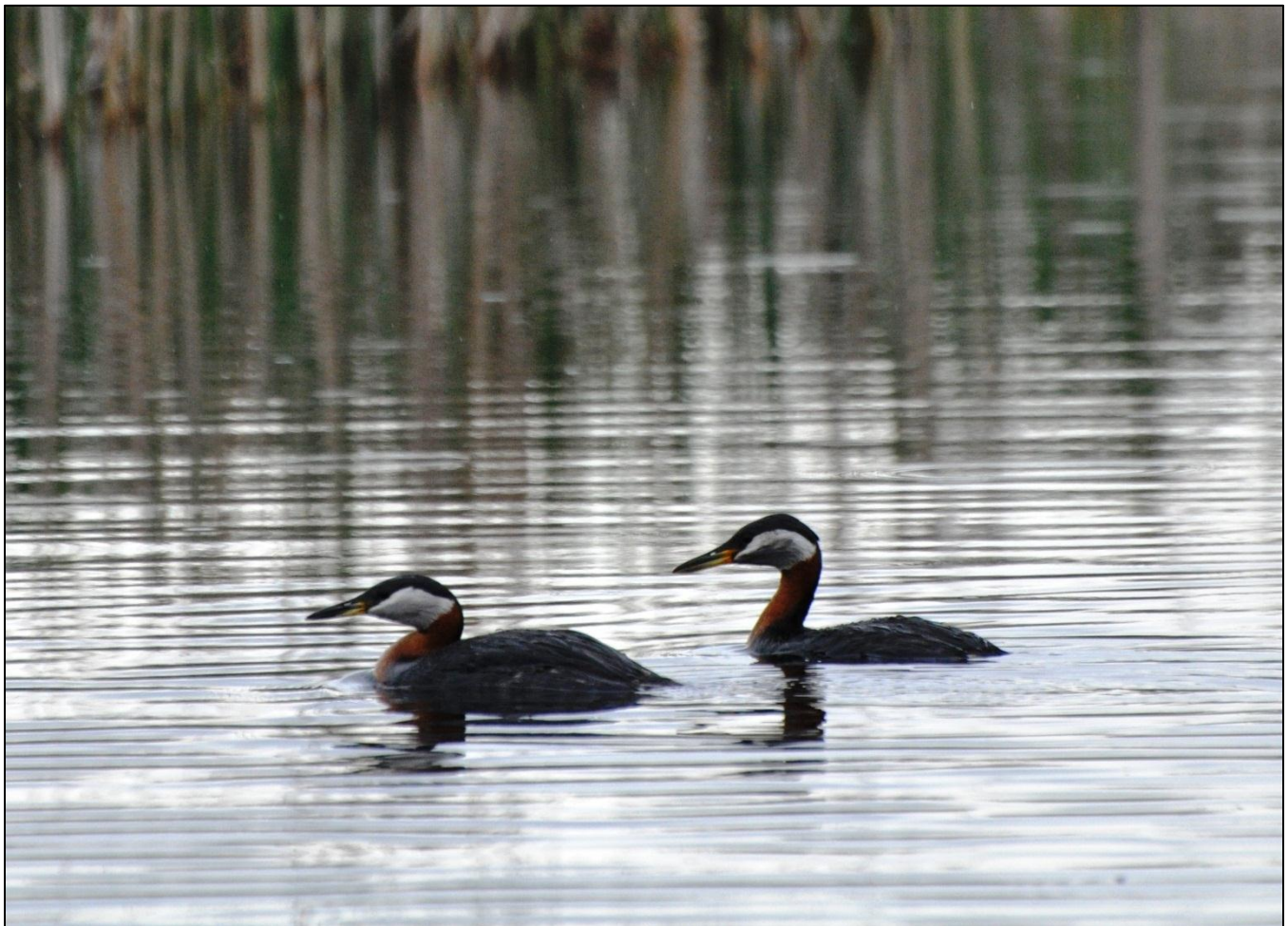




Wetland Bird Monitoring Summary Report

Voyageurs National Park

Natural Resource Data Series NPS/VOYA/NRDS—2015/972



ON THE COVER

A pair of red-necked grebes on Kabetogama Lake, Voyageurs National Park, Minnesota.
NPS photo.

Wetland Bird Monitoring Summary Report

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Natural Resource Data Series NPS/VOYA/NRDS—2015/972

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Fort Collins, Colorado

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Contents

	Page
Figures.....	v
Tables.....	v
Appendices.....	vii
Acknowledgments.....	vii
Introduction.....	1
Methods.....	1
Habitat Sampling.....	7
Results.....	9
Habitat	9
Focal Species	9
Species Richness	10
Relative Abundance.....	10
Anecdotal.....	13
Discussion	15
Literature Cited	17

Figures

	Page
Figure 1a. Wetlands surveyed for birds in Voyageurs National Park, Minnesota, from 11 June to 18 July 2012. Rectangles and figure labels correspond to fine-scale images depicting individual points within target wetlands.	3
Figure 1b. Wetlands on Rainy Lake surveyed for birds in Voyageurs National Park, Minnesota, from 11 June to 18 July 2012.	4
Figure 1c. Wetlands on Kabetogama Lake surveyed for birds in Voyageurs National Park, Minnesota, from 11 June to 18 July 2012.	4
Figure 1d. Wetlands on Sand Point Lake surveyed for birds in Voyageurs National Park, Minnesota, from 11 June to 18 July 2012.	5
Figure 2. Sample datasheet for wetland bird point counts in Voyageurs National Park, Minnesota.	6
Figure 3. Sample datasheet for habitat surrounding wetland bird point counts in Voyageurs National Park, Minnesota.	8

Tables

	Page
Table 1. Information for surveyed wetlands and individual stations used during marshbird surveys in Voyageurs National Park, June–July 2012.	2
Table 2. Total number of observations of focal wetland bird species in 11 wetlands in Voyageurs National Park, Minnesota	9
Table 3. Individual observations (visual or aural) of nine focal marsh bird species at 11 wetland sites during each of three surveys conducted in the Voyageurs National Park area, 2012.	10
Table 4. Total number of bird species observed during three visits to 11 wetlands in Voyageurs National Park, Minnesota, 11 June to 18 July 2012.	11
Table 5. Wetland bird community composition (proportion of total observations during surveys) of 11 wetlands in Voyageurs National Park, Minnesota.	11

Appendices

	Page
Appendix 1. Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012.....	19
Appendix 2. Four-letter species codes (Pyle and DeSante 2015).	75

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Introduction

The International Joint Commission's 2001 Order prescribing new methods of lake-level regulation in the Rainy and Namakan lake basins was intended to return the border lakes to a more natural hydrologic regime than observed in previous decades, and it was projected to be beneficial for aquatic species (IJC 2001). In anticipation of the 2015 review of this rule curve change, a Scope of Work titled "In Support of the International Joint Commission 2009 Plan of Study for the Evaluation of the 2000 Rule Curve Changes for Rainy and Namakan Lakes and Rainy River" was developed. This Scope of Work identified two project streams: (1) compare the extent and composition of wetland nesting bird and herptile habitat in the Namakan Reservoir and Rainy Lake, and (2) relate wetland habitat community changes to usage by breeding wetland birds and herptiles. In support of project stream two, Voyageurs National Park staff completed breeding wetland bird surveys during summer 2012 for incorporation into the final review. The following report is a basic summary of observations within the boundaries of Voyageurs National Park. Results from wetland bird and herptile monitoring on the Ontario side of Rainy Lake are detailed in a separate report (Grabas et al. 2013).

Methods

We identified target wetlands for survey throughout Voyageurs National Park using GIS data layers extracted from existing USGS-Vegetation Mapping Program data during project stream 1. We used ArcMap 10.1 to stratify potential wetland sites by size: small (<4 ha–10 ha), medium (10–30 ha), and large (>30 ha). After ground reconnaissance, we identified 32 survey stations in 11 wetlands (Table 1, Figures 1a–d). Each station was ≥ 250 m from other stations, ≥ 100 m from forest or shrub edge, and <50% open water. The number of stations within each wetland ranged from one to six, determined by wetland size.

Our sampling protocol followed a modified Marshbird Monitoring Protocol (MMP; Meyer et al. 2006). We visited each station three times, except for three stations in Irwin Bay, which were surveyed twice. We conducted surveys from 30 minutes before sunrise to 4 hours after sunrise in all cases, except one visit to Swansons Bay in which we performed the survey within 4 hours before sunset. We conducted surveys in either emergent wetland or wet meadow, or a mix of the two, and directed our attention and broadcast equipment in the same compass direction during each visit. Each survey consisted of an initial 5-minute passive listening period, 5-minute playback period, and 5-minute passive listening period, during which we recorded birds seen or heard in wetland or open water habitat.

Table 1. Information for surveyed wetlands and individual stations used during marshbird surveys in Voyageurs National Park, June–July 2012. Coordinates are in UTMs, Zone 15, NAD 1983.

Wetland Name	Site Number	Station Number	Northing	Easting	Wetland Type¹	Shoreline/ Interior²	Survey Azimuth³
Daley Bay	1	1	504686	5362892	emergent	shoreline	310
Daley Bay	1	3	504862	5363475	emergent	shoreline	288
Daley Bay	1	4	504310	5363807	emergent	shoreline	242
Daley Bay	1	6	502846	5363465	wet meadow	interior	116
Daley Bay	1	7	502963	5363688	wet meadow	interior	259
Daley Bay	1	8	503007	5364161	wet meadow	interior	154
Bowman Bay	2	1	501412	5363082	Mix	interior	216
Bowman Bay	2	2	501493	5362826	Mix	shoreline	210
Bowman Bay	2	4	501376	5363061	Mix	shoreline	204
Irwin Bay	3	1	500017	5363317	emergent	shoreline	244
Irwin Bay	3	2	499906	5363548	emergent	shoreline	224
Irwin Bay	3	3	499648	5363570	emergent	shoreline	340
Irwin Bay	3	5	500149	5363752	emergent	shoreline	286
Tom Cod Bay	5	2	490859	5369743	Mix	interior	110
Tom Cod Bay	5	5	491218	5370240	emergent	shoreline	298
Tom Cod Bay	5	6	491032	5370454	Mix	shoreline	180
Tom Cod Bay	5	10	491987	5370543	Mix	shoreline	282
Tom Cod Bay	5	11	492031	5370804	Mix	shoreline	282
Tom Cod Bay	5	14	492596	5370736	emergent	shoreline	210
Reuter Creek	8	1	490052	5380047	Mix	shoreline	100
Squaw Island	9	2	489463	5378953	emergent	interior	34
West Black Bay	22	1	487909	5381090	emergent	interior	214
Dove Bay	6	2	491824	5382543	wet meadow	interior	14
Dove Bay	6	3	492052	5382514	Mix	shoreline	260
Dove Bay	6	4	492554	5382783	Mix	shoreline	150
Cranberry Bay	10	1	495700	5381922	wet meadow	interior	90

¹“Wetland Type” was derived from classification completed by Canadian Wildlife Service in 2012, based on USGS-NPS Veg Mapping program.

²“Shoreline/Interior” denotes the location of the individual station.

³“Survey Azimuth” denotes the direction of concentrated survey effort and placement of speakers for playback calls.

Table 1 (continued). Information for surveyed wetlands and individual stations used during marshbird surveys in Voyageurs National Park, June–July 2012. Coordinates are in UTMs, Zone 15, NAD 1983.

Wetland Name	Site Number	Station Number	Northing	Easting	Wetland Type ¹	Shoreline/Interior ²	Survey Azimuth ³
Cranberry Bay	10	3	495486	5381076	Mix	shoreline	300
Cranberry Bay	10	5	495787	5380375	wet meadow	interior	260
Cranberry Bay	10	7	495925	5381153	Mix	shoreline	40
Swansons Bay	7	1	537528	5361871	emergent	shoreline	34
Swansons Bay	7	3	538268	5361898	emergent	shoreline	98
Alligator Bay	23	2	538760	5351911	wet meadow	interior	254

¹“Wetland Type” was derived from classification completed by Canadian Wildlife Service in 2012, based on USGS-NPS Veg Mapping program.

²“Shoreline/Interior” denotes the location of the individual station.

³“Survey Azimuth” denotes the direction of concentrated survey effort and placement of speakers for playback calls.

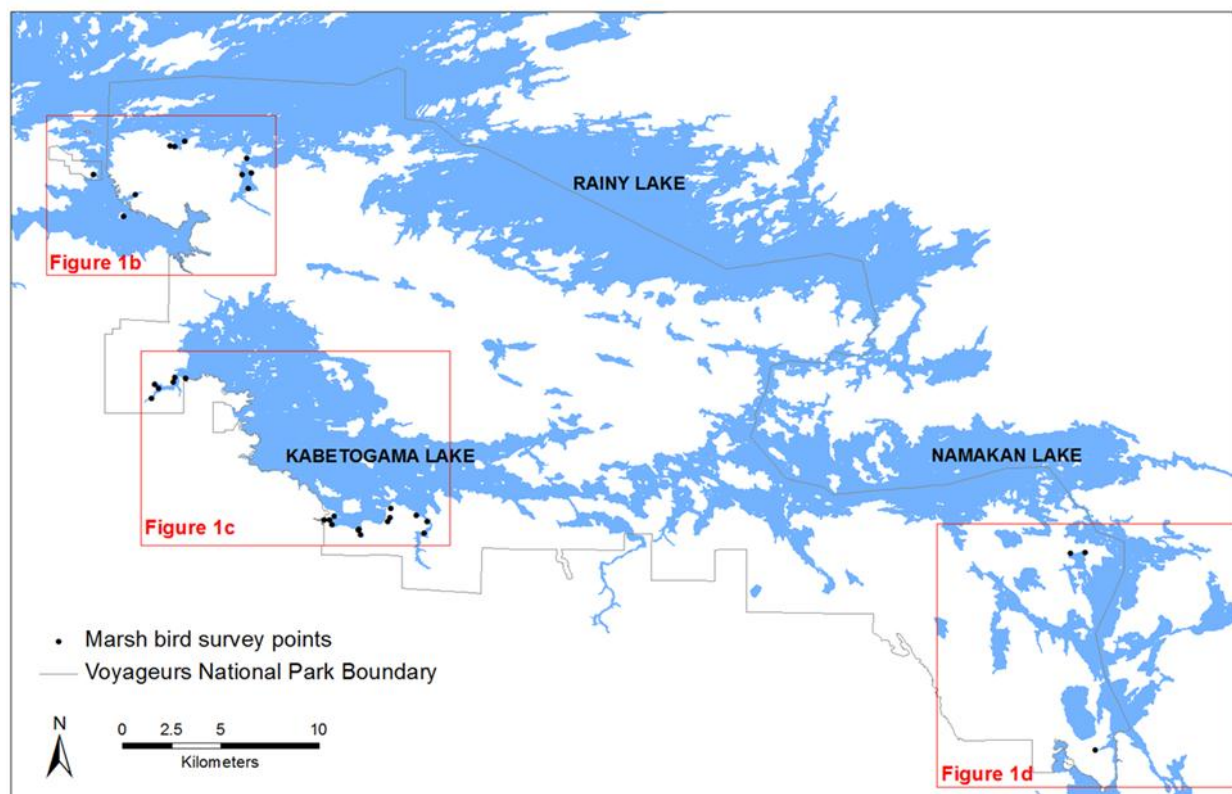


Figure 1a. Wetlands surveyed for birds in Voyageurs National Park, Minnesota, from 11 June to 18 July 2012. Rectangles and figure labels correspond to fine-scale images depicting individual points within target wetlands.

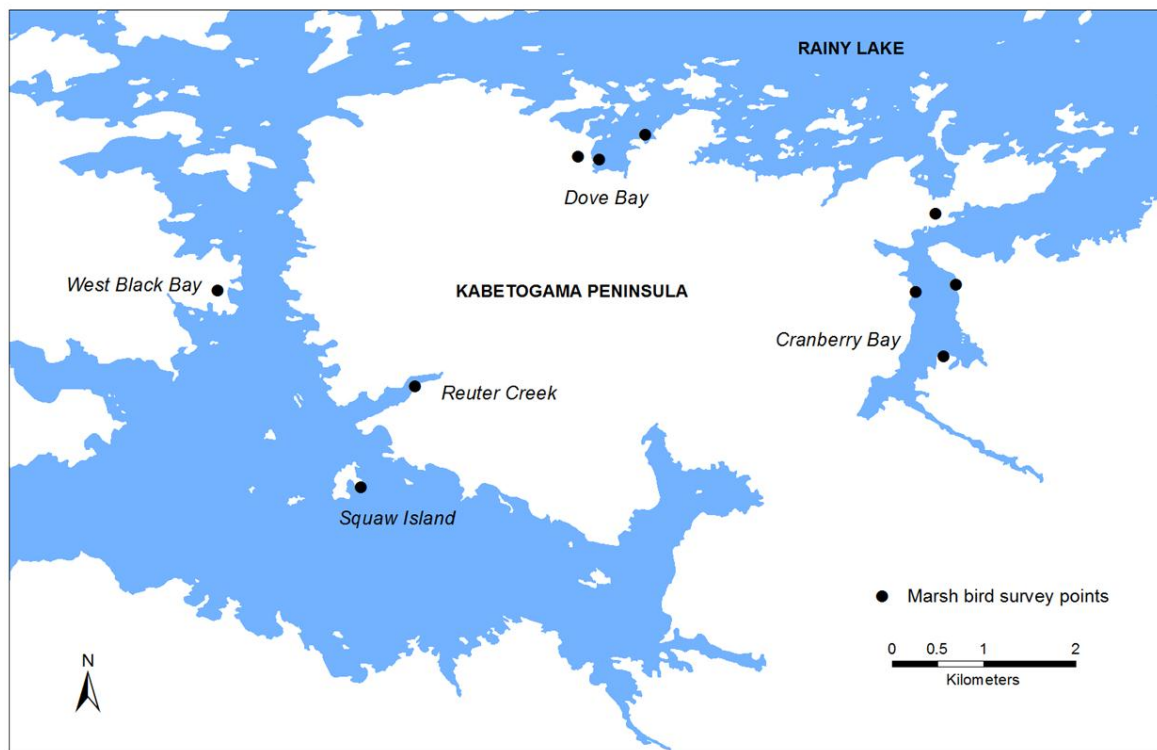


Figure 1b. Wetlands on Rainy Lake surveyed for birds in Voyageurs National Park, Minnesota, from 11 June to 18 July 2012.

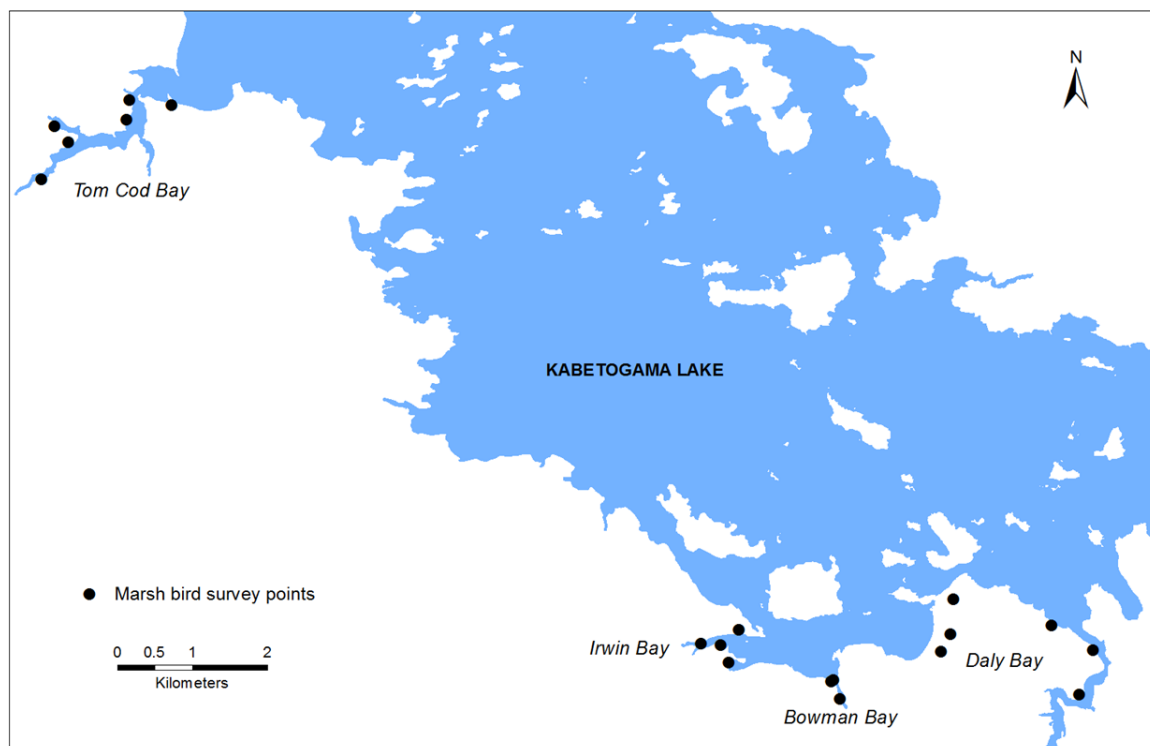


Figure 1c. Wetlands on Kabetogama Lake surveyed for birds in Voyageurs National Park, Minnesota, from 11 June to 18 July 2012.



Figure 1d. Wetlands on Sand Point Lake surveyed for birds in Voyageurs National Park, Minnesota, from 11 June to 18 July 2012.

We performed surveys for all birds present within wetland habitat, but placed special emphasis on nine focal species: yellow rail (*Coturnicops noveboracensis*), American bittern (*Botaurus lentiginosus*), least bittern (*Ixobrychus exilis*), sora (*Porzana carolina*), Virginia rail (*Rallus limicola*), American coot (*Fulica americana*), pied-billed grebe (*Podilymbus podiceps*), red-necked grebe (*Podiceps grisegena*), and black tern (*Chlidonias niger*). We recorded all species observed in wetland or open water habitat, with one exception: red-winged blackbirds (*Agelaius phoeniceus*) were only reported if observed <100 m from the center point of each station. For non-focal species we grouped observations at each site by distance category (<50 m, <100 m, or >100 m), and we only recorded each individual during the first time period it was observed: before the survey, during one of three 5-minute survey periods, or after the survey.

During the 5-minute playback period we broadcasted calls from six of the nine focal species (yellow rail, least bittern, sora, Virginia rail, American coot, and pied-billed grebe). Red-necked grebes respond to pied-billed grebe calls (Tyler Hoar, Contract Wildlife Biologist, pers. comm.), so we did not feel it was necessary to play both grebe calls. We reported observations for focal species in greater detail than for non-focal birds, tracking each individual focal species during the survey and recording whether it was seen, heard, or both seen and heard during each minute of the survey (Figure 2).

We recorded data differently for those birds located within a 180-degree arc ahead of the broadcast equipment than for birds located behind the equipment, but for the purposes of this summary we grouped observations from all directions, distances, and time periods. The MMP protocol recommends completing all surveys by 15 July, but we extended our sampling period by three days in order to account for weather postponements. In this summary we report totals for each focal species, species richness in each wetland, and relative abundance of all species.

Habitat Sampling

During each initial visit, we sampled habitat within 100 m of each point in a 180-degree semi-circle corresponding to the direction of the broadcasting equipment. We measured water depth, percent open water and vegetation, percent cover of dead vegetation and live plants in each vegetative group, and maximum vegetative height (Figure 3). Here we report only water depth and maximum vegetative height across all points.



CWS Marsh Monitoring Habitat Data Sheet

0% cl. cover
1 BS
0 mph
46°

0% cl. cover
1 BS
0 mph
54°

Route Name				Station #			
Inn Bay				3-3			
Visit	Day	Month	Year	Observer			
1 2 3	25	06	2 0 1 2	S. Malick, J. Austin			

UTM Coordinates: NAD 83

Zone	Easting	North
1 5	4 9 9 6 4 8	5 3 6 3 5 7 0

Range of water depths (cm): High 120.4cm Low 118.9cm Average water depth (cm): 118.9cm

% Open water: 10 % Vegetation: 90 % SAV: 0

% Dead vegetation: 20 Av. dead veg height (cm): 137.2cm Max veg height (cm; live and dead): 7ft = 213.6cm

% Cover occupied by each plant species:

Species	%	Average Height (cm)	Species	%	Average Height (cm)
Cattails	80	4ft = 121.9 cm	Aquatics (specify):		
Phragmites	10	7ft = 213.4 cm			
Arrowhead					
White Water Lily					
Yellow Pond Lily					
Bare ground					
Rushes (specify):					
Sedges (specify):			Herbs (specify):		
Grasses (specify):			Trees (specify):		

Field Notes:

Figure 3. Sample datasheet for habitat surrounding wetland bird point counts in Voyageurs National Park, Minnesota.

Results

We completed three rounds of surveys between 11 June and 18 July 2012—Survey 1, 11 June–22 June, Survey 2, 25 June–6 July, and Survey 3, 9 July–18 July). Total time spent actively surveying, or traveling among stations within wetlands, was 53 hours. Two technicians were typically engaged in these surveys, resulting in 102 total person-hours devoted to surveying in 2012. Travel time to and from wetlands was 28 hours, or 54 total person-hours.

Habitat

Mean water depth ($\pm$ SD) across all stations was 64 cm $\pm$ 12 cm and ranged from 11 to 122 cm. Mean maximum height of vegetation ($\pm$ SD) was 182 cm $\pm$ 14 cm and ranged from 91 to 274 cm. Although we did not measure habitat features during the second and third visits, water levels were fairly stable from June to July. Mean height of vegetation likely increased some after the first visit, but maximum height of vegetation was likely similar across all three visits, as we included vegetation from previous years (including live shrubs or dead herbaceous stems) in the initial examination.

Focal Species

We detected seven of nine focal species: American bittern, least bittern, sora, Virginia rail, pied-billed grebe, red-necked grebe, and black tern (Tables 2 and 3). We did not observe American coots or yellow rails.

Table 2. Total number of observations of focal wetland bird species in 11 wetlands in Voyageurs National Park, Minnesota. Three surveys were conducted from 11 June to 18 July 2012.

<u>Survey 1</u>		<u>Survey 2</u>		<u>Survey 3</u>	
<i>Species</i>	<i>Number of Obs.</i>	<i>Species</i>	<i>Number of Obs.</i>	<i>Species</i>	<i>Number of Obs.</i>
Red-necked grebe	8	Red-necked grebe	15	Red-necked grebe	26
American bittern	8	Pied-billed grebe	15	Pied-billed grebe	17
Pied-billed grebe	7	American bittern	4	Sora	4
Black tern	3	Black tern	2	Black tern	3
Sora	1	Sora	2	American bittern	1
Virginia rail	1	Virginia rail	1	Virginia rail	1
Least bittern	1	Least bittern	0	Least bittern	0
Total	28	Total	39	Total	52

Table 3. Individual observations (visual or aural) of nine focal marsh bird species at 11 wetland sites during each of three surveys conducted in the Voyageurs National Park area, 2012. Survey 1 =11 June–22 June 22, Survey 2 =25 June–6 July, and Survey 3 =9 July–18 July. Anecdotal observations of individuals (usually outside of standardized surveys) are also noted when they were the only record of that species at the site.

Wetland	Number of Observations (Survey 1/Survey 2/Survey3)								
	Yellow Rail	American Bittern	Least Bittern	Sora	Virginia Rail	American Coot	Pied-billed Grebe	Red-necked Grebe	Black Tern
Alligator Bay	--	--	--	--	--	--	--	--	--
Bowman Bay	--	1/0/0	--	--	--	--	--	5/3/5	--
Cranberry Bay	--	--	--	--	--	--	1/0/0	--	--
Daley Bay	a	3/2/0	--	0/2/1	0/0/1	--	0/4/7	2/4/11	--
Dove Bay	--	0/1/0	1/0/0	--	--	--	--	--	--
Irwin Bay	--	1/0/0	--	--	--	--	0/3/4	1/8/10	b
Reuter Creek	--	0/1/0	--	--	--	--	--	--	--
Squaw Island	--	--	--	--	--	--	0/0/1	--	--
Swansons Bay	--	--	--	--	1/1/0	--	--	--	--
Tom Cod Bay	--	2/0/1	--	1/0/3	--	--	5/8/5	--	3/2/3
W. Black Bay	--	c	--	--	--	--	--	--	--

a– One yellow rail was seen 1 km south of Daley Bay site in early May.

b– Five black terns seen during site visit on 22 May.

c– One American bittern heard during site visit on 31 May.

Species Richness

We detected 49 species in total (Table 4). The number of species recorded in a given wetland ranged from 13 in Alligator Bay to 29 in Tom Cod Bay. The number of species detected within wetland sites was positively related to the number of sampling stations within that wetland ($R^2=0.88$, $P<0.001$).

Relative Abundance

Red-winged blackbirds, swamp sparrows (*Melospiza georgiana*), and common yellowthroats (*Geothlypis trichas*) composed half of all observations, and the number observed was similar in all three rounds of sampling (Table 5). Twenty-four of the 49 species (49%) were reported in all three rounds.

Table 4. Total number of bird species observed during three visits to 11 wetlands in Voyageurs National Park, Minnesota, 11 June to 18 July 2012.

Wetland	Wetland size	Number of points	Number of species
Tom Cod Bay	Large	6	29
Daley Bay	Large	6	28
Irwin Bay	Large	4	24
Cranberry Bay	Large	4	23
Swansons Bay	Medium	2	20
Dove Bay	Medium	3	18
Bowman Bay	Large	3	15
Reuter Creek	Medium	1	15
Squaw Island	Small	1	14
West Black Bay	Small	1	14
Alligator Bay	Medium	1	13
<i>Total number of species</i>			49

Table 5. Wetland bird community composition (proportion of total observations during surveys) of 11 wetlands in Voyageurs National Park, Minnesota. Three surveys were conducted between 11 June and 18 July 2012. Total # of observations =1,428; number of observations during surveys was 400 (Survey 1), 502 (Survey 2), and 525 (Survey 3).

Species	Proportion of Total Observations			
	Survey 1	Survey 2	Survey 3	All Surveys Combined
Red-winged blackbird	0.323	0.295	0.330	0.315
Swamp sparrow	0.085	0.118	0.120	0.109
Common yellowthroat	0.075	0.092	0.088	0.085
Wetland wren	0.040	0.054	0.080	0.060
Common loon	0.048	0.064	0.046	0.053
Mallard	0.070	0.060	0.013	0.046
Ring-necked duck	0.048	0.020	0.065	0.044
Red-necked grebe	0.020	0.030	0.050	0.034

Table 5 (continued). Wetland bird community composition (proportion of total observations during surveys) of 11 wetlands in Voyageurs National Park, Minnesota. Three surveys were conducted between 11 June and 18 July 2012. Total # of observations =1,428; number of observations during surveys was 400 (Survey 1), 502 (Survey 2), and 525 (Survey 3).

Species	Proportion of Total Observations			
	Survey 1	Survey 2	Survey 3	All Surveys Combined
Song sparrow	0.013	0.048	0.030	0.032
Pied-billed grebe	0.018	0.030	0.032	0.027
Common raven	0.008	0.018	0.027	0.018
Herring gull	0.003	0.008	0.027	0.013
Common merganser	0.025	0.016	--	0.013
Sedge wren	0.025	0.010	--	0.011
Le Conte's sparrow	0.015	0.014	0.002	0.010
American bittern	0.020	0.008	0.002	0.009
Common goldeneye	0.013	0.014	0.002	0.009
American white pelican	0.005	0.016	0.004	0.008
Ring-billed gull	0.008	--	0.017	0.008
Blue wing teal	0.015	0.006	0.004	0.008
Unknown gull	0.018	0.004	0.002	0.007
Wood duck	0.013	0.008	--	0.006
Black tern	0.008	0.004	0.006	0.006
Yellow-headed blackbird	0.010	0.008	--	0.006
Northern flicker	0.008	0.004	0.004	0.005
Sora	0.003	0.004	0.008	0.005
Unknown duck	--	0.006	0.008	0.005
Alder flycatcher	0.008	0.004	0.002	0.004
Blue jay	--	0.012	--	0.004
Common grackle	0.008	--	0.004	0.004
Double-crested cormorant	0.010	--	--	0.003
Great blue heron	0.008	0.002	--	0.003
White-throated sparrow	--	--	0.008	0.003

Table 5 (continued). Wetland bird community composition (proportion of total observations during surveys) in 11 wetlands in Voyageurs National Park, Minnesota. Three surveys were conducted between 11 June and 18 July 2012. Total # of observations =1,428, during Survey 1 = 400, during Survey 2= 502, and during Survey 3 = 525.

Species	Proportion of Total Observations			
	Survey 1	Survey 2	Survey 3	All Surveys Combined
Belted kingfisher	0.003	0.002	0.002	0.002
Virginia rail	0.003	0.002	0.002	0.002
Yellow warbler	--	0.004	0.002	0.002
Bald eagle	0.003	0.002	--	0.001
American black duck	--	0.004	--	0.001
Broad-winged hawk	0.005	--	--	0.001
Common nighthawk	0.005	--	--	0.001
Tree swallow	--	--	0.004	0.001
Turkey vulture	--	--	0.004	0.001
American crow	0.003	--	--	0.001
American robin	--	--	0.002	0.001
Least bittern	0.003	--	--	0.001
Lincoln sparrow	--	--	0.002	0.001
Northern harrier	0.003	--	--	0.001
Pileated woodpecker	0.003	--	--	0.001
Ruby throated hummingbird	--	0.002	--	0.001
Unknown sparrow	--	--	0.002	0.001
Veery	0.003	--	--	0.001

Anecdotal

We visited each point count location during the last week of May before formal surveys began. During that time, we observed focal species in Irwin Bay and west Black Bay that were not observed during formal surveys (see Table 3). We also noted red-necked grebes sitting on nests in three locations: one in the eastern portion of Daley Bay, three in Irwin Bay, and one in Bowman Bay. We believe black terns were nesting in Tom Cod Bay, as we observed two birds foraging and returning to the same area within emergent vegetation on three occasions. On two of these occasions there was a third black tern interacting with and exhibiting similar behavior as the others. We are aware of no reports of cooperative breeding in black terns (Heath et al. 2009), but this phenomenon of

nonbreeding adult intraspecific helper birds has been observed in arctic terns (*Sterna paradisaea*; Skutch 1961).

Although we did not detect yellow rails in our study wetlands, we confirmed their presence in Voyageurs when we flushed one yellow rail in a beaver pond less than 2 km south of the Daley Bay survey stations one month prior to survey initiation.

Discussion

Our project was the first to document the occurrence of least bitterns and yellow rails in Voyageurs National Park since the park was established in 1975. However, these are both naturally rare species, so follow-up monitoring should be conducted to confirm their persistence and the occurrence of breeding.

Although red-necked grebes were fairly common in Voyageurs' wetlands, being the eighth-most abundant species, they are listed as a Species of Greatest Conservation Need in Minnesota due to continued loss of breeding habitat (MN DNR 2012). Voyageurs National Park biologists survey all park shorelines to assess common loon (*Gavia immer*) productivity in August of each year when red-necked grebe chicks are near adult size and highly visible. We suggest incorporating red-necked grebes into this survey by recording all adults and chicks of this species as well in order to assess long-term productivity of these sensitive birds over time.

We initially intended to use GIS layers created for the habitat assessment project (Grabas et al. 2013) to select points within each wetland. Unfortunately, these layers lacked the level of accuracy required for selecting suitable survey sites. Between one-quarter and one-third of the points we selected remotely with GIS were either too close to forested edges or the wetland type was misrepresented. We were able to adjust our points during our initial site visits, but wetland size as calculated by these GIS layers is most likely inaccurate as well. In future surveys, we suggest mapping the extent of each wetland type and total wetland area with a GPS for a more accurate representation.

Literature Cited

- Grabas, G., P. Watton, and J. Brett. 2013. Habitat mapping for marsh nesting birds and herptiles in the Rainy Lake and Namakan Reservoir area: Using GIS to assess the effects of the 2000 rule curve changes. Unpublished final report to International Joint Commission.
- Heath, S. R., E. H. Dunn, and D. J. Agro. 2009. Black tern (*Chlidonias niger*). In A. Poole, editor. The Birds of North America Online. Cornell Lab of Ornithology, Ithaca, New York. Available at <http://bna.birds.cornell.edu/bna/species/147>.
- IJC (International Joint Commission). 2001. In the matter of emergency regulation of the level of Rainy Lake and of other boundary waters in the Rainy Lake watershed. Order Prescribing Method of Regulating the Levels of Boundary Waters. Available at http://ijc.org/rel/boards/rainylake/Order_e.pdf.
- Meyer, S. W., J. W. Ingram, and G. P. Grabas. 2006. The Marsh Monitoring Program: Evaluating marsh bird survey protocol modifications to assess Lake Ontario coastal wetlands at a site-level. Technical Report Series 465. Canadian Wildlife Service, Ontario Region, Ontario, Canada.
- MN DNR (Minnesota Department of Natural Resources). 2012. Red-necked Grebe—*Podiceps grisegena*. Available at www.dnr.state.mn.us/forestlegacy/koochiching_washington/redneckedgrebe.html (accessed 31 August 2012).
- Pyle, P., and D. F. DeSante. 2015. Four-letter (English name) and six-letter (scientific name) alpha codes for 2,116 bird species (and 98 non-species taxa) in accordance with the 56th AOU Supplement (2015). Available at www.birdpop.org/pages/birdSpeciesCodes.php (accessed 26 August 2015).
- Skutch, A. F. 1961. Helpers among birds. Condor 63: 198–226.

Appendix 1. Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
6/19/12	Alligator Bay, Sand Point Lake	23	2	1	1	WISN	0	1	1	N
6/19/12	Alligator Bay, Sand Point Lake	23	2	1	1	COYE	0	1	1	N
6/19/12	Alligator Bay, Sand Point Lake	23	2	1	1	SWSP	1	1	2	N
6/19/12	Alligator Bay, Sand Point Lake	23	2	1	1	BEKI	1	0	1	N
6/19/12	Alligator Bay, Sand Point Lake	23	2	1	1	WODU	2	0	2	Y
6/19/12	Alligator Bay, Sand Point Lake	23	2	1	1	RNDU	1	0	1	N
6/19/12	Alligator Bay, Sand Point Lake	23	2	1	1	PIWO	1	0	1	Y
6/19/12	Alligator Bay, Sand Point Lake	23	2	1	1	BAEA	1	0	1	N
6/29/12	Alligator Bay, Sand Point Lake	23	2	2	2	WISN	1	2	3	N
6/29/12	Alligator Bay, Sand Point Lake	23	2	2	2	COYE	2	0	2	N
6/29/12	Alligator Bay, Sand Point Lake	23	2	2	2	SWSP	3	0	3	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
6/29/12	Alligator Bay, Sand Point Lake	23	2	2	2	WODU	1	0	1	N
6/29/12	Alligator Bay, Sand Point Lake	23	2	2	2	NOFL	1	0	1	Y
6/29/12	Alligator Bay, Sand Point Lake	23	2	2	2	RWBL	1	0	1	Y
6/29/12	Alligator Bay, Sand Point Lake	23	2	2	2	MALL	1	0	1	Y
6/29/12	Alligator Bay, Sand Point Lake	23	2	2	2	COLO	2	0	2	N
7/12/12	Alligator Bay, Sand Point Lake	23	2	3	3	COYE	3	0	3	N
7/12/12	Alligator Bay, Sand Point Lake	23	2	3	3	WTSP	2	0	2	N
7/12/12	Alligator Bay, Sand Point Lake	23	2	3	3	SWSP	2	0	2	N
6/11/12	Bowman Bay, Kabetogama Lake	2	4	1	1	RWBL	6	0	6	N
6/11/12	Bowman Bay, Kabetogama Lake	2	4	1	1	SWSP	1	0	1	N
6/11/12	Bowman Bay, Kabetogama Lake	2	4	1	1	COYE	1	0	1	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
6/11/12	Bowman Bay, Kabetogama Lake	2	4	1	1	MAWR	0	1	1	N
6/11/12	Bowman Bay, Kabetogama Lake	2	4	1	1	RNGR	3	0	3	N
6/11/12	Bowman Bay, Kabetogama Lake	2	2	1	1	RNGR	2	0	2	N
6/11/12	Bowman Bay, Kabetogama Lake	2	2	1	1	RWBL	4	0	4	N
6/11/12	Bowman Bay, Kabetogama Lake	2	2	1	1	MAWR	2	0	2	N
6/11/12	Bowman Bay, Kabetogama Lake	2	2	1	1	SWSP	2	0	2	N
6/11/12	Bowman Bay, Kabetogama Lake	2	2	1	1	AMBI	1	1	2	N
6/11/12	Bowman Bay, Kabetogama Lake	2	2	1	1	COYE	2	0	2	N
6/11/12	Bowman Bay, Kabetogama Lake	2	2	1	1	BWTE	1	0	1	N
6/11/12	Bowman Bay, Kabetogama Lake	2	2	1	1	COLO	1	0	1	N
6/11/12	Bowman Bay, Kabetogama Lake	2	1	1	1	RWBL	4	0	4	N
6/11/12	Bowman Bay, Kabetogama Lake	2	1	1	1	SWSP	2	0	2	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
6/11/12	Bowman Bay, Kabetogama Lake	2	1	1	1	SOSP	1	0	1	N
6/11/12	Bowman Bay, Kabetogama Lake	2	1	1	1	ALFL	2	0	2	N
6/11/12	Bowman Bay, Kabetogama Lake	2	1	1	1	COYE	1	0	1	N
6/11/12	Bowman Bay, Kabetogama Lake	2	1	1	1	MAWR	0	1	1	N
6/11/12	Bowman Bay, Kabetogama Lake	2	1	1	1	COGO	1	0	1	N
6/25/12	Bowman Bay, Kabetogama Lake	2	1	2	2	RWBL	5	0	5	N
6/25/12	Bowman Bay, Kabetogama Lake	2	1	2	2	RNGR	2	0	2	N
6/25/12	Bowman Bay, Kabetogama Lake	2	1	2	2	MAWR	1	0	1	N
6/25/12	Bowman Bay, Kabetogama Lake	2	1	2	2	MALL	5	0	5	Y
6/25/12	Bowman Bay, Kabetogama Lake	2	1	2	2	SWSP	1	0	1	N
6/25/12	Bowman Bay, Kabetogama Lake	2	1	2	2	COYE	1	0	1	N
6/25/12	Bowman Bay, Kabetogama Lake	2	4	2	2	SWSP	1	0	1	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
6/25/12	Bowman Bay, Kabetogama Lake	2	4	2	2	RWBL	3	0	3	N
6/25/12	Bowman Bay, Kabetogama Lake	2	4	2	2	MAWR	2	0	2	N
6/25/12	Bowman Bay, Kabetogama Lake	2	4	2	2	COYE	1	0	1	N
6/25/12	Bowman Bay, Kabetogama Lake	2	4	2	2	RNGR	1	0	1	N
6/25/12	Bowman Bay, Kabetogama Lake	2	2	2	2	SWSP	4	0	4	N
6/25/12	Bowman Bay, Kabetogama Lake	2	2	2	2	COYE	2	0	2	N
6/25/12	Bowman Bay, Kabetogama Lake	2	2	2	2	RWBL	4	0	4	N
6/25/12	Bowman Bay, Kabetogama Lake	2	2	2	2	MAWR	2	0	2	N
6/25/12	Bowman Bay, Kabetogama Lake	2	2	2	2	MALL	1	0	1	Y
7/9/12	Bowman Bay, Kabetogama Lake	2	1	3	3	SWSP	2	0	2	N
7/9/12	Bowman Bay, Kabetogama Lake	2	1	3	3	COYE	2	0	2	N
7/9/12	Bowman Bay, Kabetogama Lake	2	1	3	3	CORA	2	0	2	Y

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
7/9/12	Bowman Bay, Kabetogama Lake	2	1	3	3	CORA	1	0	1	N
7/9/12	Bowman Bay, Kabetogama Lake	2	1	3	3	RNGR	1	0	1	N
7/9/12	Bowman Bay, Kabetogama Lake	2	1	3	3	NOFL	1	0	1	N
7/9/12	Bowman Bay, Kabetogama Lake	2	1	3	3	SOSP	1	0	1	N
7/9/12	Bowman Bay, Kabetogama Lake	2	1	3	3	RWBL	1	0	1	Y
7/9/12	Bowman Bay, Kabetogama Lake	2	4	3	3	MAWR	1	1	2	N
7/9/12	Bowman Bay, Kabetogama Lake	2	4	3	3	RWBL	6	1	7	N
7/9/12	Bowman Bay, Kabetogama Lake	2	4	3	3	SWSP	1	0	1	N
7/9/12	Bowman Bay, Kabetogama Lake	2	4	3	3	RNDU	1	3	4	Y
7/9/12	Bowman Bay, Kabetogama Lake	2	4	3	3	RNGR	0	2	2	N
7/9/12	Bowman Bay, Kabetogama Lake	2	2	3	3	RWBL	3	0	3	N
7/9/12	Bowman Bay, Kabetogama Lake	2	2	3	3	SWSP	2	0	2	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
7/9/12	Bowman Bay, Kabetogama Lake	2	2	3	3	RNGR	2	0	2	N
7/9/12	Bowman Bay, Kabetogama Lake	2	2	3	3	MAWR	1	0	1	N
7/9/12	Bowman Bay, Kabetogama Lake	2	2	3	3	RNDU	2	0	2	Y
6/22/12	Cranberry Bay, Rainy Lake	10	7	1	1	RWBL	7	0	7	N
6/22/12	Cranberry Bay, Rainy Lake	10	7	1	1	COYE	2	0	2	N
6/22/12	Cranberry Bay, Rainy Lake	10	7	1	1	SWSP	2	0	2	N
6/22/12	Cranberry Bay, Rainy Lake	10	7	1	1	PBGR	0	1	1	N
6/22/12	Cranberry Bay, Rainy Lake	10	3	1	1	RWBL	6	0	6	N
6/22/12	Cranberry Bay, Rainy Lake	10	3	1	1	SWSP	3	0	3	N
6/22/12	Cranberry Bay, Rainy Lake	10	3	1	1	MAWR	2	0	2	N
6/22/12	Cranberry Bay, Rainy Lake	10	3	1	1	SOSP	2	0	2	N
6/22/12	Cranberry Bay, Rainy Lake	10	3	1	1	MALL	1	0	1	Y

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
6/22/12	Cranberry Bay, Rainy Lake	10	3	1	1	COLO	1	0	1	N
6/22/12	Cranberry Bay, Rainy Lake	10	5	1	1	RWBL	5	0	5	N
6/22/12	Cranberry Bay, Rainy Lake	10	5	1	1	SWSP	2	0	2	N
6/22/12	Cranberry Bay, Rainy Lake	10	5	1	1	DCCO	4	0	4	Y
6/22/12	Cranberry Bay, Rainy Lake	10	5	1	1	SEWR	2	0	2	N
6/22/12	Cranberry Bay, Rainy Lake	10	5	1	1	COLO	1	0	1	Y
6/22/12	Cranberry Bay, Rainy Lake	10	5	1	1	RNDU	1	0	1	Y
6/22/12	Cranberry Bay, Rainy Lake	10	5	1	1	COYE	1	0	1	N
6/22/12	Cranberry Bay, Rainy Lake	10	5	1	1	NOFL	1	0	1	Y
6/22/12	Cranberry Bay, Rainy Lake	10	1	1	1	COLO	4	1	5	Y
6/22/12	Cranberry Bay, Rainy Lake	10	1	1	1	SWSP	3	0	3	N
6/22/12	Cranberry Bay, Rainy Lake	10	1	1	1	SEWR	2	0	2	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
6/22/12	Cranberry Bay, Rainy Lake	10	1	1	1	LCSP	3	0	3	N
6/22/12	Cranberry Bay, Rainy Lake	10	1	1	1	SOSP	1	0	1	N
6/22/12	Cranberry Bay, Rainy Lake	10	1	1	1	UKGULL	1	0	1	N
6/22/12	Cranberry Bay, Rainy Lake	10	1	1	1	RWBL	3	0	3	N
6/22/12	Cranberry Bay, Rainy Lake	10	1	1	1	COGO	1	0	1	Y
6/22/12	Cranberry Bay, Rainy Lake	10	1	1	1	COGR	1	0	1	N
6/22/12	Cranberry Bay, Rainy Lake	10	1	1	1	COYE	1	0	1	N
6/22/12	Cranberry Bay, Rainy Lake	10	1	1	1	MALL	3	0	3	Y
7/6/12	Cranberry Bay, Rainy Lake	10	3	2	2	RWBL	11	0	11	N
7/6/12	Cranberry Bay, Rainy Lake	10	3	2	2	COYE	1	0	1	N
7/6/12	Cranberry Bay, Rainy Lake	10	3	2	2	MAWR	3	0	3	N
7/6/12	Cranberry Bay, Rainy Lake	10	3	2	2	SWSP	3	0	3	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
7/6/12	Cranberry Bay, Rainy Lake	10	3	2	2	SOSP	2	0	2	N
7/6/12	Cranberry Bay, Rainy Lake	10	5	2	2	RWBL	7	0	7	N
7/6/12	Cranberry Bay, Rainy Lake	10	5	2	2	RWBL	2	0	2	Y
7/6/12	Cranberry Bay, Rainy Lake	10	5	2	2	COLO	4	0	4	N
7/6/12	Cranberry Bay, Rainy Lake	10	5	2	2	COLO	1	0	1	Y
7/6/12	Cranberry Bay, Rainy Lake	10	5	2	2	SWSP	4	0	4	N
7/6/12	Cranberry Bay, Rainy Lake	10	5	2	2	COYE	1	0	1	N
7/6/12	Cranberry Bay, Rainy Lake	10	5	2	2	SOSP	2	0	2	N
7/6/12	Cranberry Bay, Rainy Lake	10	1	2	2	SOSP	2	0	2	N
7/6/12	Cranberry Bay, Rainy Lake	10	1	2	2	COYE	3	0	3	N
7/6/12	Cranberry Bay, Rainy Lake	10	1	2	2	COLO	1	0	1	Y
7/6/12	Cranberry Bay, Rainy Lake	10	1	2	2	COLO	1	0	1	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
7/6/12	Cranberry Bay, Rainy Lake	10	1	2	2	RWBL	4	0	4	N
7/6/12	Cranberry Bay, Rainy Lake	10	1	2	2	HEGU	1	0	1	Y
7/6/12	Cranberry Bay, Rainy Lake	10	1	2	2	SWSP	2	0	2	N
7/6/12	Cranberry Bay, Rainy Lake	10	1	2	2	SEWR	1	0	1	N
7/6/12	Cranberry Bay, Rainy Lake	10	1	2	2	LCSP	1	0	1	N
7/6/12	Cranberry Bay, Rainy Lake	10	7	2	2	SWSP	2	0	2	N
7/6/12	Cranberry Bay, Rainy Lake	10	7	2	2	COYE	3	0	3	N
7/6/12	Cranberry Bay, Rainy Lake	10	7	2	2	RWBL	7	0	7	N
7/6/12	Cranberry Bay, Rainy Lake	10	7	2	2	RWBL	2	0	2	Y
7/6/12	Cranberry Bay, Rainy Lake	10	7	2	2	SOSP	2	0	2	N
7/6/12	Cranberry Bay, Rainy Lake	10	7	2	2	COLO	2	0	2	N
7/6/12	Cranberry Bay, Rainy Lake	10	7	2	2	COLO	2	0	2	Y

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
7/6/12	Cranberry Bay, Rainy Lake	10	7	2	2	BWTE	0	1	1	N
7/6/12	Cranberry Bay, Rainy Lake	10	7	2	2	AWPE	1	0	1	N
7/18/12	Cranberry Bay, Rainy Lake	10	5	3	3	COLO	7	0	7	Y
7/18/12	Cranberry Bay, Rainy Lake	10	5	3	3	RWBL	13	0	13	N
7/18/12	Cranberry Bay, Rainy Lake	10	5	3	3	SWSP	3	0	3	N
7/18/12	Cranberry Bay, Rainy Lake	10	5	3	3	AWPE	2	0	2	Y
7/18/12	Cranberry Bay, Rainy Lake	10	5	3	3	HEGU	1	0	1	N
7/18/12	Cranberry Bay, Rainy Lake	10	7	3	3	COLO	1	0	1	N
7/18/12	Cranberry Bay, Rainy Lake	10	7	3	3	COLO	1	0	1	Y
7/18/12	Cranberry Bay, Rainy Lake	10	7	3	3	RWBL	10	0	10	N
7/18/12	Cranberry Bay, Rainy Lake	10	7	3	3	CORA	2	0	2	N
7/18/12	Cranberry Bay, Rainy Lake	10	7	3	3	COYE	3	0	3	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
7/18/12	Cranberry Bay, Rainy Lake	10	7	3	3	SWSP	3	0	3	N
7/18/12	Cranberry Bay, Rainy Lake	10	7	3	3	SOSP	2	0	2	N
7/18/12	Cranberry Bay, Rainy Lake	10	7	3	3	RBGU	1	0	1	Y
7/18/12	Cranberry Bay, Rainy Lake	10	1	3	3	RWBL	2	0	2	N
7/18/12	Cranberry Bay, Rainy Lake	10	1	3	3	SWSP	4	0	4	N
7/18/12	Cranberry Bay, Rainy Lake	10	1	3	3	COYE	2	0	2	N
7/18/12	Cranberry Bay, Rainy Lake	10	1	3	3	COLO	2	0	2	N
7/18/12	Cranberry Bay, Rainy Lake	10	1	3	3	SOSP	1	0	1	N
7/18/12	Cranberry Bay, Rainy Lake	10	1	3	3	UKGULL	1	0	1	Y
7/18/12	Cranberry Bay, Rainy Lake	10	3	3	3	MAWR	2	0	2	N
7/18/12	Cranberry Bay, Rainy Lake	10	3	3	3	RWBL	5	0	5	N
7/18/12	Cranberry Bay, Rainy Lake	10	3	3	3	RWBL	5	0	5	Y

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
7/18/12	Cranberry Bay, Rainy Lake	10	3	3	3	SWSP	2	0	2	N
7/18/12	Cranberry Bay, Rainy Lake	10	3	3	3	TUVU	1	0	1	Y
7/18/12	Cranberry Bay, Rainy Lake	10	3	3	3	UKDUCK	1	0	1	Y
6/13/12	Daley Bay, Kabetogama Lake	1	7	1	1	WISN	1	2	3	N
6/13/12	Daley Bay, Kabetogama Lake	1	7	1	1	COME	2	0	2	Y
6/13/12	Daley Bay, Kabetogama Lake	1	7	1	1	RNDU	2	0	2	Y
6/13/12	Daley Bay, Kabetogama Lake	1	7	1	1	COLO	1	0	1	Y
6/13/12	Daley Bay, Kabetogama Lake	1	7	1	1	COLO	1	0	1	N
6/13/12	Daley Bay, Kabetogama Lake	1	7	1	1	RBGU	2	0	2	N
6/13/12	Daley Bay, Kabetogama Lake	1	8	1	1	LCSP	1	0	1	N
6/13/12	Daley Bay, Kabetogama Lake	1	8	1	1	SWSP	2	0	2	N
6/13/12	Daley Bay, Kabetogama Lake	1	8	1	1	UKGULL	2	0	2	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
6/13/12	Daley Bay, Kabetogama Lake	1	8	1	1	RWBL	4	0	4	N
6/13/12	Daley Bay, Kabetogama Lake	1	8	1	1	AMBI	1	0	1	N
6/13/12	Daley Bay, Kabetogama Lake	1	8	1	1	CORA	1	0	1	N
6/13/12	Daley Bay, Kabetogama Lake	1	4	1	1	COYE	1	0	1	N
6/13/12	Daley Bay, Kabetogama Lake	1	4	1	1	RWBL	5	0	5	N
6/13/12	Daley Bay, Kabetogama Lake	1	4	1	1	RWBL	4	0	4	Y
6/13/12	Daley Bay, Kabetogama Lake	1	4	1	1	MALL	1	0	1	N
6/13/12	Daley Bay, Kabetogama Lake	1	4	1	1	BWTE	2	0	2	Y
6/13/12	Daley Bay, Kabetogama Lake	1	4	1	1	AMBI	0	1	1	N
6/13/12	Daley Bay, Kabetogama Lake	1	6	1	1	LCSP	1	1	2	N
6/13/12	Daley Bay, Kabetogama Lake	1	6	1	1	MALL	1	0	1	N
6/13/12	Daley Bay, Kabetogama Lake	1	6	1	1	AMBI	1	0	1	Y

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
6/13/12	Daley Bay, Kabetogama Lake	1	6	1	1	RNDU	2	0	2	Y
6/13/12	Daley Bay, Kabetogama Lake	1	3	1	1	RWBL	5	3	8	N
6/13/12	Daley Bay, Kabetogama Lake	1	3	1	1	RNGR	2	0	2	N
6/13/12	Daley Bay, Kabetogama Lake	1	3	1	1	COYE	1	0	1	N
6/13/12	Daley Bay, Kabetogama Lake	1	3	1	1	GBHE	1	0	1	Y
6/13/12	Daley Bay, Kabetogama Lake	1	3	1	1	YHBL	3	0	3	N
6/13/12	Daley Bay, Kabetogama Lake	1	3	1	1	COME	3	0	3	Y
6/13/12	Daley Bay, Kabetogama Lake	1	1	1	1	RWBL	1	2	3	N
6/13/12	Daley Bay, Kabetogama Lake	1	1	1	1	CONI	2	0	2	Y
6/13/12	Daley Bay, Kabetogama Lake	1	1	1	1	COME	4	0	4	Y
6/13/12	Daley Bay, Kabetogama Lake	1	1	1	1	MALL	1	0	1	Y
6/13/12	Daley Bay, Kabetogama Lake	1	1	1	1	COYE	1	0	1	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
6/13/12	Daley Bay, Kabetogama Lake	1	1	1	1	UKGULL	2	0	2	Y
6/26/12	Daley Bay, Kabetogama Lake	1	7	2	2	SWSP	3	0	3	N
6/26/12	Daley Bay, Kabetogama Lake	1	7	2	2	COYE	2	0	2	N
6/26/12	Daley Bay, Kabetogama Lake	1	7	2	2	RWBL	3	0	3	Y
6/26/12	Daley Bay, Kabetogama Lake	1	7	2	2	MALL	4	0	4	Y
6/26/12	Daley Bay, Kabetogama Lake	1	7	2	2	LCSP	2	0	2	N
6/26/12	Daley Bay, Kabetogama Lake	1	8	2	2	WISN	0	1	1	N
6/26/12	Daley Bay, Kabetogama Lake	1	8	2	2	COYE	2	0	2	N
6/26/12	Daley Bay, Kabetogama Lake	1	8	2	2	SWSP	3	0	3	N
6/26/12	Daley Bay, Kabetogama Lake	1	8	2	2	RWBL	1	0	1	N
6/26/12	Daley Bay, Kabetogama Lake	1	8	2	2	LCSP	1	0	1	N
6/26/12	Daley Bay, Kabetogama Lake	1	8	2	2	SORA	1	0	1	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
6/26/12	Daley Bay, Kabetogama Lake	1	8	2	2	ALFL	1	0	1	N
6/26/12	Daley Bay, Kabetogama Lake	1	8	2	2	COLO	1	0	1	N
6/26/12	Daley Bay, Kabetogama Lake	1	8	2	2	MALL	2	0	2	Y
6/26/12	Daley Bay, Kabetogama Lake	1	3	2	2	AMBI	0	1	1	N
6/26/12	Daley Bay, Kabetogama Lake	1	3	2	2	MAWR	1	1	2	N
6/26/12	Daley Bay, Kabetogama Lake	1	3	2	2	RWBL	7	0	7	N
6/26/12	Daley Bay, Kabetogama Lake	1	3	2	2	PBGR	1	0	1	N
6/26/12	Daley Bay, Kabetogama Lake	1	3	2	2	RNGR	2	0	2	N
6/26/12	Daley Bay, Kabetogama Lake	1	3	2	2	SOSP	1	0	1	N
6/26/12	Daley Bay, Kabetogama Lake	1	3	2	2	COYE	1	0	1	N
6/26/12	Daley Bay, Kabetogama Lake	1	3	2	2	HEGU	1	0	1	Y
6/26/12	Daley Bay, Kabetogama Lake	1	3	2	2	HEGU	1	0	1	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
6/26/12	Daley Bay, Kabetogama Lake	1	3	2	2	COME	2	0	2	Y
6/26/12	Daley Bay, Kabetogama Lake	1	3	2	2	COLO	3	0	3	N
6/26/12	Daley Bay, Kabetogama Lake	1	1	2	2	PBGR	2	0	2	N
6/26/12	Daley Bay, Kabetogama Lake	1	1	2	2	RNGR	2	0	2	N
6/26/12	Daley Bay, Kabetogama Lake	1	1	2	2	AMBI	1	0	1	Y
6/26/12	Daley Bay, Kabetogama Lake	1	1	2	2	SORA	1	0	1	N
6/26/12	Daley Bay, Kabetogama Lake	1	1	2	2	COYE	1	0	1	N
6/26/12	Daley Bay, Kabetogama Lake	1	1	2	2	COLO	4	1	5	N
6/26/12	Daley Bay, Kabetogama Lake	1	1	2	2	RWBL	4	0	4	N
6/26/12	Daley Bay, Kabetogama Lake	1	1	2	2	SOSP	1	0	1	N
6/26/12	Daley Bay, Kabetogama Lake	1	1	2	2	SWSP	1	0	1	N
6/26/12	Daley Bay, Kabetogama Lake	1	1	2	2	COME	1	0	1	Y

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
6/26/12	Daley Bay, Kabetogama Lake	1	4	2	2	RWBL	4	0	4	N
6/26/12	Daley Bay, Kabetogama Lake	1	4	2	2	SOSP	1	0	1	N
6/26/12	Daley Bay, Kabetogama Lake	1	4	2	2	COYE	2	0	2	N
6/26/12	Daley Bay, Kabetogama Lake	1	4	2	2	HEGU	1	0	1	Y
6/26/12	Daley Bay, Kabetogama Lake	1	4	2	2	AWPE	5	0	5	N
6/26/12	Daley Bay, Kabetogama Lake	1	4	2	2	MALL	3	0	3	Y
6/26/12	Daley Bay, Kabetogama Lake	1	4	2	2	SWSP	1	0	1	N
6/26/12	Daley Bay, Kabetogama Lake	1	4	2	2	COGO	2	0	2	Y
6/26/12	Daley Bay, Kabetogama Lake	1	4	2	2	CORA	2	0	2	N
6/26/12	Daley Bay, Kabetogama Lake	1	4	2	2	BLJA	1	0	1	N
6/26/12	Daley Bay, Kabetogama Lake	1	6	2	2	SWSP	4	0	4	N
6/26/12	Daley Bay, Kabetogama Lake	1	6	2	2	COYE	2	0	2	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
6/26/12	Daley Bay, Kabetogama Lake	1	6	2	2	PBGR	1	0	1	N
6/26/12	Daley Bay, Kabetogama Lake	1	6	2	2	LCSP	2	0	2	N
6/26/12	Daley Bay, Kabetogama Lake	1	6	2	2	MALL	1	0	1	N
6/26/12	Daley Bay, Kabetogama Lake	1	6	2	2	BLJA	2	0	2	N
6/26/12	Daley Bay, Kabetogama Lake	1	6	2	2	COLO	1	0	1	N
7/10/12	Daley Bay, Kabetogama Lake	1	8	3	3	SWSP	3	0	3	N
7/10/12	Daley Bay, Kabetogama Lake	1	8	3	3	COYE	2	0	2	N
7/10/12	Daley Bay, Kabetogama Lake	1	8	3	3	RWBL	1	0	1	N
7/10/12	Daley Bay, Kabetogama Lake	1	8	3	3	RWBL	1	0	1	Y
7/10/12	Daley Bay, Kabetogama Lake	1	8	3	3	SOSP	2	0	2	N
7/10/12	Daley Bay, Kabetogama Lake	1	7	3	3	PBGR	1	0	1	N
7/10/12	Daley Bay, Kabetogama Lake	1	7	3	3	SWSP	3	0	3	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
7/10/12	Daley Bay, Kabetogama Lake	1	7	3	3	CORA	1	0	1	Y
7/10/12	Daley Bay, Kabetogama Lake	1	7	3	3	HEGU	1	0	1	Y
7/10/12	Daley Bay, Kabetogama Lake	1	7	3	3	COYE	2	0	2	N
7/10/12	Daley Bay, Kabetogama Lake	1	7	3	3	SOSP	1	0	1	N
7/10/12	Daley Bay, Kabetogama Lake	1	7	3	3	LCSP	1	0	1	N
7/10/12	Daley Bay, Kabetogama Lake	1	7	3	3	WISN	1	0	1	N
7/10/12	Daley Bay, Kabetogama Lake	1	6	3	3	SWSP	4	0	4	N
7/10/12	Daley Bay, Kabetogama Lake	1	6	3	3	COYE	1	0	1	N
7/10/12	Daley Bay, Kabetogama Lake	1	6	3	3	SOSP	1	0	1	N
7/10/12	Daley Bay, Kabetogama Lake	1	6	3	3	RWBL	4	0	4	N
7/10/12	Daley Bay, Kabetogama Lake	1	4	3	3	SWSP	2	0	2	N
7/10/12	Daley Bay, Kabetogama Lake	1	4	3	3	RWBL	4	0	4	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
7/10/12	Daley Bay, Kabetogama Lake	1	4	3	3	RWBL	2	0	2	Y
7/10/12	Daley Bay, Kabetogama Lake	1	4	3	3	COYE	2	0	2	N
7/10/12	Daley Bay, Kabetogama Lake	1	4	3	3	MAWR	3	0	3	N
7/10/12	Daley Bay, Kabetogama Lake	1	4	3	3	PBGR	1	0	1	N
7/10/12	Daley Bay, Kabetogama Lake	1	4	3	3	CORA	1	0	1	Y
7/10/12	Daley Bay, Kabetogama Lake	1	4	3	3	SORA	1	0	1	N
7/10/12	Daley Bay, Kabetogama Lake	1	4	3	3	RNGR	2	0	2	N
7/10/12	Daley Bay, Kabetogama Lake	1	4	3	3	COLO	3	0	3	N
7/10/12	Daley Bay, Kabetogama Lake	1	4	3	3	HEGU	1	0	1	Y
7/10/12	Daley Bay, Kabetogama Lake	1	1	3	3	RWBL	9	0	9	N
7/10/12	Daley Bay, Kabetogama Lake	1	1	3	3	SWSP	1	0	1	N
7/10/12	Daley Bay, Kabetogama Lake	1	1	3	3	RNGR	2	0	2	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
7/10/12	Daley Bay, Kabetogama Lake	1	1	3	3	COYE	2	0	2	N
7/10/12	Daley Bay, Kabetogama Lake	1	1	3	3	PBGR	2	0	2	N
7/10/12	Daley Bay, Kabetogama Lake	1	1	3	3	MAWR	1	0	1	N
7/10/12	Daley Bay, Kabetogama Lake	1	1	3	3	HEGU	4	0	4	Y
7/10/12	Daley Bay, Kabetogama Lake	1	1	3	3	SOSP	1	0	1	N
7/10/12	Daley Bay, Kabetogama Lake	1	3	3	3	RNGR	6	1	7	N
7/10/12	Daley Bay, Kabetogama Lake	1	3	3	3	PBGR	3	0	3	N
7/10/12	Daley Bay, Kabetogama Lake	1	3	3	3	MAWR	2	0	2	N
7/10/12	Daley Bay, Kabetogama Lake	1	3	3	3	RWBL	5	0	5	N
7/10/12	Daley Bay, Kabetogama Lake	1	3	3	3	COYE	1	0	1	N
7/10/12	Daley Bay, Kabetogama Lake	1	3	3	3	COLO	1	0	1	Y
7/10/12	Daley Bay, Kabetogama Lake	1	3	3	3	SWSP	2	0	2	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
7/10/12	Daley Bay, Kabetogama Lake	1	3	3	3	VIRA	1	0	1	N
7/10/12	Daley Bay, Kabetogama Lake	1	3	3	3	CORA	1	0	1	N
6/15/12	Dove Bay, Rainy Lake	6	4	1	1	COGR	0	1	1	N
6/15/12	Dove Bay, Rainy Lake	6	4	1	1	RWBL	7	1	8	N
6/15/12	Dove Bay, Rainy Lake	6	4	1	1	COYE	1	0	1	N
6/15/12	Dove Bay, Rainy Lake	6	4	1	1	NOFL	1	0	1	N
6/15/12	Dove Bay, Rainy Lake	6	4	1	1	COLO	2	0	2	N
6/15/12	Dove Bay, Rainy Lake	6	2	1	1	COYE	3	1	4	N
6/15/12	Dove Bay, Rainy Lake	6	2	1	1	SEWR	1	0	1	N
6/15/12	Dove Bay, Rainy Lake	6	2	1	1	SWSP	3	0	3	N
6/15/12	Dove Bay, Rainy Lake	6	2	1	1	MAWR	1	1	2	N
6/15/12	Dove Bay, Rainy Lake	6	2	1	1	HEGU	1	0	1	Y

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
6/15/12	Dove Bay, Rainy Lake	6	2	1	1	MALL	1	0	1	Y
6/15/12	Dove Bay, Rainy Lake	6	2	1	1	AMCR	1	0	1	Y
6/15/12	Dove Bay, Rainy Lake	6	2	1	1	UKGULL	1	0	1	Y
6/15/12	Dove Bay, Rainy Lake	6	3	1	1	MAWR	0	1	1	N
6/15/12	Dove Bay, Rainy Lake	6	3	1	1	RWBL	2	1	3	N
6/15/12	Dove Bay, Rainy Lake	6	3	1	1	RWBL	1	0	1	Y
6/15/12	Dove Bay, Rainy Lake	6	3	1	1	LEBI	1	0	1	N
6/15/12	Dove Bay, Rainy Lake	6	3	1	1	COYE	2	0	2	N
6/15/12	Dove Bay, Rainy Lake	6	3	1	1	COLO	1	0	1	N
6/27/12	Dove Bay, Rainy Lake	6	4	2	2	RWBL	7	0	7	N
6/27/12	Dove Bay, Rainy Lake	6	4	2	2	SOSP	1	0	1	N
6/27/12	Dove Bay, Rainy Lake	6	4	2	2	COLO	1	0	1	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
6/27/12	Dove Bay, Rainy Lake	6	4	2	2	SEWR	1	0	1	N
6/27/12	Dove Bay, Rainy Lake	6	4	2	2	SWSP	1	0	1	N
6/27/12	Dove Bay, Rainy Lake	6	4	2	2	COYE	1	0	1	N
6/27/12	Dove Bay, Rainy Lake	6	4	2	2	MALL	7	0	7	N
6/27/12	Dove Bay, Rainy Lake	6	3	2	2	RWBL	6	0	6	N
6/27/12	Dove Bay, Rainy Lake	6	3	2	2	MAWR	4	0	4	N
6/27/12	Dove Bay, Rainy Lake	6	3	2	2	RNDU	0	2	2	Y
6/27/12	Dove Bay, Rainy Lake	6	3	2	2	COYE	2	0	2	N
6/27/12	Dove Bay, Rainy Lake	6	3	2	2	AMBI	1	0	1	N
6/27/12	Dove Bay, Rainy Lake	6	3	2	2	COLO	1	0	1	N
6/27/12	Dove Bay, Rainy Lake	6	2	2	2	SWSP	3	0	3	N
6/27/12	Dove Bay, Rainy Lake	6	2	2	2	RWBL	2	0	2	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
6/27/12	Dove Bay, Rainy Lake	6	2	2	2	SOSP	1	0	1	N
6/27/12	Dove Bay, Rainy Lake	6	2	2	2	SEWR	1	1	2	N
6/27/12	Dove Bay, Rainy Lake	6	2	2	2	COYE	1	0	1	N
6/27/12	Dove Bay, Rainy Lake	6	2	2	2	BLJA	1	0	1	Y
7/17/12	Dove Bay, Rainy Lake	6	2	3	3	COYE	2	0	2	N
7/17/12	Dove Bay, Rainy Lake	6	2	3	3	MAWR	2	0	2	N
7/17/12	Dove Bay, Rainy Lake	6	2	3	3	HEGU	1	0	1	Y
7/17/12	Dove Bay, Rainy Lake	6	2	3	3	SWSP	3	0	3	N
7/17/12	Dove Bay, Rainy Lake	6	2	3	3	RWBL	1	0	1	N
7/17/12	Dove Bay, Rainy Lake	6	2	3	3	LISP	1	0	1	N
7/17/12	Dove Bay, Rainy Lake	6	3	3	3	RWBL	8	0	8	N
7/17/12	Dove Bay, Rainy Lake	6	3	3	3	MAWR	2	0	2	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
7/17/12	Dove Bay, Rainy Lake	6	3	3	3	HEGU	3	0	3	Y
7/17/12	Dove Bay, Rainy Lake	6	3	3	3	NOFL	1	0	1	Y
7/17/12	Dove Bay, Rainy Lake	6	3	3	3	COYE	1	0	1	N
7/17/12	Dove Bay, Rainy Lake	6	4	3	3	MAWR	3	0	3	N
7/17/12	Dove Bay, Rainy Lake	6	4	3	3	SWSP	2	0	2	N
7/17/12	Dove Bay, Rainy Lake	6	4	3	3	COYE	2	0	2	N
7/17/12	Dove Bay, Rainy Lake	6	4	3	3	RWBL	4	0	4	N
7/17/12	Dove Bay, Rainy Lake	6	4	3	3	SOSP	2	0	2	N
6/11/12	Irwin Bay, Kabetogama Lake	3	1	1	1	AMBI	1	0	1	N
6/11/12	Irwin Bay, Kabetogama Lake	3	1	1	1	RWBL	5	0	5	N
6/11/12	Irwin Bay, Kabetogama Lake	3	1	1	1	COYE	2	0	2	N
6/11/12	Irwin Bay, Kabetogama Lake	3	1	1	1	RNGR	0	1	1	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
6/11/12	Irwin Bay, Kabetogama Lake	3	1	1	1	MAWR	1	0	1	N
6/11/12	Irwin Bay, Kabetogama Lake	3	1	1	1	NOFL	1	0	1	Y
6/11/12	Irwin Bay, Kabetogama Lake	3	1	1	1	PBGR	1	0	1	N
6/11/12	Irwin Bay, Kabetogama Lake	3	1	1	1	RNDU	3	0	3	N
6/11/12	Irwin Bay, Kabetogama Lake	3	1	1	1	YHBL	1	0	1	N
6/11/12	Irwin Bay, Kabetogama Lake	3	1	1	1	RWBL	1	0	1	Y
6/25/12	Irwin Bay, Kabetogama Lake	3	1	2	2	MAWR	0	1	1	N
6/25/12	Irwin Bay, Kabetogama Lake	3	1	2	2	SWSP	1	1	2	N
6/25/12	Irwin Bay, Kabetogama Lake	3	1	2	2	COYE	2	0	2	N
6/25/12	Irwin Bay, Kabetogama Lake	3	1	2	2	RWBL	2	0	2	N
6/25/12	Irwin Bay, Kabetogama Lake	3	1	2	2	BWTE	1	0	1	N
6/25/12	Irwin Bay, Kabetogama Lake	3	1	2	2	YHBL	3	1	4	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
6/25/12	Irwin Bay, Kabetogama Lake	3	2	2	1	RWBL	3	0	3	N
6/25/12	Irwin Bay, Kabetogama Lake	3	2	2	1	RNGR	4	0	4	N
6/25/12	Irwin Bay, Kabetogama Lake	3	2	2	1	UKDUCK	1	0	1	Y
6/25/12	Irwin Bay, Kabetogama Lake	3	2	2	1	COGO	2	0	2	Y
6/25/12	Irwin Bay, Kabetogama Lake	3	2	2	1	COGO	2	0	2	N
6/25/12	Irwin Bay, Kabetogama Lake	3	2	2	1	RNDU	1	0	1	Y
6/25/12	Irwin Bay, Kabetogama Lake	3	2	2	1	BWTE	1	0	1	Y
6/25/12	Irwin Bay, Kabetogama Lake	3	3	2	1	RNGR	2	0	2	N
6/25/12	Irwin Bay, Kabetogama Lake	3	3	2	1	COYE	1	0	1	N
6/25/12	Irwin Bay, Kabetogama Lake	3	3	2	1	RWBL	4	0	4	N
6/25/12	Irwin Bay, Kabetogama Lake	3	3	2	1	ALFL	1	0	1	N
6/25/12	Irwin Bay, Kabetogama Lake	3	3	2	1	SWSP	2	0	2	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
6/25/12	Irwin Bay, Kabetogama Lake	3	3	2	1	COGO	1	0	1	Y
6/25/12	Irwin Bay, Kabetogama Lake	3	3	2	1	RNDU	0	4	4	N
6/25/12	Irwin Bay, Kabetogama Lake	3	5	2	1	SWSP	2	0	2	N
6/25/12	Irwin Bay, Kabetogama Lake	3	5	2	1	PBGR	3	0	3	N
6/25/12	Irwin Bay, Kabetogama Lake	3	5	2	1	RWBL	8	0	8	N
6/25/12	Irwin Bay, Kabetogama Lake	3	5	2	1	SOSP	1	0	1	N
6/25/12	Irwin Bay, Kabetogama Lake	3	5	2	1	RNGR	2	0	2	N
6/25/12	Irwin Bay, Kabetogama Lake	3	5	2	1	COYE	2	0	2	N
6/25/12	Irwin Bay, Kabetogama Lake	3	5	2	1	MAWR	1	0	1	N
6/25/12	Irwin Bay, Kabetogama Lake	3	5	2	1	WODU	1	0	1	Y
6/25/12	Irwin Bay, Kabetogama Lake	3	5	2	1	COLO	3	0	3	N
6/25/12	Irwin Bay, Kabetogama Lake	3	5	2	1	CORA	2	0	2	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
7/9/12	Irwin Bay, Kabetogama Lake	3	5	3	2	COLO	4	1	5	Y
7/9/12	Irwin Bay, Kabetogama Lake	3	5	3	2	COLO	1	0	1	N
7/9/12	Irwin Bay, Kabetogama Lake	3	5	3	2	PBGR	1	0	1	N
7/9/12	Irwin Bay, Kabetogama Lake	3	5	3	2	COYE	5	0	5	N
7/9/12	Irwin Bay, Kabetogama Lake	3	5	3	2	CORA	2	0	2	N
7/9/12	Irwin Bay, Kabetogama Lake	3	5	3	2	WTSP	1	0	1	N
7/9/12	Irwin Bay, Kabetogama Lake	3	5	3	2	RWBL	7	0	7	N
7/9/12	Irwin Bay, Kabetogama Lake	3	5	3	2	SWSP	2	0	2	N
7/9/12	Irwin Bay, Kabetogama Lake	3	5	3	2	RNGR	3	0	3	N
7/9/12	Irwin Bay, Kabetogama Lake	3	5	3	2	MALL	2	0	2	Y
7/9/12	Irwin Bay, Kabetogama Lake	3	5	3	2	HEGU	1	0	1	Y
7/9/12	Irwin Bay, Kabetogama Lake	3	5	3	2	COGO	1	0	1	Y

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
7/9/12	Irwin Bay, Kabetogama Lake	3	5	3	2	BEKI	1	0	1	Y
7/9/12	Irwin Bay, Kabetogama Lake	3	5	3	2	RNDU	2	2	4	Y
7/9/12	Irwin Bay, Kabetogama Lake	3	3	3	2	COGR	2	0	2	Y
7/9/12	Irwin Bay, Kabetogama Lake	3	3	3	2	MAWR	1	1	2	N
7/9/12	Irwin Bay, Kabetogama Lake	3	3	3	2	SWSP	4	0	4	N
7/9/12	Irwin Bay, Kabetogama Lake	3	3	3	2	RWBL	4	0	4	N
7/9/12	Irwin Bay, Kabetogama Lake	3	3	3	2	PBGR	2	0	2	N
7/9/12	Irwin Bay, Kabetogama Lake	3	3	3	2	COYE	2	0	2	N
7/9/12	Irwin Bay, Kabetogama Lake	3	3	3	2	RNDU	1	0	1	N
7/9/12	Irwin Bay, Kabetogama Lake	3	3	3	2	RNDU	0	20	20	N
7/9/12	Irwin Bay, Kabetogama Lake	3	3	3	2	RNGR	1	0	1	N
7/9/12	Irwin Bay, Kabetogama Lake	3	3	3	2	CORA	1	0	1	Y

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
7/9/12	Irwin Bay, Kabetogama Lake	3	2	3	2	RNGR	5	0	5	N
7/9/12	Irwin Bay, Kabetogama Lake	3	2	3	2	SWSP	3	0	3	N
7/9/12	Irwin Bay, Kabetogama Lake	3	2	3	2	RWBL	4	0	4	N
7/9/12	Irwin Bay, Kabetogama Lake	3	2	3	2	RNDU	2	0	2	Y
7/9/12	Irwin Bay, Kabetogama Lake	3	2	3	2	MAWR	1	0	1	N
7/9/12	Irwin Bay, Kabetogama Lake	3	2	3	2	COLO	1	0	1	N
7/9/12	Irwin Bay, Kabetogama Lake	3	2	3	2	COYE	1	0	1	N
7/9/12	Irwin Bay, Kabetogama Lake	3	2	3	2	RBGU	4	0	4	N
7/9/12	Irwin Bay, Kabetogama Lake	3	1	3	3	RNDU	1	0	1	N
7/9/12	Irwin Bay, Kabetogama Lake	3	1	3	3	RNGR	1	0	1	N
7/9/12	Irwin Bay, Kabetogama Lake	3	1	3	3	MAWR	2	0	2	N
7/9/12	Irwin Bay, Kabetogama Lake	3	1	3	3	RWBL	3	0	3	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
7/9/12	Irwin Bay, Kabetogama Lake	3	1	3	3	SWSP	2	0	2	N
7/9/12	Irwin Bay, Kabetogama Lake	3	1	3	3	PBGR	1	0	1	N
7/9/12	Irwin Bay, Kabetogama Lake	3	1	3	3	MALL	1	0	1	N
7/9/12	Irwin Bay, Kabetogama Lake	3	1	3	3	RBGU	1	0	1	Y
7/9/12	Irwin Bay, Kabetogama Lake	3	1	3	3	UKDUCK	2	0	2	Y
6/18/12	Rooter Creek, Rainy Lake	8	1	1	1	RNDU	0	2	2	N
6/18/12	Rooter Creek, Rainy Lake	8	1	1	1	WODU	0	2	2	Y
6/18/12	Rooter Creek, Rainy Lake	8	1	1	1	RWBL	5	1	6	N
6/18/12	Rooter Creek, Rainy Lake	8	1	1	1	VEER	1	0	1	N
6/18/12	Rooter Creek, Rainy Lake	8	1	1	1	MALL	3	0	3	Y
6/18/12	Rooter Creek, Rainy Lake	8	1	1	1	SEWR	1	0	1	N
6/18/12	Rooter Creek, Rainy Lake	8	1	1	1	COYE	1	0	1	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
6/18/12	Rooter Creek, Rainy Lake	8	1	1	1	SWSP	1	0	1	N
6/18/12	Rooter Creek, Rainy Lake	8	1	1	1	COLO	1	0	1	N
6/27/12	Rooter Creek, Rainy Lake	8	1	2	2	AMBI	1	0	1	N
6/27/12	Rooter Creek, Rainy Lake	8	1	2	2	RWBL	4	1	5	N
6/27/12	Rooter Creek, Rainy Lake	8	1	2	2	SWSP	2	0	2	N
6/27/12	Rooter Creek, Rainy Lake	8	1	2	2	SOSP	3	0	3	N
6/27/12	Rooter Creek, Rainy Lake	8	1	2	2	COYE	2	0	2	N
6/27/12	Rooter Creek, Rainy Lake	8	1	2	2	YEWA	1	0	1	N
6/27/12	Rooter Creek, Rainy Lake	8	1	2	2	SEWR	1	0	1	N
7/17/12	Rooter Creek, Rainy Lake	8	1	3	3	ALFL	1	0	1	N
7/17/12	Rooter Creek, Rainy Lake	8	1	3	3	YEWA	1	0	1	N
7/17/12	Rooter Creek, Rainy Lake	8	1	3	3	SWSP	2	0	2	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
7/17/12	Rooter Creek, Rainy Lake	8	1	3	3	RWBL	4	0	4	N
7/17/12	Rooter Creek, Rainy Lake	8	1	3	3	COYE	3	0	3	N
7/17/12	Rooter Creek, Rainy Lake	8	1	3	3	TUVU	1	0	1	Y
7/17/12	Rooter Creek, Rainy Lake	8	1	3	3	COLO	1	0	1	Y
7/17/12	Rooter Creek, Rainy Lake	8	1	3	3	MAWR	2	0	2	N
6/18/12	Squaw Franks Island, Rainy Lake	9	2	1	1	AWPE	0	1	1	N
6/18/12	Squaw Franks Island, Rainy Lake	9	2	1	1	RWBL	7	0	7	N
6/18/12	Squaw Franks Island, Rainy Lake	9	2	1	1	SWSP	0	1	1	N
6/18/12	Squaw Franks Island, Rainy Lake	9	2	1	1	UKGULL	1	0	1	Y
6/18/12	Squaw Franks Island, Rainy Lake	9	2	1	1	COYE	1	0	1	N
6/18/12	Squaw Franks Island, Rainy Lake	9	2	1	1	SEWR	2	0	2	N
6/27/12	Squaw Franks Island, Rainy Lake	9	2	2	2	SOSP	1	0	1	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
6/27/12	Squaw Franks Island, Rainy Lake	9	2	2	2	RWBL	7	0	7	N
6/27/12	Squaw Franks Island, Rainy Lake	9	2	2	2	COME	2	0	2	Y
6/27/12	Squaw Franks Island, Rainy Lake	9	2	2	2	COME	1	0	1	N
6/27/12	Squaw Franks Island, Rainy Lake	9	2	2	2	AWPE	2	0	2	Y
6/27/12	Squaw Franks Island, Rainy Lake	9	2	2	2	MAWR	1	0	1	N
7/17/12	Squaw Franks Island, Rainy Lake	9	2	3	3	WTSP	1	0	1	N
7/17/12	Squaw Franks Island, Rainy Lake	9	2	3	3	RWBL	5	0	5	N
7/17/12	Squaw Franks Island, Rainy Lake	9	2	3	3	RWBL	3	0	3	Y
7/17/12	Squaw Franks Island, Rainy Lake	9	2	3	3	CORA	1	0	1	N
7/17/12	Squaw Franks Island, Rainy Lake	9	2	3	3	HEGU	1	0	1	Y
7/17/12	Squaw Franks Island, Rainy Lake	9	2	3	3	RBGU	2	0	2	Y
7/17/12	Squaw Franks Island, Rainy Lake	9	2	3	3	PBGR	1	0	1	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
7/17/12	Squaw Franks Island, Rainy Lake	9	2	3	3	SOSP	1	0	1	N
6/18/12	Swansons Bay, Sand Point Lake	7	3	1	1	RWBL	6	1	7	N
6/18/12	Swansons Bay, Sand Point Lake	7	3	1	1	BWHA	1	0	1	Y
6/18/12	Swansons Bay, Sand Point Lake	7	3	1	1	SWSP	1	0	1	N
6/18/12	Swansons Bay, Sand Point Lake	7	1	1	1	SWSP	2	0	2	N
6/18/12	Swansons Bay, Sand Point Lake	7	1	1	1	SOSP	1	0	1	N
6/18/12	Swansons Bay, Sand Point Lake	7	1	1	1	COYE	1	0	1	N
6/18/12	Swansons Bay, Sand Point Lake	7	1	1	1	RWBL	5	0	5	N
6/18/12	Swansons Bay, Sand Point Lake	7	1	1	1	BWTE	1	0	1	N
6/18/12	Swansons Bay, Sand Point Lake	7	1	1	1	VIRA	1	0	1	N
6/18/12	Swansons Bay, Sand Point Lake	7	1	1	1	SEWR	0	1	1	N
6/29/12	Swansons Bay, Sand Point Lake	7	1	2	2	COYE	1	0	1	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
6/29/12	Swansons Bay, Sand Point Lake	7	1	2	2	MAWR	2	1	3	N
6/29/12	Swansons Bay, Sand Point Lake	7	1	2	2	CORA	1	0	1	N
6/29/12	Swansons Bay, Sand Point Lake	7	1	2	2	MALL	2	0	2	Y
6/29/12	Swansons Bay, Sand Point Lake	7	1	2	2	SOSP	2	0	2	N
6/29/12	Swansons Bay, Sand Point Lake	7	1	2	2	BAEA	1	0	1	N
6/29/12	Swansons Bay, Sand Point Lake	7	1	2	2	RWBL	3	0	3	N
6/29/12	Swansons Bay, Sand Point Lake	7	1	2	2	BLDU	2	0	2	N
6/29/12	Swansons Bay, Sand Point Lake	7	1	2	2	VIRA	1	0	1	N
6/29/12	Swansons Bay, Sand Point Lake	7	3	2	2	SWSP	2	0	2	N
6/29/12	Swansons Bay, Sand Point Lake	7	3	2	2	RWBL	4	0	4	N
6/29/12	Swansons Bay, Sand Point Lake	7	3	2	2	UKGULL	1	0	1	Y
6/29/12	Swansons Bay, Sand Point Lake	7	3	2	2	RTHU	1	0	1	Y

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
6/29/12	Swansons Bay, Sand Point Lake	7	3	2	2	BLJA	1	0	1	N
6/29/12	Swansons Bay, Sand Point Lake	7	3	2	2	WODU	1	0	1	Y
7/12/12	Swansons Bay, Sand Point Lake	7	3	3	3	RWBL	6	0	6	N
7/12/12	Swansons Bay, Sand Point Lake	7	3	3	3	SWSP	1	0	1	N
7/12/12	Swansons Bay, Sand Point Lake	7	3	3	3	AMRO	1	0	1	N
7/12/12	Swansons Bay, Sand Point Lake	7	3	3	3	HEGU	1	0	1	N
7/12/12	Swansons Bay, Sand Point Lake	7	3	3	3	COYE	1	0	1	N
7/12/12	Swansons Bay, Sand Point Lake	7	3	3	3	WISN	1	0	1	N
7/12/12	Swansons Bay, Sand Point Lake	7	1	3	3	COYE	1	0	1	N
7/12/12	Swansons Bay, Sand Point Lake	7	1	3	3	SOSP	1	0	1	N
7/12/12	Swansons Bay, Sand Point Lake	7	1	3	3	RWBL	6	0	6	N
7/12/12	Swansons Bay, Sand Point Lake	7	1	3	3	SWSP	3	0	3	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
7/12/12	Swansons Bay, Sand Point Lake	7	1	3	3	MAWR	2	0	2	N
6/20/12	Tom Cod Bay, Kabetogama Lake	5	5	1	1	MAWR	2	0	2	N
6/20/12	Tom Cod Bay, Kabetogama Lake	5	5	1	1	RWBL	4	0	4	N
6/20/12	Tom Cod Bay, Kabetogama Lake	5	5	1	1	PBGR	2	0	2	N
6/20/12	Tom Cod Bay, Kabetogama Lake	5	5	1	1	COLO	1	0	1	N
6/20/12	Tom Cod Bay, Kabetogama Lake	5	5	1	1	COYE	1	0	1	N
6/20/12	Tom Cod Bay, Kabetogama Lake	5	5	1	1	MALL	1	0	1	Y
6/20/12	Tom Cod Bay, Kabetogama Lake	5	5	1	1	COGO	1	0	1	Y
6/20/12	Tom Cod Bay, Kabetogama Lake	5	10	1	1	WODU	0	1	1	Y
6/20/12	Tom Cod Bay, Kabetogama Lake	5	10	1	1	RWBL	4	0	4	N
6/20/12	Tom Cod Bay, Kabetogama Lake	5	10	1	1	MALL	2	0	2	Y
6/20/12	Tom Cod Bay, Kabetogama Lake	5	10	1	1	BWTE	2	0	2	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
6/20/12	Tom Cod Bay, Kabetogama Lake	5	10	1	1	COYE	2	0	2	N
6/20/12	Tom Cod Bay, Kabetogama Lake	5	10	1	1	MAWR	1	0	1	N
6/20/12	Tom Cod Bay, Kabetogama Lake	5	11	1	1	RNDU	0	1	1	Y
6/20/12	Tom Cod Bay, Kabetogama Lake	5	11	1	1	RWBL	5	0	5	N
6/20/12	Tom Cod Bay, Kabetogama Lake	5	11	1	1	COLO	1	0	1	N
6/20/12	Tom Cod Bay, Kabetogama Lake	5	11	1	1	AMBI	1	0	1	N
6/20/12	Tom Cod Bay, Kabetogama Lake	5	11	1	1	MALL	5	0	5	Y
6/20/12	Tom Cod Bay, Kabetogama Lake	5	11	1	1	MAWR	1	0	1	N
6/20/12	Tom Cod Bay, Kabetogama Lake	5	11	1	1	CORA	2	0	2	N
6/20/12	Tom Cod Bay, Kabetogama Lake	5	11	1	1	BLTE	3	0	3	N
6/20/12	Tom Cod Bay, Kabetogama Lake	5	14	1	1	RWBL	6	0	6	N
6/20/12	Tom Cod Bay, Kabetogama Lake	5	14	1	1	SWSP	2	0	2	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
6/20/12	Tom Cod Bay, Kabetogama Lake	5	14	1	1	COYE	2	0	2	N
6/20/12	Tom Cod Bay, Kabetogama Lake	5	14	1	1	AWPE	1	0	1	Y
6/20/12	Tom Cod Bay, Kabetogama Lake	5	14	1	1	RNDU	0	1	1	N
6/20/12	Tom Cod Bay, Kabetogama Lake	5	14	1	1	RNDU	1	5	6	Y
6/20/12	Tom Cod Bay, Kabetogama Lake	5	6	1	1	MAWR	2	0	2	N
6/20/12	Tom Cod Bay, Kabetogama Lake	5	6	1	1	RWBL	4	0	4	N
6/20/12	Tom Cod Bay, Kabetogama Lake	5	6	1	1	COGO	1	0	1	Y
6/20/12	Tom Cod Bay, Kabetogama Lake	5	6	1	1	BWHA	1	0	1	Y
6/20/12	Tom Cod Bay, Kabetogama Lake	5	6	1	1	NOHA	1	0	1	Y
6/20/12	Tom Cod Bay, Kabetogama Lake	5	6	1	1	SORA	1	0	1	N
6/20/12	Tom Cod Bay, Kabetogama Lake	5	6	1	1	MALL	2	0	2	Y
6/20/12	Tom Cod Bay, Kabetogama Lake	5	2	1	1	PBGR	2	1	3	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
6/20/12	Tom Cod Bay, Kabetogama Lake	5	2	1	1	RWBL	3	0	3	N
6/20/12	Tom Cod Bay, Kabetogama Lake	5	2	1	1	SWSP	2	0	2	N
6/20/12	Tom Cod Bay, Kabetogama Lake	5	2	1	1	ALFL	1	0	1	N
6/20/12	Tom Cod Bay, Kabetogama Lake	5	2	1	1	AMBI	1	0	1	N
6/20/12	Tom Cod Bay, Kabetogama Lake	5	2	1	1	COGO	1	0	1	Y
7/2/12	Tom Cod Bay, Kabetogama Lake	5	11	2	2	BLTE	0	2	2	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	11	2	2	COYE	2	0	2	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	11	2	2	SWSP	1	0	1	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	11	2	2	MAWR	1	0	1	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	11	2	2	RWBL	4	0	4	Y
7/2/12	Tom Cod Bay, Kabetogama Lake	5	11	2	2	RWBL	2	0	2	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	11	2	2	SOSP	1	0	1	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	11	2	2	MALL	1	0	1	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	11	2	2	CORA	2	0	2	Y
7/2/12	Tom Cod Bay, Kabetogama Lake	5	11	2	2	WISN	1	0	1	Y
7/2/12	Tom Cod Bay, Kabetogama Lake	5	11	2	2	COME	2	0	2	Y
7/2/12	Tom Cod Bay, Kabetogama Lake	5	14	2	2	COYE	2	0	2	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	14	2	2	SWSP	4	0	4	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	14	2	2	RWBL	5	0	5	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	14	2	2	BLJA	1	0	1	Y
7/2/12	Tom Cod Bay, Kabetogama Lake	5	6	2	2	PBGR	3	0	3	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	6	2	2	MAWR	2	0	2	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	6	2	2	UKDUCK	1	0	1	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	6	2	2	RWBL	6	0	6	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	6	2	2	SOSP	1	0	1	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	6	2	2	COYE	2	0	2	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	6	2	2	MALL	1	0	1	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	6	2	2	SWSP	2	0	2	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	6	2	2	LCSP	1	0	1	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	10	2	2	COLO	2	1	3	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	10	2	2	RWBL	6	0	6	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	10	2	2	MALL	1	0	1	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	10	2	2	PBGR	2	0	2	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	10	2	2	RNDU	2	0	2	Y
7/2/12	Tom Cod Bay, Kabetogama Lake	5	10	2	2	WODU	1	0	1	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	10	2	2	BEKI	1	0	1	Y

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	10	2	2	SOSP	1	0	1	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	2	2	2	MAWR	2	0	2	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	2	2	2	RWBL	5	0	5	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	2	2	2	YEWA	1	0	1	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	2	2	2	SWSP	1	0	1	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	2	2	2	PBGR	2	0	2	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	2	2	2	UKDUCK	1	0	1	Y
7/2/12	Tom Cod Bay, Kabetogama Lake	5	2	2	2	MALL	1	0	1	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	5	2	2	MAWR	2	0	2	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	5	2	2	SWSP	1	0	1	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	5	2	2	PBGR	1	0	1	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	5	2	2	RWBL	2	0	2	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	5	2	2	COLO	0	1	1	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	5	2	2	COYE	1	0	1	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	5	2	2	CORA	1	0	1	N
7/2/12	Tom Cod Bay, Kabetogama Lake	5	5	2	2	RNDU	1	0	1	Y
7/2/12	Tom Cod Bay, Kabetogama Lake	5	5	2	2	NOFL	1	0	1	N
7/13/12	Tom Cod Bay, Kabetogama Lake	5	6	3	3	PBGR	0	1	1	N
7/13/12	Tom Cod Bay, Kabetogama Lake	5	6	3	3	SWSP	1	0	1	N
7/13/12	Tom Cod Bay, Kabetogama Lake	5	6	3	3	RWBL	10	0	10	N
7/13/12	Tom Cod Bay, Kabetogama Lake	5	6	3	3	SORA	1	0	1	N
7/13/12	Tom Cod Bay, Kabetogama Lake	5	6	3	3	AMBI	1	0	1	Y
7/13/12	Tom Cod Bay, Kabetogama Lake	5	6	3	3	COYE	1	0	1	N
7/13/12	Tom Cod Bay, Kabetogama Lake	5	5	3	3	MAWR	3	0	3	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
7/13/12	Tom Cod Bay, Kabetogama Lake	5	5	3	3	RWBL	2	0	2	N
7/13/12	Tom Cod Bay, Kabetogama Lake	5	5	3	3	RWBL	3	0	3	Y
7/13/12	Tom Cod Bay, Kabetogama Lake	5	5	3	3	PBGR	1	0	1	N
7/13/12	Tom Cod Bay, Kabetogama Lake	5	5	3	3	TRES	2	0	2	N
7/13/12	Tom Cod Bay, Kabetogama Lake	5	5	3	3	COYE	1	0	1	N
7/13/12	Tom Cod Bay, Kabetogama Lake	5	5	3	3	SOSP	1	0	1	N
7/13/12	Tom Cod Bay, Kabetogama Lake	5	10	3	3	RWBL	4	0	4	N
7/13/12	Tom Cod Bay, Kabetogama Lake	5	10	3	3	RWBL	9	0	9	Y
7/13/12	Tom Cod Bay, Kabetogama Lake	5	10	3	3	COYE	2	0	2	N
7/13/12	Tom Cod Bay, Kabetogama Lake	5	10	3	3	MAWR	2	0	2	N
7/13/12	Tom Cod Bay, Kabetogama Lake	5	10	3	3	UKDUCK	1	0	1	Y
7/13/12	Tom Cod Bay, Kabetogama Lake	5	10	3	3	MALL	3	0	3	Y

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
7/13/12	Tom Cod Bay, Kabetogama Lake	5	10	3	3	BWTE	2	0	2	Y
7/13/12	Tom Cod Bay, Kabetogama Lake	5	2	3	3	MAWR	3	0	3	N
7/13/12	Tom Cod Bay, Kabetogama Lake	5	2	3	3	COYE	1	0	1	N
7/13/12	Tom Cod Bay, Kabetogama Lake	5	2	3	3	RWBL	4	0	4	N
7/13/12	Tom Cod Bay, Kabetogama Lake	5	2	3	3	RWBL	3	0	3	Y
7/13/12	Tom Cod Bay, Kabetogama Lake	5	2	3	3	SORA	1	0	1	N
7/13/12	Tom Cod Bay, Kabetogama Lake	5	14	3	3	SWSP	5	0	5	N
7/13/12	Tom Cod Bay, Kabetogama Lake	5	14	3	3	MAWR	3	0	3	N
7/13/12	Tom Cod Bay, Kabetogama Lake	5	14	3	3	RWBL	5	0	5	N
7/13/12	Tom Cod Bay, Kabetogama Lake	5	14	3	3	COYE	2	0	2	N
7/13/12	Tom Cod Bay, Kabetogama Lake	5	14	3	3	CORA	1	0	1	N
7/13/12	Tom Cod Bay, Kabetogama Lake	5	14	3	3	COLO	1	0	1	Y

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
7/13/12	Tom Cod Bay, Kabetogama Lake	5	14	3	3	MALL	1	0	1	N
7/13/12	Tom Cod Bay, Kabetogama Lake	5	11	3	3	RWBL	4	0	4	N
7/13/12	Tom Cod Bay, Kabetogama Lake	5	11	3	3	RWBL	2	0	2	Y
7/13/12	Tom Cod Bay, Kabetogama Lake	5	11	3	3	MAWR	4	0	4	N
7/13/12	Tom Cod Bay, Kabetogama Lake	5	11	3	3	BLTE	3	0	3	N
7/13/12	Tom Cod Bay, Kabetogama Lake	5	11	3	3	SORA	1	0	1	N
7/13/12	Tom Cod Bay, Kabetogama Lake	5	11	3	3	PBGR	3	0	3	N
7/13/12	Tom Cod Bay, Kabetogama Lake	5	11	3	3	CORA	1	0	1	N
6/18/12	West Black Bay, Rainy Lake	22	1	1	1	COLO	0	1	1	N
6/18/12	West Black Bay, Rainy Lake	22	1	1	1	COLO	2	0	2	Y
6/18/12	West Black Bay, Rainy Lake	22	1	1	1	COYE	1	0	1	N
6/18/12	West Black Bay, Rainy Lake	22	1	1	1	RWBL	0	1	1	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
6/18/12	West Black Bay, Rainy Lake	22	1	1	1	RBGU	1	0	1	Y
6/18/12	West Black Bay, Rainy Lake	22	1	1	1	SWSP	2	0	2	N
6/18/12	West Black Bay, Rainy Lake	22	1	1	1	MALL	7	0	7	Y
6/18/12	West Black Bay, Rainy Lake	22	1	1	1	COGR	1	0	1	N
6/18/12	West Black Bay, Rainy Lake	22	1	1	1	COME	1	0	1	Y
6/18/12	West Black Bay, Rainy Lake	22	1	1	1	GBHE	0	2	2	N
6/18/12	West Black Bay, Rainy Lake	22	1	1	1	SEWR	0	1	1	N
6/27/12	West Black Bay, Rainy Lake	22	1	2	2	COYE	3	0	3	N
6/27/12	West Black Bay, Rainy Lake	22	1	2	2	SWSP	4	0	4	N
6/27/12	West Black Bay, Rainy Lake	22	1	2	2	GBHE	1	0	1	Y
6/27/12	West Black Bay, Rainy Lake	22	1	2	2	SOSP	1	0	1	N
6/27/12	West Black Bay, Rainy Lake	22	1	2	2	RWBL	2	0	2	N

Appendix 1 (continued). Bird observations at 11 wetland sites in Voyageurs National Park, 11 June–18 July 2012. Survey design was a modified Marshbird Monitoring Protocol (Meyer et al. 2006). Species codes are official AOU codes (Pyle and DeSante 2015). See Table 1 for site and station information.

Date	Location	Site	Station	Round #	Visit #	Species	# Observed During Survey	# Observed Before/After Survey	Total	Flyover Y/N
6/27/12	West Black Bay, Rainy Lake	22	1	2	2	CORA	1	0	1	Y
6/27/12	West Black Bay, Rainy Lake	22	1	2	2	UKGULL	1	0	1	N
7/17/12	West Black Bay, Rainy Lake	22	1	3	3	SOSP	2	0	2	N
7/17/12	West Black Bay, Rainy Lake	22	1	3	3	SWSP	1	0	1	N
7/17/12	West Black Bay, Rainy Lake	22	1	3	3	RBGU	1	0	1	Y
7/17/12	West Black Bay, Rainy Lake	22	1	3	3	COYE	1	0	1	N
7/17/12	West Black Bay, Rainy Lake	22	1	3	3	UKSPAR	1	0	1	N

Appendix 2. Four-letter species codes (Pyle and DeSante 2015).

Four-letter Code	Species Name	Four-letter Code	Species Name
ALFL	Alder Flycatcher	MAWR	Marsh Wren
AMBI	American Bittern	NOFL	Northern Flicker
AMCR	American Crow	NOHA	Northern Harrier
AMRO	American Robin	PBGR	Pied-billed Grebe
AWPE	American White Pelican	PIWO	Pileated Woodpecker
BAEA	Bald Eagle	RBGU	Ring-billed Gull
BEKI	Belted Kingfisher	RNDU	Ring-necked Duck
BLDU	Black Duck	RNGR	Red-necked Grebe
BLJA	Blue Jay	RTHU	Ruby-throated Hummingbird
BLTE	Black Tern	RWBL	Red-winged Blackbird
BWHA	Broad-winged Hawk	SEWR	Sedge Wren
BWTE	Blue-winged Teal	SORA	Sora
COGO	Common Goldeneye	SOSP	Song Sparrow
COGR	Common Grackle	SWSP	Swamp Sparrow
COLO	Common Loon	TRES	Tree Swallow
COME	Common Merganser	TUVU	Turkey Vulture
CONI	Common Nighthawk	UKDUCK	Unknown Duck
CORA	Common Raven	UKGULL	Unknown Gull
COYE	Common Yellowthroat	UKSPAR	Unknown Sparrow
DCCO	Double-crested Cormorant	VEER	Veery
GBHE	Great Blue Heron	VIRA	Virginia Rail
HEGU	Herring Gull	WISN	Wilson's Snipe
LEBI	Least Bittern	WODU	Wood Duck
LCSP	Le Conte's Sparrow	WTSP	White-throated Sparrow
LISP	Lincoln's Sparrow	YEWA	Yellow Warbler
MALL	Mallard	YHBL	Yellow-headed Blackbird

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