

Assessment of State Rare Plant Populations at Cove Point Wetland (Year 2013)

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Cove Point wetland is located in Calvert County, Maryland, northeast of Cove Point Road, on the Dominion Liquefied Natural Gas (LNG) property. It is separated from the Chesapeake Bay by a single low dune and a rip-rap breakwater constructed in 2010. This 2013 report includes an assessment of the rare Maryland state listed plant species found in Cove Point Wetland. 2013 surveys were conducted on 6 June and 16 September. In addition to the state rare species listed below, two species (*Utricularia gibba* and *Ruppia maritima*), were observed in the marsh in 2013 for the first time since the breach of the barrier dune in 2007 that resulted in a flow of brackish bay water that intruded the freshwater marsh until 2010. *Ruppia maritima* was an abundant submerged aquatic component of the freshwater marsh up to 2007. Other noteworthy observations a Cove Point Marsh in 2013 included large mats of filamentous green algae that has never before been observed in the marsh to sure an extent. Also, on 16 September, 120 Canada geese and five mute swans were observed in the marsh.

Assessment of State rare plant populations in 2013 at Cove Point Marsh.

Ammannia latifolia (S2):

This species has rapidly, and abundantly, returned to Cove Point Marsh. It disappeared from the marsh with the brackish water intrusion in 2007, but was rediscovered in 2011 along the western shore of the marsh, adjacent to the upland area, on loosely consolidated, developing peat mats in two populations containing approximately 117 plants. In 2012 (20 September), thousands of plants were observed along the entire shoreline of the marsh except along the southeastern edge. The population observed on 16 September 2013 was similar in extent to what was observed in 2012. The largest single patch contained an estimated 2500 plants (at point 404) and other patches contained as many as 400 (point 395) – 500 (point 402) plants. See attached map and GPS coordinates in Table I for the locations of this population and the largest patches of this species.

Carex hyalinolepis (S2S3):

The size of the three populations at Cove Point was measured with GPS on 6 June, 2013. The sandy dune that separates the marsh from the Chesapeake Bay is moving toward the marsh and is now on top of the *Carex hyalinolepis* population (#1 in Table I) which in 2007 was observed along the marsh / dune ecotone and historically was found in Cove Point Marsh. Most of the *Carex hyalinolepis* population now occurs on the dune between the Chesapeake Bay and Cove Point Marsh. GPS measurements on 14 June 2012 showed a maximum length of 17.6 m and a width of 7.8 m over an area of 137.1 m². The maximum number of fruiting stems observed within a square meter of the population was 2.0. The estimated average number of fruiting stems per square meter was 0.4. On 6 June 2013 the maximum length was 19.5 m and the width was 7.5 m over an area of 137.1 m². The maximum number of fruiting stems observed within a square meter of the population was 4.0. The estimated average number of fruiting stems per

square meter was 0.3. In 2012 the population of *Carex hyalinolepis* (#2 in Table I) found in the northeastern corner of the wetland measured 26.5 x 15.4 m. The maximum number of fruiting stems observed within a square meter of the population was 7.0. The estimated average number of fruiting stems per square meter was 1.0. In 2013 it measured 25.4 x 13.7 m over an area of 241 m². The maximum number of fruiting stems observed within a square meter of the population was 2.0. The estimated average number of fruiting stems per square meter was 0.1. The population (#3 in Table I) of *Carex hyalinolepis* at the end of Webster Drive on the southeastern end of the marsh measured 108.9 x 8.7 m over 959.7 m² using GPS in 2012. The maximum number of fruiting stems observed within a square meter of the population was 15.0. The estimated average number of fruiting stems per square meter was 1.5. In 2013 it measured 100.95 x 9.14 m over an area of 942.5 m². The maximum number of fruiting stems observed within a square meter of the population was 13.0. The estimated average number of fruiting stems per square meter was 0.8. See attached map and GPS coordinates in Table I for locations of center points of these populations. Although by GPS measurements each *Carex hyalinolepis* population decreased in area, obvious visual decreases in the area of the populations were not noticeable.

Fraxinus profunda (S2S3):

In 2013 we were unable to access by kayak the area of marsh containing the *Fraxinus profunda* population because of low water levels and thick algal mats. As recently as 2005, this species formed a large contiguous population along the southeastern shore of Cove Point. The breaches of the dune in 2006 and 2007 and the associated brackish water influx decimated this population of trees. Now only a few scattered individuals survive, and they are all in poor health. In 2014 we will again attempt to count the number of remaining live *Fraxinus profunda*.

Limnobiium spongia (S1):

A small population of this species was found along the southern edge of the marsh on 26 May, 2011. In 2011, two patches of not more than five plants each were observed. By 14 June 2012 the population had expanded and measured 37.9 x 3.0 m. On 6 June 2013, the population had expanded to 74.9 x 1 m and two additional populations were found along the northern and western edges of the marsh. These two populations were approximately 1 x 1 m. As in all years since 2011, all plants were vegetative. See attached map and GPS coordinates in Table I for locations of these populations.

Scutellaria galericulata (S1):

On 10 June, 2011, nine plants of this species were observed over 3.0 x 2.0 m along the boardwalk at Cove Point Marsh. No plants were observed in flower or fruit. On 2 September 2011, no plants were observed in this same area, despite routinely being found in September on numerous previous surveys. The large mats of peat that were deposited on the eastern end of the population during hurricane Isabelle in 2005 have changed the microtopography and probably the hydrology of this site to the species detriment. In 1996, 300 stems were observed in the population. On 14 June 2012, this population measured 1.0 x 1.0 m using GPS. A total of six plants were found, none were in flower or fruit. On 6 June 2013, this population measured 1.0 x

1.0 m using GPS. A total of six plants were again found and none were in flower or fruit. *Phragmites australis* has now completely overgrown this state rare plant population and need to be treated with herbicide or the *Scutellaria galericulata* is not likely to persist. See attached map and GPS coordinates in Table I for location of the existing population.

Sesuvium maritimum (S1):

During the 2009 survey, a large population (estimated to occupy nearly an acre of the marsh) of *Sesuvium maritimum* a State endangered (S1) species was found for the first time at Cove Point. *Sesuvium maritimum* is a brackish water species. The construction of the breakwater and subsequent conversion of the marsh back to a freshwater system has nearly extirpated this species from the marsh. On 22 July 2011, only 8 plants were found, near where the main breach occurred. On 20 September 2012, *Sesuvium maritimum* was still persisting along the marsh dune ecotone near the Chesapeake Bay. The population measured 34.0 m x 2.0 m using GPS. In 2013, no plants of *Sesuvium maritimum* were observed in Cove Point Marsh.

Zizaniopsis miliacea (S1):

On 10 June 2011 this population measured 57.1 x 11.3 m with GPS. On 14 June 2012 it measured 54.0 x 10.2 m over an area of 588 m² using GPS. The maximum number of fruiting stems per square meter was nine. The estimated average number of fruiting stems per square meter was 0.4. On 6 June 2013 the populations had noticeably depreciated and measured only 43.6 x 11.4 m over an area of 172.9 m². The once contiguous population is now nearly broken into three patches and for the first time since 1996 the number of plants was so few that we counted individuals. A total of 179 plants were observed, 13 of these were in flower. See attached map and GPS coordinates in Table I for the location of this population. *Phragmites australis* has encroached on the *Zizaniopsis miliacea* population and is commingled with it. Treating the *Phragmites australis* by hand with herbicide is highly recommended in this area.

Fuirena pumila (S2S3):

On 16 September 2013 three patches of this species were observed in the marsh for the first time since the breach of the barrier dune in 2007. Each patch contained between 10 and 20 stems over areas less than 1.0 x 1.0 m. All stems were in fruit. See attached map and GPS coordinates in Table I for the location of this population.

Table I

Taxon Name	Latitude	Longitude	max length (m)	max width (m)	polygon area (m ²)
Scutellaria galericulata	38.39169	-76.40025	1.5	1.5	2.25
Zizaniopsis miliacea	38.39214	-76.40085	43.6	11.4	172.9
Limnobium spongia	38.38243	-76.39198	74.9	n/a	n/a
Carex Hyalinolepsis 1	38.38800	-76.39000	19.5	7.5	100.7
Carex Hyalinolepsis 2	38.38700	-76.38700	25.4	13.7	241
Carex Hyalinolepsis 3	38.38200	-76.39200	110.95	9.14	942.5
Fuirena pumila	38.38710	-76.39754	n/a	n/a	n/a
Ammania latifolia 395	38.38416	-76.39457	n/a	n/a	n/a
Ammania latifolia 402	38.38525	-76.39343	n/a	n/a	n/a
Ammania latifolia 404	38.38574	-76.39315	n/a	n/a	n/a

Table I: Species names of six state rare plants found in Cove Point Marsh; latitude and longitude of the center point of each population; maximum length, maximum width, and total area of GPS polygon for each population. Latitude and Longitude are given in decimal degrees. *Limnobium* maximum length denotes length of patches found along southeastern portion of marsh - each patch was approximately 1 x 1 m in area.