Assessment of State Rare Plant Populations at Cove Point Wetland (Year 2015)

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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. 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 2015 report includes an assessment of the rare Maryland state listed plant species found in Cove Point Marsh. 2015 surveys were conducted on 29 June and 14 September. On 29 June the site was accessed on foot and on 14 September kayaks were used to conduct surveys. The most notable difference between the 2014 and 2015 surveys was the abundance of *Ludwigia repens* in wetland areas at Cove Point. *Ludwigia repens* is native to the southeastern United States but has recently and rapidly extended its range northward. Brown and Brown (1984) reported *L. repens* from only one station in Wicomico County. A few plants of *L. repens* were first observed in Cove Point Marsh in 2014. In 2016, it was observed to line the shoreline of the ponds in Cove Point Marsh is a strong competitor for habitat with *Ammannia latifolia*, *Limnobium spongia, Sesuvium maritimum,* and *Fuirena pumila.*

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. In 2014, on 15 September, 20 non-contiguous patches were found. Sixteen of these contained between 30 and 500 plants. In 2015, the population remained robust, but was less common than observed in 2014, especially along the eastern shore of the ponds. This is probably due to the abundance of *Ludwigia repens* which grows in the same habitat. In 2015, six populations of *A. latifolia* were observed, the largest populations contained approximately 150, 100, and 50 plants. Most plants were in flower and fruit.

Carex hyalinolepis (S2S3):

The three populations at Cove Point were observed on 29 June 2015. All populations remained stable in 2015 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 one of the *Carex hyalinolepis* populations 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. This population is approximately of the same extent as observed in 2014. In 2015, the maximum number of fruiting stems observed within a square meter of the population was 6.0. The estimated average number of fruiting stems per square meter was 0.4.

In 2015 the population of *Carex hyalinolepis* found in the southeastern corner of the wetland was approximately the same as observed in 2014. No fruiting stems were observed within the population. This population is more shaded that the other two and may explain the lack of fruiting in this population.

In 2015 the population of *Carex hyalinolepis* found at the end of Webster Drive on the southern end of the marsh was approximately the same as observed in 2014. In 2015 the maximum number of fruiting stems observed within a square meter of the population was 11.0. The estimated average number of fruiting stems per square meter was 0.7.

Limnobium spongia (S1):

On 26 May 2011, 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. In 2015 the *L. spongia* population remained approximately the same as it was in 2014. A large patch remains along the southern edge of the marsh and two smaller populations approximately 0.5 x 0.5 m were observed along the western shore. All plants were vegetative.

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. In 2015, three plants were observed within an area of 0.5 x 0.5 m on 29 June. None of the plants were flowering.

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, 2014, and 2015 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. In 2015, on 29 June, at total of approximately 118 plants were observed. These were found in four small patches on the east side of the population and contained 7, 5, and two patches of 3 plants. Eight of these 18 plants were in flower. Most of the population was found along the eastern side of the swamp and contained approximately 100 plants, none of which were in flower. The eastern part of the population receives more light and currently is less encroached upon by *Phragmites australis*. *Phragmites australis* continues to impact 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. In 2015, one large patch approximately 8 x 8 m and containing approximately 250 fruiting plants was observed along the western shore of the marsh.

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. Surprisingly, on 14 September, 2015, no plants of *Potamogeton pussillus* were found in Cove Point Marsh, although it may have been present and not fruiting as it was in 2014. Fruiting plants are readily distinguished, but when vegetatively entangled with *Ruppia maritima*, which was commonly observed in 2015 (although not observed in 2014), it can be easily overlooked.

Literature Cited

Brown, M. L. & R. G. Brown. 1984. Herbaceous plants of Maryland. Port City Press, Inc. Baltimore, Maryland.