

1994

## **Non-Game and Endangered Wildlife Program, Annual Report - Colonial Bird Conservation**

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VIRGINIA DEPARTMENT OF GAME & INLAND FISHERIES  
PERFORMANCE REPORT (July 1, 1993 - June 30, 1994)

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PROJECT TITLE:	WILDLIFE CONSERVATION	PROJ. NO:	WE99R-3
STUDY TITLE:	RARE, THREATENED, AND ENDAN- GERED BIRD CONSERVATION	STUDY NO:	IV
JOB TITLE:	COLONIAL BIRD CONSERVATION	JOB NO:	III
PERSONNEL:	RUTH BECK, BRYAN WATTS, KAREN TERWILLIGER, DANA BRADSHAW	COSTS:	
		Total:	\$29,700
		Federal:	\$22,275
		State:	\$7,425

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SUMMARY:

Following the comprehensive survey that was undertaken in 1993 there were no formal aerial surveys conducted this year under the Colonial Waterbird contract. However, under a special contract to evaluate the beneficial uses of dredge spoil material for colonial birds, the College of William and Mary's Center for Conservation Biology conducted aerial surveys of the coastal marshes of the Eastern Shore. Results of these surveys and comparative data from 1993 can be found in the final report, "Distribution of Colonial Waterbirds on the Eastern Shore of Virginia: Implications for Beneficial Uses of Dredge Material" by Dr. Bryan Watts. Ground surveys were conducted on the barrier islands along with the annual survey work on Craney Island, the Hampton Roads Tunnel, and Grand View Beach.

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

FINDINGS:

**Craney Island Dredge Management**

The Craney Island Dredge Management Area is located in the Hampton Roads area within the City of Portsmouth. The Craney Island facility is owned and managed by the Norfolk District of the U.S. Army Corp of Engineers. The area has been monitored for avian fauna for eighteen years. In the past ten years, Ruth Beck et. al. have worked closely with the Corps to reduce the impact of dredging operations on the least tern and piping plover nesting cycle. Fortunately for these two species, these mitigation strategies have been successful and the results impressive. A key element in this success is the Corps willingness not only to modify their operations at critical times in the nesting season, but to actively protect the nesting sites.

This man-made island consists of nearly 30 square miles created by dredging operations required to maintain the Hampton Roads shipping lanes at the proper depth for large commercial and military ships. This site, with its reputation as a man-made wasteland, has become an important nesting, staging, and wintering area for populations of avian species in the last decade. The area is utilized by thousands of migratory shorebirds during spring and fall migration and supports large flocks of wintering waterfowl.

This site was monitored from late April until August 22, 1994. Least tern colony success was

moderate with 85 fledged young observed in early August. Piping plover nesting success was 1.2 young per nest. High water affected beach nesting pairs of plovers resulting in nesting failure. Fox predation caused the abandonment of one piping plover nest.

Currently, Craney Island is host to one of the largest breeding colonies of least terns in Virginia (150 pairs) and it has five breeding pairs of piping plovers. Blacked-necked stilts established a small colony of six pairs.

#### Grandview Beach, Hampton, Virginia

Grandview Beach, Hampton Virginia continues to support the largest least tern in Virginia. The area provided habitat for least terns and piping plovers. This site was monitored weekly through July 15. A student was present on weekends to provide information to beachgoers.

A multi-agency agreement exists of local, private, state and federal agencies including City of Hampton, College of William and Mary, The Virginia Living Museum, Virginia Department of Game and Inland Fisheries, and the U.S. Fish and Wildlife Service.

In early April, a group of student volunteers from the Clayton Grimes Biology Club constructed and repaired 100 signs/posts to be used for information and colony delineation as needed at Grandview. These signs were posted around the outer boundary of the least tern and piping plover nesting areas.

A total of 4 piping plovers were observed on the north end of the beach from April 15-30. No nests were observed throughout the breeding season. A large explosion of a 27-foot wooden boat just off the north end of the beach caused rescue equipment to be brought up on the beach. The plovers were not observed again anywhere within the Granview Beach area.

The least tern colony was well established by May 1, 1994. A total of 700 adults was counted on May 11, 1994. Colony size was about 350 pairs. The peak nesting count consisted of 299 nests on June 4, 1994. Several factors influence colony success: avian predators, ghost crabs, high water, weather related activity, and human disturbance. Avian predators include the northern harrier, common grackle, boat-tailed grackle, and ruddy turnstones. Ghost crab populations have exploded and expanded into and throughout the colony. Tidal and weather factors were especially detrimental during the third week of May and June. Unusually high tides and summer storms had a moderate affect on newly hatched terns. Human disturbance has been monitored for three years. Boats, joggers, picnickers, and beach visitors are respectful of the signs and remain outside the colony; however, many visitors allow their dogs to run into the colony.

#### RECOMMENDATIONS:

- p Continue monitoring the colony.
- p Continue to post the entire colony.
- p Erect a no camping or open fire notification (Responsibility of City of Hampton Parks and Recreation Department).
- p Increase patrol of the area.
- p Coordinate with all cooperative agencies on educational aspect of area.
- p Continue to post informational signs at local marines to provide boaters with general information about the sensitive nature of the area.

Table 1. Least tern clutch sizes and numbers of nests.

Number of Eggs in Nest	Number of Nests
1	47
2	245
3	6
4	1

**OBJECTIVE B:** To conduct surveys of colonial breeding birds in Virginia in order to detect changes in population numbers and population shifts.

**FINDINGS:**

No systematic survey was conducted in 1994 to locate and map colonial bird colonies due to the comprehensive survey completed in 1993. Great blue heron colonies may not be surveyed again until 1996. Areas surveyed in 1994 included Craney Island, the Hampton Roads Tunnel, and Grand View Beach. Aerial surveys were conducted of colonial birds along the barrier island marsh and lagoon system under a separate project evaluating beneficial uses of dredge spoil material. These results can be found in the final report to the Game Department entitled "Distribution of Colonial Waterbirds on the Eastern Shore of Virginia: Implications for Beneficial Uses of Dredge Material", by Dr. Bryan Watts from the Center for Conservation Biology at the College of William and Mary. Additional ground surveys were conducted on the barrier islands proper according to the annual survey protocol by Williams et. al.

**Hampton Roads Bridge Tunnel**

In 1993, approximately 300 skimmer nests were marked and monitored throughout the breeding season and we found many dented eggs in the stone, most of which did not hatch. Thus, the stone currently on the island (type #57 river bed stone) may not be the optimal substrate for hatchling success. In 1994, substrate manipulations were done to determine if black skimmers prefer sand over stone as a nesting substrate and secondly, to see if choice of substrate affects hatching success. Five experimental areas were established on the island, each area consisted of 10m X 10m plots. In two of the plots, a substrate treatment was applied of either sand or stone and a third plot served as the control. The arrangement of the plots was determined by a random block method (see Figure #1).

Once the plots were measured and marked, the sand and stone plots were dug out with a backhoe, sheets of weed guard were ap-

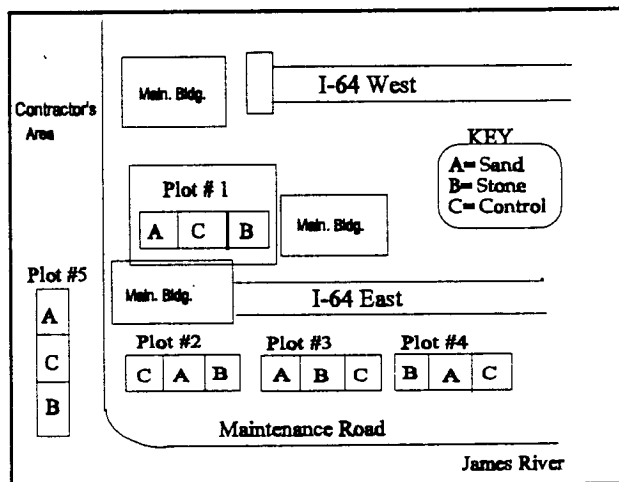


Figure 1. Experimental plot locations and substrate arrangements within plots. Hampton Road Bridge-Tunnel, Hampton.

plied, and then the appropriate substrate (either sand or stone) was put on top of the weed guard which required 700 hours of work.

In addition, an erosion control cloth barrier was put between the nesting areas and the road in an attempt to decrease the numbers of chicks being killed on the road.

Black skimmers were first seen at the island on April 14th, common terns were spotted a few days later. The skimmers gathered in large flocks within experimental areas with the largest numbers found in the sand plots. The high count for adults occurred on May 12th with 511 birds.

Nests were marked starting on May 13th with numbered white utility flags. On May 13, seven nests were in Plot 4A (sand); one nest occurred in plot 4C (control); five nests were in plot 1A (sand) and three nests were in plot 3A (sand). At this time there were also nests established behind the stone and sand plots where the dug out substrate of dredge spoil sand/stone mix had been piled. The piles had been removed but there was still a surface covering of white sand or a white sand/stone mix. These areas, however, quickly became covered with vegetation.

Table 1. Peak nest counts for black skimmers and common terns at Hampton Roads Bridge Tunnel.

<u>DATE</u>	<u>BLACK SKIMMERS</u>		<u>COMMON TERNS</u>	
	<u>6/2/93</u>	<u>6/11/94</u>	<u>6/2/93</u>	<u>6/11/94</u>
# OF ADULTS	398	400	6268	5374
# OF 1 EGG NESTS	32	15	448	667
# OF 2 EGG NESTS	60	57	1837	1850
# OF 3 EGG NESTS	68	106	840	170
# OF 4 EGG NESTS	39	21	9	0
TOTAL # OF NESTS	199	200	3134	2687
# OF CHICKS ALIVE	5	151	NA	200
# OF CHICKS DEAD	1	27	NA	121

Table 2. Number of Black Skimmer nests and chicks per plot type for three dates during the breeding season.

DATE: 05/22/94						
PLOT #	SAND		STONE		CONTROL	
	# NESTS	# CHICKS	# NESTS	# CHICKS	# NESTS	# CHICKS
1	21	0	1	0	11	0
2	4	0	0	0	0	0
3	8	0	0	0	0	0
4	23	23	0	0	0	0
5	9	9	0	0	0	0
TOTALS	65	0	1	0	13	0
DATE: 06/22/94						
PLOT #	SAND		STONE		CONTROL	
	# NESTS	# CHICKS	# NESTS	# CHICKS	# NESTS	# CHICKS
1	13	32	1	0	3	9
2	13	14	1	0	0	0
3	4	7	0	0	0	0
4	11	23	0	0	0	0
5	13	19	0	0	0	0
TOTALS	54	95	2	0	9	17
DATE: 07/24/94						
PLOT #	SAND		STONE		CONTROL	
	# NESTS	# CHICKS	# NESTS	# CHICKS	# NESTS	# CHICKS
1	0	0	0	0	0	0
2	2	1	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	0	0	0	0	0	0
TOTALS	2	1	0	0	0	0

The following table gives the number of nests and chicks that were just outside of the sand plot boundaries but occurred in the sand that was brought in by VDOT. These nests were also marked and monitored. The numbers are as of 6/22/94.

Table 3. Number of nests and chicks outside of sand plots.

PLOT #	SAMD #NESTS	# CHICKS
1	6	10
2	2	0
3	6	8
4	1	1
5	1	1
TOTALS	16	20

BLACK SKIMMER FLEDGLINGS:

On July 12, 1994, researchers counted 103 fledglings, 100 of these were in or near the plots. However, all fledglings were probably not visible as the vegetation in many areas is tall and dense.

Only two nests occurred in all the stone plots, 99 nests occurred in the sand plots (r of which were renests) and 17 nests occurred in the control plots. Common terns only nested in the control plots. Thus the stone was basically a neutral zone used by both skimmers and terns as a resting and chick/fledgling feeding area. Especially at night, large numbers of adult skimmers were on the maintenance road during the daytime and many terns aggregated on the road at night. Due to this neutral zone provided by the stone plot, fewer birds are seen on the maintenance road.

Table 4. Number of dead birds on the road in 1993 versus 1994.

	1993	1994
<u>COMMON TERNS:</u>		
ADULTS	10	2
FLEDGLINGS	500*	113**
CHICKS	126	25
<u>BLACK SKIMMER:</u>		
ADULTS	0	1
FLEDGLINGS	16	11
CHICKS	5	4

\* This number includes a 200 bird estimate from VDOT workers who picked up dead birds at the I-64 East exit and I-64 west entrance and within the tunnels.

\*\* This number does not include the numbers picked up in the tunnels and at the entrance and exit of the tunnels.

Vegetation:

This year the vegetation on the island was taller and much more dense than in the previous

year. Large patches of thistle were found throughout the island. After the heavy rains in July, even the sand plots became heavily vegetated. Next year, a vegetation control plan needs to be implemented to prevent eventual colony abandonment.

#### Rats on the Island:

Many rat holes were observed on the island prior to the birds' arrival and about two dead rats were observed during the breeding season. Evidence of rat predation on skimmer eggs was also observed.

#### Other Species Observed on the Island:

Nesting Species: During the peak nest count, two gull-billed tern nests were found, one with 3 eggs and the other with 2 eggs. These nests resulted in 4 fledglings, one of which was killed on the road; two are still on the island; and the fate of the other is unknown. Two additional nests were found later, one with 3 eggs and one with 2 eggs. The two egg nest was damaged and abandoned. One egg remains at the 3 egg nest, but the fate of the other 2 eggs is unknown. All the nests were located in the same area next to the stone plot of area #2. On July 12, 1994, 15 gull-billed terns were seen in this vicinity. Other nesting species included mourning doves, killdeer, mallards, and European starlings.

Non-nesting Species: Other species seen on the island include Caspian terns, Canada geese, ruddy turnstones, and fish crows. Royal terns were often seen flying over the island and occasionally brown pelicans were observed. Laughing gulls and herring gulls were occasionally observed flying close to the island.

#### RECOMMENDATIONS FOR HAMPTON ROAD BRIDGE TUNNEL:

Continue monitoring common tern and black skimmer population.

Maintain study plots created in 1994 and observe for two additional years.

Continue to provide and maintain a barrier around the colony to prevent chicks from wandering into roads and getting hit.

Explore the most cost-effective method of preventing annual chick loss.

Post a 5mph sign at entrances to island, maintain areas.

Step up rat control throughout the year.

Provide vegetation control by cutting and removal.

Provide a training program for VDOT staff and contractors working on the island.

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

#### FINDINGS:

Information not available.



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

FINDINGS:

Observations were received from the various landowners and surveyors but not compiled or analyzed.

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

FINDINGS:

This element of the colonial waterbird study was not undertaken this year.

OBJECTIVE H To locate and map all appropriate or potential habitats for future observation and management.

FINDINGS:

This job is ongoing as more habitat is being censused and characterized for future reference each year.

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

FINDINGS:

Work under this objective was not conducted this year. However, VDCIF and the Virginia Department of Agriculture and Consumer Services responded to numerous public inquiries by either site visits or providing our brochure.