



A Cursory Survey of Bats in Voyageurs National Park, Minnesota

Natural Resource Technical Report NPS/GLKN/NRTR—2013/701



ON THE COVER

Little brown bat (*Myotis lucifugus*). Photo by Laura Kruger.

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Abstract

During late summer 2001 we inspected known day-roosts and conducted mist netting in an attempt to verify the presence of six bat species believed to occur in Voyageurs National Park, Minnesota. Inspections of four buildings, one abandoned mine, and 100 hours of mist netting at 23 net stations resulted in 22 captures and observations. We captured nine little brown bats (*Myotis lucifugus*), 10 northern long-eared bats (*Myotis keenii*), and one silver-haired bat (*Lasionycteris noctivagans*) in mist nets, and two little brown bats by hand at day-roosts. Fecal and tissue samples for mtDNA verified all three species. A preserved hoary bat (*Lasiurus cinereus*) specimen was also inspected at a local community college; reportedly collected within a mile of the park. We were unable to verify presence of the big brown bat (*Eptesicus fuscus*) and the eastern red bat (*Lasiurus borealis*). We recommend acoustic sampling for future inventories of bats in the park.

Introduction

As part a larger attempt to verify the presence of all vertebrates and vascular plants at national parks in the upper Midwest, we conducted a brief survey of bats at Voyageurs National Park (VOYA). Our objective was to verify as many bat species as possible in two brief sampling periods in late summer/early fall 2001. This was a pilot project which eventually lead to a larger inventory of bats at three other National Park Service units in the Great Lakes Inventory and Monitoring Network (Kruger and Peterson 2008). The survey was non-random and not part of the Great Lakes Inventory and Monitoring Network's (GLKN) priority inventories; however, the work contributed to a better understanding of the methods and logistics required for future bat inventories as well as documentation of day roosts and additional bat species for the park.

Six bat species are probably present in VOYA (Kurta 1995): the little brown bat (*Myotis lucifugus*), big brown bat (*Eptesicus fuscus*), northern long-eared bat (*M. septentrionalis*), silver-haired bat (*Lasionycteris noctivagans*), eastern red bat (*Lasiurus borealis*), and the hoary bat (*Lasiurus cinereus*). Two other species should be considered as potential visitors or as possible range extensions. The eastern pipistrelle (*Pipistrellus subflavus*) is further south, reaching as far north as Duluth, Minnesota, a distance of less than 200 km. Less likely is the small-footed bat (*M. leibii*), which ranges as far west as eastern Lake Huron, a distance of nearly 1,000 km. Range extensions have been documented for several other small mammals in VOYA (Jannett et al. 2007), suggesting that an extensive survey of bats could similarly result in range extensions.

Methods

We used two methods to document the presence of bats at VOYA. First, we questioned VOYA resource management and maintenance staff about the presence of bats or bat sign in buildings or abandoned mines in the park. We visited those sites where bats were believed present, documented our observations, and when possible, hand-captured at least one roosting bat to identify the species present. Second, we attempted to mist net bats at night. Locations for mist nets were selected based on safe access at night, proximity to water, and the availability of a travel corridor to funnel bats into the net. We also reviewed the available records of bats documented at the park or nearby areas. This review included records in the National Park Service's NPSpecies database, which we updated at the conclusion of this survey.

Mist nets were 2-ply, 50 denier (50/2) nylon with 1.5 in. (ca. 38 mm) mesh (Avinet, Inc., Dryden, NY). We used nets of four different dimensions (height and length) depending on the site; single nets had a height of 2.6 meters (m) and length of either 6, 9, or 18 m. We also used a stacked net that was 5.2 m high by 9 m long. Mist netting began roughly one-half hour before sunset and continued for 4-to-6 hours (mean = 4.40 hours). Because the amount of time attempting to capture bats and the dimension of the nets varied, we normalized capture effort as the number of bats captured per 12 m of net per hour of effort to be consistent with inventories of bats in other national parks of the western Great Lakes region (Kruger and Peterson 2008).

Captured bats were removed from nets with gloved hands and placed in individual cloth bags until they could be processed. Individual bats were weighed and standard measurements taken to determine species, age-class, and sex of each individual. Standard measurements included forearm length, ear length, tragus length and shape, and hind foot length. Pelage color, length of hair on the foot, percent of tail with hair, presence of a facial mask, and other features were noted when necessary to differentiate between species. We estimated age-class of each bat by illuminating a wing to determine if the epiphyseal spaces between metacarpal joints were fully fused. Bats with fully fused metacarpal joints were classified as adults, and those with a gap or with translucent cartilage were classified as juveniles (Kunz and Anthony 1982). We also examined genitalia to determine sex and mammarys of adult females to determine reproductive status.

Field identification of species was verified for about half of the captured bats by taking a fecal pellet or tissue biopsy for DNA. Fecal pellets were collected from the bottom of cloth holding bags, which were washed after each evening. Tissue biopsies were done with a 3 mm individually wrapped sterile punch. Samples were placed in individually marked vials containing a desiccant to preserve the DNA. All DNA samples were sent to Portland State University where mitochondrial DNA (mtDNA) sequencing was used to identify the species.

Site characteristics, capture data, and roost information were recorded in standardized forms and data were entered and archived in an MSAccess database. Verification of species was recorded in the National Park Services online species database – NPSpecies.

Results and Discussion

Day roosts

We visited five sites, including one abandoned mine and four buildings, where VOYA staff believed bats were roosting during the day (Figure 1; Table 1). A privately-owned cabin near Tar Point, along the northeast shore of Kabetogama Lake, had at least 21 bats roosting near the apex of a vaulted ceiling. A 1.5 m by 0.4 m opening in the gable end of the roof-line provided access to bats. We captured and examine one little brown bat and judged the remaining colony to be little brown bats as well, though there could have been other species mixed in the colony. Additional individuals may have been hidden from view.

Three other park-owned buildings were inspected. All three had bat sign and at least one bat present (range = 1-6). Bats roosted high along ceilings and in crevices, and therefore were difficult to capture. From two hand-captures and visual inspection of those we could not reach, all of the bats in these buildings appeared to be little brown bats. Little brown bats are known for roosting in buildings; however, other species could also have been present.

We inspected the abandoned Bushyhead Mine on Bushyhead Island in Rainy Lake, but we found no sign of bats. The mine adit is about 1 m high by 1 m wide and the mine is 25 m in length. Lee Grim, VOYA biologist, previously observed as many as three bats in the mine during winter. This mine may be too cool (Table 1) for day roosting bats in summer, when bats - especially pregnant females - prefer warm conditions, but may serve as a hibernaculum for a few bats in winter when they lower their body temperature during hibernation. However, the lack of any guano on the mine floor and the lack of crevices for bats to hide in suggest little use of this mine at the time of this survey.

We examined records for other abandoned mines in VOYA. Most were either capped with cement (Old Soldier Mine) or were shallow pits that provide no habitat for bats. These sites were not visited. The Big American Mine, also on Rainy Lake, has a deep vertical shaft, but it was filled with water at the time of this survey. Two abandoned mine features on Mica Island, Rainy Lake, may provide some habitat for bats, but we were unable to inspect them.

Table 1. Day roost and mine sites inspected for presence of bats at Voyageurs National Park, Minnesota, 2001.

Roost site	Date	Time	Temp (°F) inside ¹		Temp Outside	# Bats Counted ²	Species	Guano
			High	Low				
Tar Point Cabin	7/24/01	14:30	95	80	80	21 (1)	<i>M. lucifigus</i>	Piles & scattered
W. Pines Shed	7/26/01	12:00	98	80	71	1	<i>M. lucifigus</i>	Scattered
Bushyhead Mine	7/26/01	16:30	72	65	70	0		None
Rainy Lk Saloon	7/26/01	16:00	94		70	6	<i>M. lucifigus</i>	Scattered
Cabin 2-299	8/29/01	16:30	85	80	76	3 (1)	<i>M. lucifigus</i>	Scattered

¹Range of temperatures inside roost; high temperatures were generally near the top of the structure; low temperatures were taken in a shaded area at head-level.

²Actual counts; additional bats may have been present in hidden areas; the number of bats hand-captured for identification is shown in parentheses.

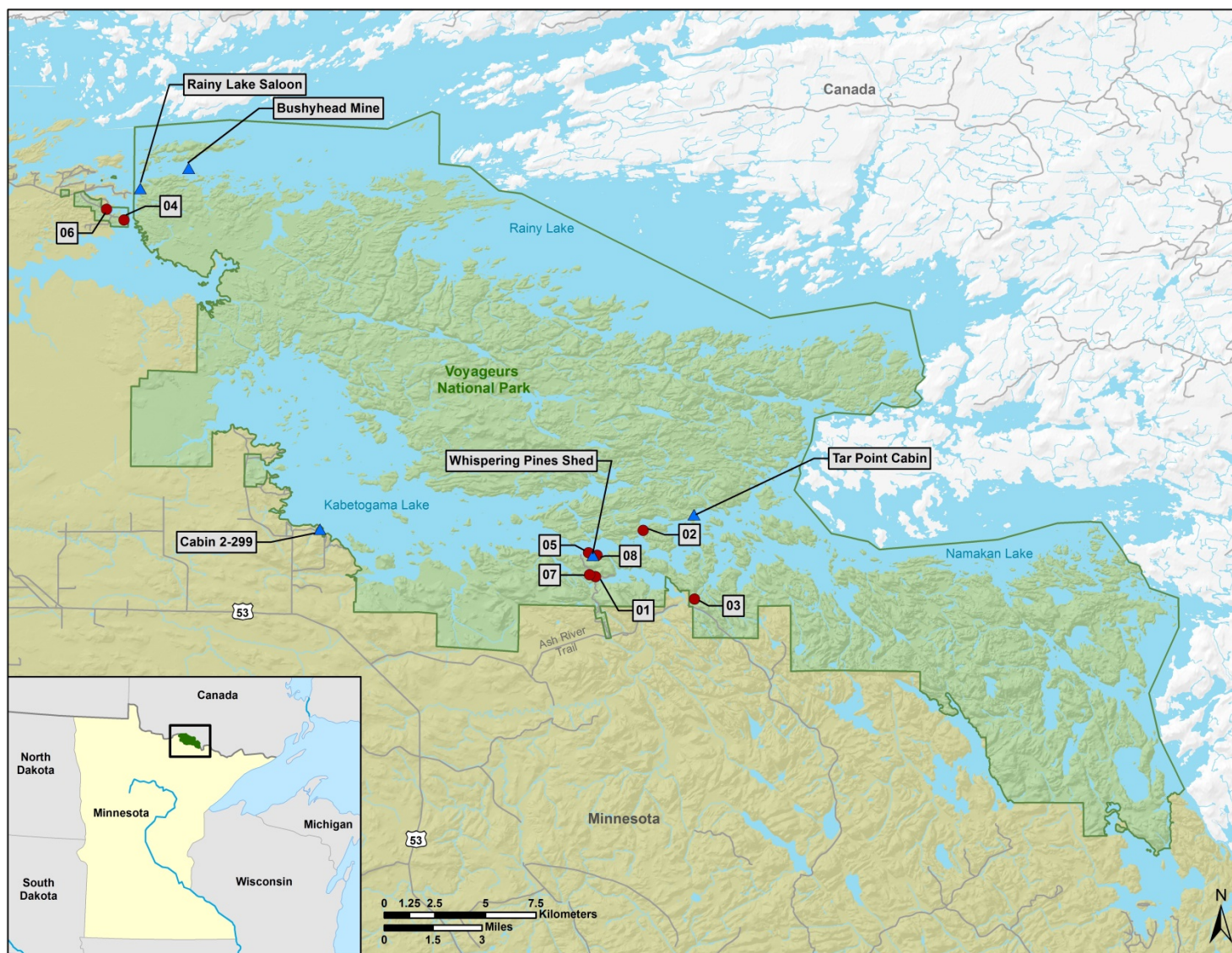


Figure 1. Location of five potential day roost sites (blue triangles with labels) and eight mist netting sites (red dots with numbers) where bats were capture at Voyageurs National Park, Minnesota.

Mist netting

We set mist nets at 23 different stations in the vicinity of eight sites (2-5 stations per site) in the south and western portions of VOYA (see Figure 1; Appendix A; Appendix B). We captured 20 bats in just over 100 hours of mist netting, with capture success at stations ranging from 0 to 0.67 bats/12 m of net/hour (Table 2; Appendix C). Mist nets that spanned travel corridors along narrow driveways or trails were most productive. Bats readily avoided mist nets set in open meadows or other stations where travel corridors were not well framed by vegetation. Our most successful station was across a driveway at the Whispering Pines seasonal housing area (Site 8, Station 1) where we captured eight bats (three little brown and five northern long-eared bats). The Sullivan Bay site provided five captures over the two sampling periods; Kohler Bay resulted in three captures; the Rainy Lake Visitor Center complex (RLVC) provided two captures; and we caught one bat along the entrance road to the Rainy Lake Visitor Center and one at the Ash River Visitor Center (ARVC, Table 2). Stations along the Moose River snowmobile portage and at a pond along the Meadwood Road were unsuccessful. These latter stations lacked vegetation to funnel bats in to the nets.

Overall capture success was 0.01 bats/12 m-net/hour (range = 0.00 – 0.67; Table 3). Capture success at VOYA was slightly lower but comparable to overall capture rates at Apostle Islands National Lakeshore (APIS; range = 0.08 to 0.32), Grand Portage National Monument (GRPO; range = 0.25 to 0.91), and Pictured Rocks National Lakeshore (PIRO; range = 0.09 to 0.75) in 2003 (Table 3) (Kruger and Peterson 2008). However, we had two stations where no bats were captured. Bat captures are highly dependent on net location, and these two stations lacked sufficient vegetation in the form of trees and branches to funnel bats in to the net. For this reason, direct comparisons of capture success using mist nets are not advisable without a large and very consistent sampling effort (Kunz and Brock 1975).

Table 2. Capture success mist netting bats at eight sites in Voyageurs National Park, Minnesota, 2001.

Date	Site Name	Site #	No. of stations	Net-hours	Net-meters	# Bats captured	Bats/net-m/hr
7/23/2001	Sullivan Bay	01	3	15.1	2.5	4	0.11
7/24/2001	Kohler Portage	02	3	15.5	2.5	3	0.08
7/25/2001	Moose Portage	03	3	14.4	2.5	0	0.00
7/26/2001	RLVC	04	3	13.1	2.5	2	0.06
7/27/2001	ARVC Lot	05	3	8.7	2.5	1	0.05
8/27/2001	RLVC Road	06	2	10.0	3.0	1	0.03
8/28/2001	Meadwood Pond	07	2	9.3	3.0	0	0.00
8/29/2001	Whispering Pines	08	2	4.0	3.0	8	0.67
8/30/2001	Sullivan Bay	01	2	11.0	3.0	1	0.03
Totals		8	23	101.1	24.5	20	

Table 3. Measures of success for mist netting bats at four national parks in the upper Midwest, 2001-2003.

Park ¹	Total captures	Mist netting nights	Average hrs/night	Captures/net-m/hr ²	
				Min	Max
GRPO	64	15	3.16	0.25	0.91
PIRO	67	30	4.23	0.09	0.75
APIS	22	20	4.05	0.08	0.32
VOYA	20	23	4.40	0.00	0.67

¹GRPO= Grand Portage National Monument, MN; PIRO= Pictured Rocks National Lakeshore, MI; APIS= Apostle Islands National Lakeshore, WI; VOYA= Voyageurs National Park, MN.

²Range of capture success rates measured as number of bats captured per 12 meters of mist net per hour for stations in each park.

Demographic data

Mist netting resulted in nine little brown bats, 10 northern long-eared bats, and one silver-haired bat being captured. Of these, four little brown bats, three northern long-eared bats, and the one silver-haired bat were verified by mtDNA (Appendix D). As an aside, we visited the Biology Department of Rainy River Community College in International Falls and viewed a hoary bat specimen that was reportedly captured within a mile of VOYA (L. Grimm, biology instructor, personal communication).

Our nets were set below the forest canopy (2.6 m to 5.2 m) and therefore were biased against bat species that forage in the canopy or sub-canopy. Bats partition use of the ecosystem to decrease competition (Kalko and Handley 2001). Nets set below the forest canopy are especially effective at capturing the smaller *Myotis* species, which comprised all but one of our captures. Eastern red bats and hoary bats are known to forage over open areas where they feed on larger prey such as moths (K. Geluso personal communication). In an attempt to catch these species we set some nets in lighted parking lots (Sites 04 and 05) and other open areas, but these nets were unsuccessful, primarily because bats can detect nets when flying through otherwise unobstructed areas. Setting nets over water where all species must eventually come to dip for water is a good strategy, and it was a small waterway (Site 06, Station 01) where we caught the single silver-haired bat (Appendix D).

The sex ratio of the juvenile *Myotis* species we captured was 50:50, as would be expected (Table 4); however, we captured no adult male bats. Sample size was small and this may have been by random chance, but potentially our capture period was during a time when adult males were less likely to be captured. In southeastern Ontario, Canada, little brown bats arriving at hibernacula during July were predominantly adult males and nulliparous females, while in August and September bats arriving were predominantly juveniles and post-partum females (Thomas et al. 1979). We found no hibernacula, but conceivably, males were in localized areas away from our capture sites and adult females and juveniles were more available.

Physical measurements

Physical measurements were generally consistent with the literature (Table 5; Appendix D). Considering all ages and sexes for the two *Myotis* species, there was no significant difference in weight ($P = 0.17$), forearm length ($P = 0.42$), hind foot length ($P = 0.11$), or ear length ($P = 0.06$). However, northern-long eared bats had significantly longer tragus length ($P = 0.0004$), and the ratio of tragus-to-ear length was greater ($P = 0.0017$) than for little brown bats. Considering adult females only, northern long-eared bats had significantly longer ears ($P = 0.0024$), a longer tragus ($P = 0.006$), and the ratio of tragus-to-ear length was significantly greater ($P = 0.0434$; Figure 2). Adult female *Myotis* could be reasonably well differentiated on the basis of ear and tragus length, but juveniles were more variable (Figure 2).

Table 4. Species, age, and sex ratio of bats mist netted and handled at Voyageurs National Park, Minnesota, 2001.

Species/Age	Number and percent of captures				
	Total	%	Male	Female	% Male
<i>Myotis lucifugus</i> :					
Adult	4	20%	0	4	0
Juvenile	5	25%	3	2	60
<i>M. septentrionalis</i> :					
Adult	3	15%	0	3	0
Juvenile	7	35%	3	4	43
<i>Lasionycteris noctivagans</i> :					
Adult	1	5%	0	1	0
Totals	20		6	14	43

Conclusions and Recommendations

We verified the presence of little brown bats, northern long-eared bats, and silver-haired bats in Voyageurs National Park by capture with mist nets and subsequent verification of a subset by mtDNA. We also examined and confirmed the identification of a single specimen of hoary bat held by the Rainy River Community College in International Falls, Minnesota. However, we did not verify any live hoary bats within the park boundary, nor could we verify the presence of the eastern red bat or big brown bat.

We recommend additional sampling using acoustic methods (Rodhouse et al. 2011). Kruger and Peterson (2008) were unable to mist net big brown bats or hoary bats at APIS, GRPO, and PIRO, but documented the presence of both species by recording 380 and 2,165 call sequences respectively. In that study, they also mist netted only five eastern red bats yet documented the species with 976 call sequences. Obviously, acoustic sampling can result in species verifications where mist netting is unable to do so. We recommend active (as opposed to passive) acoustic sampling where the observer walks slowly through a variety of habitats with an acoustic recorder, such as a Song Meter TM (<http://www.wildlifeacoustics.com>) or AnaBat TM system (<http://www.titley-scientific.com>) to record bat calls at night (Britzke 2003, Kruger and Peterson 2008).

Because of the challenges of navigating at night in VOYA, this cursory study was limited to easy access areas. A more extensive, systematic inventory using mist nets would require significant backcountry travel and overnight stays. This might be desirable, and indeed necessary, if future studies depend on having a bat in the hand for genetic, physical, and demographic data, or for determining the presence of diseases like white-nosed syndrome (WNS). However, if handling bats is not necessary, acoustic recorders can be placed in remote locations and programmed to record at desired times. The resulting data can be examined using available software to verify species and in some cases estimate relative abundance of bats (Miller 2010).

Additional mist netting for bats at VOYA could concentrate on the demographics and health of the two smaller *Myotis* species. Mist netting accompanied by radio-tagging could also provide important information on habitat use, including the locations of day-roost sites and hibernacula. The *Myotis* species are more easily captured with mist nets, and investigators could monitor the occurrence of white-nose syndrome (WNS). We found no evidence of WNS, but this deadly fungal disease could eventually infect bats in Voyageurs. WNS was verified as far north as southern Ontario, Canada, along the Lake Superior shoreline in 2011 (BCI 2013). Any handling activities should be carefully planned so as not to spread the WNS fungus (*Geomyces destructans*).

We detected bats in all four buildings to which we were alerted of their presence by VOYA staff; all were likely little brown bats. Both little brown bats and northern long-eared bats will use buildings; big brown bats are known to use them as well. Where NPS policy allows, old buildings that are not for human use could be left for day-roosts and/or hibernacula. However, for health reasons, they should be excluded from buildings used by humans. If bats are to be excluded, the number of bats and time of year should be considered. Attempting to exclude a colony with pregnant females or very young bats should be avoided. Bats can be excluded by covering, caulking, or screening all cracks and holes as small as 1.3 cm (1/2 inch) in diameter.

This is most effectively done by creating one-way funnels that will let bats out but not back in. After several nights the funnels can be removed and the holes filled. For large colonies we recommend consultation with Bat Conservation International (www.batcon.org/).

We inspected only one abandoned mine, which showed no use. We also reviewed records of other mines that suggested they were poor habitat for roosting or hibernating bats. Most mines in VOYA appear to be shallow pits. The abandoned mines on Mica Island, Rainy Lake, that we were unable to investigate should be checked, and the Bushyhead Mine could be re-inspected during winter to further explore the reports of hibernating bats there.

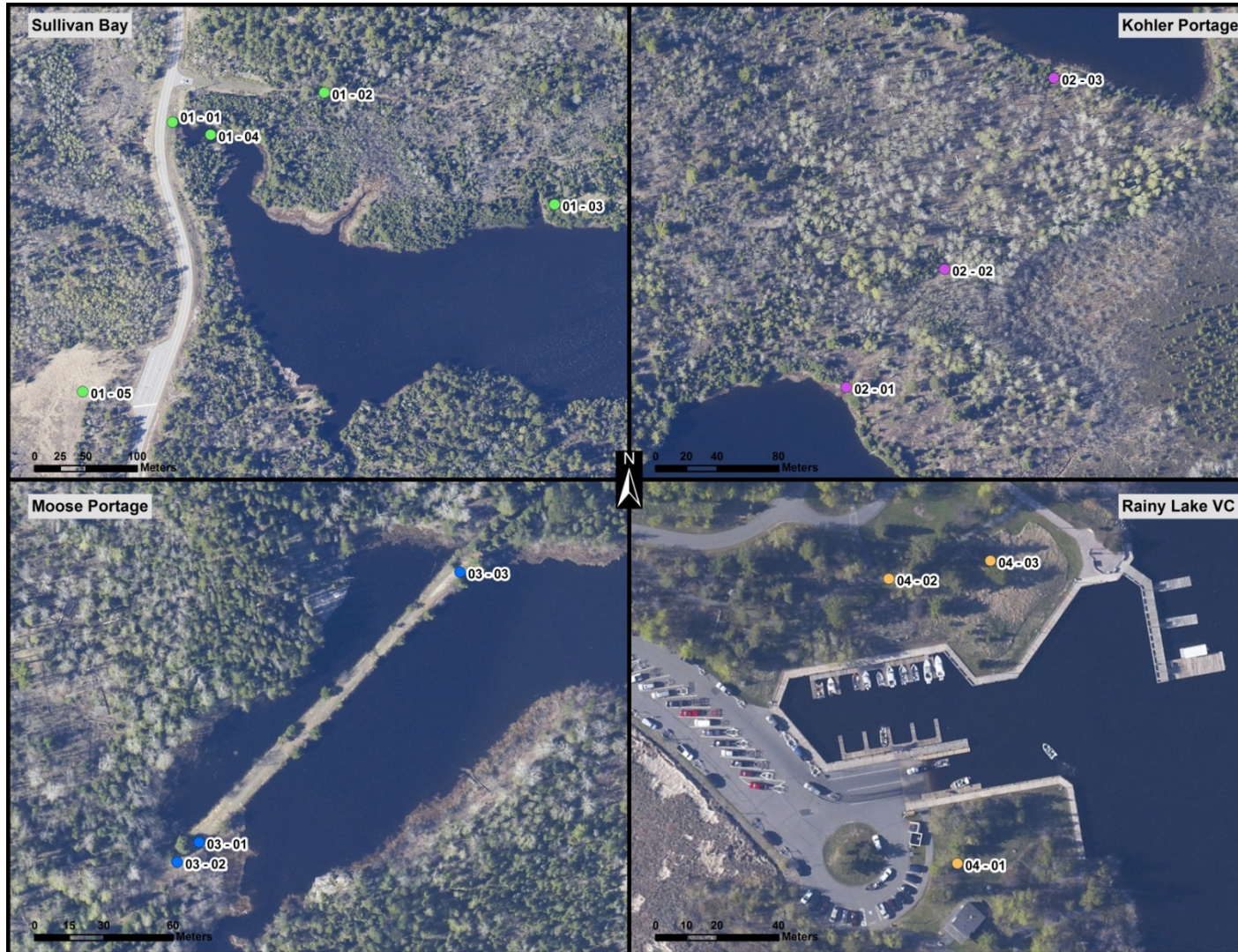
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Appendix A. Location and descriptions of stations where bats were mist netted at Voyageurs National Park, Minnesota 2001.

Site Name	Site #	Station #	Latitude	Longitude	Distance to water	Set description
Sullivan Bay	01	01	48° 25.507'	92° 50.614'	< 10 m	Over culvert between the Bay and Meadwood Road
		02	48° 25.493'	92° 50.700'	> 10 m	Across two-track trail, 100 m from Sullivan Bay
		03	48° 25.448'	92° 50.432'	< 10 m	Across clearing near shoreline
		04	48° 25.485'	92° 50.704'	0	Across small bay on north shore
		05	48° 25' 21.00"	92° 50' 48.33"	> 10 m	Edge of meadow near beaver pond
Kohler Portage	02	01	48° 26.721'	92° 48.837'	< 10 m	Across portage trail, west end, 1 m from shore of bay
		02	48° 26.769'	92° 48.774'	> 10 m	Across portage trail at swamp between stns 1 and 2
		03	48° 26.836'	92° 48.716'	< 10 m	Across portage, east end, 8 m from shore of bay
Moose Portage	03	01	48° 24.889'	92° 46.770'	< 10 m	Parallel to Moose River portage, between two ponds
		02	48° 24' 53.06"	92° 46' 46.66"	< 10 m	Parallel to Moose River portage, between two ponds
		03	48° 24.952'	92° 46.678'	> 10 m	Across Moose River portage trail
RLVC	04	01	48° 34.999'	93° 09.677'	> 10 m	Between restrooms and lighted parking lot
		02	48° 35' 03.04"	93° 09' 41.16"	> 10 m	Across path between parking lot & visitor center
		03	48° 35' 03.23"	93° 09' 39.55"	> 10 m	Across stone walkway to visitor center, well lighted
ARVC Parking Lot	05	01	48° 26' 07.82"	92° 51' 00.76"	< 10 m	On lawn under white pine near lighted parking lot
		02	48° 26' 09.06"	92° 50' 57.21"	> 10 m	Across trail from parking lot to point
		03	48° 26' 05.68"	92° 50' 58.05"	> 10 m	Across ephemeral wetland on hill over parking lot
RLVC Road	06	01	48° 35.288'	93° 10.370'	0	Over bay with floating bog mat, near power line
		02	48° 35' 06.03"	93° 10' 11.26"	0	Over water between shore and floating bog
Meadwood Road	07	01	48° 25' 32.66"	92° 50' 58.58"	0	Over water between beaver dam and snag out in pond
		02	48° 25' 37.77"	92° 51' 00.08"	> 10 m	Across old road cut near crest of small rise
Whispering Pines	08	01	48° 26' 03.86"	92° 50' 40.34"	> 10 m	Across driveway to upper cabins
		02	48° 26' 03.44"	92° 50' 39.67"	< 10 m	Across drain field for Whispering Pines quarters

Appendix B. Location of stations (colored dots) where mist nets were placed to capture bats at Voyageurs National Park, Minnesota, 2001. The numbers associated with each station refer to the site (first two digits) and station (second two digits) as listed in Appendix A.



Appendix B (continued). Location of stations (colored dots) where mist nets were placed to capture bats at Voyageurs National Park, Minnesota, 2001. The numbers associated with each station refer to the site (first two digits) and station (second two digits) as listed in Appendix A.



Appendix C. Effort expended mist netting bats at Voyageurs National Park, Minnesota 2001.

Site Name	Date	Site #	Station #	Open	Closed	Total Hours	Height (m)	Length (m)	Net-meters	# Bats Captured	Bats/net-m/hr
Sullivan Bay	7/23/2001	01	01	21:20	2:35	5.25	5.2	9.0	1.5	0	0.00
			02	21:27	2:28	5.00	2.6	6.0	0.5	4	1.60
			03	21:35	2:25	4.83	2.6	6.0	0.5	0	0.00
	8/30/2001		04	21:00	2:00	5.00	2.6	18.0	1.5	1	0.13
			05	20:30	2:30	6.00	5.2	9.0	1.5	0	0.00
Kohler Portage	7/24/2001	02	01	21:00	2:20	5.33	5.2	9.0	1.5	2	0.25
			02	21:10	2:25	5.25	2.6	6.0	0.5	1	0.38
			03	21:05	2:00	4.92	2.6	6.0	0.5	0	0.00
Moose Portage	7/25/2001	03	01	21:15	2:00	4.75	5.2	9.0	1.5	0	0.00
			02	21:15	2:00	4.75	2.6	6.0	0.5	0	0.00
			03	21:15	2:10	4.92	2.6	6.0	0.5	0	0.00
RLVC	7/26/2001	04	01	22:00	2:00	4.00	5.2	9.0	1.5	1	0.17
			02	21:30	2:00	4.50	2.6	6.0	0.5	1	0.44
			03	21:40	2:15	4.58	2.6	6.0	0.5	0	0.00
ARVC Parking Lot	7/27/2001	05	01	23:10	2:00	2.83	5.2	9.0	1.5	1	0.24
			02	23:24	2:20	2.93	2.6	6.0	0.5	0	0.00
			03	23:45	2:40	2.92	2.6	6.0	0.5	0	0.00
RLVC Road	8/27/2001	06	01	21:00	2:00	5.00	2.6	18.0	1.5	1	0.13
			02	21:15	2:15	5.00	5.2	9.0	1.5	0	0.00
Meadwood Road	8/28/2001	07	01	21:20	2:00	4.67	2.6	18.0	1.5	0	0.00
			02	21:20	2:00	4.67	5.2	9.0	1.5	0	0.00
Whispering Pines	8/29/2001	08	01	23:00	1:00	2.00	5.2	9.0	1.5	8	2.67
			02	23:00	1:00	2.00	2.6	18.0	1.5	0	0.00
Totals		8	23			101.1			24.5	20	

Appendix D. Capture dates, times, and measurements for 22 bats handled at Voyageurs National Park, Minnesota 2001.

Date	Time	Site	Station	Common Name ¹	Sex	Age	Weight (g)	Hind foot (mm)	Forearm (mm)	Ear (mm)	Tragus (mm)	Sample ID
7/24/2001	0:15	2	1	<i>Myotis lucifugus</i>	Female	Adult	10.8		3.92	1.19	0.51	VOYA-01-07
7/24/2001	21:51	2	2	<i>Myotis lucifugus</i>	Female	Adult	9.0		3.82	1.05	0.49	VOYA-01-08
8/29/2001	1:00	8	1	<i>Myotis lucifugus</i>	Female	Adult	7.3	0.96	3.83	1.13	0.53	VOYA-01-15
8/29/2001	1:00	8	1	<i>Myotis lucifugus</i>	Female	Adult	8.3	0.93	3.78	1.12	0.62	VOYA-01-16
7/24/2001	14:30	Tar Point Cabin		<i>Myotis lucifugus</i>	Female	Juvenile	7.3	0.75	2.78	1.17	0.53	VOYA-01-05
7/24/2001	21:50	2	1	<i>Myotis lucifugus</i>	Female	Juvenile	9.3		3.80	1.12	0.58	VOYA-01-06
7/26/2001	0:20	4	1	<i>Myotis lucifugus</i>	Female	Juvenile	9.0		3.62	1.30	0.60	VOYA-01-09
8/29/2001	16:30	Cabin # 229		<i>Myotis lucifugus</i>	Female	Juvenile	11.3	0.89	3.69	1.17	0.52	VOYA-01-13
7/26/2001	2:00	4	2	<i>Myotis lucifugus</i>	Male	Juvenile	8.8		3.68	1.17	0.50	VOYA-01-10
7/27/2001	0:15	5	1	<i>Myotis lucifugus</i>	Male	Juvenile	7.0		3.75	1.09	0.48	VOYA-01-12
8/29/2001	1:00	8	1	<i>Myotis lucifugus</i>	Male	Juvenile	10.5	0.79	2.74	1.10	0.53	VOYA-01-21
7/23/2001	22:50	1	2	<i>M. septentrionalis</i>	Female	Adult	8.0		3.70	1.50	0.80	VOYA-01-02
7/23/2001	22:50	1	2	<i>M. septentrionalis</i>	Female	Adult	8.3	0.65	3.71	1.36	0.85	VOYA-01-03
8/29/2001	22:12	8	1	<i>M. septentrionalis</i>	Female	Adult	6.0	0.83	2.62	1.37	0.81	VOYA-01-14
8/29/2001	1:00	8	1	<i>M. septentrionalis</i>	Female	Juvenile	7.0	0.91	3.75	1.27	0.53	VOYA-01-18
8/29/2001	1:00	8	1	<i>M. septentrionalis</i>	Female	Juvenile	11.8	0.73	2.86	1.08	0.57	VOYA-01-19
8/29/2001	1:00	8	1	<i>M. septentrionalis</i>	Female	Juvenile	7.8	0.92	3.78	1.25	0.70	VOYA-01-20
8/30/2001	21:20	1	4	<i>M. septentrionalis</i>	Female	Juvenile	10.8	0.77	2.80	1.09	0.56	VOYA-01-22
7/23/2001	22:50	1	2	<i>M. septentrionalis</i>	Male	Juvenile	6.0	0.50	3.70	1.30	0.70	VOYA-01-01
7/23/2001	22:50	1	2	<i>M. septentrionalis</i>	Male	Juvenile	5.8	0.69	3.51	1.08	0.75	VOYA-01-04
8/29/2001	1:00	8	1	<i>M. septentrionalis</i>	Male	Juvenile	7.3	0.74	3.81	1.13	0.65	VOYA-01-17
8/27/2001	3:00	6	1	<i>Lasionycteris noctivagans</i>	Female	Adult	11.3	0.69	2.23	1.09	0.47	VOYA-01-11

¹Specimens in bold were verified by mtDNA sequencing.

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