

## Assessment of State Rare Plant Populations at Cove Point Wetland (Year 2018)

Submitted by Brent W. Steury, 19 October, 2018

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 2018 report includes an assessment of the rare Maryland state listed plant species found in Cove Point Marsh. 2018 surveys were conducted on 25 June and 14 September. On 25 June the site was accessed on foot and on 14 September kayaks were used to conduct surveys. Erin Reilly of the University of Maryland Center for Environmental Science, Chesapeake Biological Laboratory accompanied me to obtain GPS data for each rare plant population. Polygons were created around large populations with a near uniform coverage (for example *Carex hylinolespis*). The area, and maximum length and width of each polygon is recorded in Table I. For smaller populations or populations that did not allow for access due to soft, mucky substrates, a point was obtained and the estimated number of plants at or between points was recorded. As first noted during the 2015 surveys, an abundance of *Ludwigia repens* along shoreline areas of the wetland at Cove Point was observed. *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 2018, it continues to line the shore of the ponds in Cove Point Marsh and is a strong competitor for habitat with *Ammannia latifolia*, *Limnium spongiosa*, and *Fuirena pumila*. In 2017, for the first time since monitoring began in 1996, *Ludwigia leptocarpa* was found at Cove Point. Similar to *L. repens*, *L. leptocarpa* is native to the southern United States but has only recently arrived in Maryland. Brown (1984) did not record *L. leptocarpa* from Maryland and there are no Maryland specimens in the District of Columbia and Vicinity collection and the Smithsonian Institution, US National Herbarium (US). In 2018 *L. leptocarpa* was observed to be common along the shoreline of ponds in Cove Point Marsh.

Assessment of State rare plant populations in 2018 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 containing approximately 150, 100, and 50 plants. Most plants were in flower and fruit. In 2016, six populations were again observed. Most were in fruit and some in flower. One population along the western shore of the marsh contained 15 plants, three populations in the southeastern corner of the marsh contained 95, 1000, and 50 plants, and the other two populations found on islets near the center of the eastern edge and in the northeastern corner of the marsh contained 50 plants each. In 2017, seven populations were mapped containing an estimated 2080 plants. In 2018, twelve populations (light blue color on Map 1) were found containing approximately 785 plants (Table 1). The population size was lower in 2018 than in 2017 because of high rainfall levels in 2018 which raise the water level in the ponds and decrease the amount of mudflat shoreline habitat preferred by *A. latifolia*.

#### *Carex hyalinolepis* (S2S3):

The two populations at Cove Point were observed on 25 June 2018. In 2017, a third population existed along the beachfront but it was beginning to erode into the Chesapeake Bay. This population is no longer present in 2018. The beach at this location, which is just beyond where the rip-rap breakwater stops, is rapidly eroding through the beach dune and toward to marsh. The sandy dune that separates the marsh from the Chesapeake Bay is nearly absent at this location. This *Carex hyalinolepis* population was observed along the marsh / dune ecotone in 2007 and historically was found in Cove Point Marsh. It was the first known Maryland rare plant population at Cove Point and was first reported in the 1990's.

The population of *Carex hyalinolepis* found in the northeastern corner of the wetland (violet polygon on the Map 1) was approximately the same as observed between 2014 and 2017. In 2018 it measured 659.76 m<sup>2</sup>.

The population of *Carex hyalinolepis* found at the end of Webster Drive on the southeastern end of the marsh (Map 1) was approximately the same as observed from 2014 through 2017. In 2018 it measured 668.83 m<sup>2</sup>. The maximum number of fruiting stems per square meter was six. The approximate mean number of fruiting stems per square meter was 0.2.

#### *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 southeastern shores. As in other years, the largest patch was located along the southeastern 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 remained along the

southeastern 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. In 2016, no *Limnobium spongia* was found in the marsh. The site along the southeastern shore was dominated by a large patch of the native species *Hydrocotyle ranunculoides* and was very dry compared to the June 2015 survey, and the sites along the western shore were dominated by *Ludwigia repens* during the September survey. In 2017, *L. spongia* was not observed during surveys on 23 June or 18 September but was observed and photographed by Erin Reilly in the southeastern corner of the marsh on 27 July. In 2018, two populations were found. One patch in the southeastern corner of the marsh measured 42.98 m<sup>2</sup> (red polygon on Map 1) and 4 plants were found along the marsh edge behind the beach dune (point 15 on Map 1).

*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. In 2016, two plants, only 7 cm tall were found. Neither plant was in flower or fruit. In 2017, three plants were found on the western side of the marsh. The tallest plant was only 9 cm and the top had been grazed. None of the plants were observed in flower or fruit. In 2018, two plants less than six cm tall were found. Neither was observed in flower or fruit.

*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. In 2013, 2014, 2015, 2016, 2017, and 2018 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 m<sup>2</sup> 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<sup>2</sup>. 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<sup>2</sup>. A total of 204 plants were counted, 9 of which were in flower. In 2015, on 29 June, a total of approximately 118 plants were observed. These were found in four small patches on the western side of the marsh 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 southern side of the swamp and contained approximately 100 plants, none of which were in flower. In 2016, on 13 June, a total of approximately 183 plants were observed. These were found in four small patches that contained 18, 8, 5 and 2 plants. None of these 33 plants were in flower. Most of the population was found along the southern side of the swamp and contained approximately 150 plants, of which nine were in flower. The southern part of the population receives more light and currently is less encroached upon by *Phragmites australis*. In 2017, on 23 June, a total of approximately 179 plants were observed. These were found in four small patches on the western side of the marsh. A total of 14 plants were in flower. Most of the population was found along the southern side of the swamp and contained approximately 150 plants, of which 11 were in flower. In 2018, 30 *Zizaniopsis miliacea* (points 19-21 on Map 1) were found just north of the larger population to the south which measured 270.99 m<sup>2</sup> and contained 10 flowering plants (approximately 3.3% of the population). Treating the *Phragmites australis* by hand with herbicide is highly recommended in this area. *Phragmites australis* continues to impact the *Zizaniopsis miliacea* population and is commingled with it. The southern part of the population continues to receive more light and is still less encroached upon by *Phragmites australis*.

*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. In 2016, four populations were found. Three occurred in the northwestern corner of the marsh and one on the southwestern shore. These populations contained 100, 3000, 50, and 300 plants. All populations were in flower and fruit. *Fuirena pumila* grows slightly higher on the marsh shoreline than does *Ammannia latifolia*, *Sesuvium maritimum*, or *Limnobium spongia* and thus may be less affected by competition from *Ludwigia repens*. In 2017, nine populations of *Fuirena pumila* were mapped that contained a total of 11,865 plants in flower and fruit. In 2018, only four populations of *F. pumila* were found (points 4, 8, 14, and 16 on Map 1) that contained

only 71 fruiting stems. The much smaller population size in 2018 is due to higher water levels submerging shoreline habitat in the ponds of Cove Point 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. No plants of *Potamogeton pussillus* were observed in 2016, 2017, or 2018.

Table 1

Polygon	Species	Area (m2)	Max Length (m)	Max Width (m)	# of Plants
Red	Limnobium spongia	42.98	10	4	Complete Coverage
Violet NE	Carex hylinolepis	659.76	33	28	Complete Coverage
Violet SE	Carex hylinolepis	668.83	76	15	Complete Coverage
Orange	Zizaniopsis miliacea	270.99	26	14	Complete Coverage
Point #					
1	Amannia latifolia				3
2	Amannia latifolia				15
3	Amannia latifolia				4
4	Fuirena pumila				1
5	Amannia latifolia				3
6	Amannia latifolia				500
7	Amannia latifolia				15
8	Fuirena pumila				50
9	Amannia latifolia				75
10	Amannia latifolia				20
11	Amannia latifolia				30
12	Amannia latifolia				30

13	Amannia latifolia				50
14	Fuirena pumila				10
15	Limnobiium spongia				4
16	Fuirena pumila				10
17	Amannia latifolia				40
18	Scutellaria galericulata				2

### Literature Cited

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