide an abundant food source, primarily small fishes which are common in these habitats (Pennington, Baker, and Bond 1983). Many dike systems are isolated from the mainland and offer areas of refuge that are relatively free from disturbance. Wading birds occurred frequently in these habitats throughout the sampling period. Ashport-Golddust and Kentucky Point DS provided relatively large amounts of pool and shallow channel water, and therefore, had the greatest numbers of herons and egrets. Utilization was greatest during September and declined during October as suitable habitat conditions were reduced by rising river stages and/or continued migration.

54. The waterbird group consisted mainly of double-crested cormorants and cattle egrets, representing 92 percent of the total number of waterbirds recorded. Waterbird numbers were similar for the months of September and October with the September counts comprised mainly of cattle egrets, and the October counts being mainly double-crested cormorants. The Redman-Robinson Crusoe DS and Porter's Lake DS had the greatest utilization. The Redman-Robinson Crusoe DS is a large system with a diversity of habitats, whereas, Porter's Lake was comprised mainly of channel water. Double-crested cormorants occupied both dike systems, but occurred in greater numbers in Redman-Robinson Crusoe DS. There appears to be a positive relationship between cormorants and the amount of open water habitat available, which is consistent with the feeding habitats of this species and the need for open water. Apparently, rising river stages in October did not impact cormorant presence because numbers increased 200 percent from September to October.

55. The data indicated extensive and frequent shorebird use of the dike systems surveyed, especially for resting and feeding sites during migration. Shorebirds occurred in all dike systems. Frequency of occurrence and numbers were greater in dike systems containing relatively large amounts of pool and sandbar habitat. Island 62 and Redman-Robinson Crusoe had these characteristics and 43 percent of the total number of shorebirds were recorded at these dike systems. Ryckman, Edgerley, Tomlinson and Associates (1975), noted shorebirds such as solitary, least, and semipalmated sandpiper and greater and lesser yellowlegs utilizing the river sandbars extensively during migration. Dike system habitat is comparable to naturally occurring riparian habitat, but the potential for utilization by shorebirds is enhanced by the presence of shallow water habitat along the edge of the pools. Shorebird utilization appears to be directly related to the extent of sandbar habitat available during falling river stages. River stages were lowest during the September sampling period when the greatest number of shorebirds were observed. Highest river stages occurred during the August and October sampling periods when the fewest shorebirds were found. Rising river stages and reduced or altered habitat areas or the continuation of migration were evidently impacting the utilization of the dike systems by shorebirds.

56. The majority of the gulls and terns (97 percent) were represented by interior least tern and ring-billed gull. Interior least terns occurred in greater numbers (96 percent) in August on the Kentucky Point DS. Kentucky Point represents a large dike system comprised of 62 percent sandbar which apparently provided suitable late summer brood habitat for the least tern. Ryckman, Edgerley, Tomlinson and Associates (1975), noted that open sandbars provided breeding sites for the interior least tern, which is likely the only bird species that utilizes this habitat for reproduction. Eighty-five percent of the ring-billed gulls recorded were found during October. Sixty percent of the total number recorded occurred in October in the four dike systems that were farthest upriver. There appeared to be a tendency for ring-billed gulls to stage at or above the Redman-Robinson Crusoe DS and continue migration nonstop to the lower reaches of the river.

57. Various species of waterfowl were recorded during the survey with a single observation of 1,100 lesser scaup representing 73 percent of the total number recorded. Eighty-five percent of the waterfowl occurred in the Redman-Robinson Crusoe DS with 90 percent of these comprised of the 1,100 lesser scaup. Redman-Robinson Crusoe is a dike system of considerable habitat diversity (Table 3). Ryckman, Edgerley, Tomlinson and Associates (1975) reported that significant numbers of waterfowl, both dabbling and diving ducks, utilize slack water and channel habitat associated with dike systems in the Lower Mississippi River. Dike system habitats are utilized by waterfowl for resting, roosting, and staging areas rather than a major food source. Diving ducks probably utilize the dike systems as a feeding area more extensively than dabbling ducks because of the relatively small amount of shallow water. Waterfowl use of dike systems is greatest during medium to high river stages when cottonwood-willow flats are flooded and serve as roosting and resting sites. Waterfowl probably utilize dike system habitat in an indirect proportion to the availability of other floodplain habitat during winter. Use of the dike system and associated riverine habitats by migrating waterfowl would probably tend to be much greater in years when inundated floodplain habitat is not extensive due to lack of fall and winter rains.

58. Coots occurred in only three of the dike systems; Redman-Robinson Crusoe, Porter's Lake, and Island 62. All three of these dike systems were large and contained significant amounts of dike system and channel water. All coots were recorded in October. Coots appear to be late fall migrants that prefer large dike systems with significant acreages of dike system and channel water.

59. The data suggest that raptors tended to frequent larger dike systems containing relatively large amounts of woody vegetation. Chicot Landing DS had the largest number of raptors recorded and the Redman-Robinson Crusoe DS had the greatest number of raptors species. These dike systems were large (3,908 and 3,402 acres, respectively), containing in excess of 1,200 acres of woody vegetation and a diversity of habitat types, conditions that are favorable for raptor species. Sixty-four percent of the raptors recorded occurred in dike systems containing in excess of 350 acres of woody vegetation. Seventy-nine percent of the raptors recorded occurred below RM 656. There was no obvious explanation for the well-defined spatial separation of dike system use.

60. Nonperching land birds occurred in all 10 dike systems but occurred in the greatest numbers in the Redman-Robinson Crusoe DS. The least number occurred at Forked Deer DS. The Redman-Robinson Crusoe DS, a large dike system with a diveisity of habitats, appeared to be the most preferred habitat of the 10 dike systems (30 percent of total numbers). Forked Deer DS, a dike system represented by low habitat diversity (less than 1 percent woody vegetation), had only 4 percent of the total number recorded. Sixty-nine percent of the total number of individuals recorded occurred in dike systems containing significant acreages of woody vegetation. Ryckman, Edgerley, Tomlinson and Associates (1975), noted downy woodpeckers to specifically inhabit the early stage succession of cottonwood and willow within the dike systems.

61. Swallows occurred in significant numbers in all dike systems, but were present in the greatest numbers at Island 62 (15,018). Waterproof DS contained the fewest number of swallows (3,464). Swallows did not appear to be inhabiting any particular feature of the dike system, but were

mainly noted as migrating downriver. There did not appear to be any specific relation between actual size of the dike system and swallow numbers. Forked Deer DS, the smallest dike system, had three times the number of swallows as Waterproof, although it was one-third the size.

62. The blackbird group was found in all dike systems; Redman-Robinson Crusoe DS had the greatest number (3,751). Large dike systems with high habitat diversity had the greatest blackbird numbers. Kentucky Point, a large dike system with low habitat diversity, had the least number of individuals (1 percent). Red-winged blackbirds were most abundant species in the group (63 percent). Brewer's blackbird, represented by a single flock, had the least number of individuals recorded (150). Ryckman, Edgerley, Tomlinson and Associates (1975), noted mixed species of blackbirds (including resident species such as red-winged blackbirds, common grackle, and brown-headed cowbird, and winter resident rusty and Brewer's blackbird) utilizing early succession riparian habitat for roosting. These species exhibit refuging behavior in the winter, roost in large colonial roosting sites, and foraging over wide areas during the daytime.

63. Songbirds occurred in all dike systems but usually occurred in greater number on the large dike systems. There did not appear to be any significant relationship between songbird numbers and the acreage of woody vegetation. Island 62 DS had the greatest number of songbirds recorded, but only 15 percent of the total acreage was woody vegetation. Waterproof DS had the second highest number, but contained only a small amount of woody vegetation (6 acres). Mourning dove was the most abundant species, suggesting that this species was utilizing sandbars as "graveling" sites.

64. Mammals were present in all dike systems, but occurred in greater numbers on the large dike systems providing an interspersion of habitat types. The most abundant species were highly mobile (white-tailed deer) and/or those that utilize aquatic habitats (beaver and raccoon).

65. Dike system habitat size (surface area and volume), mean depth and availability are continually changing as a result of river stage and discharge fluctuations. As river stages rise, increases occur in the size of aquatic habitats associated with dike systems and decreases occur in

the size of terrestrial habitats. Cobb and Magoun (1985) noted an increase in pool surface area of 135 percent and an increase in the associated sandbar aquatic habitat surface area of 64 percent in dike systems as river stage increase from 0 to +15 ft LWRP in the Lower Mississippi River. Typically, at river stages < +15 ft LWRP slack-water conditions prevail in dike systems while flowing-water conditions become more pronounced as stages increase above this elevation.

66. Dike systems provide a significant amount of slack-water and terrestrial habitat in the channel environment of the Lower Mississippi River. The 112 dike systems that were located upriver of RM 377, AHP in 1972 contained 235,000 acres of aquatic habitat at low river stages (-1.4 to 10.6 ft LWRP) compared to about 78,200 acres of natural riparian habitat, or three times the amount of natural habitat (US Army Engineer District, Vicksburg 1976). Cobb and Magoun (1985) reported 25,778 acres of pool area and 23,599 acres of submerged sandbars associated with dike systems in a 290 RM reach of the Lower Mississippi River at a stage of +15 ft LWRP. About 21,165 acres of sandbars and islands were found in diked reaches of the Lower Mississippi River based on 1976 aerial photography take at a river stage of about 0 ft LWRP.

67. Large numbers of aquatic-oriented birds and to a lesser extent mammals utilize the large amount of aquatic habitat associated with dike systems in the Lower Mississippi River, but the relative physical and hydrologic instability of these areas deters from their ecological value in some years. Habitat instability stems from the large and frequent fluctuations in river stage. Cobb and Magoun (1985) found that during the low flow season on the river (July through December) stages on the average were within five-foot stage intervals between 0 and +15 ft LWRP an average of about 7 to 11 days per event and fluctuated in and out of these intervals about 3.8 to 5.2 times annually. Flowing water conditions (stage > +15 ft LWRP) were present an average of 24 percent of the time each year, while during the high flow period (January to June stages were > +15 ft LWRP 86 percent of the time.

PART V: CONCLUSIONS

68. Dike systems in the Lower Mississippi River appear to be utilized by large numbers of migrating and resident birds and provide habitat for resident mammals and may provide certain habitats that are limited in extent along the lower river. Wading birds and shorebirds occur frequently in significant numbers throughout the late summer and early fall. Swallows were present in great numbers, but no relationships were noted between these species and dike system variables.

69. A significant relationship was noted between wading birds and the amount of dike system water. There was also a significant relationship between shorebirds and the acreage of dike system water and shoreline sandbar. There were no significant relationships noted for the other groups analyzed.

70. The dike systems provided wildlife habitats similar to naturally occurring riparian habitat, but have the added dimension of semipermanent and permanent water.

71. Dike system habitats continually change in size and availability on time scales of weeks, days, and hours as a function of changing river stages and are relatively unstable. The physical instability of the habitat in these systems makes it difficult to evaluate the relationships between habitat variables and wildlife utilization. However, the data indicate that when slack-water conditions are available, that dike system habitats provide feeding, resting, roosting sites and cover for many bird species.

72. The data indicate that water-oriented species of birds and mammals that inhabit dike systems along the Lower Mississippi River are most abundant during the fall in systems that have a relatively high habitat diversity consisting of an interspersion of sandbar, dike system pools, and woody vegetation. Large dike systems, such as Redman-Robinson Crusoe, Island 62, and Ashport-Golddust, which had these habitat conditions, also had the greatest number of birds and mammals among the 10 dike systems investigated.

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Table 1
Summary of the Engineering and Physical Characteristics of the 10 Dike Systems Surveyed, River Miles (RM) 377-885, AHP

Dike System	RM	Construction Date	Construction Material	Dike Type	Number Dikes
Kentucky Point	885L*	1977	Stone	Transverse	4
Forked Deer	797L	1964, 1968, 1969	Stone	Transverse	5
Ashport-Golddust	794R*	1960, 1969	Pile/Stone	Transverse	5
Redman-Robinson Crusoe	737R	1962, 1964, 1965, 1967, 1968	Pile/Stone	Transverse, L-Head	4
Porter's Lake	701R	1966	Stone	Transverse	4
Montezuma Bar	656R	1971	Stone	Transverse	2
Island 62	637R	1963, 1969, 1970, 1974	Pile/Stone	Transverse L-Head, Vane	6
Island 70	607L	1961, 1971	Pile/Stone	Transverse	4
Chicot Landing	561R	1967, 1974	Stone	Transverse L-Head	3
Waterproof	377R	1963, 1975	Pile/Stone	Transverse	5

*L = left descending bank; R = right descending bank.

Table 2
LWRP* River Stages for the 10 Dike Systems During August, September, and October 1984

Dike System	Month/LWRP River Stage		
	August	September	October
Kentucky Point	4.5	5.0	14.0
Forked Deer	3.6	0.9	12.3
Ashport-Golddust	3.2	2.9	12.5
Redman-Robinson Crusoe	5.8	3.8	13.4
Porter's Lake	5.4	2.6	11.4
Montezuma Bar	9.0	2.4	14.5
Island 62	8.4	1.3	0.5
Island 70	10.5	5.2	5.6 (1 Nov)
Chicot Landing	10.4	5.3	5.0
Waterproof	13.0	7.5	8.7 (2 Nov)

*LWRP = Lower Water Reference Plane.

Table 3
Dike System Acreage by Habitat Type

Dike System	Woods*	Dike Field Water**	Channel Water+	Sandbar (Shoreline)++	Sandbar (Island)±	Dike System Water <2' Deep	Total#
Kentucky Point	6	380	104	779	0	190	1,269
Forked Deer	45	49	366	204	0	68	664
Ashport-Golddust	270	668	472	1,216	8	100	2,634
Redmen-Robinson Crusoe	1,504	724	282	910	0	57	3,402
Porter's Lake	98	212	1,357	229	611	240	2,507
Montezuma	190	31	137	496	0	80	854
Island 62	370	264	160	1,614	0	165	2,408
Island 70	351	158	193	824	0	62	1,526
Chicot	1,238	56	678	186	1,750	150	3,908
Waterproof	167	0	760	11	867	135	1,805
Total	4,239	2,542	4,509	6,469	3,236	1,247	20,995

* Wooded vegetation ranging from sandbar willow reproduction to riparian bottomland hardwood. This category used only to specify habitat as wooded vegetation.

** Pools created by dikes or elevation differences within the dike systems.

+ Water within the boundary of the dike system directly connected to the main channel and usually containing some current.

++ Sandbar connected to top bank at some location within the dike system.

± Sandbar not attached to the dike system, except possibly during extremely low water, but within the boundary of the dike system.

Total does not include water $\leq$ 2 ft deep.

Table 4
1984 Sampling Schedule

Dike System	RM	Date		
		August	September	October
Kentucky Point	885	20	17	15
Forked Deer	797	21	18	16
Ashport-Golddust	794	22	19	17
Redman-Robinson Crusoe	737	23	20	18
Porter's Lake	701	24	21	28
Montezuma Bar	656	26	23	29
Island 62	637	27	24	30
Island 70	607	29	27	1 Nov
Chicot	561	28	25	31
Waterproof	377	20	28	2 Nov

Table 5
Summary Table By Group Category* and Dike System

Category	Kentucky Point	Forked Deer	Ashport-Golddust	Redman-Robinson Crusoe	Porter's Lake	Montezuma	Island 62	Island 70	Chicot	Waterproof	Total
Wading birds	233	94	334	212	115	80	251	108	203	118	1,748
Waterbirds	41	54	9	309	246	36	77	94	28	179	1,073
Shorebirds	116	186	143	234	165	106	632	226	141	89	2,038
Gulls & terns	313	41	30	70	0	5	6	41	16	10	532
Waterfowl	0	0	50	1,277	3	0	86	26	25	38	1,505
Coots	0	0	0	249	65	0	102	0	0	0	416
Raptors	0	3	9	29	2	22	18	39	41	37	200
Nonperching land birds	20	7	45	142	11	29	79	62	46	37	478
Others											
Swallows	9,555	11,903	10,520	13,151	7,784	11,131	15,018	10,086	7,876	3,464	100,488
Songbirds	38	117	337	344	71	192	413	343	250	393	2,498
Blackbirds, crows, starlings	158	838	3,517	3,751	1,082	404	1,703	2,204	1,735	244	15,636
Mammals	5	34	90	95	11	29	71	158	50	56	599
TOTALS	10,479	13,277	15,084	19,863	9,555	12,034	18,456	13,387	10,411	4,665	127,211

*Species included in each group:

Wading birds: great blue heron, little blue heron, greenbacked heron, great egret, snowy egret.

Waterbirds: double-crested cormorant, anhinga, white pelican, pied-billed grebe, common loon, white ibis, wood stork, cattle egret.

Shorebirds: killdeer, least sandpiper, greater yellowlegs, lesser yellowlegs, shortbilled dowitcher, solitary sandpiper, spotted sandpiper, semipalmated plover.

Gulls & terns: interior least tern, black tern, ring-billed gull.

Waterfowl: blue winged teal, mallard, wood duck, northern shoveler, ruddy duck, lesser scaup, redhead.

Coots: coots.

Raptors: American kestrel, bald eagle, barred owl, Mississippi Kite, northern harrier, red-shoulder hawk, red-tailed hawk.

Nonperching land birds: chimney swift, belted kingfisher, downy woodpecker, hairy woodpecker, northern flicker, pileated woodpecker, red-bellied woodpecker, red-headed woodpecker, ruby throated hummingbird, yellow billed cockoo.

Others

Swallows: bank swallow, barn swallow, cliff swallow, northern rough-winged swallow, purple martin, tree swallow.

Songbirds: American goldfinch, American robin, blue-gray gnatcatcher, blue jay, bobolink, Carolina chickadee, Carolina wren, common yellowthroat, eastern kingbird, eastern meadowlark, eastern wood-pewee, field sparrow, great-crested flycatcher, gray catbird, horned lark, hooded warbler, indigo bunting, loggerhead shrike, mourning dove, northern cardinal, northern mockingbird, northern oriole, northern parula, orchard oriole, prothonotary warbler, red-eyed vireo, song sparrow, tufted titmouse, white-eyed vireo, yellow warbler.

Blackbirds, crows, starlings: American crow, brown-headed cowbird, Brewer's blackbird, common grackle, European starling, fish crow, red-winged blackbird.

Mammals: armadillo, beaver, coyote, eastern cottontail, opossum, raccoon, red fox, river otter, swamp rabbit, stripped skunk, white-tailed deer.

Table 6

Seasonal Observations of Birds and Mammals in 10 Lower Mississippi River Dike Systems

SPECIES	1984 AUGUST	SEPTEMBER	OCTOBER	TOTAL	AVERAGE	MAXIMUM
	KENTUCKY POINT POOL 1					
AMERICAN CROW	0	4	2	6	2.00	4
BELTED KINGFISHER	0	1	0	1	0.33	1
BANK SWALLOW	25	50	0	75	25.00	50
BARN SWALLOW	0	50	0	50	16.67	50
CLIFF SWALLOW	0	3	0	3	1.00	3
COMMON GRACKLE	0	5	0	5	1.67	5
DOUBLE-CRESTED CORMORANT	7	8	6	21	7.00	8
GREAT BLUE HERON	4	42	32	78	26.00	42
GREAT EGRET	16	1	1	18	6.00	16
KILLDEER	6	7	2	15	5.00	7
LEAST SANDPIPER	12	0	0	12	4.00	12
LEAST TERN	12	0	0	12	4.00	12
MOURNING DOVE	4	2	0	6	2.00	4
NORTHERN ROUGH-WINGED SWALLOW	25	50	0	75	25.00	50
PIED-BILLED GREBE	0	1	0	1	0.33	1
RACCOON	0	1	0	1	0.33	1
RING-BILLED GULL	2	6	9	17	5.67	9
RED-WINGED BLACKBIRD	0	2	0	2	0.67	2
SHORT-BILLED DOWITCHER	0	3	0	3	1.00	3
TREE SWALLOW	50	1500	20	1570	523.33	1500
POOL TOTALS	163	1736	72	1971		

(Continued)

Table 6 (Continued)

POOL 2						
AMERICAN CROW	11	5	4	20	6.67	11
BELTED KINGFISHER	1	1	0	2	0.67	1
BANK SWALLOW	0	20	0	20	6.67	20
BLUE JAY	0	3	0	3	1.00	3
BARN SWALLOW	0	3	0	3	1.00	3
CHIMNEY SWIFT	12	0	0	12	4.00	12
CLIFF SWALLOW	0	25	0	25	8.33	25
COMMON GRACKLE	3	6	0	9	3.00	6
COYOTE	1	1	0	2	0.67	1
DOUBLE-CRESTED CORMORANT	0	9	4	13	4.33	9
GREAT BLUE HERON	13	28	14	55	18.33	28
GREAT-CRESTED FLYCATCHER	1	0	0	1	0.33	1
GRAY CATBIRD	0	2	0	2	0.67	2
GREAT EGRET	3	3	1	7	2.33	3
KILLDEER	4	6	5	15	5.00	6
LEAST TERN	50	0	0	50	16.67	50
MOURNING DOVE	4	4	0	8	2.67	4
NORTHERN CARDINAL	6	2	0	8	2.67	6
NORTHERN ROUGH-WINGED SWALLOW	50	50	0	100	33.33	50
PIED-BILLED GREBE	0	0	2	2	0.67	2
PURPLE MARTIN	8	0	0	8	2.67	8
RACCOON	1	1	0	2	0.67	1
RING-BILLED GULL	0	5	4	9	3.00	5
RED-WINGED BLACKBIRD	10	2	0	12	4.00	10
TREE SWALLOW	100	1000	0	1100	366.67	1000
POOL TOTALS	278	1176	34	1488		
POOL 3						
AMERICAN CROW	6	5	6	17	5.67	6
BELTED KINGFISHER	2	1	0	3	1.00	2
BANK SWALLOW	10	100	0	110	36.67	100
CLIFF SWALLOW	0	20	0	20	6.67	20
COMMON GRACKLE	0	3	0	3	1.00	3
GREAT BLUE HERON	9	22	16	47	15.67	22
GREAT EGRET	1	2	0	3	1.00	2
KILLDEER	8	3	8	19	6.33	8
LEAST SANDPIPER	15	0	0	15	5.00	15
LEAST TERN	20	0	0	20	6.67	20
MOURNING DOVE	4	2	0	6	2.00	4
NORTHERN ROUGH-WINGED SWALLOW	10	10	0	20	6.67	10
RING-BILLED GULL	0	10	7	17	5.67	10
RED-WINGED BLACKBIRD	12	0	0	12	4.00	12
SHORT-BILLED DOWITCHER	0	2	0	2	0.67	2
SEMIPALMATED PLOVER	9	3	0	12	4.00	9
SPOTTED SANDPIPER	1	0	0	1	0.33	1
TREE SWALLOW	50	1000	50	1100	366.67	1000
POOL TOTALS	157	1183	87	1427		

(Continued)

Table 6 (Continued)

	POOL 4					
AMERICAN CROW	0	2	4	6	2.00	4
BELTED KINGFISHER	1	1	0	2	0.67	1
BANK SWALLOW	0	10	0	10	3.33	10
COMMON GRACKLE	0	3	0	3	1.00	3
GREAT BLUE HERON	12	9	2	23	7.67	12
GREAT EGRET	2	0	0	2	0.67	2
KILLDEER	8	6	2	16	5.33	8
LEAST SANDPIPER	6	0	0	6	2.00	6
LEAST TERN	18	0	0	18	6.00	18
MOURNING DOVE	0	4	0	4	1.33	4
NORTHERN ROUGH-WINGED SWALLOW	0	10	0	10	3.33	10
RING-BILLED GULL	3	4	20	27	9.00	20
RED-WINGED BLACKBIRD	2	50	0	52	17.33	50
TREE SWALLOW	100	1000	30	1130	376.67	1000
POOL TOTALS	152	1099	53	1309		
	POOL 5					
AMERICAN CROW	4		0	4	1.33	4
BARN SWALLOW	0	25	0	25	8.33	25
LEAST TERN	8	0	0	8	2.67	8
NORTHERN ROUGH-WINGED SWALLOW	50	50	0	100	33.33	50
PIED-BILLED GREBE	2	0	0	2	0.67	2
RING-BILLED GULL	0	0	7	7	2.33	7
TREE SWALLOW	50	1000	4	1054	351.33	1000
POOL TOTALS	114	1075	11	1200		
	POOL 6					
AMERICAN CROW	7	0	0	7	2.33	7
BANK SWALLOW	10	0	0	10	3.33	10
BLACK TERN	16	0	0	16	5.33	16
BARN SWALLOW	0	50	0	50	16.67	50
DOUBLE-CRESTED CORMORANT	0	2	0	2	0.67	2
LEAST TERN	50	0	0	50	16.67	50
NORTHERN ROUGH-WINGED SWALLOW	25	100	0	125	41.67	100
RING-BILLED GULL	0	50	12	62	20.67	50
TREE SWALLOW	250	2500	12	2762	920.67	2500
POOL TOTALS	358	2702	24	3084		
DIKE FIELD TOTALS	1222	8971	286	10479		

(Continued)

Table 6 (Continued)

FORKED DEER	0	0	0			
	0	0	0	0	0.00	0
	0	0	0	0	0.00	0
	0	0	0	0	0.00	0
	0	0	0	0	0.00	0
	2	0	3	5	1.67	3
FISH CROW	10	0	0	10	3.33	10
NORTHERN ROUGH-WINGED SWALLOW	0	0	3	3	1.00	3
RING-BILLED GULL	4	0	0	4	1.33	4
TREE SWALLOW						
POOL TOTALS	16	0	6	22		
	POOL 2					
AMERICAN CROW	7	15	0	22	7.33	15
AMERICAN KESTREL	0	1	0	1	0.33	1
BEAVER	1	1	0	2	0.67	1
BELTED KINGFISHER	0	1	0	1	0.33	1
BANK SWALLOW	0	25	0	25	8.33	25
BARN SWALLOW	0	25	0	25	8.33	25
CATTLE EGRET	0	6	0	6	2.00	6
COMMON GRACKLE	2	4	0	6	2.00	4
COYOTE	1	1	0	2	0.67	1
DOUBLE-CRESTED CORMORANT	0	0	5	5	1.67	5
EUROPEAN STARLING	0	25	0	25	8.33	25
FISH CROW	2	0	3	5	1.67	3
GREAT BLUE HERON	3	12	1	16	5.33	12
GREAT EGRET	1	2	0	3	1.00	2
GREATER YELLOWLEGS	0	1	0	1	0.33	1
KILLDEER	3	6	10	19	6.33	10
LEAST SANDPIPER	0	18	0	18	6.00	18
LEAST TERN	2	0	0	2	0.67	2
MOURNING DOVE	2	4	0	6	2.00	4
NORTHERN ROUGH-WINGED SWALLOW	0	100	0	100	33.33	100
RACCOON	1	1	0	2	0.67	1
RING-BILLED GULL	0	0	3	3	1.00	3
RED-WINGED BLACKBIRD	2	100	0	102	34.00	100
SEMIPALMATED PLOVER	0	2	0	2	0.67	2
TREE SWALLOW	15	1000	0	1015	338.33	1000
WHITE-TAILED DEER	0	2	0	2	0.67	2
POOL TOTALS	42	1352	22	1416		

(Continued)

Table 6 (Continued)

	POOL 3					
AMERICAN CROW	17	25	7	49	16.33	25
AMERICAN GOLDFINCH	0	3	0	3	1.00	3
AMERICAN KESTREL	0	1	0	1	0.33	1
BEAVER	3	4	3	10	3.33	4
BELTED KINGFISHER	0	2	0	2	0.67	2
BANK SWALLOW	0	50	0	50	16.67	50
BLUE JAY	2	0	3	5	1.67	3
BOBOLINK	0	50	0	50	16.67	50
BARN SWALLOW	0	50	0	50	16.67	50
CAROLINA CHICKADEE	3	0	0	3	1.00	3
CATTLE EGRET	0	25	0	25	8.33	25
CLIFF SWALLOW	0	50	0	50	16.67	50
COMMON GRACKLE	2	6	0	8	2.67	6
COYOTE	1	1	0	2	0.67	1
DOUBLE-CRESTED CORMORANT	0	0	8	8	2.67	8
EASTERN COTTONTAIL	1	0	0	1	0.33	1
EASTERN KINGBIRD	0	1	0	1	0.33	1
EASTERN MEADOWLARK	0	0	2	2	0.67	2
EASTERN WOOD-PEWEE	2	0	0	2	0.67	2
EUROPEAN STARLING	0	50	0	50	16.67	50
FISH CROW	3	0	4	7	2.33	4
FIELD SPARROW	5	0	6	11	3.67	6
GREAT BLUE HERON	4	18	27	49	16.33	27
GREAT EGRET	3	2	6	11	3.67	6
GREATER YELLOWLEGS	0	1	1	2	0.67	1
HORNED LARK	0	7	0	7	2.33	7
KILLDEER	4	15	35	54	18.00	35
LITTLE BLUE HERON	0	0	2	2	0.67	2
LEAST SANDPIPER	15	25	31	71	23.67	31
LEAST TERN	7	0	0	7	2.33	7
MOURNING DOVE	6	7	3	16	5.33	7
NORTHERN CARDINAL	5	4	0	9	3.00	5
NORTHERN FLICKER	0	2	0	2	0.67	2
NORTHERN MOCKINGBIRD	0	1	0	1	0.33	1
NORTHERN ROUGH-WINGED SWALLOW	15	500	0	515	171.67	500
OPOSSUM	0	0	1	1	0.33	1
RACCOON	1	2	3	6	2.00	3
RING-BILLED GULL	0	0	4	4	1.33	4
RED FOX	0	0	1	1	0.33	1
RED-WINGED BLACKBIRD	3	500	0	503	167.67	500
SHORT-BILLED DOWITCHER	0	4	0	4	1.33	4
SNOWY EGRET	6	0	0	6	2.00	6
SEMIPALMATED PLOVER	0	2	0	2	0.67	2
SPOTTED SANDPIPER	0	2	0	2	0.67	2
STRIPED SKUNK	0	0	1	1	0.33	1
TREE SWALLOW	25	2500	0	2525	841.67	2500
TUFTED TITMOUSE	0	0	1	1	0.33	1
WHITE-TAILED DEER	2	2	0	4	1.33	2
YELLOW-BILLED CUCKOO	2	0	0	2	0.67	2
POOL TOTALS	137	3912	149	4198		

(Continued)

Table 6 (Continued)

POOL 4						
AMERICAN CROW	12	10	3	25	8.33	12
AMERICAN KESTREL	0	1	0	1	0.33	1
BANK SWALLOW	0	50	0	50	16.67	50
BARN SWALLOW	0	10	0	10	3.33	10
CATTLE EGRET	0	10	0	10	3.33	10
CLIFF SWALLOW	0	15	0	15	5.00	15
COMMON GRACKLE	3	0	0	3	1.00	3
FISH CROW	0	0	2	2	0.67	2
GREAT BLUE HERON	1	6	0	7	2.33	6
KILLDEER	2	6	0	8	2.67	6
LEAST SANDPIPER	0	3	0	3	1.00	3
LEAST TERN	2	0	0	2	0.67	2
NORTHERN ROUGH-WINGED SWALLOW	0	200	0	200	66.67	200
RING-BILLED GULL	0	0	2	2	0.67	2
TREE SWALLOW	3	1000	10	1013	337.67	1000
POOL TOTALS	23	1311	17	1351		
POOL 5						
AMERICAN CROW	2	3	3	8	2.67	3
BANK SWALLOW	3	50	0	53	17.67	50
BARN SWALLOW	0	50	0	50	16.67	50
FISH CROW	0	2	0	2	0.67	2
NORTHERN ROUGH-WINGED SWALLOW	7	200	0	207	69.00	200
RING-BILLED GULL	0	0	2	2	0.67	2
TREE SWALLOW	15	1000	15	1030	343.33	1000
POOL TOTALS	27	1305	20	1352		
POOL 6						
AMERICAN CROW	0	6	3	9	3.00	6
BANK SWALLOW	7	25	4	36	12.00	25
BARN SWALLOW	0	25	0	25	8.33	25
CLIFF SWALLOW	0	25	0	25	8.33	25
FISH CROW	2	0	0	2	0.67	2
NORTHERN ROUGH-WINGED SWALLOW	4	200	0	204	68.00	200
RING-BILLED GULL	0	0	3	3	1.00	3
TREE SWALLOW	10	1000	20	1030	343.33	1000
POOL TOTALS	23	1231	30	1334		

(Continued)

Table 6 (Continued)

POOL 7						
AMERICAN CROW	5	0	0	5	1.67	5
BARN SWALLOW	25	0	0	25	8.33	25
CLIFF SWALLOW	3	0	0	3	1.00	3
LEAST TERN	3	0	0	3	1.00	3
NORTHERN ROUGH-WINGED SWALLOW	4	500	0	504	168.00	500
RING-BILLED GULL	0	0	10	10	3.33	10
TREE SWALLOW	4	3000	50	3054	1018.00	3000
POOL TOTALS	44	3500	60	3604		
DIKE FIELD TOTALS	312	12661	304	13277		

(Continued)

Table 6 (Continued)

ASHPORT-GOLDDUST

POOL 1						
AMERICAN CROW	0	6	0	6	2.00	6
BELTED KINGFISHER	1	1	0	2	0.67	1
BLUE JAY	2	0	0	2	0.67	2
BARN SWALLOW	3	10	0	13	4.33	10
COMMON GRACKLE	0	7	0	7	2.33	7
GREAT BLUE HERON	1	2	0	3	1.00	2
GREAT EGRET	0	1	0	1	0.33	1
KILLDEER	0	2	0	2	0.67	2
NORTHERN ROUGH-WINGED SWALLOW	20	100	0	120	40.00	100
RING-BILLED GULL	0	0	3	3	1.00	3
RED-WINGED BLACKBIRD	0	15	9	24	8.00	15
TREE SWALLOW	10	1000	4	1014	338.00	1000
POOL TOTALS	37	1144	16	1197		
POOL 2						
AMERICAN CROW	3	20	3	26	8.67	20
BEAVER	2	2	0	4	1.33	2
BELTED KINGFISHER	1	2	0	3	1.00	2
BANK SWALLOW	3	15	0	18	6.00	15
BLUE JAY	2	2	0	4	1.33	2
BARN SWALLOW	4	25	0	29	9.67	25
CAROLINA CHICKADEE	2	0	0	2	0.67	2
CATTLE EGRET	0	6	0	6	2.00	6
CAROLINA WREN	1	0	0	1	0.33	1
CLIFF SWALLOW	0	6	0	6	2.00	6
COMMON GRACKLE	2	100	0	102	34.00	100
GREEN-BACKED HERON	1	0	0	1	0.33	1
GREAT BLUE HERON	6	12	2	20	6.67	12
GREAT-CRESTED FLYCATCHER	1	0	0	1	0.33	1
GREAT EGRET	10	2	0	12	4.00	10
KILLDEER	3	5	3	11	3.67	5
LITTLE BLUE HERON	3	0	0	3	1.00	3
LEAST SANDPIPER	9	0	0	9	3.00	9
MISSISSIPPI KITE	1	0	0	1	0.33	1
MOURNING DOVE	4	2	0	6	2.00	4

(Continued)

Table 6 (Continued)

NORTHERN CARDINAL	0	2	0	2	0.67	2
NORTHERN ROUGH-WINGED SWALLOW	10	150	0	160	53.33	150
OPOSSUM	1	0	0	1	0.33	1
PURPLE MARTIN	7	0	0	7	2.33	7
RACCOON	1	1	0	2	0.67	1
RED-BELLIED WOODPECKER	1	0	0	1	0.33	1
RED-WINGED BLACKBIRD	2	300	0	302	100.67	300
SNOWY EGRET	12	0	0	12	4.00	12
TREE SWALLOW	15	1000	10	1025	341.67	1000
WHITE-TAILED DEER	0	3	0	3	1.00	3
YELLOW-BILLED CUCKOO	2	0	0	2	0.67	2
YELLOW WARBLER	1	0	0	1	0.33	1
POOL TOTALS	110	1655	18	1783		
		POOL 3				
AMERICAN CROW	4	30	9	43	14.33	30
BEAVER	1	1	0	2	0.67	1
BELTED KINGFISHER	0	2	0	2	0.67	2
BLUE JAY	0	0	2	2	0.67	2
BARN SWALLOW	0	17	0	17	5.67	17
BLUE-WINGED TEAL	12	0	0	12	4.00	12
COMMON GRACKLE	4	100	0	104	34.67	100
COYOTE	0	1	0	1	0.33	1
FISH CROW	3	0	0	3	1.00	3
GREAT BLUE HERON	9	9	6	24	8.00	9
GREAT EGRET	12	2	0	14	4.67	12
KILLDEER	8	7	6	21	7.00	8
LEAST SANDPIPER	5	0	0	5	1.67	5
MISSISSIPPI KITE	1	0	0	1	0.33	1
MOURNING DOVE	6	6	4	16	5.33	6
NORTHERN CARDINAL	0	2	0	2	0.67	2
NORTHERN HARRIER	0	0	1	1	0.33	1
NORTHERN ROUGH-WINGED SWALLOW	0	20	0	20	6.67	20
RACCOON	1	1	1	3	1.00	1
RED FOX	1	0	0	1	0.33	1
RED-TAILED HAWK	0	1	0	1	0.33	1
RED-WINGED BLACKBIRD	3	500	50	553	184.33	500
SNOWY EGRET	15	0	0	15	5.00	15
STRIPED SKUNK	1	0	0	1	0.33	1
TREE SWALLOW	0	500	10	510	170.00	500
WHITE-TAILED DEER	3	7	1	11	3.67	7
YELLOW-BILLED CUCKOO	1	0	0	1	0.33	1
POOL TOTALS	90	1206	90	1386		

(Continued)

Table 6 (Continued)

POOL 4						
AMERICAN CROW	7	56	3	66	22.00	56
AMERICAN ROBIN	0	25	0	25	8.33	25
BEAVER	3	3	0	6	2.00	3
BELTED KINGFISHER	2	1	0	3	1.00	2
BLUE-GRAY GNATCATCHER	2	0	0	2	0.67	2
BANK SWALLOW	8	50	3	61	20.33	50
BLUE JAY	4	15	2	21	7.00	15
BARN SWALLOW	5	50	0	55	18.33	50
BLUE-WINGED TEAL	24	0	0	24	8.00	24
CAROLINA CHICKADEE	4	4	0	8	2.67	4
CATTLE EGRET	0	3	0	3	1.00	3
CAROLINA WREN	2	1	0	3	1.00	2
CLIFF SWALLOW	0	5	0	5	1.67	5
COMMON GRACKLE	6	200	5	211	70.33	200
COYOTE	4	0	0	4	1.33	4
COMMON YELLOWTHROAT	1	0	0	1	0.33	1
EASTERN KINGBIRD	2	2	0	4	1.33	2
EASTERN WOOD-PEWEE	3	0	0	3	1.00	3
EUROPEAN STARLING	0	50	0	50	16.67	50
FISH CROW	2	0	0	2	0.67	2
FIELD SPARROW	4	10	0	14	4.67	10
GREEN-BACKED HERON	1	0	0	1	0.33	1
GREAT BLUE HERON	15	22	3	40	13.33	22
GREAT-CRESTED FLYCATCHER	1	0	0	1	0.33	1
GRAY CATBIRD	1	1	0	2	0.67	1
GREAT EGRET	25	5	0	30	10.00	25
INDIGO BUNTING	2	0	0	2	0.67	2
KILLDEER	8	6	5	19	6.33	8
LITTLE BLUE HERON	2	0	0	2	0.67	2
LEAST SANDPIPER	9	0	12	21	7.00	12
LEAST TERN	9	0	0	9	3.00	9
MISSISSIPPI KITE	2	0	0	2	0.67	2
MOURNING DOVE	11	3	10	24	8.00	11
NORTHERN CARDINAL	9	9	0	18	6.00	9
NORTHERN FLICKER	0	2	0	2	0.67	2
NORTHERN HARRIER	0	0	1	1	0.33	1
NORTHERN MOCKINGBIRD	0	2	0	2	0.67	2
NORTHERN ROUGH-WINGED SWALLOW	20	150	10	180	60.00	150
OPOSSUM	1	0	2	3	1.00	2
PROTHONOTARY WARBLER	1	0	0	1	0.33	1
PURPLE MARTIN	7	0	0	7	2.33	7
RACCOON	1	1	0	2	0.67	1
RED-BELLIED WOODPECKER	2	2	0	4	1.33	2
RED FOX	1	0	0	1	0.33	1
RED-HEADED WOODPECKER	0	1	0	1	0.33	1
RED-TAILED HAWK	1	0	0	1	0.33	1
RED-WINGED BLACKBIRD	10	1000	50	1060	353.33	1000
SNOWY EGRET	50	0	0	50	16.67	50
SEMIPALMATED PLOVER	3	0	0	3	1.00	3
SPOTTED SANDPIPER	4	0	0	4	1.33	4
STRIPED SKUNK	1	1	0	2	0.67	1

(Continued)

Table 6 (Continued)

SWAMP RABBIT	0	2	0	2	0.67	2
TREE SWALLOW	25	1000	20	1045	348.33	1000
TUFTED TITMOUSE	0	2	0	2	0.67	2
WHITE-EYED VIREO	2	0	0	2	0.67	2
WHITE-TAILED DEER	2	8	4	14	4.67	8
YELLOW-BILLED CUCKOO	3	2	0	5	1.67	3
YELLOW WARBLER	1	0	0	1	0.33	1
POOL TOTALS	313	2694	130	3137		
	POOL 5					
AMERICAN CROW	6	20	8	34	11.33	20
AMERICAN ROBIN	0	50	0	50	16.67	50
BEAVER	3	3	0	6	2.00	3
BELTED KINGFISHER	2	1	0	3	1.00	2
BLUE-GRAY GNATCATCHER	2	0	0	2	0.67	2
BANK SWALLOW	10	25	0	35	11.67	25
BLUE JAY	5	20	3	28	9.33	20
BARN SWALLOW	4	10	0	14	4.67	10
BLUE-WINGED TEAL	14	0	0	14	4.67	14
CAROLINA CHICKADEE	3	5	0	8	2.67	5
CAROLINA WREN	0	1	0	1	0.33	1
COMMON GRACKLE	7	100	7	114	38.00	100
COYOTE	1	0	0	1	0.33	1
EASTERN COTTONTAIL	2	0	0	2	0.67	2
EASTERN KINGBIRD	3	0	0	3	1.00	3
EASTERN WOOD-PEWEE	2	0	0	2	0.67	2
EUROPEAN STARLING	0	25	0	25	8.33	25
FISH CROW	2	3	0	5	1.67	3
FIELD SPARROW	7	6	0	13	4.33	7
GREAT BLUE HERON	15	13	4	32	10.67	15
GREAT-CRESTED FLYCATCHER	2	1	0	3	1.00	2
GREAT EGRET	21	4	0	25	8.33	21
HORNED LARK	0	0	15	15	5.00	15
INDIGO BUNTING	3	0	0	3	1.00	3
KILLDEER	8	7	4	19	6.33	8
MOURNING DOVE	8	4	6	18	6.00	8
NORTHERN CARDINAL	5	6	0	11	3.67	6
NORTHERN FLICKER	0	3	0	3	1.00	3
NORTHERN MOCKINGBIRD	0	1	0	1	0.33	1
NORTHERN ROUGH-WINGED SWALLOW	25	100	0	125	41.67	100
PILEATED WOODPECKER	0	1	0	1	0.33	1
PROTHONOTARY WARBLER	1	0	0	1	0.33	1
RACCOON	1	2	1	4	1.33	2
RING-BILLED GULL	0	0	3	3	1.00	3
RED-BELLIED WOODPECKER	2	2	2	6	2.00	2
RED-HEADED WOODPECKER	2	0	0	2	0.67	2
RED-TAILED HAWK	1	0	0	1	0.33	1
RED-WINGED BLACKBIRD	21	500	100	621	207.00	500

(Continued)

Table 6 (Continued)

SNOWY EGRET	35	0	0	35	11.67	35
STRIPED SKUNK	0	0	1	1	0.33	1
SWAMP RABBIT	0	2	1	3	1.00	2
TREE SWALLOW	25	1000	0	1025	341.67	1000
TUFTED TITMOUSE	0	0	2	2	0.67	2
WHITE-TAILED DEER	3	2	2	7	2.33	3
YELLOW-BILLED CUCKOO	1	2	0	3	1.00	2
YELLOW WARBLER	1	0	0	1	0.33	1
POOL TOTALS	253	1919	159	2331		
	POOL 6					
AMERICAN CROW	0	30	4	34	11.33	30
BEAVER	1	0	0	1	0.33	1
BELTED KINGFISHER	0	1	0	1	0.33	1
BANK SWALLOW	10	50	0	60	20.00	50
BARN SWALLOW	4	50	0	54	18.00	50
GREAT BLUE HERON	7	2	0	9	3.00	7
GREAT EGRET	3	2	0	5	1.67	3
KILLDEER	3	0	2	5	1.67	3
LEAST SANDPIPER	20	0	0	20	6.67	20
LEAST TERN	3	0	0	3	1.00	3
NORTHERN ROUGH-WINGED SWALLOW	0	200	0	200	66.67	200
RACCOON	1	1	0	2	0.67	1
RED-WINGED BLACKBIRD	0	0	100	100	33.33	100
SOLITARY SANDPIPER	1	0	0	1	0.33	1
SEMIPALMATED PLOVER	3	0	0	3	1.00	3
TREE SWALLOW	11	1000	7	1018	339.33	1000
POOL TOTALS	67	1336	113	1516		
	POOL 7					
AMERICAN CROW	0	25	0	25	8.33	25
BANK SWALLOW	15	50	0	65	21.67	50
BARN SWALLOW	0	50	0	50	16.67	50
LEAST TERN	6	0	0	6	2.00	6
NORTHERN ROUGH-WINGED SWALLOW	25	500	0	525	175.00	500
RING-BILLED GULL	0	2	4	6	2.00	4
TREE SWALLOW	50	3000	7	3057	1019.00	3000
POOL TOTALS	96	3627	11	3734		
DIKE FIELD TOTALS	966	13581	537	15084		

(Continued)

Table 6 (Continued)

REDMAN-ROBINSON CRUSOE

POOL 1						
AMERICAN CROW	7	8	7	22	7.33	8
BALD EAGLE	0	0	1	1	0.33	1
BELTED KINGFISHER	0	1	0	1	0.33	1
BANK SWALLOW	10	50	0	60	20.00	50
BARN SWALLOW	7	25	0	32	10.67	25
CLIFF SWALLOW	0	7	0	7	2.33	7
COMMON GRACKLE	0	7	0	7	2.33	7
DOUBLE-CRESTED CORMORANT	0	2	15	17	5.67	15
GREAT BLUE HERON	3	4	1	8	2.67	4
GREAT EGRET	2	1	0	3	1.00	2
KILLDEER	4	6	2	12	4.00	6
LEAST SANDPIPER	0	12	0	12	4.00	12
MOURNING DOVE	0	9	0	9	3.00	9
NORTHERN FLICKER	0	1	0	1	0.33	1
NORTHERN HARRIER	0	0	1	1	0.33	1
NORTHERN ROUGH-WINGED SWALLOW	0	100	0	100	33.33	100
PURPLE MARTIN	3	0	0	3	1.00	3
RACCOON	0	1	0	1	0.33	1
RING-BILLED GULL	0	0	3	3	1.00	3
RED-WINGED BLACKBIRD	0	15	0	15	5.00	15
TREE SWALLOW	25	1000	0	1025	341.67	1000
POOL TOTALS	61	1249	30	1340		
POOL 2						
AMERICAN COOT	0	0	27	27	9.00	27
AMERICAN CROW	4	0	9	13	4.33	9
BALD EAGLE	0	0	1	1	0.33	1
BEAVER	0	1	0	1	0.33	1
BELTED KINGFISHER	2	1	0	3	1.00	2
BROWN-HEADED COWBIRD	0	0	50	50	16.67	50
BANK SWALLOW	3	10	0	13	4.33	10
BLUE JAY	0	7	2	9	3.00	7
BREWER'S BLACKBIRD	0	0	50	50	16.67	50
CATTLE EGRET	0	4	0	4	1.33	4
CAROLINA WREN	0	0	1	1	0.33	1
CHIMNEY SWIFT	0	7	0	7	2.33	7
COMMON GRACKLE	0	0	100	100	33.33	100
DOUBLE-CRESTED CORMORANT	0	3	9	12	4.00	9
EUROPEAN STARLING	0	3	0	3	1.00	3
FISH CROW	0	0	3	3	1.00	3
FIELD SPARROW	0	3	0	3	1.00	3
GREAT BLUE HERON	1	2	12	15	5.00	12
GREAT-CRESTED FLYCATCHER	1	0	0	1	0.33	1
GREAT EGRET	2	1	6	9	3.00	6
KILLDEER	0	3	7	10	3.33	7
LITTLE BLUE HERON	1	0	0	1	0.33	1

(Continued)

Table 6 (Continued)

LESSER SCAUP	0	0	50	50	16.67	50
MALLARD	0	0	10	10	3.33	10
MISSISSIPPI KITE	1	0	0	1	0.33	1
MOURNING DOVE	6	4	0	10	3.33	6
NORTHERN HARRIER	0	1	1	2	0.67	1
NORTHERN ROUGH-WINGED SWALLOW	18	0	0	18	6.00	18
PIED-BILLED GREBE	0	0	2	2	0.67	2
RACCOON	2	2	2	6	2.00	2
RING-BILLED GULL	0	0	2	2	0.67	2
RED-BELLIED WOODPECKER	1	1	0	2	0.67	1
RED-HEADED WOODPECKER	1	0	0	1	0.33	1
RED-WINGED BLACKBIRD	0	0	300	300	100.00	300
SPOTTED SANDPIPER	0	1	1	2	0.67	1
SWAMP RABBIT	1	1	1	3	1.00	1
TREE SWALLOW	15	500	0	515	171.67	500
WHITE PELICAN	0	0	3	3	1.00	3
WHITE-TAILED DEER	1	0	2	3	1.00	2
POOL TOTALS	60	555	651	1266		
POOL 3						
AMERICAN COOT	0	0	200	200	66.67	200
AMERICAN CROW	22	13	31	66	22.00	31
AMERICAN KESTREL	0	0	1	1	0.33	1
BALD EAGLE	0	0	1	1	0.33	1
BARRED OWL	1	1	1	3	1.00	1
BEAVER	6	4	0	10	3.33	6
BELTED KINGFISHER	2	3	2	7	2.33	3
BLUE-GRAY GNATCATCHER	3	0	0	3	1.00	3
BROWN-HEADED COWBIRD	0	0	500	500	166.67	500
BANK SWALLOW	4	50	11	65	21.67	50
BLUE JAY	12	25	12	49	16.33	25
BREWER'S BLACKBIRD	0	0	100	100	33.33	100
BARN SWALLOW	0	50	0	50	16.67	50
CAROLINA CHICKADEE	7	3	4	14	4.67	7
CATTLE EGRET	5	50	0	55	18.33	50
CAROLINA WREN	2	3	2	7	2.33	3
CHIMNEY SWIFT	15	15	0	30	10.00	15
CLIFF SWALLOW	0	25	0	25	8.33	25
COMMON GRACKLE	12	25	500	537	179.00	500
COMMON LOON	0	0	3	3	1.00	3
DOUBLE-CRESTED CORMORANT	5	12	117	134	44.67	117
EASTERN COTTONTAIL	2	0	0	2	0.67	2
EASTERN KINGBIRD	1	4	0	5	1.67	4
EASTERN WOOD-PEWEE	3	2	0	5	1.67	3
EUROPEAN STARLING	0	100	500	600	200.00	500
FISH CROW	4	0	12	16	5.33	12
FIELD SPARROW	12	17	36	65	21.67	36

(Continued)

Table 6 (Continued)

GREEN-BACKED HERON	2	0	0	2	0.67	2
GREAT BLUE HERON	3	25	52	80	26.67	52
GREAT-CRESTED FLYCATCHER	4	1	0	5	1.67	4
GRAY CATBIRD	0	3	0	3	1.00	3
GREAT EGRET	2	4	33	39	13.00	33
GREATER YELLOWLEGS	0	3	0	3	1.00	3
HAIRY WOODPECKER	3	2	2	7	2.33	3
HOODED WARBLER	1	0	0	1	0.33	1
INDIGO BUNTING	6	0	0	6	2.00	6
KILLDEER	9	8	25	42	14.00	25
LEAST SANDPIPER	15	6	27	48	16.00	27
LESSER SCAUP	0	0	1000	1000	333.33	1000
MALLARD	0	0	50	50	16.67	50
MISSISSIPPI KITE	2	0	0	2	0.67	2
MOURNING DOVE	13	19	12	44	14.67	19
NORTHERN CARDINAL	6	13	13	32	10.67	13
NORTHERN FLICKER	0	6	9	15	5.00	9
NORTHERN HARRIER	0	2	2	4	1.33	2
NORTHERN MOCKINGBIRD	3	6	3	12	4.00	6
NORTHERN PARULA	1	0	0	1	0.33	1
NORTHERN ROUGH-WINGED SWALLOW	30	500	25	555	185.00	500
OPOSSUM	2	0	3	5	1.67	3
ORCHARD ORIOLE	4	0	0	4	1.33	4
PIED-BILLED GREBE	0	2	4	6	2.00	4
PILEATED WOODPECKER	0	0	1	1	0.33	1
PROTHONOTARY WARBLER	2	0	0	2	0.67	2
PURPLE MARTIN	50	0	0	50	16.67	50
RACCOON	7	9	8	24	8.00	9
RING-BILLED GULL	0	0	23	23	7.67	23
RED-BELLIED WOODPECKER	0	5	3	8	2.67	5
RED FOX	1	0	0	1	0.33	1
REDHEAD	0	0	50	50	16.67	50
RED-HEADED WOODPECKER	4	2	2	8	2.67	4
RED-SHOULDERED HAWK	0	0	1	1	0.33	1
RED-TAILED HAWK	0	1	0	1	0.33	1
RUBY-THROATED HUMMINGBIRD	2	0	0	2	0.67	2
RUDDY DUCK	0	0	42	42	14.00	42
RED-WINGED BLACKBIRD	17	100	1000	1117	372.33	1000
SNOWY EGRET	4	2	0	6	2.00	4
SEMIPALMATED PLOVER	2	0	0	2	0.67	2
SPOTTED SANDPIPER	0	2	0	2	0.67	2
STRIPED SKUNK	0	2	2	4	1.33	2
SWAMP RABBIT	3	3	0	6	2.00	3
TREE SWALLOW	25	3000	150	3175	1058.33	3000
WHITE-EYED VIREO	2	0	0	2	0.67	2
WHITE PELICAN	0	0	17	17	5.67	17
WHITE-TAILED DEER	3	3	5	11	3.67	5
YELLOW-BILLED CUCKOO	3	4	0	7	2.33	4
YELLOW WARBLER	2	0	0	2	0.67	2
POOL TOTALS	351	4135	4597	9083		

(Continued)

Table 6 (Continued)

POOL 4						
AMERICAN COOT	0	0	22	22	7.33	22
AMERICAN CROW	16	7	7	30	10.00	16
BALD EAGLE	0	0	1	1	0.33	1
BEAVER	2	1	0	3	1.00	2
BELTED KINGFISHER	1	0	0	1	0.33	1
BLUE-GRAY GNATCATCHER	1	0	0	1	0.33	1
BANK SWALLOW	7	35	2	44	14.67	35
BLUE JAY	5	0	4	9	3.00	5
BARN SWALLOW	6	16	0	22	7.33	16
CATTLE EGRET	0	12	0	12	4.00	12
CHIMNEY SWIFT	21	9	0	30	10.00	21
CLIFF SWALLOW	0	3	0	3	1.00	3
COMMON GRACKLE	9	4	0	13	4.33	9
DOUBLE-CRESTED CORMORANT	6	3	16	25	8.33	16
EASTERN COTTONTAIL	1	0	0	1	0.33	1
EASTERN KINGBIRD	0	2	0	2	0.67	2
EUROPEAN STARLING	0	100	0	100	33.33	100
FISH CROW	3	0	0	3	1.00	3
FIELD SPARROW	0	7	0	7	2.33	7
GREAT BLUE HERON	2	12	13	27	9.00	13
GREAT-CRESTED FLYCATCHER	1	0	0	1	0.33	1
GREAT EGRET	5	9	6	20	6.67	9
INDIGO BUNTING	3	0	0	3	1.00	3
KILLDEER	12	18	6	36	12.00	18
LEAST SANDPIPER	12	27	10	49	16.33	27
LESSER SCAUP	0	0	50	50	16.67	50
MALLARD	0	0	19	19	6.33	19
MISSISSIPPI KITE	2	0	0	2	0.67	2
MOURNING DOVE	9	0	7	16	5.33	9
NORTHERN CARDINAL	4	3	0	7	2.33	4
NORTHERN FLICKER	0	4	2	6	2.00	4
NORTHERN HARRIER	0	1	1	2	0.67	1
NORTHERN MOCKINGBIRD	0	1	0	1	0.33	1
NORTHERN ROUGH-WINGED SWALLOW	20	100	15	135	45.00	100
OPOSSUM	1	0	1	2	0.67	1
PIED-BILLED GREBE	0	2	0	2	0.67	2
PURPLE MARTIN	15	0	0	15	5.00	15
RACCOON	2	3	2	7	2.33	3
RING-BILLED GULL	0	0	6	6	2.00	6
RED-BELLIED WOODPECKER	1	1	0	2	0.67	1
RUDDY DUCK	0	0	6	6	2.00	6
RED-WINGED BLACKBIRD	25	25	0	50	16.67	25
SEMIPALMATED PLOVER	2	0	0	2	0.67	2
SPOTTED SANDPIPER	1	1	1	3	1.00	1
STRIPED SKUNK	2	0	1	3	1.00	2
SWAMP RABBIT	1	0	0	1	0.33	1
TREE SWALLOW	35	1000	50	1085	361.67	1000
YELLOW-BILLED CUCKOO	2	0	0	2	0.67	2
POOL TOTALS	235	1406	248	1889		

(Continued)

Table 6 (Continued)

POOL 5						
AMERICAN CROW	15	13	12	40	13.33	15
BELTED KINGFISHER	0	1	0	1	0.33	1
BANK SWALLOW	4	25	8	37	12.33	25
BARN SWALLOW	6	25	0	31	10.33	25
DOUBLE-CRESTED CORMORANT	0	6	5	11	3.67	6
GREAT BLUE HERON	0	0	2	2	0.67	2
KILLDEER	2	6	3	11	3.67	6
MISSISSIPPI KITE	4	0	0	4	1.33	4
MOURNING DOVE	0	0	2	2	0.67	2
NORTHERN ROUGH-WINGED SWALLOW	25	500	50	575	191.67	500
RACCOON	0	0	1	1	0.33	1
RING-BILLED GULL	0	0	7	7	2.33	7
TREE SWALLOW	50	1000	100	1150	383.33	1000
POOL TOTALS	106	1576	190	1872		
POOL 6						
AMERICAN CROW	5	4	7	16	5.33	7
BANK SWALLOW	7	100	4	111	37.00	100
BARN SWALLOW	0	25	0	25	8.33	25
DOUBLE-CRESTED CORMORANT	0	0	6	6	2.00	6
NORTHERN HARRIER	0	0	1	1	0.33	1
NORTHERN ROUGH-WINGED SWALLOW	25	1000	50	1075	358.33	1000
RING-BILLED GULL	0	0	29	29	9.67	29
TREE SWALLOW	100	3000	50	3150	1050.00	3000
POOL TOTALS	137	4129	147	4413		
DIKE FIELD TOTALS	950	13050	5863	19363		

(Continued)

Table 6 (Continued)

PORTERS LAKE

POOL 1						
AMERICAN CROW	3	3	3	9	3.00	3
BARN SWALLOW	3	2	0	5	1.67	3
DOUBLE-CRESTED CORMORANT	0	3	12	15	5.00	12
EUROPEAN STARLING	0	7	0	7	2.33	7
FISH CROW	2	0	0	2	0.67	2
GREAT BLUE HERON	0	1	0	1	0.33	1
KILLDEER	0	2	2	4	1.33	2
MOURNING DOVE	0	2	0	2	0.67	2
NORTHERN ROUGH-WINGED SWALLOW	6	15	0	21	7.00	15
RACCOON	1	1	0	2	0.67	1
RED-WINGED BLACKBIRD	2	2	50	54	18.00	50
TREE SWALLOW	0	1000	15	1015	338.33	1000
POOL TOTALS	17	1038	82	1137		
POOL 2						
AMERICAN COOT	0	0	20	20	6.67	20
AMERICAN CROW	4	10	6	20	6.67	10
BELTED KINGFISHER	0	1	0	1	0.33	1
BANK SWALLOW	3	0	0	3	1.00	3
BARN SWALLOW	4	0	0	4	1.33	4
DOUBLE-CRESTED CORMORANT	0	5	6	11	3.67	6
GREAT BLUE HERON	3	1	1	5	1.67	3
KILLDEER	10	0	2	12	4.00	10
LEAST SANDPIPER	7	0	0	7	2.33	7
MOURNING DOVE	2	0	0	2	0.67	2
NORTHERN HARRIER	0	0	1	1	0.33	1
NORTHERN ROUGH-WINGED SWALLOW	6	5	0	11	3.67	6
RED-WINGED BLACKBIRD	2	0	50	52	17.33	50
SWAMP RABBIT	0	1	0	1	0.33	1
TREE SWALLOW	4	1000	50	1054	351.33	1000
POOL TOTALS	45	1023	136	1204		

(Continued)

Table 6 (Continued)

POOL 3						
AMERICAN COOT	0	0	15	15	5.00	15
AMERICAN CROW	3	16	4	23	7.67	16
AMERICAN ROBIN	0	2	0	2	0.67	2
BELTED KINGFISHER	0	1	0	1	0.33	1
BANK SWALLOW	5	0	0	5	1.67	5
BLUE JAY	0	10	2	12	4.00	10
BARN SWALLOW	5	0	0	5	1.67	5
CATTLE EGRET	0	23	0	23	7.67	23
COMMON GRACKLE	0	6	0	6	2.00	6
DOUBLE-CRESTED CORMORANT	0	14	25	39	13.00	25
EUROPEAN STARLING	0	50	0	50	16.67	50
FISH CROW	0	0	3	3	1.00	3
GREAT BLUE HERON	3	6	3	12	4.00	6
GREAT-CRESTED FLYCATCHER	1	0	0	1	0.33	1
GREAT EGRET	1	9	0	10	3.33	9
GREATER YELLOWLEGS	0	2	0	2	0.67	2
KILLDEER	2	8	6	16	5.33	8
LEAST SANDPIPER	6	6	0	12	4.00	6
MOURNING DOVE	2	6	0	8	2.67	6
NORTHERN CARDINAL	2	2	0	4	1.33	2
NORTHERN ROUGH-WINGED SWALLOW	6	10	0	16	5.33	10
PIED-BILLED GREBE	0	2	0	2	0.67	2
PURPLE MARTIN	10	0	0	10	3.33	10
RACCOON	1	1	0	2	0.67	1
RED-WINGED BLACKBIRD	2	50	50	102	34.00	50
SHORT-BILLED DOWITCHER	0	11	0	11	3.67	11
SNOWY EGRET	2	0	0	2	0.67	2
SPOTTED SANDPIPER	0	1	0	1	0.33	1
SWAMP RABBIT	0	1	0	1	0.33	1
TREE SWALLOW	4	1000	50	1054	351.33	1000
POOL TOTALS	55	1237	158	1450		
POOL 4						
AMERICAN COOT	0	0	30	30	10.00	30
AMERICAN CROW	4	25	12	41	13.67	25
AMERICAN ROBIN	0	2	0	2	0.67	2
BEAVER	1	0	0	1	0.33	1
BELTED KINGFISHER	0	1	0	1	0.33	1
BANK SWALLOW	7	0	0	7	2.33	7
BLUE JAY	0	6	4	10	3.33	6
BARN SWALLOW	3	0	0	3	1.00	3
BLUE-WINGED TEAL	3	0	0	3	1.00	3
CATTLE EGRET	0	54	0	54	18.00	54
CHIMNEY SWIFT	6	0	0	6	2.00	6
CLIFF SWALLOW	0	3	0	3	1.00	3
COMMON GRACKLE	0	7	0	7	2.33	7
DOUBLE-CRESTED CORMORANT	0	21	25	46	15.33	25

(Continued)

Table 6 (Continued)

EASTERN KINGBIRD	1	0	0	1	0.33	1
EUROPEAN STARLING	0	50	0	50	16.67	50
FISH CROW	2	0	5	7	2.33	5
GREAT BLUE HERON	7	14	12	33	11.00	14
GREAT-CRESTED FLYCATCHER	1	0	0	1	0.33	1
GRAY CATBIRD	0	2	0	2	0.67	2
GREAT EGRET	2	27	0	29	9.67	27
KILLDEER	11	9	18	38	12.67	18
LEAST SANDPIPER	25	7	0	32	10.67	25
MOURNING DOVE	4	8	0	12	4.00	8
NORTHERN CARDINAL	2	0	0	2	0.67	2
NORTHERN FLICKER	0	1	0	1	0.33	1
NORTHERN HARRIER	0	0	1	1	0.33	1
NORTHERN ROUGH-WINGED SWALLOW	15	50	0	65	21.67	50
PURPLE MARTIN	50	0	0	50	16.67	50
RACCOON	1	0	0	1	0.33	1
RED-WINGED BLACKBIRD	3	100	300	403	134.33	300
SHORT-BILLED DOWITCHER	0	11	0	11	3.67	11
SNOWY EGRET	6	1	0	7	2.33	6
SEMIPALMATED PLOVER	8	0	0	8	2.67	8
STRIPED SKUNK	0	1	0	1	0.33	1
TREE SWALLOW	10	1000	50	1060	353.33	1000
POOL TOTALS	172	1400	457	2029		

POOL 5

AMERICAN CROW	3	20	0	23	7.67	20
BEAVER	1	1	0	2	0.67	1
BELTED KINGFISHER	0	1	0	1	0.33	1
BLUE JAY	0	2	0	2	0.67	2
CATTLE EGRET	0	13	0	13	4.33	13
COMMON GRACKLE	0	2	0	2	0.67	2
DOUBLE-CRESTED CORMORANT	0	5	20	25	8.33	20
EUROPEAN STARLING	0	50	0	50	16.67	50
FISH CROW	0	0	3	3	1.00	3
GREAT BLUE HERON	3	2	4	9	3.00	4
GREAT-CRESTED FLYCATCHER	1	0	0	1	0.33	1
GREAT EGRET	0	7	0	7	2.33	7
KILLDEER	4	3	4	11	3.67	4
MOURNING DOVE	3	2	0	5	1.67	3
NORTHERN CARDINAL	2	0	0	2	0.67	2
NORTHERN ROUGH-WINGED SWALLOW	6	50	0	56	18.67	50
PURPLE MARTIN	25	0	0	25	8.33	25
RED-WINGED BLACKBIRD	4	15	100	119	39.67	100
TREE SWALLOW	5	1000	50	1055	351.67	1000
POOL TOTALS	57	1173	181	1411		

(Continued)

Table 6 (Continued)

POOL 6						
AMERICAN CROW	4	25	15	44	14.67	25
BANK SWALLOW	10	0	0	10	3.33	10
BARN SWALLOW	0	50	0	50	16.67	50
CLIFF SWALLOW	0	30	0	30	10.00	30
DOUBLE-CRESTED CORMORANT	0	7	11	18	6.00	11
FISH CROW	0	0	5	5	1.67	5
NORTHERN ROUGH-WINGED SWALLOW	7	50	0	57	19.00	50
TREE SWALLOW	10	2000	100	2110	703.33	2000
POOL TOTALS	31	2162	131	2324		
DIKE FIELD TOTALS	377	8033	1145	9555		

(Continued)

Table 6 (Continued)

MONTEZUMA BAR
POOL 1

AMERICAN CROW	9	0	0	9	3.00	9
BELTED KINGFISHER	0	1	0	1	0.33	1
BROWN-HEADED COWBIRD	5	0	0	5	1.67	5
BANK SWALLOW	10	8	0	18	6.00	10
BLUE JAY	0	3	0	3	1.00	3
BARN SWALLOW	5	2	0	7	2.33	5
COMMON GRACKLE	4	0	0	4	1.33	4
DOUBLE-CRESTED CORMORANT	3	5	0	8	2.67	5
GREAT BLUE HERON	1	3	0	4	1.33	3
GREAT EGRET	1	2	0	3	1.00	2
GREATER YELLOWLEGS	0	1	0	1	0.33	1
KILLDEER	2	6	0	8	2.67	6
LEAST SANDPIPER	5	17	0	22	7.33	17
MISSISSIPPI KITE	1	1	0	2	0.67	1
NORTHERN CARDINAL	0	1	0	1	0.33	1
NORTHERN HARRIER	0	0	1	1	0.33	1
NORTHERN ROUGH-WINGED SWALLOW	10	0	0	10	3.33	10
RED-TAILED HAWK	0	1	0	1	0.33	1
RED-WINGED BLACKBIRD	7	0	0	7	2.33	7
SPOTTED SANDPIPER	0	1	0	1	0.33	1
TREE SWALLOW	30	200	200	430	143.33	200
POOL TOTALS	93	252	201	546		

POOL 2

AMERICAN CROW	9	10	0	19	6.33	10
AMERICAN KESTREL	0	1	0	1	0.33	1
BEAVER	1	0	0	1	0.33	1
BELTED KINGFISHER	0	1	0	1	0.33	1
BROWN-HEADED COWBIRD	5	0	0	5	1.67	5
BANK SWALLOW	10	10	0	20	6.67	10
BLUE JAY	7	4	0	11	3.67	7
BARN SWALLOW	7	0	0	7	2.33	7
CATTLE EGRET	4	0	0	4	1.33	4
COMMON GRACKLE	5	12	0	17	5.67	12
DOUBLE-CRESTED CORMORANT	3	0	2	5	1.67	3
GREAT BLUE HERON	2	5	1	8	2.67	5
GREAT-CRESTED FLYCATCHER	1	0	0	1	0.33	1
GREAT EGRET	2	9	0	11	3.67	9
KILLDEER	4	4	2	10	3.33	4
LITTLE BLUE HERON	1	0	0	1	0.33	1
LEAST SANDPIPER	5	3	0	8	2.67	5
MISSISSIPPI KITE	2	0	0	2	0.67	2
MOURNING DOVE	6	10	2	18	6.00	10
NORTHERN ROUGH-WINGED SWALLOW	15	20	0	35	11.67	20

(Continued)

Table 6 (Continued)

RACCOON	2	1	0	3	1.00	2
RED-TAILED HAWK	1	1	0	2	0.67	1
RED-WINGED BLACKBIRD	10	7	0	17	5.67	10
SHORT-BILLED DOWITCHER	0	1	0	1	0.33	1
SNOWY EGRET	1	0	0	1	0.33	1
SWAMP RABBIT	1	0	0	1	0.33	1
TREE SWALLOW	50	750	250	1050	350.00	750
WHITE-TAILED DEER	1	1	0	2	0.67	1
POOL TOTALS	155	850	257	1262		
		POOL 3				
AMERICAN CROW	7	25	0	32	10.67	25
AMERICAN KESTREL	0	1	0	1	0.33	1
AMERICAN ROBIN	0	10	0	10	3.33	10
BARRED OWL	2	1	1	4	1.33	2
BEAVER	1	4	2	7	2.33	4
BELTED KINGFISHER	1	2	1	4	1.33	2
BROWN-HEADED COWBIRD	100	0	0	100	33.33	100
BANK SWALLOW	0	25	0	25	8.33	25
BLUE JAY	5	25	4	34	11.33	25
BARN SWALLOW	7	100	0	107	35.67	100
CAROLINA CHICKADEE	4	6	0	10	3.33	6
CATTLE EGRET	10	0	0	10	3.33	10
CAROLINA WREN	1	0	0	1	0.33	1
COMMON GRACKLE	4	12	12	28	9.33	12
COYOTE	0	1	0	1	0.33	1
COMMON YELLOWTHROAT	1	0	0	1	0.33	1
DOUBLE-CRESTED CORMORANT	0	0	4	4	1.33	4
DOWNY WOODPECKER	1	0	0	1	0.33	1
EASTERN COTTONTAIL	2	1	0	3	1.00	2
EASTERN KINGBIRD	2	2	1	5	1.67	2
EASTERN WOOD-PEWEE	2	0	0	2	0.67	2
FIELD SPARROW	0	4	4	8	2.67	4
GREAT BLUE HERON	6	11	3	20	6.67	11
GREAT-CRESTED FLYCATCHER	1	2	0	3	1.00	2
GREAT EGRET	3	16	1	20	6.67	16
GREATER YELLOWLEGS	1	0	0	1	0.33	1
HAIRY WOODPECKER	0	2	0	2	0.67	2
INDIGO BUNTING	2	0	0	2	0.67	2
KILLDEER	14	16	4	34	11.33	16
LITTLE BLUE HERON	4	2	0	6	2.00	4
LEAST SANDPIPER	7	0	0	7	2.33	7
LESSER YELLOWLEGS	0	1	0	1	0.33	1
MISSISSIPPI KITE	6	0	0	6	2.00	6
MOURNING DOVE	22	30	3	55	18.33	30

(Continued)

Table 6 (Continued)

NORTHERN CARDINAL	8	6	2	16	5.33	8
NORTHERN FLICKER	2	4	2	8	2.67	4
NORTHERN HARRIER	0	0	1	1	0.33	1
NORTHERN MOCKINGBIRD	2	2	0	4	1.33	2
NORTHERN ORIOLE	1	0	0	1	0.33	1
NORTHERN ROUGH-WINGED SWALLOW	10	50	25	85	28.33	50
ORCHARD ORIOLE	1	0	0	1	0.33	1
PIED-BILLED GREBE	0	3	0	3	1.00	3
PILEATED WOODPECKER	1	1	0	2	0.67	1
PROTHONOTARY WARBLER	2	0	0	2	0.67	2
PURPLE MARTIN	50	0	0	50	16.67	50
RACCOON	1	1	0	2	0.67	1
RED-BELLIED WOODPECKER	0	1	1	2	0.67	1
RED FOX	1	1	0	2	0.67	1
RED-EYED VIREO	2	0	0	2	0.67	2
RED-HEADED WOODPECKER	1	2	0	3	1.00	2
RIVER OTTER	2	0	0	2	0.67	2
RED-TAILED HAWK	0	1	0	1	0.33	1
RED-WINGED BLACKBIRD	25	100	20	145	48.33	100
SHORT-BILLED DOWITCHER	0	7	0	7	2.33	7
SNOWY EGRET	2	4	0	6	2.00	4
SPOTTED SANDPIPER	0	1	1	2	0.67	1
STRIPED SKUNK	1	0	0	1	0.33	1
SWAMP RABBIT	1	0	0	1	0.33	1
TREE SWALLOW	50	5000	1000	6050	2016.67	5000
WHITE-EYED VIREO	1	0	0	1	0.33	1
WHITE-TAILED DEER	1	1	1	3	1.00	1
YELLOW-BILLED CUCKOO	2	3	0	5	1.67	3
POOL TOTALS	383	5487	1093	6963		
POOL 4						
AMERICAN CROW	2	12	2	16	5.33	12
BANK SWALLOW	7	10	50	67	22.33	50
BLACK TERN	0	0	1	1	0.33	1
BARN SWALLOW	0	3	0	3	1.00	3
DOUBLE-CRESTED CORMORANT	2	0	0	2	0.67	2
KILLDEER	3	0	0	3	1.00	3
LEAST TERN	0	4	0	4	1.33	4
NORTHERN ROUGH-WINGED SWALLOW	10	7	100	117	39.00	100
TREE SWALLOW	50	2000	1000	3050	1016.67	2000
POOL TOTALS	74	2036	1153	3263		
DIKE FIELD TOTALS	705	8625	2704	12034		

(Continued)

Table 6 (Continued)

ISLAND 62

POOL 1						
AMERICAN CROW	0	35	6	41	13.67	35
BELTED KINGFISHER	0	1	0	1	0.33	1
BANK SWALLOW	3	100	0	103	34.33	100
BLUE JAY	0	8	0	8	2.67	8
BARN SWALLOW	2	25	0	27	9.00	25
COMMON GRACKLE	0	12	0	12	4.00	12
DOUBLE-CRESTED CORMORANT	0	0	2	2	0.67	2
GREAT BLUE HERON	2	3	2	7	2.33	3
GREAT EGRET	1	6	1	8	2.67	6
KILLDEER	2	17	3	22	7.33	17
LEAST SANDPIPER	0	9	7	16	5.33	9
MOURNING DOVE	10	12	0	22	7.33	12
NORTHERN ROUGH-WINGED SWALLOW	4	100	0	104	34.67	100
RACCOON	1	1	1	3	1.00	1
RED-TAILED HAWK	0	1	0	1	0.33	1
RED-WINGED BLACKBIRD	6	37	0	43	14.33	37
SPOTTED SANDPIPER	0	1	0	1	0.33	1
TREE SWALLOW	3	1000	100	1103	367.67	1000
WHITE-TAILED DEER	1	2	0	3	1.00	2
POOL TOTALS	35	1370	122	1527		
POOL 2						
AMERICAN CROW	7	21	12	40	13.33	21
BANK SWALLOW	0	25	0	25	8.33	25
BLUE JAY	0	3	2	5	1.67	3
BARN SWALLOW	0	25	0	25	8.33	25
COMMON GRACKLE	0	3	13	16	5.33	13
EUROPEAN STARLING	0	0	15	15	5.00	15
FISH CROW	0	2	3	5	1.67	3
GREAT BLUE HERON	2	6	2	10	3.33	6
GREAT EGRET	0	6	2	8	2.67	6
GREATER YELLOWLEGS	0	1	0	1	0.33	1
KILLDEER	6	12	9	27	9.00	12
LITTLE BLUE HERON	0	1	0	1	0.33	1
LEAST SANDPIPER	12	17	12	41	13.67	17
LEAST TERN	2	0	0	2	0.67	2
MISSISSIPPI KITE	1	0	0	1	0.33	1
MOURNING DOVE	7	8	7	22	7.33	8
NORTHERN HARRIER	0	0	2	2	0.67	2
NORTHERN ROUGH-WINGED SWALLOW	30	200	0	230	76.67	200

(Continued)

Table 6 (Continued)

RACCOON	1	1	1	3	1.00	1
RED-TAILED HAWK	0	2	0	2	0.67	2
RED-WINGED BLACKBIRD	0	50	22	72	24.00	50
SHORT-BILLED DOWITCHER	0	6	0	6	2.00	6
SEMIPALMATED PLOVER	0	2	0	2	0.67	2
STRIPED SKUNK	0	1	0	1	0.33	1
SWAMP RABBIT	0	0	2	2	0.67	2
TREE SWALLOW	20	1000	50	1070	356.67	1000
WHITE-TAILED DEER	0	2	1	3	1.00	2
POOL TOTALS	88	1394	155	1637		
		POOL 3				
AMERICAN CROW	18	17	18	53	17.67	18
BANK SWALLOW	4	25	0	29	9.67	25
BLUE JAY	0	2	3	5	1.67	3
BARN SWALLOW	0	25	0	25	8.33	25
COMMON GRACKLE	0	6	0	6	2.00	6
COYOTE	0	1	1	2	0.67	1
EASTERN COTTONTAIL	0	0	1	1	0.33	1
GREAT BLUE HERON	1	2	3	6	2.00	3
GREAT EGRET	2	3	4	9	3.00	4
GREATER YELLOWLEGS	3	4	0	7	2.33	4
KILLDEER	7	10	6	23	7.67	10
LEAST SANDPIPER	12	23	12	47	15.67	23
LEAST TERN	2	0	0	2	0.67	2
MISSISSIPPI KITE	1	0	0	1	0.33	1
MOURNING DOVE	6	21	8	35	11.67	21
NORTHERN ROUGH-WINGED SWALLOW	25	150	0	175	58.33	150
RACCOON	0	1	0	1	0.33	1
RED-TAILED HAWK	0	1	0	1	0.33	1
RED-WINGED BLACKBIRD	0	34	0	34	11.33	34
SHORT-BILLED DOWITCHER	8	7	0	15	5.00	8
SEMIPALMATED PLOVER	0	2	0	2	0.67	2
TREE SWALLOW	12	1000	50	1062	354.00	1000
WHITE-TAILED DEER	2	2	3	7	2.33	3
POOL TOTALS	103	1336	109	1548		

(Continued)

Table 6 (Continued)

POOL 4						
AMERICAN CROW	21	50	13	84	28.00	50
BROWN-HEADED COWBIRD	0	12	0	12	4.00	12
BANK SWALLOW	0	25	0	25	8.33	25
BLUE JAY	3	12	3	18	6.00	12
BARN SWALLOW	0	25	0	25	8.33	25
COMMON GRACKLE	5	50	0	55	18.33	50
COYOTE	0	1	0	1	0.33	1
DOUBLE-CRESTED CORMORANT	0	9	0	9	3.00	9
FISH CROW	3	0	0	3	1.00	3
FIELD SPARROW	0	0	5	5	1.67	5
GREAT BLUE HERON	4	6	4	14	4.67	6
GREAT EGRET	2	11	2	15	5.00	11
GREATER YELLOWLEGS	2	2	0	4	1.33	2
INDIGO BUNTING	0	0	3	3	1.00	3
KILLDEER	11	15	2	28	9.33	15
LITTLE BLUE HERON	0	1	0	1	0.33	1
LEAST SANDPIPER	9	12	0	21	7.00	12
LEAST TERN	2	0	0	2	0.67	2
MISSISSIPPI KITE	6	0	0	6	2.00	6
MOURNING DOVE	8	50	3	61	20.33	50
NORTHERN CARDINAL	0	0	4	4	1.33	4
NORTHERN FLICKER	0	0	2	2	0.67	2
NORTHERN HARRIER	1	0	1	2	0.67	1
NORTHERN MOCKINGBIRD	0	1	1	2	0.67	1
NORTHERN ROUGH-WINGED SWALLOW	0	500	0	500	166.67	500
RACCOON	1	3	2	6	2.00	3
RED-BELLIED WOODPECKER	0	1	2	3	1.00	2
RED-TAILED HAWK	0	2	0	2	0.67	2
RED-WINGED BLACKBIRD	17	300	0	317	105.67	300
SOLITARY SANDPIPER	0	1	0	1	0.33	1
SONG SPARROW	1	0	0	1	0.33	1
TREE SWALLOW	0	1000	100	1100	366.67	1000
WHITE-TAILED DEER	4	6	4	14	4.67	6
POOL TOTALS	100	2095	151	2346		

(Continued)

Table 6 (Continued)

	POOL 5					
AMERICAN CROW	0	17	7	24	8.00	17
AMERICAN ROBIN	0	6	0	6	2.00	6
BEAVER	0	2	0	2	0.67	2
BANK SWALLOW	0	200	0	200	66.67	200
BLUE JAY	0	13	3	16	5.33	13
BARN SWALLOW	0	100	0	100	33.33	100
CAROLINA CHICKADEE	0	0	5	5	1.67	5
CAROLINA WREN	0	0	1	1	0.33	1
COMMON GRACKLE	7	6	0	13	4.33	7
COYOTE	1	0	0	1	0.33	1
DOUBLE-CRESTED CORMORANT	2	3	0	5	1.67	3
EASTERN KINGBIRD	0	2	0	2	0.67	2
EUROPEAN STARLING	0	25	0	25	8.33	25
FIELD SPARROW	0	2	6	8	2.67	6
GREAT BLUE HERON	2	5	4	11	3.67	5
GREAT-CRESTED FLYCATCHER	0	1	0	1	0.33	1
GREAT EGRET	3	22	3	28	9.33	22
GREATER YELLOWLEGS	0	2	0	2	0.67	2
INDIGO BUNTING	0	0	2	2	0.67	2
KILLDEER	8	35	7	50	16.67	35
LEAST SANDPIPER	12	50	6	68	22.67	50
MISSISSIPPI KITE	3	0	0	3	1.00	3
MOURNING DOVE	12	27	4	43	14.33	27
NORTHERN CARDINAL	0	2	5	7	2.33	5
NORTHERN HARRIER	0	1	2	3	1.00	2
NORTHERN ROUGH-WINGED SWALLOW	0	500	0	500	166.67	500
OPOSSUM	1	0	1	2	0.67	1
RACCOON	0	2	1	3	1.00	2
RED-BELLIED WOODPECKER	0	0	3	3	1.00	3
RED-HEADED WOODPECKER	0	0	1	1	0.33	1
RED-TAILED HAWK	0	2	0	2	0.67	2
RED-WINGED BLACKBIRD	30	14	0	44	14.67	30
SHORT-BILLED DOWITCHER	3	0	0	3	1.00	3
SNOWY EGRET	3	1	0	4	1.33	3
SOLITARY SANDPIPER	0	1	0	1	0.33	1
SPOTTED SANDPIPER	0	2	0	2	0.67	2
STRIPED SKUNK	1	1	0	2	0.67	1
TREE SWALLOW	0	1500	100	1600	533.33	1500
TUFTED TITMOUSE	0	0	1	1	0.33	1
WHITE-TAILED DEER	6	7	5	18	6.00	7
POOL TOTALS	94	2551	167	2812		

(Continued)

Table 6 (Continued)

POOL 6						
AMERICAN COOT	0	0	75	75	25.00	75
AMERICAN CROW	14	11	7	32	10.67	14
ANHINGA	0	2	0	2	0.67	2
BEAVER	4	6	6	16	5.33	6
BELTED KINGFISHER	0	2	1	3	1.00	2
BLUE-GRAY GNATCATCHER	1	0	0	1	0.33	1
BANK SWALLOW	4	100	0	104	34.67	100
BLUE JAY	9	32	7	48	16.00	32
BARN SWALLOW	5	38	0	43	14.33	38
CAROLINA CHICKADEE	5	8	8	21	7.00	8
CAROLINA WREN	1	2	2	5	1.67	2
COMMON GRACKLE	11	25	0	36	12.00	25
COYOTE	0	0	1	1	0.33	1
DOUBLE-CRESTED CORMORANT	12	16	4	32	10.67	16
EASTERN COTTONTAIL	0	0	2	2	0.67	2
EASTERN KINGBIRD	0	6	0	6	2.00	6
EASTERN WOOD-PEWEE	1	0	0	1	0.33	1
EUROPEAN STARLING	0	50	0	50	16.67	50
FISH CROW	2	0	2	4	1.33	2
FIELD SPARROW	0	16	3	19	6.33	16
GREEN-BACKED HERON	1	0	0	1	0.33	1
GREAT BLUE HERON	4	17	7	28	9.33	17
GREAT-CRESTED FLYCATCHER	2	3	0	5	1.67	3
GRAY CATBIRD	2	0	0	2	0.67	2
GREAT EGRET	4	37	3	44	14.67	37
GREATER YELLOWLEGS	0	3	0	3	1.00	3
HAIRY WOODPECKER	1	0	0	1	0.33	1
HOODED WARBLER	1	0	0	1	0.33	1
INDIGO BUNTING	4	0	0	4	1.33	4
KILLDEER	12	50	12	74	24.67	50
LEAST SANDPIPER	50	50	9	109	36.33	50
MALLARD	0	0	43	43	14.33	43
MOURNING DOVE	7	12	0	19	6.33	12
NORTHERN CARDINAL	6	7	0	13	4.33	7
NORTHERN HARRIER	0	1	1	2	0.67	1
NORTHERN MOCKINGBIRD	3	2	2	7	2.33	3
NORTHERN ORIOLE	1	0	0	1	0.33	1
NORTHERN SHOVELER	0	0	12	12	4.00	12
NORTHERN ROUGH-WINGED SWALLOW	7	350	0	357	119.00	350
OPOSSUM	0	2	0	2	0.67	2
ORCHARD ORIOLE	2	0	0	2	0.67	2
PIED-BILLED GREBE	0	4	0	4	1.33	4
PILEATED WOODPECKER	0	0	1	1	0.33	1
PROTHONOTARY WARBLER	3	0	0	3	1.00	3
RACCOON	3	6	0	9	3.00	6
RED-BELLIED WOODPECKER	1	2	2	5	1.67	2
RED-HEADED WOODPECKER	2	1	1	4	1.33	2
RED-TAILED HAWK	0	2	2	4	1.33	2

(Continued)

Table 6 (Continued)

RUBY-THROATED HUMMINGBIRD	3	0	0	3	1.00	3
RUDDY DUCK	0	0	7	7	2.33	7
RED-WINGED BLACKBIRD	9	500	0	509	169.67	500
SNOWY EGRET	13	0	0	13	4.33	13
SPOTTED SANDPIPER	0	1	0	1	0.33	1
SWAMP RABBIT	2	0	0	2	0.67	2
TREE SWALLOW	11	1000	100	1111	370.33	1000
TUFTED TITMOUSE	0	0	1	1	0.33	1
WHITE-EYED VIREO	1	0	0	1	0.33	1
WOOD DUCK	6	0	0	6	2.00	6
WHITE-TAILED DEER	7	10	0	17	5.67	10
YELLOW-BILLED CUCKOO	3	0	0	3	1.00	3
POOL TOTALS	240	2374	321	2935		
	POOL 7					
AMERICAN COOT	0	0	27	27	9.00	27
AMERICAN CROW	0	5	5	10	3.33	5
ANHINGA	0	1	0	1	0.33	1
BEAVER	4	5	5	14	4.67	5
BELTED KINGFISHER	2	2	2	6	2.00	2
BLUE-GRAY GNATCATCHER	2	0	0	2	0.67	2
BANK SWALLOW	25	100	0	125	41.67	100
BLUE JAY	10	25	7	42	14.00	25
BARN SWALLOW	13	25	0	38	12.67	25
BLUE-WINGED TEAL	4	0	0	4	1.33	4
CAROLINA CHICKADEE	10	3	3	16	5.33	10
CAROLINA WREN	2	1	1	4	1.33	2
COMMON GRACKLE	7	12	0	19	6.33	12
COYOTE	1	0	1	2	0.67	1
DOUBLE-CRESTED CORMORANT	12	5	3	20	6.67	12
EASTERN KINGBIRD	2	1	0	3	1.00	2
EASTERN WOOD-PEWEE	0	2	0	2	0.67	2
EUROPEAN STARLING	0	23	0	23	7.67	23
FISH CROW	0	0	2	2	0.67	2
FIELD SPARROW	0	14	12	26	8.67	14
GREAT BLUE HERON	4	9	9	22	7.33	9
GREAT-CRESTED FLYCATCHER	2	2	0	4	1.33	2
GREAT EGRET	4	12	3	19	6.33	12
GREATER YELLOWLEGS	1	0	0	1	0.33	1
HAIRY WOODPECKER	0	1	2	3	1.00	2
INDIGO BUNTING	3	0	0	3	1.00	3
KILLDEER	9	24	7	40	13.33	24
LEAST SANDPIPER	0	9	3	12	4.00	9
MALLARD	3	0	7	10	3.33	7
MISSISSIPPI KITE	1	0	0	1	0.33	1
MOURNING DOVE	15	18	0	33	11.00	18
NORTHERN CARDINAL	6	7	0	13	4.33	7
NORTHERN FLICKER	0	11	0	11	3.67	11

(Continued)

Table 6 (Continued)

NORTHERN HARRIER	0	0	1	1	0.33	1
NORTHERN MOCKINGBIRD	0	2	1	3	1.00	2
NORTHERN ROUGH-WINGED SWALLOW	12	200	0	212	70.67	200
OPOSSUM	0	1	0	1	0.33	1
ORCHARD ORIOLE	1	7	0	8	2.67	7
PIED-BILLED GREBE	0	2	0	2	0.67	2
PILEATED WOODPECKER	0	1	0	1	0.33	1
RACCOON	2	3	0	5	1.67	3
RED-BELLIED WOODPECKER	1	2	3	6	2.00	3
RED FOX	1	0	0	1	0.33	1
RED-HEADED WOODPECKER	0	2	1	3	1.00	2
RED-TAILED HAWK	1	2	2	5	1.67	2
RED-WINGED BLACKBIRD	50	28	0	78	26.00	50
SNOWY EGRET	2	0	0	2	0.67	2
SPOTTED SANDPIPER	0	2	0	2	0.67	2
SWAMP RABBIT	3	0	2	5	1.67	3
TREE SWALLOW	34	1000	100	1134	378.00	1000
TUFTED TITMOUSE	0	0	2	2	0.67	2
WOOD DUCK	0	0	4	4	1.33	4
WHITE-TAILED DEER	3	3	0	6	2.00	3
YELLOW-BILLED CUCKOO	2	0	0	2	0.67	2
POOL TOTALS	254	1572	215	2041		
		POOL 8				
AMERICAN CROW	7	12	7	26	8.67	12
BANK SWALLOW	25	200	0	225	75.00	200
BARN SWALLOW	0	20	0	20	6.67	20
NORTHERN ROUGH-WINGED SWALLOW	15	1000	0	1015	338.33	1000
TREE SWALLOW	15	2000	500	2515	838.33	2000
POOL TOTALS	62	3232	507	3801		
DIKE FIELD TOTALS	976	15924	1747	18647		

(Continued)

Table 6 (Continued)

ISLAND 70
POOL 1

AMERICAN CROW	8	20	5	33	11.00	20
BARRED OWL	0	1	0	1	0.33	1
BLUE-GRAY GNATCATCHER	2	0	0	2	0.67	2
BANK SWALLOW	0	100	0	100	33.33	100
BLUE JAY	5	3	0	8	2.67	5
BARN SWALLOW	0	75	0	75	25.00	75
CAROLINA CHICKADEE	3	0	0	3	1.00	3
COMMON GRACKLE	7	21	3	31	10.33	21
DOUBLE-CRESTED CORMORANT	0	0	3	3	1.00	3
FISH CROW	0	1	0	1	0.33	1
GREEN-BACKED HERON	1	0	0	1	0.33	1
GREAT BLUE HERON	0	2	0	2	0.67	2
GREAT-CRESTED FLYCATCHER	0	1	0	1	0.33	1
HAIRY WOODPECKER	1	2	0	3	1.00	2
INDIGO BUNTING	2	0	0	2	0.67	2
KILLDEER	0	2	0	2	0.67	2
MOURNING DOVE	2	6	2	10	3.33	6
NORTHERN CARDINAL	2	2	0	4	1.33	2
NORTHERN HARRIER	0	0	1	1	0.33	1
NORTHERN MOCKINGBIRD	0	1	0	1	0.33	1
NORTHERN ROUGH-WINGED SWALLOW	8	150	0	158	52.67	150
PROTHONOTARY WARBLER	1	0	0	1	0.33	1
PURPLE MARTIN	10	0	0	10	3.33	10
RACCOON	2	1	0	3	1.00	2
RING-BILLED GULL	0	0	3	3	1.00	3
RED-BELLIED WOODPECKER	2	2	0	4	1.33	2
RED-HEADED WOODPECKER	1	1	0	2	0.67	1
RED-WINGED BLACKBIRD	50	100	14	164	54.67	100
TREE SWALLOW	3	1000	100	1103	367.67	1000
WHITE-TAILED DEER	1	2	0	3	1.00	2
YELLOW-BILLED CUCKOO	1	3	0	4	1.33	3
POOL TOTALS	112	1496	131	1739		

(Continued)

Table 6 (Continued)

	POOL 2					
AMERICAN CROW	0	7	10	17	5.67	10
BEAVER	1	2	0	3	1.00	2
BELTED KINGFISHER	0	2	0	2	0.67	2
BANK SWALLOW	0	50	0	50	16.67	50
BARN SWALLOW	2	0	0	2	0.67	2
CAROLINA CHICKADEE	5	0	0	5	1.67	5
COMMON GRACKLE	4	7	0	11	3.67	7
COYOTE	0	1	0	1	0.33	1
DOUBLE-CRESTED CORMORANT	0	0	12	12	4.00	12
EASTERN COTTONTAIL	2	0	0	2	0.67	2
FIELD SPARROW	0	0	7	7	2.33	7
GREAT BLUE HERON	2	6	3	11	3.67	6
GREAT EGRET	1	2	6	9	3.00	6
KILLDEER	14	9	12	35	11.67	14
LITTLE BLUE HERON	0	1	0	1	0.33	1
LEAST SANDPIPER	13	0	11	24	8.00	13
LEAST TERN	3	0	0	3	1.00	3
MISSISSIPPI KITE	1	0	0	1	0.33	1
MOURNING DOVE	6	4	15	25	8.33	15
NORTHERN CARDINAL	2	3	1	6	2.00	3
NORTHERN FLICKER	0	1	0	1	0.33	1
NORTHERN HARRIER	0	1	1	2	0.67	1
NORTHERN MOCKINGBIRD	0	1	0	1	0.33	1
NORTHERN ROUGH-WINGED SWALLOW	12	50	0	62	20.67	50
PIED-BILLED GREBE	0	3	3	6	2.00	3
PURPLE MARTIN	50	0	0	50	16.67	50
RACCOON	1	0	0	1	0.33	1
RING-BILLED GULL	0	0	1	1	0.33	1
RED-BELLIED WOODPECKER	0	0	3	3	1.00	3
RED-TAILED HAWK	0	0	2	2	0.67	2
RED-WINGED BLACKBIRD	7	16	0	23	7.67	16
SNOWY EGRET	0	3	0	3	1.00	3
SOLITARY SANDPIPER	0	0	1	1	0.33	1
SPOTTED SANDPIPER	0	1	1	2	0.67	1
TREE SWALLOW	20	1000	100	1120	373.33	1000
WOOD DUCK	4	0	0	4	1.33	4
WHITE-TAILED DEER	4	11	0	15	5.00	11
YELLOW-BILLED CUCKOO	2	0	0	2	0.67	2
POOL TOTALS	156	1181	189	1526		

(Continued)

Table 6 (Continued)

POOL 3						
AMERICAN CROW	6	25	7	38	12.67	25
BROWN-HEADED COWBIRD	0	0	7	7	2.33	7
BANK SWALLOW	0	30	0	30	10.00	30
BLUE JAY	0	2	0	2	0.67	2
BARN SWALLOW	0	4	0	4	1.33	4
CHIMNEY SWIFT	0	25	0	25	8.33	25
COMMON GRACKLE	7	0	6	13	4.33	7
DOUBLE-CRESTED CORMORANT	0	0	6	6	2.00	6
GREAT BLUE HERON	2	2	4	8	2.67	4
GREAT EGRET	3	0	1	4	1.33	3
KILLDEER	9	4	4	17	5.67	9
LEAST SANDPIPER	11	5	19	35	11.67	19
LEAST TERN	3	0	0	3	1.00	3
MALLARD	0	0	12	12	4.00	12
MOURNING DOVE	4	6	7	17	5.67	7
NORTHERN CARDINAL	0	2	0	2	0.67	2
NORTHERN FLICKER	0	1	0	1	0.33	1
NORTHERN HARRIER	1	1	1	3	1.00	1
NORTHERN ROUGH-WINGED SWALLOW	0	25	25	50	16.67	25
RACCOON	0	1	0	1	0.33	1
RING-BILLED GULL	0	0	3	3	1.00	3
RED-WINGED BLACKBIRD	50	500	150	700	233.33	500
SHORT-BILLED DOWITCHER	0	0	6	6	2.00	6
STRIPED SKUNK	0	1	0	1	0.33	1
TREE SWALLOW	0	750	100	850	283.33	750
WHITE-TAILED DEER	3	7	0	10	3.33	7
POOL TOTALS	99	1391	353	1848		
POOL 4						
AMERICAN CROW	0	16	8	24	8.00	16
BELTED KINGFISHER	0	1	0	1	0.33	1
BANK SWALLOW	0	4	0	4	1.33	4
BLUE JAY	0	0	3	3	1.00	3
CATTLE EGRET	0	5	0	5	1.67	5
COMMON GRACKLE	3	6	6	15	5.00	6
GREAT BLUE HERON	3	7	2	12	4.00	7
GREAT EGRET	1	3	0	4	1.33	3
KILLDEER	4	7	13	24	8.00	13
LITTLE BLUE HERON	0	1	0	1	0.33	1
LEAST SANDPIPER	9	0	9	18	6.00	9
LEAST TERN	3	0	0	3	1.00	3
MALLARD	0	0	6	6	2.00	6

(Continued)

Table 6 (Continued)

MISSISSIPPI KITE	1	0	0	1	0.33	1
MOURNING DOVE	12	7	6	25	8.33	12
NORTHERN HARRIER	1	1	1	3	1.00	1
NORTHERN ROUGH-WINGED SWALLOW	0	6	0	6	2.00	6
PIED-BILLED GREBE	0	0	2	2	0.67	2
RING-BILLED GULL	0	0	6	6	2.00	6
RED-BELLIED WOODPECKER	0	1	0	1	0.33	1
RED-WINGED BLACKBIRD	14	20	100	134	44.67	100
SNOWY EGRET	0	6	0	6	2.00	6
STRIPED SKUNK	0	1	0	1	0.33	1
SWAMP RABBIT	0	1	0	1	0.33	1
TREE SWALLOW	0	750	25	775	258.33	750
WHITE-TAILED DEER	2	3	0	5	1.67	3
YELLOW-BILLED CUCKOO	0	2	0	2	0.67	2
POOL TOTALS	53	848	187	1088		
	POOL 5					
AMERICAN CROW	10	50	12	72	24.00	50
BEAVER	0	2	0	2	0.67	2
BELTED KINGFISHER	2	0	0	2	0.67	2
BROWN-HEADED COWBIRD	0	0	12	12	4.00	12
BANK SWALLOW	7	100	0	107	35.67	100
BLUE JAY	0	6	0	6	2.00	6
BARN SWALLOW	0	100	0	100	33.33	100
CATTLE EGRET	0	0	50	50	16.67	50
CHIMNEY SWIFT	0	25	0	25	8.33	25
COMMON GRACKLE	15	50	50	115	38.33	50
COYOTE	0	1	0	1	0.33	1
DOUBLE-CRESTED CORMORANT	0	0	10	10	3.33	10
FISH CROW	4	7	0	11	3.67	7
GREAT BLUE HERON	1	14	7	22	7.33	14
GREAT EGRET	2	4	3	9	3.00	4
GREATER YELLOWLEGS	2	0	0	2	0.67	2
KILLDEER	8	13	6	27	9.00	13
LITTLE BLUE HERON	0	3	0	3	1.00	3
LEAST SANDPIPER	12	13	0	25	8.33	13
LEAST TERN	3	0	0	3	1.00	3
MALLARD	0	0	4	4	1.33	4
MOURNING DOVE	0	0	11	11	3.67	11
NORTHERN CARDINAL	0	10	0	10	3.33	10
NORTHERN FLICKER	0	1	0	1	0.33	1

(Continued)

Table 6 (Continued)

NORTHERN HARRIER	1	1	2	4	1.33	2
NORTHERN ROUGH-WINGED SWALLOW	9	500	0	509	169.67	500
RACCOON	2	0	0	2	0.67	2
RING-BILLED GULL	0	0	5	5	1.67	5
RED-WINGED BLACKBIRD	150	300	300	750	250.00	300
SHORT-BILLED DOWITCHER	0	6	0	6	2.00	6
SNOWY EGRET	0	12	0	12	4.00	12
SOLITARY SANDPIPER	1	0	0	1	0.33	1
SPOTTED SANDPIPER	0	1	0	1	0.33	1
SWAMP RABBIT	0	1	0	1	0.33	1
TREE SWALLOW	4	2000	0	2004	668.00	2000
WHITE-TAILED DEER	6	12	0	18	6.00	12
POOL TOTALS	239	3232	472	3943		
	POOL 6					
AMERICAN CROW	13	20	0	33	11.00	20
BANK SWALLOW	3	250	7	260	86.67	250
BARN SWALLOW	0	100	0	100	33.33	100
LEAST TERN	2	0	0	2	0.67	2
NORTHERN ROUGH-WINGED SWALLOW	0	500	0	500	166.67	500
PURPLE MARTIN	0	25	6	31	10.33	25
RING-BILLED GULL	0	0	9	9	3.00	9
TREE SWALLOW	17	2000	100	2117	705.67	2000
POOL TOTALS	35	2895	122	3052		
DIKE FIELD TOTALS	694	11043	1459	13196		

(Continued)

Table 6 (Continued)

CHICOT LANDING
POOL 1

AMERICAN CROW	4	5	0	9	3.00	5
BELTED KINGFISHER	1	1	0	2	0.67	1
BANK SWALLOW	2	10	0	12	4.00	10
BLUE JAY	0	3	0	3	1.00	3
BARN SWALLOW	6	10	0	16	5.33	10
COMMON GRACKLE	0	4	12	16	5.33	12
EUROPEAN STARLING	0	10	0	10	3.33	10
GREAT BLUE HERON	1	1	1	3	1.00	1
GREAT EGRET	1	2	0	3	1.00	2
KILLDEER	0	2	0	2	0.67	2
MOURNING DOVE	2	0	6	8	2.67	6
NORTHERN HARRIER	0	0	1	1	0.33	1
NORTHERN ROUGH-WINGED SWALLOW	0	25	0	25	8.33	25
RACCOON	1	1	1	3	1.00	1
RED-WINGED BLACKBIRD	2	4	100	106	35.33	100
TREE SWALLOW	4	750	0	754	251.33	750
WHITE-TAILED DEER	1	0	2	3	1.00	2
POOL TOTALS	25	828	123	976		

POOL 2

AMERICAN CROW	12	8	4	24	8.00	12
AMERICAN KESTREL	0	0	1	1	0.33	1
BEAVER	3	0	0	3	1.00	3
BELTED KINGFISHER	1	1	0	2	0.67	1
BROWN-HEADED COWBIRD	0	0	10	10	3.33	10
BANK SWALLOW	0	10	0	10	3.33	10
BLUE JAY	8	25	4	37	12.33	25
BARN SWALLOW	4	0	0	4	1.33	4
BLUE-WINGED TEAL	8	0	0	8	2.67	8
CAROLINA CHICKADEE	0	4	0	4	1.33	4
CATTLE EGRET	0	10	0	10	3.33	10
COMMON GRACKLE	0	100	25	125	41.67	100
COYOTE	1	1	0	2	0.67	1
EASTERN COTTONTAIL	2	0	0	2	0.67	2
EASTERN KINGBIRD	0	1	0	1	0.33	1
FIELD SPARROW	4	12	0	16	5.33	12
GREAT BLUE HERON	3	6	2	11	3.67	6
GREAT-CRESTED FLYCATCHER	1	0	0	1	0.33	1
GREAT EGRET	1	12	1	14	4.67	12
HAIRY WOODPECKER	2	0	0	2	0.67	2
KILLDEER	2	4	4	10	3.33	4
LITTLE BLUE HERON	2	0	0	2	0.67	2
MISSISSIPPI KITE	9	0	0	9	3.00	9
MOURNING DOVE	2	17	6	25	8.33	17
NORTHERN CARDINAL	8	6	0	14	4.67	8
NORTHERN FLICKER	1	2	0	3	1.00	2
NORTHERN HARRIER	1	1	0	2	0.67	1

(Continued)

Table 6 (Continued)

NORTHERN MOCKINGBIRD	4	3	0	7	2.33	4
NORTHERN ROUGH-WINGED SWALLOW	5	15	0	20	6.67	15
OPOSSUM	2	0	0	2	0.67	2
PIED-BILLED GREBE	0	2	0	2	0.67	2
PILEATED WOODPECKER	2	0	0	2	0.67	2
PROTHONOTARY WARBLER	2	0	0	2	0.67	2
RACCOON	2	2	1	5	1.67	2
RED-BELLIED WOODPECKER	2	2	1	5	1.67	2
RED-HEADED WOODPECKER	1	0	0	1	0.33	1
RED-TAILED HAWK	0	2	0	2	0.67	2
RED-WINGED BLACKBIRD	13	500	100	613	204.33	500
SNOWY EGRET	0	3	0	3	1.00	3
STRIPED SKUNK	2	0	0	2	0.67	2
TREE SWALLOW	0	1000	4	1004	334.67	1000
WHITE-EYED VIREO	1	0	0	1	0.33	1
WHITE-TAILED DEER	5	8	3	16	5.33	8
YELLOW-BILLED CUCKOO	7	0	0	7	2.33	7
YELLOW WARBLER	1	0	0	1	0.33	1
POOL TOTALS	124	1757	166	2047		
POOL 3						
AMERICAN CROW	12	5	0	17	5.67	12
BEAVER	1	0	0	1	0.33	1
BELTED KINGFISHER	1	2	0	3	1.00	2
BANK SWALLOW	0	10	0	10	3.33	10
BLUE JAY	12	7	0	19	6.33	12
BARN SWALLOW	0	25	0	25	8.33	25
BLUE-WINGED TEAL	15	0	0	15	5.00	15
CATTLE EGRET	0	4	0	4	1.33	4
COMMON GRACKLE	20	6	0	26	8.67	20
FISH CROW	0	2	0	2	0.67	2
GREAT BLUE HERON	2	6	4	12	4.00	6
GREAT-CRESTED FLYCATCHER	2	0	0	2	0.67	2
GREAT EGRET	1	4	0	5	1.67	4
HAIRY WOODPECKER	1	0	0	1	0.33	1
KILLDEER	3	9	3	15	5.00	9
LITTLE BLUE HERON	1	0	0	1	0.33	1
LEAST SANDPIPER	0	7	10	17	5.67	10
LEAST TERN	4	0	0	4	1.33	4
MISSISSIPPI KITE	8	0	0	8	2.67	8
MOURNING DOVE	30	25	4	59	19.67	30
NORTHERN CARDINAL	6	4	0	10	3.33	6
NORTHERN HARRIER	1	0	1	2	0.67	1
NORTHERN ROUGH-WINGED SWALLOW	3	25	0	28	9.33	25
PIED-BILLED GREBE	0	1	0	1	0.33	1
RACCOON	0	1	1	2	0.67	1
RED-BELLIED WOODPECKER	2	2	1	5	1.67	2
RED FOX	1	0	0	1	0.33	1

(Continued)

Table 6 (Continued)

RED-HEADED WOODPECKER	2	0	0	2	0.67	2
RED-TAILED HAWK	1	1	0	2	0.67	1
RED-WINGED BLACKBIRD	25	150	50	225	75.00	150
SHORT-BILLED DOWITCHER	0	1	0	1	0.33	1
SNOWY EGRET	0	1	0	1	0.33	1
SEMIPALMATED PLOVER	0	2	0	2	0.67	2
SPOTTED SANDPIPER	0	1	0	1	0.33	1
STRIPED SKUNK	1	0	0	1	0.33	1
SWAMP RABBIT	1	0	0	1	0.33	1
TREE SWALLOW	4	1000	10	1014	338.00	1000
WHITE-EYED VIREO	1	0	0	1	0.33	1
WHITE-TAILED DEER	0	2	2	4	1.33	2
POOL TOTALS	161	1303	86	1550		
	POOL 4					
AMERICAN CROW	50	50	15	115	38.33	50
AMERICAN KESTREL	1	0	2	3	1.00	2
ANHINGA	1	0	0	1	0.33	1
BEAVER	1	0	0	1	0.33	1
BELTED KINGFISHER	2	2	0	4	1.33	2
BROWN-HEADED COWBIRD	0	12	50	62	20.67	50
BANK SWALLOW	0	100	0	100	33.33	100
BARN SWALLOW	0	25	0	25	8.33	25
CATTLE EGRET	0	6	0	6	2.00	6
CHIMNEY SWIFT	0	7	0	7	2.33	7
COMMON GRACKLE	4	27	50	81	27.00	50
DOUBLE-CRESTED CORMORANT	0	4	0	4	1.33	4
EUROPEAN STARLING	0	7	0	7	2.33	7
FISH CROW	0	5	0	5	1.67	5
GREAT BLUE HERON	35	27	12	74	24.67	35
GREAT EGRET	15	36	2	53	17.67	36
GREATER YELLOWLEGS	0	2	0	2	0.67	2
KILLDEER	8	16	4	28	9.33	16
LITTLE BLUE HERON	8	2	0	10	3.33	8
LEAST SANDPIPER	17	32	0	49	16.33	32
LEAST TERN	9	0	0	9	3.00	9
MALLARD	2	0	0	2	0.67	2
MISSISSIPPI KITE	7	0	0	7	2.33	7
MOURNING DOVE	6	18	12	36	12.00	18

(Continued)

Table 6 (Continued)

NORTHERN CARDINAL	3	0	0	3	1.00	3
NORTHERN HARRIER	1	0	1	2	0.67	1
NORTHERN ROUGH-WINGED SWALLOW	20	100	0	120	40.00	100
RACCOON	1	0	0	1	0.33	1
RED-TAILED HAWK	0	2	0	2	0.67	2
RED-WINGED BLACKBIRD	16	40	200	256	85.33	200
SNOWY EGRET	7	4	0	11	3.67	7
SEMIPALMATED PLOVER	13	0	0	13	4.33	13
SPOTTED SANDPIPER	0	1	0	1	0.33	1
TREE SWALLOW	30	2000	0	2030	676.67	2000
POOL TOTALS	257	2525	348	3130		
	POOL 5					
AMERICAN CROW	6	16	4	26	8.67	16
BANK SWALLOW	0	100	0	100	33.33	100
BARN SWALLOW	0	50	0	50	16.67	50
CLIFF SWALLOW	0	14	0	14	4.67	14
LEAST TERN	3	0	0	3	1.00	3
NORTHERN ROUGH-WINGED SWALLOW	0	500	0	500	166.67	500
TREE SWALLOW	0	2000	15	2015	671.67	2000
POOL TOTALS	9	2680	19	2708		
DIKE FIELD TOTALS	576	9093	742	10411		

(Continued)

Table 6 (Continued)

WATERPROOF

POOL 1

AMERICAN CROW	0	11	3	14	4.67	11
BELTED KINGFISHER	0	0	1	1	0.33	1
BANK SWALLOW	0	6	0	6	2.00	6
BARN SWALLOW	5	0	0	5	1.67	5
BLUE-WINGED TEAL	0	2	0	2	0.67	2
CHIMNEY SWIFT	0	2	0	2	0.67	2
COMMON GRACKLE	4	0	6	10	3.33	6
EUROPEAN STARLING	0	2	0	2	0.67	2
GREAT BLUE HERON	0	1	1	2	0.67	1
GREAT EGRET	0	1	0	1	0.33	1
KILLDEER	3	2	2	7	2.33	3
LITTLE BLUE HERON	1	0	0	1	0.33	1
LEAST TERN	0	2	0	2	0.67	2
LOGGERHEAD SHRIKE	0	1	0	1	0.33	1
MISSISSIPPI KITE	2	1	0	3	1.00	2
NORTHERN HARRIER	0	0	1	1	0.33	1
NORTHERN ROUGH-WINGED SWALLOW	2	7	25	34	11.33	25
RACCOON	1	1	0	2	0.67	1
RED-BELLIED WOODPECKER	0	1	0	1	0.33	1
RED-WINGED BLACKBIRD	1	0	2	3	1.00	2
TREE SWALLOW	10	212	0	222	74.00	212
POOL TOTALS	29	252	41	322		

POOL 2

AMERICAN CROW	0	9	0	9	3.00	9
AMERICAN KESTREL	0	0	1	1	0.33	1
ANHINGA	0	1	0	1	0.33	1
BELTED KINGFISHER	0	1	0	1	0.33	1
BANK SWALLOW	0	20	0	20	6.67	20
BLUE JAY	0	3	20	23	7.67	20
CATTLE EGRET	10	10	3	23	7.67	10
COMMON GRACKLE	0	0	7	7	2.33	7
DOUBLE-CRESTED CORMORANT	0	2	2	4	1.33	2
GREEN-BACKED HERON	0	1	0	1	0.33	1
GREAT BLUE HERON	0	2	1	3	1.00	2
GREAT-CRESTED FLYCATCHER	0	1	1	2	0.67	1
GREAT EGRET	1	3	2	6	2.00	3
INDIGO BUNTING	0	0	30	30	10.00	30
KILLDEER	2	2	2	6	2.00	2

(Continued)

Table 6 (Continued)

MISSISSIPPI KITE	0	1	0	1	0.33	1
MOURNING DOVE	0	2	0	2	0.67	2
NORTHERN CARDINAL	0	2	0	2	0.67	2
NORTHERN HARRIER	0	0	2	2	0.67	2
NORTHERN ROUGH-WINGED SWALLOW	3	50	50	103	34.33	50
OPOSSUM	0	1	0	1	0.33	1
RACCOON	0	1	1	2	0.67	1
RED-BELLIED WOODPECKER	0	0	1	1	0.33	1
RED-WINGED BLACKBIRD	0	0	10	10	3.33	10
SPOTTED SANDPIPER	0	0	1	1	0.33	1
TREE SWALLOW	20	150	0	170	56.67	150
WHITE-TAILED DEER	0	0	1	1	0.33	1
YELLOW-BILLED CUCKOO	0	1	0	1	0.33	1
POOL TOTALS	36	263	135	434		

POOL 3

AMERICAN CROW	0	0	5	5	1.67	5
AMERICAN KESTREL	0	0	1	1	0.33	1
BELTED KINGFISHER	0	1	1	2	0.67	1
BROWN-HEADED COWBIRD	0	10	0	10	3.33	10
BANK SWALLOW	2	7	3	12	4.00	7
BLUE JAY	0	2	20	22	7.33	20
BARN SWALLOW	0	15	0	15	5.00	15
BLUE-WINGED TEAL	0	2	0	2	0.67	2
COMMON GRACKLE	0	2	0	2	0.67	2
DOUBLE-CRESTED CORMORANT	2	2	4	8	2.67	4
GREAT BLUE HERON	1	1	1	3	1.00	1
GREAT EGRET	1	2	2	5	1.67	2
INDIGO BUNTING	0	0	10	10	3.33	10
KILLDEER	4	3	3	10	3.33	4
NORTHERN CARDINAL	0	0	2	2	0.67	2
NORTHERN ROUGH-WINGED SWALLOW	10	100	5	115	38.33	100
RACCOON	0	0	1	1	0.33	1
RED-WINGED BLACKBIRD	0	20	12	32	10.67	20
SPOTTED SANDPIPER	0	0	1	1	0.33	1
TREE SWALLOW	4	250	0	254	84.67	250
POOL TOTALS	24	417	71	512		

(Continued)

Table 6 (Continued)

	POOL 4					
AMERICAN CROW	0	3	0	3	1.00	3
AMERICAN KESTREL	0	0	1	1	0.33	1
BEAVER	1	0	0	1	0.33	1
BELTED KINGFISHER	1	1	1	3	1.00	1
BROWN-HEADED COWBIRD	25	0	0	25	8.33	25
BANK SWALLOW	0	50	0	50	16.67	50
BLUE JAY	0	0	25	25	8.33	25
BARN SWALLOW	4	10	0	14	4.67	10
BLUE-WINGED TEAL	0	6	0	6	2.00	6
CATTLE EGRET	0	15	6	21	7.00	15
CAROLINA WREN	0	1	1	2	0.67	1
COMMON GRACKLE	4	0	6	10	3.33	6
COYOTE	0	1	0	1	0.33	1
DOUBLE-CRESTED CORMORANT	0	3	5	8	2.67	5
EASTERN KINGBIRD	0	1	0	1	0.33	1
FISH CROW	1	0	0	1	0.33	1
GREAT BLUE HERON	2	1	2	5	1.67	2
GREAT-CRESTED FLYCATCHER	1	0	0	1	0.33	1
GREAT EGRET	2	2	2	6	2.00	2
INDIGO BUNTING	0	0	30	30	10.00	30
KILLDEER	3	2	3	8	2.67	3
LITTLE BLUE HERON	1	0	2	3	1.00	2
MISSISSIPPI KITE	0	2	0	2	0.67	2
MOURNING DOVE	0	4	0	4	1.33	4
NORTHERN CARDINAL	2	2	4	8	2.67	4
NORTHERN HARRIER	0	0	2	2	0.67	2
NORTHERN MOCKINGBIRD	0	0	1	1	0.33	1
NORTHERN ROUGH-WINGED SWALLOW	10	15	25	50	16.67	25
OPOSSUM	0	1	0	1	0.33	1
RACCOON	1	1	1	3	1.00	1
RED-BELLIED WOODPECKER	0	1	1	2	0.67	1
RED-SHOULDERED HAWK	0	1	0	1	0.33	1
RED-WINGED BLACKBIRD	0	0	4	4	1.33	4
SOLITARY SANDPIPER	0	1	0	1	0.33	1
SWAMP RABBIT	0	0	1	1	0.33	1
TREE SWALLOW	35	200	0	235	78.33	200
WHITE-TAILED DEER	1	0	2	3	1.00	2
YELLOW-BILLED CUCKOO	0	2	0	2	0.67	2
POOL TOTALS	94	326	125	545		

(Continued)

Table 6 (Continued)

POOL 5						
AMERICAN CROW	12	4	0	16	5.33	12
AMERICAN KESTREL	0	0	1	1	0.33	1
ARMADILLO	1	0	0	1	0.33	1
BEAVER	1	1	2	4	1.33	2
BELTED KINGFISHER	0	0	2	2	0.67	2
BLUE-GRAY GNATCATCHER	1	0	0	1	0.33	1
BANK SWALLOW	0	25	0	25	8.33	25
BLUE JAY	0	0	20	20	6.67	20
BARN SWALLOW	4	7	0	11	3.67	7
BLUE-WINGED TEAL	2	7	0	9	3.00	7
CATTLE EGRET	0	10	6	16	5.33	10
CAROLINA WREN	0	0	1	1	0.33	1
CHIMNEY SWIFT	3	0	0	3	1.00	3
COMMON GRACKLE	2	3	4	9	3.00	4
COYOTE	1	0	1	2	0.67	1
DOUBLE-CRESTED CORMORANT	2	5	6	13	4.33	6
EASTERN KINGBIRD	1	2	0	3	1.00	2
FISH CROW	2	0	0	2	0.67	2
GREEN-BACKED HERON	0	1	0	1	0.33	1
GREAT BLUE HERON	1	2	2	5	1.67	2
GREAT EGRET	2	3	1	6	2.00	3
INDIGO BUNTING	0	0	20	20	6.67	20
KILLDEER	5	2	2	9	3.00	5
LITTLE BLUE HERON	1	2	0	3	1.00	2
LEAST SANDPIPER	7	0	0	7	2.33	7
MALLARD	0	6	0	6	2.00	6
MISSISSIPPI KITE	6	2	0	8	2.67	6
MOURNING DOVE	0	4	3	7	2.33	4
NORTHERN CARDINAL	0	2	2	4	1.33	2
NORTHERN HARRIER	0	1	1	2	0.67	1
NORTHERN MOCKINGBIRD	0	0	1	1	0.33	1
NORTHERN ROUGH-WINGED SWALLOW	7	50	50	107	35.67	50
OPOSSUM	0	0	1	1	0.33	1
PIED-BILLED GREBE	0	2	0	2	0.67	2
PURPLE MARTIN	2	0	0	2	0.67	2
RACCOON	0	1	1	2	0.67	1
RED-BELLIED WOODPECKER	1	0	0	1	0.33	1
RED FOX	1	0	0	1	0.33	1
RED-WINGED BLACKBIRD	6	4	3	13	4.33	6
SNOWY EGRET	3	0	0	3	1.00	3
STRIPED SKUNK	0	0	1	1	0.33	1
TREE SWALLOW	0	200	0	200	66.67	200
WHITE-TAILED DEER	2	0	2	4	1.33	2
YELLOW-BILLED CUCKOO	1	1	0	2	0.67	1
POOL TOTALS	77	347	133	557		

(Continued)

Table 6 (Continued)

	POOL 6					
AMERICAN CROW	0	10	0	10	3.33	10
AMERICAN KESTREL	0	1	0	1	0.33	1
ANHINGA	2	0	0	2	0.67	2
ARMADILLO	1	0	0	1	0.33	1
BEAVER	1	2	2	5	1.67	2
BELTED KINGFISHER	0	2	2	4	1.33	2
BLUE-GRAY GNATCATCHER	1	0	0	1	0.33	1
BANK SWALLOW	0	100	10	110	36.67	100
BLUE JAY	0	0	20	20	6.67	20
BARN SWALLOW	2	10	0	12	4.00	10
BLUE-WINGED TEAL	3	3	0	6	2.00	3
CATTLE EGRET	12	17	15	44	14.67	17
CAROLINA WREN	0	1	2	3	1.00	2
CHIMNEY SWIFT	4	0	0	4	1.33	4
COMMON GRACKLE	3	7	5	15	5.00	7
DOUBLE-CRESTED CORMORANT	4	0	12	16	5.33	12
EASTERN KINGBIRD	3	0	0	3	1.00	3
FISH CROW	2	2	0	4	1.33	2
GREEN-BACKED HERON	0	1	0	1	0.33	1
GREAT BLUE HERON	3	6	4	13	4.33	6
GREAT-CRESTED FLYCATCHER	1	0	0	1	0.33	1
GREAT EGRET	5	9	6	20	6.67	9
GREATER YELLOWLEGS	0	1	0	1	0.33	1
INDIGO BUNTING	0	75	30	105	35.00	75
KILLDEER	9	4	6	19	6.33	9
LITTLE BLUE HERON	1	3	2	6	2.00	3
LEAST SANDPIPER	5	7	7	19	6.33	7
LEAST TERN	0	3	0	3	1.00	3
MALLARD	0	7	0	7	2.33	7
MISSISSIPPI KITE	5	3	0	8	2.67	5
MOURNING DOVE	5	9	7	21	7.00	9
NORTHERN CARDINAL	4	6	2	12	4.00	6
NORTHERN HARRIER	0	0	1	1	0.33	1
NORTHERN MOCKINGBIRD	0	1	1	2	0.67	1
NORTHERN ROUGH-WINGED SWALLOW	0	100	200	300	100.00	200
OPOSSUM	1	0	1	2	0.67	1
PURPLE MARTIN	3	3	0	6	2.00	3
RACCOON	2	1	1	4	1.33	2
RING-BILLED GULL	0	3	0	3	1.00	3
RED-BELLIED WOODPECKER	0	1	1	2	0.67	1
RED FOX	0	1	0	1	0.33	1
RED-TAILED HAWK	0	0	1	1	0.33	1
RED-WINGED BLACKBIRD	4	12	12	28	9.33	12
SNOWY EGRET	6	12	6	24	8.00	12

(Continued)

Table 6 (Concluded)

STRIPED SKUNK	0	1	0	1	0.33	1
SWAMP RABBIT	0	1	0	1	0.33	1
TREE SWALLOW	10	500	0	510	170.00	500
TUFTED TITMOUSE	0	1	1	2	0.67	1
WHITE IBIS	0	0	7	7	2.33	7
WOOD STORK	12	0	0	12	4.00	12
WHITE-TAILED DEER	3	3	2	8	2.67	3
YELLOW-BILLED CUCKOO	0	3	0	3	1.00	3
POOL TOTALS	117	932	366	1415		
		POOL 7				
BANK SWALLOW	0	10	3	13	4.33	10
BARN SWALLOW	3	10	0	13	4.33	10
DOUBLE-CRESTED CORMORANT	0	2	0	2	0.67	2
NORTHERN ROUGH-WINGED SWALLOW	0	100	200	300	100.00	200
RING-BILLED GULL	0	0	2	2	0.67	2
TREE SWALLOW	50	500	0	550	183.33	500
POOL TOTALS	53	622	205	880		
DIKE FIELD TOTALS	430	3159	1076	4665		
		POOL				
POOL TOTALS						
DIKE FIELD TOTALS						
TOTAL OBSERVATIONS	7208	104140	15863	127211		

AD-A191 609 LOWER MISSISSIPPI RIVER ENVIRONMENTAL PROGRAM REPORT 10 2/2
EVALUATION OF BIR..(U) CORPS OF ENGINEERS VICKSBURG
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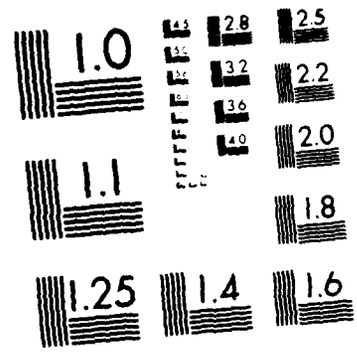

Table 7
Families, Species, and Common Names of Birds and Mammals
Observed in the 10 Dike Systems

Family	Species	Common Names
	Birds	
Accipitridae: Kites, Eagles, Hawks	Buteo jamaicensis	Red-tailed hawk
	Buteo lineatus	Red-shouldered hawk
	Circus cyaneus	Northern harrier
	Haliaeetus leucocephalus	Bald eagle
	Ictinia mississippiensis	Mississippi kite
Alaudidae: Larks	Eremophila alpestris	Horned lark
Alcedinidae: Kingfishes	Megaceryle alcyon	Belted kingfishes
Anatidae: Ducks, Geese, Swans	Aix sponsa	Wood duck
	Anas clypeata	Northern shoveler
	Anas discors	Blue-winged teal
	Anas platyrhynchos	Mallard
	Aythya affinis	Lesser scaup
	Aythya americana	Redhead
	Oxyura jamaicensis	Ruddy duck
Anhingidae: Anhingas	Anhinga anhinga	American anhinga
Ardeidae: Herons, Bitterns	Ardea herodias	Great blue heron
	Bubulcus ibis	Cattle egret
	Butorides striatus	Green-backed heron
	Casmerodius albus	Great egret
	Egretta thula	Snowy egret
	Florida caerulea	Little blue heron
Apodidae: Swifts	Chaetura pelagica	Chimney swift
Charadriidae: Plovers	Charadrius semipalmatus	Semipalmated plover
	Charadrius vociferus	Killdeer
Ciconidae: Storks	Mycteria americana	Wood stork
Columbidae: Doves, Pigeons	Zenaida macroura	Mourning dove
Corvidae: Crows, Ravens, Jays	Corvus brachyrhynchos	American crow
	Corvus ossifragus	Fish crow
	Cyanocitta cristata	Blue jay
Cuculidae: Cuckoos	Coccyzus americanus	Yellow-billed cuckco

(Continued)

Table 7 (Continued)

Family	Species	Common Names
	Birds (Cont.)	
Falconidae: Falcons	Falco sparverius	American kestrel
Fringillidae: Finches, Sparrows, Buntings	Cardinalis cardinalis	Northern cardinal
	Carduelis tristis	American goldfinch
	Melospiza melodia	Song sparrow
	Passerina cynea	Indigo bunting
	Spizella pusilla	Field sparrow
Gaviidae: Loons	Gavia immer	Common loon
Hirundinidae: Swallows	Hirundo rustica	Barn swallow
	Iridoprocne bicolor	Tree swallow
	Petrochelidon pyrrhonota	Cliff swallow
	Progne subis	Purple martin
	Riparia riparia	Bank swallow
	Stelgidopteryx ruficollis	Northern rough-winged swallow
Icteridae: Blackbirds, Orioles	Agelaius phoeniceus	Red-winged blackbird
	Dolichonyx oryzivorus	Bobolink
	Euphagus cyanocephalus	Brewer's blackbird
	Icterus galbula	Northern oriole
	Icterus spurius	Orchard oriole
	Molothrus ater	Brown-headed cowbird
	Quiscalus quiscula	Common grackle
	Sturnella magna	Eastern meadowlark
Laniidae: Shrikes	Lanius ludovicianus	Loggerhead shrike
Laridae: Gulls, Terns	Chlidonias niger	Black tern
	Larus delawarensis	Ring-billed gull
	Sterna albifrons	Interior least tern
Mimidae: Mockingbirds, Thrashers	Dumetalla carolinensis	Grey catbird
	Mimus polyglottos	Northern mockingbird
Paridae: Titmice, Chickadees	Parus bicolor	Tufted titmouse
	Parus carolinensis	Carolina chickadee
Parulidae: Wood Warblers	Dendroica petechia	Yellow warbler
	Geothlypis trichas	Common yellow throat
	Parula americana	Northern parula warbler
	Protonotaria citrea	Prothonotary warbler
	Wilsonia citrina	Hooded warbler

(Continued)

Table 7 (Continued)

Family	Species	Common Names
	Birds (Cont.)	
Pelecanidae: Pelicans	Pelecanus erythrorhynchos	White pelican
Phalacrocoracidae: Cormorants	Phalacrocorax auritus	Double-crested cormorant
Picidae: Woodpeckers	Colaptes auratus	Northern flicker
	Dryocopus pileatus	Pileated woodpecker
	Melanerpes carolinus	Red-bellied woodpecker
	Melanerpes erythrocephalus	Red-headed woodpecker
	Picoides pubescens	Downy woodpecker
	Picoides villosus	Hairy woodpecker
Podicipedidae: Grebes	Podilymbus podiceps	Pied-billed grebe
Rallidae: Coots, Gallinules	Fulica americana	American coot
Scolopacidae: Sandpipers, Snipes, Phalaropes	Actitus macularia	Spotted sandpiper
	Calidris minutilla	Least sandpiper
	Limnodromus griseus	Shortbilled dowitcher
	Tringa flavipes	Lesser yellowlegs
	Tringa melanoleuca	Greater yellowlegs
	Tringa solitaria	Solitary sandpiper
Strigidae: Owls	Strix varia	Barred owl
Sylviidae: Gnatcatchers, Kinglets	Polioptila caerulea	Blue-gray gnatcatcher
Sturnidae: Starlings	Sturnus vulgaris	European starling
Threskiornithidae: Ibises, Spoonbills	Eudocimus albus	White ibis
Trochilidae: Hummingbirds	Archilochus colubris	Ruby-throated hummingbird
Troglodytidae: Wrens	Thryothorus ludovicianus	Carolina wren
Turdidae: Thrushes	Turdus migratorius	American robin
Tyrannidae: Flycatchers	Contopus virens	Eastern wood pewee
	Myiarchus crinitus	Great-crested flycatcher
	Tyrannus tyrannus	Eastern kingbird
Vireonidae: Vireos	Vireo griseus	White-eyed vireo
	Vireo olivaceus	Red-eyed vireo

(Continued)

Table 7 (Concluded)

Family	Species	Common Names
	Mammals	
Canidae: Wolves, Coyotes, Dogs, Foxes	Canis latrans	Coyote
	Vulpes fulva	Red fox
Castoridae: Beaver	Castor canadensis	Beaver
Cervidae: Deer	Odocoileus virginiana	White-tailed deer
Dasypodidae: Armadillos	Dasypus novemcinctus	Armadillo
Didelphidae: Opossums	Didelphis marsupialis	Opossum
Leporidae: Rabbits, Hares	Sylvilagus aquaticus	Swamp rabbit
	Sylvilagus floridanus	Eastern cottontail
Mustelidae: Mink, Otter, Skunk, Weasel	Lutra canadensis	River otter
	Mephitis mephitis	Striped skunk
Procyonidae: Raccoon	Procyon lotor	Raccoon

Table 8

Step-Wise Regression Analysis and Correlation Coefficients for the Selected Species Groups and the Physical Variables of the 10 Dike Systems along the Main Stem of the Lower Mississippi River

Step-Wise Regression Analysis

Total No. of Dependent Variable	Independent Variable	B-Value	Prob > F	R^2
Wading birds	Dike field water	0.24	0.0136	0.55
Wading birds (Sep)	Shorebar	0.07	0.0935	0.72
	Islebar	0.05	0.0155	
Shorebirds	Shorebar	0.32	0.0212	0.67
	Dike field water	-0.32	0.1019	
Shorebirds (Aug)	Shorebar	0.08	0.0022	0.94
	Ac $\leq$ 2 ft (Aug)	0.18	0.0211	
	Dike field water	-0.05	0.0418	
Shorebirds (Sep)	Shorebar	0.20	0.0585	0.62
	Dike field water	-0.24	0.0759	

Correlation Coefficients

	Wading Birds	Waterbirds	Shorebirds	Gulls & Terns	Waterfowl	Coots
Dike water	0.74*	NS**	NS	NS	NS	NS
Shorebar	NS	NS	0.71	NS	NS	NS
Oct Ac $\leq$ 2 ft deep	0.81	NS	NS	NS	NS	NS

* r value where P < 0.05 level.

** No significant correlation noted.

Table 9
Plant Species Found in the 10 Lower Mississippi River Dike Systems*

Plant Species	Kentucky Point	Forked Deer	Ashport-Golddust	Redman-Robinson Crusoe	Porter's Lake	Montezuma Bar	Island 62	Island 70	Chicot Landing	Waterproof
Acalypha ostryaefolia	-	+	+	+	+	+	+	-	+	-
Acer negundo	-	+	+	+	+	+	+	+	+	+
Acer saccharinum	-	+	+	+	-	-	-	-	-	-
Amaranthus palmeri	-	-	+	+	-	+	-	-	-	-
Amaranthus retroflexus	-	+	+	+	-	+	+	-	+	-
Amaranthus spp.	-	+	+	+	+	+	+	+	+	+
Ambrosia artemisiifolia	-	+	+	+	+	+	+	+	+	-
Ambrosia trifida	-	-	-	+	-	+	+	+	+	-
Amorpha fruticosa	-	-	+	-	-	-	-	-	-	-
Ampelopsis arborea	-	+	+	+	-	+	+	+	+	-
Ampelopsis cordata	-	-	+	+	-	-	-	-	+	-
Aster lateriflorus	-	-	+	-	-	+	-	-	-	-
Aster pilosus	-	+	+	+	-	-	-	-	-	-
Bidens spp.	-	-	-	+	-	-	-	-	-	+
Boehmeria cylindrica	-	+	+	+	+	+	-	-	-	-
Brunnchia cirrhosa	-	+	+	+	-	+	+	+	+	+
Campsis radicans	-	-	+	+	-	+	+	+	+	-
Carya illinoensis	-	-	+	+	-	-	-	-	+	-
Celtis laevigata	-	-	+	+	-	-	+	-	-	-
Cephalanthus occidentalis	-	-	+	-	-	+	+	-	-	-
Chenopodium album	-	-	-	-	-	-	+	-	+	-
Commelina diffusa	-	-	-	-	-	-	-	-	+	-
Cuscuta spp.	-	-	-	-	-	+	-	-	+	-
Cynodon dactylon	-	-	+	+	+	+	+	+	+	+
Cyperus aristatus	+	+	+	+	+	+	+	+	+	-
Cyperus erythrorhizos	-	-	-	+	+	+	+	+	+	-
Cyperus strigosus	+	+	+	+	+	+	+	+	+	-
Cyperus spp.	+	+	+	+	+	+	+	+	+	+
Desmanthus illinoensis	-	-	+	+	+	-	-	-	-	-
Digitaria ischaemum	-	-	-	-	+	-	+	+	+	+
Digitaria sanguinalis	-	+	+	+	+	+	+	+	+	+

(Continued)

* "-" means absent from dike system, and "+" means present in dike system.

Table 9 (Continued)

Plant Species	Kentucky Point	Forked Deer	Ashport-Golddust	Redman-Robinson Crusoe	Porter's Lake	Montezuma Bar	Island 62	Island 70	Chicot Landing	Waterproof
Echinochloa crusgalli	–	–	+	+	+	+	+	–	+	–
Eclipta alba	–	+	+	+	–	+	+	+	+	–
Eleusine indica	–	–	–	–	+	–	–	–	–	–
Eragrostis capillaris	–	–	–	–	–	+	+	+	+	–
Eupatorium serotinum	–	–	+	+	+	+	+	+	+	–
Euphorbia maculata	–	+	+	+	+	+	+	+	+	+
Euphorbia supina	–	–	+	+	+	+	+	+	+	+
Forestiera acuminata	–	–	+	+	–	–	–	–	–	–
Fraxinus pennsylvanica	–	–	+	+	–	+	+	–	–	–
Glycine max	–	–	+	+	–	+	–	–	+	–
Hibiscus militaris	–	–	+	+	–	–	+	–	+	–
Hibiscus spp.	–	+	+	+	+	+	+	+	+	+
Ipomoea purpurea	+	+	+	+	+	+	+	+	+	+
Iva annua	–	–	–	–	+	+	+	+	+	–
Lemna minor	–	+	+	+	–	+	+	–	–	–
Lindernia dubia	–	–	+	+	–	–	–	–	–	–
Mollugo verticillata	+	+	+	+	+	+	+	+	+	–
Morus rubra	–	–	+	+	–	–	–	–	–	–
Oxalis dillenii	–	+	–	–	–	+	–	–	–	–
Panicum dichotomiflorum	–	+	+	+	+	+	+	+	+	+
Parthenocissus quinquefolia	–	–	+	+	–	+	+	+	+	–
Phytolacca americana	–	–	–	–	–	–	–	–	+	–
Pilea pumila	–	–	–	–	+	+	+	–	–	–
Platanus occidentalis	–	+	+	+	+	+	+	+	+	–
Polygonum densiflorum	–	+	+	+	+	+	+	+	+	–
Polygonum lapathifolium	–	+	+	+	–	+	+	+	+	–
Polygonum pensylvanicum	+	+	+	+	+	+	+	+	+	–
Populus deltoides	+	+	+	+	+	+	+	+	+	+
Portulaca oleracea	–	–	–	+	+	+	–	–	+	–
Rhus radicans	+	–	–	–	–	–	–	–	–	–
Rorippa sessiliflora	–	–	–	–	+	+	+	+	+	+

(Continued)

Table 9 (Concluded)

Plant Species	Kentucky Point	Forked Deer	Ashport-Golddust	Redman-Robinson Crusoe	Porter's Lake	Montezuma Bar	Island 62	Island 70	Chicot Landing	Waterproof
Rubus trivialis	-	-	-	+	-	+	+	+	+	-
Sagittaria latifolia	-	-	-	-	-	-	+	-	-	-
Salix interior	+	+	+	+	+	+	+	+	+	+
Salix nigra	+	+	+	+	+	+	+	+	+	+
Sambucus canadensis	-	-	+	+	-	-	+	+	+	-
Sida spinosa	-	-	+	+	-	-	+	+	+	-
Solanum americanum	-	-	+	+	-	-	-	-	+	-
Teucrium canadense	-	-	-	-	-	-	+	+	+	-
Ulmus americana	-	+	+	+	-	-	-	-	-	-
Urtica dioica	-	+	+	+	-	-	-	-	-	-
Vitis cinerea	-	-	+	+	-	+	-	-	-	-
Vitis riparia	-	+	+	+	-	+	+	+	+	-
Xanthium strumarium	+	+	+	+	+	+	+	+	+	+
Number of species recorded by dike system	11	33	56	58	33	50	50	39	52	18
Percent of total number of species recorded	15	44	75	77	44	67	67	52	69	24

END

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