1992

# Shorebird Investigations

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**Virginia Department of Game and Inland Fisheries**
**PERFORMANCE REPORT (July 1, 1991 - June 30, 1992)**

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|---|---|---|---|
| **Project:** | Nongame & Endangered Species Investigations | **No:** | EW-2-4 |
| **Study:** | Shorebird Investigations | **No:** | VIII |
| **Job:** | Shorebird Studies | **No.** | A,B |
| **Personnel:** | Bob Cross, Karen Terwilliger, Dana Bradshaw, Bryan Watts, Ruth Beck | **Costs** | |
| | | **Total:** | $11,708 |
| | | **State:** | $ 1,927 |
| | | **Fed'l:** | $ 9,781 |

**Status/Recommendations:** On schedule, continue study


**Summary:**

Statewide populations of both piping plovers and Wilson's plovers decreased sharply in 1992 according to the results of annual surveys. Nesting pairs of piping plovers decreased by 25.95% from 131 pairs in 1991 to 97 pairs in 1992. Wilson's plovers showed an even greater decline of 40.0% from 50 nesting pairs in 1991 to 30 pairs in 1992. Including non-breeding birds, 207 piping plovers and 67 Wilson's plovers were observed in the 1992 survey, a decline of 23.3% and 33.6% respectively from 1991 figures.


**A. Objective:** To determine and monitor piping plover (Charadrius melodus) and Wilson's plover (Charadrius wilsonia) populations along the barrier islands and in the Tidewater region of Virginia.

**Procedure:**

Annual surveys for piping plovers and Wilson's plovers have been conducted in Virginia since 1986. The 1992 survey was conducted during the first week of June. Survey participants were essentially the same as in previous years assuring confidence in the methodology. Plover nesting activity was confirmed by locating the nest in most cases whenever territorial adult plovers were encountered. Survey results are presented in Table 1.

**Results:**

At 16 barrier island breeding sites and two mainland sites surveyed, piping plover populations showed annual declines at 8 sites in 1992 (mean = -4.37 pairs/site) with the greatest decline on the island which historically supports the second highest population in Virginia (-12 pairs). Five sites exhibited an annual increase in breeding populations of piping plovers, but the improvements were small (mean = +2.2 pairs/ site). Populations at five sites remained unchanged from 1991 estimates. Annual breeding population estimates for Wilson's plovers in 1992 declined at 6 sites (mean = -4.17 pairs/site) and increased at 3 sites (mean = +2.33 pairs/site). Nine sites showed no population changes for Wilson's plovers.

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Throughout the eastern shore breeding range for piping plovers, the population decline appears to be evenly distributed in 1992. Most of the breeding population (62.7%) was located on the

Table 1. Results of Virginia piping plover and Wilson's plover survey, 1992.

| | PIPING | | WILSON'S | |
|---|---|---|---|---|
| ISLAND | PAIR | INDIV. | PAIR | INDIV |
| Fisherman | 1 | 0 | 0 | 0 |
| Smith | 2 | 1 | 1 | 0 |
| Myrtle | 7 | 0 | 0 | 0 |
| Ship Shoal | 2 | 0 | 1 | 2 |
| Wreck | 0 | 0 | 0 | 0 |
| Hog | 6 | 2 | 0 | 0 |
| Cobb | 4 | 1 | 2 | 0 |
| Cedar | 4 | 2 | 13 | 1 |
| S. Metompkin | 1 | 2 | 0 | 0 |
| N. Metompkin | 24 | 1 | 5 | 1 |
| Assawoman | 6 | 0 | 6 | 1 |

| | | | | |
|---|---|---|---|---|
| Wallops | 2 | 0 | 2 | 0 |
| Chincoteague | 35 | 1 | 0 | 1 |
| Grandview Beach | 0 | 1 | 0 | 0 |
| Craney Island | 3 | 0 | 0 | 0 |
| TOTALS | 97 | 13 | 30 | 7 |

two northern islands of Assateague and North Metompkin even though both sites showed substantial population declines. The distribution was similar to the 1991 breeding season when 63.2% of the population was found on the same two islands. Mainland piping plover populations on the western shore of the Chesapeake Bay also declined this year. No piping plovers were known to breed at Grandview Beach in 1992 where 2 - 4 pairs have been found in all previous annual surveys.

Summary of Breeding Season

The exact cause of the plover population declines observed in this season are uncertain, but may be the lagging result of poor productivity and population recruitment in the immediately prior four years. Fledgling productivity, expressed as chicks fledged per nesting pair, has been consistently low (mean = 0.83, N = 4 yrs.) for piping plovers throughout the state since 1988. Extremely low productivity combined with naturally high first year, over-winter mortality may result in an insufficient number of replacement individuals to compensate for normal adult mortality.

Two severe storms (31 October, 2 January) in the winter of 1991-92 flooded all barrier island habitats in Virginia, flattening protective primary dunes, removing vegetation, and washing sand from beaches into salt marshes on the mainland side of most barrier islands. In most cases, these storms resulted in a net increase in the amount of nesting habitat available to beach-nesting birds including piping and Wilson's plovers. However, newly created habitats were critically low and vulnerable to washovers. At the south end of Wallops Island, suitable plover nesting habitat was mapped and measured before and after the storms of 1991-1992. There was a 77.24% increase (6.23 ha., 1991; 11.03 ha., 1992) in the amount of nesting habitat available to piping and Wilson's plovers at this site between years. Despite the increase in availability of habitat, there was no significant increase in the number of piping plovers ($G = 0.00$, $P > 0.05$) or Wilson's plovers ($G = 0.111$, $P > 0.05$) nesting there by season's end and their distribution throughout the available habitat remained similar to previous years suggesting that birds were not available to colonize newly created habitat.

Piping plovers were first observed on Metompkin Island on 5 March this year. Unusually cold temperatures lingered into mid-June and were accompanied by frequent violent

storms and flooding tides, and undoubtedly were a factor in plover nesting success. All barrier island nesting habitats experienced tidal flooding in the early Spring. Distinct washover events resulting in plover nest losses were noted on Cedar Island on 12 May, Wallops Island on 12 May and 2 July, and on Metompkin Island on 1 May and 8 May.

Nesting success for piping and Wilson's plovers was monitored at the south end of Wallops Island this year. Six Wilson's plover nests were discovered (mean clutch size = 3.0 eggs/nest). The earliest Wilson's plover nest was located on 28 April containing 3 eggs suggesting a clutch initiation date of 25 April. Hatching rates for Wilson's plover nests were low (mean = 1.5 eggs/nest), primarily due to overwash losses. The incubation period for one nest was found to be 28 days to hatching from the start of incubation with the third egg. Some Wilson's plovers (40.0%, 2/5 pairs) re-nested after losing the initial nest to overwash. An estimate of 1.6 young fledged/nesting pair is provided based on the sighting of 10 adult Wilson's plovers with 8 flighted juveniles at the south end of Wallops Island on 3 July.

Piping plovers nesting on Wallops (N = 4 pairs) experienced higher hatching rates (mean = 3.0 eggs hatched/nest), but also have larger clutches (mean = 3.75 eggs/nest). Only 1 piping plover nest (25%) failed to hatch (overwash). No re-nesting was observed. Despite greater hatching success, fewer piping plover chicks survived. Productivity for piping plovers is estimated at 1.25 young fledged/nest for Wallops Island. Differences in productivity and annual population recruitment for piping and Wilson's plovers on Wallops Island may be related to differences in food preference and habitat preference during the pre-fledgling period. Wilson's plover chicks may realize some anti-predator benefits from their selection of heavily vegetated salt marsh or Salicornia flats as foraging areas. Piping plovers, on the other hand, select foraging sites near marsh edges and waterfront areas which may be more easily searched by predators.

At Chincoteague National Wildlife Refuge, 53 piping plover nests were discovered this year (Hook = 23, Wild Beach = 15, Wash Flats = 15), but hatching success and juvenile survival were low. Only 22 nests (41.5%) successfully hatched one or more eggs per nest. Mean hatching rates were lowest on the Wash Flats (0.0 hatched/nest), highest on the Wild Beach (2.44 hatched/nest), and intermediate on the Hook (1.26 hatched/nest). Most nest losses (22.6%) were attributed to flooding from tidal overwash or inclement weather. Nineteen piping plover chicks were known to survive to 25 days of age, all from the Hook nesting area.

Statewide estimates of fledgling productivity for piping plovers are lacking this year due to the ending of our three year Memorandum of Agreement (MOA) with the U.S. Fish and Wildlife Service on 30 October 1991 which facilitated detailed monitoring of nesting success at Chincoteague National Wildlife Refuge. Specific findings and recommendations stemming from the MOA can be found in the final project report Monitoring, Management, and Research of the Piping Plover at Chincoteague National Wildlife Refuge, 1991, available from Chincoteague National Wildlife Refuge.

Protective Efforts

Predator exclosures, in use to protect piping plover nests at Chincoteague National Wildlife Refuge since 1988, were used there again this year. Forty-three piping plover nests (81.1%) were protected through the use of exclosures. A triangular exclosure design (25 ft. per side) was implemented on 24 piping plover nests (55.8%) in an attempt to deter red foxes (Vulpes vulpes) from pacing the perimeters of circular exclosures and forcing nest abandonments. No exclosed nests were lost to foxes this year. Nine nest abandonments (16.9%) occurred, but none are attributed to red fox harassment or depredation.

Nesting areas for piping plovers were posted to discourage human disturbance at several sites including: Cedar Island (north point), Metompkin Island (north point), Cedar Sand Bar, Craney Island, and Grandview Beach. Vehicular traffic was re-routed on the north end of Cedar Island and, on Craney Island, a perimeter road was closed to within 200 meters of any piping plover nest. Additionally, vehicular and pedestrian access was prohibited at the north end of Wallops Island where as many as 18 piping plovers were observed in May. However, by 1 June, no piping plovers had nested there and pedestrian access was reinstated. At Grandview Beach, 31 of 71 no trespassing signs erected to protect piping plovers and least terns (Sterna antillarum) were destroyed by vandals early in the season but were replaced by early April.