

# CAPE HATTERAS NATIONAL SEASHORE SEABEACH AMARANTH SURVEYS 2011 ANNUAL REPORT

## INTRODUCTION

Seabeach amaranth, *Amaranthus pumilus*, (amaranth) 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). Historically at Cape Hatteras National Seashore (CAHA), when plants were found, they were typically found in vehicle-free areas, often the same areas protected for nesting birds. Amaranth plants have been known to survive into December at CAHA. Dormant seeds may remain viable for several years.

## METHODS

Areas of historic and potential habitat for amaranth were surveyed for the presence of plants. The surveys took place throughout July through early September. Habitats surveyed 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 off-road vehicles (ORV) use. Many of these areas coincided with historic plant locations as well.

## RESULTS

Plant surveys were conducted throughout July through early September. The passing of Hurricane Irene over CAHA in late August interrupted surveys during that time period accounting for fewer hours and miles surveyed in 2011 compared to 2010. In 2011, almost 80 staff hours were spent surveying specifically for amaranth covering over 41 lineal miles of potential beach habitat. More hours were actually spent in potential habitat than was actually recorded, as other field work required staff to be in the historical and potential habitat. No amaranth was found anywhere within the survey areas.

## DISCUSSION

The life history of seabeach 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 limits it to areas marginally conducive to plant growth. 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 the 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 have been found since 2006 and the plant is currently thought to possibly be extirpated from CAHA. The area on Bodie Island spit 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 also 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. While it is thought that the plant may possibly be extirpated from CAHA, it should be noted that since plants are not evident every year, but may survive in the seed bank, populations of seabeach amaranth may still be present even though plants are not visible for several years (USFWS 2007).

Table 1. Population Estimates of *Amaranthus pumilus* at CAHA by Site.

Year	Bodie Is. 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
2008	0	0	0	0
2009	0	0	0	0
2010	0	0	0	0
2011	0	0	0	0

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

\*Plants noted as present in 1973

## REFERENCES

U.S. Fish and Wildlife Service. Seabeach amaranth (*Amaranthus pumilus*) 5-Year Review: Summary and Evaluation. Ecological Services Office, Raleigh, N.C. 2007.