Congener patterns of persistent organic pollutants establish the extent of contaminant biotransport by Pacific salmon in the Great Lakes

Brandon S. Gerig[1]*, Dominic T. Chaloner[1], David J. Janetski[2], Richard R. Rediske[3], James P. O'Keefe[3], Ashley H. Moerke[4], and Gary A. Lamberti[1]

[1]Department of Biological Sciences, University of Notre Dame, Notre Dame, IN, 46556
[2]Department of Biology, Indiana University of Pennsylvania, Indiana, PA, 15705
[3]Annis Water Resources Institute, Grand Valley State University, Muskegon, MI, 49441
[4]School of Biological Sciences, Lake Superior State University, Sault Ste. Marie, MI, 49783

*Corresponding Author
*Email: bgerig@nd.edu

Supporting Information
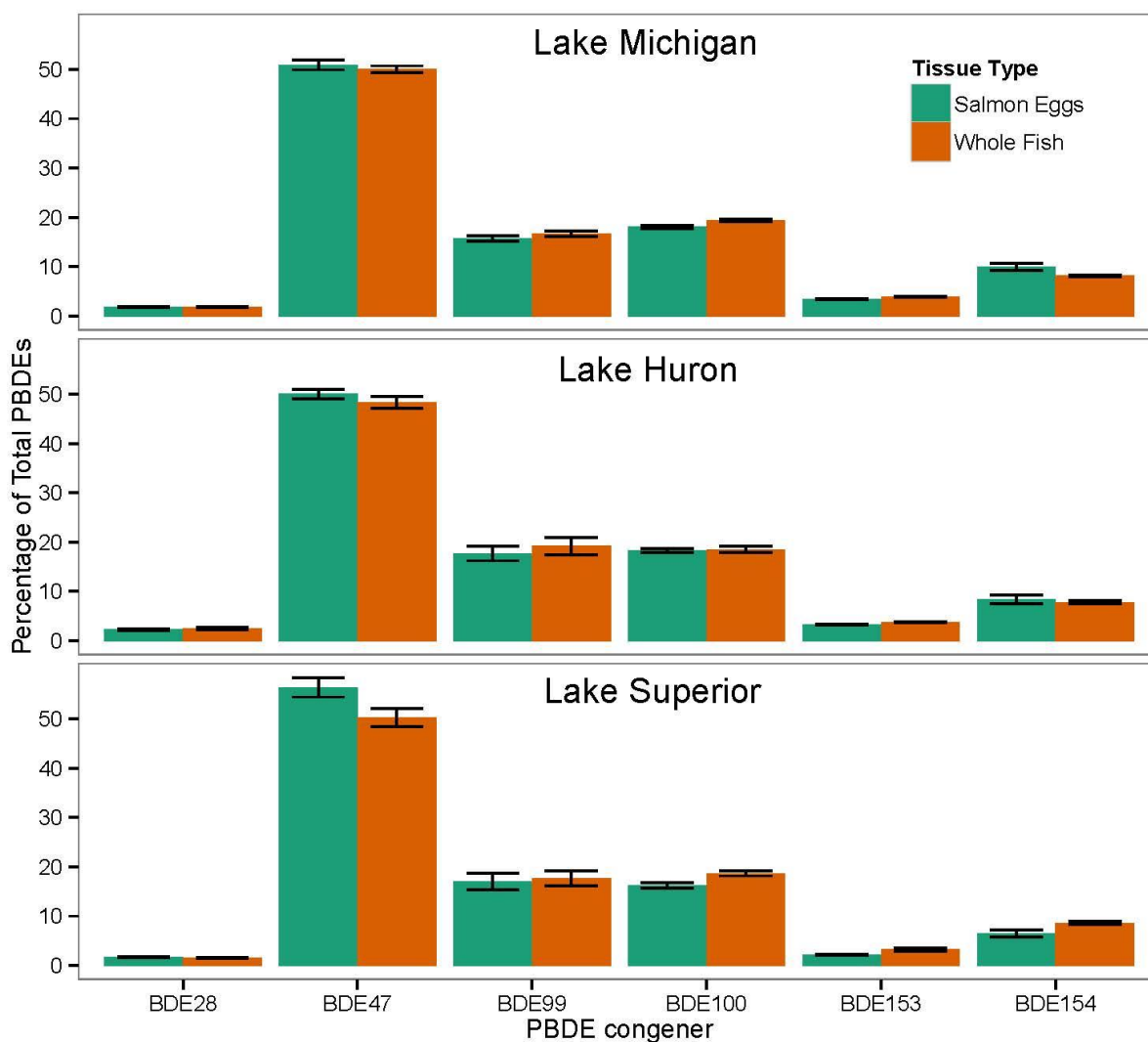
34   Figure S1. PBDE congener pattern (mean percentage ± standard error) of salmon eggs and whole
35   fish from lakes Michigan (eggs N=16, tissue N=28), Huron (eggs N=4, tissue N=9), and Superior
36   (eggs N=7, tissue N=12). PBDE congeners quantified were BDE28, BDE47, BDE99, BDE100,
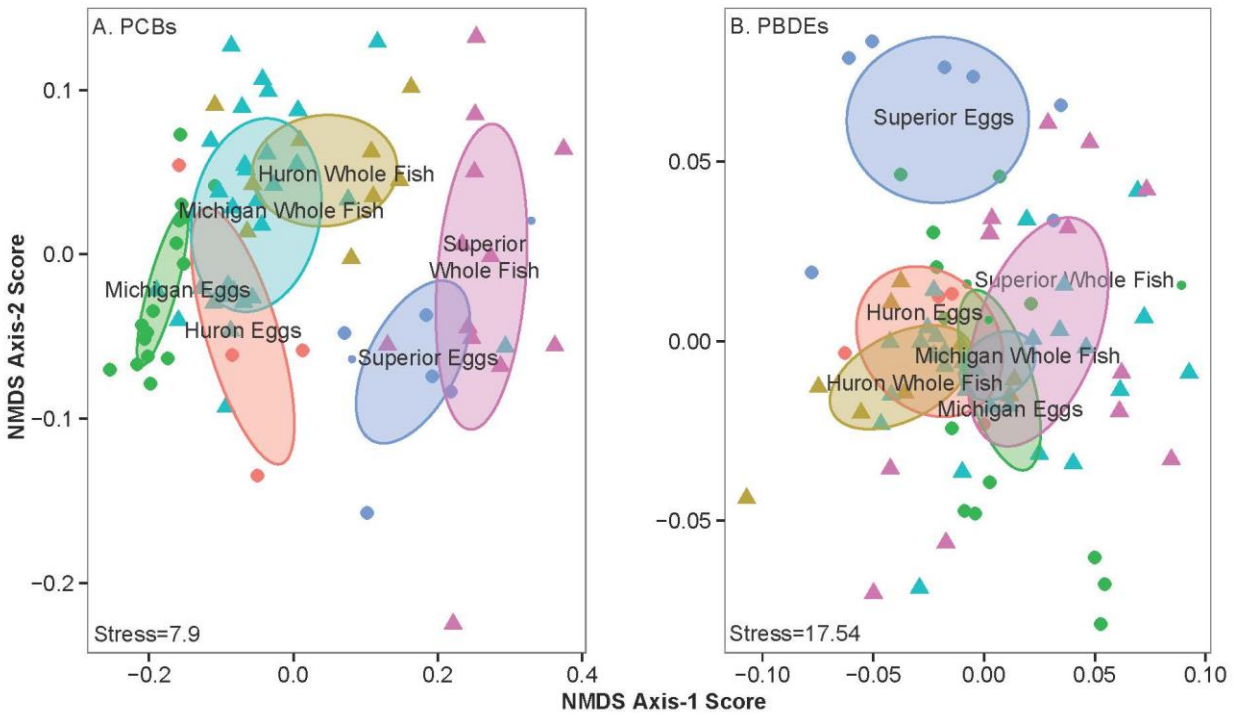37   BDE153, and BDE154.

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Figure S2. Non-metric, multidimensional scaling (NMDS) plots with 95% confidence ellipses of the mean for PCBs (A.) and PBDEs (B.) in salmon whole fish and eggs from lakes Michigan, Huron, and Superior. A convergent solution for PCBs was found after two iterations (stress=7.9) and for PBDEs after three iterations (stress=17.54). Tissue samples are represented by triangles and egg samples by circles. Ellipses are the same color as corresponding data points.

58 Table S1. Pairwise Bonferroni comparisons for PCB and PBDE PERMANOVA models in
59 salmon from lakes Michigan, Huron, and Superior. The alpha value for each pairwise
60 comparison was 0.006 (0.05/9 comparisons per POP class). Significant comparisons are in bold.
61 For each contaminant we compared differences in tissue and pattern among basins. In addition,
62 we also compared tissue and egg patterns within a given basin.

POP	Source	Comparison	F	p-value
PCB	Tissue	Michigan-Huron	4.37	**0.006**
		Michigan-Superior	42.72	**0.001**
		Superior-Huron	24.20	**0.001**
	Eggs	Michigan-Huron	3.46	0.020
		Michigan-Superior	79.62	**0.001**
		Superior-Huron	18.17	**0.003**
	Tissue-Eggs	Michigan	15.35	**0.001**
		Huron	6.88	**0.001**
		Superior	3.10	0.010
PBDE	Tissue	Michigan-Huron	2.71	0.060
		Michigan-Superior	0.83	0.420
		Superior-Huron	1.24	0.266
	Eggs	Michigan-Huron	0.76	0.460
		Michigan-Superior	6.74	**0.004**
		Superior-Huron	3.73	0.040
	Tissue-Eggs	Michigan	3.10	0.040
		Huron	0.54	0.590
		Superior	4.20	0.020

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76 Table S2. Pairwise Bonferroni comparisons for PCB models in PERMANOVA brook trout and
77 mottled sculpin in reaches with salmon present and salmon absent from lakes Michigan, Huron,
78 and Superior. The alpha value for each pairwise comparison was 0.00625 (0.05/8 comparisons
79 per basin). Significant comparisons are in bold.

POP	Basin	Comparison	F	p-value
PCB	Michigan	Brook Trout-Salmon Present: Brook Trout-Salmon Absent	5.61	**0.001**
		Brook Trout-Salmon Present: Salmon Spawners	1.86	0.020
		Brook Trout-Salmon Absent:Salmon Spawners	18.35	**0.001**
		Mottled Sculpin-Salmon Present: Mottled Sculpin-Salmon Absent	4.96	**0.001**
		Mottled Sculpin-Salmon Present: Salmon Spawners	50.17	**0.001**
		Mottled Sculpin-Salmon Absent:Salmon Spawners	39.15	**0.001**
		Brook Trout-Salmon Present: Mottled Sculpin-Salmon Present	13.20	**0.001**
		Brook Trout-Salmon Absent: Mottled Sculpin-Salmon Absent	8.95	**0.001**
	Huron	Brook Trout-Salmon Present: Brook Trout-Salmon Absent	3.40	0.003
		Brook Trout-Salmon Present: Salmon Spawners	2.23	0.039
		Brook Trout-Salmon Absent:Salmon Spawners	8.90	**0.001**
		Mottled Sculpin-Salmon Present: Mottled Sculpin-Salmon Absent	NA	NA
		Mottled Sculpin-Salmon Present: Salmon Spawners	12.17	**0.001**
		Mottled Sculpin-Salmon Absent:Salmon Spawners	NA	NA
		Brook Trout-Salmon Present: Mottled Sculpin-Salmon Present	4.50	0.004
		Brook Trout-Salmon Absent: Mottled Sculpin-Salmon Absent	NA	NA
	Superior	Brook Trout-Salmon Present: Brook Trout-Salmon Absent	14.52	**0.001**
		Brook Trout-Salmon Present: Salmon Spawners	6.66	**0.001**
		Brook Trout-Salmon Absent:Salmon Spawners	0.922	0.5
		Mottled Sculpin-Salmon Present: Mottled Sculpin-Salmon Absent	1.14	0.335
		Mottled Sculpin-Salmon Present: Salmon Spawners	23.70	**0.001**
		Mottled Sculpin-Salmon Absent:Salmon Spawners	33.38	**0.001**
		Brook Trout-Salmon Present: Mottled Sculpin-Salmon Present	3.50	**0.008**
		Brook Trout-Salmon Absent: Mottled Sculpin-Salmon Absent	2.14	**0.080**

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Table S3. Pairwise Bonferroni comparisons for PBDE PERMANOVA models for brook trout
and mottled sculpin in reaches with salmon present and salmon absent from lakes Michigan,
Huron, and Superior. The alpha value for each pairwise comparison was 0.00625 (0.05/8
comparisons per basin). Significant comparisons are italicized.

POP	Basin	Comparison	F	p-value
PBDE	Michigan	Brook Trout-Salmon Present: Brook Trout-Salmon Absent	4.95	**0.009**
		Brook Trout-Salmon Present: Salmon Spawners	1.68	0.170
		Brook Trout-Salmon Absent:Salmon Spawners	20.53	**0.001**
		Mottled Sculpin-Salmon Present: Mottled Sculpin-Salmon Absent	4.72	**0.001**
		Mottled Sculpin-Salmon Present: Salmon Spawners	92.52	**0.001**
		Mottled Sculpin-Salmon Absent:Salmon Spawners	10.69	**0.001**
		Brook Trout-Salmon Present: Mottled Sculpin-Salmon Present	23.21	**0.001**
		Brook Trout-Salmon Absent: Mottled Sculpin-Salmon Absent	2.92	0.040
	Huron	Brook Trout-Salmon Present: Brook Trout-Salmon Absent	4.22	0.003
		Brook Trout-Salmon Present: Salmon Spawners	1.89	0.169
		Brook Trout-Salmon Absent:Salmon Spawners	13.07	**0.001**
		Mottled Sculpin-Salmon Present: Mottled Sculpin-Salmon Absent	NA	NA
		Mottled Sculpin-Salmon Present: Salmon Spawners	12.35	**0.001**
		Mottled Sculpin-Salmon Absent:Salmon Spawners	NA	NA
		Brook Trout-Salmon Present: Mottled Sculpin-Salmon Present	3.28	0.032
		Brook Trout-Salmon Absent: Mottled Sculpin-Salmon Absent	NA	NA
	Superior	Brook Trout-Salmon Present: Brook Trout-Salmon Absent	0.81	0.470
		Brook Trout-Salmon Present: Salmon Spawners	2.19	0.130
		Brook Trout-Salmon Absent:Salmon Spawners	16.81	**0.001**
		Mottled Sculpin-Salmon Present: Mottled Sculpin-Salmon Absent	1.18	0.350
		Mottled Sculpin-Salmon Present: Salmon Spawners	25.65	**0.001**
		Mottled Sculpin-Salmon Absent:Salmon Spawners	10.45	**0.001**
		Brook Trout-Salmon Present: Mottled Sculpin-Salmon Present	2.93	0.095
		Brook Trout-Salmon Absent: Mottled Sculpin-Salmon Absent	1.34	0.282

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