Assessment of Five State Rare Plant Populations at Cove Point Marsh (Year 2007)

2007 may mark a turning point for Cove Point Marsh and the rare plants that live there. During the site visit on 14 September, while the Bay was at low tide, a tidal gut approximately 15 meters wide was observed to have breached the barrier dune between the Chesapeake Bay and the historically freshwater marsh at Cove Point. This is by far the largest breach of the barrier dune ever observed at Cove Point and is an indication that the marsh has converted from a non-tidal freshwater barrier wetland to a tidal brackish marsh, at least temporarily. Evidence for this is that the ponds were full rather than dry as observed in past drought years, the absence of freshwater plant species in the marsh, and the abundance of brackish water species.

All indications are that this has been devastating to the freshwater adapted rare plant populations that have been documented in the marsh. No *Ammannia latifolia* (S2) or *Fuirena pumila* (S2S3) populations were found. With 2007 being one of the worst drought years since monitoring of the rare plants in Cove Point Marsh was initiated, it was expected that the freshwater ponds at Cove Point marsh would be nearly dry and that the drought drawn-down peaty substrate would be covered with acres of *Leptochloa fascicularis*, as has been observed during past drought years. It was also expected that habitat along the edges of the *Leptochloa fascicularis* populations for State rare freshwater annual species such as *Ammannia latifolia* and *Fuirena pumila* would be abundant. In 2006 this habitat existed along the marsh / dune ecotone (and along peat islands in the interior marsh) where *Ammannia latifolia* was abundant and where *Fuirena pumila* was observed in 2005. However in 2007, the ponds where full, apparently with brackish bay water, the expected peaty substrate was absent, and the non-tidal freshwater barrier wetland at Cove Point Marsh seems to have converted to a brackish tidal wetland.

It has been long assumed that Cove Point Marsh has been a freshwater baymouth barrier wetland for hundreds or even thousands of years. The abundance of freshwater plant species that exist (existed) in the interior mash are evidence of this. Since the aerial applications of the herbicide RODEO to the *Phragmites australis*, and inadvertently to the other native beach grasses, along the barrier dune began within the last ten years, the dune system seems to have become unstable. Attempts to eradicate *Phragmites australis* to provide more habitat for rare plant populations may have caused a lack of stability in the dune system causing the freshwater marsh to change to a brackish water tidal wetland and the loss of all of the State rare freshwater plant populations found in the interior marsh along with most of its other freshwater plant diversity. Since the marsh is likely spring feed at a couple of locations along the west side of the marsh, if the dune breach can be closed, the marsh would likely, rapidly revert back to a freshwater marsh. However, it is unknown how long it would take for the freshwater plants to return or if the seedbank of the freshwater plants can survive the current brackish water inundation. The drought of 2007 may have also greatly increased the salinity in Cove Point Marsh.

Assessment of *Carex hyalinolepis* population

The population's size was measured on 1 June, 2007. It was observed to be linear in outline. The maximum length measured 11.2 meters and the maximum width was 2.4 meters. The maximum number of fruiting stems observed within a square meter of the population was 2 (a decrease from 8 in 2006). The estimated average number of fruiting stems per square meter was 0.3.

All plants were observed along the marsh / dune ecotone. No plants were found in open marsh where they had been present during past assessments. These measurements indicate that the population is approximately the same size as in the 2006 assessment when for the first time all plants in the open marsh were gone. The current population is not as large as it was in any of the assessments prior to 2006. The open marsh area where the *Carex hyalinolepis* was observed in the past, and was more open with few plants of any species in 2006, was strongly dominated by *Phragmites australis*. Even the native cat-tail (*Typha angustifolia*) which appeared to be out-competing the *Carex hyalinolepis* in the open marsh in 2005 was nearly absent in this area in 2007. It is recommended that *Phragmites australis* in this area be treated with RODEO using a backpack sprayer in 2007 with extreme care being used not to spray the *Carex hyalinolepis* along the marsh / dune ecotone.

Assessment of *Scutellaria galericulata* population

This population was measured on 1 June, 2007. It was observed to be generally rectangular in outline. The maximum length measured 7.0 meters and the maximum width was 1.0 meters, a decrease in length of 4 meters from the 2006 assessment. As in 2006 there were no flowering or fruiting stems observed within the population on the date of the survey however fruits were observed on some plants on 14 September 2007. The maximum number of vegetative plants observed within a square meter of the population was 10, four less than in 2006.

This is the smallest the *Scutellaria galericulata* population has measured since this study began. It is believed that the same influences causing the abrupt decline in 2005 and 2006 have continued to impact the population in 2007. The large mats of peat that were deposited on the eastern end of the population during hurricane Isabelle have changed the microtopography and probably the hydrology of this site to the species detriment. The drought of 2007 undoubtedly further impacted this population as it prefers moist freshwater habitats. The population is also surrounded by *Phragmites australis* which is further impacting the much smaller *Scutellaria galericulata* by shading it and probably by robbing available moisture around the population.

Assessment of *Potomogeton foliosus* population

No plants of *Potomogeton foliosus* were observed during site visits on 1 June or 14 September, 2007. The drought conditions under the boardwalk in 2002 and 2007 and

the heavy sedimentation resulting from the unusually wet years of 2003 and 2004 have evidently extirpated the *Potomogeton foliosus* population.

Assessment of *Zizaniopsis miliacea* population

This population was measured on 1 June, 2007. It was observed to be arched in outline. The maximum length measured 71.7 meters and the maximum width was 15.4 meters. The maximum number of fruiting stems observed within a square meter of the population was two. The estimated average number of fruiting stems per square meter was 0.3.

These measurements are similar to those obtained during the past seven years. It was noticed that most (15 – 20) of the young red maple trees on the south side of the *Zizaniopsis miliacea* population are dead or dying, as also noted in 2006. This is obvious even from the boardwalk. They may have been hit by an aerial application of herbicide or perhaps were killed by intrusion of brackish bay water into the marsh during a strong storm surge in June 2006. The death of these red maples leaves the *Zizaniopsis miliacea* population more vulnerable to being hit by aerial applications of herbicide since there is no longer as much protective canopy. The effect of more sunlight on the population in 2007 seems to have not impacted the population. Very large fruiting stems of *Phragmites australis* are closely approaching the *Zizaniopsis miliacea* from the north near the middle of population and younger stems of *Phragmites* are intermixed with *Zizaniopsis miliacea* at the eastern end of the population.

Assessment of *Leptochloa fascicularis* population

This population was examined on 14 September, 2007. It was expected that due to the drought of 2007 the freshwater ponds at Cove Point marsh would be nearly dry and that the drought drawn-down peaty substrate would be covered with acres of *Leptochloa fascicularis*, as has been observed during past drought years. However, the ponds were full, probably with brackish bay water and the marsh seemed to be tidally influenced by a large breach of the barrier dune. *Leptochloa fascicularis* is tolerant of brackish influences and was still common at many sites along the marsh edge of the barrier dune. This species is no longer listed as rare by the State of Maryland.