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Colonial Waterbird Investigations

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PERFORMANCE REPORT

STATE: VIRGINIA

PROJECT TITLE: NONGAME AND ENDANGERED WILDLIFE INVESTIGATIONS PROJECT NO.: EW-2-2

STUDY TITLE: COLONIAL WATERBIRD INVESTIGATIONS STUDY NO.: VI

JOB TITLE: COLONIAL BIRD STUDIES JOB NO.: VI-A-G

PERIOD COVERED: JULY 1, 1989 - JUNE 30, 1990

JOB VI-A
OBJECTIVE: To coordinate the protection and management of colonial birds in the state.

JOB VI-B
OBJECTIVE: To conduct surveys of colonial breeding birds in Virginia in order to detect changes in population number as well as population shifts.

JOB VI-C
OBJECTIVE: To sample nesting success in colonies of selected species each year.

JOB VI-D
OBJECTIVE: To conduct preliminary studies on the effects and extent of predation on colonial breeders.

JOB VI-E
OBJECTIVE: To locate, map, and describe all existing yellow-crowned night heron colonies and single nests in Tidewater, Virginia.

JOB VI-F
OBJECTIVE: To locate and map all appropriate or potential habitats for future observation and management.

JOB VI-G
OBJECTIVE: To evaluate human impacts on heron populations in residential areas in Tidewater, Virginia.

SUMMARY:

Aerial and ground surveys were conducted for colonial

waterbirds, including colonial and solitary beach nesting species along the Virginia barrier islands and the Coastal plain and Piedmont region of Virginia. Management strategies for critical, large, or sensitive colonies were recommended. Management agreements were initiated with federal and state agencies and private landowners. Predation and disturbance factors were identified and investigated at select colonies with target species of common terns, least terns, black skimmers, piping plovers, and Wilson's plovers.

JOB VI-A - To coordinate the protection and management of colonial birds in the state.

To insure and enhance the protection of colonial birds within the state, several major cooperative management agreements and strategies have been implemented from July 1, 1989 to June 3, 1990. The study areas include the Virginia barrier island chain on the Eastern Shore and diverse areas of the river systems of the western shore of the Chesapeake Bay region.

A new agreement is in place for the cooperation among the U.S. Fish and Wildlife Service, Virginia Department of Game and Inland Fisheries, Hampton Parks, College of William and Mary, and the Living Museum to ensure the protection and management of Grandview Beach, Hampton, Virginia. This area is among the areas selected as critical habitat for piping plovers and has provided suitable habitat for a least tern colony for well over 100 years. This agreement includes protection through posting the area, monitoring the success of species utilizing the area, and educating the public to the sensitive nature of the area. A brief documentary was made for a local television newscast featuring the Grandview Beach site, its nesting species, and the management agreement.

The second management agreement is currently being negotiated between the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, College of William and Mary, and Virginia Department of Game and Inland Fisheries for Craney Island, Portsmouth, Virginia. The new agreement will expand the efforts to protect and enhance available habitat and create additional suitable nesting areas. This agreement will incorporate protection of all beach nesting species.

Protection of the barrier island chain is continued through the U.S. Fish and Wildlife Service, The Nature Conservancy, Virginia Heritage Program, Virginia Department of Game and Inland Fisheries, and private landowners. Project personnel assisted the Virginia Coast Reserve of The Nature Conservancy and the Virginia Department of Game and Inland Fisheries in posting selected barrier islands. Work is underway with the Natural Heritage program to categorize critical habitat for select beach nesting species on three of the barrier islands.

Urban colonies of great egrets, great blue herons, and yellow-crowned night herons present challenging management problems due to their location within developed areas. Relocation and abandonment result from human disturbance. Management agreements with private landowners are a feasible step in protection of these species.

RECOMMENDATION:

Management agreements provide the key steps for protection of the habitat needed for the continuation and success of colonial nesting species. Establishment of such agreements is recommended for large and critical colonies throughout the state.

JOB VI-B - To conduct surveys of colonial breeding birds in Virginia in order to detect changes in population number as well as population shifts.

Flights were conducted mainly on the Piedmont and Coastal Plain of Virginia and the Virginia barrier islands. Flight operations were conducted principally along the major river systems and adjacent forested areas; and the rivers, streams, and barrier islands of the Eastern Shore.

Areas of Greatest Activity - The primary areas frequently surveyed were as follows:

The James River from Goochland County to the James River Bridge including all tributaries and adjacent forest within ten miles of the shoreline;

The Chickahominy River from the James River to Mechanicsville including all tributaries and adjacent forest within ten miles of the shoreline;

The York River from the Town of West Point to Yorktown including all tributaries and adjacent forest within ten miles of the shoreline;

The Mattoponi River from the Town of West Point to Aylett including all tributaries and adjacent forest within ten miles of the shoreline;

The Pamunkey River from the Town of West Point to Tunstall including all tributaries and adjacent forest within ten miles of the shoreline;

The Piankatank River/Dragon Swamp from Deltaville to Ino including all tributaries and adjacent forest within ten miles of the shoreline;

The Rappahannock River from Stingray Point to Fredericksburg including all tributaries and

adjacent forest within ten miles of the shoreline;

The Potomac River from Smith Point to Masons Neck including all tributaries and adjacent forest within ten miles of the shoreline on the Virginia side of the River;

The North Landing River within the City of Virginia Beach including all tributaries within two miles of the River;

The Eastern Shore of Virginia including all shorelines forests, and barrier islands;

Western shoreline of the Chesapeake Bay from Smith Point to New Point Comfort including all inlets and adjacent forest within five miles of the shore;

Mobjack Bay and adjacent forest within five miles of the shoreline.

Areas Surveyed Once Per Year:

Nottoway River;

Nansemond River.

For these areas, aerial observations were normally conducted within five miles of the shore line.

Infrequent Surveys - Occasionally, there were reports of colonial nesters and other species of interest in areas beyond their normal nesting range. If these reports were deemed credible, and the area was not readily accessible by surface transportation, the reported location was searched by air to confirm the sighting and to accurately locate the nest on the appropriate Topographical Chart for future observations.

COLONIAL BIRD SURVEYS ON THE EASTERN SHORE OF VIRGINIA:

Colonial bird surveys were flown over the barrier island chain in early June. The numbers of colonies and locations were recorded on 7 1/2 minute topographic maps. In addition, an annual comprehensive ground survey was conducted in mid-June by J. W. Williams, J. W. Akers, J. W. Via, and R. A. Beck through the coordination and support of the Virginia Coast Reserve of The Nature Conservancy. This census has been conducted for sixteen consecutive years by the same personnel using the same census techniques. Each barrier island was walked from north to south with all locations, numbers, and statuses recorded for avian colonial and solitary beach nesting species. Although the breeding population number of many species has fluctuated, certain species merit attention including the little blue heron, gull-billed tern,

black skimmer, and brown pelican. The first three species merit attention because of the apparent decline in numbers while the last species shows an increase in number.

In 1990, the little blue heron was recorded at an all time low count of 30 individuals by the William et. al survey. The highest count of little blue herons, in the same census area over the last sixteen years, was 326 individuals in 1981. Four additional areas were surveyed in 1990 for the first time by project personnel resulting in 123 adult little blue herons. Even the combined total of 153 adult little blue herons merits concern. Continued monitoring should provide additional information to address this probable population decline or shift. Table 1 indicates the total number of adult little blue herons for Virginia.

Table 1. Total Number of Adult Little Blue Herons in Virginia, 1990.

Location	Number of Adults
Cords Marsh A, Chincoteague Bay	13
Cords Marsh B, Chincoteague Bay	27
Willis Marsh, Chincoteague Bay	12
Farmouth, Chincoteague Bay	55
Hog Island (colony moved)	0
Wreck Island	14
Fisherman Island	14
Chimney Pole Island	2
Club House Point, southwest of Wachapreague Inlet	16
Total: 153	

Another species of concern is the gull-billed tern with a record low of 214 individuals in 1990. This represents a population decline of 90 percent from 1975 to 1990 (Williams et. al).

There were 2594 black skimmer adults on the barrier islands in 1990 compared to 3451 in 1989. Weekly monitoring at Hog, Cobb, and Little Cobb islands indicated three separate renesting attempts for the black skimmers, but nesting success was heavily influenced by flooding. Relatively few fledged black skimmers have been observed for the past two breeding seasons on all barrier island locations. The only significant number of fledged black skimmers observed in 1990 was on the western shore of the Chesapeake Bay on the Hampton Roads Bridge-Tunnel.

The brown pelican has been nesting in Virginia since 1988. In 1990, 97 nests were counted which represents a 262 percent increase since the count last year of 37 nests. The colony has been monitored regularly, and the young are thriving. The colony is surrounded by nesting herring gulls and great black-backed gulls and bordered by a large royal tern colony of approximately 4100 pairs. The royal tern young are banded annually by a corralling technique. 132 young royal terns were lost due to crushing this year. 82 additional dead young were found within the colony at a later date. The entire area should have a minimum amount of disturbance.

In January 1990, a cooperative monitoring project was established to monitor a select group of colonial beach nesting birds. This project included black skimmers, common terns, least terns, gull-billed terns, piping plovers, and Wilson's plovers that nested on Hog, Cobb and Little Cobb islands in the Virginia Coast Reserve. This study is under the auspices of The Nature Conservancy/Virginia Coast Reserve, Virginia Department of Game and Inland Fisheries, University of Virginia/Virginia Coast Reserve/Long-term Ecological Research, and the Virginia Natural Heritage Department. Weekly visits were made to the three islands by project personnel. Suitable habitat was categorized for each species. Meteorological factors, predation and disturbance were researched for their effects on colony success. The analysis of the results is not complete at this time. Continuation of this project is recommended.

COLONIAL BIRD SURVEYS ON THE WESTERN SHORE OF THE CHESAPEAKE BAY:

Great Blue Herons

Great blue heron colonies were located by aerial surveying. The use of a small aircraft is a cost effective and efficient use of manpower to study the distribution and population trends of these herons. In addition, an aerial perspective frequently provides the clues to understand why certain population changes have occurred as a result of manmade or natural changes in the environment. An example of the data that can be gained from both an aerial and a ground count is found in the Mason's Neck Wildlife Refuge survey. The aerial count for great blue heron nests was 679

nests on June 9, 1990. The ground count on June 25, 1990 was 772 nests. There were 257 nest trees compared to the 1989 report of 182 nest trees. Of the fifty acres of available habitat, only approximately ten acres were being utilized by the colony. Although the boundaries of the colony did not appear to be spreading from 1989 to 1990, the nests were more concentrated within the colony.

The nesting success of the great blue heron is dependent on food supply, meteorological factors and human disturbance. During the 1989 and 1990 breeding seasons, inclement weather affected many colonial nesters. However, no obvious overwhelming detrimental effect was observed within the surveyed great blue heron colonies. Table 2 summarizes the location of great blue heron colonies in Virginia, as of September 1, 1989. In 1990, nine new small heronries, each with less than ten pairs, were located.

Least Terns

The least tern is another species that has been followed closely on the western shore of the Chesapeake Bay as well as the Eastern Shore barrier island chain. In general the least tern population is slowly declining for the state (Beck, *et. al*, Virginia Journal of Science). In 1990, 1480 least tern adults were observed on the western shores of the Chesapeake Bay. Grandview Beach, Hampton, and Craney Island, Portsmouth have the two largest least tern colonies within the state. 705 least tern adults were observed on the barrier islands. Flooding, from high tides and heavy rains, and hail influenced productivity at all colonies. Table 3 summarizes the number of least tern adults, management strategies implemented, major problems, and recommendations for all areas censused throughout the state.

Piping Plovers

As a point of interest, eight piping plovers were observed weekly on Craney Island in 1990. Four territorial pairs produced three nests with eight hatched young. Five fledged young were observed in late July. In 1989, one territorial pair of piping plovers produced three fledged young. The piping plovers were successful at Grandview Beach in 1990. Five territorial pairs produced four nests, however only three fledged juveniles were observed in late July.

Common Terns and Black Skimmers

The south end of the Hampton Roads Bridge-Tunnel continues to support the largest common tern colony in Virginia. The estimated number of adult common terns for 1990 was 4580 adults. Of the 6955 common terns surveyed in Virginia, 66 percent were on the tunnel island (Table 4). A definitive nest count of 2890 nests was conducted on June 5, 1990. In general, the common terns are successful because this site is well protected from the influence of tidal action. The substrate also allows for efficient drainage

of water resulting from heavy rains.

Table 4. Common Terns in Virginia, 1990.

Island	Number of Adults	Percentage of Total
Metompkin	167	2 %
Cedar	363	5 %
Sandy	15	0.2 %
Hog	72	1 %
Little Cobb	1236	18 %
Wreck	94	1 %
Ship Shoal	428	6 %
Hampton Roads Bridge-Tunnel	4580	66 %
Total:		6955

Black skimmers arrived at the site on April 28, 1990. The adult count was 519, and the total number of nests was 208. This was the only area within the state where fledged black skimmer young were observed. In 1990, the total number of black skimmer adults for the state was 3113.

The area continues to support a population of Norway rats (*Rattus norvegicus*). Extensive tunneling was observed throughout the nesting area. Since the Norway rat is capable of producing twelve litters per year with an average of eight to ten young per litter, the rat removal program must not only be continued but also extended into the breeding season of the birds to control the rat population.

Vehicular traffic traveling through the tunnel reached a record high of 97,000 vehicles in one day in late July. With this additional traffic, more disabled vehicles were brought through the access road of the nesting area in 1990. Construction vehicles, including heavy equipment and large trucks, utilize the area extensively. The speed of the traffic has been observed in excess of 25 miles per hour. Rapidly moving trucks do not allow ample time for the young terns and skimmers to move out of the road. 229 dead young terns were collected from the road between June 13 and July 13, 1990. This is an average of 7.4 birds destroyed per day.

A reduced speed limit of five miles per hour on the access road is recommended.

The installation of erosion cloth between the colony and the road, to prevent chicks from sitting in the road, was postponed until the rat population is controlled. Since the rat numbers were high within the colony, the chicks would not be able to escape rat predation if they were confined to the colony. This erosion cloth should decrease chick fatalities in the road.

Vegetation control was necessary to continue to attract terns to the area. In April, select areas had vegetation manually removed. A study is in progress to determine the optimal substrate conditions by manipulating the amount of vegetation.

Continued cooperation between the Virginia Department of Transportation, Ruth Beck of the College of William and Mary (principle investigator), and the Virginia Department of Game and Inland Fisheries is expected and is necessary to protect this area for common terns and black skimmers.

Double-crested Cormorants and Cattle Egrets

An active mixed colony of 240 adult double-crested cormorants, 280 adult cattle egrets, 8 great egrets, and 4 green-backed herons was reported by M. A. Byrd. The colony was on an island in the James River, west of the Benjamin Harrison Bridge in Charles City County, Westover quadrangle. The colony was reported as thriving in late June, 1990. This colony is increasing in size annually.

RECOMMENDATIONS:

Monitoring the populations of colonial nesting species through aerial and ground surveying to determine trends and shifts should continue. Avian and mammalian predator control, limitation of human disturbance, and protection of the habitat for colonial beach nesting species should be included in management recommendations for each colony site. Recognition of the volunteers who donate hundreds of hours of field expertise to the collection of data and ultimately to the protection of the species should be instated.

JOB VI-C - To sample nesting success in colonies of selected species each year.

A protocol for monitoring reproductive success for selected beach nesting birds was developed by Ruth Beck of the College of William and Mary and Mike Erwin of the U.S. Fish and Wildlife Service. Least terns, common terns, gull-billed terns, and black skimmers were selected as the initial species to be monitored on Hog, Cobb, and Little Cobb islands on the Virginia Coast Reserve. A visit to the islands in early May provided an overview of

potential habitat. In mid-May, the colony location, nest building initiation, and estimated number of adults were recorded. From late May to early June, the perimeter of each colony was defined. All nests were counted in colonies with less than fifty nests. If the colony was large, three plots with ten to fifteen nests of each species were selected and staked. The contents and number of each active nest were recorded. Each area was visited weekly, and the number of young was recorded in each plot. All observations were made from a distance greater than fifty meters to avoid disturbing the young. In late July, counts of fledged young and adults were made to establish an adult/young ratio.

Preliminary analysis of data collected indicates a reduced colony success predominately due to nest failure by flooding.

RECOMMENDATIONS:

The monitoring of select colonies for reproductive success is recommended to continue through at least another breeding season. Cooperation among the Virginia Department of Game and Inland Fisheries, Virginia Coast Reserve/The Nature Conservancy, Long-term Ecological Monitoring Program/University of Virginia, and the Heritage Program should continue. These agencies provide the necessary steps for the success of the project including boat transport to study areas, gathering of data, comparison of meteorological data with nest failure sequences, and analysis of habitat perimeters.

JOB VI-D - To conduct preliminary studies on the effects and extent of predation on colonial breeders.

During the 1990 breeding season, a concentrated effort was initiated to observe the effects of predation on colonial breeders. The study areas on the barrier islands of the Eastern Shore and the study areas on the western shore of the Chesapeake Bay were censused for potential predators of colonial nesters. Each area had a combined set of confirmed or potential predators. The Eastern Shore colonial bird populations were subjected to avian and mammalian predators. Avian species observed taking and harassing various tern species included the northern harrier, peregrine falcon, fish crow, great black-backed gull and herring gull. Mammalian predators included red foxes, raccoons, and rats which are prevalent on many of the barrier islands. The Norway rat is predominantly found at the Hampton Roads Bridge-Tunnel site. Of the three barrier islands surveyed weekly, the north end of Cobb Island had evidence of red foxes going into the colonies regularly. Raccoon tracks were observed in the colonies on both Hog and Cobb islands. Little Cobb was the only island free of mammalian predators. The future of these colonial nesters will be dependent upon control of these predators.

A study is under way to determine the effects of gull

predation on the reproductive success of nesting terns on the Eastern Shore of Virginia.

The documentation of a fish crow taking a piping plover chick off the beach at the North end of Grandview Beach, and the thirty-two separate events of fish crows harassing oystercatchers, willets, terns, and herons confirmed the potential problem the fish crow can be to colonial nesters. A pair of northern harriers was observed harassing and taking four young least terns and one adult least tern.

RECOMMENDATION:

Continue the study of the effects and extent of predation on colonial nesters at all known sites.

JOB VI-E: To locate, map, and describe all existing yellow-crowned night heron colonies and single nests in Tidewater Virginia.

As was done last year, only Hampton and Norfolk were surveyed extensively in view of the significance of these areas to the yellow-crowned population. Homeowner complaints during the latter part of the breeding season, however, directed us to an additional yellow-crowned colony in Portsmouth. Results of the nest surveys are presented below in Table 5

Table 5. Yellow Crowned Night Heron Nest Survey Results.

	Active Nest Sites			
	1987	1988	1989	1990
Hampton	79	64	65	62
Norfolk	62	42	64	53
Portsmouth	-	-	13	11
Totals:	141	106	129	126

All colonies and singles nests have been located in, or in association with, residential areas. Specific site locations have been mapped and provided to the Game Department's Fish and Wildlife Information System and to the Virginia Breeding Bird Atlas Project. Of the 126 nests located, only 7 were in hardwood trees, the remainder in loblolly pines of usually 30 to 50 years of age.

JOB VI-F: To locate and map all appropriate or potential habitats for future observation and management.

Through the use of aerial photography and ground surveys much of the potential habitat in the Tidewater has been mapped and evaluated for use by yellow-crowned night herons. Given the level of information needed to assess habitat suitability, additional field seasons will be necessary to adequately classify the remaining habitat for possible management objectives.

JOB VI-G: To evaluate human impacts on heron populations in residential areas in Tidewater Virginia.

Surveys were conducted again this year in the Hampton Roads and Tidewater areas to monitor urban heron and egret colonies and address citizen concerns. Prior to the nesting season, the Department of Agriculture and Consumer Services sent out approximately two dozen letters to homeowners who anticipated having problems with nesting colonial birds. As was the case last year, it was agreed that harassment would be permissible prior to nest construction to prevent nesting in certain areas. Information on nesting success and the effects of human intervention are discussed for both wading bird species in Tidewater Virginia.

Yellow-crowned night herons

The Hampton population of this species remained essentially the same as last year in number of nesting pairs, although once again a significant proportion of these nests were located in different sites than were used in 1989. The removal of nest limbs by landowners has contributed greatly to the lack of site fidelity by yellow-crowns.

Hampton is somewhat unique in that approximately half of the yellow-crowned population in that city is located in a residential area contained within two city blocks. Night heron populations in dense colonies like this may be subject to a greater risk of predation from fish crows. The abundance of fish crows nesting in Hampton suggest that fish crows may become a limiting factor to yellow-crowned productivity.

The Norfolk population dropped significantly from last year in numbers of nesting pairs, with nest relocations more the rule than the exception this year. Following at least three years of media attention and condoned harassment, this species has little opportunity to exhibit site fidelity. As pairs continue to shift nest sites each year, there is concern about the effects of increased nest displacement on nesting success. Unfortunately, a pilot project to band yellow-crowned night herons in Norfolk and Hampton has been tabled indefinitely due to lack of adequate equipment to access nests. In the interim more emphasis is being

placed on educating the public about the status of this species and the implications of harassment.

Great Egrets

The mystery of one colony's disappearance in 1987 was solved this year as a result of a major storm. A violent thunderstorm swept through Chesapeake in mid May destroying most of one large great egret colony. The news of downed nests and dying birds attracted the local media and subsequently reached the Game Department. Upon investigating the situation, it was discovered that the egret colony that was almost destroyed represented the same group of birds which had been harassed out of the Giordano colony in Virginia Beach in 1987. The two colony sites are less than one mile apart separated only by a finger of the Elizabeth River. When locals were questioned about the history of the damaged colony it was learned that the birds began appearing at the Chesapeake site concurrently with the disappearance of birds from the Virginia Beach Giordano colony. Although the colony size for the newly discovered Chesapeake location was estimated at 100 pairs, over seventy percent of the young birds were lost in the storm.

The Brown colony in Norfolk decreased from 110 pair in 1989 to 35 nesting pair this year. Although this colony has been harassed each year since 1986 the cause of this colony's population reduction is unclear, given that the colony had doubled in size each of the previous four years.

Both the Hampton and Portsmouth egret colonies showed increases in nesting pairs this year. The Hampton colony is still the single largest great egret colony that we have knowledge of at 305 pairs. The landowners of this colony have requested assistance in removing the birds for the second year. Under the protection of the Migratory Bird Treaty Act no depredation permits have been written; however, the future of this colony is uncertain.

Perhaps the only great egret colony under reasonable protection is the Portsmouth (Winston) colony. Showing a 50 pair increase this year, this colony is situated on a vacant forested lot. The absentee landowners do not mind its presence and have no plans to develop the property, although no long-term management agreement has yet been reached.

Tables 6 and 7 depicting the past and present status of the Hampton Roads great egret population are shown below.

Table 6. Status of Urban Great Egret Colonies.

Colony	Drainage	Status/Cause
01 Thoroughgood Colony Virginia Beach	Lynhaven River	Relocated - habitat loss (87) Abandoned - (89)
02 Giordano Colony Virginia Beach	Eastern Branch Elizabeth River	Abandoned - harrassment (87) Relocated - (90) Chesapeake
03 Mariner Colony Portsmouth	Western Branch Elizabeth River	Abandoned - habitat loss (87)
04 Winston Colony Portsmouth	Western Branch Elizabeth River	Increasing
05 Brown Colony Norfolk	Lafayette River	Decreasing
06 Hampton Colony	Hampton River	Increasing

Table 7. Colony Size of Great Egrets over Time.

TIME	01	02	03	04	05	06	TOTAL
1986	80	110	110+	70	8	-	368
1987	320	30	0	73	26	-	449
1988	237	0	0	121	55	241	654
1989	0	0	0	122	110	296	528
1990	0	100	0	172	35	305	612

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TARGET DATE FOR COMPLETION: June 30, 1990

STATUS OF PROGRESS: on schedule

SIGNIFICANT DEVIATIONS: none

RECOMMENDATIONS: continue study

COST THIS SEGMENT: \$17,400 total
\$13,050 federal
\$ 4,350 state

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