



Surveys of Amphibians, Abnormalities, Pathogens, Triazines, Breeding-Site Characteristics, and Reptiles in Five Areas Managed by the National Park Service and the U.S. Fish and Wildlife Service in the Upper Midwest, 2002-2007

Data Supplement: Figures and Tables

Natural Resource Technical Report NPS/GLKN/NRTR—2009/179



ON THE COVER

Larval frogs. NPS photo.



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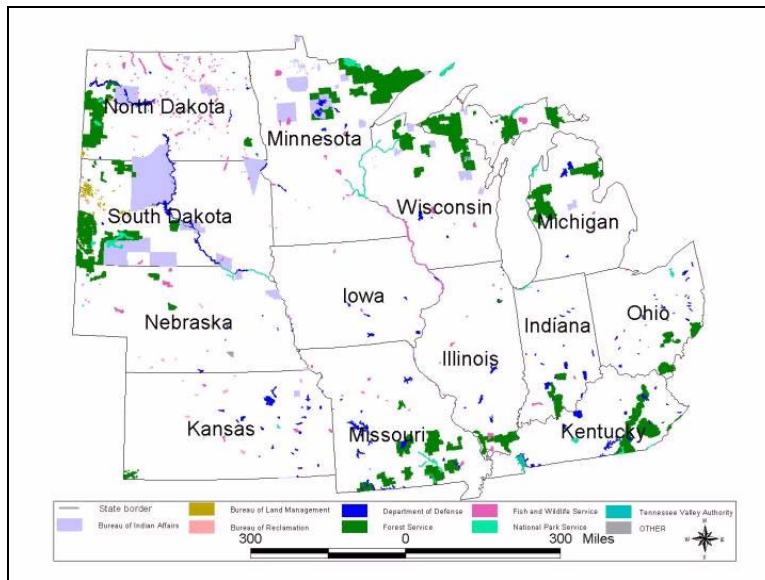


Figure 1. The distribution of federal lands, by agency, in the ARMI-MR. The bright green and pink sections are managed by the NPS and FWS, respectively.

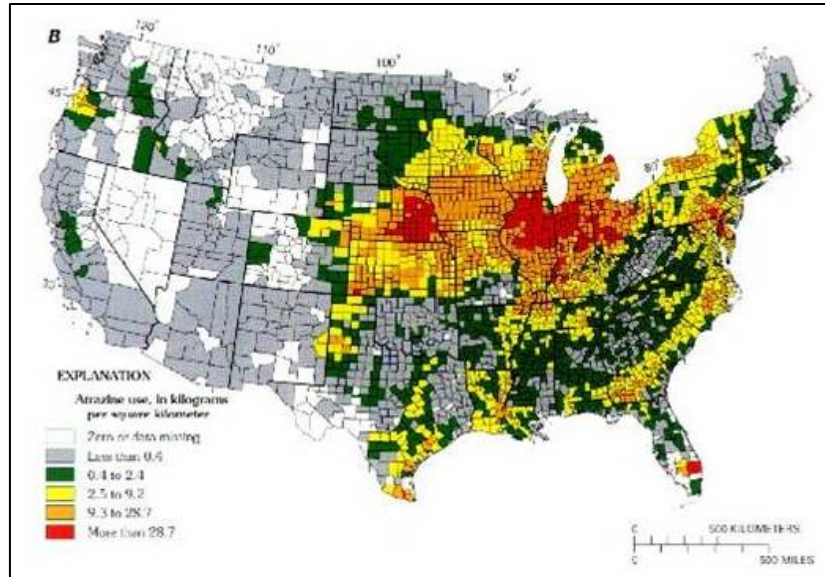


Figure 2. Atrazine use in the United States.

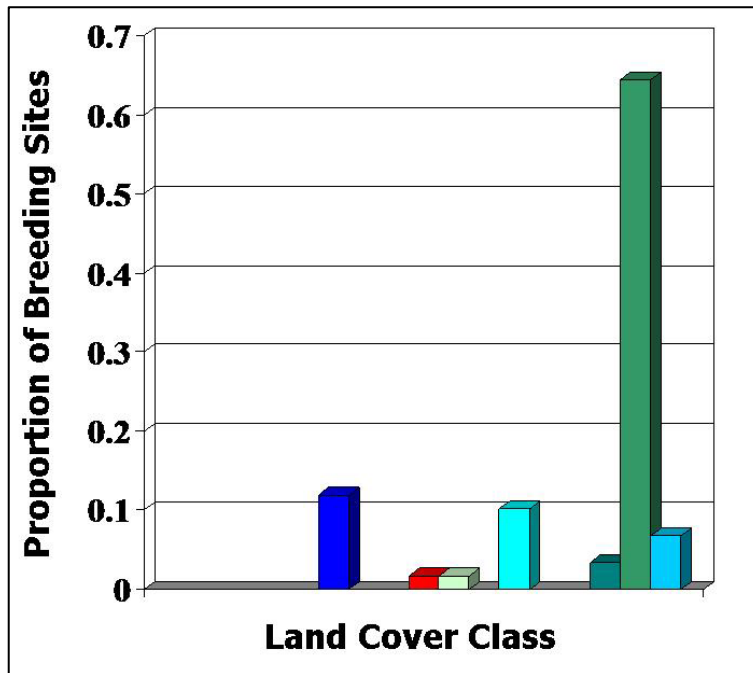


Figure 3. Proportion of potential amphibian breeding sites we sampled in the UMR per land cover type. Bars left to right symbolize open water, sand/mud, scrub/shrub, seasonally flooded emergent perennial, wet floodplain forest, and wet meadow. Based upon 18 USGS land cover classes available for the UMR. None of our sampling locations fell into any of the other classes.

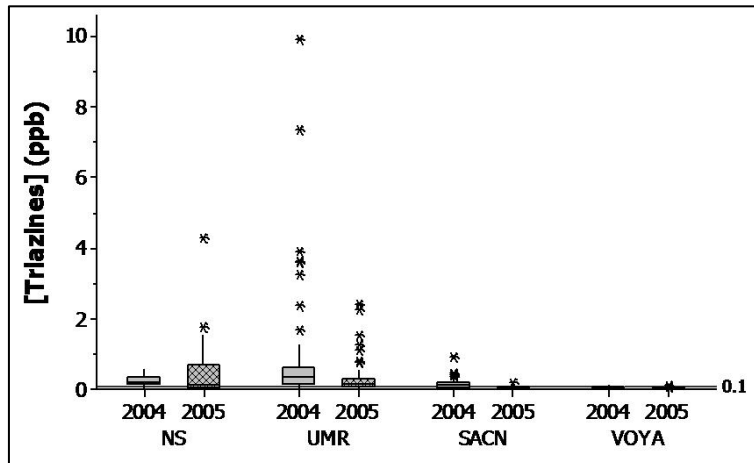


Figure 4. Boxplot of results of ELISA for triazine concentrations in water samples collected from potential breeding sites across management areas in 2004 and 2005. Lines within boxes = median values. The middle 50% of the data are contained within each box. * indicate outliers. 0.1 ppb = [triazine] that induced abnormal gonads in leopard frogs in the laboratory (Hayes et al. 2003).

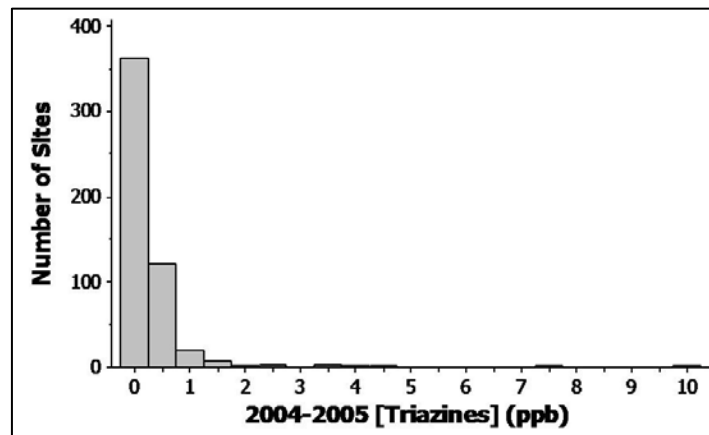


Figure 5. Distribution of triazine concentrations measured on water samples from potential breeding sites across VOYA, the SACN, the UMR, and the NS in 2004 and 2005.

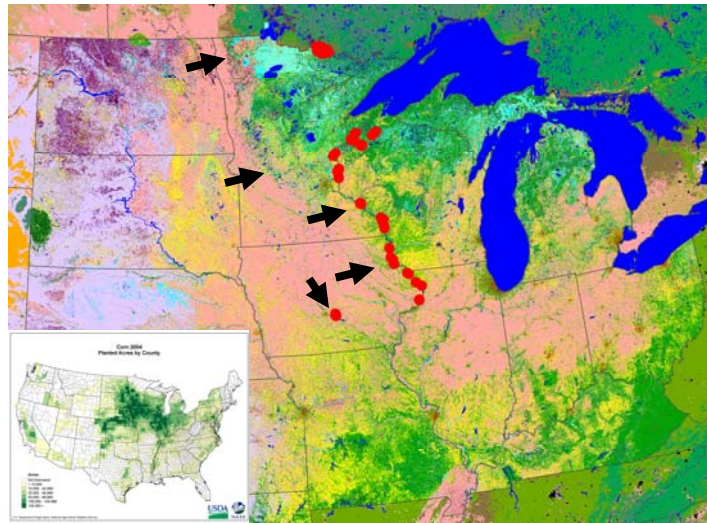


Figure 6. Distribution of VOYA, the SACN, the UMR, and the NS relative to extensive row crops where atrazine is applied. Pink = row crops. Insert shows corn planted in the conterminous United States during 2004.

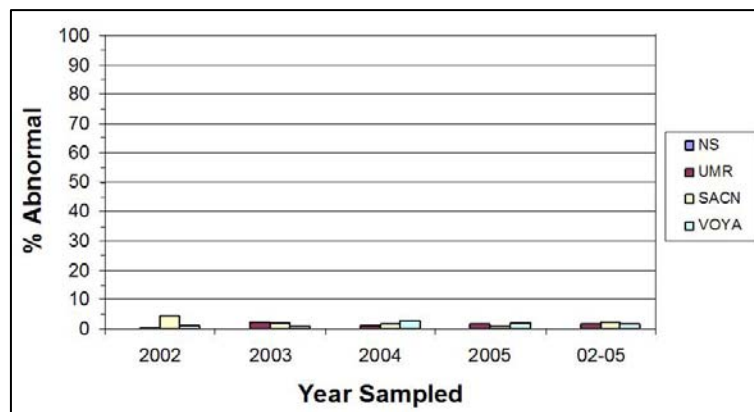


Figure 7. Percent of amphibian metamorphs that showed gross physical abnormalities across species by management area. Note: We sampled small numbers of metamorphs in the NS and did not observe abnormalities.

Table 1. Characteristics of sites within the Neal Smith National Wildlife Refuge from 2004-2005.

Point identification type	Subdivided area	Cell or transect	Site identification	LAT	LONG
Cell corner point	Neal Smith 1	D-A	N15	41.58085	-93.26986
Cell corner point	Neal Smith 1	D-A	N16	41.58087	-93.26386
Cell corner point	Neal Smith 1	D-A	N19	41.58537	-93.26388
Cell corner point	Neal Smith 1	D-A	N20	41.58536	-93.26987
Cell corner point	Neal Smith 3	D-A	NS-1	41.52235	-93.25163
Cell corner point	Neal Smith 3	D-D	NS-10	41.54478	-93.28769
Cell corner point	Neal Smith 3	D-D	NS-11	41.54480	-93.28170
Cell corner point	Neal Smith 3	D-D	NS-12	41.54029	-93.28168
Cell corner point	Neal Smith 3	D-D	NS-13	41.54028	-93.28767
Cell corner point	Neal Smith 2	D-B	NS-14	41.56733	-93.27580
Cell corner point	Neal Smith 2	D-B	NS-15	41.56735	-93.26980
Cell corner point	Neal Smith 2	D-B	NS-16	41.56284	-93.26978
Cell corner point	Neal Smith 2	D-B	NS-17	41.56283	-93.27578
Cell corner point	Neal Smith 3	D-A	NS-2	41.52234	-93.25763
Cell corner point	Neal Smith 2	D-C	NS-22	41.57635	-93.26984
Cell corner point	Neal Smith 2	D-C	NS-23	41.57185	-93.26982
Cell corner point	Neal Smith 2	D-C	NS-24	41.57183	-93.27582
Cell corner point	Neal Smith 2	D-C	NS-27	41.57634	-93.27584
Cell corner point	Neal Smith 1	D-B	NS-29	41.59434	-93.28191
Cell corner point	Neal Smith 3	D-B	NS-3	41.53136	-93.25167
Cell corner point	Neal Smith 1	D-B	NS-30	41.58983	-93.28189
Cell corner point	Neal Smith 1	D-B	NS-31	41.58982	-93.28789
Cell corner point	Neal Smith 1	D-B	NS-34	41.59432	-93.28791
Cell corner point	Neal Smith 3	D-A	NS-4	41.52685	-93.25165
Cell corner point	Neal Smith 3	D-A	NS-5	41.52684	-93.25765
Cell corner point	Neal Smith 3	D-C	NS-6	41.53583	-93.26368
Cell corner point	Neal Smith 3	D-C	NS-7	41.53585	-93.25768
Cell corner point	Neal Smith 3	D-B	NS-8	41.53134	-93.25766
Cell corner point	Neal Smith 3	D-C	NS-9	41.53133	-93.26366

Table 1. Characteristics of sites within the Neal Smith National Wildlife Refuge from 2004-2005 (continued).

Point identification type	Subdivided area	Cell or transect	Site identification	LAT	LONG	Habitat type	Length (M)	Width (M)	AREA (Ha)	pH	Conductivity (μ S/cm)
Incidental	Neal Smith 1	D-B	NS1DBI1	41.59481	-93.28159	Stock Pond	40	30	0.12	8.26	352
Incidental	Neal Smith 1	D-B	NS1DBI2	41.59475	-93.28801	Swamp/seep	7.5	10	0.01	7.80	194
Incidental	Neal Smith 1	D-B	NS1DBI3	41.58855	-93.28410	Stock Pond	36	27.5	0.10	7.84	237
Incidental	Neal Smith 2	D-B	NS2DBI1	41.56249	-93.26925	Swamp	113.5	30	0.34	7.74	395
Incidental	Neal Smith 3	D-B	NS3DBI1	41.53223	-93.25433	Perm. Pond	66	8.5	0.00	7.02	313
Incidental	Neal Smith 3	D-B	NS3DBI2	41.52992	-93.25350	Swamp/seep	-	-	-	-	-
Night	Neal Smith 1	N-A	NS1NA1	41.58055	-93.26560	-	-	-	-	-	-
Night	Neal Smith 1	N-A	NS1NA2	41.58054	-93.26797	-	-	-	-	-	-
Night	Neal Smith 1	N-B	NS1NB1	41.58694	-93.27701	-	-	-	-	-	-
Night	Neal Smith 1	N-B	NS1NB2	41.58858	-93.27595	-	-	-	-	-	-
Night	Neal Smith 2	N-A	NS2NA1	41.57525	-93.27301	-	-	-	-	-	-
Night	Neal Smith 2	N-A	NS2NA2	41.57378	-93.27164	-	-	-	-	-	-
Night	Neal Smith 2	N-B	NS2NB1	41.56600	-93.27158	-	-	-	-	-	-
Night	Neal Smith 2	N-B	NS2NB2	41.56595	-93.27417	-	-	-	-	-	-
Night	Neal Smith 3	N-A	NS3NA1	41.52249	-93.25684	-	-	-	-	-	-
Night	Neal Smith 3	N-A	NS3NA2	41.52311	-93.25326	-	-	-	-	-	-
Night	Neal Smith 3	N-A	NS3NA3	41.52533	-93.25329	-	-	-	-	-	-
Night	Neal Smith 3	N-A	NS3NA4	41.52727	-93.25323	-	-	-	-	-	-
Night	Neal Smith 3	N-C	NS3NC1	41.53712	-93.25963	-	-	-	-	-	-
Night	Neal Smith 3	N-C	NS3NC2	41.53725	-93.26223	-	-	-	-	-	-
Night	Neal Smith 3	N-D	NS3ND1	41.53701	-93.28371	-	-	-	-	-	-
Night	Neal Smith 3	N-D	NS3ND2	41.53702	-93.28629	-	-	-	-	-	-
Site	Neal Smith 1	D-A	NS1DA1	41.58394	-93.26861	Stock Pond	66	48.5	0.35	8.02	409
Site	Neal Smith 1	D-A	NS1DA2	41.58156	-93.26825	Temp. Pond	5	1	0.00	6.51	360
Site	Neal Smith 1	D-B	NS1DB1	41.58966	-93.28649	Stock Pond	30	35	0.14	7.93	282
Site	Neal Smith 2	D-A	NS2DA1	41.57299	-93.27515	Seep	20	7	0.01	6.88	145

Table 1. Characteristics of sites within the Neal Smith National Wildlife Refuge from 2004-2005 (continued).

Point identification type	Subdivided area	Cell or transect	Site identification	LAT	LONG	Habitat type	Length (M)	Width (M)	AREA (Ha)	pH	Conductivity (μS/cm)
Site	Neal Smith 2	D-B	NS2DB1	41.56376	-93.27094	Seep	30	15	0.30	6.51	227
Site	Neal Smith 2	D-B	NS2DB2	41.56461	-93.27321	Seep	35	5	0.04	6.37	193
Site	Neal Smith 2	D-B	NS2DB3	41.56731	-93.27240	Seep	20	1	0.00	6.45	278
Site	Neal Smith 2	D-C	NS2DC1	41.57004	-93.27384	Temp. Pond	40	10	0.07	7.21	367
Site	Neal Smith 2	D-C	NS2DC2	41.56931	-93.27317	Swamp/seep	60	15	0.06	6.49	285
Site	Neal Smith 3	D-A	NS3DA1	41.52430	-93.25707	Swamp/seep	80	50	0.47	6.33	303
Site	Neal Smith 3	D-B	NS3DB1	41.52748	-93.25662	Temp. Pond	25	15	0.05	6.39	185
Site	Neal Smith 3	D-B	NS3DB2	41.52904	-93.25636	Temp. Pond	12	4	0.01	6.25	127
Site	Neal Smith 3	D-B	NS3DB3	41.53040	-93.25601	Temp. Pond	60	5	0.03	6.73	256
Site	Neal Smith 3	D-C	NS3DC1	41.53124	-93.26093	Seep	25	6.5	0.02	6.61	377
Site	Neal Smith 3	D-C	NS3DC2	41.53411	-93.26220	Stock Pond	58.5	45	0.41	8.89	265
Site	Neal Smith 3	D-D	NS3DD1	41.54307	-93.28753	Stock Pond	155	120	1.80	8.44	449
Site	Neal Smith 3	D-D	NS3DD2	41.54066	-93.28400	Beaver Pond	175	17.5	0.70	7.61	469
Water sample site	-	-	CALHOUNCREEK1	41.52254	-93.17877	-	-	-	-	-	-
Water sample site	-	-	CAMP CREEK 1	41.52217	-93.32614	-	-	-	-	-	-
Water sample site	-	-	MUD CREEK 1	41.52904	-93.37674	-	-	-	-	-	-
Water sample site	-	-	PRAIRIE CREEK 1	41.47997	-93.19580	-	-	-	-	-	-
Water sample site	-	-	REDROCK 1	41.46605	-93.21087	-	-	-	-	-	-
Water sample site	-	-	WALNUT CREEK 1	41.50814	-93.25540	-	-	-	-	-	-

Table 2. Characteristics of sites within the Upper Mississippi National Wildlife and Fish Refuge from 2002-2005.

Point identification type	Subdivided area	Cell or transect	Site identification	LAT	LONG
Cell corner point	Pool 10	D-A	10-34	42.85453	-91.08139
Cell corner point	Pool 10	D-A	10-35	42.85443	-91.07528
Cell corner point	Pool 10	D-A	10-36	42.85003	-91.08153
Cell corner point	Pool 10	D-A	10-37	42.84993	-91.07542
Cell corner point	Pool 10	D-B	10-26	42.92324	-91.15278
Cell corner point	Pool 10	D-B	10-27	42.92314	-91.14666
Cell corner point	Pool 10	D-B	10-28	42.91874	-91.15291
Cell corner point	Pool 10	D-B	10-29	42.91864	-91.14679
Cell corner point	Pool 10	D-C	10-12	43.17114	-91.16993
Cell corner point	Pool 10	D-C	10-13	43.17105	-91.16378
Cell corner point	Pool 10	D-C	10-14	43.16664	-91.17006
Cell corner point	Pool 10	D-C	10-15	43.16655	-91.16391
Cell corner point	Pool 10	D-D	10-16	43.16645	-91.15777
Cell corner point	Pool 10	D-D	10-18	43.16205	-91.16405
Cell corner point	Pool 10	D-D	10-19	43.16195	-91.15790
Cell corner point	Pool 11	D-A	11-6	42.73894	-91.05261
Cell corner point	Pool 11	D-A	11-7	42.73905	-91.05872
Cell corner point	Pool 11	D-A	11-8	42.73444	-91.05275
Cell corner point	Pool 11	D-A	11-9	42.73455	-91.05886
Cell corner point	Pool 11	D-B	11-1	42.75286	-91.07662
Cell corner point	Pool 11	D-B	11-2	42.75296	-91.08272
Cell corner point	Pool 11	D-B	11-4	42.74836	-91.07676
Cell corner point	Pool 11	D-B	11-5	42.74845	-91.08212
Cell corner point	Pool 12	D-A	12-1	42.47402	-90.62694
Cell corner point	Pool 12	D-A	12-2	42.47415	-90.63302
Cell corner point	Pool 12	D-A	12-3	42.46952	-90.62711
Cell corner point	Pool 12	D-A	12-4	42.46965	-90.63318
Cell corner point	Pool 12	D-B	12-5	42.44151	-90.57953
Cell corner point	Pool 12	D-B	12-6	42.44164	-90.58561
Cell corner point	Pool 12	D-B	12-7	42.43702	-90.57971
Cell corner point	Pool 12	D-B	12-8	42.43714	-90.58578
Cell corner point	Pool 13	D-A	13-33	42.10023	-90.18149
Cell corner point	Pool 13	D-A	13-34	42.10009	-90.17545
Cell corner point	Pool 13	D-A	13-35	42.09574	-90.18169
Cell corner point	Pool 13	D-B	13-1	42.20364	-90.36464
Cell corner point	Pool 13	D-B	13-2	42.20350	-90.35858
Cell corner point	Pool 13	D-B	13-3	42.19914	-90.36482
Cell corner point	Pool 13	D-B	13-4	42.19900	-90.35877
Cell corner point	Pool 14	D-A	14-26	41.75067	-90.32095
Cell corner point	Pool 14	D-A	14-27	41.75053	-90.31513
Cell corner point	Pool 14	D-A	14-28	41.74618	-90.32133
Cell corner point	Pool 14	D-A	14-29	41.74604	-90.31532
Cell corner point	Pool 14	D-B	14-52	41.70569	-90.32301

Table 2. Characteristics of sites within the Upper Mississippi National Wildlife and Fish Refuge from 2002-2005 (continued).

Point identification type	Subdivided area	Cell or transect	Site identification	LAT	LONG
Cell corner point	Pool 14	D-B	14-53	41.70555	-90.31701
Cell corner point	Pool 14	D-B	14-54	41.70119	-90.32320
Cell corner point	Pool 14	D-B	14-55	41.70105	-90.31719
Cell corner point	Pool 14	D-C	14-46	41.72860	-90.34009
Cell corner point	Pool 14	D-C	14-47	41.72846	-90.33409
Cell corner point	Pool 14	D-C	14-50	41.72410	-90.34028
Cell corner point	Pool 14	D-C	14-51	41.72396	-90.33427
Cell corner point	Pool 4	D-A	122	44.39904	-92.04986
Cell corner point	Pool 4	D-A	123	44.39899	-92.04358
Cell corner point	Pool 4	D-A	141	44.39454	-92.04993
Cell corner point	Pool 4	D-A	142	44.39449	-92.04365
Cell corner point	Pool 4	D-B	64	44.41239	-92.03080
Cell corner point	Pool 4	D-B	65	44.41233	-92.02452
Cell corner point	Pool 4	D-B	84	44.40788	-92.03088
Cell corner point	Pool 4	D-B	85	44.40783	-92.02460
Cell corner point	Pool 4	D-C	194	44.38071	-92.01249
Cell corner point	Pool 4	D-C	195	44.38066	-92.00622
Cell corner point	Pool 4	D-C	205	44.37621	-92.01249
Cell corner point	Pool 4	D-C	206	44.37616	-92.00629
Cell corner point	Pool 4	D-D	168	44.38966	-92.00607
Cell corner point	Pool 4	D-D	169	44.38961	-91.99979
Cell corner point	Pool 4	D-D	183	44.38516	-92.00614
Cell corner point	Pool 4	D-D	184	44.38511	-91.99987
Cell corner point	Pool 7	D-A	7-8	43.92614	-91.26386
Cell corner point	Pool 7	D-A	7-9	43.92605	-91.25764
Cell corner point	Pool 7	D-A	7-10	43.92165	-91.26399
Cell corner point	Pool 7	D-A	7-11	43.92155	-91.25777
Cell corner point	Pool 7	D-E	7-36	43.97703	-91.35589
Cell corner point	Pool 7	D-E	7-1	43.97694	-91.34966
Cell corner point	Pool 7	D-E	7-2	43.97253	-91.35601
Cell corner point	Pool 7	D-E	7-3	43.97244	-91.34978
Cell corner point	Pool 7	D-H	7-28	43.90007	-91.32688
Cell corner point	Pool 7	D-H	7-29	43.89998	-91.32065
Cell corner point	Pool 7	D-H	7-30	43.89557	-91.32700
Cell corner point	Pool 7	D-I	7-18	43.91283	-91.27670
Cell corner point	Pool 7	D-I	7-19	43.91274	-91.27048
Cell corner point	Pool 7	D-I	7-22	43.90833	-91.27683
Cell corner point	Pool 7	D-I	7-23	43.90824	-91.27061
Cell corner point	Pool 8	D-A	8-5	43.76579	-91.26996
Cell corner point	Pool 8	D-A	8-6	43.76570	-91.26375
Cell corner point	Pool 8	D-A	8-7	43.76129	-91.27009
Cell corner point	Pool 8	D-A	8-8	43.76120	-91.26388
Cell corner point	Pool 8	D-B	8-34	43.68020	-91.26621
Cell corner point	Pool 8	D-B	8-35	43.68011	-91.26001
Cell corner point	Pool 8	D-B	8-46	43.75670	-91.26401

Table 2. Characteristics of sites within the Upper Mississippi National Wildlife and Fish Refuge from 2002-2005 (continued).

Point identification type	Subdivided area	Cell or transect	Site identification	LAT	LONG
Cell corner point	Pool 8	D-B	8-47	43.75661	-91.25780
Cell corner point	Pool 8	D-B	8-9	43.75220	-91.26414
Cell corner point	Pool 8	D-B	8-31	43.68461	-91.25988
Cell corner point	Pool 8	D-B	8-30	43.68470	-91.26608
Cell corner point	Pool 8	D-C	8-27	43.68929	-91.27216
Cell corner point	Pool 8	D-C	8-28	43.68920	-91.26595
Cell corner point	Pool 8	D-C	8-29	43.68479	-91.27228
Night	Pool 10	N-A	P10NA2	42.91021	-91.12220
Night	Pool 10	N-A	P10NA3	42.91168	-91.12058
Night	Pool 10	N-A	P10NA4	42.91304	-91.11897
Night	Pool 10	N-A	P10NA5	42.91449	-91.11748
Night	Pool 10	N-A	P10NA6	43.14156	-91.14355
Night	Pool 10	N-R	P10NR1	42.88586	-91.08756
Night	Pool 10	N-R	P10NR5	42.84635	-91.10638
Night	Pool 10	N-R	P10NR7	43.10702	-91.15138
Night	Pool 10	N-R	P10NR8	42.81799	-91.10211
Night	Pool 11	N-A	P11NA1	42.71765	-91.01040
Night	Pool 11	N-A	P11NA2	42.71578	-91.01082
Night	Pool 11	N-A	P11NA3	42.71466	-91.01334
Night	Pool 11	N-A	P11NA4	42.65891	-90.73323
Night	Pool 11	N-A	P11NA5	42.66052	-90.73132
Night	Pool 11	N-A	P11NA6	42.66199	-90.72956
Night	Pool 11	N-A	P11NA7	42.66416	-90.72930
Night	Pool 12	N-A	P12NA1	42.54180	-90.63946
Night	Pool 12	N-A	P12NA2	42.54159	-90.63572
Night	Pool 12	N-A	P12NA3	42.54250	-90.63366
Night	Pool 12	N-A	P12NA4	42.54336	-90.63160
Night	Pool 12	N-A	P12NA5	42.54405	-90.62940
Night	Pool 12	N-B	P12NB1	42.43455	-90.58712
Night	Pool 12	N-B	P12NB2	42.28568	-90.40331
Night	Pool 12	N-B	P12NB3	42.34366	-90.40832
Night	Pool 12	N-B	P12NB4	42.47020	-90.63029
Night	Pool 12	N-B	P12NB5	42.47251	-90.63404
Night	Pool 12	N-B	P12NB6	42.47133	-90.63212
Night	Pool 13	N-A	P13NA1	42.09043	-90.19068
Night	Pool 13	N-A	P13NA2	42.09234	-90.19075
Night	Pool 13	N-A	P13NA3	42.09416	-90.19084
Night	Pool 13	N-A	P13NA4	42.09598	-90.19109
Night	Pool 13	N-R	P13NA4	42.09598	-90.19109
Night	Pool 13	N-A	P13NA5	42.09788	-90.19128
Night	Pool 13	N-A	P13NA6	42.09974	-90.19166

Table 2. Characteristics of sites within the Upper Mississippi National Wildlife and Fish Refuge from 2002-2005 (continued).

Point identification type	Subdivided area	Cell or transect	Site identification	LAT	LONG
Night	Pool 13	N-A	P13NA7	42.10161	-90.19205
Night	Pool 13	N-A	P13NA8	42.10349	-90.19243
Night	Pool 13	N-R	P13NR1	41.96523	-90.11855
Night	Pool 13	N-R	P13NR5	42.03032	-90.11666
Night	Pool 13	N-R	P13NR6	42.07044	-90.12750
Night	Pool 13	N-R	P13NR7	42.18290	-90.35448
Night	Pool 14	N-A	P14NA1	41.71037	-90.32973
Night	Pool 14	N-A	P14NA2	41.70863	-90.33047
Night	Pool 14	N-A	P14NA3	41.70690	-90.33112
Night	Pool 14	N-R	P14NA4	41.70519	-90.33197
Night	Pool 14	N-A	P14NA5	41.70361	-90.33319
Night	Pool 14	N-A	P14NA6	41.70190	-90.33408
Night	Pool 14	N-A	P14NA7	41.70009	-90.33396
Night	Pool 14	N-A	P14NA8	41.69836	-90.33473
Night	Pool 14	N-R	P14NR1	41.77726	-90.27246
Night	Pool 14	N-R	P14NR2	41.81432	-90.16804
Night	Pool 14	N-R	P14NR3	41.75879	-90.31171
Night	Pool 14	N-R	P14NR4	41.72335	-90.35021
Night	Pool 4	N-A	P4NA1	44.41075	-92.01490
Night	Pool 4	N-A	P4NA2	44.40343	-92.01860
Night	Pool 4	N-A	P4NA3	44.39529	-92.02423
Night	Pool 4	N-R	P4NA3	44.39529	-92.02423
Night	Pool 4	N-A	P4NA4	44.39172	-92.02801
Night	Pool 4	N-A	P4NA5	44.38970	-92.02823
Night	Pool 4	N-R	P4NR1	44.31918	-91.94500
Night	Pool 4	N-R	P4NR3	44.41899	-92.00904
Night	Pool 4	N-R	P4NR4	44.35595	-91.93534
Night	Pool 4	N-R	P4NR5	44.35169	-91.98363
Night	Pool 4	N-R	P4NR6	44.34493	-91.99275
Night	Pool 4	N-R	P4NR7	44.35333	-91.91107
Night	Pool 7	N-A	P7NA1	43.97364	-91.35937
Night	Pool 7	N-A	P7NA2	43.97239	-91.35780
Night	Pool 7	N-A	P7NA3	43.97113	-91.35595
Night	Pool 7	N-R	P7NA4	43.96987	-91.35408
Night	Pool 7	N-A	P7NA5	43.96842	-91.35191
Night	Pool 7	N-A	P7NA6	43.96714	-91.35002
Night	Pool 7	N-A	P7NA7	43.96570	-91.34809
Night	Pool 7	N-A	P7NA8	43.96441	-91.34606
Night	Pool 7	N-R	P7NR10	43.95448	-91.32218
Night	Pool 7	N-R	P7NR3	43.97942	-91.36815
Night	Pool 7	N-R	P7NR7	43.90383	-91.24624
Night	Pool 7	N-R	P7NR8	43.91594	-91.25540
Night	Pool 7	N-R	P7NR9	43.92697	-91.26597

Table 2. Characteristics of sites within the Upper Mississippi National Wildlife and Fish Refuge from 2002-2005 (continued).

Point identification type	Subdivided area	Cell or transect	Site identification	LAT	LONG
Night	Pool 8	N-A	P8NA1	43.74577	-91.22561
Night	Pool 8	N-A	P8NA2	43.74429	-91.22697
Night	Pool 8	N-A	P8NA3	43.74257	-91.22753
Night	Pool 8	N-A	P8NA4	43.74086	-91.22822
Night	Pool 8	N-R	P8NA4	43.74086	-91.22822
Night	Pool 8	N-A	P8NA5	43.73918	-91.22897
Night	Pool 8	N-A	P8NA6	43.73740	-91.22862
Night	Pool 8	N-A	P8NA7	43.73576	-91.22756
Night	Pool 8	N-A	P8NA8	43.73428	-91.22616

Table 2. Characteristics of sites within the Upper Mississippi National Wildlife and Fish Refuge from 2002-2005 (continued).

Point identification type	Subdivided area	Cell or transect	Site identification	LAT	LONG	Habitat type	Length (M)	Width (M)	AREA (Ha)	pH	Conductivity (μ S/cm)
Night	Pool 8	N-R	P8NR1	43.71528	-91.23105	-	-	-	-	-	-
Night	Pool 8	N-R	P8NR2	43.82510	-91.28108	-	-	-	-	-	-
Night	Pool 8	N-R	P8NR4	43.68680	-91.27237	-	-	-	-	-	-
Night	Pool 8	N-R	P8NR5	43.73009	-91.21547	-	-	-	-	-	-
Night	Pool 8	N-R	P8NR6	43.60224	-91.27282	-	-	-	-	-	-
Night	Pool 8	N-R	P8NR9	43.65262	-91.22328	-	-	-	-	-	-
Incidental	Pool 10	-	P10I1	42.91300	-91.12003	-	-	-	-	-	-
Incidental	Pool 4	D-I	P4DI1	44.39377	-92.03472	-	-	-	-	-	-
Incidental	Pool 7	D-A	P7DAI1	43.92646	-91.26301	Perm. Pond	23	10	0.02	7.18	450
Incidental	Pool 8	D-A	P8DAI1	43.75914	-91.27390	Temp. Pond/flood	43	32	0.14	7.65	754
Incidental	Pool 8	-	P8I1	43.78750	-91.30140	Perm. Pond	459	315	14.46	7.86	624
Individual	Pool 13	D-B	P13DBI1	42.18487	-90.35475	-	-	-	-	-	-
Individual	Pool 4	D-A	P4DA3WOOD	44.39748	-92.04295	-	-	-	-	-	-
Individual	Pool 4	-	P4DAI1	44.39569	-92.03488	-	-	-	-	-	-
Individual	Pool 4	D-A	P4DAIWOOD1	44.39236	-92.02991	-	-	-	-	-	-
Individual	Pool 4	D-A	P4DAIWOOD2	44.39216	-92.02928	-	-	-	-	-	-
Site	Pool 10	D-A	P10DA1	42.85028	-91.07654	Oxbow/river slough	500	30	2.00	7.92	342
Site	Pool 10	D-A	P10DA2	42.85092	-91.07939	Perm. Pond	30	15	0.04	7.28	473
Site	Pool 10	D-A	P10DA3	42.85093	-91.07987	Shallow Marsh	165	82.5	1.70	7.65	215
Site	Pool 10	D-A	P10DA4	42.84935	-91.07965	Deep Marsh	500	300	20.00	7.42	399
Site	Pool 10	D-A	P10DA5	42.85408	-91.07551	Oxbow/river slough	65	6	0.07	7.88	319
Site	Pool 10	D-B	P10DB1	42.91913	-91.14727	Oxbow/river slough	97.5	17.5	0.17	7.87	463.5
Site	Pool 10	D-B	P10DB2	42.91959	-91.14818	Oxbow/river slough	50	10	0.07	7.15	520
Site	Pool 10	D-B	P10DB3	42.92007	-91.14874	Perm. Pond	160	12.5	0.20	7.76	532
Site	Pool 10	D-B	P10DB4	42.92206	-91.15266	Deep Marsh	325	110	3.58	8.25	450
Site	Pool 10	D-C	P10DC1	43.16949	-91.16468	Deep Marsh	500	400	25.00	7.48	406.5
Site	Pool 10	D-D	P10DD1	43.16230	-91.16278	Deep Marsh	500	500	25.00	7.11	438
Site	Pool 11	D-A	P11DA1	42.73559	-91.05510	Oxbow/river slough	333	50	-	-	-
Site	Pool 11	D-A	P11DA2	42.73827	-91.05593	Perm. Pond	40	18	-	-	-

Table 2. Characteristics of sites within the Upper Mississippi National Wildlife and Fish Refuge from 2002-2005 (continued).

Point identification type	Subdivided area	Cell or transect	Site identification	LAT	LONG	Habitat type	Length (M)	Width (M)	AREA (Ha)	pH	Conductivity (μ S/cm)
Site	Pool 11	D-A	P11DA3	42.73838	-91.05755	Oxbow/river slough	210	50	-	-	-
Site	Pool 11	D-A	P11DA4	42.73850	-91.05847	Perm. Pond	22	12	-	-	-
Site	Pool 11	D-A	P11DA5	42.73630	-91.05831	Oxbow/river slough	250	70	-	-	-
Site	Pool 11	D-B	P11DB1	42.74874	-91.07893	Perm. Pond	120	32	-	-	-
Site	Pool 11	D-B	P11DB2	42.75108	-91.07721	Swamp	32	12	-	-	-
Site	Pool 11	D-B	P11DB3	42.75316	-91.07769	Perm. Pond	155	135	-	-	-
Site	Pool 12	D-A	P12DA1	42.47028	-90.63119	Perm. Pond	300	30	-	-	-
Site	Pool 12	D-A	P12DA2	42.47057	-90.62725	Perm. Pond	300	150	-	-	-
Site	Pool 12	D-A	P12DA3	42.47243	-90.63170	Perm. Pond	291	177	-	-	-
Site	Pool 12	D-B	P12DB1	42.43845	-90.58157	Deep Marsh	169	30	-	-	-
Site	Pool 12	D-B	P12DB2	42.43887	-90.58077	Deep Marsh	255	132	-	-	-
Site	Pool 12	D-B	P12DB3	42.43861	-90.58305	Oxbow/river slough	251	26	-	-	-
Site	Pool 13	D-A	P13DA1	42.09668	-90.17948	Deep Marsh	500	105	5.25	7.15	472
Site	Pool 13	D-A	P13DA2	42.09550	-90.17684	Swamp	32.5	20	0.07	7.09	544
Site	Pool 13	D-A	P13DA3	42.09665	-90.17579	Deep Marsh	140	66.5	0.93	7.47	451
Site	Pool 13	D-A	P13DA4	42.09923	-90.17669	Oxbow/river slough	500	22.5	1.13	8.13	420
Site	Pool 13	D-A	P13DA5	42.09988	-90.17923	Deep Marsh	500	135	10.00	7.59	353
Site	Pool 13	D-A	P13DA6	42.09738	-90.17988	Deep Marsh	265	160	4.24	7.34	415
Site	Pool 13	D-B	P13DB1	42.19965	-90.36047	Perm. Pond	300	60	1.80	7.45	413
Site	Pool 13	D-B	P13DB2	42.19970	-90.36308	Perm. Pond	93	40	0.64	7.42	410
Site	Pool 13	D-B	P13DB3	42.19926	-90.36359	Swamp	200	58	2.55	7.26	389
Site	Pool 13	D-B	P13DB4	42.20276	-90.36003	Swamp	200	36	0.76	7.78	411
Site	Pool 13	D-B	P13DB5	42.20153	-90.36312	Deep Marsh	500	100	5.00	7.79	440
Site	Pool 13	D-B	P13DB6	42.20326	-90.36142	Swamp	100	20	0.76	7.35	770
Site	Pool 14	D-A	P14DA1	41.74761	-90.31802	Deep Marsh	162.5	33	0.63	8.26	407
Site	Pool 14	D-A	P14DA2	41.74834	-90.32043	Perm. Pond	47.5	13.5	0.11	7.54	445
Site	Pool 14	D-A	P14DA3	41.74875	-90.31977	Perm. Pond	90	28.5	0.23	7.42	477
Site	Pool 14	D-B	P14DB1	41.70486	-90.31960	Deep Marsh	500	400	22.50	8.02	400
Site	Pool 14	D-B	P14DB2	41.70153	-90.32216	Oxbow/river slough	500	25	1.25	8.68	390
Site	Pool 14	D-B	P14DB3	41.70257	-90.32184	Shallow Marsh	50	20	0.13	7.17	478

Table 2. Characteristics of sites within the Upper Mississippi National Wildlife and Fish Refuge from 2002-2005 (continued).

Point identification type	Subdivided area	Cell or transect	Site identification	LAT	LONG	Habitat type	Length (M)	Width (M)	AREA (Ha)	pH	Conductivity (μ S/cm)
Site	Pool 14	D-B	P14DB4	41.70242	-90.32153	Perm. Pond	70	15	0.11	7.30	553
Site	Pool 14	D-C	P14DC1	41.72588	-90.33460	Oxbow/river slough	150	60	1.04	8.04	496
Site	Pool 4	D-A	P4DA1	44.39490	-92.04327	Perm. Pond	210	36.5	0.63	7.55	264
Site	Pool 4	D-A	P4DA2	44.39657	-92.04506	Oxbow/river slough	150	25	0.38	7.23	160
Site	Pool 4	D-A	P4DA3	44.39757	-92.04429	Perm. Pond	195	50	0.36	6.77	245
Site	Pool 4	D-A	P4DA4	44.39900	-92.04596	Shallow Marsh	240	70	1.51	6.58	208
Site	Pool 4	D-B	P4DB1	44.41236	-92.02524	Deep Marsh	120	103	1.24	6.86	217
Site	Pool 4	D-B	P4DB2	44.41158	-92.02654	Perm. Pond	320	80	3.41	7.02	229
Site	Pool 4	D-B	P4DB3	44.41150	-92.02726	Deep Marsh	335	92.5	3.36	7.10	193
Site	Pool 4	D-B	P4DB4	44.41061	-92.02902	Oxbow/river slough	412.5	40	1.65	7.27	173
Site	Pool 4	D-B	P4DB5	44.41047	-92.03018	Oxbow/river slough	200	30	0.60	8.23	179
Site	Pool 4	D-B	P4DB6	44.41246	-92.02752	Perm. Pond	31	8	0.03	6.56	134
Site	Pool 4	D-C	P4DC1	44.37667	-92.00867	Oxbow/river slough	500	425	25.00	8.50	395
Site	Pool 4	D-D	P4DD1	44.38894	-92.00483	Deep Marsh	500	500	25.00	6.92	314
Site	Pool 7	D-A	P7DA1	43.92162	-91.26270	Shallow Marsh	7.5	4	0.26	6.88	515
Site	Pool 7	D-A	P7DA2	43.92182	-91.26035	Swamp	50	20	1.66	7.36	594
Site	Pool 7	D-A	P7DA3	43.92565	-91.26290	Temp. Pond	3	3	0.00	6.99	391
Site	Pool 7	D-E	P7DE1	43.97318	-91.35456	Temp. Pond	30	15	0.08	6.88	194
Site	Pool 7	D-E	P7DE2	43.97414	-91.35436	Swamp	100	20	0.61	6.72	191
Site	Pool 7	D-E	P7DE3	43.97557	-91.35419	Perm. Pond	237.5	85	4.40	6.91	170
Site	Pool 7	D-E	P7DE4	43.97670	-91.35123	Perm. Pond	150	40	0.60	6.82	125.5
Site	Pool 7	D-E	P7DE5	43.97297	-91.35000	Perm. Pond	55	17	0.09	6.53	170
Site	Pool 7	D-E	P7DE6	43.97299	-91.35164	Oxbow/river slough	60	35	0.60	6.27	145.5
Site	Pool 7	D-H	P7DH1	43.89826	-91.32212	Deep Marsh	500	300	25.00	6.89	438
Site	Pool 7	D-H	P7DH1	43.89826	-91.32212	Deep Marsh	500	300	25.00	6.89	438
Site	Pool 7	D-I	P7DI1	43.91124	-91.27165	Swamp	70	50	0.35	6.80	303
Site	Pool 8	D-A	P8DA1	43.76412	-91.26515	Oxbow/river slough	75	8	0.09	7.38	725
Site	Pool 8	D-A	P8DA2	43.76137	-91.26956	Oxbow/river slough	170	8	0.14	7.49	700
Site	Pool 8	D-B	P8DB1	43.68210	-91.26463	Deep Marsh	500	190	9.50	8.40	386
Site	Pool 8	D-C	P8DC1	43.68658	-91.26636	Deep Marsh	500	500	25.00	8.61	386
Site	Pool 8	D-B	P8DG1	43.75621	-91.26383	Deep Marsh	500	500	25.00	7.29	580

Table 3. Characteristics of sites within the St. Croix National Scenic Riverway from 2002-2005.

Point identification type	Subdivided area	Cell or transect	Site identification	LAT	LONG
Cell corner point	Saint Croix 8	D-A	5	46.25883	-91.93859
Cell corner point	Saint Croix 8	D-A	6	46.25873	-91.94508
Cell corner point	Saint Croix 8	D-A	23	46.25421	-91.94517
Cell corner point	Saint Croix 8	D-A	24	46.25415	-91.93868
Cell corner point	Saint Croix 12	D-A	58	46.23550	-91.16734
Cell corner point	Saint Croix 12	D-A	73	46.23549	-91.17382
Cell corner point	Saint Croix 12	D-A	90	46.23099	-91.17397
Cell corner point	Saint Croix 12	D-A	91	46.23089	-91.16749
Cell corner point	Saint Croix 12	D-E	235	46.20092	-91.26570
Cell corner point	Saint Croix 12	D-E	236	46.20082	-91.25922
Cell corner point	Saint Croix 12	D-E	272	46.19642	-91.26584
Cell corner point	Saint Croix 12	D-E	273	46.19632	-91.25937
Cell corner point	Saint Croix 12	D-C	447	46.14819	-91.35153
Cell corner point	Saint Croix 12	D-B	448	46.14809	-91.34506
Cell corner point	Saint Croix 12	D-B	449	46.14800	-91.33859
Cell corner point	Saint Croix 12	D-C	458	46.14369	-91.35166
Cell corner point	Saint Croix 12	D-B	459	46.14359	-91.34519
Cell corner point	Saint Croix 12	D-B	460	46.14350	-91.33872
Cell corner point	Saint Croix 7	D-B	569	46.10300	-92.16154
Cell corner point	Saint Croix 7	D-B	570	46.10295	-92.15507
Cell corner point	Saint Croix 7	D-B	578	46.09850	-92.16161
Cell corner point	Saint Croix 7	D-B	579	46.09845	-92.15514
Cell corner point	Saint Croix 7	D-A	614	46.08940	-92.14881
Cell corner point	Saint Croix 7	D-A	615	46.08935	-92.14235
Cell corner point	Saint Croix 7	D-A	659	46.08490	-92.14888
Cell corner point	Saint Croix 7	D-A	660	46.08486	-92.14242
Cell corner point	Saint Croix 9	D-E	961	46.03887	-92.02035
Cell corner point	Saint Croix 9	D-E	962	46.03882	-92.01389
Cell corner point	Saint Croix 9	D-E	979	46.03437	-92.02043
Cell corner point	Saint Croix 9	D-E	980	46.03432	-92.01397
Cell corner point	Saint Croix 10	D-D	1643	45.93731	-91.75769
Cell corner point	Saint Croix 10	D-D	1644	45.93724	-91.75125
Cell corner point	Saint Croix 10	D-D	1678	45.93282	-91.75779
Cell corner point	Saint Croix 10	D-D	1679	45.93274	-91.75135
Cell corner point	Saint Croix 10	D-A	1732	45.92388	-91.76415
Cell corner point	Saint Croix 10	D-A	1733	45.92382	-91.75799
Cell corner point	Saint Croix 10	D-A	1759	45.91938	-91.76411
Cell corner point	Saint Croix 10	D-A	1760	45.91932	-91.75810
Cell corner point	Saint Croix 10	D-C	1762	45.91938	-91.76454
Cell corner point	Saint Croix 10	D-C	1763	45.91929	-91.77099
Cell corner point	Saint Croix 10	D-C	1787	45.91496	-91.77109

Table 3. Characteristics of sites within the St. Croix National Scenic Riverway from 2002-2005 (continued).

Point identification type	Subdivided area	Cell or transect	Site identification	LAT	LONG
Cell corner point	Saint Croix 10	D-C	1788	45.91489	-91.76464
Cell corner point	Saint Croix 10	D-B	1839	45.90630	-91.80351
Cell corner point	Saint Croix 10	D-B	1840	45.90623	-91.79707
Cell corner point	Saint Croix 10	D-B	1863	45.90180	-91.80361
Cell corner point	Saint Croix 10	D-B	1864	45.90173	-91.79716
Cell corner point	Saint Croix 4	D-A	2052	45.78184	-92.77741
Cell corner point	Saint Croix 4	D-A	2053	45.78183	-92.77098
Cell corner point	Saint Croix 4	D-A	2057	45.77734	-92.77743
Cell corner point	Saint Croix 4	D-A	2058	45.77733	-92.77100
Cell corner point	Saint Croix 4	D-B	2118	45.73693	-92.83543
Cell corner point	Saint Croix 4	D-B	2119	45.73693	-92.82901
Cell corner point	Saint Croix 4	D-B	2127	45.73243	-92.83545
Cell corner point	Saint Croix 4	D-B	2128	45.73243	-92.82902
Cell corner point	Saint Croix 4	D-C	2183	45.69648	-92.87409
Cell corner point	Saint Croix 4	D-C	2184	45.69647	-92.86766
Cell corner point	Saint Croix 4	D-C	2187	45.69198	-92.87410
Cell corner point	Saint Croix 4	D-C	2188	45.69197	-92.86767
Cell corner point	Saint Croix 2	D-B	2690	45.34962	-92.70252
Cell corner point	Saint Croix 2	D-B	2691	45.34960	-92.69614
Cell corner point	Saint Croix 2	D-B	2696	45.34512	-92.70254
Cell corner point	Saint Croix 2	D-B	2697	45.34510	-92.69616
Cell corner point	Saint Croix 2	D-D	2780	45.29125	-92.76021
Cell corner point	Saint Croix 2	D-D	2781	45.29123	-92.75384
Cell corner point	Saint Croix 2	D-D	2784	45.28675	-92.76023
Cell corner point	Saint Croix 2	D-D	2785	45.28673	-92.75385
Cell corner point	Saint Croix 1	D-D	2825	45.25074	-92.76038
Cell corner point	Saint Croix 1	D-D	2826	45.25073	-92.75401
Cell corner point	Saint Croix 1	D-D	2830	45.24624	-92.76040
Cell corner point	Saint Croix 1	D-A	2831	45.24623	-92.75403
Cell corner point	Saint Croix 1	D-A	2832	45.24621	-92.74766
Cell corner point	Saint Croix 1	D-A	2837	45.24173	-92.75405
Cell corner point	Saint Croix 1	D-A	2838	45.24171	-92.74768
Cell corner point	Saint Croix 1	D-E	3028	45.11119	-92.74825
Cell corner point	Saint Croix 1	D-E	3029	45.11117	-92.74190
Cell corner point	Saint Croix 1	D-E	3035	45.10669	-92.74827
Cell corner point	Saint Croix 1	D-E	3036	45.10667	-92.74192
Cell corner point	Saint Croix 8	D-B	78777	46.24556	-91.98425
Cell corner point	Saint Croix 8	D-B	78778	46.24550	-91.97777
Cell corner point	Saint Croix 8	D-B	78779	46.24106	-91.98433
Cell corner point	Saint Croix 8	D-B	78780	46.24100	-91.97785

Table 3. Characteristics of sites within the St. Croix National Scenic Riverway from 2002-2005 (continued).

Point identification type	Subdivided area	Cell or transect	Site identification	LAT	LONG
Night	Saint Croix 10	N-A	SC10NA1	45.94548	-91.74405
Night	Saint Croix 10	N-A	SC10NA2	45.94494	-91.74653
Night	Saint Croix 10	N-A	SC10NA3	45.94401	-91.74872
Night	Saint Croix 10	N-A	SC10NA4	45.94338	-91.75109
Night	Saint Croix 10	N-A	SC10NA5	45.94314	-91.75362
Night	Saint Croix 10	N-A	SC10NA6	45.94425	-91.75558
Night	Saint Croix 10	N-A	SC10NA7	45.94504	-91.75782
Night	Saint Croix 10	N-A	SC10NA8	45.94484	-91.76031
Night	Saint Croix 10	N-R	SC10NR2	45.90971	-91.78631
Night	Saint Croix 10	N-R	SC10NR3	45.97524	-91.65506
Night	Saint Croix 10	N-R	SC10NR5	45.91927	-91.76411
Night	Saint Croix 10	N-R	SC10NR6	45.97804	-91.58473
Night	Saint Croix 10	N-R	SC10NR7	45.95379	-91.68282
Night	Saint Croix 12	N-A	SC12NA1	46.14993	-91.34486
Night	Saint Croix 12	N-A	SC12NA10	46.14296	-91.33968
Night	Saint Croix 12	N-A	SC12NA2	46.14980	-91.34745
Night	Saint Croix 12	N-A	SC12NA3	46.14813	-91.34867
Night	Saint Croix 12	N-A	SC12NA4	46.14638	-91.34884
Night	Saint Croix 12	N-A	SC12NA5	46.14460	-91.34887
Night	Saint Croix 12	N-A	SC12NA6	46.14268	-91.34894
Night	Saint Croix 12	N-A	SC12NA7	46.14239	-91.34633
Night	Saint Croix 12	N-A	SC12NA8	46.14248	-91.34361
Night	Saint Croix 12	N-A	SC12NA9	46.14296	-91.33968
Night	Saint Croix 12	N-R	SC12NR1	46.20336	-91.23317
Night	Saint Croix 12	N-R	SC12NR2	46.22357	-91.15308
Night	Saint Croix 12	N-R	SC12NR4	46.14440	-91.33473
Night	Saint Croix 12	N-R	SC12NR5	46.18629	-91.32025
Night	Saint Croix 12	N-R	SC12NR8	46.19291	-91.29686
Night	Saint Croix 1	N-A	SC1NA1	45.19465	-92.76059
Night	Saint Croix 1	N-A	SC1NA2	45.19631	-92.75944
Night	Saint Croix 1	N-A	SC1NA3	45.19772	-92.75775
Night	Saint Croix 1	N-A	SC1NA4	45.19827	-92.76022
Night	Saint Croix 1	N-A	SC1NA5	45.19966	-92.76186
Night	Saint Croix 1	N-A	SC1NA6	45.20140	-92.76143
Night	Saint Croix 1	N-A	SC1NA7	45.20320	-92.76109
Night	Saint Croix 1	N-A	SC1NA8	45.20334	-92.76364
Night	Saint Croix 1	N-R	SC1NR10	45.20189	-92.76769
Night	Saint Croix 1	N-R	SC1NR2	45.08490	-92.78656
Night	Saint Croix 1	N-R	SC1NR5	45.09237	-92.76146
Night	Saint Croix 1	N-R	SC1NR7	45.26166	-92.74894
Night	Saint Croix 1	N-R	SC1NR9	45.10442	-92.74542

Table 3. Characteristics of sites within the St. Croix National Scenic Riverway from 2002-2005 (continued).

Point identification type	Subdivided area	Cell or transect	Site identification	LAT	LONG
Night	Saint Croix 2	N-A	SC2NA1	45.35119	-92.69079
Night	Saint Croix 2	N-A	SC2NA2	45.34969	-92.68903
Night	Saint Croix 2	N-A	SC2NA3	45.34865	-92.68627
Night	Saint Croix 2	N-A	SC2NA4	45.34879	-92.68376
Night	Saint Croix 2	N-B	SC2NB1	45.28819	-92.75211
Night	Saint Croix 2	N-B	SC2NB2	45.28670	-92.75252
Night	Saint Croix 2	N-B	SC2NB3	45.28490	-92.75380
Night	Saint Croix 2	N-B	SC2NB4	45.28335	-92.75442
Night	Saint Croix 2	N-B	SC2NB5	45.28164	-92.75485
Night	Saint Croix 2	N-R	SC2NR12	45.30521	-92.72667
Night	Saint Croix 2	N-R	SC2NR4	45.48009	-92.69124
Night	Saint Croix 2	N-R	SC2NR5	45.46734	-92.67684
Night	Saint Croix 2	N-R	SC2NR6	45.36135	-92.68125
Night	Saint Croix 2	N-R	SC2NR8	45.32229	-92.71336
Night	Saint Croix 4	N-A	SC4NA1	45.78473	-92.76873
Night	Saint Croix 4	N-A	SC4NA2	45.78307	-92.76906
Night	Saint Croix 4	N-A	SC4NA3	45.78146	-92.76962
Night	Saint Croix 4	N-A	SC4NA4	45.78002	-92.77127
Night	Saint Croix 4	N-A	SC4NA5	45.77846	-92.77223
Night	Saint Croix 4	N-A	SC4NA6	45.77701	-92.77368
Night	Saint Croix 4	N-A	SC4NA7	45.77523	-92.77437
Night	Saint Croix 4	N-A	SC4NA8	45.77353	-92.77559
Night	Saint Croix 4	N-B	SC4NB1	45.73619	-92.82801
Night	Saint Croix 4	N-B	SC4NB2	45.73464	-92.82976
Night	Saint Croix 4	N-B	SC4NB3	45.73402	-92.83251
Night	Saint Croix 4	N-B	SC4NB4	45.73353	-92.83493
Night	Saint Croix 4	N-B	SC4NB5	45.73285	-92.83735
Night	Saint Croix 4	N-C	SC4NC1	45.70102	-92.86502
Night	Saint Croix 4	N-C	SC4NC2	45.69923	-92.86572
Night	Saint Croix 4	N-C	SC4NC3	45.69761	-92.86668
Night	Saint Croix 4	N-C	SC4NC4	45.69587	-92.86687
Night	Saint Croix 4	N-C	SC4NC5	45.69429	-92.86794
Night	Saint Croix 4	N-C	SC4NC6	45.69260	-92.86880
Night	Saint Croix 4	N-C	SC4NC7	45.69083	-92.86960
Night	Saint Croix 4	N-C	SC4NC8	45.68892	-92.86787
Night	Saint Croix 4	N-R	SC4NR10	45.65613	-92.87869
Night	Saint Croix 4	N-R	SC4NR2	45.68971	-92.88204
Night	Saint Croix 4	N-R	SC4NR3	45.80410	-92.76761
Night	Saint Croix 4	N-R	SC4NR7	45.70595	-92.86335
Night	Saint Croix 4	N-R	SC4NR8	45.75110	-92.79600
Night	Saint Croix 8	N-A	SC8NA1	46.23129	-91.98147

Table 3. Characteristics of sites within the St. Croix National Scenic Riverway from 2002-2005 (continued).

Point identification type	Subdivided area	Cell or transect	Site identification	LAT	LONG
Night	Saint Croix 8	N-A	SC8NA2	46.23217	-91.97902
Night	Saint Croix 8	N-A	SC8NA3	46.23410	-91.97826
Night	Saint Croix 8	N-A	SC8NA4	46.23595	-91.97860
Night	Saint Croix 8	N-A	SC8NA5	46.23782	-91.97723
Night	Saint Croix 8	N-A	SC8NA6	46.23965	-91.97586
Night	Saint Croix 8	N-A	SC8NA7	46.24081	-91.97374
Night	Saint Croix 8	N-A	SC8NA8	46.24245	-91.97215
Night	Saint Croix 8	N-R	SC8NR1	46.18740	-92.08975
Night	Saint Croix 8	N-R	SC8NR3	46.17302	-92.10350
Night	Saint Croix 8	N-R	SC8NR7	46.22349	-92.01629
Night	Saint Croix 8	N-R	SC8NR8	46.12082	-92.12387
Night	Saint Croix 8	N-R	SC8NR9	46.20316	-92.04632
Night	Saint Croix 9	N-A	SC9NA1	46.03791	-92.02032
Night	Saint Croix 9	N-A	SC9NA2	46.03633	-92.01810
Night	Saint Croix 9	N-A	SC9NA3	46.03466	-92.01773
Night	Saint Croix 9	N-A	SC9NA4	46.03262	-92.01783
Night	Saint Croix 9	N-A	SC9NA5	46.03035	-92.01787
Night	Saint Croix 9	N-A	SC9NA6	46.02843	-92.01792
Night	Saint Croix 9	N-A	SC9NA7	46.02747	-92.01580
Night	Saint Croix 9	N-A	SC9NA8	46.02749	-92.01305
Coverboard	Saint Croix 10	-	SC10CB04	45.93280	-91.75274
Coverboard	Saint Croix 10	-	SC10CB13	45.92951	-91.76826
Coverboard	Saint Croix 10	-	SC10CB15	45.93695	-91.75009
Coverboard	Saint Croix 10	-	SC10CB16	45.93161	-91.75119
Coverboard	Saint Croix 10	-	SC10CB17	45.93256	-91.74795
Coverboard	Saint Croix 10	CB-A	SC10CBA1	45.91930	-91.76052
Coverboard	Saint Croix 10	CB-B	SC10CBB1	45.93666	-91.75571
Coverboard	Saint Croix 10	CB-C	SC10CBC1	45.91763	-91.76532
Coverboard	Saint Croix 10	CB-D	SC10CBD1	45.93666	-91.75570
Coverboard	Saint Croix 12	-	SC12CB016	46.15036	-91.34609
Coverboard	Saint Croix 12	-	SC12CB03	46.20009	-91.24820
Coverboard	Saint Croix 12	-	SC12CB04	46.21932	-91.15496
Coverboard	Saint Croix 12	-	SC12CB05	46.17975	-91.32832
Coverboard	Saint Croix 12	-	SC12CB06	46.14434	-91.34798
Coverboard	Saint Croix 12	CB-A	SC12CBA1	46.23130	-91.17066
Coverboard	Saint Croix 12	CB-B	SC12CBB1	46.14359	-91.34433
Coverboard	Saint Croix 12	CB-C	SC12CBC1	46.14622	-91.34722
Coverboard	Saint Croix 12	CB-E	SC12CBE1	46.19814	-91.25975
Coverboard	Saint Croix 1	-	SC1CB02	45.11921	-92.75119
Coverboard	Saint Croix 1	-	SC1CB09	45.20020	-92.76248

Table 3. Characteristics of sites within the St. Croix National Scenic Riverway from 2002-2005 (continued).

Point identification type	Subdivided area	Cell or transect	Site identification	LAT	LONG
Coverboard	Saint Croix 1	-	SC1CB12	45.1044	-92.7466
Coverboard	Saint Croix 1	-	SC1CB14	45.22803	-92.76295
Coverboard	Saint Croix 1	CB-A	SC1CBA1	45.24566	-92.75302
Coverboard	Saint Croix 1	CB-D	SC1CBD1	45.2491	-92.75691
Coverboard	Saint Croix 1	CB-E	SC1CBE1	45.11126	-92.74581
Coverboard	Saint Croix 2	-	SC2CB03	45.38657	-92.67288
Coverboard	Saint Croix 2	-	SC2CB06	45.38519	-92.67422
Coverboard	Saint Croix 2	-	SC2CB09	45.43805	-92.64222
Coverboard	Saint Croix 2	-	SC2CB13	45.32212	-92.71438
Coverboard	Saint Croix 2	-	SC2CB16	45.36874	-92.69086
Coverboard	Saint Croix 2	CB-B	SC2CBB1	45.35152	-92.69892
Coverboard	Saint Croix 2	CB-D	SC2CBD1	45.28994	-92.75827
Coverboard	Saint Croix 4	-	SC4CB07	45.7012	-92.8641
Coverboard	Saint Croix 4	-	SC4CB12	45.69802	-92.86684
Coverboard	Saint Croix 4	-	SC4CB14	45.64272	-92.89225
Coverboard	Saint Croix 4	-	SC4CB15	45.73074	-92.83715
Coverboard	Saint Croix 4	-	SC4CB20	45.73079	-92.85174
Coverboard	Saint Croix 4	CB-A	SC4CBA1	45.77992	-92.77205
Coverboard	Saint Croix 4	CB-B	SC4CBB1	45.7361	-92.82957
Coverboard	Saint Croix 4	CB-C	SC4CBC1	45.69618	-92.87346
Coverboard	Saint Croix 7	CB-A	SC7CBA1	46.08852	-92.14268
Coverboard	Saint Croix 7	CB-B	SC7CBB1	46.09897	-92.15556
Coverboard	Saint Croix 8	-	SC8CB04	46.19456	-92.0718
Coverboard	Saint Croix 8	-	SC8CB15	46.22515	-92.01327
Coverboard	Saint Croix 8	-	SC8CB16	46.22509	-92.01443
Coverboard	Saint Croix 8	-	SC8CB18	46.18004	-92.09322
Coverboard	Saint Croix 8	-	SC8CB20	46.22619	-92.02088
Coverboard	Saint Croix 8	CB-A	SC8CBA1	46.25466	-91.94271
Coverboard	Saint Croix 8	CB-B	SC8CBB1	46.24135	-91.97859
Coverboard	Saint Croix 9	-	SC9CB05	45.98416	-91.935
Coverboard	Saint Croix 9	-	SC9CB07	46.02781	-92.01018
Coverboard	Saint Croix 9	-	SC9CB11	45.95346	-91.8899
Coverboard	Saint Croix 9	-	SC9CB17	46.04484	-92.02903
Coverboard	Saint Croix 9	-	SC9CB18	46.04538	-92.02117

Table 3. Characteristics of sites within the St. Croix National Scenic Riverway from 2002-2005 (continued).

Point identification type	Subdivided area	Cell or transect	Site identification	LAT	LONG	Habitat type	Length (M)	Width (M)	AREA (Ha)	pH	Conductivity (μ S/cm)
Incidental	Saint Croix 10	D-A	SC10DAI1	45.92122	-91.76410	Temp. Pond	25	21	0.05	6.33	122
Incidental	Saint Croix 12	D-A	SC12DAI1	46.22634	-91.15942	Temp. Pond	24.5	14	0.03	6.10	44.3
Incidental	Saint Croix 12	D-A	SC12DAI2	46.22655	-91.16620	Temp. Pond	20	15	0.03	5.99	36
Incidental	Saint Croix 4	D-A	SC4DAI1	45.78141	-92.77056	Temp. Pond	55	45	0.25	6.24	40.4
Incidental	Saint Croix 4	D-A	SC4DAI2	45.77728	-92.77031	Temp. Pond	70	25	0.18	4.93	36.5
Incidental	Saint Croix 4	D-B	SC4DBI1	45.73346	-92.83854	Swamp	150	47.5	0.71	-	126
Incidental	Saint Croix 4	D-B	SC4DBI2	45.73137	-92.85041	Temp. Pond	55	20	0.11	5.54	73
Incidental	Saint Croix 4	D-C	SC4DCI1	45.69355	-92.87450	Shallow Marsh	130	80	1.04	5.45	58
Incidental	Saint Croix 4	D-C	SC4DCI2	45.68724	-92.87822	Shallow Marsh	475	137.5	6.53	6.16	70
Incidental	Saint Croix 8	D-A	SC8DAI1	46.25355	-91.94030	Temp. Pond	17	12	0.02	5.00	26
Incidental	Saint Croix 8	D-A	SC8DAI2	46.25346	-91.93950	Temp. Pond	25	15	0.04	5.90	40
Incidental	Saint Croix 8	D-A	SC8DAI3	46.25726	-91.95258	Oxbow/river slough	75	20	0.15	6.69	112
Incidental	Saint Croix 8	N-A	SC8NAI	46.25923	-91.95258	-	-	-	-	-	-
Incidental	Saint Croix 8	N-A	SC8NAI3	46.25726	-91.95258	-	-	-	-	-	-
Incidental	Saint Croix 9	-	SC9DNI1	46.02349	-92.02725	Perm. Pond	500	220	11.00	8.01	65.6
Individual	Saint Croix 4	-	BLANDINGS041504	45.70625	-92.79643	Perm. Pond	-	-	-	-	-
Individual	Saint Croix 12	-	FOURTOED	46.22640	-91.16695	-	-	-	-	-	-
Individual	Saint Croix 10	D-B	SC10DBT1	45.90544	-91.80276	Oxbow/river slough	-	-	-	-	-
Individual	Saint Croix 10	D-D	SC10DDT1	45.93626	-91.75226	-	-	-	-	-	-
Individual	Saint Croix 12	D-A	SC12DASAM1	46.22746	-91.16951	-	-	-	-	-	-
Individual	Saint Croix 1	D-E	SC1DET1	45.10905	-92.74108	River	-	-	-	-	-
Individual	Saint Croix 1	D-E	SC1DET2	45.10760	-92.75248	River	-	-	-	-	-
Individual	Saint Croix 2	-	SC2MUDPUPPY4275	45.42635	-92.64736	-	-	-	-	-	-
Individual	Saint Croix 4	D-C	SC4DCT1	45.69700	-92.87225	River	-	-	-	-	-
Individual	Saint Croix 4	D-C	SC4DCT2	45.69761	-92.87194	River	-	-	-	-	-
Individual	Saint Croix 8	D-A	SC8DA1T	46.25471	-91.94066	River	-	-	-	-	-
Individual	Saint Croix 8	D-B	SC8DBT1	46.24337	-91.98086	River	-	-	-	-	-

Table 3. Characteristics of sites within the St. Croix National Scenic Riverway from 2002-2005 (continued).

Point identification type	Subdivided area	Cell or transect	Site identification	LAT	LONG	Habitat type	Length (M)	Width (M)	AREA (Ha)	pH	Conductivity (μ S/cm)
Site	Saint Croix 10	D-A	SC10DA1	45.92191	-91.75916	Oxbow/river slough	100	35	0.35	6.67	167
Site	Saint Croix 10	D-A	SC10DA2	45.91945	-91.75893	Swamp	35	25	0.09	6.03	104
Site	Saint Croix 10	D-B	SC10DB1	45.90432	-91.80169	Shallow Marsh	220	45	0.99	5.99	114.5
Site	Saint Croix 10	D-C	SC10DC1	45.91638	-91.77030	River	67	16	0.11	7.06	176
Site	Saint Croix 10	D-C	SC10DC2	45.91518	-91.77005	River	325	30	0.98	7.36	161
Site	Saint Croix 10	D-D	SC10DD1	45.93351	-91.75448	Shallow Marsh	60	45	0.27	5.19	48
Site	Saint Croix 10	D-D	SC10DD2	45.93337	-91.75419	Shallow Marsh	37.5	21.5	0.08	5.34	114.7
Site	Saint Croix 10	D-D	SC10DD3	45.93399	-91.75538	Shallow Marsh	100	70	0.70	4.82	35.95
Site	Saint Croix 10	D-D	SC10DD4	45.93448	-91.75403	Shallow Marsh	20	20	0.04	5.42	83
Site	Saint Croix 10	D-D	SC10DD5	45.93563	-91.75398	Temp. Pond	39	20	0.08	5.29	59
Site	Saint Croix 12	D-A	SC12DA1	46.23211	-91.17216	Beaver Pond	400	300	12.00	6.19	46
Site	Saint Croix 12	D-A	SC12DA3	46.23418	-91.17372	Swamp	100	40	0.40	5.65	54.2
Site	Saint Croix 12	D-A	SC12DA4	46.23113	-91.17166	Swamp	80	60	0.48	5.34	35.9
Site	Saint Croix 12	D-B	SC12DB1	46.14495	-91.33994	Lake	500	400	20.00	7.50	181.9
Site	Saint Croix 12	D-C	SC12DC1	46.14705	-91.34856	River	200	30	0.60	6.88	140
Site	Saint Croix 12	D-E	SC12DE1	46.19993	-91.26067	River	500	50	2.50	7.30	123
Site	Saint Croix 12	D-E	SC12DE2	46.20010	-91.26294	Oxbow/river slough	50	40	0.20	7.10	257
Site	Saint Croix 12	D-E	SC12DE3	46.19828	-91.26021	Perm. Pond	5	7	0.00	5.97	54
Site	Saint Croix 1	D-A	SC1DA1	45.24551	-92.75369	Oxbow/river slough	386	144	5.56	7.27	221.15
Site	Saint Croix 1	D-A	SC1DA2	45.24338	-92.75334	Perm. Pond	150	80	1.20	7.23	304
Site	Saint Croix 1	D-A	SC1DA3	45.24134	-92.74774	Temp. Pond	70	20	0.14	5.95	52.2
Site	Saint Croix 1	D-D	SC1DD1	45.24639	-92.75540	River	56	20	0.11	7.48	318
Site	Saint Croix 1	D-D	SC1DD2	45.24641	-92.75787	Perm. Pond	25	15	0.04	6.89	171
Site	Saint Croix 1	D-D	SC1DD3	45.24778	-92.75608	Oxbow/river slough	500	110.5	5.53	7.67	231.5
Site	Saint Croix 1	D-D	SC1DD4	45.24614	-92.75791	Perm. Pond	15	12	0.02	6.79	245
Site	Saint Croix 1	D-D	SC1DD5	45.24629	-92.75705	Perm. Pond	175	42.5	0.74	7.10	235.5
Site	Saint Croix 1	D-D	SC1DD6	45.24944	-92.75850	Shallow Marsh	80	25	0.20	6.67	190
Site	Saint Croix 1	D-D	SC1DD7	45.24983	-92.75873	Temp. Pond	100	35	0.35	6.77	139
Site	Saint Croix 1	D-E	SC1DE1	45.11065	-92.74212	River	90	30	0.27	7.76	190

Table 3. Characteristics of sites within the St. Croix National Scenic Riverway from 2002-2005 (continued).

Point identification type	Subdivided area	Cell or transect	Site identification	LAT	LONG	Habitat type	Length (M)	Width (M)	AREA (Ha)	pH	Conductivity (μ S/cm)
Site	Saint Croix 1	D-E	SC1DE2	45.11121	-92.74552	Oxbow/river slough	125	21	0.26	7.22	181
Site	Saint Croix 1	D-E	SC1DE3	45.10962	-92.74578	Oxbow/river slough	132	28	0.37	7.21	183.65
Site	Saint Croix 2	D-B	SC2DB1	45.34681	-92.69865	Deep Marsh	500	500	25.00	7.28	168.8
Site	Saint Croix 2	D-D	SC2DD1	45.28730	-92.75686	Deep Marsh	500	360	18.00	7.10	319
Site	Saint Croix 2	D-D	SC2DD2	45.28930	-92.76015	Oxbow/river slough	25	15	0.04	6.65	140.5
Site	Saint Croix 2	D-D	SC2DD3	45.28990	-92.75788	Perm. Pond	150	30	0.45	6.76	253
Site	Saint Croix 4	D-A	SC4DA1	45.78112	-92.77083	Perm. Pond	35	24	0.08	6.16	40.5
Site	Saint Croix 4	D-A	SC4DA2	45.78132	-92.77216	Shallow Marsh	500	92.5	4.63	5.60	42
Site	Saint Croix 4	D-A	SC4DA3	45.77699	-92.77509	Shallow Marsh	225	62.5	1.41	5.27	42
Site	Saint Croix 4	D-A	SC4DA4	45.77750	-92.77091	Temp. Pond	34	7	0.02	4.03	38
Site	Saint Croix 4	D-A	SC4DA5	45.78085	-92.77112	Swamp	35	20	0.07	5.71	59.5
Site	Saint Croix 4	D-B	SC4DB1	45.73415	-92.83269	Temp. Pond	48.5	12.5	0.06	6.42	89.5
Site	Saint Croix 4	D-B	SC4DB10	45.73492	-92.83473	Shallow Marsh	80	45	0.36	5.45	60.85
Site	Saint Croix 4	D-B	SC4DB11	45.73465	-92.83536	Shallow Marsh	56.5	19.5	0.11	5.55	42
Site	Saint Croix 4	D-B	SC4DB2	45.73391	-92.83212	Oxbow/river slough	86	20	0.17	6.32	113.6
Site	Saint Croix 4	D-B	SC4DB3	45.73427	-92.83131	Temp. Pond	70	20	0.14	6.25	102
Site	Saint Croix 4	D-B	SC4DB4	45.73438	-92.83021	Oxbow/river slough	100	10	0.10	6.75	228
Site	Saint Croix 4	D-B	SC4DB5	45.73676	-92.83179	Shallow Marsh	100	50	0.50	5.45	53
Site	Saint Croix 4	D-B	SC4DB6	45.73690	-92.82893	Shallow Marsh	107	20	0.21	5.57	31
Site	Saint Croix 4	D-B	SC4DB7	45.73549	-92.83103	Shallow Marsh	33	15	0.05	5.68	55
Site	Saint Croix 4	D-B	SC4DB8	45.73515	-92.83334	Shallow Marsh	90.5	20	0.18	5.78	62
Site	Saint Croix 4	D-B	SC4DB9	45.73675	-92.83424	Perm. Pond	100	62.5	0.63	5.30	44
Site	Saint Croix 4	D-C	SC4DC1	45.69633	-92.87298	Oxbow/river slough	150	15	0.23	6.42	155.9
Site	Saint Croix 7	D-A	SC7DA1	46.08710	-92.14850	Swamp	200	70	1.40	5.88	90

Table 3. Characteristics of sites within the St. Croix National Scenic Riverway from 2002-2005 (continued).

Point identification type	Subdivided area	Cell or transect	Site identification	LAT	LONG	Habitat type	Length (M)	Width (M)	AREA (Ha)	pH	Conductivity (μS/cm)
Site	Saint Croix 7	D-A	SC7DA2	46.08527	-92.14669	Swamp	230	80	1.84	6.32	141
Site	Saint Croix 7	D-A	SC7DA3	46.08462	-92.14848	Oxbow/river slough	42.5	8	0.03	7.14	129.2
Site	Saint Croix 7	D-A	SC7DA4	46.08610	-92.14712	Oxbow/river slough	400	30	1.20	7.17	139.5
Site	Saint Croix 7	D-A	SC7DA5	46.08845	-92.14313	Temp. Pond	30	60	0.18	5.81	52.6
Site	Saint Croix 7	D-B	SC7DB1	46.10308	-92.15695	Swamp	60	25	0.15	6.21	97.5
Site	Saint Croix 7	D-B	SC7DB2	46.10143	-92.15649	River	105	37.5	0.39	6.68	114.05
Site	Saint Croix 7	D-B	SC7DB3	46.10140	-92.15552	Swamp	125	40	0.50	6.50	113
Site	Saint Croix 8	D-A	SC8DA1	46.25449	-91.93958	River	180	30	0.54	7.21	111.8
Site	Saint Croix 8	D-B	SC8DB1	46.24370	-91.98222	River	50	15	0.08	6.74	119.3
Site	Saint Croix 9	D-E	SC9DE1	46.03621	-92.01891	Temp. Pond	24	17	0.04	5.51	57
Site	Saint Croix 9	D-E	SC9DE2	46.03635	-92.01453	River	180	90	1.62	6.76	141

Table 4. Characteristics of sites within Voyageurs National Park from 2002-2005.

Point identification type	Subdivided area	Cell or transect	Site identification	LAT	LONG
Cell corner point	Voyageurs 11	D-B	10V	48.57380	-93.13389
Cell corner point	Voyageurs 11	D-B	11V	48.57379	-93.14066
Cell corner point	Voyageurs 11	D-B	12V	48.57829	-93.14068
Cell corner point	Voyageurs 11	D-A	13V	48.61427	-93.13395
Cell corner point	Voyageurs 11	D-A	14V	48.60977	-93.13394
Cell corner point	Voyageurs 11	D-A	15V	48.60976	-93.14072
Cell corner point	Voyageurs 11	D-A	16V	48.61426	-93.14074
Cell corner point	Voyageurs 10	D-A	17V	48.54235	-93.09993
Cell corner point	Voyageurs 10	D-A	18V	48.53784	-93.10670
Cell corner point	Voyageurs 10	D-A	19V	48.54234	-93.10671
Cell corner point	Voyageurs 5	D-A	1V	48.59186	-92.96442
Cell corner point	Voyageurs 10	D-C	20V	48.53785	-93.09315
Cell corner point	Voyageurs 10	D-C	21V	48.53336	-93.09314
Cell corner point	Voyageurs 10	D-C	22V	48.53335	-93.09992
Cell corner point	Voyageurs 10	D-A or D-C	23V	48.53785	-93.09992
Cell corner point	Voyageurs 6	D-B	24V	48.53338	-92.95091
Cell corner point	Voyageurs 6	D-B	25V	48.52889	-92.95092
Cell corner point	Voyageurs 6	D-B	26V	48.52889	-92.95769
Cell corner point	Voyageurs 6	D-B	27V	48.53339	-92.95768
Cell corner point	Voyageurs 9	D-B	28V	48.51535	-93.11342
Cell corner point	Voyageurs 9	D-B	29V	48.51085	-93.11341
Cell corner point	Voyageurs 5	D-A	2V	48.58737	-92.96442
Cell corner point	Voyageurs 9	D-B	30V	48.51084	-93.12018
Cell corner point	Voyageurs 9	D-B	31V	48.51534	-93.12019
Cell corner point	Voyageurs 4	D-C	32V	48.51511	-92.74104
Cell corner point	Voyageurs 4	D-C	33V	48.51061	-92.74107
Cell corner point	Voyageurs 4	D-C	34V	48.51063	-92.74784
Cell corner point	Voyageurs 4	D-C	35V	48.51512	-92.74781
Cell corner point	Voyageurs 9	D-C	36V	48.47936	-93.11334
Cell corner point	Voyageurs 9	D-C	37V	48.47486	-93.11333
Cell corner point	Voyageurs 9	D-C	38V	48.47485	-93.12010
Cell corner point	Voyageurs 9	D-C	39V	48.47935	-93.12011
Cell corner point	Voyageurs 5	D-A	3V	48.58737	-92.97120
Cell corner point	Voyageurs 3	D-C	40V	48.47923	-92.79535
Cell corner point	Voyageurs 3	D-C	41V	48.47474	-92.79537
Cell corner point	Voyageurs 3	D-C	42V	48.47475	-92.80214
Cell corner point	Voyageurs 3	D-C	43V	48.47925	-92.80212
Cell corner point	Voyageurs 3	D-A	44V	48.47034	-92.86303
Cell corner point	Voyageurs 3	D-A	45V	48.46584	-92.86305
Cell corner point	Voyageurs 3	D-A	46V	48.46585	-92.86981
Cell corner point	Voyageurs 3	D-A	47V	48.47035	-92.86980
Cell corner point	Voyageurs 7	D-E	48V	48.46590	-92.93745
Cell corner point	Voyageurs 7	D-E	49V	48.46141	-92.93745
Cell corner point	Voyageurs 5	D-A	4V	48.59187	-92.97120
Cell corner point	Voyageurs 7	D-E	50V	48.46141	-92.94422

Table 4. Characteristics of sites within Voyageurs National Park from 2002-2005 (continued).

Point identification type	Subdivided area	Cell or transect	Site identification	LAT	LONG
Cell corner point	Voyageurs 7	D-E	51V	48.46591	-92.94421
Cell corner point	Voyageurs 8	D-C	52V	48.42991	-92.91718
Cell corner point	Voyageurs 8	D-C	53V	48.42541	-92.91719
Cell corner point	Voyageurs 8	D-C	54V	48.42541	-92.92395
Cell corner point	Voyageurs 8	D-C	55V	48.42991	-92.92394
Cell corner point	Voyageurs 7	D-F	56V	48.46590	-92.92392
Cell corner point	Voyageurs 7	D-F	57V	48.46140	-92.92393
Cell corner point	Voyageurs 7	D-F	58V	48.46140	-92.93069
Cell corner point	Voyageurs 7	D-F	59V	48.46590	-92.93068
Cell corner point	Voyageurs 12	D-C	5V	48.58287	-93.03900
Cell corner point	Voyageurs 2	D-F	60V	48.42977	-92.80231
Cell corner point	Voyageurs 2	D-F	61V	48.42527	-92.80233
Cell corner point	Voyageurs 2	D-F	62V	48.42528	-92.80909
Cell corner point	Voyageurs 2	D-F	63V	48.42978	-92.80907
Cell corner point	Voyageurs 1	D-A	64V	48.42947	-92.67389
Cell corner point	Voyageurs 1	D-A	65V	48.42497	-92.67392
Cell corner point	Voyageurs 1	D-A	66V	48.42499	-92.68067
Cell corner point	Voyageurs 1	D-A	67V	48.42949	-92.68065
Cell corner point	Voyageurs 1	D-B	68V	48.42046	-92.66719
Cell corner point	Voyageurs 1	D-B	69V	48.41596	-92.66722
Cell corner point	Voyageurs 12	D-C	6V	48.57837	-93.03899
Cell corner point	Voyageurs 1	D-B	70V	48.41598	-92.67397
Cell corner point	Voyageurs 1	D-B	71V	48.42048	-92.67395
Cell corner point	Voyageurs 2	D-E	72V	48.41628	-92.80912
Cell corner point	Voyageurs 2	D-E	73V	48.41178	-92.80914
Cell corner point	Voyageurs 2	D-E	74V	48.41179	-92.81589
Cell corner point	Voyageurs 2	D-E	75V	48.41629	-92.81588
Cell corner point	Voyageurs 8	D-B	76V	48.40742	-92.92401
Cell corner point	Voyageurs 8	D-B	77V	48.40292	-92.92401
Cell corner point	Voyageurs 8	D-B	78V	48.40292	-92.93077
Cell corner point	Voyageurs 8	D-B	79V	48.40742	-92.93076
Cell corner point	Voyageurs 12	D-C	7V	48.57837	-93.04577
Cell corner point	Voyageurs 12	D-C	8V	48.58286	-93.04578
Cell corner point	Voyageurs 11	D-B	9V	48.57830	-93.13390
Coverboard	Voyageurs 10	CB-A	V10CBA3	48.53979	-93.10416
Coverboard	Voyageurs 10	CB-C	V10CBC1	48.53570	-93.09585
Coverboard	Voyageurs 11		V11CB13	48.58522	-93.16821
Coverboard	Voyageurs 11		V11CB15	48.58593	-93.16909
Coverboard	Voyageurs 11		V11CB21B	48.59194	-93.19078
Coverboard	Voyageurs 11		V11CB4	48.58766	-93.17654
Coverboard	Voyageurs 11		V11CB6B	48.58534	-93.16354
Coverboard	Voyageurs 11	CB-B	V11CBB1	48.57641	-93.13601
Coverboard	Voyageurs 12	CB-C	V12CBC3	48.58229	-93.04097
Coverboard	Voyageurs 1	CB-A	V1CBA1	48.42551	-92.67896
Coverboard	Voyageurs 1	CB-B	V1CBB1	48.41924	-92.66944
Coverboard	Voyageurs 2		V2CB1	48.42510	-92.84598
Coverboard	Voyageurs 2		V2CB10	48.41857	-92.84385

Table 4. Characteristics of sites within Voyageurs National Park from 2002-2005 (continued).

Point identification type	Subdivided area	Cell or transect	Site identification	LAT	LONG
Coverboard	Voyageurs 2		V2CB11	48.40158	-92.83799
Coverboard	Voyageurs 2		V2CB18	48.42264	-92.84508
Coverboard	Voyageurs 2		V2CB19	48.41327	-92.84541
Coverboard	Voyageurs 2		V2CB20	48.43243	-92.84842
Coverboard	Voyageurs 2		V2CB21	48.42929	-92.85079
Coverboard	Voyageurs 2		V2CB22	48.40809	-92.84328
Coverboard	Voyageurs 2		V2CB5	48.41325	-92.84488
Coverboard	Voyageurs 2	CB-E	V2CBE1	48.41189	-92.80997
Coverboard	Voyageurs 2	CB-F	V2CBF1	48.42778	-92.80411
Coverboard	Voyageurs 3	CB-A	V3CBA1	48.46834	-92.86768
Coverboard	Voyageurs 3	CB-C	V3CBC1	48.47911	-92.80012
Coverboard	Voyageurs 4	CB-C	V4CBC1	48.51069	-92.74517
Coverboard	Voyageurs 5	CB-A	V5CBA1	48.59120	-92.96598
Coverboard	Voyageurs 6	CB-B	V6CBB1	48.53115	-92.95699
Coverboard	Voyageurs 7	CB-E	V7CBE1	48.46441	-92.94316
Coverboard	Voyageurs 7	CB-F	V7CBF1	48.46422	-92.93286
Coverboard	Voyageurs 8	CB-B	V8CBB1	48.40446	-92.92711
Coverboard	Voyageurs 9		V9CB06	48.47353	-93.07952
Coverboard	Voyageurs 9		V9CB16	48.47792	-93.07824
Coverboard	Voyageurs 9		V9CB20	48.47815	-93.07802
Coverboard	Voyageurs 9		V9CB22	48.47721	-93.06914
Coverboard	Voyageurs 9	CB-B	V9CBB1	48.51523	-93.11394
Coverboard	Voyageurs 9	CB-C	V9CBC1	48.47635	-93.11785
Night	Voyageurs 11	N-A	V11NA1	48.58447	-93.16444
Night	Voyageurs 11	N-A	V11NA2	48.58469	-93.16712
Night	Voyageurs 11	N-A	V11NA3	48.58529	-93.16946
Night	Voyageurs 11	N-A	V11NA4	48.58616	-93.17179
Night	Voyageurs 11	N-A	V11NA5	48.58697	-93.17425
Night	Voyageurs 11	N-A	V11NA6	48.58784	-93.17665
Night	Voyageurs 11	N-A	V11NA7	48.58823	-93.17932
Night	Voyageurs 11	N-A	V11NA8	48.58952	-93.18124
Night	Voyageurs 2	N-A	V2NA1	48.42268	-92.84583
Night	Voyageurs 2	N-A	V2NA2	48.42089	-92.84561
Night	Voyageurs 2	N-A	V2NA3	48.41902	-92.84405
Night	Voyageurs 2	N-A	V2NA4	48.41748	-92.84552
Night	Voyageurs 2	N-A	V2NA5	48.41676	-92.84808
Night	Voyageurs 2	N-A	V2NA6	48.41489	-92.84704
Night	Voyageurs 2	N-A	V2NA7	48.41359	-92.84514
Night	Voyageurs 2	N-A	V2NA8	48.41168	-92.84414
Night	Voyageurs 3	N-A	V3NA1	48.47443	-92.80732
Night	Voyageurs 3	N-A	V3NA2	48.47294	-92.80951
Night	Voyageurs 3	N-A	V3NA3	48.47246	-92.81076
Night	Voyageurs 3	N-A	V3NA4	48.47116	-92.81458

Table 4. Characteristics of sites within Voyageurs National Park from 2002-2005 (continued).

Point identification type	Subdivided area	Cell or transect	Site identification	LAT	LONG
Night	Voyageurs 3	N-B	V3NB1	48.46572	-92.82169
Night	Voyageurs 3	N-B	V3NB2	48.46581	-92.82448
Night	Voyageurs 3	N-B	V3NB3	48.46571	-92.82725
Night	Voyageurs 3	N-B	V3NB4	48.46563	-92.82991
Night	Voyageurs 3	N-B	V3NB5	48.46485	-92.83226
Night	Voyageurs 3	N-B	V3NB6	48.46390	-92.83459
Night	Voyageurs 3	N-B	V3NB7	48.46324	-92.83715
Night	Voyageurs 3	N-B	V3NB8	48.46342	-92.84009
Night	Voyageurs 8	N-A	V8NA1	48.38832	-92.91030
Night	Voyageurs 8	N-A	V8NA2	48.38770	-92.90761
Night	Voyageurs 8	N-A	V8NA3	48.38719	-92.90510
Night	Voyageurs 8	N-A	V8NA4	48.38674	-92.90230
Night	Voyageurs 8	N-A	V8NA5	48.38615	-92.89933
Night	Voyageurs 8	N-A	V8NA6	48.38567	-92.89665
Night	Voyageurs 8	N-A	V8NA7	48.38491	-92.89402
Night	Voyageurs 8	N-A	V8NA8	48.38336	-92.89194
Night	Voyageurs 9	N-A	V9NA1	48.47961	-93.07839
Night	Voyageurs 9	N-A	V9NA2	48.47769	-93.07870
Night	Voyageurs 9	N-A	V9NA3	48.47590	-93.07914
Night	Voyageurs 9	N-A	V9NA4	48.47413	-93.07973
Night	Voyageurs 9	N-A	V9NA5	48.47210	-93.08019
Night	Voyageurs 9	N-A	V9NA6	48.47022	-93.08071
Night	Voyageurs 9	N-A	V9NA7	48.46841	-93.08066
Night	Voyageurs 9	N-A	V9NA8	48.46659	-93.08022

Table 4. Characteristics of sites within Voyageurs National Park from 2002-2005 (continued).

Point identification type	Subdivided area	Cell or transect	Site identification	LAT	LONG	Habitat type	Length (M)	Width (M)	AREA (Ha)	pH	Conductivity (μ S/cm)
Incidental	Voyageurs 2	D-E	V2DENB1	48.41549	-92.81138	Swamp	140	40	0.56	6.46	-
Incidental	Voyageurs 3	D-A	V3DAI1	48.46527	-92.86840	Beaver Pond	-	-	-	-	-
Incidental	Voyageurs4	D-C	V4DCI1	48.50631	-92.74520	Beaver Pond	95	45	0.43	6.44	35.85
Incidental	Voyageurs 5	D-A	V5DAI1	48.58168	-92.97528	Beaver Pond	98	53	0.52	5.90	49
Incidental	Voyageurs 5	D-A	V5DAI2	48.58371	-92.97249	Temp. Pond	-	-	-	-	-
Incidental	Voyageurs 5	D-A	V5DAI3	48.58611	-92.97152	Temp. Pond	-	-	-	5.14	33.5
Incidental	Voyageurs 5	D-A	V5DAI4	48.58650	-92.97040	Temp. Pond	40	20	0.08	5.67	86
Incidental	Voyageurs 6	D-B	V6DBI1	48.53385	-92.95818	River	29	23.5	0.07	6.57	33.6
Incidental	Voyageurs 6	D-B	V6DBI2	48.52910	-92.94872	Beaver Pond	260	80	2.08	5.41	24.9
Incidental	Voyageurs 9	D-B	V9DBI1	48.51371	-93.10686	Beaver Pond	171	55	0.94	6.57	85.1
Individual	Voyageurs 2	D-A	V2DAT1	48.43614	-92.85102	Lake	-	-	-	-	-
Individual	Voyageurs 2	D-C	V2DCI1	48.41974	-92.83416	-	-	-	-	-	-
Individual	Voyageurs 2	D-C	V2DCI2	48.41851	-92.82460	-	-	-	-	-	-
Individual	Voyageurs 2	D-E	V2DEI1	48.41602	-92.82001	-	-	-	-	-	-
Individual	Voyageurs 2	D-F	V2DFNB1	48.42728	-92.80475	-	-	-	-	-	-
Individual	Voyageurs 3	D-C	V3DCI1	48.46575	-92.82181	Lake	-	-	-	-	-
Individual	Voyageurs 3	D-C	V3DCI2	48.47340	-92.80912	Beaver Pond	416.5	89	3.71	5.57	24.05
Individual	Voyageurs 5	-	V5DI1	48.58368	-93.16111	Lake	-	-	-	-	-
Site	Voyageurs 10	D-A	V10DA1	48.53825	-93.10685	Swamp	63.5	25	0.16	4.87	58.5
Site	Voyageurs 10	D-A	V10DA2	48.53793	-93.10626	Swamp	70	15	0.11	4.70	51
Site	Voyageurs 10	D-A	V10DA3	48.53869	-93.10310	Swamp	50	20	0.10	5.97	82
Site	Voyageurs 10	D-A	V10DA4	48.54014	-93.10365	Deep Marsh	500	250	12.50	6.57	103
Site	Voyageurs 10	D-C	V10DC1	48.53456	-93.09586	Beaver Pond	200	100	2.00	6.84	131.3
Site	Voyageurs 10	D-C	V10DC2	48.53655	-93.09729	Swamp	65	17.5	0.11	5.42	69

Table 4. Characteristics of sites within Voyageurs National Park from 2002-2005 (continued).

Point identification type	Subdivided area	Cell or transect	Site identification	LAT	LONG	Habitat type	Length (M)	Width (M)	AREA (Ha)	pH	Conductivity (μ S/cm)
Site	Voyageurs 11	D-A	V11DA1	48.61289	-93.13861	Lake	120	75	0.90	8.14	58.9
Site	Voyageurs 11	D-B	V11DB1	48.57863	-93.13712	Bog	80	40	0.32	4.18	49.65
Site	Voyageurs 11	D-B	V11DB2	48.57796	-93.13356	Swamp	25	20	0.05	4.93	36
Site	Voyageurs 11	D-B	V11DB3	48.57553	-93.13594	Swamp	53	40	0.21	5.41	60.3
Site	Voyageurs 11	D-B	V11DB4	48.57431	-93.13600	Deep Marsh	500	360	18.00	6.71	99.5
Site	Voyageurs 11	D-B	V11DB5	48.57724	-93.13873	Swamp	135	30	0.41	4.39	45.5
Site	Voyageurs 11	D-B	V11DB6	48.57554	-93.13806	Swamp	70	15	0.11	5.70	68.5
Site	Voyageurs 12	D-C	V12DC1	48.58162	-93.04466	Swamp	80	20	0.16	6.16	77
Site	Voyageurs 12	D-C	V12DC2	48.57873	-93.04049	Beaver Pond	140	60	0.84	6.20	48
Site	Voyageurs 12	D-C	V12DC3	48.58051	-93.03954	Bog	370	40	1.48	5.59	45.75
Site	Voyageurs 12	D-C	V12DC4	48.58220	-93.03929	Swamp	200	40	0.80	4.21	48.9
Site	Voyageurs 12	D-C	V12DC5	48.58254	-93.03976	Swamp	90	20	0.18	5.39	155
Site	Voyageurs 12	D-C	V12DC6	48.58179	-93.04134	Swamp	95	30	0.29	6.01	114
Site	Voyageurs 1	D-A	V1DA1	48.42635	-92.67892	Swamp	30	25	0.08	4.98	41
Site	Voyageurs 1	D-A	V1DA2	48.42659	-92.67814	Swamp	22.5	20	0.05	5.75	40
Site	Voyageurs 1	D-B	V1DB1	48.42020	-92.66782	Beaver Pond	160	100	1.60	6.53	56.8
Site	Voyageurs 2	D-E	V2DE1	48.41266	-92.81441	Swamp	85	35	0.30	4.98	44
Site	Voyageurs 2	D-E	V2DE2	48.41464	-92.81633	Swamp	20	12.5	0.03	4.39	28.05
Site	Voyageurs 2	D-F	V2DF1	48.42603	-92.80633	Deep Marsh	500	30	1.50	8.21	196
Site	Voyageurs 2	D-F	V2DF2	48.42921	-92.80303	Swamp	25	15	0.04	5.12	32
Site	Voyageurs 3	D-A	V3DA1	48.46669	-92.86913	Swamp	45	35	0.16	4.98	28.7
Site	Voyageurs 3	D-A	V3DA2	48.46782	-92.86341	Swamp	40	20	0.08	5.05	36.75
Site	Voyageurs 3	D-A	V3DA3	48.46670	-92.86384	Swamp	90	10	0.09	3.86	32
Site	Voyageurs 3	D-C	V3DC1	48.47517	-92.79947	Beaver Pond	500	500	25.00	5.60	26

Table 4. Characteristics of sites within Voyageurs National Park from 2002-2005 (continued).

Point identification type	Subdivided area	Cell or transect	Site identification	LAT	LONG	Habitat type	Length (M)	Width (M)	AREA (Ha)	pH	Conductivity (μ S/cm)
Site	Voyageurs 4	D-C	V4DC2	48.51172	-92.74700	Beaver Pond	110	80	0.88	5.85	20.8
Site	Voyageurs 4	D-C	V4DC3	48.51378	-92.74787	Bog	100	40	0.40	4.86	34
Site	Voyageurs 5	D-A	V5DA1	48.58772	-92.97031	Deep Marsh	400	200	8.00	6.46	54
Site	Voyageurs 5	D-A	V5DA2	48.58922	-92.96659	Deep Marsh	300	200	6.00	4.83	57.7
Site	Voyageurs 5	D-A	V5DA3	48.59130	-92.96756	Lake	40	60	0.24	6.52	55.95
Site	Voyageurs 5	D-A	V5DA4	48.59150	-92.96562	Lake	210	70	1.47	6.83	53.95
Site	Voyageurs 5	D-A	V5DA5	48.58850	-92.97068	Bog	400	100	4.00	6.00	41
Site	Voyageurs 5	D-A	V5DA6	48.59053	-92.96589	Temp. Pond	20	10	0.02	5.14	65.1
Site	Voyageurs 6	D-B	V6DB1	48.53134	-92.95879	Beaver Pond	200	50	1.00	6.03	35.45
Site	Voyageurs 6	D-B	V6DB2	48.52891	-92.95729	Bog	140	32.5	0.46	5.09	107.2
Site	Voyageurs 6	D-B	V6DB3	48.53029	-92.95653	Bog	30	20	0.06	4.76	36.2
Site	Voyageurs 7	D-E	V7DE1	48.46588	-92.94399	Beaver Pond	500	70	3.50	6.64	91
Site	Voyageurs 7	D-E	V7DE2	48.46515	-92.94018	Swamp	30	30	0.09	5.31	60.1
Site	Voyageurs 7	D-F	V7DF1	48.46463	-92.93157	Beaver Pond	100	30	0.30	6.34	138.95
Site	Voyageurs 7	D-F	V7DF2	48.46382	-92.93055	Swamp	35	20	0.07	5.64	51.3
Site	Voyageurs 7	D-F	V7DF3	48.46448	-92.93108	Swamp	30	20	0.06	6.06	153
Site	Voyageurs 8	D-B	V8DB1	48.40303	-92.92965	Lake	500	121	6.05	6.97	176
Site	Voyageurs 8	D-B	V8DB2	48.40374	-92.92645	Swamp	112.5	77.5	0.87	6.78	299.5
Site	Voyageurs 8	D-C	V8DC1	48.42924	-92.92256	Beaver Pond	400	176	7.04	5.93	54.5
Site	Voyageurs 8	D-C	V8DC2	48.42538	-92.91814	Swamp	265	55	1.46	6.29	143.9
Site	Voyageurs 8	D-C	V8DC3	48.42691	-92.92348	Lake	500	114.5	5.73	6.87	169.5
Site	Voyageurs 8	D-C	V8DC4	48.42774	-92.92129	Temp. pond	20	15	0.03	5.62	73.5
Site	Voyageurs 9	D-B	V9DB1	48.51446	-93.11693	Swamp	175	65	1.14	6.43	132.6
Site	Voyageurs 9	D-C	V9DC1	48.47890	-93.12119	Swamp	50	20	0.10	6.27	218.5
Site	Voyageurs 9	D-C	V9DC2	48.47919	-93.11426	Temp. Pond	30	15	0.05	6.15	99

Table 5. Characteristics of sites within the Mississippi National River and Recreation Area from 2004-2005.

Point identification type	Site identification	LAT	LONG
Individual	MNRRRA1	44.90409	-93.15299
Individual	MNRRRA10	44.79071	-93.03322
Individual	MNRRRA11	44.78820	-93.03134
Individual	MNRRRA12	44.71383	-92.76468
Individual	MNRRRA14	44.79054	-92.96367
Individual	MNRRRA15	44.79461	-92.96426
Individual	MNRRRA2	44.90091	-93.15758
Individual	MNRRRA3	44.90893	-93.14439
Individual	MNRRRA4	44.88192	-93.17904
Individual	MNRRRA5	44.88849	-93.18326
Individual	MNRRRA6	44.87547	-93.19080
Individual	MNRRRA7	44.87418	-93.19185
Individual	MNRRRA8	44.76723	-92.93212
Individual	MNRRRA9	44.89733	-93.19116
Individual	MNRRATEMP	44.78255	-93.02309
Individual	MNRRATEMP2	44.78935	-93.03322
Individual	MNRRATRAP1	44.88970	-93.17784
Individual	MNRRATRAP2	44.89069	-93.17780
Individual	MNRRATRAP3	44.89077	-93.17749
Individual	MNRRATRAP4	44.89208	-93.17790
Individual	MNRRATRAP5	44.89236	-93.17772
Individual	MNRRATRAP6	44.89274	-93.17751
Individual	MNRRATRAP7	44.89346	-93.17798
Individual	NB3A	44.66555	-92.73560
Night	MNRRRA05N01	44.66596	-92.73570
Night	MNRRRA05N02	44.70229	-92.75890
Night	MNRRRA05N03	44.72967	-92.82499
Night	MNRRRA05N04	44.78814	-93.03133
Night	MNRRRA05N05	44.79001	-93.03494
Night	MNRRRA05N06	44.80080	-92.96456
Night	MNRRANA1	44.88921	-93.18351
Night	MNRRANA2	44.88754	-93.18524
Night	MNRRANA3	44.88543	-93.18421
Night	MNRRANA4	44.88313	-93.18153
Night	MNRRANA5	44.88165	-93.17969
Night	MNRRANA6	44.87835	-93.18221
Night	MNRRANA7	44.87551	-93.19062
Night	MNRRANA8	44.87336	-93.19182
Night	MNRRANB1	44.70229	-92.75889
Night	MNRRANB2	44.66542	-92.74211
Night	MNRRANB3	44.66608	-92.73542
Night	MNRRANB4	44.74182	-92.82106
Night	MNRRANC1	44.79077	-93.03535

Table 6. Water quality and pesticide concentrations for water samples taken in the Upper Mississippi River National Wildlife and Fish Refuge tested by the USGS's Organic Geochemistry Research Group in Lawrence, Kansas, and analyzed using liquid chromatography/mass spectrometry.

Site	Date	Time	Sample Type	Temp. (Celsius)	pH (units)	Specific Cond. (mS/cm)	DO (mg/L)	Alk (mg/L as CaCO ₃)	Bicarbonate (mg/L as CaCO ₃)	Total Triazines and Phenylureas (mg/L)
P4DA1	5/28/03	10:30	sw ¹	18.08	7.61	209	5.26	66.5	81.1	0
P4DA3	7/6/04	10:30	sw	17	7.17	67	6.41	NA ²	NA	0.06
P4DA3	6/20/05	13:00	sw	28.5	6.71	333	0.27	NA	NA	0
P4DC1	7/6/04	11:20	sw	24	8.39	517	8.81	NA	NA	1.06
P4DC1	7/6/04	11:25	sw - replicate	24	8.39	517	8.81	NA	NA	1.29
P4DC1	6/20/05	14:00	sw	30.5	7.69	480	4.91	NA	NA	0
P7DA2	5/28/03	15:00	sw	23.72	7.38	598	6.16	258	315	0
P7DA3	7/7/04	10:30	sw	15	6.76	206	2.65	NA	NA	6.23
P7DA3	6/23/05	10:00	sw	29.9	7.88	769	0.72	NA	NA	0
P7DA3	6/23/05	10:02	sw - replicate	29.9	7.88	769	0.72	NA	NA	0
P8DA1	7/6/04	16:00	sw	21	7.18	742	3.41	NA	NA	0.64
P8DB1	7/6/04	17:20	sw	22.5	8.91	392	13.25	NA	NA	0.59
P8DB1	6/20/05	17:30	sw	27.5	8.58	410	13.27	NA	NA	0
P10DA1	5/29/03	12:30	sw	21.6	8.52	308	10.53	108	132	0
P10DA3	7/7/04	19:00	sw	19.5	8.48	366	2.91	NA	NA	0.72
P10DA3	6/21/05	14:00	sw	28.5	7.46	646	0.54	NA	NA	0
P10DD1	7/7/04	14:30	sw	19.7	7.49	670	3.8	NA	NA	0.47
P10DD1	6/21/05	12:00	sw	30	7.27	483	1.6	NA	NA	0

¹sw = surface water.

²NA = not analyzed.

Table 6. Water quality and pesticide concentrations for water samples taken in the Upper Mississippi River National Wildlife and Fish Refuge tested by the USGS's Organic Geochemistry Research Group in Lawrence, Kansas, and analyzed using liquid chromatography/mass spectrometry (continued).

Site	Atrazine (mg/L)	Bromacil (mg/L)	Cyanazine (mg/L)	Cyanazine-amide (mg/L)	Cyanazine-acid (mg/L)	Deethylatrazine (mg/L)	Deethylcyanazine (mg/L)
P4DA1	0.06	NA ¹	< 0.025	< 0.025	< 0.025	< 0.025	< 0.20
P4DA3	0.06	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.20
P4DA3	0.14	< 0.025	< 0.025	< 0.025	< 0.025	0.05	< 0.20
P4DC1	0.39	< 0.025	< 0.025	< 0.025	< 0.025	0.08	< 0.20
P4DC1	0.48	< 0.025	< 0.025	< 0.025	< 0.025	0.10	< 0.20
P4DC1	0.22	< 0.025	< 0.025	< 0.025	< 0.025	0.07	< 0.20
P7DA2	0.04	NA	< 0.025	< 0.025	< 0.025	< 0.025	< 0.20
P7DA3	4.36	< 0.025	< 0.025	< 0.025	< 0.025	0.86	< 0.20
P7DA3	0.10	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.20
P7DA3	0.08	< 0.025	< 0.025	< 0.025	< 0.025	0.06	< 0.20
P8DA1	0.11	< 0.025	< 0.025	< 0.025	< 0.025	0.03	< 0.20
P8DB1	0.36	< 0.025	< 0.025	< 0.025	< 0.025	0.08	< 0.20
P8DB1	0.19	< 0.025	< 0.025	< 0.025	< 0.025	0.06	< 0.20
P10DA1	0.06	NA	< 0.025	< 0.025	< 0.025	< 0.025	< 0.20
P10DA3	0.37	< 0.025	< 0.025	< 0.025	< 0.025	0.09	< 0.20
P10DA3	0.09	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.20
P10DD1	0.13	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.20
P10DD1	0.17	< 0.025	< 0.025	< 0.025	< 0.025	0.06	< 0.20

¹NA = not analyzed.

Table 6. Water quality and pesticide concentrations for water samples taken in the Upper Mississippi River National Wildlife and Fish Refuge tested by the USGS's Organic Geochemistry Research Group in Lawrence, Kansas, and analyzed using liquid chromatography/mass spectrometry (continued).

Site	Deethyl-cyanazine acid (mg/L)	Deethyl-cyanazine amide (mg/L)	Deethylhydroxy-atrazine (mg/L)	Deisopropyl-atrazine (mg/L)	Deisopropyl-hydroxyatrazine (mg/L)	Demethyl-fluometuron (mg/L)
P4DA1	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.20
P4DA3	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.20
P4DA3	< 0.025	< 0.025	< 0.025	0.03	< 0.025	< 0.20
P4DC1	0.26	< 0.025	< 0.025	0.05	< 0.025	< 0.20
P4DC1	0.31	< 0.025	< 0.025	0.06	< 0.025	< 0.20
P4DC1	0.24	< 0.025	< 0.025	0.04	< 0.025	< 0.20
P7DA2	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.20
P7DA3	< 0.025	< 0.025	< 0.025	0.33	< 0.025	< 0.20
P7DA3	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.20
P7DA3	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.20
P8DA1	< 0.025	< 0.025	< 0.025	< 0.025	0.03	< 0.20
P8DB1	< 0.025	< 0.025	< 0.025	0.05	< 0.025	< 0.20
P8DB1	0.14	< 0.025	< 0.025	0.03	< 0.025	< 0.20
P10DA1	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.20
P10DA3	< 0.025	< 0.025	< 0.025	0.05	< 0.025	< 0.20
P10DA3	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.20
P10DD1	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.20
P10DD1	0.11	< 0.025	< 0.025	0.04	< 0.025	< 0.20

Table 6. Water quality and pesticide concentrations for water samples taken in the Upper Mississippi River National Wildlife and Fish Refuge tested by the USGS's Organic Geochemistry Research Group in Lawrence, Kansas, and analyzed using liquid chromatography/mass spectrometry (continued).

Site	Deethyldeisopropylatrazine/Did ealkyatrazine (mg/L)	Diuron (mg/L)	Fluometuron (mg/L)	Hydroxy- atrazine (mg/L)	Linuron (mg/L)	Hydroxy- simazine (mg/L)	Propazine (mg/L)	Prometon (mg/L)
P4DA1	< 0.025	< 0.200	< 0.200	< 0.025	< 0.200	NA ¹	< 0.025	NA
P4DA3	< 0.025	< 0.200	< 0.200	< 0.025	< 0.200	< 0.025	< 0.025	< 0.025
P4DA3	0.07	< 0.200	< 0.200	< 0.025	< 0.200	< 0.025	0.04	< 0.025
P4DC1	0.11	< 0.200	< 0.200	0.17	< 0.200	< 0.025	< 0.025	< 0.025
P4DC1	0.13	< 0.200	< 0.200	0.18	< 0.200	< 0.025	0.03	< 0.025
P4DC1	0.08	< 0.200	< 0.200	< 0.025	< 0.200	< 0.025	0.04	< 0.025
P7DA2	< 0.025	< 0.200	< 0.200	0.14	< 0.200	NA	< 0.025	NA
P7DA3	0.31	< 0.200	< 0.200	0.31	< 0.200	< 0.025	0.06	< 0.025
P7DA3	< 0.025	< 0.200	< 0.200	< 0.025	< 0.200	< 0.025	< 0.025	< 0.025
P7DA3	< 0.025	< 0.200	< 0.200	< 0.025	< 0.200	< 0.025	< 0.025	< 0.025
P8DA1	< 0.025	< 0.200	< 0.200	0.47	< 0.200	< 0.025	< 0.025	< 0.025
P8DB1	0.10	< 0.200	< 0.200	< 0.025	< 0.200	< 0.025	< 0.025	< 0.025
P8DB1	0.08	< 0.200	< 0.200	< 0.025	< 0.200	< 0.025	0.04	< 0.025
P10DA1	< 0.025	< 0.200	< 0.200	< 0.025	< 0.200	NA	< 0.025	NA
P10DA3	0.12	< 0.200	< 0.200	0.09	< 0.200	< 0.025	< 0.025	< 0.025
P10DA3	< 0.025	< 0.200	< 0.200	< 0.025	< 0.200	< 0.025	< 0.025	< 0.025
P10DD1	< 0.025	< 0.200	< 0.200	0.34	< 0.200	< 0.025	< 0.025	< 0.025
P10DD1	0.08	< 0.200	< 0.200	< 0.025	< 0.200	< 0.025	0.04	< 0.025

¹NA = not analyzed.

Table 6. Water quality and pesticide concentrations for water samples taken in the Upper Mississippi River National Wildlife and Fish Refuge tested by the USGS's Organic Geochemistry Research Group in Lawrence, Kansas, and analyzed using liquid chromatography/mass spectrometry (continued).

Site	Simazine (mg/L)	Acetochlor (mg/L)	Acetochlor ESA (mg/L)	Acetochlor oxanillic acid (mg/L)	Acetochlor sulfynil acetic acid (mg/L)	Alachlor (mg/L)	Alachlor ESA (mg/L)
P4DA1	< 0.025	0.03	0.06	0.05	< 0.02	< 0.02	0.11
P4DA3	< 0.025	NA ¹	NA	NA	NA	NA	NA
P4DA3	< 0.025	NA	NA	NA	NA	NA	NA
P4DC1	< 0.025	NA	NA	NA	NA	NA	NA
P4DC1	< 0.025	NA	NA	NA	NA	NA	NA
P4DC1	0.03	NA	NA	NA	NA	NA	NA
P7DA2	< 0.025	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.08
P7DA3	< 0.025	NA	NA	NA	NA	NA	NA
P7DA3	< 0.025	NA	NA	NA	NA	NA	NA
P7DA3	< 0.025	NA	NA	NA	NA	NA	NA
P8DA1	< 0.025	NA	NA	NA	NA	NA	NA
P8DB1	< 0.025	NA	NA	NA	NA	NA	NA
P8DB1	0.03	NA	NA	NA	NA	NA	NA
P10DA1	< 0.025	0.05	0.10	0.08	< 0.02	< 0.02	0.11
P10DA3	< 0.025	NA	NA	NA	NA	NA	NA
P10DA3	< 0.025	NA	NA	NA	NA	NA	NA
P10DD1	< 0.025	NA	NA	NA	NA	NA	NA
P10DD1	< 0.025	NA	NA	NA	NA	NA	NA

¹NA = not analyzed.

Table 6. Water quality and pesticide concentrations for water samples taken in the Upper Mississippi River National Wildlife and Fish Refuge tested by the USGS's Organic Geochemistry Research Group in Lawrence, Kansas, and analyzed using liquid chromatography/mass spectrometry (continued).

Site	Alachlor ESA - 2nd amide (mg/L)	Alachlor OXA (mg/L)	Alachlor SAA (mg/L)	Dimethenamid (mg/L)	Dimethenamid ESA (mg/L)	Dimethenamid OXA (mg/L)	Flufenacet (mg/L)	Flufenacet ESA (mg/L)
P4DA1	0.03	0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
P4DA3	NA ¹	NA	NA	NA	NA	NA	NA	NA
P4DA3	NA	NA	NA	NA	NA	NA	NA	NA
P4DC1	NA	NA	NA	NA	NA	NA	NA	NA
P4DC1	NA	NA	NA	NA	NA	NA	NA	NA
P4DC1	NA	NA	NA	NA	NA	NA	NA	NA
P7DA2	0.03	0.03	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
P7DA3	NA	NA	NA	NA	NA	NA	NA	NA
P7DA3	NA	NA	NA	NA	NA	NA	NA	NA
P7DA3	NA	NA	NA	NA	NA	NA	NA	NA
P8DA1	NA	NA	NA	NA	NA	NA	NA	NA
P8DB1	NA	NA	NA	NA	NA	NA	NA	NA
P8DB1	NA	NA	NA	NA	NA	NA	NA	NA
P10DA1	0.03	0.03	< 0.02	< 0.02	0.05	< 0.02	< 0.02	< 0.02
P10DA3	NA	NA	NA	NA	NA	NA	NA	NA
P10DA3	NA	NA	NA	NA	NA	NA	NA	NA
P10DD1	NA	NA	NA	NA	NA	NA	NA	NA
P10DD1	NA	NA	NA	NA	NA	NA	NA	NA

¹NA = not analyzed.

Table 6. Water quality and pesticide concentrations for water samples taken in the Upper Mississippi River National Wildlife and Fish Refuge tested by the USGS's Organic Geochemistry Research Group in Lawrence, Kansas, and analyzed using liquid chromatography/mass spectrometry (continued).

Site	Flufenacet OXA (mg/L)	Metolachlor (mg/L)	Metolachlor ESA (mg/L)	Metolachlor OXA (mg/L)	Metolachlor/Aceto chlor ESA - 2nd amide (mg/L)	Propachlor (mg/L)	Propachlor ESA (mg/L)	Propachlor OXA (mg/L)
P4DA1	< 0.02	< 0.02	0.16	0.04	0.03	< 0.02	< 0.05	< 0.02
P4DA3	NA ¹	NA	NA	NA	NA	NA	NA	NA
P4DA3	NA	NA	NA	NA	NA	NA	NA	NA
P4DC1	NA	NA	NA	NA	NA	NA	NA	NA
P4DC1	NA	NA	NA	NA	NA	NA	NA	NA
P4DC1	NA	NA	NA	NA	NA	NA	NA	NA
P7DA2	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.05	< 0.02
P7DA3	NA	NA	NA	NA	NA	NA	NA	NA
P7DA3	NA	NA	NA	NA	NA	NA	NA	NA
P7DA3	NA	NA	NA	NA	NA	NA	NA	NA
P8DA1	NA	NA	NA	NA	NA	NA	NA	NA
P8DB1	NA	NA	NA	NA	NA	NA	NA	NA
P8DB1	NA	NA	NA	NA	NA	NA	NA	NA
P10DA1	< 0.02	0.06	0.20	0.06	0.03	< 0.02	< 0.05	< 0.02
P10DA3	NA	NA	NA	NA	NA	NA	NA	NA
P10DA3	NA	NA	NA	NA	NA	NA	NA	NA
P10DD1	NA	NA	NA	NA	NA	NA	NA	NA
P10DD1	NA	NA	NA	NA	NA	NA	NA	NA

¹NA = not analyzed.

Table 6. Water quality and pesticide concentrations for water samples taken in the Upper Mississippi River National Wildlife and Fish Refuge tested by the USGS's Organic Geochemistry Research Group in Lawrence, Kansas, and analyzed using liquid chromatography/mass spectrometry (continued).

Site	Date	Time	Sample Type	Temp. (Celsius)	pH (units)	Specific Cond. (mS/cm)	DO (mg/L)	Alk (mg/L as CaCO ₃)	Bicarbonate (mg/L as CaCO ₃)	Total Triazines and Phenylureas (mg/L)
P11DA5	7/8/04	10:30	sw ¹	24.5	7.51	113	5.01	NA ²	NA	0.39
P11DA5	6/21/05	17:20	sw	29.5	8.04	408	7.03	NA	NA	0.3
P13DA1	7/8/04	14:30	sw	23.8	8	543	8.69	NA	NA	1.09
P13DA1	6/22/05	9:00	sw	23.5	7.03	362	1.89	NA	NA	0.59
P13DB3	7/8/04	16:30	sw	25.3	7.48	328	1.25	NA	NA	1
P13DB3	6/22/05	17:00	sw	29.5	7.28	428	4.73	NA	NA	0.14
P14DB1	7/9/04	9:40	sw	21.5	7.66	448	5.16	NA	NA	0.91
P14DB1	6/22/05	14:00	sw	32.5	8.05	402	2.72	NA	NA	0.42
P14DC1	7/9/04	8:30	sw	22.4	8.22	462	7.88	NA	NA	1.18
P14DC1	6/22/05	13:00	sw	30	7.61	476	6.43	NA	NA	1.86

¹sw = surface water.

²NA = not analyzed.

Table 6. Water quality and pesticide concentrations for water samples taken in the Upper Mississippi River National Wildlife and Fish Refuge tested by the USGS's Organic Geochemistry Research Group in Lawrence, Kansas, and analyzed using liquid chromatography/mass spectrometry (continued).

Site	Atrazine (mg/L)	Bromacil (mg/L)	Cyanazine (mg/L)	Cyanazine-amide (mg/L)	Cyanazine-acid (mg/L)	Deethylatrazine (mg/L)	Deethylcyanazine (mg/L)
P11DA5	0.19	< 0.025	< 0.025	< 0.025	< 0.025	0.04	< 0.20
P11DA5	0.10	< 0.025	< 0.025	< 0.025	< 0.025	0.04	< 0.20
P13DA1	0.53	< 0.025	< 0.025	< 0.025	< 0.025	0.11	< 0.20
P13DA1	0.20	< 0.025	< 0.025	< 0.025	< 0.025	0.07	< 0.20
P13DB3	0.49	< 0.025	< 0.025	< 0.025	< 0.025	0.09	< 0.20
P13DB3	0.08	< 0.025	< 0.025	< 0.025	< 0.025	0.06	< 0.20
P14DB1	0.47	< 0.025	< 0.025	< 0.025	< 0.025	0.10	< 0.20
P14DB1	0.19	< 0.025	< 0.025	< 0.025	< 0.025	0.07	< 0.20
P14DC1	0.42	< 0.025	< 0.025	< 0.025	< 0.025	0.23	< 0.20
P14DC1	1.02	< 0.025	< 0.025	< 0.025	< 0.025	0.31	< 0.20

Table 6. Water quality and pesticide concentrations for water samples taken in the Upper Mississippi River National Wildlife and Fish Refuge tested by the USGS's Organic Geochemistry Research Group in Lawrence, Kansas, and analyzed using liquid chromatography/mass spectrometry (continued).

Site	Deethyl-cyanazine acid (mg/L)	Deethyl-cyanazine amide (mg/L)	Deethylhydroxy-atrazine (mg/L)	Deisopropyl-atrazine (mg/L)	Deisopropyl-hydroxyatrazine (mg/L)	Demethyl-fluometuron (mg/L)
P11DA5	< 0.025	< 0.025	< 0.025	< 0.025	0.06	< 0.20
P11DA5	0.08	< 0.025	< 0.025	< 0.025	< 0.025	< 0.20
P13DA1	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.20
P13DA1	0.16	< 0.025	< 0.025	0.03	< 0.025	< 0.20
P13DB3	< 0.025	< 0.025	< 0.025	0.05	< 0.025	< 0.20
P13DB3	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.20
P14DB1	< 0.025	< 0.025	< 0.025	0.06	< 0.025	< 0.20
P14DB1	0.13	< 0.025	< 0.025	0.03	< 0.025	< 0.20
P14DC1	< 0.025	< 0.025	< 0.025	0.08	< 0.025	< 0.20
P14DC1	< 0.025	< 0.025	< 0.025	0.09	< 0.025	< 0.20

Table 6. Water quality and pesticide concentrations for water samples taken in the Upper Mississippi River National Wildlife and Fish Refuge tested by the USGS's Organic Geochemistry Research Group in Lawrence, Kansas, and analyzed using liquid chromatography/mass spectrometry (continued).

Site	Deethyldeisopropylatrazine/Did ealkyatrazine (mg/L)	Diuron (mg/L)	Fluometuron (mg/L)	Hydroxy- atrazine (mg/L)	Linuron (mg/L)	Hydroxy- simazine (mg/L)	Propazine (mg/L)	Prometon (mg/L)
P11DA5	< 0.025	< 0.20	< 0.20	0.10	< 0.20	< 0.025	< 0.025	< 0.025
P11DA5	0.05	< 0.20	< 0.20	< 0.025	< 0.20	< 0.025	< 0.025	< 0.025
P13DA1	0.10	< 0.20	< 0.20	0.35	< 0.20	< 0.025	< 0.025	< 0.025
P13DA1	0.13	< 0.20	< 0.20	< 0.025	< 0.20	< 0.025	< 0.025	< 0.025
P13DB3	0.06	< 0.20	< 0.20	0.31	< 0.20	< 0.025	< 0.025	< 0.025
P13DB3	< 0.025	< 0.20	< 0.20	< 0.025	< 0.20	< 0.025	< 0.025	< 0.025
P14DB1	0.07	< 0.20	< 0.20	0.21	< 0.20	< 0.025	< 0.025	< 0.025
P14DB1	< 0.025	< 0.20	< 0.20	< 0.025	< 0.20	< 0.025	< 0.025	< 0.025
P14DC1	0.25	< 0.20	< 0.20	0.20	< 0.20	< 0.025	< 0.025	< 0.025
P14DC1	0.17	< 0.20	< 0.20	0.20	< 0.20	< 0.025	0.04	< 0.025

Table 6. Water quality and pesticide concentrations for water samples taken in the Upper Mississippi River National Wildlife and Fish Refuge tested by the USGS's Organic Geochemistry Research Group in Lawrence, Kansas, and analyzed using liquid chromatography/mass spectrometry (continued).

Site	Simazine (mg/L)	Acetochlor (mg/L)	Acetochlor ESA (mg/L)	Acetochlor Oxanillic Acid (mg/L)	Acetochlor sulfynil acetic acid (mg/L)	Alachlor (mg/L)	Alachlor ESA (mg/L)
P11DA5	< 0.025	NA ¹	NA	NA	NA	NA	NA
P11DA5	0.03	NA	NA	NA	NA	NA	NA
P13DA1	< 0.025	NA	NA	NA	NA	NA	NA
P13DA1	< 0.025	NA	NA	NA	NA	NA	NA
P13DB3	< 0.025	NA	NA	NA	NA	NA	NA
P13DB3	< 0.025	NA	NA	NA	NA	NA	NA
P14DB1	< 0.025	NA	NA	NA	NA	NA	NA
P14DB1	< 0.025	NA	NA	NA	NA	NA	NA
P14DC1	< 0.025	NA	NA	NA	NA	NA	NA
P14DC1	0.03	NA	NA	NA	NA	NA	NA

¹NA = not analyzed.

Table 6. Water quality and pesticide concentrations for water samples taken in the Upper Mississippi River National Wildlife and Fish Refuge tested by the USGS's Organic Geochemistry Research Group in Lawrence, Kansas, and analyzed using liquid chromatography/mass spectrometry (continued).

Site	Alachlor ESA - 2nd Amide (mg/L)	Alachlor OXA (mg/L)	Alachlor SAA (mg/L)	Dimethenamid (mg/L)	Dimethenamid ESA (mg/L)	Dimethenamid OXA (mg/L)	Flufenacet (mg/L)	Flufenacet ESA (mg/L)
P11DA5	NA ¹	NA	NA	NA	NA	NA	NA	NA
P11DA5	NA	NA	NA	NA	NA	NA	NA	NA
P13DA1	NA	NA	NA	NA	NA	NA	NA	NA
P13DA1	NA	NA	NA	NA	NA	NA	NA	NA
P13DB3	NA	NA	NA	NA	NA	NA	NA	NA
P13DB3	NA	NA	NA	NA	NA	NA	NA	NA
P14DB1	NA	NA	NA	NA	NA	NA	NA	NA
P14DB1	NA	NA	NA	NA	NA	NA	NA	NA
P14DC1	NA	NA	NA	NA	NA	NA	NA	NA
P14DC1	NA	NA	NA	NA	NA	NA	NA	NA

¹NA = not analyzed.

Table 6. Water quality and pesticide concentrations for water samples taken in the Upper Mississippi River National Wildlife and Fish Refuge tested by the USGS's Organic Geochemistry Research Group in Lawrence, Kansas, and analyzed using liquid chromatography/mass spectrometry (continued).

Site	Flufenacet OXA (mg/L)	Metolachlor (mg/L)	Metolachlor ESA (mg/L)	Metolachlor OXA (mg/L)	Metolachlor/Aceto chlor ESA - 2nd amide (mg/L)	Propachlor (mg/L)	Propachlor ESA (mg/L)	Propachlor OXA (mg/L)
P11DA5	NA ¹	NA	NA	NA	NA	NA	NA	NA
P11DA5	NA	NA	NA	NA	NA	NA	NA	NA
P13DA1	NA	NA	NA	NA	NA	NA	NA	NA
P13DA1	NA	NA	NA	NA	NA	NA	NA	NA
P13DB3	NA	NA	NA	NA	NA	NA	NA	NA
P13DB3	NA	NA	NA	NA	NA	NA	NA	NA
P14DB1	NA	NA	NA	NA	NA	NA	NA	NA
P14DB1	NA	NA	NA	NA	NA	NA	NA	NA
P14DC1	NA	NA	NA	NA	NA	NA	NA	NA
P14DC1	NA	NA	NA	NA	NA	NA	NA	NA

¹NA = not analyzed.

Table 7. Water quality and pesticide concentrations for water samples taken in the St. Croix National Scenic Riverway and Voyageurs National Park tested by the USGS's Organic Geochemistry Research Group in Lawrence, Kansas, and analyzed using liquid chromatography/mass spectrometry.

Site	Date	Time	Sample Type	Temp. (Celsius)	pH (units)	Specific Cond. (mS/cm)	DO (mg/L)	Alk (mg/L as CaCO ₃)	Bicarbonate (mg/L as CaCO ₃)	Total Triazines and Phenylureas (mg/L)
SC4DC1	6/5/03	9:30	sw ¹	11.14	6.18	148	0.88 (bad reading)	53	64	0
SC4DC1	6/5/03	9:31	sw - replicate	11.14	6.18	148	0.88 (bad reading)	53	64	0
SC9DE2	6/5/03	13:00	sw	19.28	7.41	146.2	6.43	69	84	0.04
V1DB1	6/11/03	11:30	sw	22.61	6.93	57.3	6.59	24	29.3	0
V2DF1	6/11/03	10:00	sw	20.08	6.98	146	5.71	63.6	77.6	0
V6DB1	6/12/03	11:30	sw	15.74	6.26	34.2	4.25	11.3	13.8	0

¹sw = surface water.

Table 7. Water quality and pesticide concentrations for water samples taken in the St. Croix National Scenic Riverway and Voyageurs National Park tested by the USGS's Organic Geochemistry Research Group in Lawrence, Kansas, and analyzed using liquid chromatography/mass spectrometry (continued).

Site	Atrazine (mg/L)	Bromacil (mg/L)	Cyanazine (mg/L)	Cyanazine-amide (mg/L)	Cyanazine-acid (mg/L)	Deethylatrazine (mg/L)	Deethylcyanazine (mg/L)
SC4DC1	< 0.025	NA ¹	< 0.025	< 0.025	< 0.025	< 0.025	< 0.2
SC4DC1	< 0.025	NA	< 0.025	< 0.025	< 0.025	< 0.025	< 0.2
SC9DE2	0.04	NA	< 0.025	< 0.025	< 0.025	< 0.025	< 0.2
V1DB1	< 0.025	NA	< 0.025	< 0.025	< 0.025	< 0.025	< 0.2
V2DF1	< 0.025	NA	< 0.025	< 0.025	< 0.025	< 0.025	< 0.2
V6DB1	< 0.025	NA	< 0.025	< 0.025	< 0.025	< 0.025	< 0.2

¹NA = not analyzed.

Table 7. Water quality and pesticide concentrations for water samples taken in the St. Croix National Scenic Riverway and Voyageurs National Park tested by the USGS's Organic Geochemistry Research Group in Lawrence, Kansas, and analyzed using liquid chromatography/mass spectrometry (continued).

Site	Deethyl-cyanazine acid (mg/L)	Deethyl-cyanazine amide (mg/L)	Deethylhydroxy-atrazine (mg/L)	Deisopropyl-atrazine (mg/L)	Deisopropyl-hydroxyatrazine (mg/L)	Demethyl-fluometuron (mg/L)
SC4DC1	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.20
SC4DC1	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.20
SC9DE2	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.20
V1DB1	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.20
V2DF1	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.20
V6DB1	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.20

Table 7. Water quality and pesticide concentrations for water samples taken in the St. Croix National Scenic Riverway and Voyageurs National Park tested by the USGS's Organic Geochemistry Research Group in Lawrence, Kansas, and analyzed using liquid chromatography/mass spectrometry (continued).

Site	Deethyldeisopropylatrazine/Dealkylatrazine (mg/L)	Diuron (mg/L)	Fluometuron (mg/L)	Hydroxy-atrazine (mg/L)	Linuron (mg/L)	Hydroxy-simazine (mg/L)	Propazine (mg/L)	Prometon (mg/L)
SC4DC1	< 0.025	< 0.20	< 0.20	< 0.025	< 0.20	NA ¹	< 0.025	NA
SC4DC1	< 0.025	< 0.20	< 0.20	< 0.025	< 0.20	NA	< 0.025	NA
SC9DE2	< 0.025	< 0.20	< 0.20	< 0.025	< 0.20	NA	< 0.025	NA
V1DB1	< 0.025	< 0.20	< 0.20	< 0.025	< 0.20	NA	< 0.025	NA
V2DF1	< 0.025	< 0.20	< 0.20	< 0.025	< 0.20	NA	< 0.025	NA
V6DB1	< 0.025	< 0.20	< 0.20	< 0.025	< 0.20	NA	< 0.025	NA

¹NA = not analyzed.

Table 7. Water quality and pesticide concentrations for water samples taken in the St. Croix National Scenic Riverway and Voyageurs National Park tested by the USGS's Organic Geochemistry Research Group in Lawrence, Kansas, and analyzed using liquid chromatography/mass spectrometry (continued).

Site	Simazine (mg/L)	Acetochlor (mg/L)	Acetochlor ESA (mg/L)	Acetochlor Oxanillic Acid (mg/L)	Acetochlor sulfynil acetic acid (mg/L)	Alachlor (mg/L)	Alachlor ESA (mg/L)
SC4DC1	< 0.025	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
SC4DC1	< 0.025	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
SC9DE2	< 0.025	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
V1DB1	< 0.025	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
V2DF1	< 0.025	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
V6DB1	< 0.025	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02

Table 7. Water quality and pesticide concentrations for water samples taken in the St. Croix National Scenic Riverway and Voyageurs National Park tested by the USGS's Organic Geochemistry Research Group in Lawrence, Kansas, and analyzed using liquid chromatography/mass spectrometry (continued).

Site	Alachlor ESA - 2nd Amide (mg/L)	Alachlor OXA (mg/L)	Alachlor SAA (mg/L)	Dimethenamid (mg/L)	Dimethenamid ESA (mg/L)	Dimethenamid OXA (mg/L)	Flufenacet (mg/L)	Flufenacet ESA (mg/L)
SC4DC1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
SC4DC1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
SC9DE2	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
V1DB1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
V2DF1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
V6DB1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02

Table 7. Water quality and pesticide concentrations for water samples taken in the St. Croix National Scenic Riverway and Voyageurs National Park tested by the USGS's Organic Geochemistry Research Group in Lawrence, Kansas, and analyzed using liquid chromatography/mass spectrometry (continued).

Site	Flufenacet OXA (mg/L)	Metolachlor (mg/L)	Metolachlor ESA (mg/L)	Metolachlor OXA (mg/L)	Metolachlor/Acetochlor ESA - 2nd amide (mg/L)	Propachlor (mg/L)	Propachlor ESA (mg/L)	Propachlor OXA (mg/L)
SC4DC1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.05	< 0.02
SC4DC1	< 0.02	< 0.02	0.02	< 0.02	< 0.02	< 0.02	< 0.05	< 0.02
SC9DE2	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.05	< 0.02
V1DB1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.05	< 0.02
V2DF1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.05	< 0.02
V6DB1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.05	< 0.02

Table 8. Triazine concentrations for water samples taken in the Neal Smith National Wildlife Refuge from 2004–2005 and analyzed using enzyme-linked immunosorbent assays.

YEAR	2004			2005					2004-2005				
VISIT #	1	N	MEDIAN	1	2	3	N	MEDIAN	N	MEDIAN	SE	MAX	MIN
Site													
Calhoun Creek 1	-	0	-	0.10	2.15	0.63	3	0.63	3	0.63	0.61	2.15	0.10
Camp Creek 1	-	0	-	0.08	1.37	0.38	3	0.38	3	0.38	0.39	1.37	0.08
Mud Creek 1	-	0	-	0.07	1.56	0.30	3	0.30	3	0.30	0.46	1.56	0.07
NS1DA1	-	0	-	0.025	0.025	0.04	3	0.025	3	0.025	0.00	0.04	0.025
NS1DA2	-	0	-	-	-	-	0	-	0	-	-	-	-
NS1DB1	-	0	-	0.025	0.07	-	2	0.05	2	0.05	0.02	0.07	0.025
NS1DBI1	-	0	-	0.04	4.27	0.025	3	0.04	3	0.04	1.41	4.27	0.025
NS1DBI2	-	0	-	0.14	-	0.09	2	0.11	2	0.11	0.02	0.14	0.09
NS1DBI3	-	0	-	0.025	0.25	-	2	0.14	2	0.14	0.11	0.25	0.025
NS2DA1	-	0	-	-	1.19	-	1	1.19	1	1.19	-	1.19	1.19
NS2DB1	-	0	-	0.025	0.48	-	2	0.25	2	0.25	0.23	0.48	0.025
NS2DB2	0.30	1	0.30	-	1.30	-	1	1.30	2	0.80	0.50	1.30	0.30
NS2DB3	-	0	-	-	0.22	-	1	0.22	1	0.22	-	0.22	0.22
NS2DBI1	-	0	-	0.04	1.15	-	2	0.59	2	0.59	0.55	1.15	0.04
NS2DC1	0.04	1	0.04	-	0.025	0.025	2	0.025	3	0.025	0.01	0.025	0.04
NS2DC2	-	0	-	0.025	0.08	-	2	0.05	2	0.05	0.025	0.08	0.025
NS3DA1	-	0	-	-	1.76	-	1	1.76	1	1.76	-	1.76	1.76
NS3DB1	-	0	-	0.025	0.78	-	2	0.40	2	0.40	0.38	0.78	0.025
NS3DB2	-	0	-	-	0.65	-	1	0.65	1	0.65	-	0.65	0.65
NS3DB3	-	0	-	-	1.52	-	1	1.52	1	1.52	-	1.52	1.52
NS3DBI1	0.15	1	0.15	0.05	-	-	1	0.05	2	0.10	0.05	0.15	0.05
NS3DC1	0.21	1	0.21	-	0.025	-	1	0.025	2	0.12	0.09	0.21	0.025
NS3DC2	0.14	1	0.14	-	0.22	0.18	2	0.20	3	0.18	0.02	0.22	0.14
NS3DD1	0.58	1	0.58	0.10	1.28	0.33	3	0.33	4	0.45	0.26	1.28	0.10
NS3DD2	0.34	1	0.34	0.12	1.07	0.27	3	0.27	4	0.31	0.21	1.07	0.12
Prairie Creek 1	-	0	-	0.10	1.42	0.56	3	0.56	3	0.56	0.39	1.42	0.10
Red Rock 1	-	0	-	0.11	1.81	1.09	3	1.09	3	1.09	0.49	1.81	0.11
Walnut Creek 1	-	0	-	0.16	1.59	0.45	3	0.45	3	0.45	0.44	1.59	0.16
Neal Smith Total	0.25	7	0.21	0.07	1.15	0.025	56	0.025	63	0.31	0.09	4.27	0.025

Table 9. Triazine concentrations for water samples taken in the Upper Mississippi National Wildlife and Fish Refuge from 2003-2005 and analyzed using enzyme-linked immunosorbent assays.

YEAR	2003				2004								2005								
VISIT #	1	2			1	2	3	4	5	6	7			1	2	3	4	5	6		
Site			N	MEDIAN								N	MEDIAN							N	MEDIAN
P10DA1	0.07	0.10	2	0.09	-	0.71	-	-	-	-	-	1	0.71	-	-	-	-	-	-	0	-
P10DA2	-	0.31	1	0.31	-	0.42	-	-	-	-	-	1	0.42	0.51	0.45	0.46	0.39	0.12	0.09	6	0.42
P10DA3	-	0.66	1	0.66	0.35	0.31	0.87	0.67	0.30	0.52	0.25	7	0.35	1.52	0.76	-	0.23	-	-	3	0.76
P10DA3- River	-	-	0	-	-	0.31	1.16	0.63	0.35	0.64	0.30	6	0.49	0.06	0.06	0.08	0.30	0.31	-	5	0.08
P10DA4	-	0.21	1	0.21	-	0.13	-	-	-	-	-	1	0.13	-	-	-	-	-	-	0	-
P10DA5	-	0.15	1	0.15	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-	0	-
P10DB1	-	0.04	1	0.04	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-	0	-
P10DB2	-	0.17	1	0.17	0.34	0.45	0.29	-	0.34	0.93	0.19	6	0.34	0.18	0.15	0.17	0.17	0.12	0.025	6	0.16
P10DB2- River	-	-	0	-	-	0.23	1.65	-	0.34	0.81	0.30	5	0.34	0.05	0.09	0.08	0.31	0.33	-	5	0.09
P10DB3	-	0.21	1	0.21	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-	0	-
P10DB4	-	0.10	1	0.10	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-	0	-
P10DC1	-	-	0	-	0.35	0.14	0.17	-	0.33	0.75	0.38	6	0.34	0.10	0.06	0.10	0.26	0.29	0.09	6	0.10
P10DC1- River	-	-	0	-	-	0.22	0.91	-	0.33	0.80	0.33	5	0.33	0.04	0.12	0.09	0.26	0.36	-	5	0.12
P10DD1	-	-	0	-	0.37	0.41	0.19	-	0.40	0.23	0.18	6	0.30	0.11	0.19	0.12	0.24	0.06	0.14	6	0.13
P10DD1- River	-	-	0	-	-	0.27	0.93	-	0.33	0.74	0.29	5	0.33	0.04	0.12	0.10	0.33	0.31	-	5	0.12
P11DA5	-	-	0	-	0.09	0.17	1.26	-	0.39	0.22	0.10	6	0.19	0.09	0.08	0.05	0.41	0.18	-	5	0.09
P11DA5- River	-	-	0	-	-	0.38	1.30	-	0.33	0.70	0.29	5	0.38	0.07	0.07	0.06	0.31	0.34	-	5	0.07
P11DB2	-	-	0	-	0.19	0.39	1.15	-	0.34	0.58	-	5	0.39	0.54	0.31	0.18	0.10	0.04	-	5	0.18
P11DB2- River	-	-	0	-	-	0.34	1.23	-	0.36	0.67	0.31	5	0.36	0.07	0.08	0.05	0.42	0.26	-	5	0.08
P13DA1	-	-	0	-	0.27	0.44	1.00	7.35	0.61	0.75	0.19	7	0.61	0.51	0.19	0.15	0.44	0.19	0.07	6	0.19
P13DA1- River	-	-	0	-	-	0.15	4.42	-	0.40	0.79	0.33	5	0.40	0.09	0.07	0.09	0.27	0.32	-	5	0.09
P13DA2	-	-	0	-	-	0.39	-	-	-	-	-	1	0.39	-	-	-	-	-	-	0	-

Table 9. Triazine concentrations for water samples taken in the Upper Mississippi National Wildlife and Fish Refuge from 2003-2005 and analyzed using enzyme-linked immunosorbent assays (continued).

Long One-Line Limited Informational Table (continued)																					
YEAR	2003				2004									2005							
VISIT #	1	2			1	2	3	4	5	6	7			1	2	3	4	5	6		
Site			N	MEDIAN								N	MEDIAN							N	MEDIAN
P13DA3	-	-	0	-	-	0.98	-	-	-	-	-	1	0.98	-	-	-	-	-	-	0	-
P13DA4	-	-	0	-	-	1.00	-	-	-	-	-	1	1.00	-	-	-	-	-	-	0	-
P13DA5	-	-	0	-	-	0.28	-	-	-	-	-	1	0.28	-	-	-	-	-	-	0	-
P13DB1	-	-	0	-	-	0.61	-	-	-	-	-	1	0.61	-	-	-	-	-	-	0	-
P13DB2	-	-	0	-	-	1.67	-	-	-	-	-	1	1.67	-	-	-	-	-	-	0	-
P13DB3	-	-	0	-	0.52	0.65	0.68	3.27	0.40	0.65	-	6	0.65	0.38	0.20	0.18	0.13	0.12	0.18	6	0.18
P13DB3 River	-	-	0	-	-	0.15	3.25	-	0.37	0.83	0.31	5	0.37	0.07	0.09	0.06	0.26	0.31	-	5	0.09
P13DB5	-	-	0	-	-	0.20	-	-	-	-	-	1	0.20	-	0.26	0.19	-	-	-	2	0.22
P14DA1	-	-	0	-	-	0.88	-	-	-	-	-	1	0.88	-	-	-	-	-	-	0	-
P14DA2	-	-	0	-	-	0.44	-	-	-	-	-	1	0.44	-	-	-	-	-	-	0	-
P14DA3	-	-	0	-	-	0.68	-	-	-	-	-	1	0.68	-	0.33	0.09	-	-	-	2	0.21
P14DB1	-	-	0	-	0.34	0.49	0.66	3.60	0.46	0.72	0.37	7	0.49	0.20	0.21	0.15	0.31	0.31	0.16	6	0.20
P14DB1 River	-	-	0	-	-	0.28	4.29	-	0.48	0.72	0.34	5	0.48	0.06	0.10	0.16	0.23	0.24	-	5	0.16
P14DB2	-	-	0	-	-	0.61	-	-	-	-	-	1	0.61	-	-	-	-	-	-	0	-
P14DB3	-	-	0	-	-	0.84	-	-	-	-	-	1	0.84	-	-	-	-	-	-	0	-
P14DB4	-	-	0	-	-	0.57	-	-	-	-	-	1	0.57	-	-	-	-	-	-	0	-
P14DC1	-	-	0	-	0.40	1.15	9.90	-	2.36	0.63	0.34	6	0.89	0.79	1.12	0.80	2.42	1.28	0.42	6	0.96
P14DC1 River	-	-	0	-	-	0.96	7.20	-	0.61	0.70	0.34	5	0.70	0.10	0.11	0.21	0.38	0.29	-	5	0.21
P4DA1	0.17	0.04	2	0.11	-	0.20	-	-	-	-	-	1	0.20	-	-	-	-	-	-	0	-
P4DA2	-	0.15	1	0.15	-	0.025	-	-	-	-	-	1	0.025	-	-	-	-	-	-	0	-
P4DA3	-	0.15	1	0.15	0.025	0.14	0.44	-	0.25	0.15	-	5	0.15	0.04	0.025	0.14	0.40	0.025	0.025	6	0.025
P4DA3 River	-	-	0	-	-	0.14	0.27	-	0.42	0.62	0.16	5	0.27	0.04	0.15	0.07	0.28	0.34	-	5	0.15
P4DA4	-	0.18	1	0.18	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-	0	-
P4DB1	-	-	0	-	-	0.08	-	-	-	-	-	1	0.08	-	-	-	-	-	-	0	-
P4DB3	-	-	0	-	-	0.07	-	-	-	-	-	1	0.07	-	-	-	-	-	-	0	-
P4DB4	-	-	0	-	-	0.08	-	-	-	-	-	1	0.08	-	-	-	-	-	-	0	-
P4DB6	-	-	0	-	-	0.22	-	-	-	-	-	1	0.22	-	-	-	-	-	-	0	-

Table 9. Triazine concentrations for water samples taken in the Upper Mississippi National Wildlife and Fish Refuge from 2003-2005 and analyzed using enzyme-linked immunosorbent assays (continued).

YEAR	2003				2004									2005							
VISIT #	1	2			1	2	3	4	5	6	7			1	2	3	4	5	6		
Site			N	MEDIAN								N	MEDIAN							N	MEDIAN
P4DC1	-	0.15	1	0.15	0.05	0.19	0.15	-	0.41	0.52	0.26	6	0.22	0.05	0.05	0.04	0.29	0.12	0.025	6	0.05
P4DC1 River	-	-	0	-	-	0.04	0.33	-	0.44	0.81	0.27	5	0.33	0.04	0.12	0.09	0.48	0.39	-	5	0.12
P4DD1	-	0.08	1	0.08	-	0.12	-	-	-	-	-	1	0.12	-	0.025	0.18	-	-	-	2	0.10
P7DA1	-	0.09	1	0.09	-	0.025	-	-	-	-	-	1	0.025	-	-	-	-	-	-	0	-
P7DA2	-	0.09	1	0.09	-	0.56	-	-	-	-	-	1	0.56	-	-	-	-	-	-	0	-
P7DA3	-	0.27	1	0.27	0.025	0.29	0.10	-	0.13	3.89	-	5	0.13	0.09	-	-	-	-	-	1	0.09
P7DAI1	-	-	0	-	-	0.11	-	-	-	-	-	1	0.11	-	0.07	0.04	0.08	0.09	0.06	5	0.07
P7DE1	-	0.07	1	0.07	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-	0	-
P7DE2	-	0.10	1	0.10	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-	0	-
P7DE3	-	0.14	1	0.14	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-	0	-
P7DE4	-	0.11	1	0.11	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-	0	-
P7DE5	-	0.04	1	0.04	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-	0	-
P7DE6	-	0.21	1	0.21	0.25	0.19	0.56	-	0.41	0.13	-	5	0.25	0.05	0.04	0.35	0.11	0.44	-	5	-
P7DH1	-	-	0	-	-	0.41	-	-	-	-	-	1	0.41	-	0.09	0.09	-	-	-	2	0.09
P7DI1	-	-	0	-	-	0.09	-	-	-	-	-	1	0.09	-	-	-	-	-	-	0	-
P8DA1	-	-	0	-	0.21	0.15	0.025	-	0.025	0.15	0.12	6	0.13	0.12	0.11	-	-	-	-	2	0.11
P8DA1 River	-	-	0	-	-	0.13	0.57	-	0.29	0.72	0.32	5	0.32	0.025	0.15	0.94	0.42	0.35	-	5	0.35
P8DB1	-	0.13	1	0.13	0.11	0.22	0.36	-	0.28	0.63	0.31	6	0.30	0.025	0.07	0.13	0.27	0.34	0.19	6	0.16
P8DB1 River	-	-	0	-	-	0.17	0.32	-	0.29	0.73	0.27	5	0.29	0.025	0.11	0.96	0.45	0.38	-	5	0.38
P8DC1	-	0.13	1	0.13	-	0.34	-	-	-	-	-	1	0.34	-	-	-	-	-	-	0	-
P8DG1	-	0.04	1	0.04	-	0.05	-	-	-	-	-	1	0.05	-	0.13	0.04	-	-	-	2	0.08
TNWRDA1	-	-	0	-	-	-	-	-	-	-	-	0	-	-	0.09	-	-	-	-	1	0.09
UMNFWR																					
Total	0.12	0.13	29	0.13	0.26	0.28	0.77	3.27	0.35	0.70	0.30	196	0.34	0.07	0.11	0.11	0.30	0.31	0.09	173	0.12

Table 9. Triazine concentrations for water samples taken in the Upper Mississippi National Wildlife and Fish Refuge from 2003-2005 and analyzed using enzyme-linked immunosorbent assays (continued).

Site	N	All Years			
		MEDIAN	SE	MAXIMUM	MINIMUM
P10DA1	3	0.10	0.21	0.71	0.07
P10DA2	8	0.40	0.06	0.51	0.09
P10DA3	11	0.52	0.12	1.52	0.23
P10DA3 River	11	0.31	0.10	1.16	0.06
P10DA4	2	0.17	0.04	0.21	0.13
P10DA5	1	0.15	-	0.15	0.15
P10DB1	1	0.04	-	0.04	0.04
P10DB2	13	0.18	0.06	0.93	0.025
P10DB2 River	10	0.30	0.15	1.65	0.05
P10DB3	1	0.21	-	0.21	0.21
P10DB4	1	0.10	-	0.10	0.10
P10DC1	12	0.21	0.06	0.75	0.06
P10DC1 River	10	0.29	0.09	0.91	0.04
P10DD1	12	0.19	0.025	0.41	0.06
P10DD1 River	10	0.30	0.09	0.93	0.04
P11DA5	11	0.17	0.10	1.26	0.05
P11DA5 River	10	0.32	0.12	1.30	0.06
P11DB2	10	0.32	0.10	1.15	0.04
P11DB2 River	10	0.32	0.11	1.23	0.05
P13DA1	13	0.44	0.54	7.35	0.07
P13DA1 River	10	0.30	0.42	4.42	0.07
P13DA2	1	0.39	-	0.39	0.39
P13DA3	1	0.98	-	0.98	0.98
P13DA4	1	1.00	-	1.00	1.00
P13DA5	1	0.28	-	0.28	0.28
P13DB1	1	0.61	-	0.61	0.61
P13DB2	1	1.67	-	1.67	1.67

Table 9. Triazine concentrations for water samples taken in the Upper Mississippi National Wildlife and Fish Refuge from 2003-2005 and analyzed using enzyme-linked immunosorbent assays (continued).

Site	N	All Years			
		MEDIAN	SE	MAXIMUM	MINIMUM
P13DB3	12	0.39	0.25	3.27	0.12
P13DB3 River	10	0.28	0.31	3.25	0.06
P13DB5	3	0.20	0.02	0.26	0.19
P14DA1	1	0.88	-	0.88	0.88
P14DA2	1	0.44	-	0.44	0.44
P14DA3	3	0.33	0.17	0.68	0.09
P14DB1	13	0.34	0.25	3.60	0.15
P14DB1 River	10	0.26	0.40	4.29	0.06
P14DB2	1	0.61	-	0.61	0.61
P14DB3	1	0.84	-	0.84	0.84
P14DB4	1	0.57	-	0.57	0.57
P14DC1	12	0.96	0.76	9.90	0.34
P14DC1 River	10	0.36	0.68	7.20	0.10
P4DA1	3	0.17	0.05	0.20	0.04
P4DA2	2	0.09	0.06	0.15	0.025
P4DA3	12	0.14	0.04	0.44	0.025
P4DA3 River	10	0.22	0.06	0.62	0.04
P4DA4	1	0.18	-	0.18	0.18
P4DB1	1	0.08	-	0.08	0.08
P4DB3	1	0.07	-	0.07	0.07
P4DB4	1	0.08	-	0.08	0.08
P4DB6	1	0.22	-	0.22	0.22
P4DC1	13	0.15	0.04	0.52	0.025
P4DC1 River	10	0.30	0.08	0.81	0.04
P4DD1	4	0.10	0.025	0.18	0.025
P7DA1	2	0.06	0.025	0.09	0.025
P7DA2	2	0.32	0.24	0.56	0.09
P7DA3	7	0.13	0.54	3.89	0.025

Table 9. Triazine concentrations for water samples taken in the Upper Mississippi National Wildlife and Fish Refuge from 2003-2005 and analyzed using enzyme-linked immunosorbent assays (continued).

All Years					
Site	N	MEDIAN	SE	MAXIMUM	MINIMUM
P7DA11	6	0.08	0.01	0.11	0.04
P7DE1	1	0.07	-	0.07	0.07
P7DE2	1	0.10	-	0.10	0.10
P7DE3	1	0.14	-	0.14	0.14
P7DE4	1	0.11	-	0.11	0.11
P7DE5	1	0.04	-	0.04	0.04
P7DE6	11	0.09	-	0.56	0.04
P7DH1	3	0.09	0.11	0.41	0.09
P7DI1	1	0.09	-	0.09	0.09
P8DA1	8	0.12	0.02	0.21	0.025
P8DA1 River	10	0.33	0.09	0.94	0.025
P8DB1	13	0.22	0.04	0.63	0.025
P8DB1 River	10	0.30	0.09	0.96	0.025
P8DC1	2	0.23	0.10	0.34	0.13
P8DG1	4	0.05	0.02	0.13	0.04
TNWRDA1	1	0.09	-	0.09	0.09
UMNFWR Total	398	0.22	-	9.90	0.025

Table 9. Triazine concentrations for water samples taken in the Upper Mississippi National Wildlife and Fish Refuge from 2003-2005 and analyzed using enzyme-linked immunosorbent assays (continued).

Site	N	All Years			
		MEDIAN	SE	MAXIMUM	MINIMUM
P10DA1	3	0.10	0.21	0.71	0.07
P10DA2	8	0.40	0.06	0.51	0.09
P10DA3	11	0.52	0.12	1.52	0.23
P10DA3 River	11	0.31	0.10	1.16	0.06
P10DA4	2	0.17	0.04	0.21	0.13
P10DA5	1	0.15	-	0.15	0.15
P10DB1	1	0.04	-	0.04	0.04
P10DB2	13	0.18	0.06	0.93	0.025
P10DB2 River	10	0.30	0.15	1.65	0.05
P10DB3	1	0.21	-	0.21	0.21
P10DB4	1	0.10	-	0.10	0.10
P10DC1	12	0.21	0.06	0.75	0.06
P10DC1 River	10	0.29	0.09	0.91	0.04
P10DD1	12	0.19	0.025	0.41	0.06
P10DD1 River	10	0.30	0.09	0.93	0.04
P11DA5	11	0.17	0.10	1.26	0.05
P11DA5 River	10	0.32	0.12	1.30	0.06
P11DB2	10	0.32	0.10	1.15	0.04
P11DB2 River	10	0.32	0.11	1.23	0.05
P13DA1	13	0.44	0.54	7.35	0.07
P13DA1 River	10	0.30	0.42	4.42	0.07
P13DA2	1	0.39	-	0.39	0.39
P13DA3	1	0.98	-	0.98	0.98
P13DA4	1	1.00	-	1.00	1.00
P13DA5	1	0.28	-	0.28	0.28
P13DB1	1	0.61	-	0.61	0.61
P13DB2	1	1.67	-	1.67	1.67

Table 9. Triazine concentrations for water samples taken in the Upper Mississippi National Wildlife and Fish Refuge from 2003-2005 and analyzed using enzyme-linked immunosorbent assays (continued).

Site	N	All Years			
		MEDIAN	SE	MAXIMUM	MINIMUM
P13DB3	12	0.39	0.25	3.27	0.12
P13DB3 River	10	0.28	0.31	3.25	0.06
P13DB5	3	0.20	0.02	0.26	0.19
P14DA1	1	0.88	-	0.88	0.88
P14DA2	1	0.44	-	0.44	0.44
P14DA3	3	0.33	0.17	0.68	0.09
P14DB1	13	0.34	0.25	3.60	0.15
P14DB1 River	10	0.26	0.40	4.29	0.06
P14DB2	1	0.61	-	0.61	0.61
P14DB3	1	0.84	-	0.84	0.84
P14DB4	1	0.57	-	0.57	0.57
P14DC1	12	0.96	0.76	9.90	0.34
P14DC1 River	10	0.36	0.68	7.20	0.10
P4DA1	3	0.17	0.05	0.20	0.04
P4DA2	2	0.09	0.06	0.15	0.025
P4DA3	12	0.14	0.04	0.44	0.025
P4DA3 River	10	0.22	0.06	0.62	0.04
P4DA4	1	0.18	-	0.18	0.18
P4DB1	1	0.08	-	0.08	0.08
P4DB3	1	0.07	-	0.07	0.07
P4DB4	1	0.08	-	0.08	0.08
P4DB6	1	0.22	-	0.22	0.22
P4DC1	13	0.15	0.04	0.52	0.025
P4DC1 River	10	0.30	0.08	0.81	0.04
P4DD1	4	0.10	0.025	0.18	0.025
P7DA1	2	0.06	0.025	0.09	0.025
P7DA2	2	0.32	0.24	0.56	0.09
P7DA3	7	0.13	0.54	3.89	0.025

Table 9. Triazine concentrations for water samples taken in the Upper Mississippi National Wildlife and Fish Refuge from 2003-2005 and analyzed using enzyme-linked immunosorbent assays (continued).

All Years					
Site	N	MEDIAN	SE	MAXIMUM	MINIMUM
P7DA11	6	0.08	0.01	0.11	0.04
P7DE1	1	0.07	-	0.07	0.07
P7DE2	1	0.10	-	0.10	0.10
P7DE3	1	0.14	-	0.14	0.14
P7DE4	1	0.11	-	0.11	0.11
P7DE5	1	0.04	-	0.04	0.04
P7DE6	11	0.09	-	0.56	0.04
P7DH1	3	0.09	0.11	0.41	0.09
P7DI1	1	0.09	-	0.09	0.09
P8DA1	8	0.12	0.02	0.21	0.025
P8DA1 River	10	0.33	0.09	0.94	0.025
P8DB1	13	0.22	0.04	0.63	0.025
P8DB1 River	10	0.30	0.09	0.96	0.025
P8DC1	2	0.23	0.10	0.34	0.13
P8DG1	4	0.05	0.02	0.13	0.04
TNWRDA1	1	0.09	-	0.09	0.09
UMNFWR Total	398	0.22	-	9.90	0.025

Table 10. Triazine concentrations for water samples taken in the St. Croix Scenic Riverway from 2003-2005 and analyzed using enzyme-linked immunosorbent assays.

YEAR	2003				2004				2005					All Years				
VISIT #	1	2			1	2			1	2	3			N	MEDIAN	SE	MAX	MIN
Site			N	MEDIAN			N	MEDIAN				N	MEDIAN					
SC10DA1	-	-	0	-	0.18	0.04	2	0.11	-	-	-	0	-	2	0.11	0.07	0.18	0.04
SC10DA2	-	-	0	-	-	0.21	1	0.21	0.025	0.12	-	2	0.07	3	0.12	0.05	0.21	0.025
SC10DAI1	-	-	0	-	0.34	0.23	2	0.29	-	-	-	0	-	2	0.29	0.06	0.34	0.23
SC10DB1	-	-	0	-	-	0.17	1	0.17	-	0.12	-	1	0.12	2	0.14	0.02	0.17	0.12
SC10DC1	-	-	0	-	0.025	0.04	2	0.025	-	-	-	0	-	2	0.025	0.01	0.04	0.025
SC10DD1	-	-	0	-	0.38	-	1	0.38	-	-	-	0	-	1	0.38	-	0.38	0.38
SC10DD3	-	-	0	-	-	0.14	1	0.14	0.07	0.18	-	2	0.12	3	0.14	0.025	0.18	0.07
SC12DA1	0.06	-	1	0.06	0.26	0.07	2	0.17	-	-	.025	1	0.025	4	0.07	0.05	0.26	0.025
SC12DA3	0.025	-	1	0.025	0.04	0.07	2	0.06	-	-	-	0	-	3	0.04	0.01	0.07	0.025
SC12DA4	-	-	0	-	0.18	0.16	2	0.17	-	0.025	-	1	0.025	3	0.16	0.05	0.18	0.025
SC12DAI1	0.025	-	1	0.025	0.47	0.15	2	0.31	-	-	-	0	-	3	0.15	0.13	0.47	0.025
SC12DAI2	-	-	0	-	-	0.07	1	0.07	-	-	-	0	-	1	0.07	-	0.07	0.07
SC12DB1	0.025	-	1	0.025	-	-	0	-	-	0.025	-	1	0.025	2	0.025	-	0.025	0.025
SC12DC1	0.025	-	1	0.025	-	0.06	1	0.06	-	-	-	0	-	2	0.04	0.02	0.06	0.025
SC12DE1	0.025	-	1	0.025	-	-	0	-	-	0.025	-	1	0.025	2	0.025	-	0.025	0.025
SC1DA1	-	-	0	-	0.025	0.17	2	0.10	-	-	-	0	-	2	0.10	0.07	0.17	0.025
SC1DA2	-	-	0	-	0.025	0.24	2	0.13	-	-	-	0	-	2	0.13	0.11	0.24	0.025
SC1DA3	0.12	-	1	0.12	0.025	0.10	2	0.06	-	0.11	-	1	0.11	4	0.10	0.02	0.12	0.025
SC1DD2	0.025	-	1	0.025	-	-	0	-	-	-	-	0	-	1	0.025	-	0.025	0.025

Table 10. Triazine concentrations for water samples taken in the St. Croix Scenic Riverway from 2003-2005 and analyzed using enzyme-linked immunosorbent assays (continued).

YEAR	2003				2004				2005				All Years					
VISIT #	1	2			1	2			1	2	3							
Site			N	MEDIAN			N	MEDIAN				N	MEDIAN	N	MEDIAN	SE	MA X	MIN
SC1DD3	0.07	-	1	0.07	-	0.15	1	0.15	-	0.04	0.025	2	0.025	4	0.06	0.025	0.15	0.025
SC1DD4	0.08	-	1	0.08	-	-	0	-	-	-	-	0	-	1	0.08	-	0.08	0.08
SC1DD5	0.025	-	1	0.025	-	-	0	-	-	-	-	0	-	1	0.025	-	0.025	0.025
SC1DD6	0.05	-	1	0.05	-	-	0	-	-	-	-	0	-	1	0.05	-	0.05	0.05
SC1DD7	0.13	-	1	0.13	-	-	0	-	-	-	-	0	-	1	0.13	-	0.13	0.13
SC1DE1	-	-	0	-	-	-	0	-	-	0.08	0.025	2	0.05	2	0.05	0.025	0.08	0.025
SC1DE2	0.025	-	1	0.025	-	0.21	1	0.21	-	-	-	0	-	2	0.12	0.09	0.21	0.025
SC1DE3	-	-	0	-	-	0.26	1	0.26	-	-	-	0	-	1	0.26	-	0.26	0.26
SC2DB1	0.025	-	1	0.025	0.025	0.13	2	0.08	-	0.04	-	1	0.04	4	0.025	0.025	0.13	0.025
SC2DD1	0.10	-	1	0.10	-	0.13	1	0.13	-	-	-	0	-	2	0.11	0.02	0.13	0.10
SC2DD2	0.04	-	1	0.04	-	0.11	1	0.11	-	0.16	0.025	2	0.09	4	0.07	0.025	0.16	0.025
SC2DD3	0.05	-	1	0.05	-	0.16	1	0.16	-	-	-	0	-	2	0.10	0.06	0.16	0.05
SC4DA1	0.06	-	1	0.06	-	0.13	1	0.13	-	-	-	0	-	2	0.09	0.04	0.13	0.06
SC4DA2	0.12	-	1	0.12	-	0.18	1	0.18	-	-	-	0	-	2	0.15	0.025	0.18	0.12
SC4DA3	0.04	-	1	0.04	-	0.07	1	0.07	-	0.07	-	1	0.07	3	0.07	0.01	0.07	0.04
SC4DA4	0.18	-	1	0.18	-	0.06	1	0.06	-	-	-	0	-	2	0.12	0.06	0.18	0.06
SC4DA5	0.025	-	1	0.025	-	0.09	1	0.09	-	-	-	0	-	2	0.06	0.025	0.09	0.025
SC4DAI1	0.06	-	1	0.06	-	0.11	1	0.11	-	-	-	0	-	2	0.09	0.025	0.11	0.06
SC4DAI2	-	-	0	-	-	0.12	1	0.12	-	-	-	0	-	1	0.12	-	0.12	0.12
SC4DB1	-	-	0	-	-	0.40	1	0.40	-	-	-	0	-	1	0.40	-	0.40	0.40

Table 10. Triazine concentrations for water samples taken in the St. Croix Scenic Riverway from 2003-2005 and analyzed using enzyme-linked immunosorbent assays (continued).

YEAR	2003				2004				2005					All Years				
VISIT #	1	2			1	2			1	2	3							
Site			N	MEDIAN			N	MEDIAN				N	MEDIAN	N	MEDIAN	SE	MAX	MIN
SC4DB10	-	-	0	-	-	0.19	1	0.19	-	-	-	0	-	1	0.19	-	0.19	0.19
SC4DB11	-	-	0	-	-	0.09	1	0.09	-	-	-	0	-	1	0.09	-	0.09	0.09
SC4DB2	0.025	-	1	0.025	-	0.19	1	0.19	-	0.11	-	1	0.11	3	0.11	0.05	0.19	0.025
SC4DB3	0.05	-	1	0.05	-	0.43	1	0.43	-	-	-	0	-	2	0.24	0.19	0.43	0.05
SC4DB4	0.025	-	1	0.025	-	0.18	1	0.18	-	-	-	0	-	2	0.10	0.08	0.18	0.025
SC4DB5	0.07	-	1	0.07	-	0.06	1	0.06	-	-	-	0	-	2	0.06	0.01	0.07	0.06
SC4DB6	-	-	0	-	-	0.025	1	0.025	-	-	-	0	-	1	0.025	-	0.025	0.025
SC4DB7	0.025	-	1	0.025	-	0.025	1	0.025	-	-	-	0	-	2	0.025	0.00	0.025	0.025
SC4DB8	0.025	-	1	0.025	-	0.08	1	0.08	-	-	-	0	-	2	0.05	0.025	0.08	0.025
SC4DB9	0.05	-	1	0.05	-	0.07	1	0.07	-	-	-	0	-	2	0.06	0.01	0.07	0.05
SC4DC1	0.025	0.025	2	0.025	-	0.15	1	0.15	-	-	0.025	1	0.025	4	0.025	0.025	0.15	0.025
SC4DCI1	0.08	-	1	0.08	-	-	0	-	-	-	-	0	-	1	0.08	-	0.08	0.08
SC7DA1	-	-	0	-	0.93	0.025	2	0.48	-	-	-	0	-	2	0.48	0.45	0.93	0.025
SC7DA3	-	-	0	-	-	0.04	1	0.04	-	-	-	0	-	1	0.04	-	0.04	0.04
SC7DA4	-	-	0	-	-	0.025	1	0.025	-	0.025	-	1	-	2	0.025	-	0.025	0.025
SC7DA5	-	-	0	-	-	0.15	1	0.15	-	-	-	0	-	1	0.15	-	0.15	0.15
SC7DB3	-	-	0	-	0.025	-	1	0.025	-	0.04	0.025	2	0.025	3	0.025	0.01	0.04	0.025
SC8DA1	0.025	-	1	0.025	0.025	0.025	2	0.025	-	0.025	0.025	2	0.025	5	0.025	0.00	0.025	0.025
SC8DAI1	0.025	-	1	0.025	-	0.14	1	0.14	-	-	-	0	-	2	0.08	0.06	0.14	0.025
SC8DAI2	0.025	-	1	0.025	-	0.19	1	0.19	-	-	-	0	-	2	0.11	0.08	0.19	0.025
SC8DB1	-	-	0	-	-	0.025	1	0.025	-	0.025	0.025	2	0.025	3	0.025	0.00	0.025	0.025
SC9DE1	0.08	-	1	0.08	-	0.20	1	0.20	-	-	-	0	-	2	0.14	0.06	0.20	0.08
SC9DE2	0.025	-	1	0.025	0.04	0.07	2	0.05	-	-	-	0	-	3	0.04	0.01	0.07	0.025
SACN Total	0.025	0.025	39	0.025	0.04	0.13	67	0.12	0.05	0.04	0.025	27	0.04	133	0.08	0.025	0.93	0.025

Table 11. Triazine concentrations for water samples taken in Voyageurs National Park from 2003-2005 and analyzed using enzyme-linked immunosorbent assays.

YEAR	2003				2004				2005					All Years				
VISIT #	1	2	N	MEDIAN	1	2	N	MEDIAN	1	2	3	N	MEDIAN	N	MEDIAN	SE	MAX	MIN
Site #																		
V10DA1	0.025	-	1	0.025	0.05	-	1	0.05	-	-	-	0	-	2	0.04	0.01	0.05	0.025
V10DA2	0.025	-	1	0.025	-	0.04	1	0.04	-	-	-	0	-	2	0.025	0.01	0.04	0.025
V10DA4	0.025	-	1	0.025	0.025	0.06	2	0.04	-	-	-	0	-	3	0.025	0.01	0.06	0.025
V10DC1	-	-	0	-	-	0.04	1	0.04	-	-	0.025	1	0.025	2	0.025	0.01	0.04	0.025
V11DA1	-	-	0	-	-	0.025	1	0.025	0.025	0.025	0.025	3	0.025	4	0.025	0.00	0.025	0.025
V11DB1	-	-	0	-	0.04	0.025	2	0.025	-	-	-	0	-	2	0.025	0.01	0.04	0.025
V11DB2	-	-	0	-	0.025	-	1	0.025	-	-	-	0	-	1	0.025	-	0.025	0.025
V11DB3	-	-	0	-	0.05	0.06	2	0.05	-	-	-	0	-	2	0.05	0.01	0.06	0.05
V11DB4	0.025	-	1	0.025	0.025	0.025	2	0.025	-	-	-	0	-	3	0.025	0.00	0.025	0.025
V11DB5	-	-	0	-	0.04	0.07	2	0.05	-	-	-	0	-	2	0.05	0.01	0.07	0.04
V11DB6	-	-	0	-	0.025	-	1	0.025	-	-	-	0	-	1	0.025	-	0.025	0.025
V12DC1	0.025	-	1	0.025	-	-	0	-	-	-	-	0	-	1	0.025	-	0.025	0.025
V12DC2	0.025	-	1	0.025	-	0.04	1	0.04	0.025	0.025	0.04	3	0.025	5	0.025	0.00	0.04	0.025
V12DC3	0.025	-	1	0.025	-	0.025	1	0.025	-	-	-	0	-	2	0.025	0.00	0.025	0.025
V12DC4	-	-	0	-	-	-	0	-	0.025	0.04	0.09	3	0.04	3	0.04	0.02	0.09	0.025
V12DC6	0.07	-	1	0.07	-	0.04	1	0.04	-	-	-	0	-	2	0.06	0.01	0.07	0.04
V1DA1	0.025	-	1	0.025	-	0.06	1	0.06	-	-	-	0	-	2	0.04	0.02	0.06	0.025
V1DA2	0.025	-	1	0.025	-	0.08	1	0.08	-	-	-	0	-	2	0.05	0.025	0.08	0.025
V1DB1	0.025	0.025	2	0.025	0.025	0.08	2	0.05	-	0.04	0.025	2	0.025	6	0.025	0.01	0.08	0.025
V2DE1	1.21	-	1	1.21	0.025	0.04	2	0.025	0.025	0.025	-	2	0.025	5	0.025	0.24	1.21	0.025
V2DE2	-	-	0	-	-	0.025	1	0.025	-	0.025	-	1	0.025	2	0.025	0.00	0.025	0.025
V2DF1	0.025	0.025	2	0.025	0.025	0.04	2	0.025	-	0.025	0.025	2	0.025	6	-	-	-	-
V2DF2	-	-	0	-	-	-	0	-	0.025	-	-	1	0.025	1	0.025	-	0.025	0.025
V3DA1	0.025	-	1	0.025	-	0.025	1	0.025	0.025	0.025	-	2	0.025	4	0.025	0.00	0.025	0.025
V3DA2	-	-	0	-	-	-	0	-	-	-	-	0	-	0	-	-	-	-
V3DC1	0.025	-	1	0.025	-	-	0	-	0.025	0.10	0.10	3	0.10	4	0.06	0.02	0.10	0.025
V4DC1	0.025	-	1	0.025	0.025	0.04	2	0.025	0.05	0.04	0.025	3	0.04	6	0.025	0.00	0.05	0.025
V4DC2	0.025	-	1	0.025	0.025	0.025	2	0.025	0.025	0.05	0.025	3	0.025	6	0.025	0.00	0.05	0.025

Table 11. Triazine concentrations for water samples taken in Voyageurs National Park from 2003-2005 and analyzed using enzyme-linked immunosorbent assays (continued).

YEAR	2003				2004				2005					All Years				
VISIT #	1	2	N	MEDIAN	1	2	N	MEDIAN	1	2	3	N	MEDIAN	N	MEDIAN	SE	MAX	MIN
Site #																		
V4DC3	0.025	-	1	0.025	0.08	0.06	2	0.07	-	-	-	0	-	3	0.06	0.01	0.08	0.025
V4DCI1	-	-	0	-	-	0.025	1	0.025	-	-	-	0	-	1	0.025	-	0.025	0.025
V5DA1	-	-	0	-	-	0.025	1	0.025	0.025	0.025	0.025	3	0.025	4	0.025	0.00	0.025	0.025
V5DA2	0.92	-	1	0.92	-	0.025	1	0.025	-	0.05	0.025	2	0.04	4	0.04	0.22	0.92	0.025
V5DA3	0.025	-	1	0.025	-	0.025	1	0.025	-	-	-	0	-	2	0.025	0.00	0.025	0.025
V5DA4	0.025	-	1	0.025	-	0.025	1	0.025	-	-	-	0	-	2	0.025	0.00	0.025	0.025
V5DA5	0.025	-	1	0.025	-	-	0	-	-	-	-	0	-	1	0.025	-	0.025	0.025
V5DA6	-	-	0	-	-	0.06	1	0.06	-	-	-	0	-	1	0.06	-	0.06	0.06
V6DB1	0.025	0.025	2	0.025	-	0.025	1	0.025	-	-	-	0	-	3	0.025	0.00	0.025	0.025
V6DB2	0.025	-	1	0.025	-	0.08	1	0.08	-	-	-	0	-	2	0.05	0.025	0.08	0.025
V6DB3	-	-	0	-	-	0.07	1	0.07	-	-	-	0	-	1	0.07	-	0.07	0.07
V6DBI1	0.025	-	1	0.025	-	-	0	-	-	-	-	0	-	1	0.025	-	0.025	0.025
V6DBI2	0.025	-	1	0.025	-	0.09	1	0.09	-	-	-	0	-	2	0.06	0.025	0.09	0.025
V7DE1	0.025	-	1	0.025	0.025	0.07	2	0.05	-	-	-	0	-	3	0.025	0.02	0.07	0.025
V7DE2	-	-	0	-	0.06	0.08	2	0.07	0.025	0.05	-	2	0.04	4	0.05	0.01	0.08	0.025
V7DF1	0.025	-	1	0.025	-	-	0	-	0.025	0.025	0.025	3	0.025	4	0.025	0.00	0.025	0.025
V7DF2	-	-	0	-	-	0.025	1	0.025	-	0.025	-	1	0.025	2	0.025	0.00	0.025	0.025
V7DF3	0.025	-	1	0.025	-	0.025	1	0.025	-	-	-	0	-	2	0.025	0.00	0.025	0.025
V8DB1	0.025	-	1	0.025	-	0.025	1	0.025	-	-	-	0	-	2	0.025	0.00	0.025	0.025
V8DB2	0.025	-	1	0.025	-	0.04	1	0.04	0.04	0.025	-	2	0.025	4	0.025	0.00	0.04	0.025
V8DC1	-	-	0	-	-	0.11	1	0.11	-	0.08	0.04	2	0.06	3	0.08	0.02	0.11	0.04
V8DC2	-	-	0	-	-	0.025	1	0.025	0.025	0.025	0.025	3	0.025	4	0.025	0.00	0.025	0.025
V8DC3	-	-	0	-	-	0.025	1	0.025	-	-	-	0	-	1	0.025	-	0.025	0.025
V8DC4	-	-	0	-	-	-	0	-	0.07	-	-	1	0.07	1	0.07	-	0.07	0.07
V9DB1	0.025	-	1	0.025	0.025	0.07	2	0.05	0.025	0.025	0.025	3	0.025	6	0.025	0.01	0.07	0.025
V9DBI1	0.025	-	1	0.025	0.04	0.04	2	0.04	-	-	-	0	-	3	0.04	0.01	0.04	0.025
V9DC1	0.025	-	1	0.025	-	-	0	-	-	-	-	0	-	1	0.025	-	0.025	0.025
V9DC2	-	-	0	-	0.06	0.025	2	0.04	0.025	0.025	-	2	0.025	4	0.025	0.01	0.06	0.025
VOYA Total	0.025	0.025	37	0.025	0.025	0.04	62	0.04	0.025	0.025	0.025	53	0.025	152	0.025	0.01-	1.21	0.025

Table 12. Potentially present amphibian species based on the ARMI Atlas (2007), U.S. Fish and Wildlife Service and field guides and amphibian species observed by ARMI–MR for the Upper Mississippi River National Wildlife and Fish Refuge (UMR) and the Neal Smith National Wildlife Refuge (NS).

Species		Management Unit where confirmed or potentially present			
		UMR		NS	
Common Name	Scientific Name	Potentially Present	Observed	Potentially Present	Observed
blue-spotted salamander	<i>Ambystoma laterale</i>	X	X	-	-
spotted salamander	<i>Ambystoma maculatum</i>	X	-	-	-
small-mouthed salamander	<i>Ambystoma texanum</i>	X	-	X	-
eastern tiger salamander	<i>Ambystoma tigrinum tigrinum</i>	X	-	X	X
central newt	<i>Notophthalmus viridescens louisianensis</i>	X	X	-	-
four-toed salamander	<i>Hemidactylium scutatum</i>	X	-	-	-
common mudpuppy	<i>Necturus maculosus</i>	X	-	-	-
eastern American toad	<i>Bufo americanus americanus</i>	X	X	X	X
Blanchard's cricket frog	<i>Acris crepitans blanchardi</i>	X	X	X	X
northern spring peeper	<i>Pseudacris crucifer</i>	X	X	X	-
western chorus frog	<i>Pseudacris triseriata triseriata</i>	X	X	X	X
Cope's gray treefrog	<i>Hyla chrysoscelis</i>	X	X	X	X
eastern gray treefrog	<i>Hyla versicolor</i>	X	X	X	X
plains leopard frog	<i>Rana blairi</i>	-	-	X	X
bullfrog	<i>Rana catesbeiana</i>	X	X	X	X
green frog	<i>Rana clamitans</i>	X	X	X	-
pickerel frog	<i>Rana palustris</i>	X	X	-	-
northern leopard frog	<i>Rana pipiens</i>	X	X	X	X
wood frog	<i>Rana sylvatica</i>	X	X	-	-

Table 13. Summary of sampling efforts within the Neal Smith National Wildlife Refuge (NS), the Upper Mississippi National Wildlife and Fish Refuge (UMR), the St. Croix National Scenic Riverway (SACN), and Voyageurs National Park (VOYA) from 2002-2005.

Management Unit	# of survey nights	# of night transects	# of transect nodes	# of cover boards	# of cells visited with sites	total number of cells visited	# of breeding sites within cells	# of sampled breeding sites (visits 1)	# of sampled breeding sites (visits 2)	# of sampled breeding sites (visits 3)	# of sampled breeding sites (visits 4)	# of sampled night sites (visits 1)	# of sampled night sites (visits 1.1)	# of sampled night sites (visits 1.2)	# of sampled night sites (visits 1.3)	# of sampled night sites (visits 2)	# of sampled night sites (visits 2.1)	# of sampled night sites (visits 2.2)	# of sampled night sites (visits 2.3)	# of sampled night sites (visits 2.4)	# of sampled night sites (visits 3)	# of sampled night sites (visits 3.1)	# of sampled night sites (visits 3.2)	# of sampled night sites (visits 3.3)	# of sampled night sites (visits 3.4)	incidental sites (breeding and other)	total sites
UMR 2002	19	12	74	0	24	30	72	4	39	52	21															10	82
SACN 2002	17	11	109	0	22	23	59	25	52	57	0															27	86
VOYA 2002	8	6	45	0	18	24	47	22	43	47	0															22	69
UMR 2003	19	7	60	0	21	21	58	37	29	58																2	60
SACN 2003	18	7	53	55	21	21	62	41	52	58																11	73
VOYA 2003	12	4	32	35	20	20	56	29	44	53																9	65
NS 2004	8	7	16	0	9	9	16	15	0	16																5	21
UMR 2004	18	6	42	0	21	21	54	19	46	29																3	57
SACN 2004	14	7	53	50	21	21	63	21	45	62																10	74
VOYA 2004	12	4	32	34	20	20	55	23	48	49																5	60
NS 2005	7	3	16	0	9	9	17	17	17	11		16				16					16					5	22
UMR 2005	46	6	35	0	17	17	20	2	20	20			16	15	15		31	30	30	1		32	30	30	3	1	21
SACN 2005	52	6	38	25	18	18	19	2	18	19			34	35	23		34	36	36			36	36	36		0	19
VOYA 2005	12	4	32	10	17	17	26	23	25	26		32				32					32					0	26

Table 14. Amphibian species observed at sites within the Neal Smith National Wildlife Refuge during daytime surveys from 2004-2005.

Site	Blanchard's cricket frog	western chorus frog	bullfrog	Cope's gray treefrog	eastern American toad	eastern gray treefrog	green frog	northern leopard frog	northern spring peeper	plains leopard	eastern tiger salamander
NS1DA1	X	X	X	X	X	X	-	X	-	-	X
NS1DA2	-	X	-	-	-	-	-	-	-	-	-
NS1DB1	X	X	X	-	X	X	-	-	-	-	X
NS2DA1	X	X	-	-	X	-	-	X	-	-	-
NS2DB1	X	X	-	-	-	-	-	-	-	-	-
NS2DB2	X	X	-	-	-	-	-	-	-	-	-
NS2DB3	-	X	-	-	X	-	-	-	-	-	-
NS2DC1	X	X	-	-	-	-	-	X	-	-	-
NS2DC2	X	X	-	-	-	-	-	-	-	-	-
NS3DA1	X	X	-	-	-	-	-	-	-	-	-
NS3DB1	-	X	-	-	-	X	-	X	-	-	-
NS3DB2	-	X	-	-	-	-	-	-	-	-	-
NS3DB3	-	X	X	-	-	-	-	X	-	-	-
NS3DC1	-	X	-	-	-	-	-	X	-	-	-
NS3DC2	X	-	X	X	X	X	-	X	-	X	X
NS3DD1	X	X	X	-	X	X	-	X	-	-	-
NS3DD2	X	X	X	X	X	X	-	X	-	-	-

Table 15. Amphibian species observed at each site within the Upper Mississippi River National Fish and Wildlife Refuge during daytime surveys from 2002-2005.

Site	Blanchard's cricket frog	western chorus frog	bullfrog	Cope's gray treefrog	eastern American toad	eastern gray treefrog	green frog	northern leopard frog	northern spring peeper	pickerel frog	wood frog	mink frog	central newt	spotted salamander	blue-spotted salamander	eastern tiger salamander
P4DA1	-	X	-	-	X	X	X	X	-	-	-	-	-	-	-	-
P4DA2	-	-	-	-	-	-	X	X	X	-	-	-	-	-	-	-
P4DA3	-	-	-	X	-	X	X	X	X	-	X	-	-	-	-	-
P4DA4	-	-	-	X	-	X	X	X	X	-	-	-	-	-	-	-
P4DB1	-	-	X	-	X	X	X	X	-	-	-	-	-	-	-	-
P4DB2	-	-	-	-	-	-	X	X	-	-	-	-	-	-	-	-
P4DB3	-	-	-	-	X	-	X	X	-	-	-	-	-	-	-	-
P4DB4	-	-	-	-	X	-	X	X	-	-	-	-	-	-	-	-
P4DB5	-	-	-	-	-	X	X	X	-	-	-	-	-	-	-	-
P4DB6	-	-	-	-	-	-	X	X	-	-	-	-	-	-	-	-
P4DC1	-	-	-	-	-	X	X	X	-	-	-	-	-	-	-	-
P4DD1	-	-	-	-	-	-	X	X	-	-	-	-	-	-	-	-
P7DA1	-	-	-	-	-	X	X	X	-	-	-	-	-	-	-	-
P7DA2	-	-	-	-	-	-	X	X	-	-	-	-	-	-	-	-
P7DA3	-	-	-	-	X	X	X	-	-	-	-	-	-	-	-	-
P7DE1	-	-	-	-	-	-	X	X	-	-	-	-	-	-	X	-
P7DE2	-	-	-	-	-	-	X	X	-	-	-	-	-	-	X	-
P7DE3	-	-	-	-	-	-	X	X	X	-	X	-	-	-	X	-
P7DE4	-	-	-	-	-	-	X	X	-	-	-	-	-	-	-	-
P7DE5	-	-	-	-	-	-	X	X	-	-	X	-	-	-	-	-
P7DE6	-	-	-	-	-	X	X	X	-	-	-	-	X	-	X	-
P7DH1	-	-	X	-	-	X	X	X	-	-	-	-	-	-	-	-
P7DI1	-	-	-	-	-	X	X	X	-	-	-	-	-	-	-	-
P8DA1	-	X	-	-	-	-	X	X	-	-	-	-	-	-	-	-
P8DA2	-	X	-	-	X	-	X	X	-	-	-	-	-	-	-	-

Table 15. Amphibian species observed at each site within the Upper Mississippi River National Fish and Wildlife Refuge during daytime surveys from 2002-2005 (continued).

Site	Blanchard's cricket frog	western chorus frog	bullfrog	Cope's gray treefrog	eastern American toad	eastern gray treefrog	green frog	northern leopard frog	northern spring peeper	pickerel frog	wood frog	mink frog	central newt	spotted salamander	blue-spotted salamander	eastern tiger salamander
P8DB1	-	-	-	-	-	X	X	X	-	-	-	-	-	-	-	-
P8DC1	-	-	X	-	-	-	X	X	-	-	-	-	-	-	-	-
P8DG1	-	X	X	X	-	X	X	X	-	-	-	-	-	-	-	-
P10DA1	-	-	X	-	X	-	X	X	-	-	-	-	-	-	-	-
P10DA2	-	-	X	-	X	-	X	X	-	-	-	-	-	-	-	-
P10DA3	-	-	-	-	-	-	X	X	-	-	-	-	-	-	-	-
P10DA4	-	-	X	-	X	-	X	X	-	-	-	-	-	-	-	-
P10DA5	-	-	X	-	X	-	X	X	-	-	-	-	-	-	-	-
P10DB1	-	-	X	-	-	X	X	-	-	-	-	-	-	-	-	-
P10DB2	-	-	X	-	-	-	X	X	-	-	-	-	-	-	-	-
P10DB3	X	-	X	-	-	-	X	-	-	-	-	-	-	-	-	-
P10DB4	-	-	X	-	-	-	X	X	-	-	-	-	-	-	-	-
P10DC1	-	-	X	-	-	X	X	X	-	-	-	-	-	-	-	-
P10DD1	-	-	X	-	-	X	-	X	-	-	-	-	-	-	-	-
P11DA1	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-
P11DA2	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-
P11DA3	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-
P11DA4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P11DA5	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-
P11DB1	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-
P11DB2	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P11DB3	-	-	X	-	-	-	X	X	-	-	-	-	-	-	-	-
P12DA1	-	-	X	-	-	-	-	X	-	-	-	-	-	-	-	-
P12DA2	-	-	X	-	-	-	-	X	-	-	-	-	-	-	-	-
P12DA3	-	-	X	-	-	-	-	X	-	-	-	-	-	-	-	-

Table 15. Amphibian species observed at each site within the Upper Mississippi River National Fish and Wildlife Refuge during daytime surveys from 2002-2005 (continued).

Site	Blanchard's cricket frog	western chorus frog	bullfrog	Cope's gray treefrog	eastern American toad	eastern gray treefrog	green frog	northern leopard frog	northern spring peeper	pickerel frog	wood frog	mink frog	central newt	spotted salamander	blue-spotted salamander	eastern tiger salamander
P12DB1	-	-	X	-	-	-	-	X	-	-	-	-	-	-	-	-
P12DB2	-	-	X	-	X	X	-	X	-	-	-	-	-	-	-	-
P12DB3	-	-	X	-	-	X	-	X	-	-	-	-	-	-	-	-
P13DA1	X	X	X	X	-	X	X	X	X	-	-	-	-	-	-	-
P13DA2	-	-	X	X	-	X	-	X	X	-	-	-	-	-	-	-
P13DA3	-	-	X	X	-	X	X	X	X	-	-	-	-	-	-	-
P13DA4	-	-	X	X	-	X	X	X	-	-	-	-	-	-	-	-
P13DA5	-	-	X	-	-	X	X	X	-	-	-	-	-	-	-	-
P13DA6	-	-	X	-	-	-	-	-	X	-	-	-	-	-	-	-
P13DB1	X	-	X	-	X	X	X	X	X	-	-	-	-	-	-	-
P13DB2	-	-	X	X	X	X	-	X	-	-	-	-	-	-	-	-
P13DB3	X	-	X	X	-	X	X	X	-	-	-	-	-	-	-	-
P13DB4	-	-	X	-	-	-	X	-	-	-	-	-	-	-	-	-
P13DB5	X	-	X	-	-	X	X	X	-	-	-	-	-	-	-	-
P13DB6	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-
P14DA1	X	-	X	X	-	X	-	X	-	-	-	-	-	-	-	-
P14DA2	X	-	-	X	-	X	-	-	-	-	-	-	-	-	-	-
P14DA3	X	-	X	X	-	X	-	X	X	-	-	-	-	-	-	-
P14DB1	X	-	X	X	X	X	X	X	-	-	-	-	-	-	-	-
P14DB2	X	-	X	-	-	X	-	X	-	-	-	-	-	-	-	-
P14DB3	X	-	X	X	-	X	-	-	X	-	-	-	-	-	-	-
P14DB4	-	-	X	X	-	X	-	-	X	-	-	-	-	-	-	-
P14DC1	X	X	X	-	-	-	X	X	X	-	-	-	-	-	-	-

Table 16. Amphibian species observed at each site within the St. Croix National Scenic Riverway during daytime surveys from 2002-2005.

Site	chorus frog ¹	bullfrog	Cope's gray treefrog	eastern American toad	eastern gray treefrog	green frog	northern leopard frog	northern spring peeper	pickerel frog	wood frog	mink frog	central newt	spotted salamander	blue-spotted salamander	eastern tiger salamander
SC1DA1	X	-	-	X	X	X	X	-	-	X	-	-	-	X	-
SC1DA2	-	-	X	X	X	X	X	X	-	X	-	-	-	-	-
SC1DA3	X	-	-	-	-	X	X	X	-	X	-	-	X	X	-
SC1DD1	-	-	X	X	X	X	X	X	-	-	-	-	-	-	-
SC1DD2	-	-	X	-	X	X	X	-	-	-	-	-	-	-	-
SC1DD3	-	-	X	X	X	X	X	X	-	X	-	-	-	-	-
SC1DD4	-	-	X	X	X	X	-	-	-	-	-	-	-	-	-
SC1DD5	X	-	X	X	X	X	X	-	-	-	-	-	-	-	-
SC1DD6	X	-	-	-	-	X	-	-	-	-	-	-	-	-	-
SC1DD7	X	-	-	-	-	-	-	-	-	X	-	-	-	-	-
SC1DE1	-	-	-	X	-	X	-	-	-	-	-	-	-	-	-
SC1DE2	-	X	-	X	-	X	-	-	-	-	-	-	-	-	-
SC1DE3	-	-	-	X	-	X	-	-	-	-	-	-	-	-	-
SC2DB1	X	-	-	X	X	X	X	-	-	X	-	-	-	-	-
SC2DD1	X	-	X	X	X	X	X	-	-	-	-	-	-	-	-
SC2DD2	X	-	-	X	-	X	X	-	-	X	-	-	-	-	-
SC2DD3	-	-	-	X	-	X	-	-	-	X	-	-	-	-	-
SC4DA1	X	-	X	X	X	X	X	X	-	X	-	-	-	-	-
SC4DA2	X	-	X	X	X	X	X	X	-	-	-	-	-	X	-
SC4DA3	X	-	X	X	X	X	X	X	-	X	-	-	-	X	-
SC4DA4	-	-	-	X	-	-	-	X	-	X	-	-	-	-	-
SC4DA5	X	-	-	-	-	-	-	X	-	X	-	-	-	X	-
SC4DB1	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-
SC4DB10	X	-	X	X	X	X	X	X	-	X	-	-	-	-	-
SC4DB11	X	-	-	X	X	X	X	X	-	X	-	-	-	-	-

¹We did not differentiate between the boreal chorus frog and the western chorus frog.

Table 16. Amphibian species observed at each site within the St. Croix National Scenic Riverway during daytime surveys from 2002-2005 (continued).

Site	chorus frog ¹	bullfrog	Cope's gray treefrog	eastern American toad	eastern gray treefrog	green frog	northern leopard frog	northern spring peeper	pickrel frog	wood frog	mink frog	central newt	spotted salamander	blue-spotted salamander	eastern tiger salamander
SC4DB2	-	-	-	-	-	X	X	-	-	X	-	-	-	-	-
SC4DB3	-	-	-	-	X	X	X	-	-	X	-	-	-	-	-
SC4DB4	-	-	X	X	X	X	X	-	-	X	-	-	-	-	-
SC4DB5	X	-	X	X	X	X	X	X	-	X	-	-	-	X	-
SC4DB6	X	-	-	-	-	X	X	X	-	X	-	-	-	X	-
SC4DB7	X	-	-	X	X	X	X	X	-	X	-	-	-	-	-
SC4DB8	X	-	X	-	X	X	X	X	-	X	-	-	-	-	-
SC4DB9	X	-	X	X	X	X	X	X	-	X	-	-	-	X	-
SC4DC1	-	-	-	X	X	X	X	-	-	X	-	-	-	-	-
SC7DA1	-	-	-	-	-	X	X	-	-	X	-	-	-	-	-
SC7DA2	-	-	-	X	-	X	X	X	-	X	-	-	-	-	-
SC7DA3	-	-	-	X	-	X	X	X	-	-	-	-	-	-	-
SC7DA4	-	-	-	-	-	X	-	-	-	X	X	-	-	-	-
SC7DA5	-	-	-	-	-	X	-	-	-	X	-	-	-	-	-
SC7DB1	-	-	-	-	-	X	-	-	-	X	-	-	-	-	-
SC7DB2	-	-	-	-	X	X	X	-	-	-	X	-	-	-	-
SC7DB3	-	-	-	-	-	X	X	-	-	X	X	-	-	-	-
SC8DA1	-	-	-	-	-	X	X	X	-	X	-	-	-	-	-
SC8DB1	-	-	-	-	-	X	-	-	-	X	X	-	-	-	-
SC9DE1	X	-	-	X	X	X	X	X	-	X	X	-	-	-	-
SC9DE2	-	-	-	-	-	X	-	-	-	-	X	-	-	-	-
SC10DA1	-	-	-	-	-	X	-	X	-	-	X	-	-	X	-
SC10DA2	-	-	-	-	-	X	X	-	-	X	-	-	-	-	-
SC10DB1	-	-	-	X	-	X	-	X	-	X	X	-	-	X	-
SC10DC1	-	-	-	-	-	X	-	-	-	-	X	-	-	-	-

¹We did not differentiate between the boreal chorus frog and the western chorus frog.

Table 16. Amphibian species observed at each site within the St. Croix National Scenic Riverway during daytime surveys from 2002-2005 (continued).

Site	chorus frog ¹	bullfrog	Cope's gray treefrog	eastern American toad	eastern gray treefrog	green frog	northern leopard frog	northern spring peeper	pickerel frog	wood frog	mink frog	central newt	spotted salamander	blue-spotted salamander	eastern tiger salamander
SC10DC2	-	-	-	-	-	X	-	X	-	X	-	-	-	X	-
SC10DD1	X	-	X	-	X	X	X	X	-	X	-	-	-	X	-
SC10DD2	-	-	-	-	-	-	X	-	-	X	-	-	-	X	-
SC10DD3	X	-	-	-	X	X	X	X	-	X	-	-	-	X	-
SC10DD4	X	-	-	-	X	X	-	X	-	X	X	X	-	X	-
SC10DD5	X	-	-	-	X	X	X	X	-	-	X	-	-	-	-
SC12DA1	-	-	-	X	X	X	X	X	-	X	X	-	X	X	-
SC12DA2	-	-	-	X	X	X	X	X	-	X	X	-	X	X	-
SC12DA3	X	-	X	X	X	X	X	-	-	X	X	-	-	-	-
SC12DA4	-	-	-	X	X	-	-	-	-	X	-	-	-	-	-
SC12DB1	-	-	-	X	X	X	X	-	-	X	X	-	-	-	-
SC12DC1	-	-	-	X	-	X	X	-	-	-	X	-	-	-	-
SC12DE1	-	-	-	X	X	X	-	-	-	-	-	-	-	-	-
SC12DE2	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-
SC12DE3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

¹We did not differentiate between the boreal chorus frog and the western chorus frog.

Table 17. Amphibian species observed at each site within Voyageurs National Park during daytime surveys from 2002-2005.

Site	boreal chorus frog	bullfrog	Cope's gray treefrog	eastern American toad	eastern gray treefrog	green frog	northern leopard frog	northern spring peeper	wood frog	mink frog	central newt	blue-spotted salamander
V1DA1	-	-	-	X	-	X	-	X	X	-	-	-
V1DA2	-	-	-	X	X	X	X	-	X	-	-	X
V1DB1	X	-	-	X	X	X	X	X	X	-	-	X
V2DE1	-	-	-	-	X	-	X	-	X	-	-	X
V2DE2	-	-	-	-	-	-	-	-	X	-	-	-
V2DENB1	-	-	-	-	-	-	-	-	X	-	-	-
V2DF1	-	-	-	-	X	X	X	X	X	X	-	-
V2DF2	-	-	-	-	X	X	-	-	X	X	-	-
V3DA1	-	-	-	X	-	X	X	X	X	-	-	X
V3DA2	-	-	-	X	-	-	-	X	X	-	-	-
V3DA3	-	-	-	X	-	-	X	X	X	-	-	-
V3DC1	X	-	-	-	-	X	-	X	X	X	X	-
V4DC1	-	-	-	-	X	X	X	X	X	X	X	X
V4DC2	-	-	-	-	X	X	X	X	X	X	X	X
V4DC3	-	-	-	-	-	-	-	-	X	-	-	-
V5DA1	-	-	-	-	X	X	X	X	X	X	X	-
V5DA2	-	-	-	-	X	X	X	X	X	X	-	-
V5DA3	-	-	-	-	X	X	-	X	-	X	-	-
V5DA4	-	-	-	-	X	X	-	X	X	X	X	X
V5DA5	-	-	-	-	-	X	X	-	X	X	-	-
V5DA6	-	-	-	-	-	-	-	-	-	-	-	-
V6DB1	-	-	-	X	X	X	X	X	X	X	-	-
V6DB2	-	-	-	X	-	-	X	X	X	-	-	X
V6DB3	-	-	-	X	-	-	-	X	X	-	-	-
V7DE1	-	-	-	X	X	X	X	X	X	-	-	X

Table 17. Amphibian species observed at each site within Voyageurs National Park during daytime surveys from 2002-2005 (continued).

Site	boreal chorus frog	bullfrog	Cope's gray treefrog	eastern American toad	eastern gray treefrog	green frog	northern leopard frog	northern spring peeper	wood frog	mink frog	central newt	blue-spotted salamander
V7DE2	-	-	-	X	X	-	X	X	X	-	-	X
V7DF1	X	-	-	-	-	X	X	X	X	-	-	X
V7DF2	-	-	-	X	-	-	X	X	X	-	X	X
V7DF3	-	-	-	-	-	-	X	X	X	-	-	X
V8DB1	X	-	-	X	-	X	X	X	X	-	-	-
V8DB2	X	-	-	X	-	-	X	X	X	-	-	-
V8DC1	-	-	-	-	X	X	X	X	X	X	-	-
V8DC2	-	-	-	X	X	-	X	-	X	-	-	-
V8DC3	-	-	-	-	-	-	-	X	-	-	-	-
V8DC4	X	-	-	-	-	-	-	-	X	-	-	-
V9DB1	X	-	-	X	-	-	-	X	X	-	-	X
V9DC1	-	-	-	-	-	-	-	X	X	-	-	-
V9DC2	X	-	-	X	-	-	-	-	X	-	-	X
V11DA1	-	-	-	-	X	X	X	-	-	-	-	-
V11DB1	-	-	-	-	-	-	X	-	X	-	-	-
V11DB2	-	-	-	-	-	-	-	-	X	-	-	-
V10DA1	-	-	-	X	-	-	-	-	X	-	-	-
V10DA2	-	-	-	X	-	-	-	-	X	-	-	-
V10DA3	-	-	-	X	-	-	-	-	X	-	-	-
V10DA4	-	-	-	-	X	X	X	X	X	X	X	-
V10DC1	-	-	-	X	X	-	X	-	X	X	-	-
V10DC2	-	-	-	-	-	-	-	-	X	-	-	-
V11DB3	-	-	-	-	-	-	X	-	X	-	-	-
V11DB4	-	-	-	-	-	X	X	X	X	X	-	-
V11DB5	-	-	-	-	-	-	X	-	X	-	-	-

Table 17. Amphibian species observed at each site within Voyageurs National Park during daytime surveys from 2002-2005 (continued).

Site	boreal chorus frog	bullfrog	Cope's gray treefrog	eastern American toad	eastern gray treefrog	green frog	northern leopard frog	northern spring peeper	wood frog	mink frog	central newt	blue-spotted salamander
V11DB6	-	-	-	-	-	-	X	-	X	-	X	-
V12DC1	-	-	-	-	-	-	-	-	X	-	-	X
V12DC2	X	-	-	-	X	X	X	X	X	-	-	-
V12DC3	-	-	-	-	-	-	X	-	X	-	-	-
V12DC4	-	-	-	-	-	-	X	X	X	-	-	-
V12DC5	-	-	-	-	-	-	-	-	-	-	-	-
V12DC6	-	-	-	-	-	-	-	-	X	-	-	X

Table 18. Amphibian species observed at sites within the Neal Smith National Wildlife Refuge during nighttime surveys from 2004-2005.

Site	Blanchard's cricket frog	western chorus frog	bullfrog	Cope's gray treefrog	eastern American toad	eastern gray treefrog	green frog	northern leopard frog	northern spring peeper
NS1NA1	X	X	X	X	X	X	-	X	-
NS1NA2	X	X	X	X	X	X	-	-	-
NS1NB1	X	X	X	X	X	X	-	X	-
NS1NB2	X	X	X	X	X	X	-	X	-
NS2NA1	X	X	X	X	X	X	-	-	-
NS2NA2	X	X	X	X	X	X	-	X	-
NS2NB1	X	X	X	X	X	X	-	-	-
NS2NB2	X	X	X	X	X	X	-	X	-
NS3NA1	X	X	X	X	X	X	-	X	-
NS3NA2	X	X	X	-	X	X	-	X	-
NS3NA3	X	X	X	X	X	X	-	X	-
NS3NA4	X	X	X	X	X	X	-	-	-
NS3NC1	X	X	X	X	X	X	-	-	-
NS3NC2	X	X	X	X	X	X	-	X	-
NS3ND1	X	X	X	X	X	X	-	X	-
NS3ND2	X	X	X	X	X	X	-	X	-

Table 19. Amphibian species observed at each site within the Upper Mississippi River National Fish and Wildlife Refuge during nighttime surveys from 2002-2005.

Site	Blanchard's cricket frog	western chorus frog	bullfrog	Cope's gray treefrog	eastern American toad	eastern gray treefrog	green frog	mink frog	northern leopard frog	northern spring peeper	pickerel frog	wood frog
P4NA1	-	-	X	X	X	X	X	-	X	X	-	X
P4NA2	-	-	-	-	X	X	X	-	X	X	-	X
P4NA3	-	-	-	-	X	X	X	-	X	X	-	-
P4NA4	-	-	-	X	X	X	X	-	X	X	-	X
P4NA5	-	-	-	X	X	X	X	-	-	X	-	-
P4NR1	-	X	-	-	X	X	X	-	X	X	-	-
P4NR3	-	X	-	-	-	X	-	-	X	X	-	-
P4NR4	-	X	-	-	X	-	-	-	X	X	-	-
P4NR5	-	X	-	-	X	X	X	-	X	-	-	-
P4NR6	-	X	-	-	X	X	X	-	X	X	-	-
P7NA1	-	X	-	-	X	X	X	-	X	X	-	X
P7NA2	-	-	-	-	-	X	X	-	X	X	-	X
P7NA3	-	-	-	X	-	X	X	-	X	X	-	X
P7NA4	-	-	-	-	X	X	X	-	X	X	-	X
P7NA5	-	X	-	X	-	X	X	-	X	X	-	X
P7NA6	-	-	-	-	-	X	X	-	X	X	-	X
P7NA7	-	-	-	-	X	X	X	-	X	X	-	X
P7NA8	-	X	-	-	X	X	X	-	X	X	-	X
P7NR10	X	-	-	X	X	X	X	-	-	X	-	-
P7NR3	-	-	-	X	X	X	X	-	X	X	-	-
P7NR7	-	-	-	-	-	-	-	-	-	-	-	-
P7NR8	-	-	-	-	X	X	X	-	-	-	-	-
P7NR9	-	-	-	X	X	X	X	-	-	X	-	-
P8NA1	-	X	-	-	X	X	X	-	X	X	-	-

Table 19. Amphibian species observed at each site within the Upper Mississippi River National Fish and Wildlife Refuge during nighttime surveys from 2002-2005 (continued).

Site	Blanchard's cricket frog	western chorus frog	bullfrog	Cope's gray treefrog	eastern American toad	eastern gray treefrog	green frog	mink frog	northern leopard frog	northern spring peeper	pickerel frog	wood frog
P8NA2	-	-	-	X	X	X	X	-	X	-	-	-
P8NA3	-	X	-	X	X	X	X	-	X	X	-	-
P8NA4	-	X	-	X	X	X	X	-	X	X	-	-
P8NA5	-	X	-	X	X	X	X	-	X	X	-	-
P8NA6	-	X	-	X	X	X	X	-	X	X	-	-
P8NA7	-	X	-	X	X	X	X	-	X	X	-	-
P8NA8	-	X	-	X	X	X	X	-	X	X	-	-
P8NR1	-	X	-	-	X	X	X	-	-	-	-	-
P8NR2	-	-	-	-	-	-	X	-	-	X	-	-
P8NR4	-	-	-	-	-	X	-	-	-	-	-	-
P8NR5	-	-	-	-	-	-	X	-	-	-	-	-
P8NR6	-	-	-	-	X	X	-	-	-	X	-	-
P8NR9	-	-	-	-	-	-	X	-	-	-	-	-
P10NA1	-	-	X	-	X	X	X	-	-	X	-	X
P10NA2	-	-	X	X	-	X	X	-	X	X	-	X
P10NA3	-	-	X	X	X	X	X	-	X	X	X	X
P10NA4	-	-	X	X	X	X	X	-	X	X	-	X
P10NA5	-	-	X	X	X	X	X	-	X	X	-	X
P10NA6	-	-	-	-	X	X	-	-	-	-	-	-
P10NR1	X	-	X	X	X	X	X	-	-	X	X	-
P10NR5	-	-	X	-	X	X	X	-	X	X	X	-
P10NR7	-	X	X	-	X	X	X	-	X	X	X	-
P10NR8	-	X	X	-	X	X	X	-	X	X	-	-
P11NA1	-	-	-	-	-	-	-	-	-	-	-	-

Table 19. Amphibian species observed at each site within the Upper Mississippi River National Fish and Wildlife Refuge during nighttime surveys from 2002-2005 (continued).

Site	Blanchard's cricket frog	western chorus frog	bullfrog	Cope's gray treefrog	eastern American toad	eastern gray treefrog	green frog	mink frog	northern leopard frog	northern spring peeper	pickerel frog	wood frog
P11NA1	-	-	-	-	-	-	-	-	-	-	-	-
P11NA2	-	-	-	-	-	-	-	-	-	-	-	-
P11NA3	-	-	-	-	-	-	-	-	-	-	-	-
P11NA4	-	-	-	-	-	-	-	-	-	-	-	-
P11NA5	-	-	-	-	-	-	X	-	-	-	-	-
P11NA6	X	-	X	-	-	-	X	-	-	-	-	-
P11NA7	-	-	X	-	-	-	X	-	-	-	-	-
P12NA1	-	-	-	-	-	-	-	-	-	-	-	-
P12NA2	-	-	-	-	-	-	-	-	-	-	-	-
P12NA3	-	-	-	-	-	-	-	-	-	-	-	-
P12NA4	-	-	-	-	-	-	X	-	-	-	-	-
P12NA5	-	-	-	-	-	-	-	-	-	-	-	-
P13NA1	-	X	X	X	X	X	X	-	X	-	-	-
P13NA2	X	X	X	X	X	X	X	-	X	X	-	-
P13NA3	X	X	X	X	X	X	X	-	X	-	-	-
P13NA4	X	X	X	X	X	X	X	-	X	-	-	-
P13NA5	X	X	X	-	X	X	X	-	X	-	-	-
P13NA6	X	X	X	X	X	X	X	-	X	-	-	-
P13NA7	X	X	X	-	X	X	X	-	X	-	-	-
P13NA8	X	X	X	X	X	X	X	-	X	-	-	-
P13NR1	X	-	X	-	X	X	X	-	X	-	-	-
P13NR5	-	-	X	-	X	X	X	-	X	-	-	-
P13NR6	X	X	X	-	-	X	X	-	-	-	-	-
P13NR7	X	-	X	-	-	X	X	-	-	-	-	-

Table 19. Amphibian species observed at each site within the Upper Mississippi River National Fish and Wildlife Refuge during nighttime surveys from 2002-2005 (continued).

Site	Blanchard's cricket frog	western chorus frog	bullfrog	Cope's gray treefrog	eastern American toad	eastern gray treefrog	green frog	mink frog	northern leopard frog	northern spring peeper	pickerel frog	wood frog
P14NA1	X	-	X	X	X	X	X	-	-	-	-	-
P14NA2	X	-	X	X	X	X	X	-	-	-	-	-
P14NA3	X	-	X	X	X	X	X	-	-	-	-	-
P14NA4	X	X	X	-	X	X	X	-	X	-	-	-
P14NA5	X	X	X	X	X	X	X	-	X	-	-	-
P14NA6	X	X	X	X	X	X	X	-	X	-	-	-
P14NA7	X	X	X	-	-	X	X	-	X	-	-	-
P14NA8	X	X	X	-	X	X	X	-	X	-	-	-
P14NR1	X	-	X	-	X	X	-	-	-	-	-	-
P14NR2	-	-	X	-	-	X	-	-	-	-	-	-
P14NR3	X	-	X	-	-	X	-	-	-	-	-	-
P14NR4	X	-	X	-	-	X	X	-	-	-	-	-

Table 20. Amphibian species observed at each site within the St. Croix National Scenic Riverway during nighttime surveys from 2002-2005.

Site	chorus frog ¹	bullfrog	Cope's gray treefrog	eastern American toad	eastern gray treefrog	green frog	mink frog	northern leopard frog	northern spring peeper	wood frog
SC1NA1	-	-	-	X	X	-	-	-	-	-
SC1NA2	-	-	-	-	X	-	-	-	X	-
SC1NA3	-	-	-	X	X	-	-	-	X	-
SC1NA4	-	-	-	X	X	-	-	-	X	X
SC1NA5	X	-	-	X	X	X	-	-	X	X
SC1NA6	X	-	-	X	X	X	-	X	X	X
SC1NA7	X	-	-	X	X	X	-	X	X	X
SC1NA8	X	-	-	X	X	X	-	X	X	X
SC1NR10	-	-	-	X	X	X	X	-	-	-
SC1NR2	X	-	-	X	X	-	X	-	-	-
SC1NR5	X	-	-	X	X	-	-	-	-	-
SC1NR7	X	-	-	X	X	-	-	-	X	-
SC1NR9	X	-	X	X	X	X	-	-	X	-
SC2NA1	-	-	-	X	X	-	-	-	X	X
SC2NA2	-	-	-	X	X	-	-	-	X	-
SC2NA3	-	-	-	X	X	-	-	-	X	-
SC2NA4	-	-	-	X	X	-	-	-	X	-
SC2NB1	-	-	-	X	X	X	-	-	X	-
SC2NB2	-	-	-	X	X	X	-	-	-	-
SC2NB3	-	-	-	X	X	X	-	X	-	-
SC2NB4	-	-	-	X	X	X	-	-	X	-
SC2NB5	-	-	-	X	X	X	-	-	-	-
SC2NR12	X	-	-	X	X	-	-	-	-	-
SC2NR4	-	-	-	X	X	X	-	-	-	-

¹We did not differentiate between the boreal chorus frog and the western chorus frog.

Table 20. Amphibian species observed at each site within the St. Croix National Scenic Riverway during nighttime surveys from 2002-2005 (continued).

Site	chorus frog ¹	bullfrog	Cope's gray treefrog	eastern American toad	eastern gray treefrog	green frog	mink frog	northern leopard frog	northern spring peeper	wood frog
SC2NR5	X	-	-	X	X	X	-	X	X	-
SC2NR6	X	-	-	X	X	X	-	-	X	-
SC2NR8	X	-	-	-	X	X	-	-	-	-
SC4NA1	X	-	X	-	X	X	-	X	X	X
SC4NA2	X	-	-	X	X	X	-	-	X	X
SC4NA3	X	-	X	-	X	X	-	X	X	X
SC4NA4	X	-	X	X	X	X	-	X	X	X
SC4NA5	X	-	X	X	X	X	-	X	X	X
SC4NA6	X	-	X	X	X	X	-	-	X	X
SC4NA7	X	-	X	X	X	X	-	X	X	X
SC4NA8	X	-	X	X	X	X	-	X	X	X
SC4NB1	-	-	-	-	-	-	-	-	X	-
SC4NB2	-	-	-	-	-	-	-	-	X	-
SC4NB3	-	-	-	-	-	-	-	-	X	-
SC4NB4	-	-	-	-	-	-	-	-	X	-
SC4NC1	-	-	-	-	-	-	-	-	X	-
SC4NC2	-	-	-	-	-	-	-	-	X	-
SC4NC3	-	-	-	-	-	-	-	-	X	-
SC4NC4	X	-	-	-	-	-	-	-	X	-
SC4NC5	-	-	-	-	-	-	-	-	X	-
SC4NC6	-	-	-	-	-	-	-	-	X	-
SC4NC7	-	-	-	-	-	-	-	-	X	-
SC4NC8	-	-	-	-	-	-	-	-	X	-
SC4NR10	X	-	-	X	X	-	-	-	-	-
SC4NR2	X	-	-	X	X	-	-	-	X	-
SC4NR3	X	-	-	X	X	X	-	-	-	-

¹We did not differentiate between the boreal chorus frog and the western chorus frog.

Table 20. Amphibian species observed at each site within the St. Croix National Scenic Riverway during nighttime surveys from 2002-2005 (continued).

Site	chorus frog ¹	bullfrog	Cope's gray treefrog	eastern American toad	eastern gray treefrog	green frog	mink frog	northern leopard frog	northern spring peeper	wood frog
SC2NR5	X	-	-	X	X	X	-	X	X	-
SC2NR6	X	-	-	X	X	X	-	-	X	-
SC2NR8	X	-	-	-	X	X	-	-	-	-
SC4NA1	X	-	X	-	X	X	-	X	X	X
SC4NA2	X	-	-	X	X	X	-	-	X	X
SC4NA3	X	-	X	-	X	X	-	X	X	X
SC4NA4	X	-	X	X	X	X	-	X	X	X
SC4NA5	X	-	X	X	X	X	-	X	X	X
SC4NA6	X	-	X	X	X	X	-	-	X	X
SC4NA7	X	-	X	X	X	X	-	X	X	X
SC4NA8	X	-	X	X	X	X	-	X	X	X
SC4NB1	-	-	-	-	-	-	-	-	X	-
SC4NB2	-	-	-	-	-	-	-	-	X	-
SC4NB3	-	-	-	-	-	-	-	-	X	-
SC4NB4	-	-	-	-	-	-	-	-	X	-
SC4NC1	-	-	-	-	-	-	-	-	X	-
SC4NC2	-	-	-	-	-	-	-	-	X	-
SC4NC3	-	-	-	-	-	-	-	-	X	-
SC4NC4	X	-	-	-	-	-	-	-	X	-
SC4NC5	-	-	-	-	-	-	-	-	X	-
SC4NC6	-	-	-	-	-	-	-	-	X	-
SC4NC7	-	-	-	-	-	-	-	-	X	-
SC4NC8	-	-	-	-	-	-	-	-	X	-
SC4NR10	X	-	-	X	X	-	-	-	-	-
SC4NR2	X	-	-	X	X	-	-	-	X	-
SC4NR3	X	-	-	X	X	X	-	-	-	-

¹We did not differentiate between the boreal chorus frog and the western chorus frog.

Table 20. Amphibian species observed at each site within the St. Croix National Scenic Riverway during nighttime surveys from 2002-2005 (continued).

Site	chorus frog ¹	bullfrog	Cope's gray treefrog	eastern American toad	eastern gray treefrog	green frog	mink frog	northern leopard frog	northern spring peeper	wood frog
SC4NR7	-	-	-	X	X	X	-	-	-	-
SC4NR8	X	-	X	-	X	X	-	-	-	-
SC8NA1	-	-	-	X	X	X	-	-	X	X
SC8NA2	-	-	-	X	X	X	-	-	X	X
SC8NA3	-	-	-	X	X	X	-	-	X	X
SC8NA4	-	-	-	X	X	X	-	-	X	X
SC8NA5	-	-	-	X	X	X	-	-	X	X
SC8NA6	X	-	-	X	X	X	-	-	X	X
SC8NA7	X	-	-	X	X	X	-	-	X	X
SC8NA8	X	-	-	X	X	X	-	-	X	X
SC8NR1	-	-	-	X	X	-	-	-	-	-
SC8NR3	X	-	-	-	X	-	-	-	X	-
SC8NR7	-	-	-	X	X	X	X	-	X	-
SC8NR8	-	-	-	X	X	X	-	-	X	-
SC8NR9	-	-	-	X	X	X	-	-	-	-
SC9NA1	-	-	-	X	X	X	X	-	X	X
SC9NA2	X	-	-	X	X	X	X	-	X	-
SC9NA3	X	-	-	X	X	X	X	-	X	-
SC9NA4	X	-	X	X	X	X	X	-	X	-
SC9NA5	-	-	X	X	X	X	X	-	X	-
SC9NA6	-	-	X	X	X	X	X	-	X	-
SC9NA7	-	-	X	X	X	X	-	-	X	-
SC9NA8	-	-	-	-	-	X	X	-	-	-
SC10NA1	-	-	X	X	X	X	-	X	X	X
SC10NA2	X	-	X	X	X	X	-	X	X	X
SC10NA3	X	-	X	X	X	X	-	X	X	X

¹We did not differentiate between the boreal chorus frog and the western chorus frog.

Table 20. Amphibian species observed at each site within the St. Croix National Scenic Riverway during nighttime surveys from 2002-2005 (continued).

Site	chorus frog ¹	bullfrog	Cope's gray treefrog	eastern American toad	eastern gray treefrog	green frog	mink frog	northern leopard frog	northern spring peeper	wood frog
SC10NA4	X	-	X	X	X	X	-	X	X	X
SC10NA5	-	-	X	-	X	X	X	X	X	-
SC10NA6	-	-	X	X	X	X	X	-	X	-
SC10NA7	-	-	X	X	X	X	-	-	X	-
SC10NA8	-	-	X	X	X	X	-	-	X	-
SC10NR2	-	-	-	-	X	X	-	X	X	-
SC10NR3	X	-	-	X	X	-	-	-	X	-
SC10NR5	-	-	-	X	-	-	-	-	X	X
SC10NR6	X	-	-	-	X	X	-	X	X	X
SC10NR7	-	-	-	-	X	-	-	-	X	-
SC12NA1	-	-	-	X	X	X	-	X	X	X
SC12NA2	-	-	X	X	X	X	-	-	X	X
SC12NA3	-	X	X	X	X	X	-	-	X	X
SC12NA4	-	-	-	X	X	X	-	-	X	-
SC12NA5	-	X	-	X	X	X	-	-	X	-
SC12NA6	-	-	-	X	X	X	-	-	X	X
SC12NA7	-	-	-	X	X	X	-	-	X	X
SC12NA8	-	X	-	X	X	X	-	X	X	X
SC12NA9	-	-	-	-	X	X	-	-	X	-
SC12NR1	-	-	X	X	X	X	X	X	X	X
SC12NR2	-	-	-	-	X	X	-	X	X	X
SC12NR4	-	X	-	X	X	X	-	X	X	X
SC12NR5	-	-	-	-	X	X	-	-	X	X
SC12NR8	X	X	-	X	X	X	X	X	X	-

¹We did not differentiate between the boreal chorus frog and the western chorus frog.

Table 21. Amphibian species observed at each site within Voyageurs National Park during nighttime surveys from 2002-2005.

Site	boreal chorus frog	Cope's gray treefrog	eastern American toad	eastern gray treefrog	green frog	mink frog	northern leopard frog	northern spring peeper	wood frog
V2NA1	-	-	X	X	X	X	X	X	X
V2NA2	-	-	X	X	X	X	X	X	X
V2NA3	-	-	X	X	X	X	X	X	X
V2NA4	-	-	X	X	X	X	X	X	X
V2NA5	-	-	X	X	X	X	X	X	X
V2NA6	-	-	X	X	X	X	X	X	X
V2NA7	-	-	X	X	X	X	X	X	X
V2NA8	-	-	X	X	X	X	X	X	X
V3NA1	-	-	-	-	-	-	-	X	-
V3NA2	-	-	-	-	-	-	-	X	-
V3NA3	-	-	-	-	-	-	-	X	-
V3NA4	-	-	-	-	-	-	-	X	-
V3NB1	-	-	-	X	-	-	-	-	-
V3NB2	-	-	-	X	-	-	-	-	-
V3NB3	-	-	-	X	X	-	-	-	-
V3NB4	-	-	-	X	X	-	-	-	-
V3NB5	-	-	-	X	X	-	-	-	-
V3NB6	-	-	-	X	X	-	-	-	-
V3NB7	-	-	-	X	-	-	-	-	-
V3NB8	-	-	-	X	-	-	-	-	-
V8NA1	-	-	X	X	-	-	-	X	X
V8NA2	-	-	X	X	-	-	-	X	X
V8NA3	-	-	X	X	X	-	-	X	X
V8NA4	-	-	X	X	-	-	X	X	X
V8NA5	-	-	X	X	-	-	X	X	X
V8NA6	-	-	X	X	-	X	X	X	X

Table 21. Amphibian species observed at each site within Voyageurs National Park during nighttime surveys from 2002-2005 (continued).

Site	boreal chorus frog	Cope's gray treefrog	eastern American toad	eastern gray treefrog	green frog	mink frog	northern leopard frog	northern spring peeper	wood frog
V8NA7	-	-	X	X	-	X	X	X	X
V8NA8	-	-	X	X	-	X	X	X	X
V9NA1	X	-	-	X	-	-	X	X	X
V9NA2	X	-	-	X	X	-	X	X	X
V9NA3	X	-	-	X	X	-	X	X	X
V9NA4	X	-	-	X	X	-	-	X	X
V9NA5	X	-	-	X	-	-	X	X	X
V9NA6	X	-	-	X	-	-	X	X	X
V9NA7	X	-	-	X	-	-	X	X	X
V9NA8	X	-	-	X	-	X	X	X	X
V11NA1	-	-	-	X	X	-	X	X	X
V11NA2	-	-	-	X	X	-	X	X	X
V11NA3	-	-	X	X	X	X	X	X	X
V11NA4	-	-	X	X	X	-	X	X	X
V11NA5	-	-	-	X	X	X	X	X	X
V11NA6	-	-	-	X	X	X	X	X	X
V11NA7	-	-	X	X	X	-	X	X	X
V11NA8	-	-	X	X	X	X	X	X	X

Table 22. Occupancy analysis results by species from all ARMI management units including the Neal Smith National Wildlife Refuge from 2004-2005 and the Upper Mississippi National Fish and Wildlife Refuge, the St. Croix National Scenic Riverway and Voyageurs National Park from 2002-2005. Covariates used in models included date (DATE), time (TIME), observer (OBS1), management unit (MAN), surface area of the site (AREA), and wetland type (HABITAT).

Model by species	sites	N ¹	ΔAIC	AIC	ψ ²	ψ(SE)	γ ³	γ (SE)	ε ⁴	ε (SE)	p ⁵ RANGE	p (SE) RANGE
chorus frog ⁷	197	61										
(psi,gamma(),eps(),p(OBS MAN HABITAT)) [21] ⁶			0	1379.27	0.29	0.78	0.10	0.26	0.09	0.13	0.0 - 0.85	0.0 - 3.58
(psi,gamma(),eps(),p(OBS MAN AREA HABITAT))[22]			0.79	1380.06	0.29	0.79	0.10	0.25	0.09	0.12	0.0 - 0.85	0.0 - 98.98
(psi,gamma(),eps(),p(TIME OBS MAN HABITAT))[22]			1.81	1381.08	0.29	0.07	0.10	0.04	0.09	0.07	0.0 - 0.85	0.00- 0.24
(psi,gamma(),eps(),p(DATE OBS MAN HABITAT))[22]			1.99	1381.26	0.29	0.08	0.10	0.04	0.09	0.07	0.0 - 0.85	0.00 - 2.74
(psi,gamma(),eps(),p(TIME OBS MAN AREA HABITAT)) [23]			2.62	1381.89	0.29	0.8	0.10	0.24	0.09	0.13	0.0 - 0.85	0 - 102.65
(psi,gamma(),eps(),p()) [4]			120.55	1499.82	0.13	0.03	0.09	0.02	0.23	0.06	0.24	0.01
eastern American toad	197	56										
(psi,gamma(),eps(),p(DATE MAN)) [8]			0	1426.16	0.47	0.9	0.18	0.77	0.7	0.73	0.0 - 0.34	0.0 - 1.37
(psi,gamma(),eps(),p(MAN)) [7]			0.08	1426.24	0.41	0.07	0.18	0.03	0.69	0.07	0.07 - 0.34	0.02 - 0.06
(psi,gamma(),eps(),p(DATE MAN AREA)) [9]			0.76	1426.92	0.47	0.9	0.18	0.77	0.7	0.73	0.0 - 0.35	0.0 - 217.91
(psi,gamma(),eps(),p(MAN AREA)) [8]			1.05	1427.21	0.41	0.07	0.18	0.03	0.69	0.07	0.05 - 0.34	0.02 - 0.06
(psi,gamma(),eps(),p(DATE OBS MAN)) [9]			1.86	1428.02	0.47	0.9	0.18	0.77	0.7	0.73	0.0 - 0.35	0.0 - 2.37
(psi,gamma(),eps(),p()) [4]			22.71	1448.87	0.33	0.05	0.16	0.02	0.69	0.07	0.17	0.01

¹Number of sampling occasions.

²Occupancy estimate.

³Colonization estimate.

⁴Extinction estimate.

⁵Detection probability.

⁶Number of parameters within model.

⁷We did not differentiate between the boreal chorus frog and the western chorus frog.

Table 22. Occupancy analysis results by species from all ARMI management units including the Neal Smith National Wildlife Refuge from 2004-2005 and the Upper Mississippi National Fish and Wildlife Refuge, the St. Croix National Scenic Riverway and Voyageurs National Park from 2002-2005. Covariates used in models included date (DATE), time (TIME), observer (OBS1), management unit (MAN), surface area of the site (AREA), and wetland type (HABITAT) (continued).

Model by species	sites	N ¹	ΔAIC	AIC	ψ ²	ψ(SE)	γ ³	γ (SE)	ε ⁴	ε (SE)	p ⁵ RANGE	p (SE) RANGE
eastern gray treefrog	196	54										
(psi,gamma(),eps(),p(DATE HABITAT)) [17] ⁶			0	1614.6	0.6	0.79	0.21	0.63	0.48	0.99	0.0 - 0.61	0.0 - 1.60
(psi,gamma(),eps(),p(AREA HABITAT)) [17]			0.11	1614.71	0.6	0.78	0.22	0.63	0.48	0.99	0.0 - 0.50	0.0 - 197.29
(psi,gamma(),eps(),p(DATE AREA HABITAT)) [18]			0.47	1615.07	0.6	0.08	0.22	0.05	0.48	0.08	0.0 - 0.57	0.0 - 0.17
(psi,gamma(),eps(),p(HABITAT)) [16]			0.72	1615.32	0.6	0.79	0.21	0.63	0.48	0.99	0.0 - 0.5	0.0 - 1.11
(psi,gamma(),eps(),p(MAN HABITAT)) [20]			0.74	1615.34	0.62	0.74	0.22	0.64	0.48	1	0.0 - 0.38	0.0 - 1.99
(psi,gamma(),eps(),p()) [4]			55.52	1670.12	0.36	0.05	0.12	0.02	0.49	0.07	0.02	0.01
green frog	111	62										
(psi,gamma(),eps(),p(DATE OBS MAN HABITAT) [17]			0	3881.47	0.79	0.05	0.44	0.07	0.21	0.04	0.18 - 1.0	0.0 - 0.13
(psi,gamma(),eps(),p(DATE TIME OBS MAN HABITAT)) [18]			1.49	3882.96	0.79	0.05	0.44	0.07	0.21	0.04	0.18 - 1.0	0.0 - 0.13
(psi,gamma(),eps(),p(DATE MAN HABITAT)) [16]			1.73	3883.2	0.78	0.05	0.44	0.07	0.22	0.04	0.18 - 1.0	0.0 - 0.13
(psi,gamma(),eps(),p(DATE OBS MAN AREA HABITAT)) [18]			1.92	3883.39	0.79	0.05	0.44	0.07	0.21	0.04	0.18 - 1.0	0.0 - 0.13
(psi,gamma(),eps(),p(DATE TIME MAN HABITAT)) [17]			3.32	3884.79	0.78	0.05	0.44	0.07	0.22	0.04	0.18 - 1.0	0.0 - 0.13
(psi,gamma(),eps(),p()) [4]			60.43	3941.9	0.81	0.05	0.04	0.07	0.23	0.03	0.38	0.01

¹Number of sampling occasions.

²Occupancy estimate.

³Colonization estimate.

⁴Extinction estimate.

⁵Detection probability.

⁶Number of parameters within model.

Table 22. Occupancy analysis results by species from all ARMI management units including the Neal Smith National Wildlife Refuge from 2004-2005 and the Upper Mississippi National Fish and Wildlife Refuge, the St. Croix National Scenic Riverway and Voyageurs National Park from 2002-2005. Covariates used in models included date (DATE), time (TIME), observer (OBS1), management unit (MAN), surface area of the site (AREA), and wetland type (HABITAT) (continued).

Model by species	sites	N ¹	ΔAIC	AIC	ψ ²	ψ(SE)	γ ³	γ (SE)	ε ⁴	ε (SE)	p ⁵ RANGE	p (SE) RANGE
mink frog	59	56										
(psi,gamma(),eps(),p(DATE TIME OBS AREA HABITAT)) [16] ⁶			0	1014.57	0.48	0.09	0.06	0.04	0.07	0.05	0.0 - 0.67	0.00 - 0.14
(psi,gamma(),eps(),p(TIME OBS MAN AREA HABITAT)) [17]			1.59	1016.16	0.47	0.09	0.06	0.04	0.07	0.05	0.0 - 0.82	0.00 - 0.19
(psi,gamma(),eps(),p(DATE TIME OBS MAN AREA HABITAT)) [18]			2.40	1016.97	0.46	0.76	0.07	0.1	0.07	0.09	0.0 - 1.00	0.0 - 566.44
(psi,gamma(),eps(),p(DATE TIME AREA HABITAT)) [15]			2.71	1017.28	0.47	0.77	0.05	0.07	0.08	0.1	0.0 - 0.64	0.0 - 560.61
(psi,gamma(),eps(),p(DATE TIME MAN AREA HABITAT)) [17]			3.29	1017.86	0.45	0.77	0.07	0.11	0.07	0.09	0.0 - 1.0	0.0 - 557.59
(psi,gamma(),eps(),p()) [4]			42.26	1056.83	0.35	0.07	0.06	0.03	0.13	0.05	0.29	0.02
northern leopard frog	128	60										
(psi,gamma(),eps(),p(DATE OBS MAN AREA HABITAT)) [22]			0	3121.5	0.7	0.06	0.29	0.06	0.22	0.04	0.00 - 0.76	0.00 - 0.17
(psi,gamma(),eps(),p(OBS MAN AREA HABITAT)) [21]			0.20	3121.7	0.68	0.06	0.3	0.06	0.22	0.04	0.11 - 0.77	0.02 - 0.17
(psi,gamma(),eps(),p(DATE TIME OBS MAN AREA HABITAT)) [23]			1.72	3123.22	0.71	0.06	0.29	0.06	0.22	0.04	0.00 - 0.76	0.00 - 0.18
(psi,gamma(),eps(),p(TIME OBS MAN AREA HABITAT)) [22]			1.88	3123.38	0.68	0.06	0.3	0.06	0.22	0.04	0.11 - 0.77	0.02 - 0.18
(psi,gamma(),eps(),p(MAN AREA HABITAT)) [20]			4.64	3126.14	0.67	0.06	0.31	0.06	0.22	0.04	0.13 - 0.77	0.02 - 0.17
(psi,gamma(),eps(),p()) [4]			93.78	3215.28	0.59	0.06	0.34	0.05	0.25	0.04	0.34	0.01

¹Number of sampling occasions.

²Occupancy estimate.

³Colonization estimate.

⁴Extinction estimate.

⁵Detection probability.

⁶Number of parameters within model.

Table 22. Occupancy analysis results by species from all ARMI management units including the Neal Smith National Wildlife Refuge from 2004-2005 and the Upper Mississippi National Fish and Wildlife Refuge, the St. Croix National Scenic Riverway and Voyageurs National Park from 2002-2005. Covariates used in models included date (DATE), time (TIME), observer (OBS1), management unit (MAN), surface area of the site (AREA), and wetland type (HABITAT) (continued).

Model by species	sites	N ¹	Δ AIC	AIC	ψ^2	ψ (SE)	γ^3	γ (SE)	ϵ^4	ϵ (SE)	p ⁵ RANGE	p (SE) RANGE
northern spring peeper	180	62										
(psi,gamma(),eps(),p(DATE TIME OBS MAN AREA)) [10] ⁶			0	36677.37	0.55	0.89	0.12	0.32	0.47	0.94	0.0 - 0.42	0.0 - 157.80
(psi,gamma(),eps(),p(DATE TIME MAN AREA)) [9]			0.45	36677.82	0.54	0.90	0.11	0.3	0.46	0.93	0.0 - 0.39	0.0 - 149.26
(psi,gamma(),eps(),p(DATE TIME OBS MAN)) [9]			2.36	36679.73	0.54	0.90	0.12	0.35	0.48	0.95	0.0 - 0.40	0.0 - 4.71
(psi,gamma(),eps(),p(DATE OBS MAN AREA)) [9]			2.60	36679.97	0.56	0.86	0.12	0.34	0.48	0.95	0.0 - 0.33	0.0 - 166.17
(psi,gamma(),eps(),p(DATE TIME MAN)) [8]			2.91	36680.28	0.54	0.91	0.12	0.32	0.47	0.94	0.0 - 0.37	0.0 - 3.24
(psi,gamma(),eps(),p()) [4]			48.40	36725.77	0.36	0.05	0.08	0.02	0.45	0.07	0.2	0.01
wood frog	134	54										
(psi,gamma(),eps(),p(DATE TIME MAN HABITAT)) [18]			0	2677.22	0.61	0.06	0.51	0.07	0.2	0.04	0.0 - 0.70	0.0 - 0.08
(psi,gamma(),eps(),p(DATE TIME OBS MAN HABITAT)) [19]			0.87	2678.09	0.61	0.06	0.51	0.07	0.20	0.04	0.0 - 0.71	0.0 - 0.08
(psi,gamma(),eps(),p(TIME MAN HABITAT)) [17]			1.39	2678.61	0.58	0.06	0.51	0.07	0.19	0.04	0.0 - 0.78	0.0 - 0.10
(psi,gamma(),eps(),p(DATE TIME MAN AREA HABITAT)) [19]			1.93	2679.15	0.61	0.06	0.51	0.07	0.20	0.04	0.0 - 0.70	0.0 - 0.09
(psi,gamma(),eps(),p(DATE MAN HABITAT)) [17]			2.44	2679.66	0.61	0.06	0.51	0.07	0.20	0.04	0.0 - 0.69	0.0 - 0.07
(psi,gamma(),eps(),p()) [4]			134.83	2812.05	0.43	0.05	0.31	0.04	0.20	0.04	0.43	0.01

¹Number of sampling occasions.

²Occupancy estimate.

³Colonization estimate.

⁴Extinction estimate.

⁵Detection probability.

⁶Number of parameters within model.

Table 23. Number of metamorphs per species caught during metamorph abnormality surveys for the Neal Smith National Wildlife Refuge (NS) from 2004-2005 and the Upper Mississippi National Wildlife and Fish Refuge (UMR), the St. Croix National Scenic Riverway (SACN), and Voyageurs National Park (VOYA) from 2003-2005. We did not include 2002 data here because we used different protocols that year and could not differentiate among species. Note: We conducted surveys when we estimated species were metamorphosing. Numbers caught reflect timing of surveys with actual timing of metamorphosis and environmental conditions, such as wetland drying, rather than the actual number of metamorphs across species.

Management Unit	bullfrog	eastern American toad	eastern gray treefrog	green frog	mink frog	northern leopard frog	northern spring peeper	western chorus frog	wood frog
NS 2004	2	-	-	-	-	16	-	-	-
NS 2005	-	-	-	-	-	23	-	-	-
UMR 2003	6	0	0	27	0	637	0	0	1
UMR 2004	-	-	-	27	-	340	-	-	-
UMR 2005	33	-	-	65	-	135	-	-	-
SACN 2003	0	1	1	19	3	559	2	0	8
SACN 2004	-	58	4	148	8	169	43	4	100
SACN 2005	-	6	4	81	21	68	-	-	123
VOYA 2003	0	3	1	11	9	626	4	1	12
VOYA 2004	-	9	2	53	122	239	17	-	300
VOYA 2005	-	23	3	102	65	14	14	-	62

Table 24. General health screening and abnormality specimens sent to USGS's National Wildlife Health Center from the Upper Mississippi National Wildlife and Fish Refuge from 2002-2005.

Site	Species	Life Stage	Capt. Date	Weight (g)	Primary diagnosis	Minor diagnosis
P10DA1	<i>Rana catesbeiana</i>	Larva	10/1/2002	2.650	Normal	Malformed tooththrows
P10DA1	<i>Rana catesbeiana</i>	Larva	10/1/2002	2.880	Normal	Malformed tooththrows
P10DA1	<i>Rana catesbeiana</i>	Larva	10/1/2002	2.680	Normal	-
P10DA1	<i>Rana catesbeiana</i>	Larva	10/1/2002	2.870	Normal	-
P10DA1	<i>Rana catesbeiana</i>	Larva	10/1/2002	2.610	Normal	-
P10DA1	<i>Rana catesbeiana</i>	Larva	10/1/2002	1.760	Normal	-
P10DA1	<i>Rana catesbeiana</i>	Meta	10/1/2002	7.010	<i>Ribeiroia</i> -like metacercaria	-
P10DA1	<i>Rana catesbeiana</i>	Meta	10/1/2002	4.630	Normal	Renal metacercaria
P10DA1	<i>Rana catesbeiana</i>	Meta	10/1/2002	4.040	Normal	Renal metacercaria
P10DA1	<i>Rana catesbeiana</i>	Meta	10/1/2002	6.790	Brachyphalangy of 1 digit	Renal metacercaria
P10DA1	<i>Rana catesbeiana</i>	Meta	10/1/2002	4.710	Normal	Renal metacercaria
P10DA1	<i>Rana catesbeiana</i>	Adult	10/1/2002	32.260	Normal	-
P10DA1	<i>Rana catesbeiana</i>	Adult	10/1/2002	74.750	Normal	-
P10DA1	<i>Rana catesbeiana</i>	Adult	10/1/2002	52.620	Normal	Renal metacercaria
P10DA1	<i>Rana catesbeiana</i>	Larva	8/14/2003	1.690	Open	-
P10DA1	<i>Rana catesbeiana</i>	Larva	8/14/2003	1.540	Nephritis	-
P10DA1	<i>Rana catesbeiana</i>	Larva	8/14/2003	2.330	Open	TR deformities
P10DA1	<i>Rana catesbeiana</i>	Larva	8/14/2003	1.750	Open	Poss renal metacercaria
P10DA1	<i>Rana catesbeiana</i>	Larva	8/14/2003	2.640	Deformed tooththrows	Amputated tail tip
P10DA1	<i>Rana catesbeiana</i>	Larva	8/14/2003	1.790	Open	Amputated tail
P10DA1	<i>Rana catesbeiana</i>	Larva	8/14/2003	3.330	Open	-
P10DA1	<i>Rana clamitans</i>	Larva	10/1/2002	3.240	Normal	Renal metacercaria
P10DA1	<i>Rana clamitans</i>	Larva	10/1/2002	2.590	Depigmented tooththrows	Renal metacercaria
P10DA1	<i>Rana clamitans</i>	Larva	10/1/2002	3.470	Normal	Renal metacercaria
P10DA1	<i>Rana clamitans</i>	Larva	10/1/2002	3.290	Depigmented tooththrows	Renal metacercaria
P10DA1	<i>Rana clamitans</i>	Larva	10/1/2002	3.190	Normal	Renal metacercaria
P10DA1	<i>Rana clamitans</i>	Larva	10/1/2002	2.340	Susp oral papillomas	Renal metacercaria
P10DA1	<i>Rana pipiens</i>	Adult	10/1/2002	26.930	<i>Ribeiroia</i> -like metacercaria	-
P10DA1	<i>Rana pipiens</i>	Adult	10/1/2002	23.430	<i>Rhabdias</i> lungworms	Renal metacercaria
P10DA1	<i>Rana pipiens</i>	Adult	10/1/2002	29.040	<i>Rhabdias</i> lungworms	-

Table 24. General health screening and abnormality specimens sent to USGS's National Wildlife Health Center from the Upper Mississippi National Wildlife and Fish Refuge from 2002-2005 (continued).

Site	Species	Life Stage	Capt. Date	Weight (g)	Primary diagnosis	Minor diagnosis
P10DA2	<i>Rana clamitans</i>	Meta	10/1/2002	7.420	Normal	Renal metacercaria
P10DA2	<i>Rana clamitans</i>	Meta	10/1/2002	5.880	Gangrene of toe tips	Renal metacercaria
P10DA2	<i>Rana clamitans</i>	Meta	10/1/2002	6.950	Normal	Renal metacercaria
P10DA2	<i>Rana clamitans</i>	Meta	10/1/2002	3.630	Normal	Renal metacercaria
P10DA2	<i>Rana clamitans</i>	Meta	10/1/2002	5.210	<i>Ribeiroia</i> -like metacercaria	Renal metacercaria
P10DA4	<i>Rana clamitans</i>	Meta	8/14/2003	1.930	Poss <i>Ribeiroia</i>	Renal metacercaria
P10DA4	<i>Rana clamitans</i>	Meta	8/14/2003	6.300	Muscle metacercaria	Renal metacercaria
P10DA4	<i>Rana clamitans</i>	Meta	8/14/2003	16.810	Susp <i>Bufolucilia</i> sp. (Myiasis)	-
P10DA4	<i>Rana clamitans</i>	Adult	8/14/2003	15.200	Open	Renal metacercaria
P10DA5	<i>Rana clamitans</i>	Adult	10/1/2002	35.130	<i>Ribeiroia</i> -like metacercaria	Renal metacercaria
P10DA5	<i>Rana clamitans</i>	Adult	10/1/2002	28.910	<i>Ribeiroia</i> -like metacercaria	Renal metacercaria
P10DB4	<i>Rana catesbeiana</i>	Meta	8/14/2003	4.650	Hepatomegaly	SQ & Muscle metacercaria
P10DB4	<i>Rana catesbeiana</i>	Meta	8/14/2003	15.550	Open	Renal metacercaria
P10DB4	<i>Rana catesbeiana</i>	Meta	8/14/2003	10.660	Open	-
P10DB4	<i>Rana catesbeiana</i>	Meta	8/14/2003	11.860	Open	-
P10DB4	<i>Rana clamitans</i>	Adult	8/14/2003	16.800	Open	-
P4DA2	<i>Rana pipiens</i>	Meta	8/16/2003	1.760	Ectromelia of LHL	Severe muscle metacercaria
P4DA2	<i>Rana pipiens</i>	Adult	8/16/2003	7.810	Open	Renal metacercaria
P4DA2	<i>Rana pipiens</i>	Adult	8/16/2003	9.950	Muscle metacercaria	Rhabdias lungworms
P4DA2	<i>Rana pipiens</i>	Adult	8/16/2003	9.060	Heavy muscle metacercaria	Renal metacercaria
P4DA2	<i>Rana pipiens</i>	Adult	8/16/2003	10.020	Muscle metacercaria	Renal metacercaria
P4DA2	<i>Rana pipiens</i>	Adult	8/16/2003	6.950	Muscle metacercaria	Renal metacercaria
P4DD1	<i>Rana clamitans</i>	Meta	8/16/2003	5.950	Ectromelia of R foot	Renal metacercaria

Table 25. General health screening and abnormality specimens sent to USGS's National Wildlife Health Center from the St. Croix National Scenic Riverway from 2002-2005.

Site	Species	Life Stage	Capt. Date	Weight (g)	Primary diagnosis	Minor diagnosis
SC10DA3	<i>Ambystoma laterale</i>	Egg	4/17/2004	-	83% moldy eggs	95% dead eggs
SC12DA1	<i>Rana clamitans</i>	Larva	8/3/2002	11.25	Normal	Hydrocoelom
SC12DA1	<i>Rana clamitans</i>	Adult	8/4/2002	39.35	<i>Ribeiroia</i> -like metacercaria	Lung flukes
SC12DA1	<i>Rana clamitans</i>	Adult	8/4/2002	42.92	Renal metacercaria	Lung flukes
SC12DA1	<i>Rana clamitans</i>	Meta	8/4/2002	6.72	<i>Ribeiroia</i> -like metacercaria	Renal metacercaria
SC12DA1	<i>Rana clamitans</i>	Meta	8/4/2002	7.59	<i>Ribeiroia</i> -like metacercaria	Renal metacercaria
SC12DA1	<i>Rana clamitans</i>	Meta	8/4/2002	7.26	<i>Ribeiroia</i> -like metacercaria	Renal metacercaria
SC12DA1	<i>Rana clamitans</i>	Meta	8/4/2002	4.75	<i>Ribeiroia</i> -like metacercaria	Renal metacercaria
SC12DA1	<i>Rana clamitans</i>	Meta	8/4/2002	5.19	<i>Ribeiroia</i> -like metacercaria	Renal metacercaria
SC12DA1	<i>Rana clamitans</i>	Meta	8/4/2002	5.37	<i>Ribeiroia</i> -like metacercaria	Renal metacercaria
SC12DA1	<i>Rana clamitans</i>	Meta	8/4/2002	6.44	Polyphalangy	<i>Ribeiroia</i> -like metacercaria
SC12DA1	<i>Rana pipiens</i>	Larva	8/2/2002	10.62	Malformed toothrows	Hydrocoelom
SC12DA1	<i>Rana pipiens</i>	Meta	8/4/2002	6.65	Polymelia (2 extra legs)	<i>Ribeiroia</i> -like metacercaria
SC12DA1	<i>Rana pipiens</i>	Meta	8/4/2002	4.48	Polydactyly (1 extra toe)	<i>Ribeiroia</i> -like metacercaria
SC12DA1	<i>Rana pipiens</i>	Meta	8/4/2002	3.63	Polydactyly	<i>Ribeiroia</i> -like metacercaria
SC12DA1	<i>Rana pipiens</i>	Meta	8/4/2002	4.21	Polymelia	<i>Ribeiroia</i> -like metacercaria
SC12DA1	<i>Rana pipiens</i>	Meta	8/4/2002	3.26	Micromelia (bilateral)	<i>Ribeiroia</i> -like metacercaria
SC12DA1	<i>Rana pipiens</i>	Meta	8/4/2002	5.51	Polydactyly (3 extra toes)	Renal metacercaria
SC12DA1	<i>Rana pipiens</i>	Meta	8/4/2002	3.53	Polydactyly (4 extra toes)	<i>Ribeiroia</i> -like metacercaria
SC12DA1	<i>Rana pipiens</i>	Meta	8/4/2002	4.81	Polydactyly (3 extra toes)	<i>Ribeiroia</i> -like metacercaria
SC12DA1	<i>Rana pipiens</i>	Meta	8/4/2002	4.23	Polypodia (1 extra foot)	<i>Ribeiroia</i> -like metacercaria
SC12DA1	<i>Rana pipiens</i>	Meta	8/4/2002	4.78	Polyphalangy	<i>Ribeiroia</i> -like metacercaria
SC12DA1	<i>Rana pipiens</i>	Meta	8/4/2002	5.06	Polydactyly (7 extra toes)	<i>Ribeiroia</i> -like metacercaria
SC12DA1	<i>Rana pipiens</i>	Meta	8/4/2002	4.95	Polypodia (1 extra foot)	<i>Ribeiroia</i> -like metacercaria
SC12DA1	<i>Rana pipiens</i>	Meta	8/4/2002	4.01	Polydactyly (2 extra toes)	<i>Ribeiroia</i> -like metacercaria
SC12DA1	<i>Rana septentrionalis</i>	Adult	8/3/2002	16.25	Brachyphalangy of RHL-IV	Lung flukes
SC12DA1	<i>Rana septentrionalis</i>	Adult	8/3/2002	15.13	<i>Ribeiroia</i> -like metacercaria	Lung flukes
SC12DA1	<i>Rana septentrionalis</i>	Adult	8/3/2002	22.61	Renal metacercaria	Lung flukes

Table 25. General health screening and abnormality specimens sent to USGS's National Wildlife Health Center from the St. Croix National Scenic Riverway from 2002-2005 (continued).

Site	Species	Life Stage	Capt. Date	Weight (g)	Primary diagnosis	Minor diagnosis
SC12DA1	<i>Rana septentrionalis</i>	Adult	8/3/2002	16.51	Renal metacercaria	Cloacal flukes
SC12DA1	<i>Rana septentrionalis</i>	Meta	8/3/2002	4.210	<i>Ribeiroia</i> -like metacercaria	Renal metacercaria
SC12DA1	<i>Rana septentrionalis</i>	Meta	8/3/2002	4.650	<i>Ribeiroia</i> -like metacercaria	Renal metacercaria
SC12DA1	<i>Rana septentrionalis</i>	Meta	8/3/2002	5.460	Polymelia	Renal metacercaria
SC12DA1	<i>Rana septentrionalis</i>	Meta	8/4/2002	4.460	Renal metacercaria	<i>Ribeiroia</i> -like metacercaria
SC12DA1	<i>Rana septentrionalis</i>	Meta	8/4/2002	5.680	Lung flukes	<i>Ribeiroia</i> -like metacercaria
SC12DA1	<i>Rana clamitans</i>	Adult	8/19/2003	10.960	Normal	-
SC12DA1	<i>Rana clamitans</i>	Meta	8/19/2003	9.430	Ichthyophoniasis of rump	Lungworms
SC12DA1	<i>Rana clamitans</i>	Adult	8/19/2003	8.500	-	Renal metacercaria
SC12DA1	<i>Rana clamitans</i>	Adult	8/19/2003	9.000	-	Renal metacercaria
SC12DA1	<i>Rana clamitans</i>	Adult	8/19/2003	13.020	-	Renal metacercaria
SC12DA1	<i>Rana clamitans</i>	Larva	8/19/2003	6.150	Normal	-
SC12DA1	<i>Rana clamitans</i>	Larva	8/19/2003	0.300	Normal	-
SC12DA1	<i>Rana clamitans</i>	Larva	8/19/2003	2.370	Normal	-
SC12DA1	<i>Rana clamitans</i>	Larva	8/19/2003	4.610	Skin petechia	Renal metacercaria
SC12DA1	<i>Rana clamitans</i>	Larva	8/19/2003	4.320	Regenerating tail	-
SC12DA1	<i>Rana sylvatica</i>	Meta	8/22/2003	2.800	Normal	-
SC12DA1	<i>Rana sylvatica</i>	Meta	8/22/2003	2.600	Leg wound	Larval rhabdias
SC12DA1	<i>Rana sylvatica</i>	Meta	8/22/2003	2.510	-	Renal metacercaria
SC12DA1	<i>Rana sylvatica</i>	Meta	8/22/2003	2.570	Normal	-
SC12DA1	<i>Rana sylvatica</i>	Adult	8/22/2003	2.530	-	Renal metacercaria
SC12DA1	<i>Rana sylvatica</i>	Adult	8/22/2003	3.860	-	Renal metacercaria
SC12DA1	<i>Rana sylvatica</i>	Adult	8/22/2003	6.240	-	Renal metacercaria
SC1DA3	<i>Rana pipiens</i>	Meta	8/23/2003	10.300	Myiasis	-
SC1DA3	<i>Rana pipiens</i>	Adult	8/23/2003	19.250	Metacercaria in BC & SQ	Renal metacercaria
SC1DA3	<i>Rana pipiens</i>	Adult	8/23/2003	16.610	Flukes in UB	-
SC1DA3	<i>Rana pipiens</i>	Adult	8/23/2003	7.400	Renal metacercaria	-
SC1DA3	<i>Rana pipiens</i>	Adult	8/23/2003	12.650	Renal metacercaria	-
SC1DA3	<i>Rana pipiens</i>	Adult	8/23/2003	15.880	Renal metacercaria	-
SC7DB2	<i>Rana pipiens</i>	Meta	8/4/2002	8.570	Polydactyly (1 extra toe)	<i>Ribeiroia</i> -like metacercaria

Table 26. General health screening and abnormality specimens sent to USGS's National Wildlife Health Center from Voyageurs National Park from 2002-2005.

Site	Species	Life Stage	Capt. Date	Weight (g)	Primary diagnosis	Minor diagnosis
V3DAI1	<i>Rana pipiens</i>	Meta	8/2/2003	7.900	Renal metacercariae	-
V3DAI1	<i>Rana pipiens</i>	Meta	8/2/2003	8.770	Renal metacercariae	-
V3DAI1	<i>Rana pipiens</i>	Adult	8/2/2003	7.950	Renal metacercariae	-
V3DAI1	<i>Rana pipiens</i>	Adult	8/2/2003	7.310	Renal metacercariae	-
V3DAI1	<i>Rana pipiens</i>	Adult	8/2/2003	6.250	Renal metacercariae	-
V3DC1	<i>Rana septentrionalis</i>	Meta	8/2/2003	5.650	Hip luxation & fractured femur	Ichthyophoniasis
V4DA2	<i>Rana clamitans</i>	Adult	8/9/2002	47.650	Lung & bladder flukes	Renal metacercaria
V4DC1	<i>Rana pipiens</i>	Meta	8/9/2002	4.130	<i>Ribeiroia</i> -like metacercaria	Renal metacercaria
V4DC1	<i>Rana pipiens</i>	Meta	8/9/2002	13.330	Foreign body granulomas in stomach & tongue	Renal metacercaria
V4DC1	<i>Rana septentrionalis</i>	Meta	8/9/2002	8.570	Rhinitis & splenitis (suspect virus infection)	Renal metacercaria
V4DC2	<i>Rana clamitans</i>	Meta	8/9/2002	8.620	Chytridiomycosis (very mild)	Renal myxozoa & metacercaria
V4DC2	<i>Rana clamitans</i>	Adult	8/9/2002	43.470	Lung & bladder flukes	Renal myxozoa & metacercaria
V4DC2	<i>Rana clamitans</i>	Adult	8/9/2002	16.160	Ichthyophoniasis	Renal metacercaria
V4DC2	<i>Rana pipiens</i>	Meta	8/9/2002	8.920	Normal	Autolysis
V4DC2	<i>Rana septentrionalis</i>	Adult	8/8/2002	22.510	Ichthyophoniasis	Heavy renal metacercaria
V4DC2	<i>Rana septentrionalis</i>	Meta	8/9/2002	11.250	Chytridiomycosis (mild)	Rhinitis (suspect virus infection)
V5DA1	<i>Ambystoma laterale</i>	Larva	7/31/2003	0.550	Normal	-
V5DA1	<i>Notophthalmus viridescens</i>	Adult	8/9/2005	0.910	Absence of male secondary sex characteristics	Amputated tail tip
V5DA1	<i>Rana clamitans</i>	Meta	7/31/2003	4.810	Toe gangrene & Ichthyophoniasis	Heavy renal metacercaria
V5DA1	<i>Rana clamitans</i>	Meta	7/31/2003	6.120	Renal metacercariae	-
V5DA1	<i>Rana clamitans</i>	Adult	7/31/2003	5.300	Renal metacercariae	-
V5DA1	<i>Rana clamitans</i>	Meta	7/31/2003	5.330	Heavy renal metacercariae	SQ effusion
V5DA1	<i>Rana clamitans</i>	Meta	7/31/2003	6.190	Ichthyophoniasis & <i>Ribeiroia</i> -like metacercariae	Renal metacercaria
V5DA1	<i>Rana clamitans</i>	Larva	8/9/2005	5.410	Malformed toothrows	Pinworms & <i>Myxidium</i> sp in gall bladder
V5DA1	<i>Rana clamitans</i>	Larva	8/9/2005	0.170	Normal	-
V5DA1	<i>Rana clamitans</i>	Larva	8/9/2005	0.440	Normal	-
V5DA1	<i>Rana clamitans</i>	Larva	8/9/2005	0.460	Normal	-
V5DA1	<i>Rana clamitans</i>	Meta	8/9/2005	7.600	Lung flukes	Renal & coelomic metacercaria

Table 26. General health screening and abnormality specimens sent to USGS's National Wildlife Health Center from Voyageurs National Park from 2002-2005 (continued).

Site	Species	Life Stage	Capt. Date	Weight (g)	Primary diagnosis	Minor diagnosis
V5DA1	<i>Rana clamitans</i>	Meta	8/9/2005	5.700	Suspect dysecdysis	Renal & coelomic metacercaria
V5DA1	<i>Rana clamitans</i>	Meta	8/9/2005	3.460	Splenomegaly	Renal metacercaria
V5DA1	<i>Rana clamitans</i>	Meta	8/9/2005	8.110	Bladder flukes	-
V5DA1	<i>Rana clamitans</i>	Meta	8/9/2005	3.710	Ichthyophoniasis	Renal metacercariae
V5DA1	<i>Rana clamitans</i>	Meta	8/9/2005	4.520	Ichthyophoniasis	Renal metacercariae
V5DA1	<i>Rana clamitans</i>	Meta	8/9/2005	4.080	Bladder flukes	Renal metacercariae
V5DA1	<i>Rana clamitans</i>	Meta	8/9/2005	4.320	Ichthyophoniasis	Renal metacercariae
V5DA1	<i>Rana pipiens</i>	Adult	8/9/2005	26.210	Susp proliferative enteritis	Renal & muscle metacercariae
V5DA1	<i>Rana pipiens</i>	Adult	8/9/2005	31.530	Susp proliferative enteritis	Gut cestodes
V5DA1	<i>Rana pipiens</i>	Meta	8/9/2005	7.370	Hydrocoelom	Splenomegaly
V5DA1	<i>Rana pipiens</i>	Meta	8/9/2005	5.620	Renal metacercariae	-
V5DA1	<i>Rana pipiens</i>	Meta	8/9/2005	5.730	Renal & coelomic metacercariae	-
V5DA1	<i>Rana septentrionalis</i>	Meta	7/31/2003	2.640	Chytridiomycosis	Renal myxozoa & metacercaria
V5DA1	<i>Rana septentrionalis</i>	Meta	7/31/2003	4.630	Ichthyophoniasis	Renal metacercaria
V5DA1	<i>Rana septentrionalis</i>	Meta	7/31/2003	2.830	Chytridiomycosis	Ichthyophoniasis & renal metacercariae
V5DA1	<i>Rana septentrionalis</i>	Meta	7/31/2003	4.610	Renal myxozoa & metacercariae	-
V5DA1	<i>Rana septentrionalis</i>	Meta	8/9/2005	6.800	Ectrodactyly of 1 toe	Renal metacercariae
V5DA1	<i>Rana septentrionalis</i>	Meta	8/9/2005	8.130	Severe unilateral microphthalmia	Ichthyophoniasis
V5DA1	<i>Rana septentrionalis</i>	Juv	8/9/2005	17.710	Hyperemia & dysecdysis	Renal metacercariae
V5DA1	<i>Rana septentrionalis</i>	Juv	8/9/2005	8.840	Normal	-
V5DA1	<i>Rana septentrionalis</i>	Juv	8/9/2005	11.330	Gut cestodes	-
V5DA1	<i>Rana septentrionalis</i>	Juv	8/9/2005	15.050	Lung & bladder flukes	Cestodes & renal metacercariae
V5DA1	<i>Rana septentrionalis</i>	Juv	8/9/2005	5.550	Gut cestodes & renal metacercariae	-
V5DA1	<i>Rana septentrionalis</i>	Juv	8/9/2005	4.150	Gut cestodes & renal metacercariae	-
V5DA2	<i>Rana septentrionalis</i>	Meta	7/31/2003	3.590	Ectrodactyly of 3 R toes	Renal metacercaria
V5DA3	<i>Rana clamitans</i>	Meta	8/8/2002	5.250	Renal myxozoa	Renal metacercaria
V5DA3	<i>Rana clamitans</i>	Meta	8/8/2002	4.480	Chytridiomycosis (very mild)	Skin & renal metacercaria
V5DA3	<i>Rana clamitans</i>	Meta	8/9/2002	8.350	Rhinitis & splenitis (suspect virus infection)	Renal metacercaria

Table 26. General health screening and abnormality specimens sent to USGS's National Wildlife Health Center from Voyageurs National Park from 2002-2005 (continued).

Site	Species	Life Stage	Capt. Date	Weight (g)	Primary diagnosis	Minor diagnosis
V5DA3	<i>Rana septentrionalis</i>	Meta	8/8/2002	26.700	Splenitis & renal necrosis (virus infection?)	Lung flukes & renal metacercaria
V5DA3	<i>Rana septentrionalis</i>	Meta	8/8/2002	12.060	Chytridiomycosis (mild)	Lung flukes & gut cestodes
V5DA3	<i>Rana septentrionalis</i>	Meta	8/8/2002	7.270	Chytridiomycosis (very mild)	Skin & renal metacercaria
V5DA3	<i>Rana septentrionalis</i>	Meta	8/8/2002	3.910	<i>Ribeiroia</i> -like metacercaria	Heavy renal metacercariae & myxozoa
V5DA3	<i>Rana septentrionalis</i>	Meta	8/8/2002	9.210	Ichthyophoniasis	Heavy renal metacercaria
V5DA3	<i>Rana septentrionalis</i>	Meta	8/8/2002	4.720	Ichthyophoniasis	Ectromelia of LHL
V5DA3	<i>Rana septentrionalis</i>	Meta	8/8/2002	4.230	Chytridiomycosis (very mild)	Ichthyophoniasis & heavy renal metacercaria
V7DE1	<i>Rana clamitans</i>	Adult	8/9/2002	43.710	Normal	-
V7DE1	<i>Rana pipiens</i>	Meta	8/9/2002	6.800	Autolysis	Renal metacercaria
V7DE1	<i>Rana pipiens</i>	Meta	8/9/2002	10.220	Lung flukes	Renal metacercaria
V7DE1	<i>Rana pipiens</i>	Adult	8/30/2003	3.880	Puncture wounds with mixed bacteria in liver	Renal metacercaria
V7DE2	<i>Rana sylvatica</i>	Meta	8/6/2005	1.370	RHL Malformation	SQ & renal metacercaria
V7DF1	<i>Rana sylvatica</i>	Meta	8/6/2005	0.650	RHL Ectromelia	Ichthyophoniasis
V7DF1	<i>Rana sylvatica</i>	Meta	8/6/2005	0.550	RHL Ectromelia at mid tibiale-fibulare	Coelomic & renal metacercariae

Table 27. *Batrachochytrium dendrobatidis* detection results for pooled swabs of metamorphs from sites within the Upper Mississippi National Wildlife and Fish Refuge and submitted to Pisces Molecular Lab for PCR tests during 2006 and 2007. One swab represents one individual metamorph.

Site	Date	Sample Form/Condition	Number of swabs	Species	Detection results ¹
P10DA3	6/27/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	-
P10DA3	6/27/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	-
P10DA3	6/27/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	+
P10DA4	6/27/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P10DA4	6/27/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P10DA4	6/27/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P10DB3	7/6/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	+++
P10DB3	7/6/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P10DB3	7/6/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P10DB3	7/6/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P10DB4	7/14/2006	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P10DB4	7/14/2006	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P10DD1	7/14/2006	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P10DD1	7/14/2006	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P10DD1	7/6/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P10DD1	7/6/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P10DD1	7/6/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P13DA1	6/25/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P13DA1	6/25/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P13DA1	6/25/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P13DA4	7/12/2006	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P13DA4	7/12/2006	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P13DB3	7/12/2006	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-

¹Scoring: +++ = very strong positive signal.

++ = strong positive signal.

+ = positive signal.

w+ = weak positive signal.

- = no signal/below limit of detection.

Table 27. *Batrachochytrium dendrobatidis* detection results for pooled swabs of metamorphs from sites within the Upper Mississippi National Wildlife and Fish Refuge and submitted to Pisces Molecular Lab for PCR tests during 2006 and 2007. One swab represents one individual metamorph (continued).

Site	Date	Sample Form/Condition	Number of swabs	Species	Detection results ¹
P13DB3	7/12/2006	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	+
P13DB3	6/24/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P13DB3	6/24/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P13DB3	6/24/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P14DA1	6/26/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P14DA1	6/26/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P14DA1	6/26/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P14DB2	6/26/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P14DB2	6/26/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P14DB2	6/26/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P14DC1	6/25/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P14DC1	6/25/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P14DC1	6/25/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P4DA1	7/15/2006	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P4DA1	7/15/2006	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P4DA1	7/8/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	-
P4DA1	7/8/2007	Pooled Swabs/EtOH	3	<i>Rana clamitans</i>	-
P4DA1	7/8/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P4DA1	7/8/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P4DA1	7/8/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P4DA2	7/9/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	++
P4DA2	7/9/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	-
P4DA2	7/9/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	++

¹Scoring: +++ = very strong positive signal.

++ = strong positive signal.

+ = positive signal.

w+ = weak positive signal.

- = no signal/below limit of detection.

Table 27. *Batrachochytrium dendrobatidis* detection results for pooled swabs of metamorphs from sites within the Upper Mississippi National Wildlife and Fish Refuge and submitted to Pisces Molecular Lab for PCR tests during 2006 and 2007. One swab represents one individual metamorph (continued).

Site	Date	Sample Form/Condition	Number of swabs	Species	Detection results ¹
P4DC1	7/8/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	-
P4DC1	7/8/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	-
P4DC1	7/8/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	-
P4DC1	7/8/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P4DC1	7/8/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P4DC1	7/8/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P4DD1	7/15/2006	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	++
P4DD1	7/15/2006	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P4DD1	7/8/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	+++
P4DD1	7/8/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	+++
P4DD1	7/8/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	++
P4DD1	7/8/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	+++
P4DD1	7/8/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P4DD1	7/8/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P7DAI1	7/11/2007	Pooled Swabs/EtOH	10	<i>Bufo americanus</i>	-
P7DAI1	7/11/2007	Pooled Swabs/EtOH	10	<i>Bufo americanus</i>	-
P7DAI1	7/11/2007	Pooled Swabs/EtOH	10	<i>Bufo americanus</i>	-
P7DAI1	7/11/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	++
P7DAI1	7/11/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	+
P7DAI1	7/11/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	++
P7DE3	7/10/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	++
P7DE3	7/10/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	-
P7DE3	7/10/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	+

¹Scoring: +++ = very strong positive signal.

++ = strong positive signal.

+ = positive signal.

w+ = weak positive signal.

- = no signal/below limit of detection.

Table 27. *Batrachochytrium dendrobatidis* detection results for pooled swabs of metamorphs from sites within the Upper Mississippi National Wildlife and Fish Refuge and submitted to Pisces Molecular Lab for PCR tests during 2006 and 2007. One swab represents one individual metamorph (continued).

Site	Date	Sample Form/Condition	Number of swabs	Species	Detection results ¹
P7DE3	7/10/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P7DE3	7/10/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P7DE3	7/10/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P7DH1	7/7/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	-
P7DH1	7/7/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	++
P7DH1	7/7/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	+++
P7DH1	7/7/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P7DH1	7/7/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P7DH1	7/7/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P8DB1	7/13/2006	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P8DB1	7/13/2006	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P8DB1	7/7/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	++
P8DB1	7/7/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	+++
P8DB1	7/7/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	++
P8DB1	7/7/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P8DB1	7/7/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P8DB1	7/7/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P8DG1	7/15/2006	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P8DG1	7/15/2006	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P8DG1	7/11/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	++
P8DG1	7/11/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
P8DG1	7/11/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-

¹Scoring: +++ = very strong positive signal.

++ = strong positive signal.

+ = positive signal.

w+ = weak positive signal.

- = no signal/below limit of detection.

Table 28. *Batrachochytrium dendrobatidis* detection results for pooled swabs of metamorphs from sites within the St. Croix National Scenic Riverway and submitted to Pisces Molecular Lab for PCR tests during 2006 and 2007. One swab represents one individual metamorph.

Site	Date	Sample Form/Condition	Number of swabs	Species	Detection results ¹
SC10DC1	7/20/2006	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	++
SC10DC1	7/20/2006	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	w+
SC12DB1	7/21/2006	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	+++
SC12DB1	7/21/2006	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	++
SC12DB1	7/21/2006	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
SC12DB1	7/21/2006	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
SC12DB1	6/22/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	++
SC12DB1	6/22/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	-
SC12DB1	6/22/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	++
SC12DB1	7/24/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
SC12DB1	7/24/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
SC12DB1	7/24/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
SC12DC1	7/24/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	++
SC12DC1	7/24/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	++
SC12DC1	7/24/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	+
SC12DE1	7/21/2006	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	-
SC12DE1	7/21/2006	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	+
SC12DE1	7/24/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	-
SC12DE1	7/24/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	+
SC12DE1	7/24/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	-
SC12DE1	7/24/2007	Pooled Swabs/EtOH	10	<i>Rana septentrionalis</i>	+
SC12DE1	7/24/2007	Pooled Swabs/EtOH	5	<i>Rana septentrionalis</i>	-
SC1DA1	7/21/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	-
SC1DA1	7/21/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	-

¹Scoring: +++ = very strong positive signal.

++ = strong positive signal.

+ = positive signal.

w+ = weak positive signal.

- = no signal/below limit of detection.

Table 28. *Batrachochytrium dendrobatidis* detection results for pooled swabs of metamorphs from sites within the St. Croix National Scenic Riverway and submitted to Pisces Molecular Lab for PCR tests during 2006 and 2007. One swab represents one individual metamorph (continued).

Site	Date	Sample Form/Condition	Number of swabs	Species	Detection results ¹
SC1DA1	7/21/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	-
SC1DA1	7/21/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
SC1DA1	7/21/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
SC1DA1	7/21/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
SC1DD3	7/18/2006	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	+++
SC1DD3	7/18/2006	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	++
SC1DE1	7/22/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	-
SC1DE1	7/22/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	-
SC1DE1	7/22/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	-
SC2DB1	7/22/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	-
SC2DB1	7/22/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	-
SC2DB1	7/22/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	-
SC2DD2	7/18/2006	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	++
SC2DD2	7/18/2006	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	+++
SC2DD2	7/22/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	++
SC2DD2	7/22/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	-
SC2DD2	7/22/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	-
SC2DD2	7/22/2007	Pooled Swabs/EtOH	10	<i>Rana sylvatica</i>	-
SC2DD2	7/22/2007	Pooled Swabs/EtOH	10	<i>Rana sylvatica</i>	+
SC2DD2	7/22/2007	Pooled Swabs/EtOH	10	<i>Rana sylvatica</i>	-
SC4DA3	6/20/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	-
SC4DA3	6/20/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	++
SC4DA3	6/20/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	++

¹Scoring: +++ = very strong positive signal.

++ = strong positive signal.

+ = positive signal.

w+ = weak positive signal.

- = no signal/below limit of detection.

Table 28. *Batrachochytrium dendrobatidis* detection results for pooled swabs of metamorphs from sites within the St. Croix National Scenic Riverway and submitted to Pisces Molecular Lab for PCR tests during 2006 and 2007. One swab represents one individual metamorph (continued).

Site	Date	Sample Form/Condition	Number of swabs	Species ¹	Detection results ²
SC4DA3	6/20/2007	Pooled Swabs/EtOH	10	<i>Rana sylvatica</i>	-
SC4DA3	6/20/2007	Pooled Swabs/EtOH	10	<i>Rana sylvatica</i>	-
SC4DA3	6/20/2007	Pooled Swabs/EtOH	10	<i>Rana sylvatica</i>	-
SC4DB1	7/23/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	++
SC4DB1	7/23/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	++
SC4DB1	7/23/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	-
SC4DB2	7/19/2006	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	+
SC4DB2	7/19/2006	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	+
SC4DB9	6/14/2007	Pooled Swabs/EtOH	10	<i>Pseudacris triseriata</i>	-
SC4DB9	6/14/2007	Pooled Swabs/EtOH	10	<i>Pseudacris triseriata</i>	-
SC4DB9	6/14/2007	Pooled Swabs/EtOH	10	<i>Pseudacris triseriata</i>	-
SC4DB9	6/21/2007	Pooled Swabs/EtOH	10	<i>Rana sylvatica</i>	-
SC4DB9	6/21/2007	Pooled Swabs/EtOH	10	<i>Rana sylvatica</i>	-
SC4DB9	6/21/2007	Pooled Swabs/EtOH	10	<i>Rana sylvatica</i>	-
SC4DBI2	6/6/2007	Pooled Swabs/EtOH	10	<i>Pseudacris triseriata</i>	-
SC4DBI2	6/6/2007	Pooled Swabs/EtOH	10	<i>Pseudacris triseriata</i>	-
SC4DBI2	6/12/2007	Pooled Swabs/EtOH	10	<i>Rana sylvatica</i>	-
SC4DBI2	6/12/2007	Pooled Swabs/EtOH	10	<i>Rana sylvatica</i>	-
SC4DBI2	6/12/2007	Pooled Swabs/EtOH	10	<i>Rana sylvatica</i>	-
SC4DC1	7/19/2006	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	+++
SC4DC1	7/19/2006	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	+
SC4DC1	7/23/2007	Pooled Swabs/EtOH	10	<i>Rana sylvatica</i>	-
SC4DC1	7/23/2007	Pooled Swabs/EtOH	10	<i>Rana sylvatica</i>	-

¹We did not differentiate between the boreal chorus frog and the western chorus frog.

²Scoring: +++ = very strong positive signal.

++ = strong positive signal.

+ = positive signal.

w+ = weak positive signal.

- = no signal/below limit of detection.

Table 28. *Batrachochytrium dendrobatidis* detection results for pooled swabs of metamorphs from sites within the St. Croix National Scenic Riverway and submitted to Pisces Molecular Lab for PCR tests during 2006 and 2007. One swab represents one individual metamorph (continued).

Site	Date	Sample Form/Condition	Number of swabs	Species	Detection results ¹
SC4DC1	7/23/2007	Pooled Swabs/EtOH	10	<i>Rana sylvatica</i>	++
SC4DCI2	7/23/2007	Pooled Swabs/EtOH	10	<i>Hyla versicolor</i>	-
SC4DCI2	7/23/2007	Pooled Swabs/EtOH	10	<i>Hyla versicolor</i>	-
SC4DCI2	7/23/2007	Pooled Swabs/EtOH	10	<i>Hyla versicolor</i>	-
SC8DB1	7/20/2006	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	+++
SC8DB1	7/20/2006	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	+++

¹Scoring: +++ = very strong positive signal.

++ = strong positive signal.

+ = positive signal.

w+ = weak positive signal.

- = no signal/below limit of detection.

Table 29. *Batrachochytrium dendrobatidis* detection results for pooled swabs of metamorphs from sites within Voyageurs National Park and submitted to Pisces Molecular Lab for PCR tests during 2006 and 2007. One swab represents one individual metamorph.

Site	Date	Sample Form/Condition	Number of swabs	Species	Detection results ¹
V10DC1	8/21/2007	Pooled Swabs/EtOH	10	<i>Hyla versicolor</i>	-
V10DC1	8/21/2007	Pooled Swabs/EtOH	10	<i>Hyla versicolor</i>	-
V10DC1	8/21/2007	Pooled Swabs/EtOH	10	<i>Hyla versicolor</i>	-
V11DA1	7/30/2006	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	-
V11DA1	7/30/2006	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	+
V11DA1	8/20/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	-
V11DA1	8/20/2007	Pooled Swabs/EtOH	1	<i>Rana clamitans</i>	-
V11DA1	8/20/2007	Pooled Swabs/EtOH	9	<i>Rana pipiens</i>	-
V11DB4	7/30/2006	Pooled Swabs/EtOH	1	<i>Rana clamitans</i>	++
V11DB4	7/30/2006	Pooled Swabs/EtOH	10	<i>Rana septentrionalis</i>	+++
V11DB4	7/30/2006	Pooled Swabs/EtOH	10	<i>Rana septentrionalis</i>	+++
V11DB4	8/21/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	+
V11DB4	8/21/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
V11DB4	8/21/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	+++
V11DB4	8/21/2007	Pooled Swabs/EtOH	10	<i>Rana septentrionalis</i>	+++
V1DB1	8/19/2007	Pooled Swabs/EtOH	10	<i>Hyla versicolor</i>	-
V1DB1	8/19/2007	Pooled Swabs/EtOH	10	<i>Hyla versicolor</i>	-
V1DB1	8/19/2007	Pooled Swabs/EtOH	10	<i>Hyla versicolor</i>	-
V2DF1	7/27/2006	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	+++
V2DF1	7/27/2006	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	+++
V2DF1	7/27/2006	Pooled Swabs/EtOH	10	<i>Rana septentrionalis</i>	+++
V2DF1	7/27/2006	Pooled Swabs/EtOH	10	<i>Rana septentrionalis</i>	+++
V2DF1	8/22/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	++
V2DF1	8/22/2007	Pooled Swabs/EtOH	10	<i>Rana septentrionalis</i>	+++

¹Scoring: +++ = very strong positive signal.

++ = strong positive signal.

+ = positive signal.

w+ = weak positive signal.

- = no signal/below limit of detection.

Table 29. *Batrachochytrium dendrobatidis* detection results for pooled swabs of metamorphs from sites within Voyageurs National Park and submitted to Pisces Molecular Lab for PCR tests during 2006 and 2007. One swab represents one individual metamorph (continued).

Site	Date	Sample Form/Condition	Number of swabs	Species	Detection results ¹
V2DF1	8/22/2007	Pooled Swabs/EtOH	10	<i>Rana septentrionalis</i>	+++
V2DF1	8/22/2007	Pooled Swabs/EtOH	10	<i>Rana septentrionalis</i>	++
V3DAI1	8/6/2007	Pooled Swabs/EtOH	1	<i>Hyla versicolor</i>	-
V3DAI1	8/6/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
V3DAI1	8/6/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
V3DAI1	8/6/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
V3DAI1	8/6/2007	Pooled Swabs/EtOH	10	<i>Rana septentrionalis</i>	-
V3DAI1	8/6/2007	Pooled Swabs/EtOH	10	<i>Rana septentrionalis</i>	-
V3DAI1	8/6/2007	Pooled Swabs/EtOH	10	<i>Rana septentrionalis</i>	-
V3DAI1	8/6/2007	Pooled Swabs/EtOH	10	<i>Rana sylvatica</i>	-
V3DAI1	8/6/2007	Pooled Swabs/EtOH	10	<i>Rana sylvatica</i>	-
V3DAI1	8/6/2007	Pooled Swabs/EtOH	10	<i>Rana sylvatica</i>	++
V3DC1	7/28/2006	Pooled Swabs/EtOH	10	<i>Rana septentrionalis</i>	-
V3DC1	7/28/2006	Pooled Swabs/EtOH	10	<i>Rana septentrionalis</i>	+++
V3DC1	7/28/2006	Pooled Swabs/EtOH	10	9 <i>Rana septentrionalis</i> + 1 <i>Rana clamitans</i>	-
V3DC1	8/6/2007	Pooled Swabs/EtOH	10	<i>Rana septentrionalis</i>	-
V3DC1	8/6/2007	Pooled Swabs/EtOH	10	<i>Rana septentrionalis</i>	-
V3DC1	8/6/2007	Pooled Swabs/EtOH	10	<i>Rana septentrionalis</i>	+
V4DC1	7/28/2006	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	++
V4DC1	7/28/2006	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	-
V4DC1	7/28/2006	Pooled Swabs/EtOH	10	<i>Rana septentrionalis</i>	+++
V4DC1	7/28/2006	Pooled Swabs/EtOH	10	<i>Rana septentrionalis</i>	++
V4DC1	8/19/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	+
V4DC1	8/19/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	++

¹Scoring: +++ = very strong positive signal.

++ = strong positive signal.

+ = positive signal.

w+ = weak positive signal.

- = no signal/below limit of detection.

Table 29. *Batrachochytrium dendrobatidis* detection results for pooled swabs of metamorphs from sites within Voyageurs National Park and submitted to Pisces Molecular Lab for PCR tests during 2006 and 2007. One swab represents one individual metamorph (continued).

Site	Date	Sample Form/Condition	Number of swabs	Species	Detection results ¹
V4DC1	8/19/2007	Pooled Swabs/EtOH	10	<i>Rana clamitans</i>	+
V4DC1	8/19/2007	Pooled Swabs/EtOH	7	<i>Rana pipiens</i>	-
V4DC1	8/19/2007	Pooled Swabs/EtOH	10	<i>Rana septentrionalis</i>	+++
V4DC1	8/19/2007	Pooled Swabs/EtOH	10	<i>Rana septentrionalis</i>	++
V4DC1	8/19/2007	Pooled Swabs/EtOH	10	<i>Rana septentrionalis</i>	++
V4DC2	8/19/2007	Pooled Swabs/EtOH	10	<i>Rana sylvatica</i>	++
V4DC2	8/19/2007	Pooled Swabs/EtOH	10	<i>Rana sylvatica</i>	+
V4DC2	8/19/2007	Pooled Swabs/EtOH	10	<i>Rana sylvatica</i>	+
V5DA2	8/20/2007	Pooled Swabs/EtOH	10	<i>Rana septentrionalis</i>	+++
V5DA2	8/20/2007	Pooled Swabs/EtOH	10	<i>Rana septentrionalis</i>	+
V5DA2	8/20/2007	Pooled Swabs/EtOH	10	<i>Rana septentrionalis</i>	+++
V5DA1	7/30/2006	Pooled Swabs/EtOH	10	<i>Rana septentrionalis</i>	+++
V5DA1	7/30/2006	Pooled Swabs/EtOH	10	<i>Rana septentrionalis</i>	+++
V7DE1	7/29/2006	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
V7DE1	7/29/2006	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
V7DE1	8/7/2007	Pooled Swabs/EtOH	10	<i>Hyla versicolor</i>	-
V7DE1	8/7/2007	Pooled Swabs/EtOH	10	<i>Hyla versicolor</i>	-
V7DE1	8/7/2007	Pooled Swabs/EtOH	10	<i>Hyla versicolor</i>	-
V7DE1	8/7/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
V7DE1	8/7/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
V7DE1	8/7/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
V7DE1	8/7/2007	Pooled Swabs/EtOH	10	<i>Rana sylvatica</i>	++
V7DE1	8/7/2007	Pooled Swabs/EtOH	10	<i>Rana sylvatica</i>	-
V7DE1	8/7/2007	Pooled Swabs/EtOH	10	<i>Rana sylvatica</i>	-

¹Scoring: +++ = very strong positive signal.

++ = strong positive signal.

+ = positive signal.

w+ = weak positive signal.

- = no signal/below limit of detection.

Table 29. *Batrachochytrium dendrobatidis* detection results for pooled swabs of metamorphs from sites within Voyageurs National Park and submitted to Pisces Molecular Lab for PCR tests during 2006 and 2007. One swab represents one individual metamorph (continued).

Site	Date	Sample Form/Condition	Number of swabs	Species	Detection results ¹
V8DC1	8/7/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
V8DC1	8/7/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
V8DC1	8/7/2007	Pooled Swabs/EtOH	10	<i>Rana pipiens</i>	-
V8DC1	8/7/2007	Pooled Swabs/EtOH	10	<i>Rana sylvatica</i>	-
V8DC1	8/7/2007	Pooled Swabs/EtOH	10	<i>Rana sylvatica</i>	-
V8DC1	8/7/2007	Pooled Swabs/EtOH	10	<i>Rana sylvatica</i>	+++
V8DC3	7/29/2006	Pooled Swabs/EtOH	10	<i>Rana septentrionalis</i>	+++
V8DC3	7/29/2006	Pooled Swabs/EtOH	10	<i>Rana septentrionalis</i>	+++
V9DBI1	8/22/2007	Pooled Swabs/EtOH	10	<i>Hyla versicolor</i>	-

¹Scoring: +++ = very strong positive signal.

++ = strong positive signal.

+ = positive signal.

w+ = weak positive signal.

- = no signal/below limit of detection.

Table 30. *Batrachochytrium dendrobatidis* detection results for pooled swabs of metamorphs from sites within Wisconsin Department of Natural Resources Blanchard's cricket frog sites and submitted to Pisces Molecular Lab for PCR tests during 2006. One swab represents one individual metamorph.

Site	DATE	Sample Form/Condition	Number of swabs	Species	Detection results ¹
REDELL GREY GOOSE	8/24/2006	Pooled Swabs/EtOH	10	<i>Acris crepitans blanchardi</i>	-
REDELL GREY GOOSE	8/24/2006	Pooled Swabs/EtOH	10	<i>Acris crepitans blanchardi</i>	-
CALAMINE	8/24/2006	Pooled Swabs/EtOH	10	<i>Acris crepitans blanchardi</i>	-
CALAMINE	8/24/2006	Pooled Swabs/EtOH	10	<i>Acris crepitans blanchardi</i>	-
MCQUIRE	8/24/2006	Pooled Swabs/EtOH	10	<i>Acris crepitans blanchardi</i>	-
MCQUIRE	8/24/2006	Pooled Swabs/EtOH	10	<i>Acris crepitans blanchardi</i>	-

¹Scoring: +++ = very strong positive signal.

++ = strong positive signal.

+ = positive signal.

w+ = weak positive signal.

- = no signal/below limit of detection.

Table 31. Turtle species observed within the St. Croix National Scenic Riverway during daytime surveys, basking turtle surveys, and targeted searches from 2002-2005.

Site	unknown softshelled turtle species	spiny softshelled turtle	Blanding's turtle	common map turtle	map turtle species	false map turtle	common snapping turtle	western painted turtle	wood turtle
BLANDINGS									
041504	-	-	X	-	-	-	-	-	-
SC1DA1	-	-	-	-	-	-	-	-	-
SC1DA2	-	-	-	-	-	-	X	-	-
SC1DA3	-	-	-	-	-	-	-	-	-
SC1DD3	-	X	-	X	-	-	X	-	-
SC1DD5	-	-	-	-	-	-	X	-	-
SC1DD6	-	X	-	X	-	X	-	-	-
SC1DE1	X	-	-	-	X	X	-	-	-
SC1DE3	-	-	-	-	-	X	-	-	-
SC1DET1	-	-	-	-	-	-	X	-	-
SC1DET2	-	-	-	X	-	-	X	-	-
SC2DB1	-	-	-	-	-	-	X	-	-
SC2DD1	-	-	-	-	-	-	X	-	-
SC2DD2	-	-	-	-	-	-	X	X	-
SC2DD3	-	-	-	-	-	-	-	-	-
SC4DA1	-	-	-	-	-	-	-	-	-
SC4DA3	-	-	X	-	-	-	-	-	-
SC4DAI1	-	-	-	-	-	-	-	X	-
SC4DAI2	-	-	-	-	-	-	-	-	-
SC4DB1	-	-	-	-	-	-	-	-	-
SC4DB10	-	-	-	-	-	-	-	-	-
SC4DB11	-	-	-	-	-	-	-	-	-
SC4DB2	-	-	-	X	-	-	-	-	-
SC4DB3	-	-	-	-	-	-	-	-	-
SC4DB4	-	-	-	X	-	-	-	-	-

Table 31. Turtle species observed within the St. Croix National Scenic Riverway during during daytime surveys, basking turtle surveys, and targeted searches from 2002-2005 (continued).

Site	unknown softshelled turtle species	spiny softshelled turtle	Blanding's turtle	common map turtle	map turtle species	false map turtle	common snapping turtle	western painted turtle	wood turtle
SC4DB5	-	-	-	-	-	-	-	-	-
SC4DB6	-	-	-	-	-	-	-	-	-
SC4DB7	-	-	-	-	-	-	-	-	-
SC4DB8	-	-	-	-	-	-	-	-	-
SC4DB9	-	-	-	-	-	-	-	-	-
SC4DBI1	-	-	-	-	-	-	-	-	-
SC4DBI2	-	-	-	-	-	-	-	-	-
SC4DBT1	-	-	-	X	-	-	-	X	-
SC4DC1	X	-	-	-	-	-	-	-	-
SC4DCI1	-	-	-	-	-	-	-	-	-
SC8DBT1	-	-	-	-	-	-	X	-	-
SC8NAI3	-	-	-	-	-	-	-	-	-
SC9DE1	-	-	-	-	-	-	-	-	-
SC9DE2	-	-	-	-	-	-	-	-	-
SC9DEI1	-	-	-	-	-	-	-	X	-
SC9DNI1	-	-	-	-	-	-	-	-	-
SC10DA1	-	-	-	-	-	-	-	-	-
SC10DA2	-	-	-	-	-	-	-	-	-
SC10DAI1	-	-	-	-	-	-	-	-	-
SC10DB1	-	-	-	-	-	-	-	X	-
SC10DC2	-	-	-	-	-	-	-	-	-
SC10DD1	-	-	-	-	-	-	-	-	-
SC10DD2	-	-	-	-	-	-	-	-	-
SC10DD3	-	-	-	-	-	-	-	-	-
SC10DDT1	-	-	-	-	-	-	-	-	X
SC12DA1	-	-	-	-	-	-	-	X	-
SC12DA2	-	-	-	-	-	-	-	-	-

Table 31. Turtle species observed within the St. Croix National Scenic Riverway during during daytime surveys, basking turtle surveys, and targeted searches from 2002-2005 (continued).

Site	unknown softshelled turtle species	spiny softshelled turtle	Blanding's turtle	common map turtle	map turtle species	false map turtle	common snapping turtle	western painted turtle	wood turtle
SC12DA3	-	-	-	-	-	-	-	-	-
SC12DA4	-	-	-	-	-	-	-	-	-
SC12DAI1	-	-	-	-	-	-	-	-	-
SC12DAI2	-	-	-	-	-	-	-	-	-
SC12DB1	-	-	-	-	-	-	-	-	-
SC12DC1	-	-	-	-	-	-	X	-	-
SC12DE1	-	-	-	-	-	-	X	-	-

Table 32. Turtle species observed within Voyageurs National Park during daytime surveys, basking turtle surveys, and targeted searches from 2002-2005.

Site	common snapping turtle	western painted turtle
V1DA1	-	-
V1DB1	X	X
V2DAT1	X	-
V2DCI1	-	-
V2DCI2	-	-
V2DCNB1	-	X
V2DE1	-	-
V2DEI1	-	-
V2DF1	-	X
V2DF2	-	-
V3CBCI2	-	-
V3DA1	-	-
V3DA2	-	-
V3DC1	-	X
V3DCI1	-	X
V3DCI2	-	X
V3DCNB1	X	-
V4DC1	-	X
V4DC2	-	X
V4DC3	-	-
V4DCI1	-	-
V5DA1	-	-
V5DA2	-	X
V5DA3	X	-
V5DA4	-	X
V5DAI2	-	X
V5DAI3	-	-
V5DAI4	-	-
V5DBI5	-	-
V5DI1	-	X
V6DB1	-	X
V6DB2	-	-
V6DBI1	-	-
V6DBI2	-	X
V7DE1	-	X
V7DE2	-	-
V7DF1	-	X
V7DF2	-	-
V8DB1	-	-
V8DB2	-	-
V8DC1	-	-
V8DC2	-	-
V9DB1	-	-

Table 32. Turtle species observed within Voyageurs National Park during daytime surveys, basking turtle surveys, and targeted searches from 2002-2005 (continued).

Site	common snapping turtle	western painted turtle
V9DBI1	-	-
V9DC2	-	-
V10DA2	-	-
V10DA3	-	-
V11DA1	X	X
V11DB1	-	-
V11DB2	-	-
V11DB4	-	-
V11DB5	-	-
V11DB6	-	-
V12DC2	-	-
V12DC3	-	-
V12DC4	-	-
V12DC6	-	-

The Department of the Interior protects and manages the nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its special responsibilities to American Indians, Alaska Natives, and affiliated Island Communities.

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