

Shifting vegetation zones in response to culvert enlargement of a tidally restricted salt marsh in Harpswell Maine.

Author

Shri Nageshvari (Andrea) L. Verrill,
Masters of Science candidate
Department of Biological Sciences
University of Southern Maine
Portland
(207) 515-0733
shri.verrill@gmail.com

Advisor

Curtis Bohlen, PhD.
Director of Casco Bay Estuary Partnership





Adventures
of Tang & Tyla



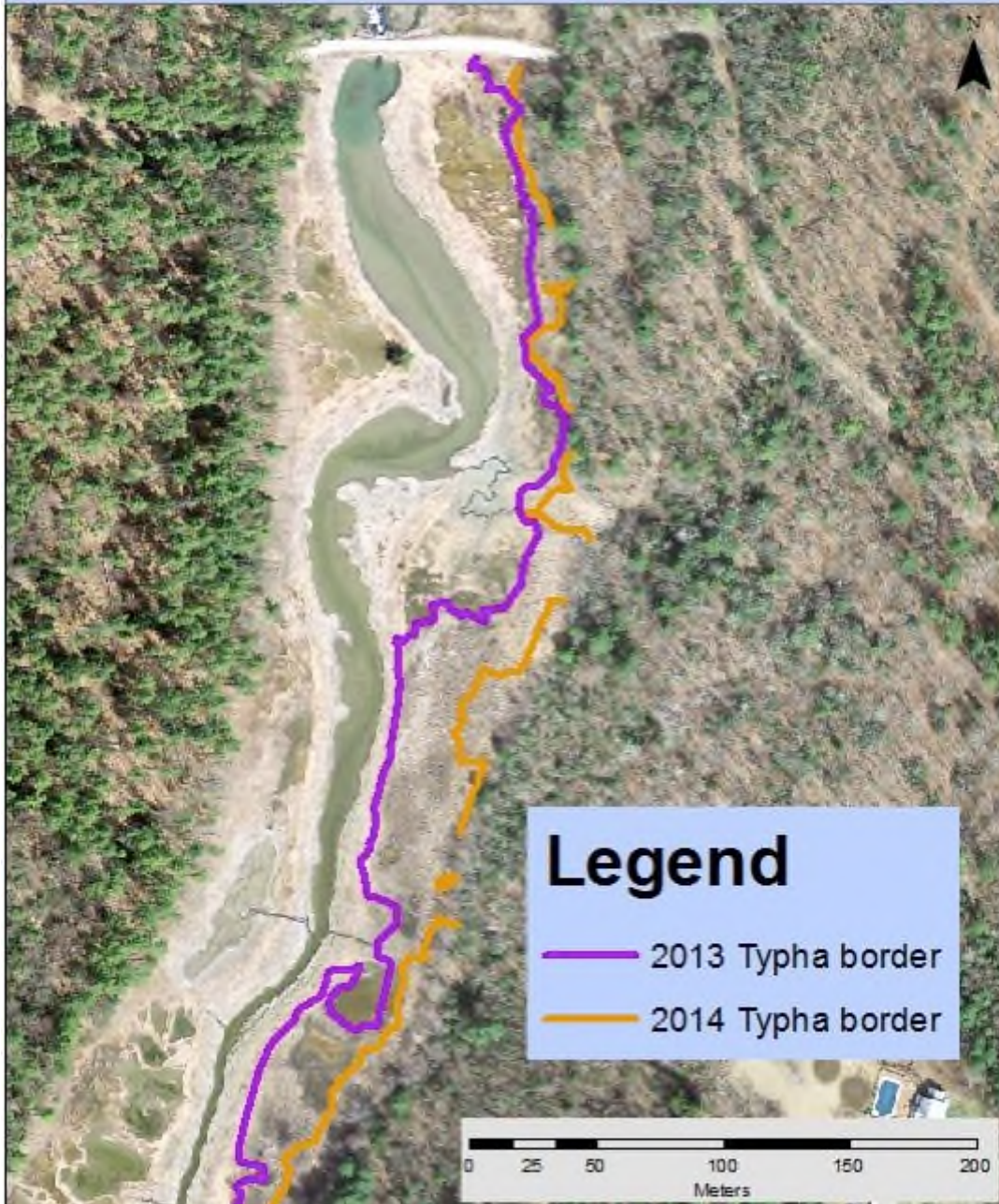
2013



2014



Brackish plant community
border before and after tidal restoration
in Long Marsh, Harpswell Maine.



Hypotheses

- 1) Inundation
- 2) Salt





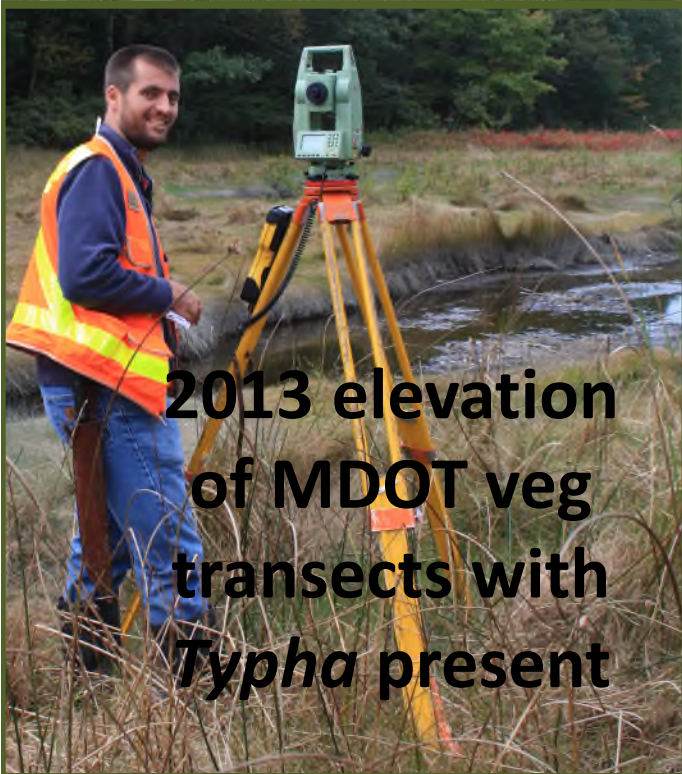
Imagery Date: 9/27/2014 43°50'20.52" N 69°55'10.12" W elev 4 ft eye alt 912 ft



2014 Pore water salinity at high marsh transition zone with *Typha* present in 2013



2014 salinity along transects with *Typha* in 2013

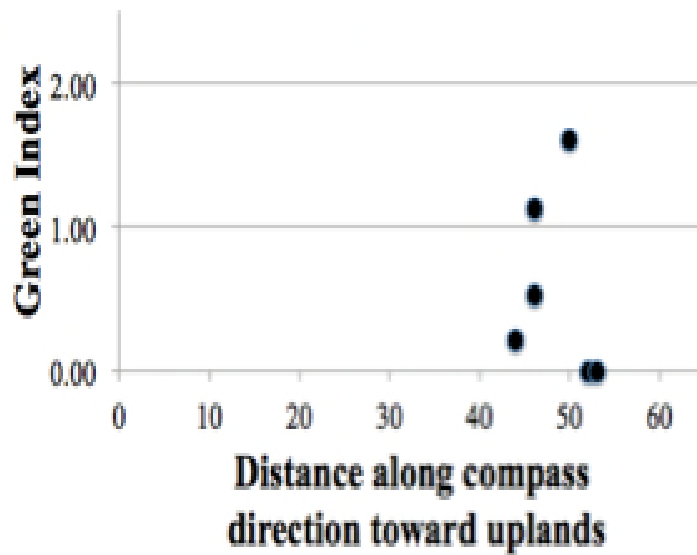


2013 elevation of MDOT veg transects with *Typha* present

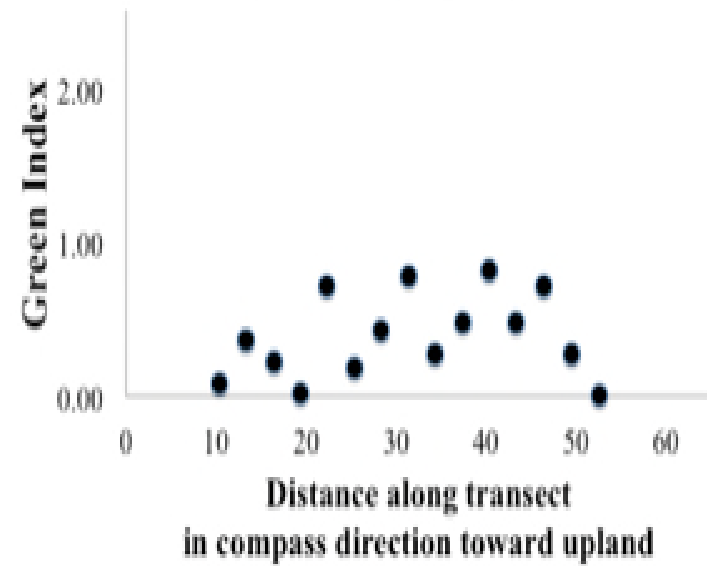


***Typha* index**

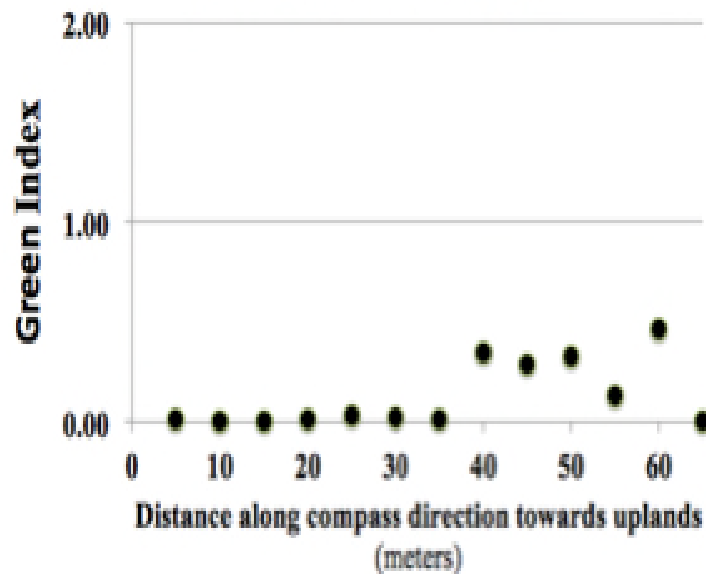
Reference Green Index



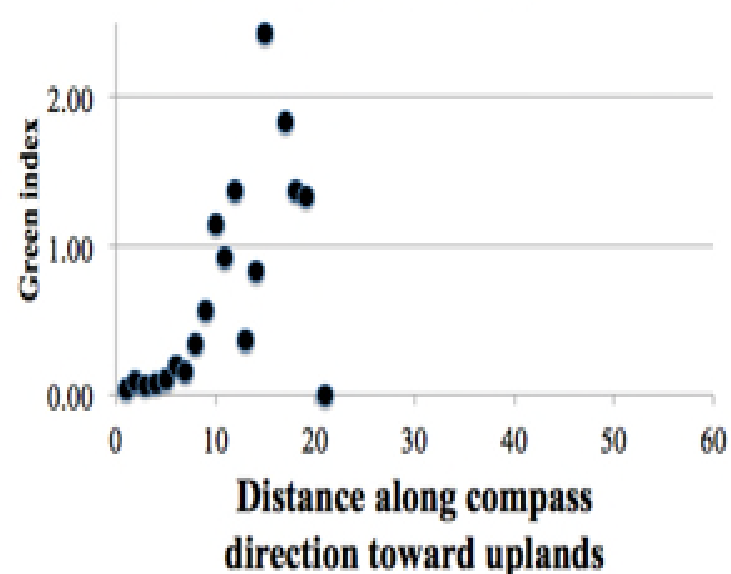
Green Index Transect 4



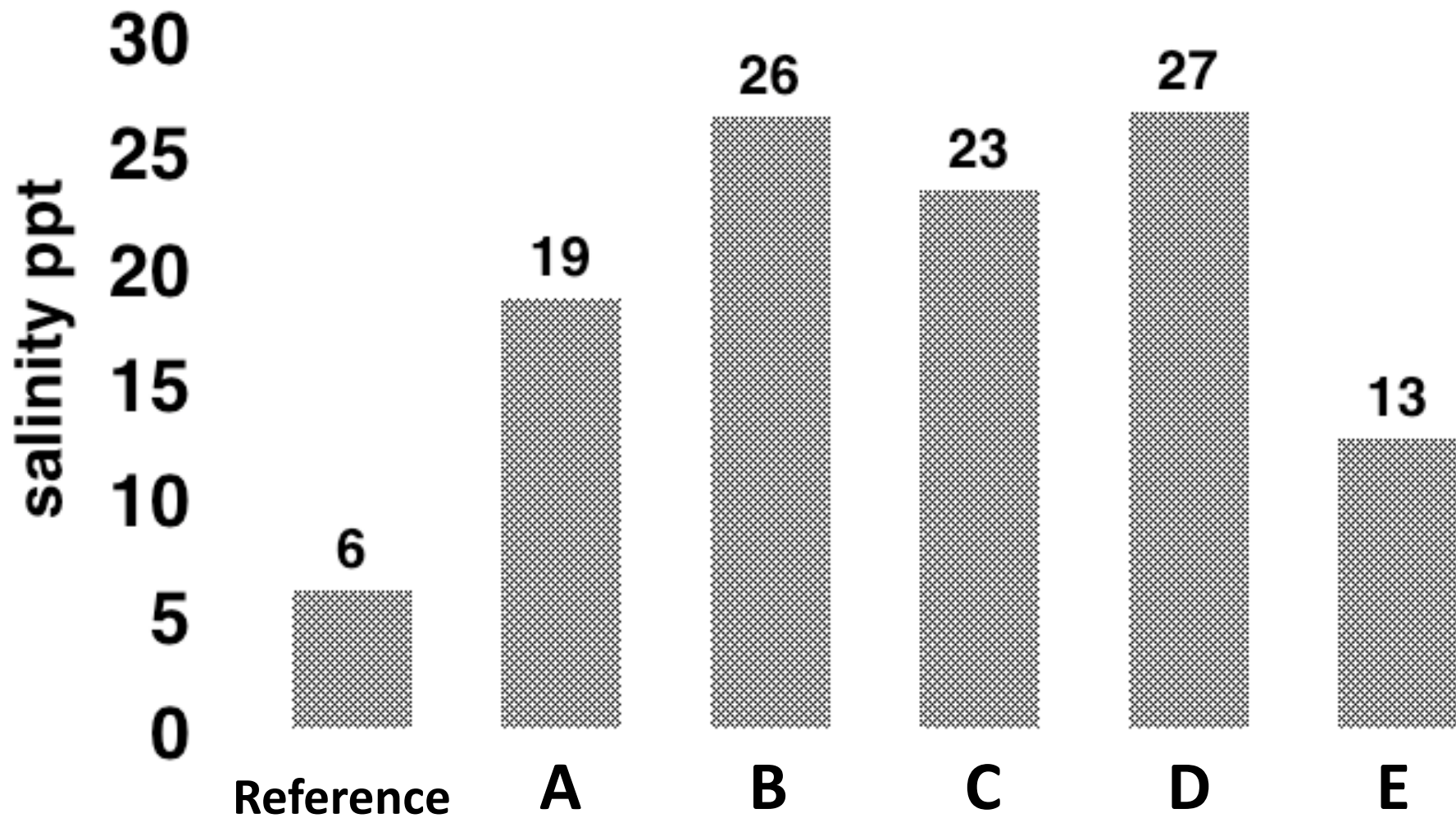
Green Index transect 6



Green Index transect 9

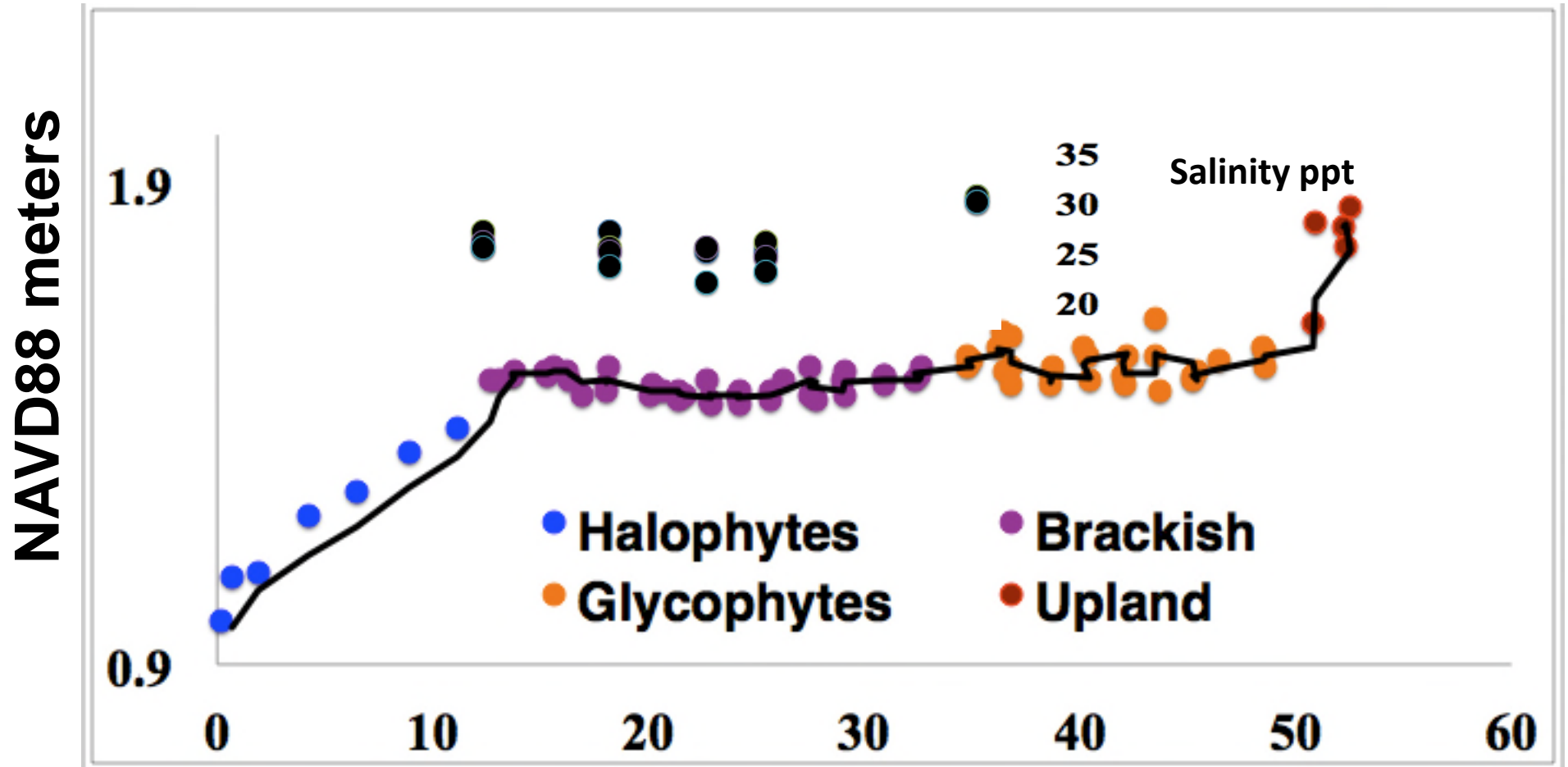


2014 mean salinity at high marsh brackish transitional zone dominated by *Typha* in 2013



Downstream Upstream ----->

2013 Vegetation zonation

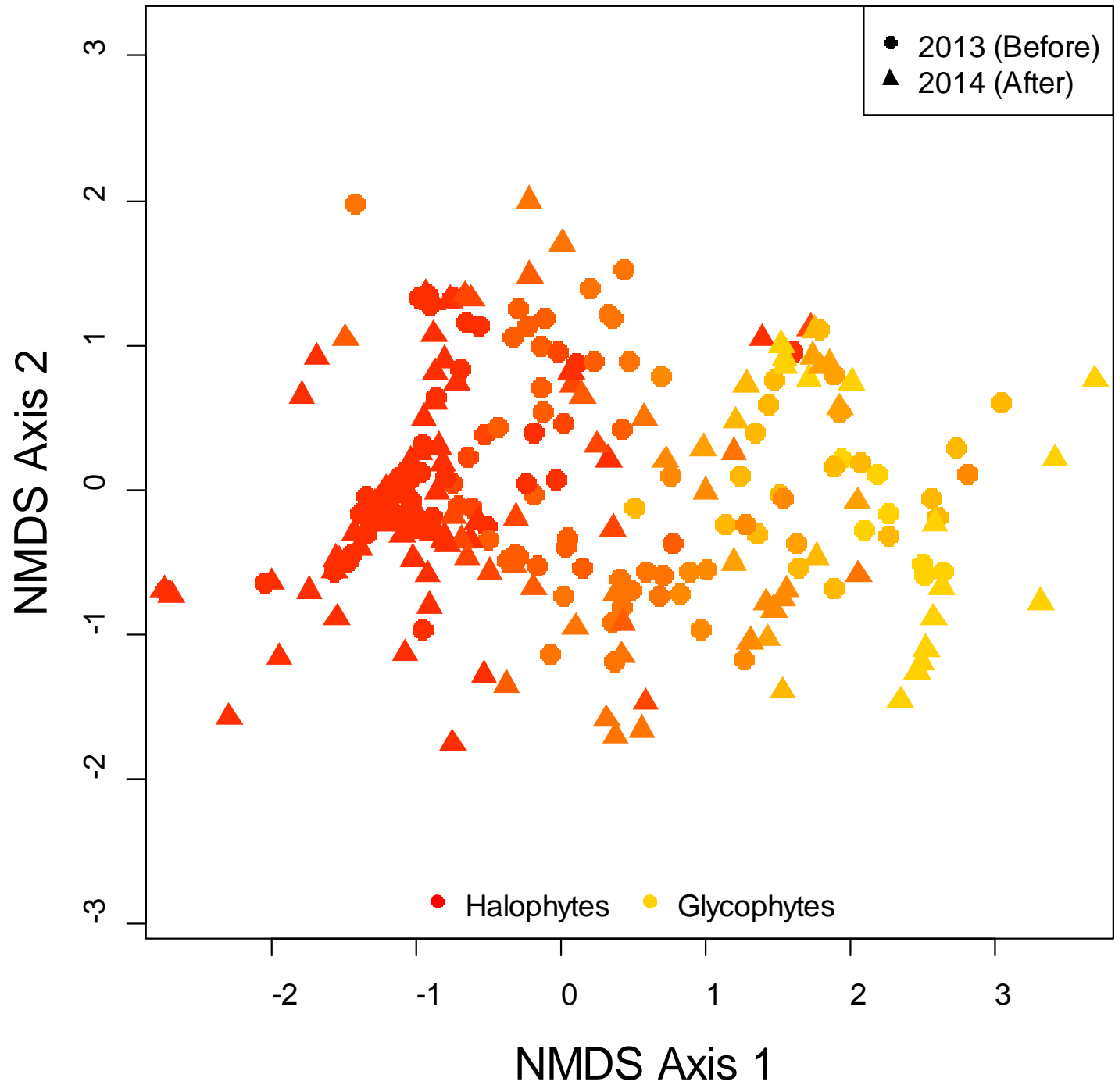


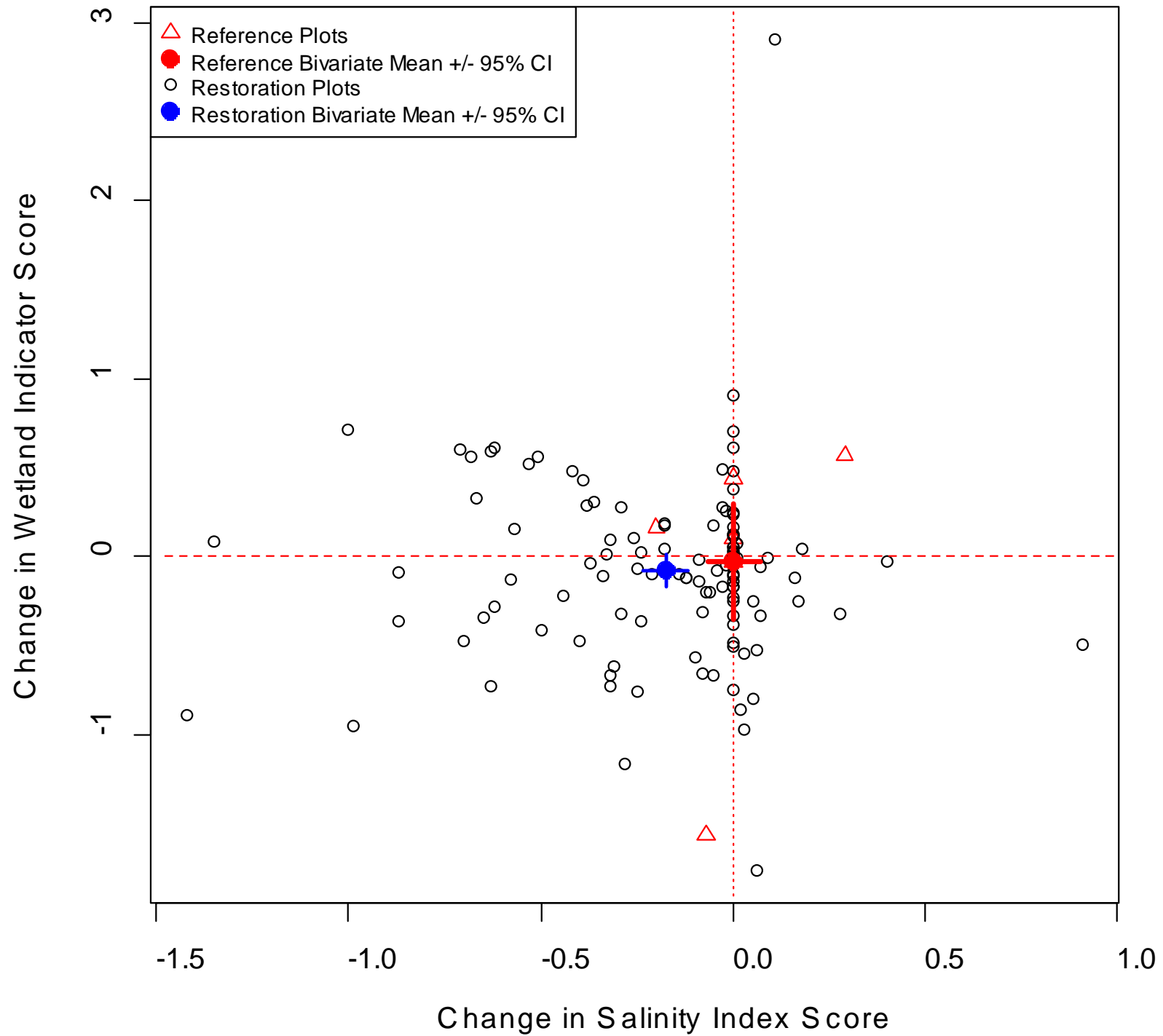
Transect 4 meters from tidal creek

Salt index: wetland score



<i>Spartina alterniflora</i>	<i>Typha angustifolia</i>	<i>Osmunda regalis</i>
Saltmarsh cordgrass	Narrow -leaved cattail	Royal fern
Salt tolerant = 1	Brackish = 2	Fresh water = 3
OBL	OBL	OBL





Salt not inundation



- Current Sea Level
- 1 ft SLR
- 2 ft SLR
- 3 ft SLR

Before tidal restoration: During tidal restriction 2013



During first growing season 2014



After first growing season 2014



Advisor:

Curtis Bohlen Ph.D

Committee:

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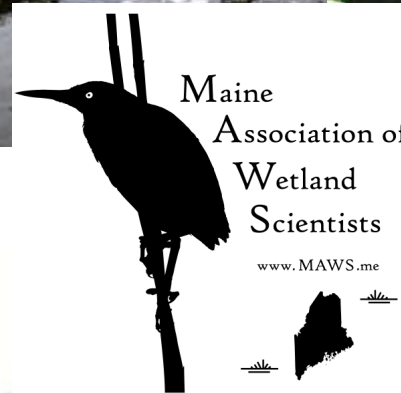
Daniel Lawrence


Kari Biledeau

Chris in Dave Burdick's lab

Dave Wilkenson

Dave Roque





THIS SURFACE HORIZON MOST LIKELY HAS A THIN ORGANIC HORIZON AT THE SURFACE UNDERLAIN BY SILT LOAM TO SILTY CLAY MINERAL HORIZON. IT LOOKS LIKE THE ORGANIC LAYER BENEATH IT HAS BEEN COVERED WITH REPEATED LAYERS OF SILT DUE TO TIDAL FLOODING.

THIS LAYER LOOKS TO BE DOMINATED BY ORGANIC MATERIAL. DECOMPOSED ROOTS AND GRASSES. THERE IS A SIGNIFICANT AMOUNT OF MINERAL SILTS AND CLAYS, BUT OVERALL IT WOULD BE DEFINED AS AN ORGANIC HORIZON.

THIS HORIZON WOULD BE DESIGNATED A C_g HORIZON. THE "C" IS THE SUBSTRATUM/PARENT MATERIAL AND THE "g" SUBSCRIPT INDICATES THAT THE LAYER IS COMPLETELY REDUCED AND ANAEROBIC...THUS THE GLEY COLORS (MUNSELL COLOR BOOK). THE TEXTURE IS MOST LIKELY A SILTY CLAY (CLAY 40-60% / SILT 40-60% / SAND 0-20%)

06/17/2014 11:25

Photo credit: Matt Craig