

Transect .5: Mill Pond

Observers and dates

N42 37.676'

2002 Duff/Kagle w070 40.610' Boards on gate
 2003 Duff 06 Duff & Ess Ag
 2004 Duff/Munson 07 Duff and Wilbur Tide gates opened
 2005 Duff/Janson 08 Duff 09 Duff & Hee

SPECIES

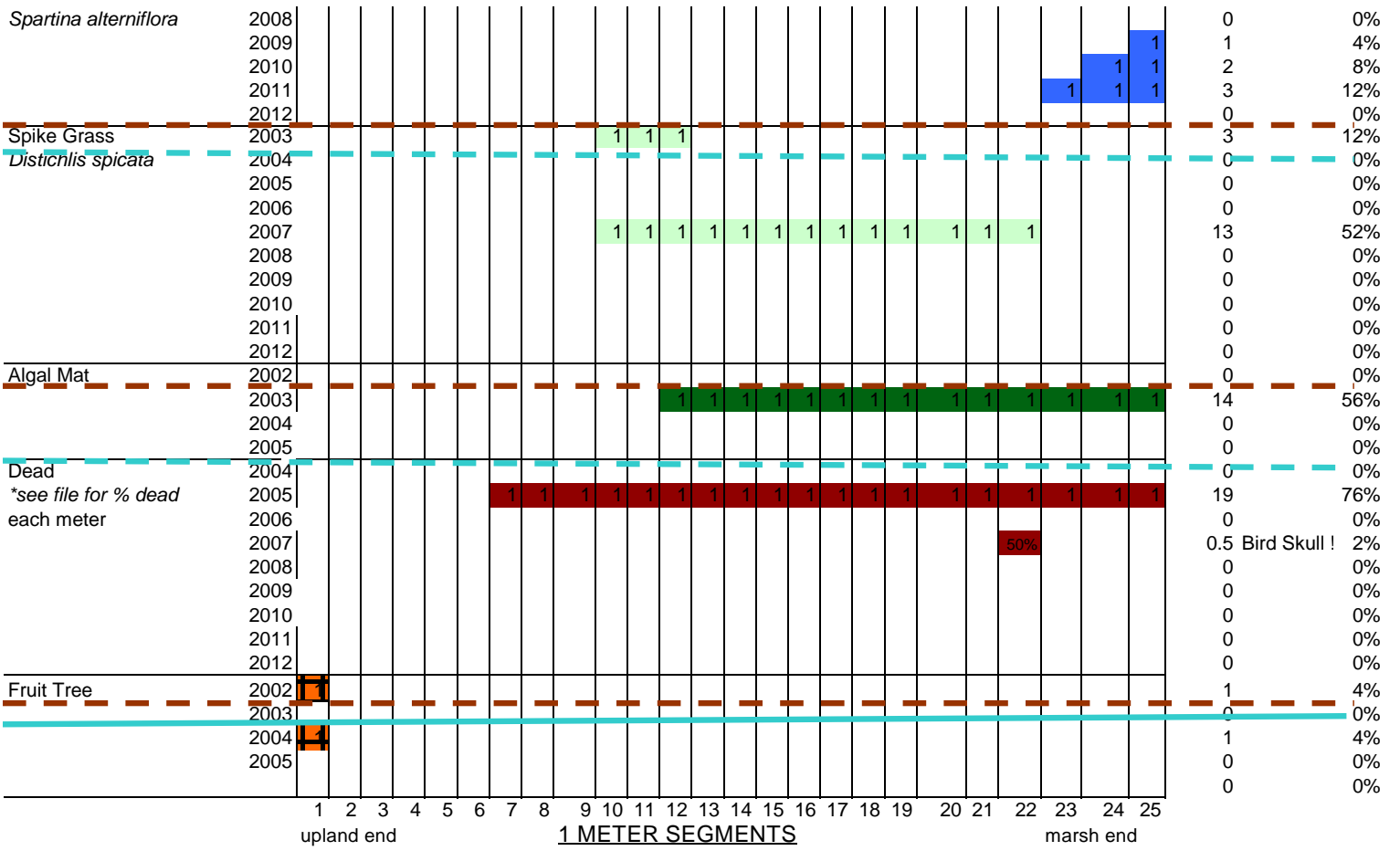
In 2003 Extra boards were put on top of the tide gate, flooding the marsh and killing areas of this marsh.

Algal mat in 2003 is remnant of this. In 2004 there was a lot of dead grass.

Tide gates open 2004 and beyond.

upland end **1 METER SEGMENTS** marsh end # of intervals present in %

Species	Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	# of intervals present in	%
<i>Phragmites australis</i>	2002	1	1	1	1	1	1	1	1																		8	32%
	2003	1	1	1	1	1	1	1	1																		8	32%
	2004	1	1	1	1	1	1	1	1																		8	32%
	2005	1	1	1						1	1										1	1	1	1			9	36%
	2006	1	1	1	1	1	1																				6	24%
	2007	1	1	1	1	1	1	1	1	1																	8	32%
	2008	1	1	1	1	1	1	1	1	1	1																9	36%
	2009	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	9	36%
	2010	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	9	36%
	2011	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	8	32%
	2012																										0	0%
	<i>Spartina patens</i>	2002			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	23	92%
2003						1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	21	84%	
2004								1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	10	40%	
2005					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	23	92%	
2006								1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	17	68%	
2007								1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	18	72%	
2008								1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	18	72%	
2009								1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	19	76%	
2010								1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20	80%	
2011								1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	22	88%	
2012																									0	0%		
<i>Solidago sempervirens</i>	2002			1	1	1	1																			4	16%	
	2003																									0	0%	
	2004																									0	0%	
	2005																			1						1	4%	
	2006																									0	0%	
	2007																									0	0%	
	2008																									0	0%	
	2009																									0	0%	
	2010																									0	0%	
	2011																									0	0%	
Glasswort (<i>Salicornia europaea</i>)	2008																								1	1	4%	
	2009																									0	0%	
	2010																									0	0%	
	2011																									0	0%	
Creeping Bentgrass (<i>Argostis stolonifera</i>)	2002									1	1	1	1													4	16%	
	2003																									0	0%	
	2004																									0	0%	
	2005																									0	0%	
Orach (<i>Atriplex patula</i>)	2005																		1							2	8%	
	2006																									0	0%	
	2007																								1	1	4%	
	2008																									0	0%	
	2009																									0	0%	
	2010																									0	0%	
	2011																									0	0%	
Saltmarsh Aster (<i>Aster subulatus</i>)	2006												1	1	1	1	1	1	1	1	1	1	1	1	1	11	44%	
	2007																									0	0%	
	2008																									0	0%	
	2009																									0	0%	
	2010																									0	0%	
	2011																									0	0%	
Salt Marsh Fleabane (<i>Pluchea purpurascens</i>)	2007																									2	8%	
	2008																									3	12%	
	2009																									3	12%	
	2010																									1	4%	
	2011																									4	16%	
Saltmarsh Cordgrass	2007																								1	1	4%	



Transect 1: Mill Pond

Soft Peat Soil

Boards were placed above the tide gate in 2003, raising the pond level. This killed vegetation on the marsh.

tid gates open in 2004 and beyond.

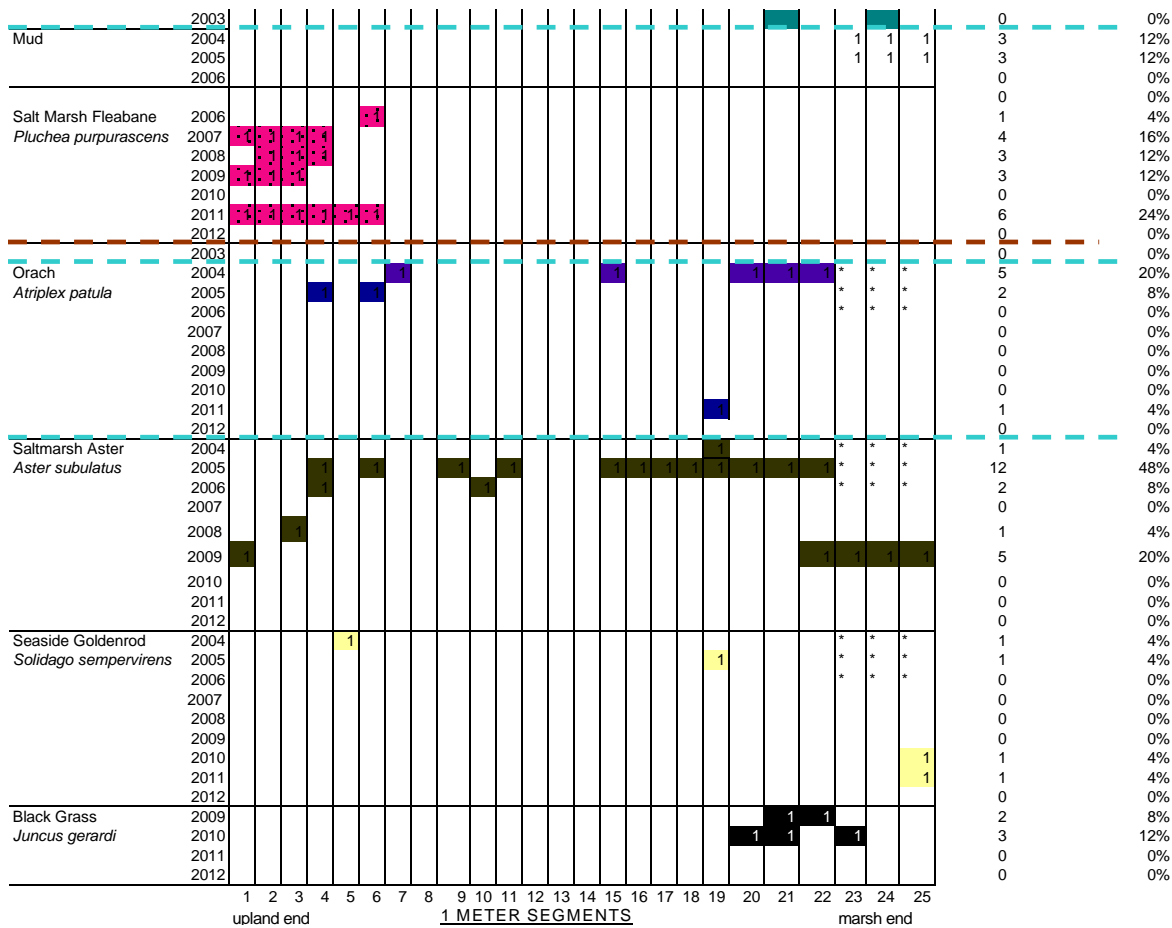
Tide gates opened 2004 and beyond

* In 2004 this transect ends at the edge of the pond at meter 22. Meters 23-25 are mud, no vegetation.

SPECIES

upland end 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 # of intervals %

Species	Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	# of intervals	%	
Pragmites <i>Phragmites australis</i>	1998	1	1	1																							3	12%	
	1999	1	1	1	1																							4	16%
	2000	1	1	1	1	1																						5	20%
	2001	1	1	1	1	1	1																					6	24%
	2002	1	1	1	1	1	1																					3	12%
	2003	1	1	1																								2	8%
	2004	1	1	1																								2	8%
	2005	1	1	1	1				1	1										1	1	1	1					9	36%
	2006	1	1	1	1	1	1	1													1	1	1	1				5	20%
	2007	1	1	1	1	1	1	1																				6	24%
	2008	1	1	1	1	1	1	1																				4	16%
	2009	1	1	1	1	1	1	1																				5	20%
2010	1	1	1	1	1	1	1																				5	20%	
2011	1	1	1	1	1	1	1	1	1																		7	28%	
2012																											0	0%	
Salt marsh Hay <i>Spartina patens</i>	1998	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	100%	
	1999	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	100%	
	2000	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	100%	
	2001	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	22	88%	
	2002	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	100%	
	2003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	96%	
	2004	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	21	84%	
	2005	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	19	76%	
	2006	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	22	88%	
	2007	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24	96%	
2008	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	22	88%		
2009	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24	96%		
2010	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24	96%		
2011	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	23	92%		
2012																											0	0%	
Glasswort <i>(Salicornia europaea)</i>	2008	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	18	72%		
	2009	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	56%		
	2010	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	9	36%		
	2011																										0	0%	
Spike Grass <i>Distichlis spicata</i>	2003				1	1	1																				3	12%	
	2004															1	1						*	*	*		2	8%	
	2005																										0	0%	
Algal Mat	2003																										4	16%	
	2004																										0	0%	
Dead *see file for % dead	2004	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	19	76%		
	2005																										0	0%	
Saltmarsh Cordgrass <i>Spartina alterniflora</i>	1998									1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	56%		
	1999		1	1						1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16	64%		
	2000			1											1	1	1	1	1	1	1	1	1	1	1	13	52%		
	2001																										9	36%	
	2002										1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15	60%		
	2003																										4	16%	
	2004																						*	*	*		1	4%	
	2005																						*	*	*		3	12%	
	2006															1	1	1	1	1	1	1	1	1	1	1	8	32%	
	2007																										9	36%	
	2008																									1	10	40%	
2009										1	1															13	52%		
2010																										11	44%		
2011																										11	44%		
2012																											0	0%	
Quack Grass? <i>Agropyron pungens</i>	1998																										1	4%	
	1999																										0	0%	
	2000																										0	0%	
	2001																										0	0%	
	2002																									1	2	8%	



Transect 1 Mill Pond

Massachusetts Audubon Society, Endicott Center
 Long Range Phragmites Study
 Location: Gloucester, Mill Pond
Soft Peat Soil
B=burnt spring 2000

Transect 2: Mill Pond

This was burned Spring 2000
burned Fall 2007
 (before 11/13 after Sept)

Observers and dates

2000
 2001 11/6/00 Lodge
 2002 10/8/01, LD, NS
 2003 Duff
 2004 9/7/04, Duff/Munson
 2005 8/29/05, Duff/Janson
 2006 Duff
 2010 Duff & Thompson

tide gates open 2004 and beyond

03
 4
 4
 3
 04

2007 Duff and Wilbur
 2008 Duff
 Boards on gate 2003
 Tide gates opened 2004
 2009 Duff and Hee

SPECIES side gates open 2004 and beyond.

upland end

1 METER SEGMENTS

marsh end

of intervals present in

%

Species	Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	# of intervals present in	%
Phragmites	2000	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1										16	64%
<i>Phragmites australis</i>	2001	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1										16	64%
	2002	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1									17	68%
	2003	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1									16	64%
	2004	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1									16	64%
is immature	2005	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1							1	1	18	72%
	2006	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20	80%
Fire in 2007	2007	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16	Whole 64%
	2008	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	19	76%
	2009	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	18	72%
	2010	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16	64%
	2011	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	13	52%
	2012																										0	0%
Salt Marsh Hay	2000																										12	48%
<i>Spartina patens</i>	2001																										11	44%
	2002																										11	44%
	2003																										11	44%
	2004																										10	40%
	2005																										12	48%
	2006																										7	28%
	2007																										14	56%
	2008																										13	52%
	2009																										13	52%
	2010																										16	64%
	2011																										15	60%
	2012																										0	0%
Glasswort	2008																										0	0%
(<i>Salicornia europaea</i>)	2009																										8	32%
	2010																										0	0%
	2011																										0	0%
	2012																										0	0%
Spike grass	2000																										0	0%
<i>Distichlis spicata</i>	2001																										0	0%
	2002																										0	0%
	2003																										7	28%
	2004																										0	0%
	2005																										0	0%
	2006																										0	0%
	2007																										0	0%
	2008																										0	0%
	2009																										0	0%
	2010																										0	0%
	2011																										0	0%
	2012																										0	0%
Salt Marsh Cordgrass	2000																										3	12%
<i>Spartina alterniflora</i>	2001																										3	12%
	2002																										0	0%

Species	Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Total	Percentage	
<i>Rosa sp.</i>	2008	1																									1	4%	
	2009																											0	0%
	2010																											0	0%
	2011																											0	0%
	2012																											0	0%
<i>Rubus sp.</i>	2008	1	1																								2	8%	
	2009	1	1																								2	8%	
	2010	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0%	
	2011	1																									1	4%	
Pokeweed <i>Phytolacca americana</i>	2008		1																								1	4%	
	2009																										0	0%	
Saltmarsh Aster <i>Aster subulatus</i>	2005															1	1	1	1	1	1	1	1	1	1	1	10	40%	
	2006															1	1	1	1	1	1	1	1	1	1	1	9	36%	
	2007																										0	0%	
	2008																										0	0%	
	2009						1																				1	4%	
	2010																										0	0%	
	2011																										0	0%	
Unknown Upland Grass	2010			1	1																						2	8%	
	2011																										0	0%	
	2012																										0	0%	

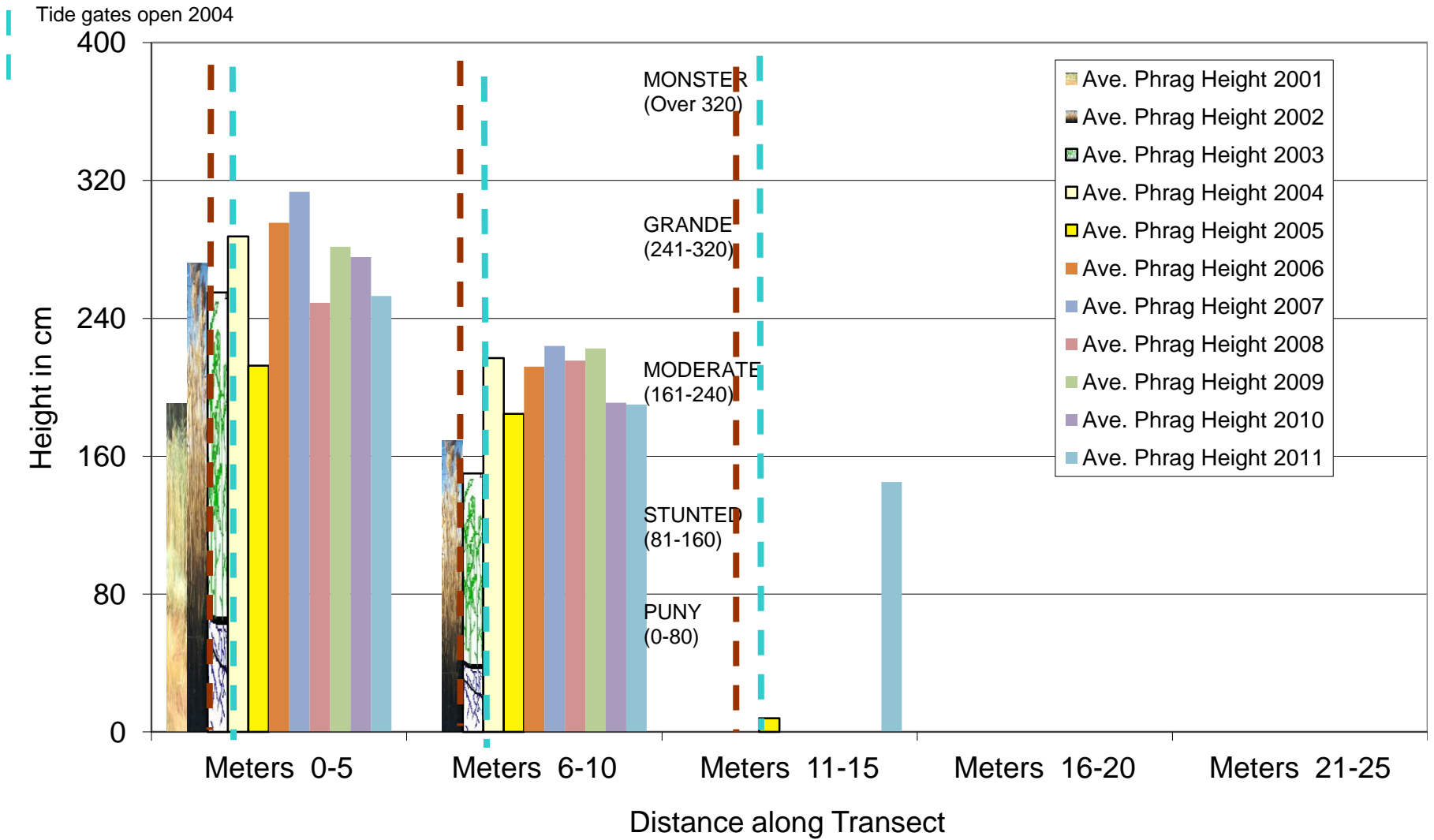
Mill Pond Transect 2

upland end

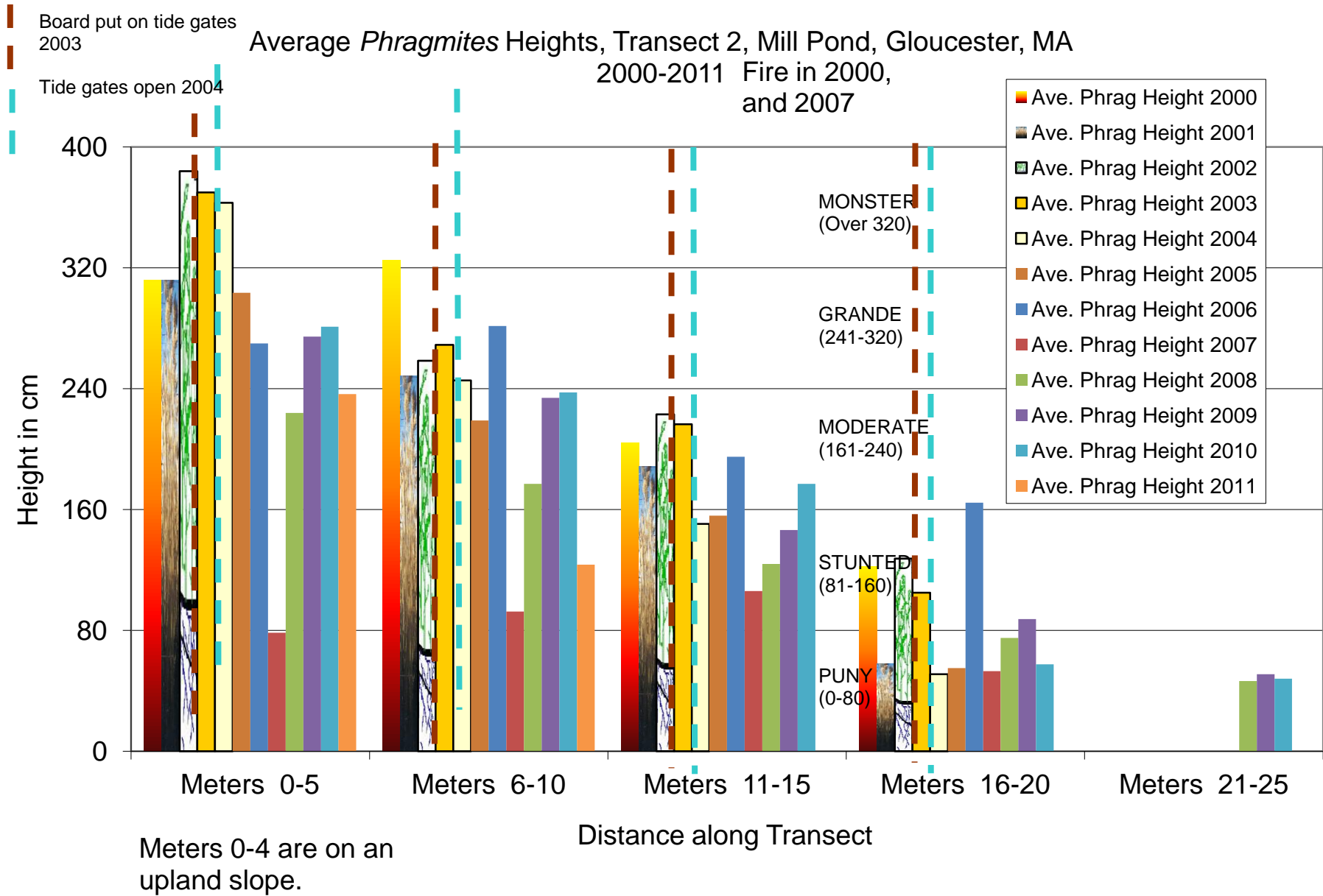
1 METER SEGMENTS

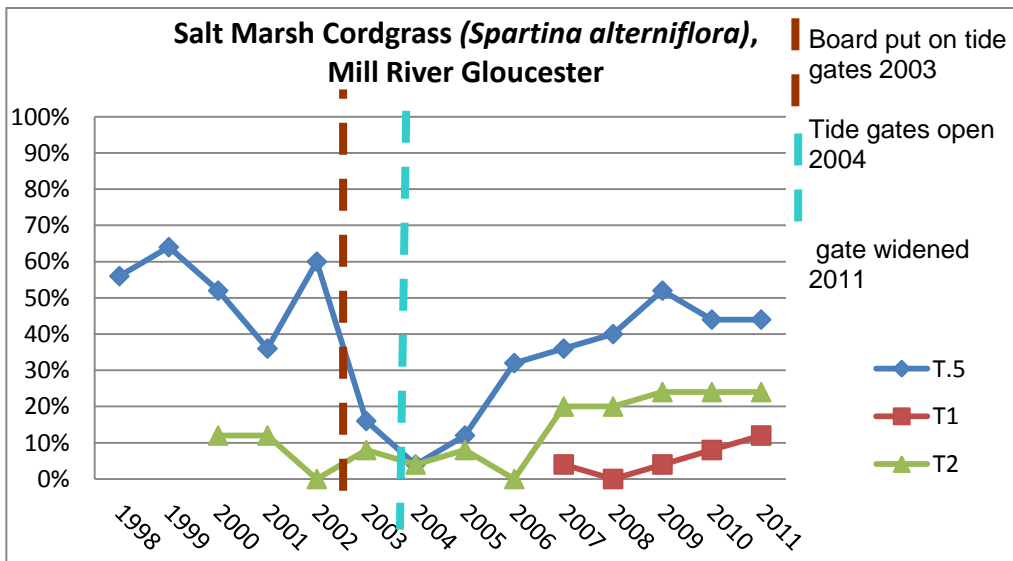
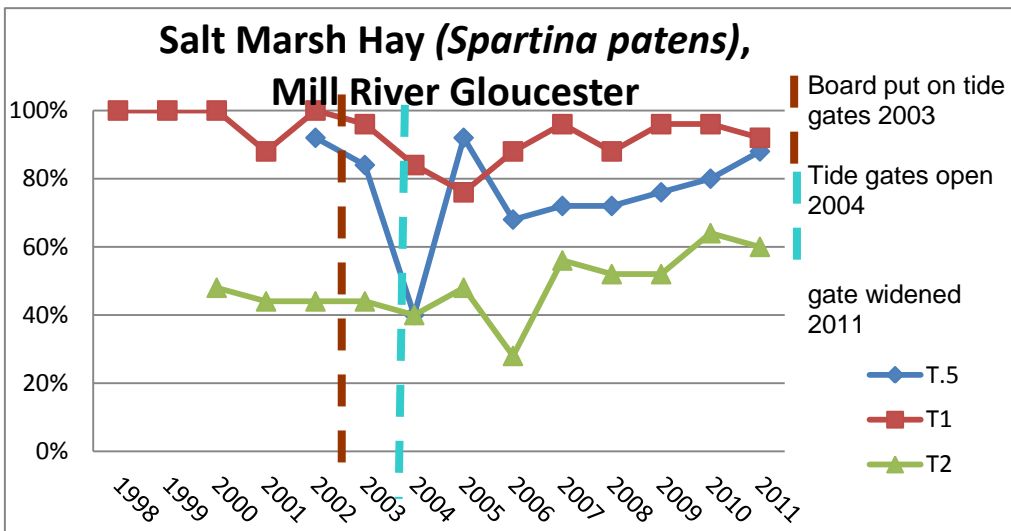
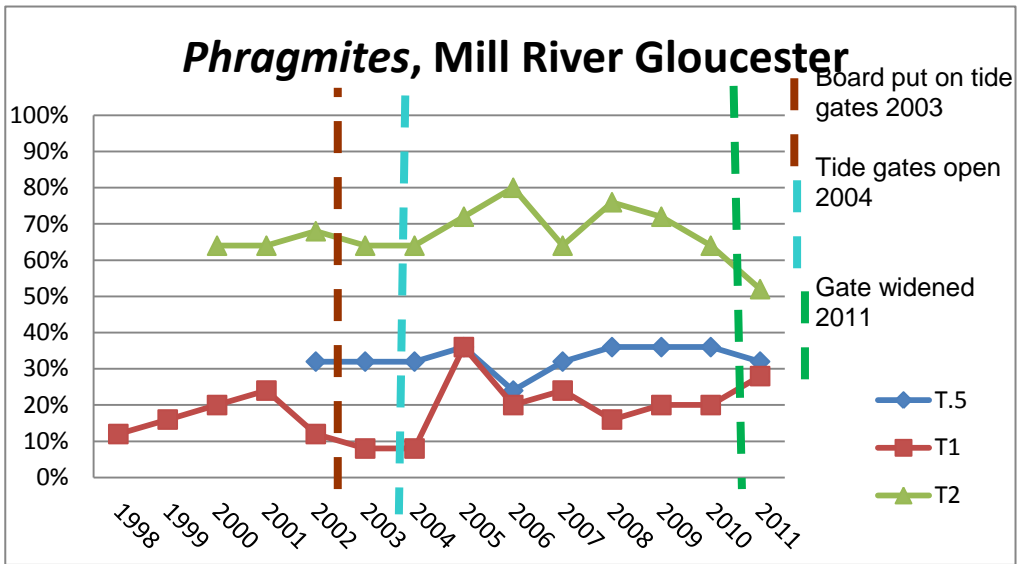
marsh end

Board put on tide gates 2003
 Average *Phragmites* Heights, Transect .5, Mill Pond, Gloucester, MA
 2002-2011



Average *Phragmites* Heights, Transect 2, Mill Pond, Gloucester, MA 2000-2011 Fire in 2000, and 2007





<i>Phragmites</i>				
Year	T.5	T1	T2	
1998			12%	
1999			16%	
2000			20%	64%
2001			24%	64%
2002		32%	12%	68%
2003		32%	8%	64%
2004		32%	8%	64%
2005		36%	36%	72%
2006		24%	20%	80%
2007		32%	24%	64%
2008		36%	16%	76%
2009		36%	20%	72%
2010		36%	20%	64%
2011		32%	28%	52%

Salt Marsh Hay				
Year	T.5	T1	T2	
1998			100%	
1999			100%	
2000			100%	48%
2001			88%	44%
2002		92%	100%	44%
2003		84%	96%	44%
2004		40%	84%	40%
2005		92%	76%	48%
2006		68%	88%	28%
2007		72%	96%	56%
2008		72%	88%	52%
2009		76%	96%	52%
2010		80%	96%	64%
2011		88%	92%	60%

Cordgrass				
Year	T.5	T1	T2	
1998		56%		
1999		64%		
2000		52%		12%
2001		36%		12%
2002		60%		0%
2003		16%		8%
2004		4%		4%
2005		12%		8%
2006		32%		0%
2007		36%	4%	20%
2008		40%	0%	20%
2009		52%	4%	24%
2010		44%	8%	24%
2011		44%	12%	24%