

Cape Hatteras National Seashore Seabeach Amaranth Surveys 2007 Annual Report

INTRODUCTION

Seabeach amaranth, *Amaranthus pumilus*, was listed as federally threatened in 1993. At the time of its listing the species had been eliminated from two-thirds of its historic range that extended from Massachusetts to South Carolina (USFWS). The annual plant is found on overwash flats, at accreting ends of barrier islands, and along lower foredunes. Populations can be highly variable, occupying suitable habitat as it becomes available (USFWS). Plants have only been found in vehicle-free areas, often the same areas protected for nesting birds. Amaranth plants have been known to survive into December at Cape Hatteras National Seashore (CAHA). Dormant seeds may remain viable for several years.

METHODS

Areas of historic and potential habitat for sea beach amaranth (*Amaranthus pumilis*) on CAHA were surveyed for the presence of plants. The surveys took place during the first two weeks of August and then repeated in the first weeks of September. Habitats included high beach between the wrackline and foredune, sandflats near island tips and large dune blowouts. Particular attention was given to areas within resource closures where motor vehicle traffic had been excluded for the growing season. All resource closures were checked for growth prior to opening them to pedestrian or ORV use. Many of these areas coincided with historic locations as well.

RESULTS

Plant surveys were conducted in August and September. During August, 14.6 miles of beach encompassing ~1237 acres were covered in 40 hours of surveying time. In September, 10.1 miles (encompassing ~720 acres) were covered in 17 hours of survey time. No amaranth was found on any of the survey routes. During the September surveys, emphasis was placed on the areas of highest potential (based on potential observed during the August surveys). Portions of the seashore, particularly in the Hatteras District, were extremely dry during the latter part of the summer. During the surveys it was apparent that rainfall deficit was affecting the growth of other plants in the area. Other areas, especially sandflats, had experienced overwash by salt water during periods of the growing season. While many of the historic locations were located within resource protection areas established for birds, some of the historic locations were in areas that experienced significant vehicle traffic. The rutting and compression in these areas may have precluded the establishment of any vegetation. However, no plants were found even in ideal habitat type that had been protected from ORV and pedestrian use by summer and winter resource management closures for the past several years.

DISCUSSION

The life history of sea beach amaranth as a pioneer species accounts for the variability in plant numbers and locations of populations through time. Distribution by wind and water of seed sources into appropriate habitats is somewhat random by nature. The plants' intolerance for competition by other plants already limits it to often marginal areas. Additionally, overwash is known to affect the plants' ability to grow. The dynamic nature of coastal islands creates and eliminates potential habitat quickly.

Seabeach amaranth populations have fluctuated greatly since surveys began in 1985 (Table 1). In the last 10 years, numbers were highest in 2002 with 93 plants. More recently, numbers have declined with only one plant found in 2004 and two plants found in 2005. No plants were found in 2006 and 2007 and amaranth is currently thought to be extirpated from the seashore. On Bodie Island Spit, the area where amaranth had been located in 2004 and 2005, has been continuously protected through summer and winter resource management closures. At Cape Point, a portion of the area where amaranth was historically found has been continuously protected through summer and winter resource closures. No plants were found within any of these protected areas. At Hatteras Inlet, large portions of the historic range were simply no longer present due to continued erosion.

Table 1. Population Estimates of <i>Amaranthus pumilus</i> at Cape Hatteras National Seashore by Site				
Year	Bodie Island. Spit	Cape Pt. / South Beach	Hatteras Island Spit*	Ocracoke Island
1981				15
1984				1
1985	0	300-500	300-500	100
1986	0	>200	>300	>100
1987	0	5,200	274	1,409
1988	0	800	1,718	13,310
1990	0	2,830	252	250
1994			0	0
1996	0	6	82	10
1997	0	59	16	6
1998	0	55	210	0
1999	0	3	5	0
2000	0	1	1	0
2001	0	27	16	8
2002	0	11	75	7
2003	0	16	3	11
2004	1	0	0	0
2005	1	0	0	1
2006	0	0	0	0
2007	0	0	0	0

Population estimates by NC Natural Heritage Program, East Carolina Univ. and NPS

*Plants noted as present in 1973