

Peat over sandy soil SPECIES Transect 2 (Near house on stilts) ## 08 Duff int.

12 species upland end 2003 Duff 2004 Munson, Halloran, gr 8 2005 10/12-13/05 Halloran presnt in

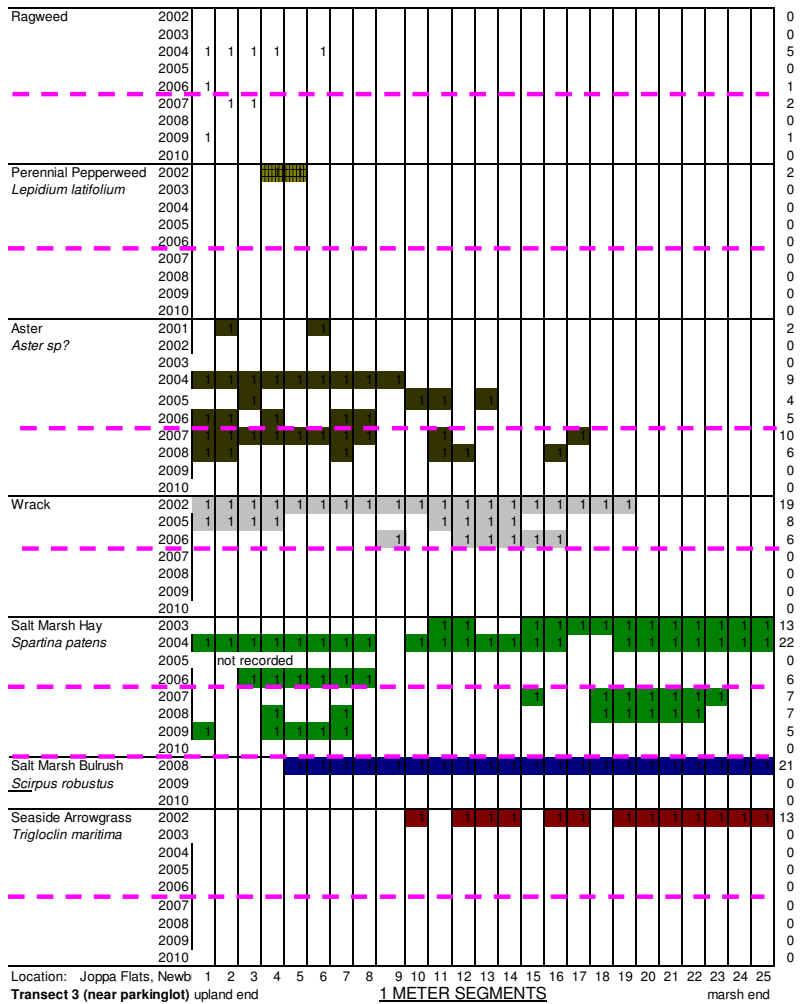
1 METER SEGMENTS 2006 Duff marsh end in

	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	
Cattail	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	3
<i>Typha angustifolia</i>	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	6
	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	8
	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	6
	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	9
	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	9
	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	8
is immature	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	8
	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	10
	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	10
	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	10
	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	0
Black Grass	1999																									0
<i>Juncus gerardii</i>	2000																									10
	2001																									16
	2002																									0
	2003																									18
	2004																									7
	2005																									0
	2006																									3
	2007																									2
	2008																									8
	2009																									2
	2010																									0
Creeping Bent Grass	1999		1																							20
<i>Agrostis stolonifera</i>	2000		1																							18
	2001		1																							18
	2002		1																							19
	2003		1																							18
	2004		1																							16
	2005		1																							16
	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	22
	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	21
	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	17
	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	19
	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	0
Saltmarsh Hay	1999																									17
<i>Spartina patens</i>	2000																									7
	2001																									17
	2002																									4
	2003																									16
	2004																									16
	2005																									6
	2006																									17
	2007																									18
	2008																									19
	2009																									17
	2010																									0
Saltmarsh Cordgrass	1999																									6
<i>Spartina alterniflora</i>	2000																									12
	2001																									18
	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	17
	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	8
	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	5
	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	5
	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	3
	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
	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	0
	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	3
	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	0
Bulrush	1999																									8
<i>Scirpus robustus</i>	2000																									19
	2001																									20
	2002																									5
(Some may be sedge)	2003																									16
	2004																									0
	2005																									7
	2006																									1
	2007																									20
	2008																									0
	2009																									

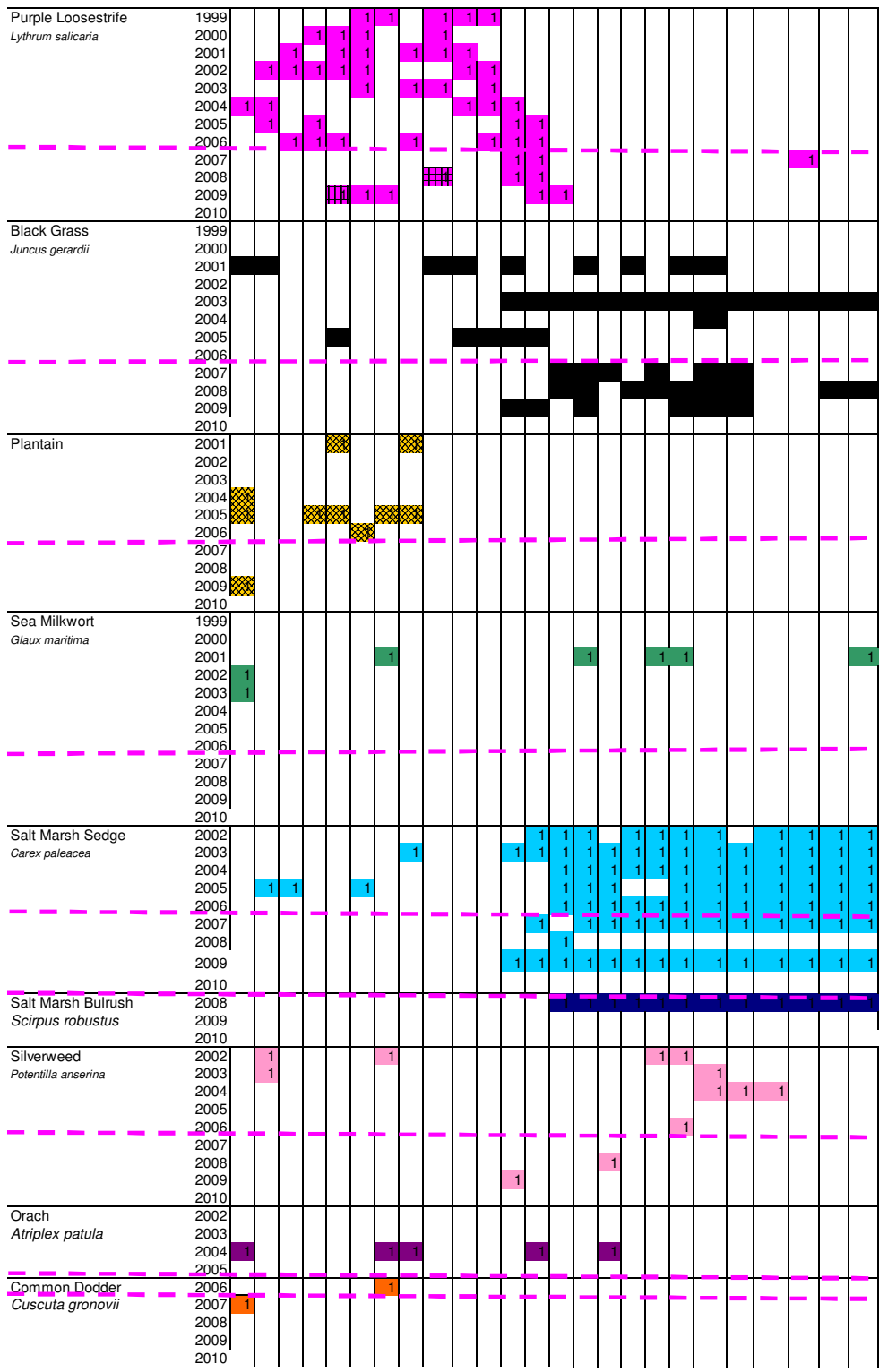
Species	Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Silverweed <i>Potentilla anserina</i>	2002											1	1	1	1	1											
	2003	None recorded																									
	2004	None recorded																									
	2005	None recorded																									
	2006	None recorded																									
	2007	None recorded																									
	2008	None recorded																									
	2009	None recorded																									
	2010	None recorded																									
	Purple Loosestrife <i>Lythrum salicaria</i>	2003					1																				
2004		None recorded																									
2005		None recorded																									
2006		None recorded																									
2007						1	1																				
2008						1	1																				
2009																											
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Olney Three Square <i>Scirpus americanus</i>	2003																										
	2004																										
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	2010																										
	False Indigo <i>Amorpha fruticosa</i>	2006	1																								
		2007																									
2008																											
2009																											
2010																											
Water Hemp <i>Amaranthus cannabinus</i>	2007																										
	2008																										
	2009																										
Black Locust?	2008	1																									
	2009																										
	2010																										
Yellow Flower Lobed If	2007	1																									
	2008																										
	2009																										
Sea Milkwort <i>Glaux maritima</i>	2006																										
	2007																										
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	2010																										
Salt Marsh Sedge <i>Carex paleacea</i>	2002																										
	2003																										
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upland end 1 METER SEGMENTS marsh end
Long Range Phragmites Study Location: Joppa Flats, Newburyport, MA
Transect 2 (Near house on stilts)

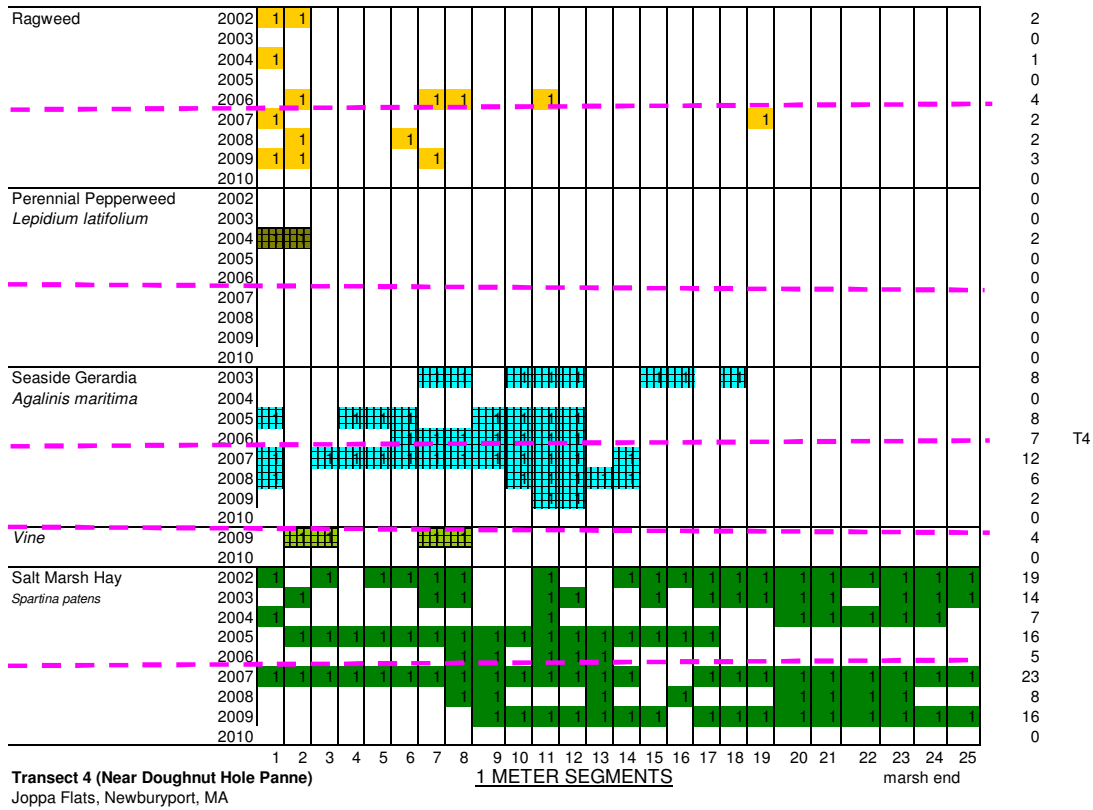


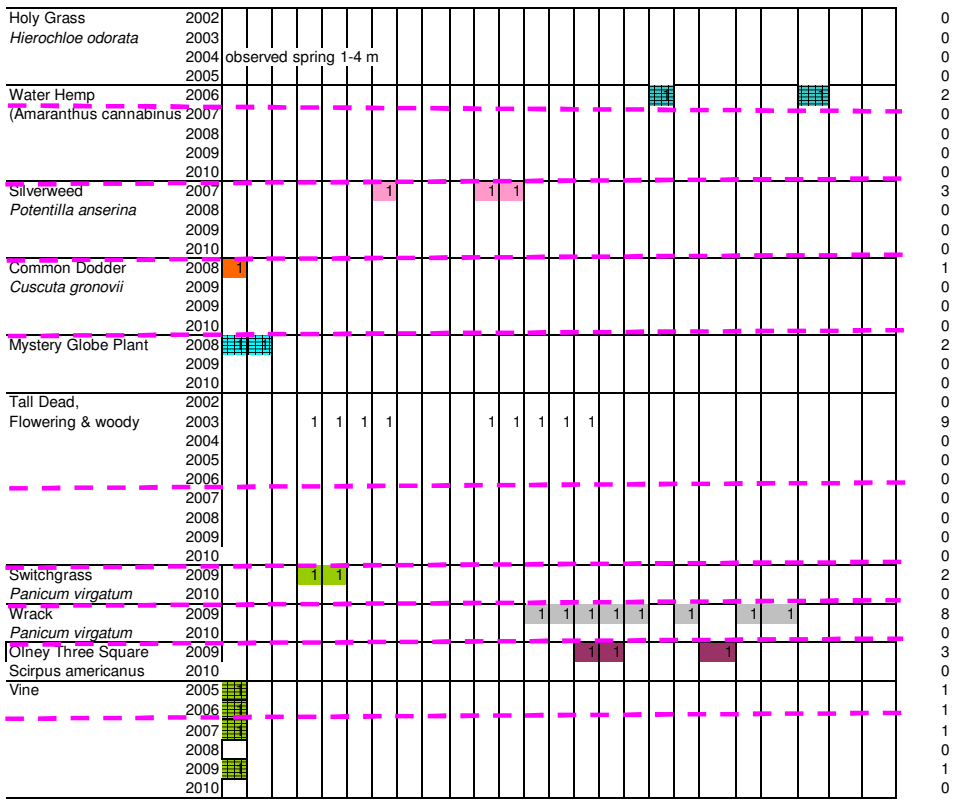
Location: Joppa Flats, Newb
 Transect 3 (near parkinglot) upland end 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 marsh end
 1 METER SEGMENTS



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Fig.

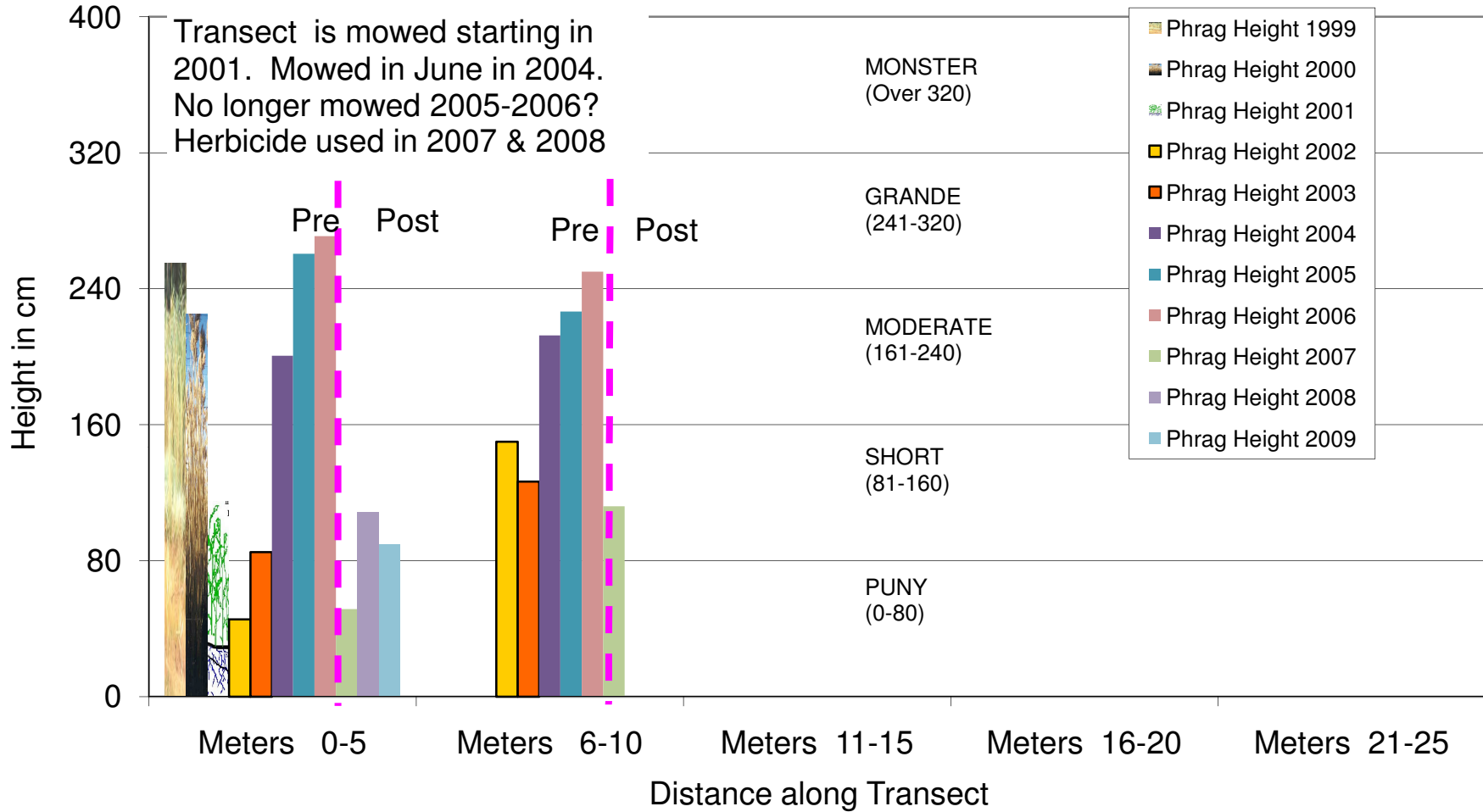




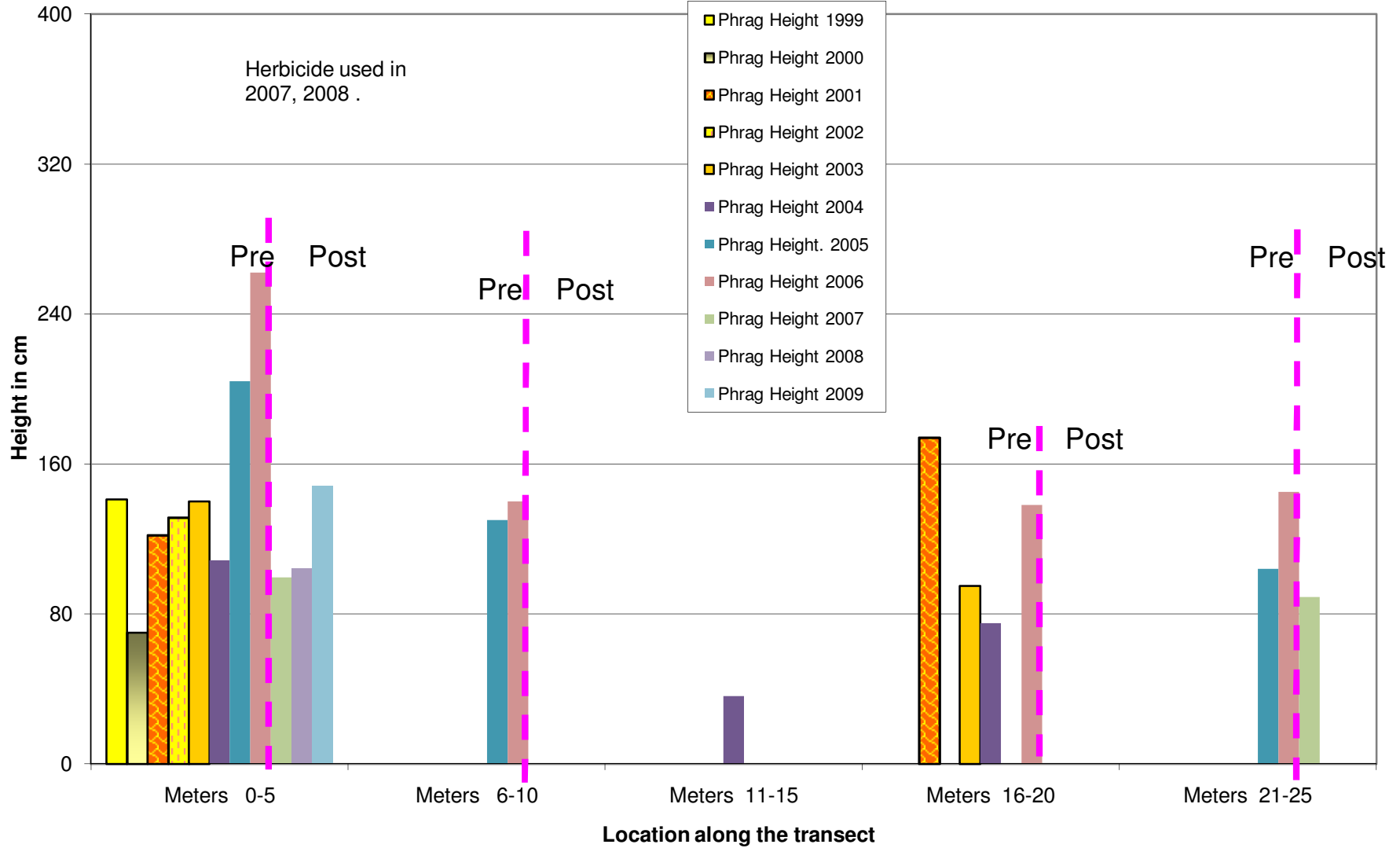
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upland end 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 marsh end
1 METER SEGMENTS
 Location: Joppa Flats, Newburyport **Transect 3 (near parkinglot)**

Average *Phragmites* Heights, Transect 3, Joppa Flats, Newburyport, MA, 2001-2009



Average *Phragmites* Heights, Transect 4, Joppa Flats, Newburyport 1999-2009



Average *Phragmites* Heights, Transect 5, Joppa Flats 2002-2009

