Assessment of State Rare Plant Populations at Cove Point Wetland (Year 2023)

Submitted by Brent W. Steury, 13 November 2023

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 that were first documented in the marsh in 1996 were not found in the marsh during surveys in 2008 - 2010. In fall of 2021, after the 2021 rare plant report was submitted, another much smaller breach occurred in the barrier dune allowing for another brackish water intrusion into the freshwater marsh. Even this small breach of the dune greatly reduced the number of rare plants in Cove Point Marsh between the survey in 2021 and the survey in 2022.

This 2023 report includes an assessment of the rare Maryland state listed plant species found in Cove Point Marsh. 2023 surveys were conducted on 16 June and 4 October. On 16 June the site was accessed on foot and on 4 October kayaks were used to conduct surveys. Shelby Johnson of the University of Maryland Center for Environmental Science, Chesapeake Biological Laboratory, accompanied me on both surveys to obtain GPS data for each rare plant population. Polygons for *Carex hylinolepsis* and *Zizaniopsis miliacea* were measured by recording GPS data points. The areas of each polygon are given in the species accounts below. A GPS point was obtained for all other species populations and the estimated number of plants at each point was recorded. All GPS data is recorded in Table 1 and on the attached Map 1.

Assessment of State rare plant populations in 2020 at Cove Point Marsh.

Ammannia latifolia (S2):

In 2019, eleven populations of *A. latifolia* were found containing approximately 5875 stems. In 2020, the survey recorded the highest number of *A. latifolia* found in the marsh since monitoring began in 1996. The 2020 survey recorded 26 populations containing an estimated 42,095 stems. During the 21 September 2021 survey, we documented 16 populations containing 16,183 stems. Due to the brackish water intrusion of fall 2021 the number of *Ammannia latifolia* in the marsh was greatly reduced in 2022. A total of only 20 plants were counted on 14 September 2022. During the 2023 survey on 4 October, the species had recovered nicely and we tallied a total of 22 populations containing 41,360 plants, all in fruit and some still in flower (see Table 1 and Map 1). This was the second highest number of *A. latifolia* ever recorded at Cove Point. The dry summer during the growing season provided favorable conditions for germination of this species.

Carex hyalinolepis (S2S3):

In 2017, a population of *Carex hyalinolepis* existed along the beachfront but it was beginning to erode into the Chesapeake Bay. This population has not been present since 2017.

The beach at this location, just beyond where the rip-rap breakwater stops, is rapidly eroding through the beach dune and toward the marsh. This population of *C. hyalinolepis* was the first known Maryland rare plant population at Cove Point and was first recorded here in the 1990's.

A second population of *Carex hyalinolepis* was present until 2020 in the southwestern corner of the wetland at the end of Webster Drive. It has been shrinking in extent since 2014. In 2021, an assessment of its area could not be obtained due to the thickness of the exotic grass, *Phragmites australis*, which it is growing under. Treating the *P. australis* by hand with herbicide is highly recommended in this area.

The *Carex hyalinolepis* population in the southeastern corner of the marsh measured 394.9 m^2 in 2019. In 2020, a slight increase in area was recorded at 402 m^2. In 2021 it measured 406.6 m^2. On 7 June 2022 a decrease in size was recorded at 331.9 m^2. On 16 June 2023 this population measured 449.2 m^2 an increase in area from previous years (see small yellow polygon in southeastern corner on Map 1). No plants were observed to be in flower or fruit.

Limnobium spongia (S1):

In 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. In 2019 a single small population was found near the *Carex hyalinolepis* at the end of Webster Drive. In 2020, 2 populations were documented. One measured 1.0 m x 0.5 m and second population contained a single plant. On 21 September 2021, we recorded they largest extent of *Limnobium spongia* ever observed in Cove Point Marsh. A total of seven populations were documented covering a combined area of 51.5 m x 7.5 m. In 2022, no populations of *Limnobium spongia* were found, undoubtedly due to the brackish water intrusion of the marsh in fall 2021. On 4 October 2023, a single plant was found in the marsh (see Map 1 and Table 1).

Scutellaria galericulata (S1):

In 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. In 2019, four small plants were found measuring six cm, four cm, and two at two cm each. In 2020, three stems were observed, the tallest measuring 5 cm. On 25 June 2021, 3 plants were observed measuring 10 cm, 15 cm and 60 cm. None were in flower or fruit. On 7 June 2022, one plant was observed measuring 5 cm. In 2023, the site was checked on 16 June and 4 October but no *Scutellaria galericulata* plants were found for the first time since 1996.

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. By 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 2013-2023 no plants of *Sesuvium maritumum* were observed in Cove Point Marsh.

Zizaniopsis miliacea (S1):

In 2011 this population measured 57.1 x 11.3 m with GPS. In 2012 it measured 54.0 x 10.2 m over an area of 588 m ² using GPS. In 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. In 2014, the population had recovered slightly from its all time low observed in 2013. In 2014, the population measured 50.3 x 8.5 m over an area of 227 m ². A total of 204 plants were counted. In 2015, a total of approximately 118 plants were observed. These were found in four small patches on the western side of the marsh and contained seven, five, and two patches of 3 plants. Most of the population was found along the southern side of the swamp and contained approximately 100 plants. In 2016, a total of approximately 183 plants were observed. These were found in four small patches that contained 18, eight, five and two plants. Most of the population was found along the southern side of the swamp and contained approximately 150 plants. In 2017, a total of approximately 179 plants were observed. These were found in four small patches on the western side of the marsh. Most of the population was found along the southern side of the swamp and contained approximately 150 plants. In 2018, 30 *Zizaniopsis miliacea* were found just north of the larger population to the south which measured 270.99 m^2. In 2019, seven small clumps of *Z. miliacea* containing 20, 16, 10, eight, two, and two clumps of three each were observed just north of the larger population along the southern edge of the marsh which contained 175 plants over an area of 153.2 m^2, a decrease in area of 44%. In 2020, five clumps of *Z. miliacea* were observed to the north of the population along the southern edge of the marsh which contained an estimated 160 plants over an area of 175 m^2. The smaller clumps contained 18, 16, 8, 5, and 2 stems. In 2021, seven small patches of *Z. miliacea* occurred northeast of the larger patch. These seven populations contained 10 plants (2 flowering), 8 plants (3 in flower), 22 (5), 3 (2), 18 (4), 7 (2), and 6 (none in flower). The polygon just west of these populations covered an area of 141.6 m and contained as estimated 100 plants, 12 of which were in flower. On 7 June 2022, four patches of *Zizaniopsis miliacea* containing 83 plants occurred northeast of the larger patch. These patches contained three plants in flower. The polygon just south of these points included approximately 275 plants, including 14 in flower over an area that measured 90.3 m^2 (a decrease in area of 36.2%). On 16 June 2023 this population measured 149.7 m^2 and contained 160 plants, seven of which were in flower. *Phragmites australis* continues to impact the *Z. miliacea* population and is commingled with it, especially along its northern edge. The southern part of the population continues to receive more light and is less encroached upon by *P. 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. In 2014, four patches containing nine, 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. In 2017, nine populations of *Fuirena pumila* were mapped that contained a total of 11,865 plants. In 2018, only four populations of *F. pumila* were found that contained 71 fruiting stems. In 2019, only one site with 35 flowering plants was located. In 2020, 11 populations containing an estimated 752 fruiting stems were observed. During 2021survey, eight populations containing 1056 fruiting stems were counted, the highest number recorded since 2013. On 14 September 2022 only a single plant was found. No plants of *F. pumila* were found during the survey on 4 October 2023.

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 2016-2023.

Table 1

GPS Point # Map 1	Taxon Name	Number of Plants
1	*Carex hyalinolepis*	.11 acres
2	*Zizaniopsis miliacea*	160 (.037 acres)
3	*Ammannia latifolia*	25
4	*Ammannia latifolia*	25
5	*Ammannia latifolia*	100
6	*Ammannia latifolia*	20
7	*Ammannia latifolia*	20,000
8	*Ammannia latifolia*	25
9	*Ammannia latifolia*	10,000
10	*Ammannia latifolia*	200
11	*Limnobium spongia*	1
12	*Ammannia latifolia*	150
13	*Ammannia latifolia*	75
14	*Ammannia latifolia*	100

15	*Ammannia latifolia*	15
16	*Ammannia latifolia*	150
17	*Ammannia latifolia*	1250
18	*Ammannia latifolia*	1000
19	*Ammannia latifolia*	1500
20	*Ammannia latifolia*	600
21	*Ammannia latifolia*	5500
22	*Ammannia latifolia*	200
23	*Ammannia latifolia*	75
24	*Ammannia latifolia*	250
25	*Ammannia latifolia*	100