

# West Storke Wetland Enhancement Project Monitoring Results

Annual vegetation monitoring surveys have been conducted through six transects at West Storke Wetlands since 2007. These surveys have shown how the vegetation at the site has responded to restoration as well as which areas are in need of further habitat enhancement. Monitoring transects 1 through 5 run through areas where restoration efforts took place during the winter of 2007, while transect 6 runs through an area that has not yet been restored.



Figure 1: Locations of the monitoring transects at West Storke Wetlands.

Transect four runs through the wetland area that was re-graded in 2007. Since re-grading, relative native cover has increased dramatically to an average of 80%, while relative nonnative cover has remained very low at about 10% cover, with very little supplemental maintenance (weeding). Bare ground in transect four significantly decreased as a result of native re-colonization. Relative cover was used for this site to normalize variation in cover arisen from new sampling strategies.

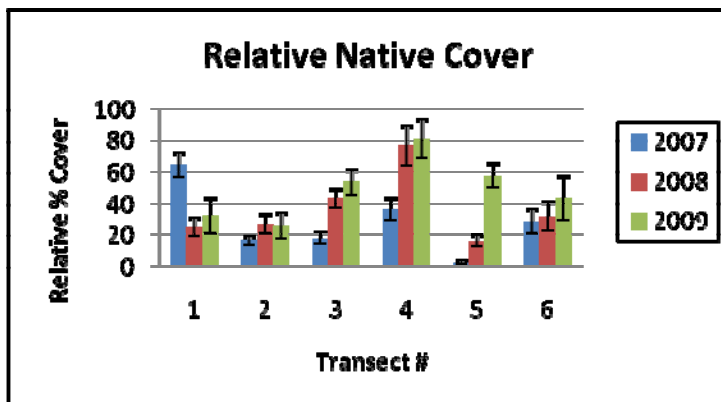


Chart 1: Relative non-native cover from 2007 to 2009.

When fill soils were removed from the wetland enhancement area in 2006, the removed soil was spread across the transect 1 restoration area, which temporarily suppressed non-natives. During the first year of restoration, *Atriplex triangularis*, a native salt marsh species, came up from the soil seedbank causing the native cover in this transect to be very high. However, the hydrology in this upland area was not suitable habitat for this species, therefore it did not persist in this area.

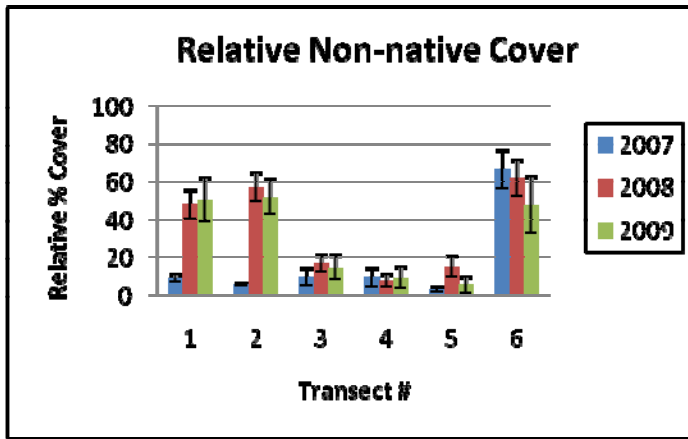


Chart 2: Relative non-native cover from 2007 to 2009.

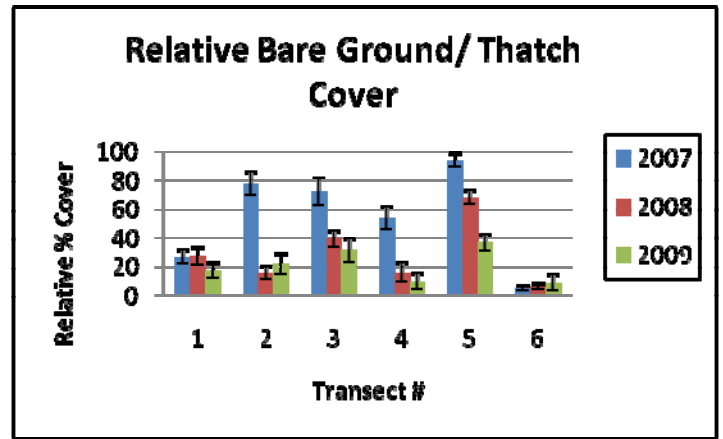


Chart 3: Relative bare ground and thatch cover from 2007 to 2009.

The apparent increase in non-native cover between 2007 and 2008 is an artifact of monitoring time and characterization of dried, annual, non-native grasses. In 2007, the monitoring occurred in July when all the grasses were dried out and recorded as “thatch,” while in 2008 and 2009, the monitoring occurred in June when grasses were more identifiable and the grasses were recorded by species name. The high percentage of non-native cover in transect one in 2008 and 2009 is probably due to the transects close proximity to a source of non-native weeds. Meanwhile, the lack of native cover in transect 2 reflects the lack of establishment of planted seedlings due to herbivory by a dense colony of ground squirrels and a record low rainfall. In transects 3, 4, and 5 small mammals were not nearly as numerous, and these areas responded well to restoration efforts.

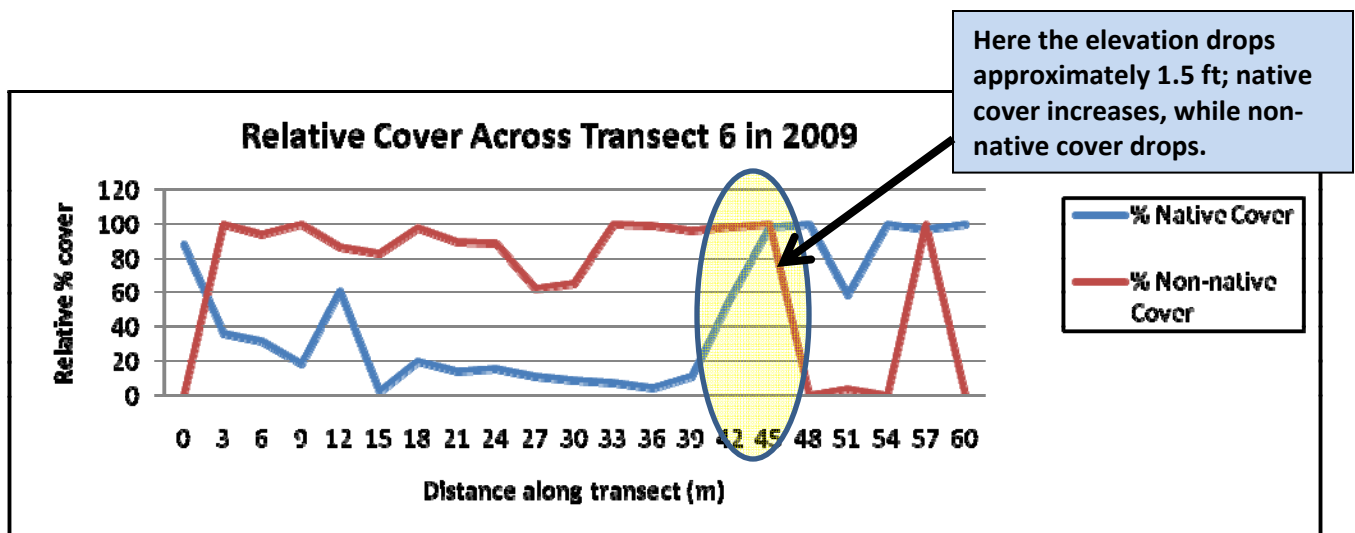


Chart 4: Relative vegetation cover across transect six.

Transect six runs through an disturbed wetland area that has not yet been restored. Two thirds of the transect run through an area of the wetland where fill was added which supports non-natives, while the other third of the transect is lower in elevation and is dominated by native wetland species. We believe that the fill portion of the wetland is non-native dominated because the elevation has been altered which changes the hydrology regime. To achieve successful restoration of this area 1 to 1.5 feet of soil would need to be removed to restore a more natural hydrology to sustainably maintain dominance by native salt marsh plants and resist non-native invasion.