# Long term monitoring of restoration projects is crucial for recognizing successes, identifying and fixing problems, and tracking continuing threats

## The dune separating Cove Point Marsh from the Chesapeake Bay was breached in 2007.



Map of the Chesapeake Bay showing the location of Cove Point Marsh. Aerial images show the site pre-breach in 1975, in 2008 with the breaches in the dune circled in blue, and during construction in 2010.

In 2010 the breach was closed and a Spartina marsh was built in front of a berm. This was protected with a riprap revetment and offshore breakwaters. A plan for long term monitoring was created.



Conceptual Diagram describing the parts of the Monitoring Plan.

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### Areas of planted vegetation reached equilibrium within 3 years.

Summer plant percent coverage after planting in Fresh Water, Berm and Salt Water Habitats



Six transects were established to track plant establishment after the restoration. Most have reached equilibrium with a percent cover greater than 75%.

### Salinity monitoring discovered a damaged valve.

Through kayak surveys, a distinct salinity gradient was observed from the valves that allow water to leave the pond. We determined that there was a faulty valve that allowed bay water into the marsh at high tide. Valves were replaced in December 2016 and the spatial variability of salinities has decreased since then.



Transects measuring elevation show that restoration success is threatened by erosion south of the breakwaters.



which sees the highest erosion rates.

A) Location of overwash events in 2017 and 2018 were southeast of the last breakwater near Line 8 where we are seeing higher rates of erosion.

B) These overwash events take place when there are storms or extremely high water events such as the high water that occured after sustained high winds in March of 2018.

C) The salty baywater that rushes into the marsh during



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Symbols courtesy of the Integration and Application Network, University of Maryland Center for Environmental Science (ian.umces.edu/symbols/). CENTER FOR ENVIRONMENTAL SCIENCE CHESAPEAKE BIOLOGICAL LABORATORY



Transects from North to South (Transects 2-5 are behind the revetment)

Shoreline change is defined as the distance from a fixed point to MLW and is measured twice a year. Rate of Change is derived from a linear model of these measurements.





