Assessment of State Rare Plant Populations at Cove Point Wetland (Year 2014)

Submitted by Brent W. Steury, 12 December, 2014

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. In 2007, a breach of the barrier dune resulted in the intrusion of brackish bay water into the freshwater marsh. This lasted until 2010 when the breakwater was constructed, the breach restored, and the marsh began to revert back to a freshwater system. Many of the state rare plant species, first documented in the marsh in 1996, were not found in the marsh during surveys in 2008 - 2010.

This 2014 report includes an assessment of the rare Maryland state listed plant species found in Cove Point Marsh. 2014 surveys were conducted on 11 June and 15 September. On 11 June the site was accessed on foot and on 15 September kayaks were used to conduct surveys. The 2014 survey discovered the presence of the Maryland state rare (S1) submerged aquatic plant *Potamogeton pussillus* subsp. *tenuissimus* in the marsh. On 15 September , 2014, two mute swans and 120, presumably non-migratory, Canada geese were observed in the marsh.

Assessment of State rare plant populations in 2014 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. This population remains robust in 2014. On 15 September, 20 non-contiguous patches were found. Sixteen of these contained between 30 and 500 plants and four populations labeled as “significant” on the attached map had over 500 plants. Most plants were in flower and fruit. See attached map and GPS coordinates in Table I for the location of this population and the patches of this species.

Carex hyalinolepis (S2S3):

The size of the three populations at Cove Point was measured with GPS on 11 June 2014. All populations remained stable in 2014 when compared to measurements in other recent years. 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 documented an area of 137.1 m^2. On 6 June 2013 the area was recorded as 100.7 m^2. 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. On 11 June 2014 the area was recorded as 120.9 m ². 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.

In 2012 the population of *Carex hyalinolepis* (#2 in Table I) found in the northeastern corner of the wetland contained an area of 412.5 m ². In 2013 it measured 241 m ². 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. On 11 June 2014 it measured 451 m ². The maximum number of fruiting stems observed within a square meter of the population was 9.0. The estimated average number of fruiting stems per square meter was 0.3.

The population (#3 in Table I) of *Carex hyalinolepis* at the end of Webster Drive on the southeastern end of the marsh measured 959.7 m ² in 2012. In 2013 it measured 942.5 m ². 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. On 11 June 2014 it measured 1106 m ². The maximum number of fruiting stems observed within a square meter of the population was 8.0. The estimated average number of fruiting stems per square meter was 0.3. See attached map and GPS coordinates in Table I for locations of center points of these populations.

Fraxinus profunda (S2S3):

In 2014, the *Fraxinus profunda* population, as in the last few years, was not accessible. As recently as 2005, this species formed a large contiguous population along the southeastern shore of Cove Point. The breach of the dune in 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. It is recommended that in 2015 an attempt is made to access these trees from the land to assess the status of this population. The non-native beetle, Emerald ash borer, *Agrilus planipennis*, which has recently entered our area, may also be present at Cove Point and will likely cause the death of these trees without long-term intervention of biennial injections of an insecticide such as TREE-age. However, formulas for use in wetlands have not been developed and impacts to aquatic life from the use of this product in wetlands has not been well studied.

Limnobium spongia (S1):

On 26 May 2001, for the first time since the breach of the barrier dune, a small population of this species was found along the southern edge of the marsh in two patches of not more than five plants each. 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. In 2014, six patches of *L. spongia* were found in the marsh along the western and southern shores. As in past years, the largest patch is located along the southern shore and measured 70 x 1.5 m in 2014. For the first year since the breach of the barrier dune, several plants in most patches were observed in flower on 15 September. 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. In 2014, three small non-flowering plants within an area of 0.5 x 0.5 m were observed on 11 June and no plants were found in September. *Phragmites australis* was cleared from around the area of this state rare plant population during the summer of 2014. The efficacy of these efforts on this small population can be assessed in 2015. 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 apparently 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 x 2.0 m using GPS. In 2013 and 2014, no plants of *Sesuvium maritumum* 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 m ^{2} 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 population had noticeably depreciated and measured only 43.6 x 11.4 m over an area of 172.9 m ^{2}. The once contiguous population was nearly broken into three patches and for the first time since 1996 the number of plants was so few that individuals could be counted. A total of 179 plants were observed, 13 of these were in flower. In 2014, the population had recovered slightly from its all time low observed in 2013. On 11 June 2014, the population measured 50.3 x 8.5 m over an area of 227 m ^{2}. A total of 204 plants were counted, 9 of which were in flower. See attached map and GPS coordinates in Table I for the location of this population. *Phragmites australis* continues to encroach 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. In 2014, four patches containing 9, 25, 46, and 100 fruiting stems were observed. See attached map and GPS coordinates in Table I for the location of this population.

Potamogeton pussillus subsp. *tenuissimus* (S1):

In 2014, the state rare submerged aquatic plant *Potamogeton pussillus* was found for the first time since the flora of Cove Point marsh was first surveyed in 1996. This population was determined to be subspecies *tenuissimus*. It was observed to be, by far, the dominant submerged aquatic species found in the marsh. It was abundant in the open water areas of the wetland and probably covers at least two acres. It was observed in flower and fruit on 15 September 2014. This species has apparently replaced *Ruppia maritima* which was the dominant submerged aquatic species in the marsh prior to the breach of the barrier dune in 2007.

Table I
2014 Cove Point Rare Plant Population Survey Table

Taxon Name	Latitude	Longitude	max length (m)	max width (m)	polygon area (m^2)
Scutellaria galericulata	38.39171	-76.40022	0.5	0.5	0.25
Zizaniopsis miliacea	38.39214	-76.40092	50.3	8.5	226.9
Limnobium spongia	38.38239	-76.39191	70	1.5	n/a
Carex hyalinolepsis 1	38.38782	-76.38995	19.5	7.5	120.94
Carex hyalinolepsis 2	38.38693	-76.38706	25.4	13.7	451.03
Carex hyalinolepsis 3	38.38259	-76.39168	110.95	9.14	1105.99
Fuirena pumila	38.38744	-76.3978	n/a	n/a	n/a
Fuirena pumila	38.38725	-76.3977	n/a	n/a	n/a
Fuirena pumila	38.38712	-76.3976	n/a	n/a	n/a
Fuirena pumila	38.38676	-76.3973	n/a	n/a	n/a
Ammania latifolia	38.38636	-76.39665	n/a	n/a	n/a
Ammania latifolia	38.3838	-76.3946	n/a	n/a	n/a
Ammania latifolia	38.3852	-76.39258	n/a	n/a	n/a
Ammania latifolia	38.38767	-76.39427	n/a	n/a	n/a

Table I: Rare plant species measured in Cove Point Marsh in 2014; latitude and longitude of the center point of population/patch; maximum length, maximum width, and total area of GPS polygon for each population. Areas are computed from polygons created from GPS waypoints, except for *Limnobium spongia*. Latitude and longitude are given in decimal degrees. Locations of *Ammania latifolia* represent the largest patches found in Cove Point Marsh.