

**Errata for: PENOBSCOT RIVER MERCURY STUDY FINAL REPORT,
Mercury Contamination of the Penobscot River Estuary: Current
Situation, Remediation Targets and Possible Remediation
Procedures, Submitted to Judge John Woodcock United States
District Court (District of Maine), April 2013** By: The Penobscot River Mercury
Study Panel

Errata compiled by C. Kelly, December 2013 and January 2014.

Note: Chapters were checked primarily for proper sequencing in Figure and Table numbers, and proper referencing of Figure and Table numbers in the text. Some other errors were also corrected, as requested by chapter authors. There may be additional errors that were not specifically checked during this exercise.

Chapter 1 Errata

p. 1-14. The paragraph beginning “the natural attenuation study...” contains references to Table 1-2. While the text of this paragraph does not need to be changed, the information on which this table is based (Table 6-1) has been updated since April 2013, when the Phase II report was finished. This update affected only the averages for Fort Point Cove in Table 1-2 (see erratum below).

p. 1-29, Table 1-2. In column 1, the average recovery half time for Fort Point Cove should be changed from “61” to “67” years, as a result of adjustments made to Table 6-1 after the Phase II report was submitted.

p. 1-29, Table 1-2. In the heading for the second column, add “(years)” underneath ““Recovery Half-time””.

p. 1-36. Figure 1-5 caption: “the first half of the 1990’s” should be “the first half of the “1900’s””.

p. 1-55. The Y-axis for Figure 1-19 should read “Total Hg, $\mu\text{g/gww}$ ”.

Chapter 2 Errata

p. 2-7. First paragraph, beginning “Effects of methyl Hg on bird eggs...”.

“At end of paragraph, add the following: “Guillemots were not tested for toxicity to eggs in the Heinz et al (2009) study. However, since guillemots are also fish-eating, they may also be relatively insensitive to methyl Hg, and 800 ng/g should also be quite protective for them as well.”

p. 2-16. In paragraph above table, the first sentence beginning “Virginia rails...”: “(Table 3-5)” should be “(Table 2-5)”

p. 2-16. In caption: “Table 3-5” should be “Table 2-5”.

p. 2-17. In first paragraph, headed “Black Guillemots”, the sentences “Although no information is available about Hg toxicity thresholds in guillemots specifically, the toxic effects threshold for Hg in bird eggs generally is around 800 ng/g and is about 1,200 ng/g for Hg adult bird blood. Current concentrations exceed these toxic thresholds in many individuals. If concentrations at sites in Penobscot Bay were lowered by about 35%, this would place most individual birds and eggs below toxic thresholds; these reductions would not lower Hg in guillemot eggs below those of a reference site.”

should be changed to :

“Although no information is available about Hg toxicity thresholds in guillemots specifically, the toxic effects threshold for Hg in bird eggs generally is around 800 ng/g and is about 2,000 ng/g for Hg in the blood of fish-eating birds. Current concentrations in eggs in guillemots sampled in Penobscot Bay exceeded the toxic threshold of 800 ng/g in 6 of 9 birds (67%). Concentrations in guillemot blood were all below the toxic threshold of 2,000 ng/g. If concentrations at sites in Penobscot Bay were lowered by about 25%, all guillemot eggs would be below the toxic threshold of 800 ng/g; these reductions would not lower Hg in guillemot eggs or blood below those of a reference site.”

p. 2-17. Bottom paragraph headed “Bats”: Replace text starting with “A contaminated site in Virginia....” and ending with “valid to compare two different species.” with new text as follows:

“Hg in bats at the HoltraChem site can be compared to those at a contaminated site in Virginia (South River) (Wada et al. 2010; Nam et al. 2012; Chapter 14). At the South River, Hg in blood of adult female big brown bats averaged 0.11 µg/g w.w. as compared to the much higher levels at HoltraChem of 0.58 µg/g w.w. in the blood of adult female little brown bats (Wada et al.

2010; Chapter 14). Hg in fur of adult female big brown bats at South River averaged 28,010 ng/g f.w. (Wada et al. 2010) and 132,000 ng/g f.w. in the fur of adult female little brown bats (Nam et al. 2012) as compared to 39,000 and 38,000 ng/g f.w. for adult female little brown bats and northern long-eared bats at HoltraChem. These comparisons should be treated with caution, because the species sampled at these two sites were not always the same.”

p. 2-18. Conclusion section: First sentence beginning “Of species.... “: Table 3-6” should be “Table 2-6”.

p. 2-18. Second paragraph, first sentence beginning “Reductions needed... “: Table 3-6” should be “Table 2-6”.

p. 2-24. Add the following reference:

Nam, D, D Yates, P Ardapple, DC Evers, J Schmerfeld, N Basu. 2012. Elevated mercury exposure and neurochemical alterations in little brown bats (*Myotis lucifugus*) from a site with historical mercury contamination. *Ecotoxicology* 21: 1094-1101.

Chapter 3 Errata

p. 3-12. In the caption for Figure 3-7, change “(see Figure 3-5 for locations)” to “(see Figure 3-6 for locations)”.

p. 3-21. Section 4.3.1, second sentence: Change “(Figures 3-9 and 3-28)” to “(Figures 3-9 and 3-27)”. The same correction is needed in the next to last sentence of the same paragraph.

p. 3-23. Section 5.1. In first sentence, change “Figures 3-11 and 3-12” to “Figures 3-12 and 3-13”.

p. 3-25. Ignore Figure 3-11 on this page. It is a duplicate of Figure 3-12 on p. 26.

p. 3-25. In the sentences beginning “Composite sample concentrations...” and “Total Hg concentrations...”, “Figure 3-12” should be “Figure 3-13”.

p. 3-43. Second paragraph: In the sentence beginning “Given these assumptions...”, the reference to “Figure 3-20” should be changed to “Figure 3-10”.

p. 3-45. *Radon (September 2009)* – In the sentence, “During the three-day record in September, radon-222 concentrations from the continuous radon monitor (see Figure 3-20)”, the figure reference should be “(Figure 3-21)”.

p. 3-45. In the sentence “On all days there was a trend of increasing radon with decreasing water level (Figure 3-24)...”, Figure 3-24 is referred to correctly, but it is out of order in the pages of the chapter (Figure 3-23 is on p. 46, Figure 3-25 is on p. 48, and Figure 3-24 is on p. 50).

p. 3-52. In the sentence, “In September 2009 the more comprehensive sampling of porewater and seepage did not detect any Hg concentrations greater than 437 ng/L (Tables 3-13 and 3-14).”, the Tables referred to should be “(Tables 3-12 and 3-13)”.

Chapter 4 Errata

Throughout chapter: All figures in this chapter should be numbered “4-1, 4-2”, etc., instead of “3-1, 3-2”, etc.

p. 4-2, at bottom: “...mixture salinities of 13% and 16‰ (Figure 3-4)” should be “...mixture salinities of 13‰ and 16‰ (Figure 3-4).”

Chapter 5 Errata

None found.

Chapter 6 Errata

None found in body of text. Table 6-1 was revised by Peter Santschi and sent to all parties on December 7, 2013. For convenience, this table is reproduced below.

Table 6-1. Summary of recovery parameters.

(T_{1/2} and T_{1/2}* calculated as ln2/a, with a from Hg(t) = Hg(t=21) exp(-a*t) + Hg(∞), with Hg(∞) = asymptotic level of either 0 or 400 ng/g (T_{1/2}*), and 2009 as time zero, and 1988 as time 21 years).

Core	T _{1/2} (y)	T _{1/2} * (y)	Hg _(o) ng/g	Hg _(max) ng/g	Hg _(o) /Hg _(max)	Sed Rate	
						Hg (cm/yr)	Inv Hg (ng/cm ²)
Mendall marsh							
MM_01B_09V	36	16	555	1730	0.321	0.20	10754
MM_02B_09V	19	10	564	4680	0.121	1.61	103098
MM_03B_09V	31	19	855	3290	0.260	2.56	80264
MM_04C_09V	23	20	646	5140	0.126	0.55	62996
MM_05C_09V	25	12	826	3000	0.275	0.44	17218
MM_06A_09V	22	11	678	3270	0.207	0.50	34219
MM_07A_09V	15	12	626	6310	0.099	0.69	53799
MM_08A_09V	18	8	574	3860	0.149	0.37	23039
MM_09B_09V	12	11	471	4420	0.107	0.42	14850
MM_11B_09V			1080	1200	0.900	0.08	8189
MM_12C_09V			88	88.2	0.998		1781
Penobscot River							
PBR_01.5B_09V	50		42	1270	0.033	1.61	24231
PBR_04C_09V	26		108	2790	0.039	1.85	50947
PBR_05A_09V	54	39	1750	46300	0.038	0.79	148014
PBR_06C_09V	9		140	2640	0.053	0.74	47856
PBR_09A_09V			1975	1976.5	1.204	0.93	65244

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PBR_10A_09V	13	6.7	507	3870	0.131	0.83	43719
PBR_11B_09V			646	1960	0.330	0.79	32389
PBR_13B_09V			1130	1310	0.863	0.88	26975
PBR_14CR_09V			1310	4260	0.308	1.01	60105
PBR_16A_09V	16	12	1001	73300	0.014	0.42	150451
PBR_17A_09V	28	16	634	4850	0.131	0.83	78639
PBR_18B_09V	23	15	969	2320	0.418	0.44	24507
PBR_19A_09V	12	8.4	643	6440	0.100	1.25	95720
PBR_20A_09V	47	35	430	3560	0.121	0.30	33352
PBR_21B_09V	12	3	406	2670	0.152	0.18	29310
PBR_21C_09V	13		294	4050	0.073	0.39	29796
PBR_23B_09V	9	3	404	3020	0.134	0.35	42730
PBR_25A_09V	35	20	814	1920	0.424	0.08	16258
PBR_26A_09V			1034	1340	0.772	0.18	13941
PBR_27B_09V			501	10193	0.049	1.01	74268
PBR_28B_09V	106	72	1060	2710	0.391	0.37	11261
PBR_29A_09V			1410	3390	0.416	0.39	43753
PBR_30B_09V			844	1670	0.505	0.32	17238
PBR_31C_09V	41	19	598	4240	0.141	0.64	30224

Core	$T_{1/2}$	$T_{1/2}^*$	$Hg_{(o)}$	$Hg_{(max)}$	$Hg_{(o)}/Hg_{(max)}$	Sed Rate	Inv Hg
	(y)	(y)	ng/g	ng/g		Hg (cm/yr)	

Penobscot Estuary

ES_01B_09V	56	12	679	2080	0.326	0.46	15953
ES_02C_09V	19	12	772	2140	0.361	0.64	26792
ES_03C_09V	18	29	239	803	0.298	0.12	9936
ES_04C_09V	76	60	585	905	0.646	0.27	6372

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ES_06A_09V	136		678	939	0.722	0.20	9779
ES_07A_09V	117	69	331	346		0.15	4232
ES_08A_09V			383	495	0.774	0.35	7772
ES_08C_09V	117		290	370	0.784	0.39	6663
ES_09C_09V			236	365	0.647	0.35	5650
ES_12C_09V	36	13	332	406	0.818	0.42	5597
ES_13C_09V	132		420	589	0.713	0.23	7983
ES_14C_09V	79	32	645	934	0.691	0.88	30529
ES_15A_09V	79	34	310	583	0.532	0.46	7491
ES_16C_09V	37	13	599	959	0.625	0.35	12548
ES_17C_09V	122	69	873	2710	0.322	0.79	27304
ES_18B_09V			872	1200	0.727	0.08	11416
ES_19C_09V	44	27	249	1120	0.222	0.69	27901
ES_20C_09V	93	45	725	2060	0.352	0.46	22902
Orland River							
OR_01B_09V	100		577	577	1.000		4190
OR_02B_09V			1930	2640	0.731	0.35	30262
OR_03A_09V	125	90	1300	3080	0.422	0.69	42534
OR_05C_09V	35	21	754	4650	0.162	0.74	44048
OR_06B_09V	48	30	947	4510	0.210	0.74	44713

Chapter 7 Errata.

p. 7-4. In the sentence, “Bottom tripods with upward-looking acoustic Doppler current profilers, conductivity-temperature-pressure and optical backscatter sensors were placed at 6 locations in the estuary in 2010 and 2 locations in 2011 (Figure 7-2, Figure 7-1).”, “Figure 7-1” should be “Table 7-1”.

p. 7-6. In the table heading, “Figure 7-1” should be “Table 7-1”.

p. 7- 6. In the paragraph “In 2010, surveys were conducted on three occasions, first during the freshet on April 1-5, 2010, second on May 10-14, and third on June 26-29 (Figure 7-2). During each interval, large-scale surveys were conducted over the entire estuary from Fort Point to Bangor (Figure 7-2) and tidal-cycle surveys were conducted over selected transects. During 2011, measurements were obtained during 4 periods, in March, April, May and June (Figure 7-2), with repeated along-estuary surveys conducted along the main channel of the Penobscot.”, all references to “(Figure 7-2)” should be “(Table 7-2)”.

p. 7-7. In the sentence, “A limited set of grab samples were obtained during the April, May, 2010 cruises, and more extensive data were obtained in June, 2010, June, 2011, and August, 2011 (Figure 7-3).”, “(Figure 7-3)” should be “(Table 7-3)”.

p. 7-8. Table 17a-3 should be Table 7-3.

p. 7-9. In the sentence, “Tidal currents were strongest in the constricted parts of the Penobscot River, and weakest in the side embayments (Figures 7a-4 and 7a-5)”, the figures referred to should be “(Figures 7-4 and 7-5)”.

p. 7-21. The table headed “Figure 7-4” should be “Table 7-4”.

p. 7-25. Third paragraph: In the sentence “This may be explained by the reduction in tidal amplitude, which results in a 25% reduction in the tidal mixing factor (Figure 7-4).”, “(Figure 7-4)” should be “(Figure 7-14)”.

p. 7-25. Last paragraph: In the sentence, “During the June 2011 survey (Figure 7-21), the combination of low river flow and weak tides (Figure 7-4)...”, “(Figure 7-4)” should be “(Figure 7-14)”.

p. 7-30. In the sentence “The times of the four surveys in 2010 are shown in Figure 7-23 relative to river flow and tidal conditions.”, “Figure 7-23” should be “Table 7-5”.

p. 7-32. Top line: “(Figures 7a-27 and 7a-28)” should be “(Figures 7-27 and 7-28)”.

p. 7-39. Top line: “Figgure 7a-36” should be “Figure 7-36”.

p. 7-45. “The area of each segment was calculated from a numerical planimetric calculation”. should be changed to “The area of each segment was calculated from a numerical planimetric calculation (Table 7-6)”.

p. 7-45. The table heading should be changed from “Figure 7- 6” to “Table 7-6”.

p. 7-46. “Based on Figure 7-6,...” should be “Based on Table 7-6,...”

p. 7-46. At bottom: “Figures 7a-4 and 7a-5” should be “Figures 7-4 and 7-5”.

p. 7-47. Top paragraph: “Figures 7a-5 and 7a-6” should be “Figures 7-5 and 7-6”.

p. 7-47. Second paragraph: “Figures 7a-6 and 7a-8” should be “Figures 7-6 and 7-8”.

p. 7-47. Third paragraph: “Figures 7a-25 to 7a-29” should be “Figures 7-25 to 7-29”.

p. 7-47. Fourth paragraph: “Figures 7a-30 to 7a-33” should be “Figures 7-30 to 7-33”.

p. 7-48. In the paragraph beginning “Tidal resuspension...”:

- “Figures 7a-9 and 7a-10” should be “Figures 7-9 and 7-10”.
- “(Figures 7a-18, 7a-20, and 7a-22)” should be “(Figures 7-18, 7-20, and 7-22)”.
- “(Figures 7a-4 and 7a-10)” should be “(Figures 7-4 and 7-10)”.

Chapter 8 Errata

- p. 8-5.** Section 4.1.1, first sentence: “(Figure 8-1)” should be “(Figure 8-1a and b)”.
- p. 8-7.** Section 4.1.2, sentence at bottom of page: “Because Hg is tightly bound to the sulfhydryl groups of organic matter, it is useful to examine Hg concentrations per gram of carbon, in addition to the previous analysis of Hg per gram dry wt. of material.” Add reference to figures at end of sentence (Figures 8-3a and 8-3b).
- p. 8-9.** Top Figure: Caption should be changed from “Figure 8-4” to “Figure 8-3c”
- p. 8-9.** Sentence at bottom of page: Normalizing Hg to per gram carbon resulted in means that were less different from each other than concentrations of Hg per gram dry wt., as expected ...” should be changed to “Normalizing Hg to per gram carbon resulted in means that were less different from each other (Figure 8-3c) than means for concentrations of Hg per gram dry wt (Figure 8-2), as expected ...”
- p. 8-10.** Section 4.1.3: “(Figure 8-3a and b)” should be changed to “(Figures 8-3d and 8-3e)”. “(Figure 8-3a)” should be changed to “(Figure 8-3d)”. “(Figure 8-3b)” should be changed to “(Figure 8-3e)”.
- p. 8-10.** Figure caption for bottom figure: “Figure 8-3a” should be changed to “Figure 8-3d”.
- p. 8-11.** Figure caption for top figure: “Figure 8-3b” should be changed to “Figure 8-3e”.
- p. 8-12.** Section 4.1.4, first sentence: “(Figure 8-5a)” should be changed to “(Figures 8-5a and 8-5b)”.
- p. 8-14.** Paragraph below Table 8-4: Add at end of first sentence: “(Figure 8-6)”.
- p. 8-21.** Paragraph below Figure 8-14: “(Figure 8-11)” should be “(Figure 8-10)”

Chapter 9 Errata.

None found.

Chapter 10 Errata.

p. 10-13. In the paragraph beginning “The second interpolation routine...”, the figure reference at the end of the paragraph should be changed from “Figure 10-4” to “Figure 10-41”.

p. 10-13. Figure caption: “Figure 10-4. Example of data smoothing using RegionFit” should be numbered “Figure 10-4a”.

p. 10-15. Figure caption: “Figure 10-4” should be changed to “Figure 10-4b”.

p. 10-14. In the sentence “Sampling of flood and ebb tidal discharges on the South Marsh River was conducted at up to three stations across the direction of flow and at up to three depths (Figure 10-4).”, “(Figure 10-4)” should be changed to “(Figure 10-4b)”.

p. 10-14. In the sentence “Typically, sampling at near high tide involved three evenly spaced stations at three depths, three stations at mid-tides at two depths and three stations at near low tide at one depth (Figure 10-4).”, “(Figure 10-4)” should be changed to “(Figure 10-4b)”.

p. 10-24. In the sentence “Water and salt mass balances (calculated as % difference = $100 \times \text{net/flood}$) for the fully characterized 2010 tidal cycles (Table 10-1)...”, “(Table 10-1)” should be changed to “(Table 10-3)”.

p. 10-37. In the sentence “Three tidal cycles at the hydrological station (CS, Figure 10-2) were characterized (Figures 10-15 and 10-16) at the lower end of Cindy’s Slough in 2010 (June 23, August 26 and October 9).”, “(CS, Figure 10-2)” should be changed to “(CS, Figure 10-1b)”.

Chapter 11 Errata

- p. 11-7.** In the sentence, “Sample preservation methods are given in Tables 11a-1.4.”, “Tables 11a-1.4)”, should be “(Table 11-1.4)”
- p. 11-9.** In the sentence, “Samples were collected for all of the parameters listed in Tables 11a-1.2 and 11a-1.3,...”, “Tables 11a-1.2 and 11a-1.3” should be “(Tables 11-1.2 and 11-1.3)”.
- p. 11-45.** In the sentence “Figures 11-2.20 to 11-2.22 show that average Hg and methyl Hg concentrations at these sites in 2011,...”, change “Hg and methyl Hg concentrations” to “% MeHg”.
- p. 11-57.** Figure caption: “Figure 11-2.27” should be changed to “Figure 11-2.27a”.
- p. 11-52.** Second paragraph: “(Figure 11-2.32b)” should be changed to “(Figure 11-2.32).”
- p. 11-63.** Figure caption: “Figure 11-2.32a” should be changed to “Figure 11-2.32”.
- p. 11-89.** Third paragraph. The sentence “Figure 11-3.2 shows methyl Hg vs. Hg in the solid phase in sediments and soils of the comparison ecosystems, and Figure 11-3.3 shows the averages and standard deviations for the study systems.” should be changed to “Figure 11-3.2 shows methyl Hg vs. Hg in the solid phase in sediments and soils of the comparison ecosystems, and Figure 11-3.3 shows the averages and standard deviations for % methyl Hg in the same systems.”
- p. 11-97.** In the sentence “Bulk density, pH, and Hg K_D were negative correlates (Figure 11-4.12).”, “(Figure 11-4.12)” should be changed to “(Figures 11-4.12 and 11-4.14)”
- p. 11-98.** In the sentence “ K_D for both total Hg and methyl Hg correlated significantly with DOC across the Penobscot surface data set (Figure 11-4.14), but were weak.”, (Figure 11-4.14)” should be “(Figure 11-4.16)”.
- p. 11-99.** In the sentence “However, in organic soils, including the Penobscot data set (Figure 11-4.16),...”, (Figure 11-4.16)” should be “(Figure 11-4.17)”

Chapter 12 Errata

- p. 12-8.** Figure 12-1. All x-axes labels on the 4 graphs in this figure should be the same as in the top left panel.
- p. 12-12.** Figure caption. “Figure 11-b4” should be changed to “Figure 12-4”.
- p. 12-14.** Figure caption. “Figure 5” should be changed to “Figure 12-5”.
- p. 12-16.** Figure caption. “Figure 6” should be changed to “Figure 12-6”.
- p. 12-17.** In the sentence “When measurements were separated by elevation, % methyl Hg had a consistently positive relationship with temperature at the High elevation sites, but not at the other elevations (Figure 12-8 a,c,e,g,i,k).”, the figure references should be “(Figure 12-8 a,c,e,g,i,k)”.
- p. 12-23.** In the table caption “Table 12-3: Results for regression of methyl Hg concentrations versus total Hg concentrations on sampling dates in 2008.”, “sampling dates in 2008” should be changed to “sampling dates in 2007 and 2008”.

Chapter 13 Errata

None found.

Errata Chapter 14

- p. 14-11.** In paragraph beginning “Methyl Hg was significantly lower in the eels...”, in the last sentence, “In 2009 methyl Hg concentrations were significantly lower in eel samples collected at OV5 relative to all sites in the BO and OB reaches (ANCOVA, adjusted for age, $P < 0.001$; Tukey HSD, $\alpha = 0.05$).”, change “OV5” to “OV4”.
- p. 14-12, Figure 14-3.** In panel of data for 2010, remove small black numbers (which are barely legible) from above the blue columns.
- p. 14-20, Figure 14-7.** In figure caption, “lease” should be “least”.
- p. 14-25, first paragraph in section 7.2.** “interanula” should be “interannual”
- p. 14-27, Section 7.3.** At end of first sentence insert “(Figure 14-11)”.
- p. 14-52, Section 10.6.** In first sentence, change “Table 2” to “Table 14-2”.
- p. 14-53, Section 11.1.** In first sentence, change “late April” to “late May”.
- p. 14-55.** In paragraph beginning, “This pattern of Hg concentrations in bird feathers...”, insert “Appendix 14-8b” at end of this first sentence.
- p. 14-56, after Figure 14-27.** Insert Figure 14-28, presented below.

Figure 14-28 (insert after Figure 27 on p. 14-56).

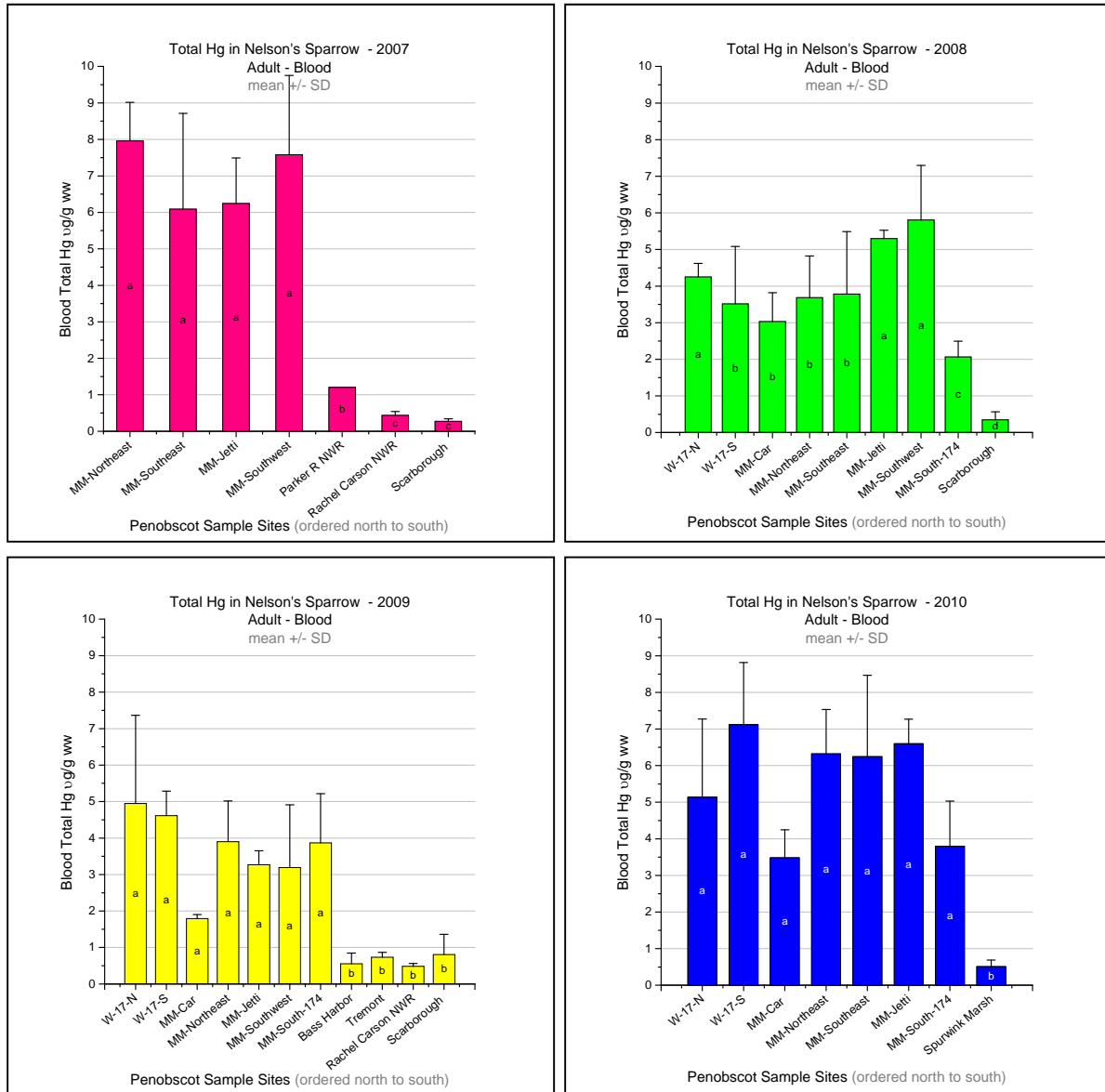


Figure 14-28. Geographic comparisons of mean Hg concentrations in blood sampled from adult Nelson's sparrows at all sites sampled in each year of the study. Letters in each bar define homogenous groups where Hg concentrations were statistically equivalent.

Figure captions 14-28 and greater, beginning on p. 14-57. All figure captions from Figure 14-28 on should have their numbers increased by 1, e.g., “Figure 14-28 should be 14-29”, “Figure 14-29” should be “Figure 14-30”, and so on, because Figure 14-28 was left out when the pdf for this chapter was made. However, the figure numbers in the text are as originally written and refer to the figure numbers as they are supposed to be. For example, in the text, if it says Figure 14-30, that refers to the figure number 14-29 as numbered in the printed (pdf) version, which is the corrected figure number 14-30.

p. 14-60. In last sentence of first paragraph, “The S2 secondary feather, sampled in 2008, exceeded the Hg feather target in 85% of birds sampled (mean total Hg, 15 ± 7 $\mu\text{g/g}$ fresh wt.).”, insert “in Mendall Marsh” after “2008”.

p. 14-62. “Table 3” should be Table “14-3”.

p. 14-65. “Table 3” should be Table “14-3”.

p. 14-70. “Table 3” should be “Table 14-3”.

p. 14-76. “Table 3” should be “Table 14-3”.

p. 14-78. The Y-axis on the figure “Total Hg in the Blood of Adult Virginia Rails 2007-2010” should have units of $\mu\text{g/gww}$.

p. 14-84. Section 16.3, top paragraph: After “ANOVA, $P < 0.05$ ”, insert “Figure 14-44”

p. 14-94. “Table 3” should be “Table 14-3”.

p. 14-100. Section 18.3: “Table 4” should be “Table 14-4”.

p. 14-101. The Table caption number should be “Table 14-4”.

p. 14-116. “Appendix 14-7b” should be “Appendix 14-6b”.

p. 14-118. “Appendix 14-8c” should be “Appendix 14-6c”.

p. 14-119. “Appendix 14-9d” should be “Appendix 14-6d”.

p. 14-120. “Appendix 14-10” should be “Appendix 14-7”.

p. 14-121. “Appendix 14-11a” should be “Appendix 14-8a”.

p. 14-122. “Appendix 14-12b” should be “Appendix 14-8b”.

p. 14-127. “Appendix 14-13a” should be “Appendix 14-10a”.

p. 14-128. “Appendix 14-14b” should be “Appendix 14-10b”.

p. 14-129. “Appendix 14-13a should be “Appendix 14-10a”.

p. 14-130. “Appendix 14-16b should be “Appendix 14-11b”.

p. 14-131. “Appendix 14-17 should be “Appendix 14-12”.

p. 14-132. “Appendix 14-18 should be “Appendix 14-13”.

p. 14-133. “Appendix 14-19 should be “Appendix 14-14”.

p. 14-134 “Appendix 14-20 should be “Appendix 14-15”.

Chapter 15 Errata

p. 15-8. In the sentence “Methyl Hg concentrations showed significant, though conflicting, trends at three of the six sites (Figure 3; Appendix 4).”, “Figure 3” should be “Figure 15-3”.

p. 15-17. In the paragraph beginning “Demonstrating that Hg in biota is often related to Hg in surface sediments...”, the sentence “Figures 12d-7 and 12d-8 provide two examples of these correlations.” should be changed to “Figures 15-7 and 15-8 provide two examples of these correlations.”

p. 15-18. In the Figure caption “Figure 15-7. Relationship between total Hg in Nereis and methyl Hg in surficial (0-3 cm) sediments, based on data from 2006-7 (Phase I of the Study). See Table 1 for statistical details.”, “Table 1” should be “Table 15-1”.

Chapter 16 Errata

- p. 16-8. "Figure 16-3" should be "Figure 16-2".
- p. 16-11. "Tables 16-3 and 16-4" should be "Tables 16-2a and b".
- p. 16-13. The table heading "Table 16-2" should be "Table 16-2a".
- p. 16-14. The table heading "Table 16-3" should be "Table 16-2b".
- p. 16-15. The table heading "Table 16-4" should be "Table 16-3".
- p. 16-15. The section heading "5 MIXING MODELS" should be "4.4 Mixing Models"
- p. 16-16. Section number "5.1" should be "4.5".
- p. 16-16. Section heading "5.2 Aquatic Food Web—Source of Hg in the Lower Penobscot" should be "**5 AQUATIC FOOD WEBS IN THE LOWER PENOBSCOT**"
- p. 16-16. The heading "5.3 Benthic V Pelagic" should be deleted.
- p. 16-16. In the sentence "Note that data summaries for aquatic food chains can be found in Appendices 16-1 to 16-3", the appendices referred to should be "16-1a,b to 16-3a,b"
- p. 16-16. Section number "5.4" should be "5.1"
- p. 16-16. Section number "5.4.1" should be "5.1.1"
- p. 16-16. In the bottom paragraph on this page, "Table 6-4" should be "Tables 16-4a,b, and c".
- p. 16-17. "Table 16-5" should be "Table 16-4a".
- p. 16-18. "Table 16-6" should be "Table 16-4b"
- p. 16-19. "Table 16-7" should be "Table 16-4c".
- p. 16-20. Section Heading "5.5 BO Reach" should be "5.2 BO Reach"
- p. 16-21. Section Heading "5.5.1 BO-American Eel" should be "5.2.1 BO-American Eel".
- p. 16-23. Section Heading "5.6 OB Reach" should be "5.3 OB Reach"
- p. 16-25. Section Heading "5.6.2 OB-Tomcod" should be "5.3.2 OB Tomcod"
- p. 16-27. Section Heading "5.6.3 OB-Rainbow Smelt" should be "5.3.3 OB-Rainbow Smelt"
- p. 16-27. Section Heading "5.6.4 OB-Mummichog" should be "5.3.4 OB-Mummichog".

p. 16-28. Section Heading “5.7 ES Reach” should be “5.4 ES Reach”.

p. 16-30. Section heading “5.71 ES Tomcod” should be “5.4.1 ES Tomcod”.

p. 16-30. In the first sentence “Tomcod in the northern ES reach, based on stomach content analyses, fed in both the pelagic and benthic food webs (Table 16-4).”, (Table 16-4 should be “Table 16-4a,b,c”).

p. 16-30. In the first sentence of the last paragraph, “contribute” should be changed to “contribution”.

p. 16-34. Section heading “5.7.2 ES-Rainbow Smelt” should be “5.4.2 ES-Rainbow Smelt”.

p. 16-34. In the first sentence “ Rainbow smelt, based on stomach content analyses (Table 16-4)...”, “Table 16-4” should be “Table 16-4a,b,c”.

p. 16-35. Section heading “5.7.3 ES-Lobster” should be “5.4.3 ES-Lobster”.

p. 16-37. The section heading “ **6 TROPHIC LEVEL of TARGET SPECIES**” should be changed to “**6 TROPHIC LEVEL of FISH AND LOBSTER TARGET SPECIES**”

p. 16-39. The captions for Figures 16-13 and 16-14 are reversed. For Figure 16-13:

“ Figure 16-13. Rainbow smelt trophic levels versus mean total Hg, antilog of least squares means, adjusted for fish length. At all sites, except ES04, there was no correlation between trophic level and Hg concentrations in rainbow smelt. At ES04, the reference site near Searsport, both trophic level and Hg concentrations were low.”

should be changed to

“Figure 16-13. Tomcod trophic levels versus mean total Hg, antilog of least squares means, adjusted for fish length. No relationship was evident between muscle Hg concentrations in tomcod and tomcod trophic level in the lower Penobscot region.”

p. 16-40. The caption for Figure 16-14:

“ Figure 16-14. Tomcod trophic levels versus mean total Hg, antilog of least squares means, adjusted for fish length. No relationship was evident between muscle Hg concentrations in tomcod and tomcod trophic level in the lower Penobscot region.”

should be changed to

“ Figure 16-14. Rainbow smelt trophic levels versus mean total Hg, antilog of least squares means, adjusted for fish length. At all sites, except ES04, there was no correlation between

trophic level and Hg concentrations in rainbow smelt. At ES04, the reference site near Searsport, both trophic level and Hg concentrations were low.”

p. 16-42. The heading for section 7 “SITE FIDELITY OF TARGET SPECIES” should be changed to “SITE FIDELITY OF TARGET SPECIES IN THE AQUATIC FOOD WEB”.

p. 16-50. The section heading “7.2.1 American Eel” should be changed to “7.3 American Eel”.

p. 16-51. In the figure caption, “Figure 16-23” should be changed to “Figure 16-22”.

p. 16-52. Section heading “7.2.2 Tomcod” should be changed to “7.4 Tomcod”.

p. 16-52. Section heading “7.2.3 Mummichog” should be changed to “7.5 Mummichog”.

p. 16-53. In the figure caption, “Figure 16-24” should be changed to “Figure 16-23”.

p. 16-54. In the figure caption, “Figure 16-25” should be changed to “Figure 16-24”.

p. 16-55. Section heading “7.2.4 Rainbow Smelt” should be changed to “7.6 Rainbow Smelt”.

p. 16-56. In the figure caption, “Figure 16-26” should be changed to “Figure 16-25”.

p. 16-58. In Section 8.1, at end of first paragraph, “(Figure 16-33)” should be changed to “(Figure 16-2)”.

p. 16-58. In Section 8.1, last sentence “Note that raw data summaries for wetland food chains can be found in Appendices 16-4 to 16-8.”, “Appendices 16-4 to 16-8” should be changed to “Appendices 16-4a,b to 16-8a,b”.

p. 16-70. Section 8.4.a. In the sentence “As found at the other marshes along the lower Penobscot River, the concentration of total Hg in bird blood at W17 was approximately 10 times greater than the concentration of methyl Hg in invertebrates sampled from the same marsh (Figure 16-39).”, “(Figure 16-39)” should be changed to “(Figure 16-32)”.

p. 16-87. In the sentence “The $\delta^{15}\text{N}$ values for horseflies (Tabanid), adults unless otherwise shown on legend, hovered around 6‰ across most sites (Figure 16-44).”, “(Figure 16-44)” should be changed to “(Figure 16-45)”.

p. 16-87. In the sentence “Leafhoppers (Cicadellidae) were very similar in carbon (-24 to -28‰) and nitrogen (5 to 6‰) signatures at both Mendall Marsh sites and at the transect 1 site at W17 (Figure 16-45).”, “(Figure 16-45)” should be changed to “(Figure 16-44)”.

p. 16-89. The figure caption for Figure 16-44 (leafhopper data) should be changed to “Stable isotope bi-plots of $\delta^{13}\text{C}$ v $\delta^{15}\text{N}$ (top plot) and $\delta^{13}\text{C}$ v $\delta^{34}\text{S}$ (bottom plot) for leafhoppers

(Cicadellidae). Invertebrates were sampled at two sites, transect 1 (TR1), at the water's edge, and transect 2 (TR2) in the marsh interior."

p. 16-90. The figure caption for Figure 16-45 (horsefly data) should be changed to "Stable isotope bi-plots of $\delta^{13}\text{C}$ v $\delta^{15}\text{N}$ (top plot) and $\delta^{13}\text{C}$ v $\delta^{34}\text{S}$ (bottom plot) for horseflies (Tabanid). Invertebrates were sampled at two sites, transect 1 (TR1), at the water's edge, and transect 2 (TR2) in the marsh interior."

p. 16-94. Delete the heading "SUMMARY OF FINDINGS".

p. 16-94. In sentence "Carbon isotope signatures were consistently heavier by 3 to 12‰ in invertebrates sampled at Scarborough Marsh than at any of the marshes examined along the lower Penobscot River.", add "In summary, ..." at beginning of sentence.

p. 16-94. The section heading "11.1 Marsh Birds along the lower Penobscot River and in Scarborough Marsh" should be re-numbered "10.2".

p. 16-106. "Appendix 16-2b" should be re-numbered "Appendix 16-1b"

p. 16-107. "Appendix 16-3a" should be re-numbered "Appendix 16-2a"

p. 16-108. "Appendix 16-4b" should be re-numbered "Appendix 16-2b"

p. 16-108. The printed page number on this page is "105" when it should be "108", and all page numbers after this page are wrong, i.e. "106" should be "109", etc. **All page designations in this errata are for the correct page number, not the printed page number.**

p. 16-109. "Appendix 16-5a" should be re-numbered "Appendix 16-3a".

p. 16-110. "Appendix 16-6b" should be re-numbered "Appendix 16-3b".

p. 16-111. "Appendix 16-7a" should be re-numbered "Appendix 16-4a".

p. 16-112. "Appendix 16-8b" should be re-numbered "Appendix 16-4b".

p. 16-113. "Appendix 16-9a" should be re-numbered "Appendix 16-5a".

p. 16-114. "Appendix 16-10b" should be re-numbered "Appendix 16-5b".

p. 16-115. "Appendix 16-11a" should be re-numbered "Appendix 16-6a".

p. 16-116. "Appendix 16-12b" should be re-numbered "Appendix 16-6b".

p. 16-117. "Appendix 16-13a" should be re-numbered "Appendix 16-7a". Also, in the title of this appendix "Summary statistics for the wetland food web at W17. Carbon, nitrogen and

sulfur stable isotope signatures for marsh birds and invertebrates collected in 2009 in Penobscot Bay”, the words “in Penobscot Bay” should be removed.

p. 16-118. “Appendix 16-14b” should be re-numbered “Appendix 16-7b”.

p. 16-119. “Appendix 16-15a” should be re-numbered “Appendix 16-8a”.

p. 16-114. “Appendix 16-16b” should be re-numbered “Appendix 16-8b”.

Chapter 17 Errata

None found.

Chapter 18 Errata

p. 18-7. “Figure 318-5” near bottom of page should be “Figure 18-5”.

p. 18-21. First paragraph in Section 6.1: “Figure 18-4” should be “Figure 18-9”.

p. 18-21. Second paragraph: “Figure 18-4” should be “Figure 18-9”.

p. 18-21. Third paragraph” “Figure 18-5” should be “Figure 18-10”.

p. 18-22. Caption under top figure should be changed from “Figure 18-4” to “Figure 18-9”.

p. 18-22. Caption under lower figure should be changed from “Figure 18-5” to “Figure 18-10”.

p. 18-22. First paragraph should be changed from:

“Calibrated Hg concentrations in the dissolved and particle phases in the water column and sediments reasonably reflected observations in 2006-2010 (Figures 18-6 and 18-7). The time required to achieve 50% of the full response was 32 years, consistent with the target. Total Hg concentrations on sediments declined to 400 ng g^{-1} by ~ 2052 . This concentration was the threshold for the recovery of river biota to acceptable Hg levels (Chapter 2). The long term Hg concentration was 100 ng g^{-1} in sediments (based on a curve fit to the model results and long term extrapolation).”

To:

“Calibrated Hg concentrations in the dissolved and particle phases in the water column and sediments (18-11a and b) and in the unfiltered water column data (Figure 18-12) reasonably reflected observations in 2006-2010. The modeled time required to achieve 50% of the full response was 32 years, consistent with the field data estimate. Predicted total Hg concentrations on sediments declined to 400 ng g^{-1} by ~ 2052 (Figure 18-11a). This concentration was the threshold for the recovery of river biota to acceptable Hg levels (Chapter 3). The modeled long term Hg concentration was 100 ng g^{-1} in sediments, consistent with the long term recovery concentration estimated from the core data (Chapter 1, Section 4.1).”

p. 18-23. Top paragraph: “Figure 18-6a” should be “Figure 18-11a”; “Figures 18-4, 18-6a” should be “Figures 18-4, 18-11a”; “Figures 18-5 and 18-6b” should be “Figures 18-5 and 18-11b”. Note that references to Figures 18-4 and 18-5 are correct in this paragraph.

p. 18-23. Figure caption should be changed from “18-6 to “18-11”.

p. 18-23. Bottom paragraph: “Figure 18-7” should be “Figure 18-12”; “Figure 18-8” should be “Figure 18-13”.

p. 18-24. Figure captions should be changed from “Figure 18-7” to “Figure 18-12” and from “Figure 18-8” to “Figure 18-13”.

p. 18-25. Top paragraph: “Figure 18-9” should be “Figure 18-14”, in two places.

p. 18-26. Figure caption number should be changed from “Figure 18-9” to “Figure 18-14”.

p. 18-27. Top paragraph: “Figure 18-18 a-c” should be “Figure 18-15 a-c”; “Figure 18-10” should be “Figure 18-15 a-c”.

p. 18-28. Figure caption: “Figure 18-10” should be “Figure 18-15”.

Chapter 19 Errata

p. 19-29. In the first sentence of the caption for Figure 19-5, “Pore water total Hg concentrations in surface soils (0-5 cm) of amendment plots over time.”, “total Hg” should be changed to “MeHg”.

p. 19-39. In section 2.6.4, in the sentence “The lime and FeCl₂ amendments increased the solid pools of Ca and Fe, respectively, in surface marsh soils (Figures 16a-15 and 16a-16).”, “(Figures 16a-15 and 16a-16)” should be changed to “(Figures 19-15 and 19-16)”.

p. 19-16. In section 2.5.1, the sentence “Dates are given in Table 2.” should be changed to “Dates are given Table 19-2.”

p. 19-24. In section 2.6.1, in the sentence “Across all four sampling dates, AC amendments resulted in significant reductions in pore water Hg and methyl Hg at both test sites in the marsh (Table 19-7).”, (Table 19-7)” should be changed to “(Tables 19-7A and 19-7B)”.

Chapter 20 Errata

None found.

Chapter 21 Errata

p. 21-3, Table 21-1: Approximate years to reach target concentrations in sediments in the upper estuary of the river, and on the platform of Mendall Marsh. Background for specific changes below: The estimates in this table were derived using the data in Table 6-1, and some adjustments to data in Table 6-1 were made in December 2013 by Peter Santschi. These adjustments changed the average half time for the cores from the main stem, Mendall Marsh, and Orland River from 34 years to 35 years, using an asymptote of zero. This is relevant to the estimate of $\frac{1}{2}$ time for an asymptote of 100 ng/gdw referred to in the first footnote (see below). The average half time for Mendall Marsh was not changed by adjustments in Table 6-1 (22 years, using an asymptote of zero).

For footnote to Table 21-1 that reads: “*Using 1/2 time of 32 years, for main stem, Mendall Marsh and Orland River cores, to an asymptote of 100 ng/g dry wt. (expected background concentration in the main stem, after natural attenuation is complete)”, add the following “Note that the $\frac{1}{2}$ time estimate of 32 years to an asymptote of 100 ng/gdw was obtained using a $\frac{1}{2}$ time estimate of 34 years for an asymptote of zero. The adjustments made to Table 6-1 result in an average $\frac{1}{2}$ time of 35 years for an asymptote of zero. This new average is slightly longer, but not different enough to warrant a new estimate of $\frac{1}{2}$ time to an asymptote of 100 ng/gdw.

For footnote to Table 21-1 that reads “Adjustment for non-zero asymptotes in “Estimates of recovery using Core data CK Mar 20_13.xlsx””, add the following: “A note on the changes to data from Table 6-1 that are relevant to the estimate of recovery for the combined main stem, Mendall Marsh and Orland River areas, using non-zero asymptotes, has been added to this file, and the file was renamed “Estimates of recovery using Core data CK Mar 20_13 Dec 18_13.xlsx.” No new calculations were made because it was decided that the changes were too small to affect the estimates made, and would not affect conclusions.

Chapter 22 Errata

None found.

Chapter 23 Errata

p. 23-3. At end of paragraph that begins “Our mass budget estimates...”, the reference should be to “Chapters 1 and 3”, not “Chapters 1 and 4”.

p. 23-4. The second sentence in “Section 3 THE NEED FOR ACTIVE REMEDIATION IN THE UPPER ESTUARY OF THE PENOBSCOT RIVER” is “Natural attenuation will decrease these Hg concentrations over time to the target concentration (about 33 years from 2013, Chapter 21).” This statement refers to the data in Table 21-1 on p. 21-3. See Errata for Table 21-1.

p. 23-10. In paragraph beginning “Total Hg concentrations are lower...”, in the second sentence, the reference to “Chapter 1” should be changed to “Chapter 11”.

p. 23-14, Table 23-1. Alignment formatting for footnotes in this table was corrected previously and sent to parties. The corrected version is below, for easy reference.

Table 23-1. Percent contribution of benthic-based food chain items to higher food chain organisms. Unless otherwise stated, the remainder of the 100% is from pelagic food sources. These results are obtained from stomach content analysis and/or stable isotope analyses, see Chapter 16 for detailed results.

Species	OV %	BO %	OB %	ESTUARY %
Mussels				0
Lobster				55-67 ¹
Tomcod			74 ²	44 ²
Smelt			9	9
Mummichog			90 ³	
Am. Eel	79	98	97	
Black duck ⁴			100	100
Winter flounder ⁴			100	100

1. estimates based on stable isotope analyses and reports in the literature; non-benthic prey consumed by lobster primarily trap bait (Atlantic herring)
2. Crangon shrimp and gammarids: epi-benthic invertebrates
3. 90 % of food was insects of terrestrial or benthic sources
4. benthic-based diet estimated from numerous reports in the literature (see Chapter 16)

p. 23-31, Figure 23-13. There should be no “A” and “B” on the outside of this figure.