

**Supplemental Material**

**Changes in the benthic community of the Bay of Quinte, Lake Ontario, over a 40 year period**

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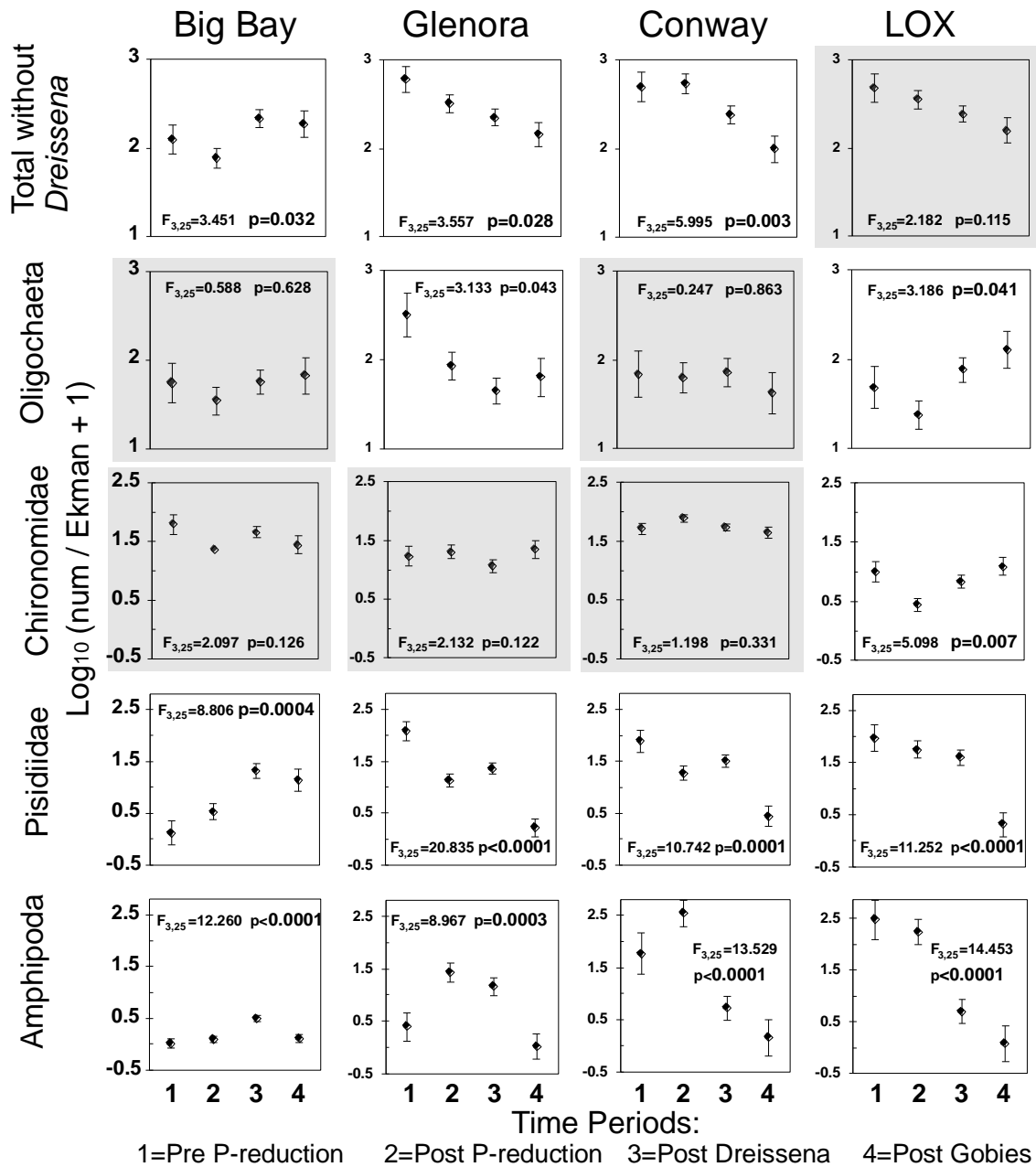


Figure A1. ANOVA for average abundances of five taxonomic groups in 4 time periods (Pre-Phosphorus reduction (1967-1978); Post P reduction (1982-1991), Post Zebra Mussels (1992-2001) and Post Goby (2002-2006)) at the Bay of Quinte index sites (Big Bay, Glenora, Conway and Lake Ontario Exit site). Grey panels are not significant at  $p > 0.05$ .

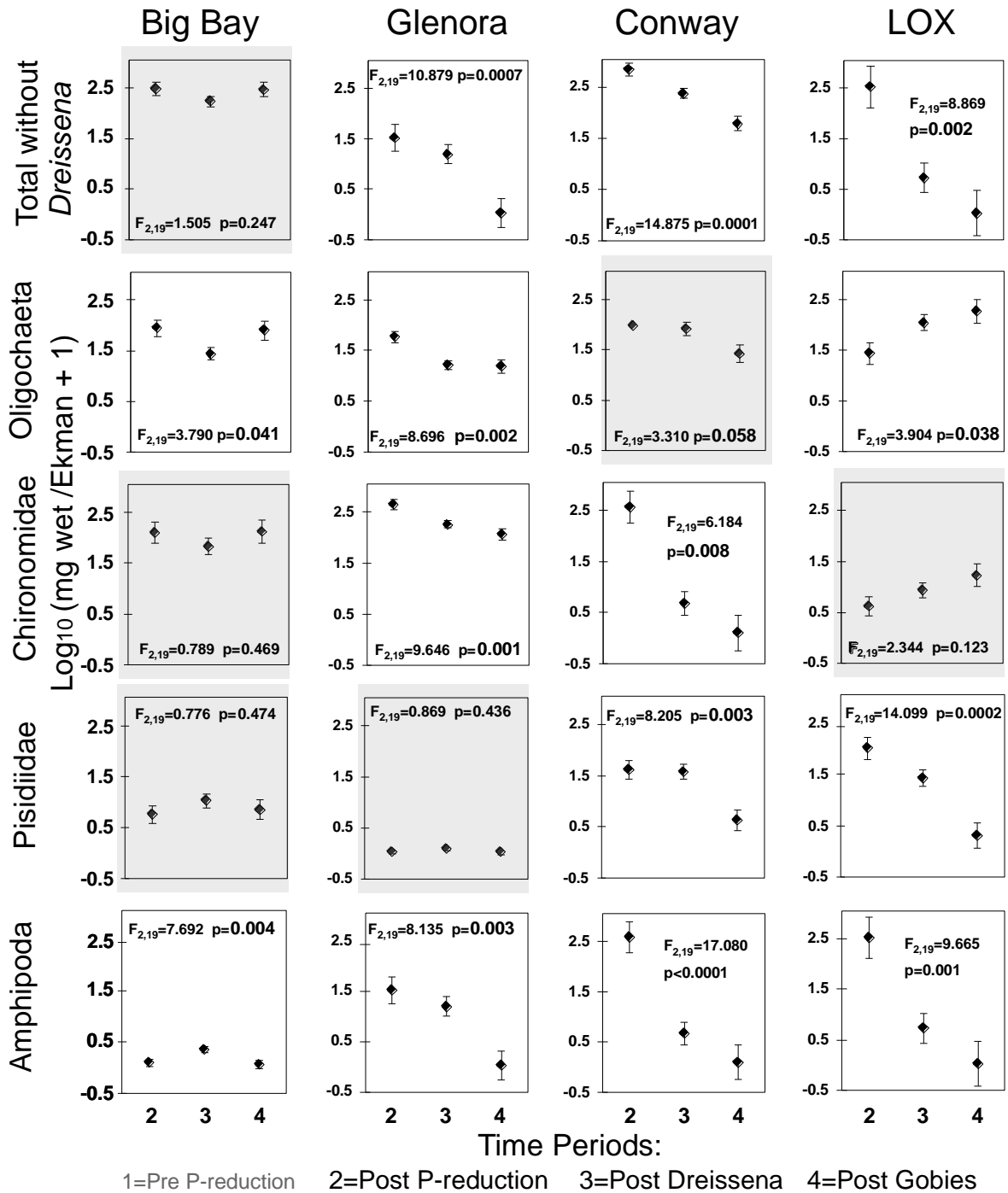


Figure A2. ANOVA for average wet biomass of five taxonomic groups in the Bay of Quinte as in figure A1. Indirect biomass measurements in years 1967-1978 restricted the analysis to 3 time periods: (Post P reduction (1982-1991), Post Zebra Mussels (1992-2001) and Post Goby (2002-2006).

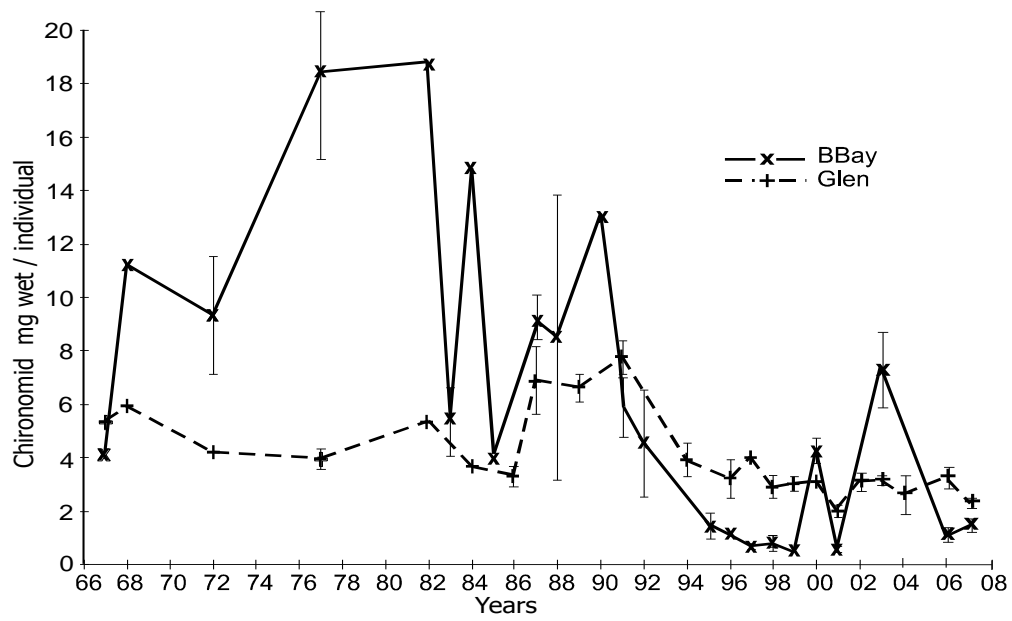


Figure A3. Trend in average individual weight of chironomids at Big Bay and Glenora.

Table A1. Average abundance of benthic macroinvertebrates (per Ekman 0.05 m<sup>2</sup>) during the timeline of changes in the Bay of Quinte. Totals include other minor invertebrate groups.

Time Period Epoch	Years n	Group	Big Bay		Glenora		Conway		Lake Ontario	
			Ave.	SE.	Ave.	SE.	Ave.	SE.	Ave.	SE.
Pre-sewage treatment (to 1978)	4	Total	147.77	38.51	827.03	255.62	665.13	180.85	559.58	124.42
		Oligochaeta	73.50	19.71	502.95	191.52	209.46	156.66	57.08	15.14
		Chironomidae	70.33	19.20	60.96	21.82	21.68	8.38	10.74	1.45
		Sphaeriidae	0.58	0.20	194.13	60.11	92.75	26.43	112.58	33.01
		Amphipoda	0.04	0.04	2.04	0.54	314.09	179.99	371.33	90.56
		Isopoda	0.00	0.00	65.21	37.34	26.50	13.39	5.25	2.86
		<i>Dreissena</i>	0	0	0	0	0	0	0	0
		Gastropoda	0.13	0.13	0.25	0.05	0.12	0.08	1.39	0.48
Post – Phosphorus Control & Pre- <i>Dreissena</i> (1982-1991)	10	Total	119.17	26.42	590.79	168.82	891.33	276.51	580.19	137.22
		Oligochaeta	50.45	10.17	191.89	67.39	143.26	41.26	53.98	12.77
		Chironomidae	40.79	10.78	95.25	12.46	24.68	4.28	3.93	1.39
		Sphaeriidae	9.15	3.57	20.91	5.15	37.03	10.39	133.61	45.82
		Amphipoda	0.66	0.26	67.53	25.46	457.17	80.03	381.42	90.43
		Isopoda	0.08	0.08	60.67	26.41	151.63	120.75	4.23	1.91
		<i>Dreissena</i>	0	0	0	0	0	0	0	0
		Gastropoda	0.03	0.02	0.05	0.04	0.06	0.03	3.27	3.21
Post- <i>Dreissena</i> (1992-2001)	10	Total	357.96	79.99	268.54	73.89	279.42	59.77	283.79	32.72
		Oligochaeta	115.68	32.14	84.88	21.93	93.58	18.66	131.20	29.72
		Chironomidae	57.83	9.60	55.37	6.38	18.89	6.87	8.90	2.91
		Sphaeriidae	36.96	8.10	34.03	8.84	44.30	11.01	67.77	22.19
		Amphipoda	3.74	1.04	31.88	12.22	66.26	63.14	28.68	19.46
		Isopoda	0.03	0.03	0.95	0.52	2.96	2.96	0.53	0.48
		<i>Dreissena</i>	47.58	47.40	1.37	0.68	77.05	56.14	55.88	46.04
		Gastropoda	1.31	0.46	0.26	0.12	0.41	0.14	0.51	0.32
Post- Round Goby (2002-2006)	5	Total	222.55	42.36	154.30	22.69	200.48	66.24	381.52	109.29
		Oligochaeta	89.29	21.20	78.51	18.90	69.69	21.39	181.35	42.75
		Chironomidae	43.86	18.14	48.73	10.32	23.08	4.71	18.79	6.29
		Sphaeriidae	20.78	7.65	1.72	1.62	3.62	1.82	1.96	1.05
		Amphipoda	0.43	0.15	0.10	0.06	0.83	0.60	0.35	0.22
		Isopoda	0	0	0	0	0	0	0	0
		<i>Dreissena</i>	1.15	0.86	0.16	0.10	75.08	39.51	156.52	112.66
		Gastropoda	2.53	1.28	0.08	0.08	0.28	0.12	0.68	0.40

Table A2. Average biomass (mg wet +shells per Ekman) of macroinvertebrates during the timeline of changes in the Bay of Quinte.

Time Stanzas	Years n	Group	Big Bay		Glenora		Conway		Lake Ontario	
			Ave.	S.E.	Ave.	S.E.	Ave.	S.E.	Ave.	S.E.
Pre-Phosphorus Controls (to 1978)	4	Totals	518.57	99.66	2873.99	937.96	1854.07	686.08	2518.17	228.86
		Oligochaeta	73.5	24.28	573.05	1.64	155.65	123.60	83.74	43.82
		Chironomidae	435.63	92.35	579.67	117.54	55.38	29.50	30.07	18.07
		Sphaeriidae	9.13	3.61	522.01	45.35	178.38	64.21	172.96	26.87
		Amphipoda	0.26	0.26	12.89	2.48	1242.56	713.48	2182.69	203.19
		Isopoda	0.00	0.00	1186.38	969.85	222.12	137.75	48.74	20.07
		<i>Dreissena</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Post - Phosphorus control & Pre- <i>Dreissena</i> (1982-1991)	10	Totals	430.03	120.43	740.12	114.47	938.82	175.35	1402.43	263.18
		Oligochaeta	119.64	35.21	57.40	20.56	127.57	25.40	65.78	23.97
		Chironomidae	299.98	110.58	508.76	83.81	82.03	18.98	11.69	4.46
		Sphaeriidae	5.27	1.83	41.75	9.56	47.18	11.74	178.65	55.77
		Amphipoda	1.07	0.63	86.42	28.34	544.32	81.80	1071.43	268.41
		Isopoda	0.16	0.16	40.03	9.39	128.93	77.18	15.52	12.61
		<i>Dreissena</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Post- <i>Dreissena</i> (1992-2001)	10	Totals	221.54	46.85	302.45	45.02	3713.34	1823.37	563.49	147.03
		Oligochaeta	39.09	8.77	20.14	3.66	90.66	21.11	218.62	50.06
		Chironomidae	112.7	36.15	176.31	23.86	17.75	3.41	10.12	2.46
		Sphaeriidae	16.10	3.49	54.44	16.74	56.55	12.97	51.16	17.52
		Amphipoda	2.15	0.74	38.91	14.27	40.81	39.13	34.62	22.66
		Isopoda	0.01	0.01	0.18	0.10	11.83	11.83	1.66	1.13
		<i>Dreissena</i>	7.20	6.59	2.16	1.80	3481.55	1821.88	238.07	142.03
Post- Round Goby (2002-2006)	5	Totals	344.36	91.65	173.48	26.24	16315.94	2186.05	12441.90	7733.88
		Oligochaeta	78.70	5.48	18.85	3.51	47.68	16.89	301.32	82.08
		Chironomidae	201.16	91.24	134.72	28.31	27.55	5.91	33.07	14.70
		Sphaeriidae	10.54	3.90	2.43	2.40	2.23	1.20	1.84	0.96
		Amphipoda	0.41	0.32	0.12	0.10	0.57	0.48	0.09	0.06
		Isopoda	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		<i>Dreissena</i>	16.57	15.67	0.47	0.46	16229.02	2168.08	12095.03	7780.99

Table A3. Average Benthic Diversity (Margalef) in the Bay of Quinte.

Year	Big Bay (7m)	Glenora (21m)	Conway (32m)	L.Ontario (31m)
1967	1.17	1.99	1.39	1.33
1972	1.05	1.32	1.39	0.99
1977	0.55	1.77	1.79	1.82
1982	0.78	1.66	1.27	1.42
1988	1.48	1.86	1.46	0.76
1985	1.14	2.04	1.13	1.51
1992	1.79	1.54	1.10	1.08
1995	2.33	2.39	1.85	1.44
1996	2.04	1.79	1.98	1.08
1999	3.87	2.74	2.62	1.23
2000	3.30	2.49	2.82	2.16
2001	3.06	2.99	2.45	1.88
2002	2.00	3.05	2.78	1.85
2003	2.81	2.28	2.63	2.35
2004	2.18	2.98	2.30	1.50
2005	3.12	3.55	2.80	1.81
2006	3.22	1.59	2.20	0.83
2007	2.97	3.15	3.25	1.39
2008	2.45	2.70	2.29	1.48