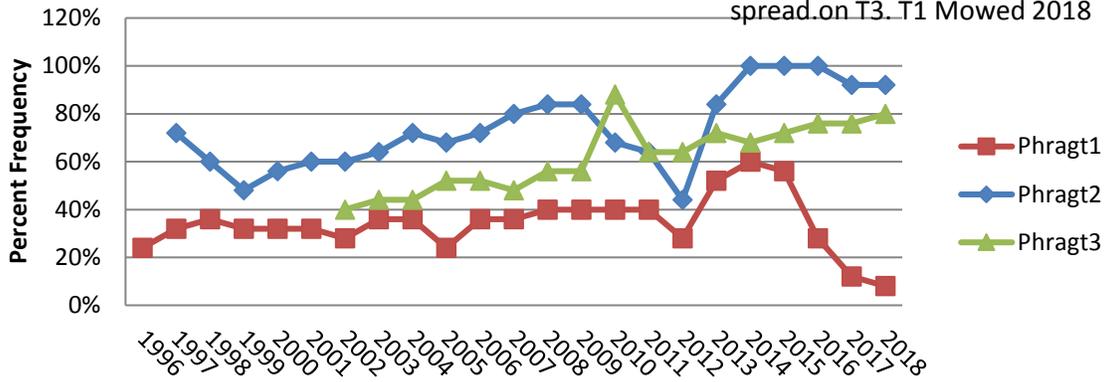
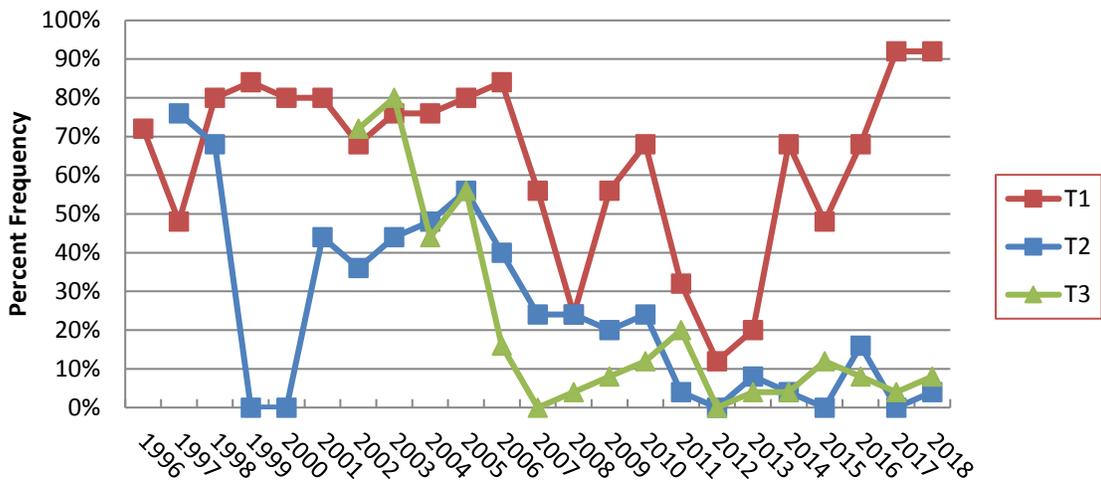


Phragmites Rowley

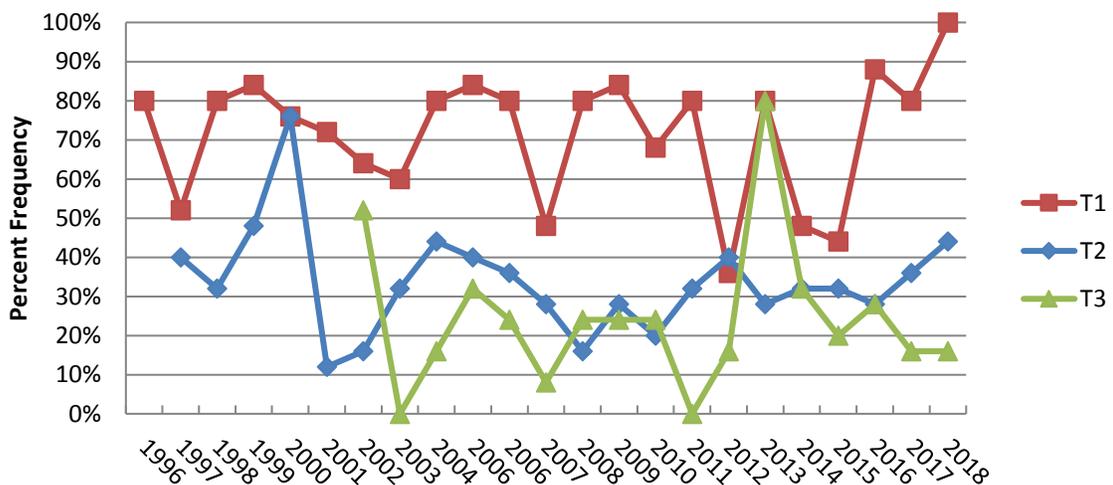
Abundant Wrack in 2007
opened way for Phrag
spread.on T3. T1 Mowed 2018



Salt Marsh Hay Rowley

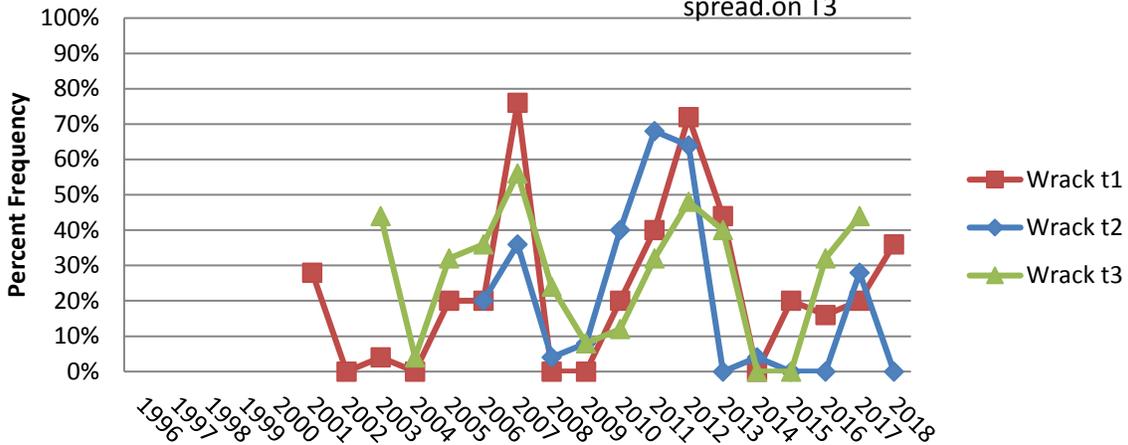


Cordgrass Rowley



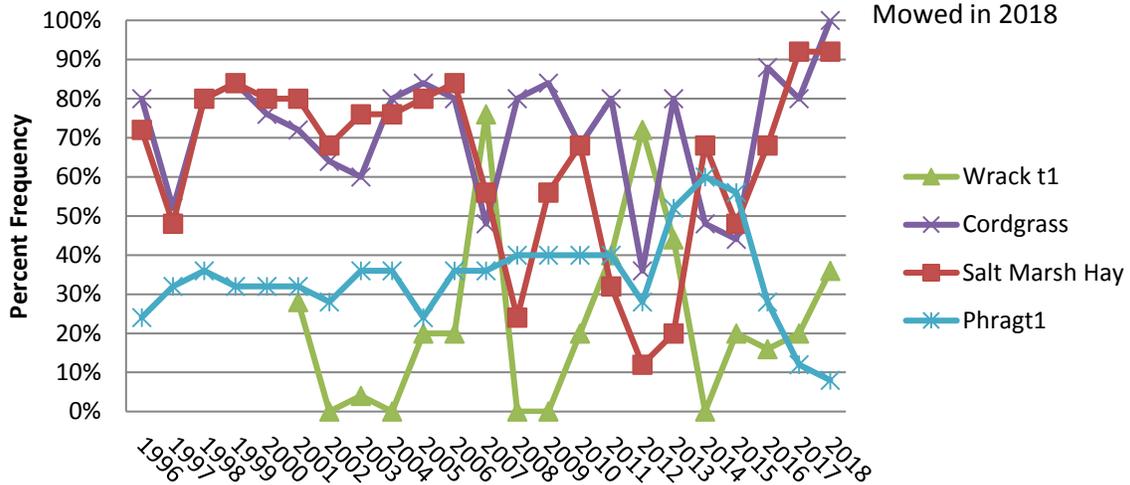
Wrack Rowley

Abundant Wrack in 2007
opened way for Phrag
spread.on T3



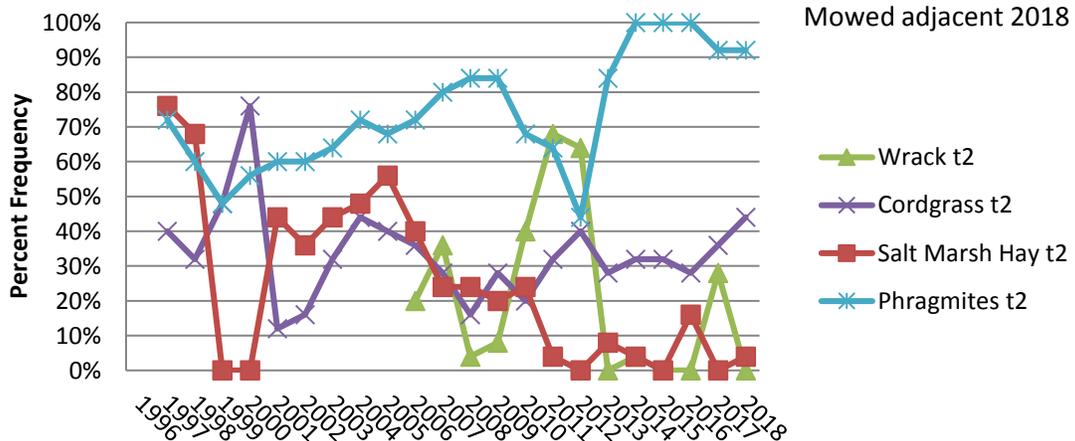
Transect 1 Rowley comparison

Abundant Wrack in
2007 and 2012
Mowed in 2018

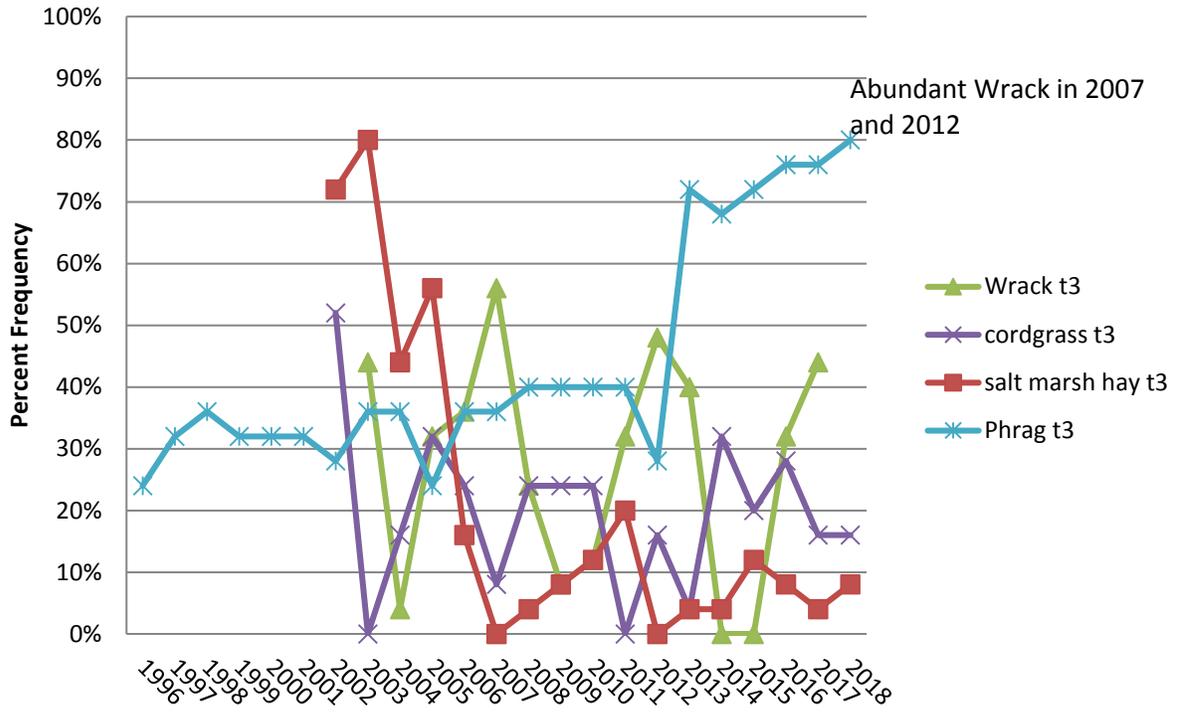


Transect 2 Rowley comparison

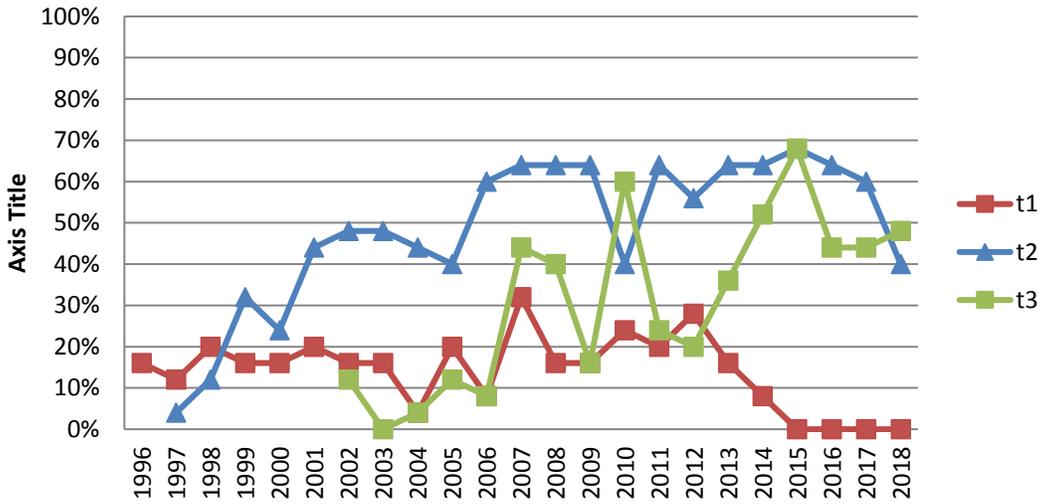
Abundant Wrack in
2007 and 2012
Mowed adjacent 2018



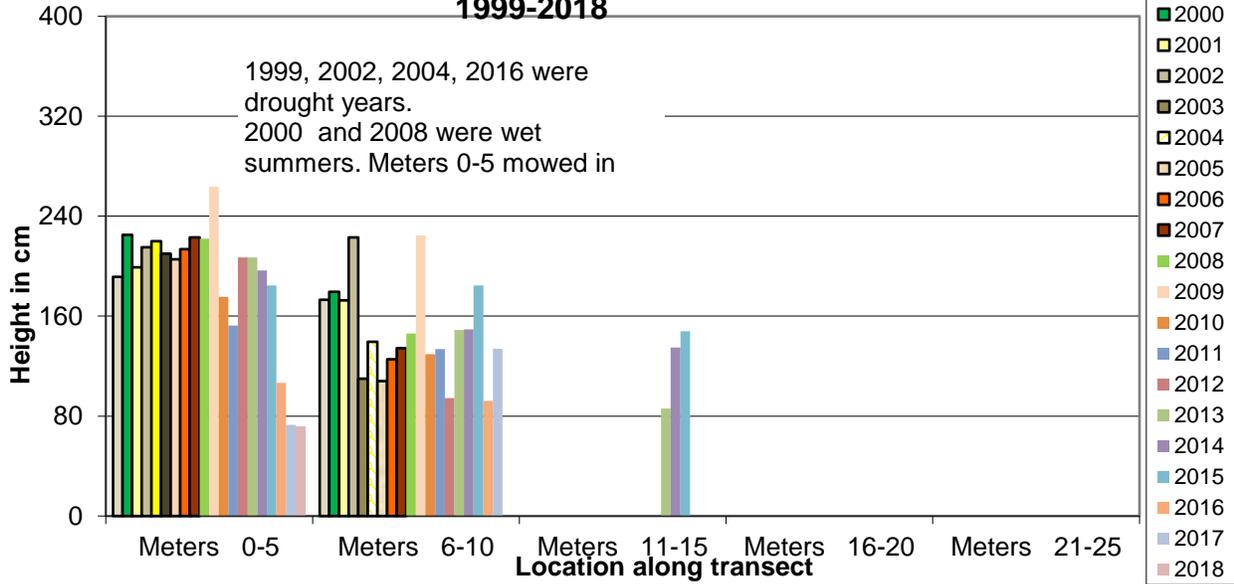
Transect 3 Rowley comparison



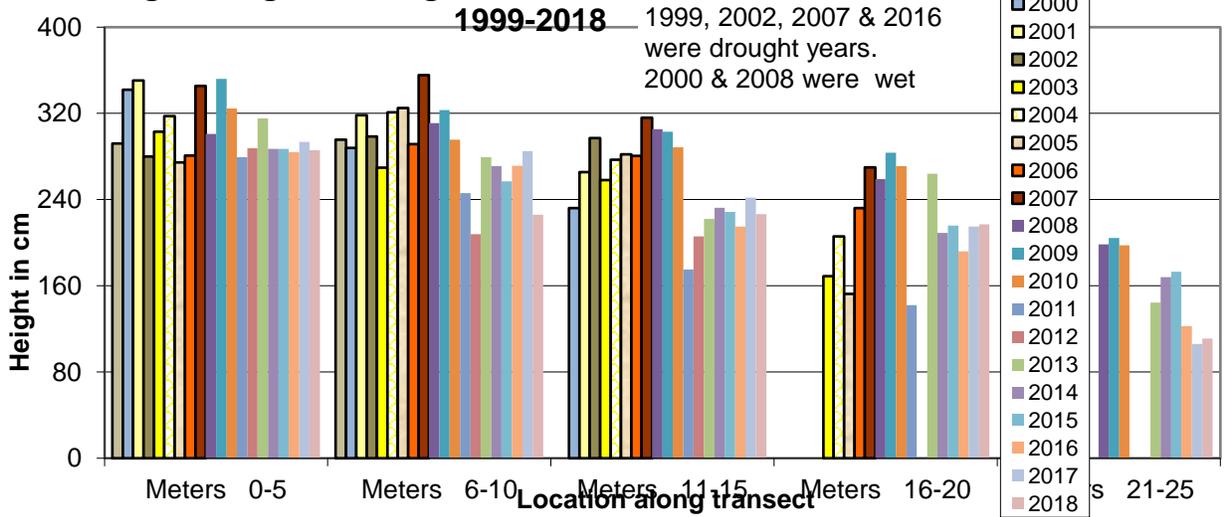
Percent *Phragmites* Monoculture Rowley



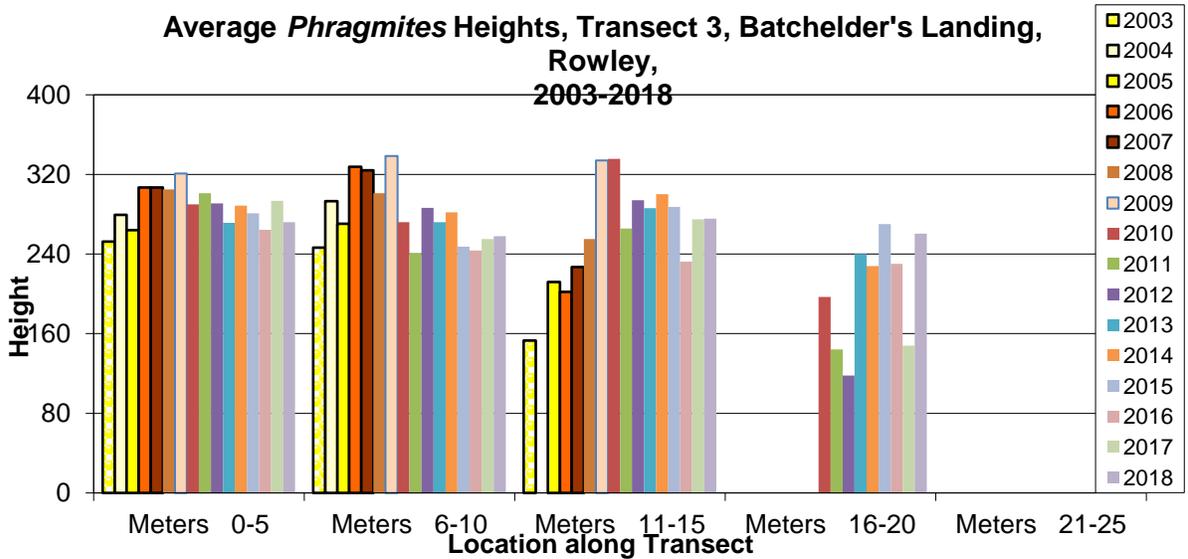
**Average *Phragmites* Heights, Transect 1, Railroad Ave, Rowley
1999-2018**



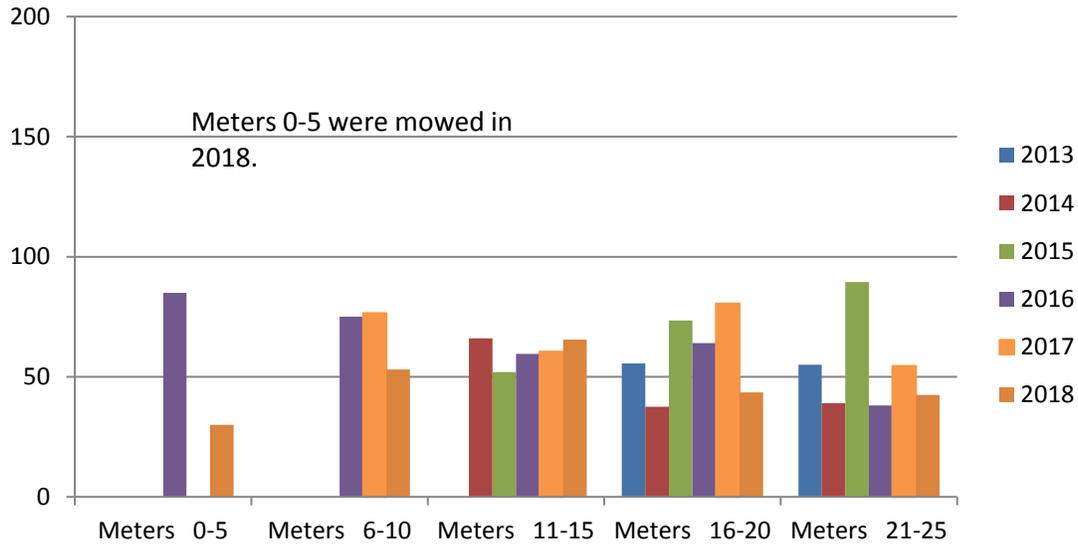
**Average *Phragmites* Heights, Transect 2, Railroad Ave, Rowley
1999-2018**



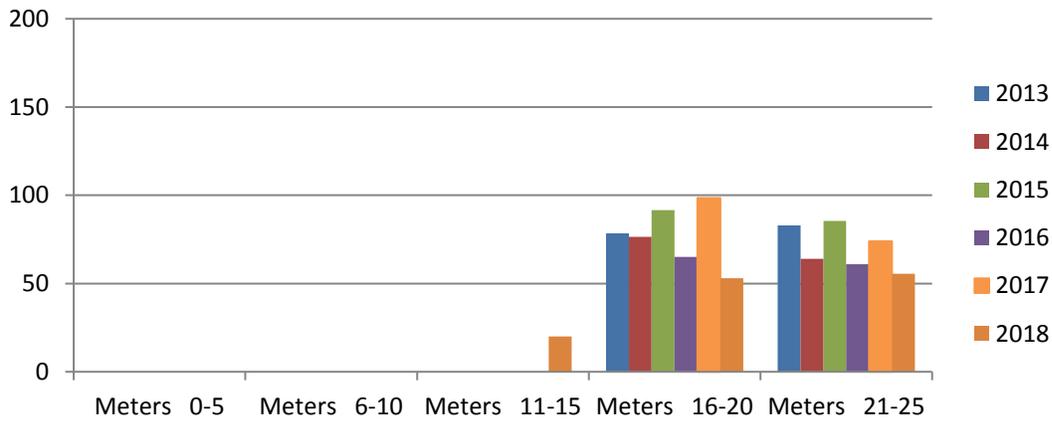
Average *Phragmites* Heights, Transect 3, Batchelder's Landing, Rowley, 2003-2018



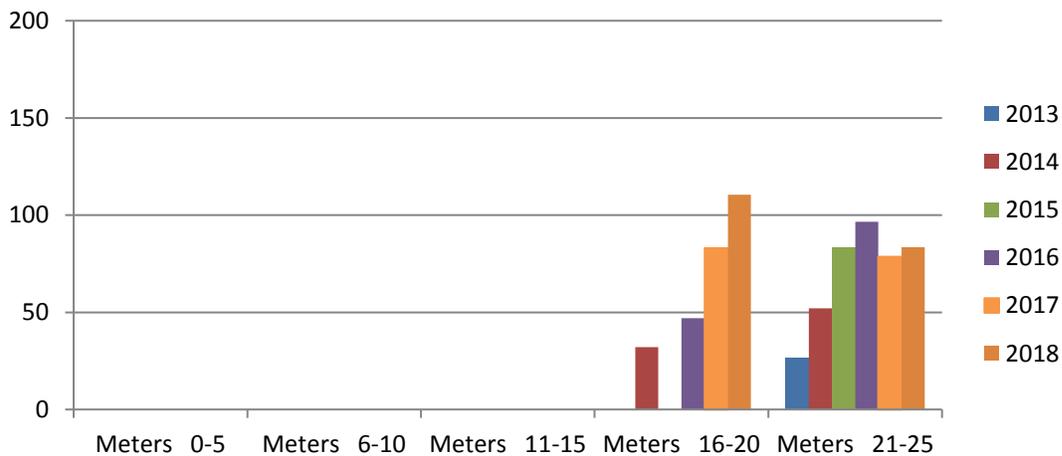
Cordgrass Heights Rowley Transect 1



Cordgrass Heights Rowley Transect 2



Cordgrass Heights Rowley Transect 3



Massachusetts Audubon Society, Endicott Center, Long Range Phragmites Study
 Mass Audubon Salt Marsh Science Project Transect 2 Railroad Ave.
 Long Range *Phragmites* Study 1998 Peter, Pine Grove Students
 Location: Rowley, Pine Grove School 1999 Liz, Pine Grove Students
 2000 Elsa F. 2000
 2001 LD, ADR

Observers and dates

2010 Duff 2018 Duff
 2003 Collected 4/2004 for 2003, Duff & Latham
 2004 Duff & Munson 2011 Buchsbaum
 2005-2008 Duff 2012 Buchsbaum 2014 LD&TM
 2009 Duff & Park 2013 Buchsbaum & Lehrman
 2016 Duff & Shain
 2017 Duff

Mowed adjacent to transect 2018

SPECIES	Year	1 METER SEGMENTS																									# intervals		
		upland end																										marsh 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			
Phragmites	1997	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		
<i>Phragmites australis</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	15		
	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	12		
	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	14		
	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	15		
	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	15		
	2003	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		
	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	18		
	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	17		
	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	18		
 is immature	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	20		
	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	21		
	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	21		
maturity not rec.	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	17		
	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	16		
	2012	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	11		
	2013	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		
	2014	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		
	2015	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		
	2016	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		
	2017	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		
Mowed adjacent to this.	2018	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		
	2019																										0		
Salt Marsh Hay	1997	1	1																								19		
<i>Spartina patens</i>	1998	1																									17		
	1999																										0		
	2000																										0		
	2001																										11		
	2002																										9		
	2003																										11		
	2004																										12		
	2005																										14		
	2006																										10		
	2007																										6		
	2008																										6		
	2009																										5		
	2010																										6		
	2011																										1		
	2012																										0		
	2013																										2		
	2014																										2		
	2015																										0		
	2016																										4		
	2017																										0		
	2018																										1		
	2019																										0		

We want to double check this data.

Grape Vines	1997	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	2	
	1998																										0	
	1999																										0	
	2000																										0	
	2001																										0	
	2002																										0	
	2003																										0	
2004																											0	
2005																											0	
Freshwater Cordgrass <i>Spartina pectinata</i>	2001											12	13														2	
	2002																										0	
	2003																										0	
	2004																										0	
	2005																										0	
	2006																										0	
Seaside Arrowgrass <i>Triglochin maritima</i>	2001																							23	24		2	
	2002																										0	
	2003																										0	
	2004																										0	
	2005																						22		24		2	
	2006																										0	
Saltmarsh Bulrush <i>Scirpus robustus</i>	2001											12	13														2	
	2002																										0	
	2003																										0	
	2004																										0	
	2005											11															1	
	2006																										0	
	2010																										8	
2011																										0		
Switch Grass?	2003																										4	
	2004																										0	
	2005																										1	
	2006																										0	
Loosestrife	2010																										3	
	2011																										0	
Transect 2 Rowley	2006																										5	
	2007																										9	
	2008																										1	
	2009																										2	
	2010																										10	
	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	1	17
	2012																										16	
	2013																										0	
	2014																										1	
	2015																										0	
Bare	2016																										0	
	2017																										0	
	2018																										0	
	2019																										0	
	2010																										0	
	2011																										0	
Sea Blite <i>(Suaeda linearis)</i>	2016																										0	
	2017																										1	
	2018																										0	
	2019																										0	

upland end
Location: Rowley, Pine Grove School

1 METER SEGMENTS

marsh end

