
**Woodland Owl Surveys in Support of the Michigan Breeding Bird Atlas II:
Year 3**



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EXECUTIVE SUMMARY

The first Michigan Breeding Bird Atlas project occurred during 1983 – 1988 and had a goal of mapping the distribution of bird species that breed in Michigan (McPeck and Adams 1991). The Michigan Breeding Bird Atlas II (MBBA II) project was started in 2001 to help identify changes in bird populations and distributions. McPeck and Adams (1991) noted that early nesting and nocturnal species were underreported in the first Atlas. Because woodland owls are largely nocturnal, often use remote habitats, and breed in the late winter or early spring, they are typically underrepresented in large-scale bird surveys. Consequently, information is lacking on the distribution, abundance, breeding phenology, and habitat use of woodland owls.

In 2003 the Michigan Natural Features Inventory proposed a three-year statewide survey of forest-nesting owls to increase the data available for the MBBA II. Nineteen (19) randomly selected North American Breeding Bird Survey routes were surveyed in 2006 during four periods: 1) mid January – mid February; 2) mid February – mid March; 3) mid March – mid April; and 4) mid April – mid May. In the southern Lower Peninsula (SLP), we conducted surveys during all four periods, while in the northern Lower Peninsula (NLP) and Upper Peninsula (UP) surveys were done in the second, third, and fourth periods. We situated survey stations at approximately 1.6-km (1.0-mile) intervals along each route. Surveys occurred between 0.5 hr after sunset and 0.5 hr before sunrise. We avoided conducting surveys during heavy precipitation or high winds. Weather and other environmental data were collected at all points. Each point count consisted of a two-min silent period, followed by a two-min broadcast period for each potential species, and ended with final two-min silent period. We broadcasted owl calls using an electronic game caller. The period of first response and estimated location was noted for each owl observation. We summarized the data recorded at survey stations by

quarter-township (nine mi²) MBBA II survey block.

We documented 949 owl observations in 2006, consisting of 359 Eastern Screech-Owl, 155 Great Horned Owl, 337 Barred Owl, three Long-eared Owl, two Boreal Owl, and 93 Northern Saw-whet Owl detections. In the SLP we recorded more than four times as many Eastern Screech-Owls as Great Horned or Barred Owls. Great Horned Owl observation rates were similar among survey periods and zones of the State and low compared to Eastern Screech-Owl and Barred Owl. Barred Owl was more common than any other species in the NLP and UP. Barred Owl observation rates increased with each subsequent survey and peaked during the fourth period in all zones. Northern Saw-whet Owl was observed sporadically throughout the State and observation rates varied by zone and survey period. We observed Northern Saw-whet Owl at rates similar to or lower than Great Horned Owl. Two Long-eared Owls were recorded in the SLP and one in the UP. We observed Boreal Owl for the first time in 2006, with two calling birds heard in the central UP. Breeding status was determined for the six owl species on 317 MBBA II survey blocks. We recorded Eastern Screech-Owl, Great Horned Owl, Barred Owl, and Northern Saw-whet Owl on 25, 25, 35, and 14% of the total blocks, respectively. The total number of survey blocks with owl observations increased in 2006 compared to previous years, but the proportion of the total represented by each species was similar to 2004 and 2005.

Comparisons of the number of responses observed during equal length time periods occurring before and after broadcasts indicated that response to calls varied by species and survey. We recorded significantly more Eastern Screech-Owls after broadcasts during each survey. We observed more responses of Great Horned Owls prior to broadcast during the second survey period when comparing both two- and four-minute survey blocks. No significant differences in responses were observed for Great Horned Owl in any of

our other comparisons. When we compared two- and four-minute blocks before and after broadcast for Barred Owl, we had significantly fewer responses after broadcast during the third survey. There were no other significant differences for any other Barred Owl comparisons. We found no differences in the number of Northern Saw-whet Owl responses before and after broadcast, except for the second period when more were observed during the Eastern Screech-Owl broadcast compared to the first silent period. Because we played broadcasts of all forest-nesting owls, it is unknown what effect this may have had on the responsiveness of these species. Specific research is needed to understand the effectiveness of broadcast calls in surveying woodland owls.

It is difficult to evaluate the success of a survey protocol without knowing if negative data (i.e. species not observed) were due to the species being absent or present but not detected. We used likelihood-based models to estimate site occupancy rates and detection probabilities for Eastern Screech-Owl, Great Horned Owl, and Barred Owl. This approach also allowed us to assess how these estimates were influenced by landscape-level habitat and environmental factors. Our best-approximating model for 2006 Eastern Screech-Owl data indicated that the estimated proportion of sites occupied increased with increasing amounts of agriculture and herbaceous upland. Detection probability varied by survey and appeared to be higher when survey time was later at night. Support was not strong for this model and was similar to the second best-supported model, which contained wind as a covariate in place of time period. Wind was negatively related to probability of detection. The estimated proportion of sites occupied was similar to our observed proportion. Mean detection probability was lowest (0.42) in the third survey and highest (0.58) during the fourth period. Using the range of estimated probabilities of detection, we estimated that two to three surveys would be needed to have 80% confidence that lack of detection means Eastern Screech-Owl is not present at a site.

The Great Horned Owl model best supported by our 2006 data indicated increasing site occupancy with higher proportions of agricultural and herbaceous upland and lower amounts of coniferous and mixed forest, water, and bare/sparsely vegetated ground. Wind appeared to negatively affect detection probability in the best-approximating model. Model-estimated site occupancy (0.87) was more than three times as high as the observed proportion (0.26). Probability of detection in 2006 was low (0.13) and similar to estimates in 2004 and 2005. Using the 2006 detection probability estimate, we calculated that 11 surveys would be required to have 80% confidence that Great Horned Owl is absent from a site when not detected.

The model best supported by our 2006 Barred Owl data indicated that the proportion of sites occupied appeared to increase with increasing proportions of forest and decreasing amounts of agriculture, herbaceous upland, and urbanized land. Wind was negatively related to detection probability. The model-estimated proportion of sites occupied was 0.65 compared to our observed proportion of 0.47. Probability of detection increased with each successive survey. Using the lowest and highest detection probabilities, we estimate that 2 – 9 surveys (mean of 4) would be needed to have 80% certainty that Barred Owl is really absent when not observed.

Our results indicate that substantial survey effort is required to have high confidence in the determination of presence/absence of forest-nesting owls at a given site. Wind was negatively related to detection probability in six of the nine best-supported models for the three species from 2004 – 2006. Noise was negatively related to detection probability in two of the remaining models. More work is needed to understand how environmental factors affect owl calling and detection, and how landscape level habitat influences owl site selection.

INTRODUCTION

The original Michigan Breeding Bird Atlas (Atlas) project spanned the years from 1983 to 1988, and the primary goal was to map the distribution of each bird species that breeds in Michigan (McPeck and Adams 1991). Such surveys should be conducted at regular intervals (10 to 25 years) to identify range and population changes (McPeck and Adams 1991), which was the purpose of the Michigan Breeding Bird Atlas II (MBBA II) project that began in 2001. McPeck and Adams (1991) acknowledged that species that nest early in the season and are nocturnal were underreported in the first Atlas due to concentration of field work between late May and early July and in early morning hours. Because woodland owls are largely nocturnal, often utilize remote and inaccessible habitats, and breed in the late winter or early spring, they are typically underrepresented in most large-scale breeding bird surveys, such as state atlas projects and the North American Breeding Bird Survey (BBS). Subsequently, information is lacking on the distribution, abundance, breeding phenology, and habitat use of woodland owls. Scientists recognize the need to develop and use standardized protocols to monitor owl populations (Morrell et al. 1991, Takats et al. 2001).

In 2003 the Michigan Natural Features Inventory (MNFI) proposed to conduct systematic surveys for forest-nesting owls to provide improved data for the MBBA II. We expected that a three-year effort would be required to adequately survey the state for these species. Our objectives were to 1) provide improved data for the MBBA II project, 2) expand our knowledge of the distribution, abundance, breeding status, and phenology of forest-nesting owls in Michigan, 3) collect baseline data using an accepted protocol that would allow for long-term monitoring, 4) evaluate the effectiveness of broadcast call surveys in locating breeding owls, and 5) gather information on the habitat use of forest-nesting owl species at the landscape level.

METHODS

Point Counts

Woodland owl surveys were conducted in 2006 along 19 randomly selected BBS routes (Figure 1). MNFI staff conducted surveys on 15 of these routes and the Kalamazoo Nature Center (KNC) surveyed an additional four transects. Data from the KNC transects are also summarized in this report. Eight of the total routes surveyed were also surveyed in 2004 and 2005. Nine routes were surveyed in the southern Lower Peninsula (SLP), five in the northern Lower Peninsula (NLP), and five in the Upper Peninsula (UP) (Figure 1). In 2004 transects were surveyed once during each of three periods, mid January to mid February, mid February to mid March, and mid March to mid April, for a total of three surveys. Beginning in 2005 a fourth survey period from mid April to mid May was added in an effort to increase detections of later nesting owl species. We also discontinued surveys during the first period in the NLP and UP, due to the low number of owl responses observed in 2004. The revised survey protocol resulted in a total of four surveys being conducted in the SLP and three surveys in the NLP and UP during 2005 and 2006. Surveys were staggered so that SLP transects were done first, NLP second, and UP third, with starting dates separated by 7 – 10 days in each zone.

Owl survey methods used in this project were based on the *Guidelines for Nocturnal Owl Monitoring in North America* (Takats et al. 2001). We located owl point-count stations at approximate 1.6 km (1.0 mile) intervals along each route. Since each BBS route has 50 point-count stations situated at 0.8 km (0.5 mile) intervals, we generally surveyed every other station. When turns in the predefined routes placed a survey station closer than 1.6 km from the previous, we skipped that point and moved to the next station that was at least 1.6 km away. Each station was situated within approximately 0.4 km (0.25 mile) in any direction of the

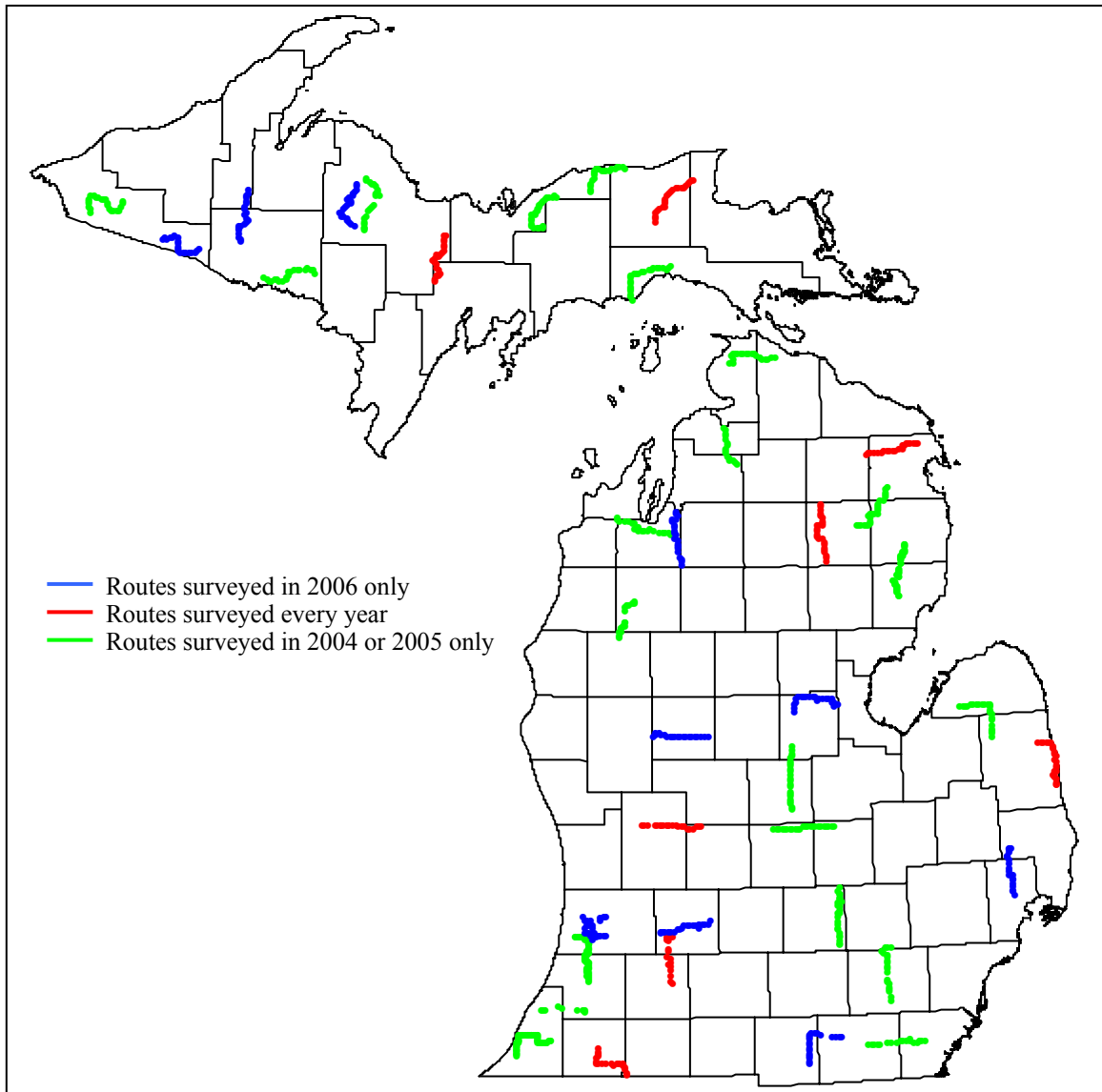


Figure 1. Locations of woodland owl survey routes conducted in Michigan from 2004 – 2006.

predefined point, which provided flexibility in finding locations that were safe and allowed the survey to be conducted without disturbing landowners. If a suitable station could not be located within 0.4 km of the original point, that station was skipped and observers moved on to the next point.

We conducted surveys between 0.5 hr after sunset and 0.5 hr before sunrise and varied starting times as much as practicable. We made an effort to survey each route during each of three portions of the night: first third

(dusk to late evening), second third (late evening to early morning), and last third (early morning to dawn). Heavy precipitation and winds greater than or equal to 20 km/hr (13 mph, equivalent to Beaufort Scale 4) were avoided; however, if conditions deteriorated during the course of a survey, we completed the survey in an effort to evaluate the methodology in a variety of weather conditions. We noted the time of survey and collected data on temperature, moon visibility, cloud cover,

precipitation level and type, wind speed, snow cover, and noise level at each station.

Point counts consisted of a two-minute silent period, followed by a two-minute broadcast period for each species, and ended with final two-minute silent period. We broadcasted owl calls recorded on a CD using an Anchor PB-25 electronic broadcast unit. Calls were played as loud as possible without distortion, which typically ranged from approximately 80-95 dB. A broadcast period consisted of 20 s of calls followed by 20 s of silence, which was repeated three times for a total of two minutes. At Lower Peninsula stations calls of Northern Saw-whet Owl (*Aegolius acadicus*), Eastern Screech-Owl (*Megascops asio*), Long-eared Owl (*Asio otus*), Barred Owl (*Strix varia*), and Great Horned Owl (*Bubo virginianus*) were played for a total survey period of 14 minutes. Calls of Boreal Owl (*Aegolius funereus*), Eastern Screech-Owl, Long-eared Owl, Barred Owl, Great Gray Owl (*Strix nebulosa*), and Great Horned Owl were broadcast at UP stations and the survey period totaled 16 minutes. Calls were played in order from smallest owl to largest. For each series of three calls, we rotated the caller 120° to ensure full coverage. We considered that an owl had responded to a broadcast when it vocalized or flew toward the survey station. For each owl response we recorded the species, sex (if discernable), survey period during which the response was first observed, and estimated location. Locations of owls were approximated by estimating the distance away from the observer and taking a compass bearing from the station point. Due to the difficulty of estimating distances of vocalizing owls at night, we recorded distance using six categories: 1) ≤ 100 m; 2) > 100 m and ≤ 250 m; 3) > 250 m and ≤ 500 m; 4) > 500 m and ≤ 750 m; 5) > 750 m and ≤ 1000 m; and 6) > 1000 m.

Atlas Breeding Status

We summarized point count data by MBBA II survey block and determined breeding

status according to methods in the MBBA II Project Handbook (KNC 2004). MBBA II survey blocks are based on quarter-townships and consist of nine legal sections (KNC 2004). Owls vocalizing in response to broadcasts were treated as singing males for the purposes of assigning breeding criteria codes. The “S” breeding code is assigned when a singing male is present at the same location on at least two dates at least seven days apart (KNC 2004). We used sections as boundaries in determining if observations were repeat occurrences, i.e. if we recorded an owl of the same species in the same section during two or more surveys separated by at least one week, we assigned the observation breeding code S and considered the species a probable breeder for that survey block.

Data Analysis

Because we noted instances in the field when apparently individual owls were recorded at more than one survey station, we estimated the number of repeat detections that occurred for each species. We made two assumptions in estimating repeat detections: 1) owl calls of the same species coming from the same approximate location (based field observations, compass bearings, and distance estimates) on two or more consecutive stations were made by the same owl (i.e. repeat detection), and 2) owl responses of the same species observed at different locations on two consecutive stations were from different birds.

We used the Sign Test to determine if the number of owl observations recorded before and after conspecific broadcast was significantly different than what would be expected. Since we only considered the presence or absence of a species before and after broadcast, the binomial distribution was assumed. The Sign Test is a nonparametric paired-sample test developed from the concept of the binomial test, and is essentially a binomial test with p hypothesized to be 0.50 (Zar 1996). We examined the number of times owls were

observed before (+) or after (-) conspecific calls were played. Testing was conducted by survey period, since owl responsiveness may vary due to breeding phenology, and we only compared equal numbers of two-minute survey blocks (e.g. first silent period vs. Eastern Screech-Owl broadcast period).

To evaluate the success of a given survey protocol, it is important to know if negative data (i.e. the species was not observed) were due to the species being absent or because the species was not detected. We used a likelihood-based modeling approach to evaluate the effectiveness of our survey protocol by providing estimates of site occupancy rates and detection probabilities given environmental conditions and landscape-level habitat. MacKenzie et al. (2002) proposed this model as a method to estimate site occupancy rates when detection probabilities are less than one. The major assumptions of this model are that occupancy rate remains constant throughout the survey, species are never falsely detected at a site when absent and may or may not be detected when present, and detection of the species at a site is independent of detecting the species at all other sites (MacKenzie et al. 2002). We expected that detection probabilities might vary among surveys for some species given different breeding phenologies. Because of limited observations of Long-eared, Boreal, and Northern Saw-whet Owls, we were unable to model their site occupancy rates and detection probabilities.

To investigate if site occupancy estimates were related to landscape level habitat, we summarized the landscape within an 800 meter radius buffer surrounding each point using the MDNR Integrated Forest Monitoring Assessment and Prescription (IFMAP) land coverage. Similar land cover types were combined to form nine categories: urban, tilled agricultural, herbaceous upland, deciduous forest, coniferous forest, mixed forest, nonforested wetland, water, and bare/sparsely vegetated (Table A-1, Appendix A). We calculated

the proportion of each buffer represented by the nine land cover categories for each survey point. To reduce the number of parameters used in our candidate models and increase the interpretability of the results, we conducted principal components analysis (PCA) on the nine land cover categories using JMP-IN 5.1 software (Sall et al. 2005). The first three principal components (PC1, PC2, and PC3) were used in developing our candidate models.

We used the program PRESENCE (www.proteus.co.nz, MacKenzie et al. 2003) to produce our models and estimate occupancy rates and detection probabilities. Akaike's Information Criterion (AIC) was used to select the best approximating model from our candidate sets (Burnham and Anderson 2002). Six environmental variables, time period, temperature, wind speed, cloud coverage (proportion of sky covered), moon visibility, and noise level, were used as parameters in our candidate models to explore potential effects on detection probability. Previous research indicated some of these variables can affect detection and activity of some owl species (Gehlbach 1995, Morrell et al. 1991).

A three-step hierarchical approach was used to develop the set of candidate models for each species. We began by comparing two models that included the parameters ψ (probability that the species is present) and p (probability that the species will be detected), but no site-specific or environmental covariates. The first model assumed that p was constant across surveys whereas the second model assumed that p varied among surveys. If AIC values indicated that the data provided more support for the model with detection probabilities that varied among surveys, we included that parameter in all subsequent models. The second step was to add landscape-level habitat variables, which we believed may be important in determining the probability that a species was present at a site. This was accomplished by specifying seven models with all possible combinations

of our three habitat variables (PC1, PC2, and PC3). The model with the greatest support from our data was then used in forming all subsequent candidate models. The final step in our process was to add one sampling variable (time, wind, temperature, cloud cover, moon visibility, and noise level) to the model resulting from step two individually to form five models. This hierarchical process resulted in a set of 15 candidate models for each species.

If detection probability is known, the minimum number of visits needed to be certain that a species is absent at a given level of confidence can be calculated using the following equation (Reed 1996):

$$N = \frac{\ln(\alpha \text{ level})}{\ln(1-p)}$$

where N is the minimum number of visits and p is the probability of detection. We used an α -level of 0.20 to provide estimates of the minimum number of visits needed to be 80% certain that the species is absent.

RESULTS

Atlas Breeding Status

A total of 949 owl observations, consisting of 359 Eastern Screech-Owl, 155 Great Horned Owl, 337 Barred Owl, three Long-eared Owl, two Boreal Owl, and 93 Northern Saw-whet Owl detections, was recorded during surveys conducted at 1,259 points along 19 BBS routes in 2006 (Table 1). In 2005 we had 634 owl observations, which consisted of 245 Eastern Screech-Owl, 111 Great Horned, 234 Barred Owl, four Long-eared Owl, and 40 Northern Saw-whet Owl records. A total of 456 detections, consisting of 157 Eastern Screech-Owl, 116 Great Horned Owl, 143 Barred Owl, five Long-eared Owl, and 35 Northern Saw-whet Owl observations, was documented in 2004. Eastern Screech-Owl, Barred Owl, and Northern Saw-whet Owl numbers were substantially higher in 2006 compared to 2005.

In the SLP more than four times as many Eastern Screech-Owls were observed than Great Horned and Barred Owls in 2006. Observation rates (total birds recorded/total stations surveyed) for Eastern Screech-Owl were similar during all four surveys in the SLP (Table 1). Great Horned Owl observation rates were generally low compared to Eastern Screech-Owl and Barred Owl and similar among survey periods and zones of the State. We observed more Barred Owls than any other species in both the NLP and UP. In all parts of the State Barred Owl observation rates increased with each subsequent survey and peaked during the fourth period. Northern Saw-whet Owl was observed irregularly throughout the State, with observation rates varying by zone and survey period (Table 1). We observed Northern Saw-whet Owl at rates similar to or lower than Great Horned Owl. Two Long-eared Owls were recorded in the SLP and one in the UP. Boreal Owl was recorded for the first time in 2006, with two calling birds observed in the central UP.

We determined breeding status for six owl species on 317 MBBA II survey blocks (Table 2), which compares to 265 in 2005 and 204 blocks in 2004. Eastern Screech-Owl, Great Horned Owl, Barred Owl, and Northern Saw-whet Owl made up 25, 25, 35, and 14% of the blocks, respectively. The total number of survey blocks with owl observations increased in 2006 compared to the previous two years. The proportion of the total represented by each species was similar to 2004 and 2005.

Table 1. Summary of owl observations by region and survey period recorded during surveys conducted in Michigan in 2006.

Region ^a	Survey Period	No. Points	East. Screech-Owl ^b		Great Horned Owl		Barred Owl		Long-eared Owl		Boreal Owl		No. Saw-whet Owl ^c		Total	
			No. Obs. ^d	Mean ^e	No. Obs. ^d	Mean ^e	No. Obs.	Mean	No. Obs.	Mean	No. Obs.	Mean	No. Obs.	Mean	No. Obs.	Mean
SLP	1	159	80	0.50	18	0.11	4	0.03	---	---	---	---	8	0.05	110	0.69
	2	159	86	0.54	25	0.16	15	0.09	2	0.01	---	---	14	0.09	142	0.89
	3	159	68	0.43	14	0.09	19	0.12	---	---	---	---	6	0.04	107	0.67
	4	157	95	0.61	17	0.11	42	0.27	---	---	---	---	4	0.03	158	1.01
	Subtotal	634	329	0.52	74	0.12	80	0.13	2	<0.01	---	---	32	0.05	517	0.82
NLP	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	2	110	11	0.10	17	0.15	22	0.20	---	---	---	---	17	0.15	67	0.61
	3	109	6	0.06	13	0.12	54	0.50	---	---	---	---	25	0.23	98	0.90
	4	110	13	0.12	6	0.05	69	0.63	---	---	---	---	8	0.07	96	0.87
	Subtotal	329	30	0.09	36	0.11	145	0.44	---	---	---	---	50	0.15	261	0.79
UP	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	2	105	---	---	15	0.14	11	0.10	1	0.01	---	---	---	---	27	0.26
	3	103	---	---	16	0.16	25	0.24	---	---	2	0.02	7	0.07	50	0.49
	4	88	---	---	14	0.16	76	0.86	---	---	---	---	4	0.05	94	1.07
	Subtotal	296	---	---	45	0.15	112	0.38	1	<0.01	2	<0.01	11	0.04	171	0.58
Overall	1	159	80	0.50	18	0.11	4	0.03	---	---	---	---	8	0.05	110	0.69
	2	374	97	0.26	57	0.15	48	0.13	3	<0.01	---	---	31	0.08	236	0.63
	3	371	74	0.20	43	0.12	98	0.26	---	---	2	---	38	0.10	255	0.69
	4	355	108	0.30	37	0.10	187	0.53	---	---	---	---	16	0.05	348	0.98
	Total	1259	359	0.29	155	0.12	337	0.27	3	<0.01	2	<0.01	93	0.07	949	0.75

^a SLP = Southern Lower Peninsula, NLP = Northern Lower Peninsula, and UP = Upper Peninsula.

^b Eastern Screech-Owl.

^c Northern Saw-Whet Owl.

^d Number of owls observed.

^e Average number of owls per point surveyed.

We observed Eastern Screech-Owl on the greatest number of blocks in the SLP (Figure 2). Great Horned Owl was the second most common species in the SLP (Figure 3), and tied with Eastern Screech-Owl for the second highest number of blocks overall. Barred Owl was observed on the greatest number of survey blocks and was most common in the NLP and UP (Figure 4). We only recorded Long-eared Owl as a possible breeder on one SLP and one UP block (Figure 5). Boreal Owl was observed on one survey block in the UP (Figure 6). Northern Saw-whet Owl was recorded sporadically throughout the State (Figure 7). Table B-1 (Appendix B) lists owl breeding data by survey block.

Because the third and fourth survey periods occurred during the early spring, we observed breeding activity of several incidental species. Twenty-two (22) other bird species were recorded during owl surveys (Table 3). American Woodcock (*Scolopax minor*) and Canada Goose (*Branta canadensis*) were the most commonly observed incidental species, being recorded on 32 and 31 survey blocks, respectively. Common Loon (*Gavia immer*) was observed on 11 blocks and Killdeer (*Charadrius vociferus*) and Wilson's Snipe (*Gallinago delicata*) on 10 survey blocks. We recorded Whip-poor-will (*Caprimulgus vociferus*) on nine survey blocks and Mallard (*Anas platyrhynchos*) and Ruffed Grouse (*Bonasa umbellus*) on eight blocks. The remaining 14 species were observed on six or less survey blocks (Table 3). Incidental species data are summarized by block in Table B-2 (Appendix B).

Survey Efficacy

We noted repeat detections for Eastern Screech-owl, Great Horned Owl, and Barred Owl at estimated overall rates of <0.1, 8.3, and 6.6% of the total observations, respectively. Great Horned Owl repeat detections represented 5.1% of SLP, 16.3% of NLP, and 6.3% of UP total observations. We estimated that 1.2% of the SLP, 6.5% of

the NLP, and 10.4% of the UP Barred Owl records were observed at more than one survey point.

Our preliminary testing of equal length survey blocks before and after broadcasts indicated that response to calls varied by species and survey period. We consistently observed Eastern Screech-Owls more often after conspecific broadcasts than before during each survey period ($p \leq 0.004$). The result was the same whether we compared two-min (first silent vs. Eastern Screech-Owl period) or four-min (first silent + Northern Saw-whet periods vs. Eastern Screech-Owl + Long-eared Owl periods) blocks. During the second survey period, significantly fewer Great Horned Owl responses were observed after conspecific broadcast than before when we compared the first silent period with the Great Horned Owl broadcast period ($p < 0.001$). When we compared four-min blocks (first silent + Northern Saw-whet Owl or Boreal Owl periods vs. Great Horned Owl + final silent periods), the number of responses was again significantly lower during the second survey ($p = 0.014$). Great Horned Owl responses were similar before and after broadcasts in all other comparisons. When we compared the number of Barred Owl responses between the first silent and Barred Owl broadcast periods, significantly fewer responses were observed after broadcast during the third survey ($p = 0.034$). In comparing the number of Barred Owl responses between four-min blocks (first silent + Northern Saw-whet or Boreal Owl periods vs. Barred Owl + Great Gray or Great Horned Owl periods), we again observed more responses before broadcasts than after during the third survey ($p = 0.013$). The number of Barred Owl observations before and after broadcast was similar in all other comparisons. The number of Northern Saw-whet Owls observed before and after broadcast was not significantly different for any survey when comparing the first silent period with the broadcast period. When comparing the first silent period with the Eastern Screech-Owl broadcast (period after

Table 2. Number of blocks with owl observations by region and breeding status (according to MBBA II criteria) from surveys conducted in Michigan in 2006.

Species	SLP ^a			NLP		UP		Total
	PO ^b	PR	CO	PO	PR	PO	PR	
Eastern Screech-Owl	14	51	---	11	4	---	---	80
Great Horned Owl	25	14	1	14	6	11	9	80
Barred Owl	13	14	---	20	25	22	17	111
Long-eared Owl	1	---	---	---	---	1	---	2
Boreal Owl	---	---	---	---	---	1	---	1
Northern Saw-whet Owl	12	5	---	13	6	7	---	43
Total	65	84	1	58	41	42	26	317

^a SLP = Southern Lower Peninsula, NLP = Northern Lower Peninsula, and UP = Upper Peninsula.

^b MBBA II breeding status: PO = possible, PR = probable, and CO = confirmed.

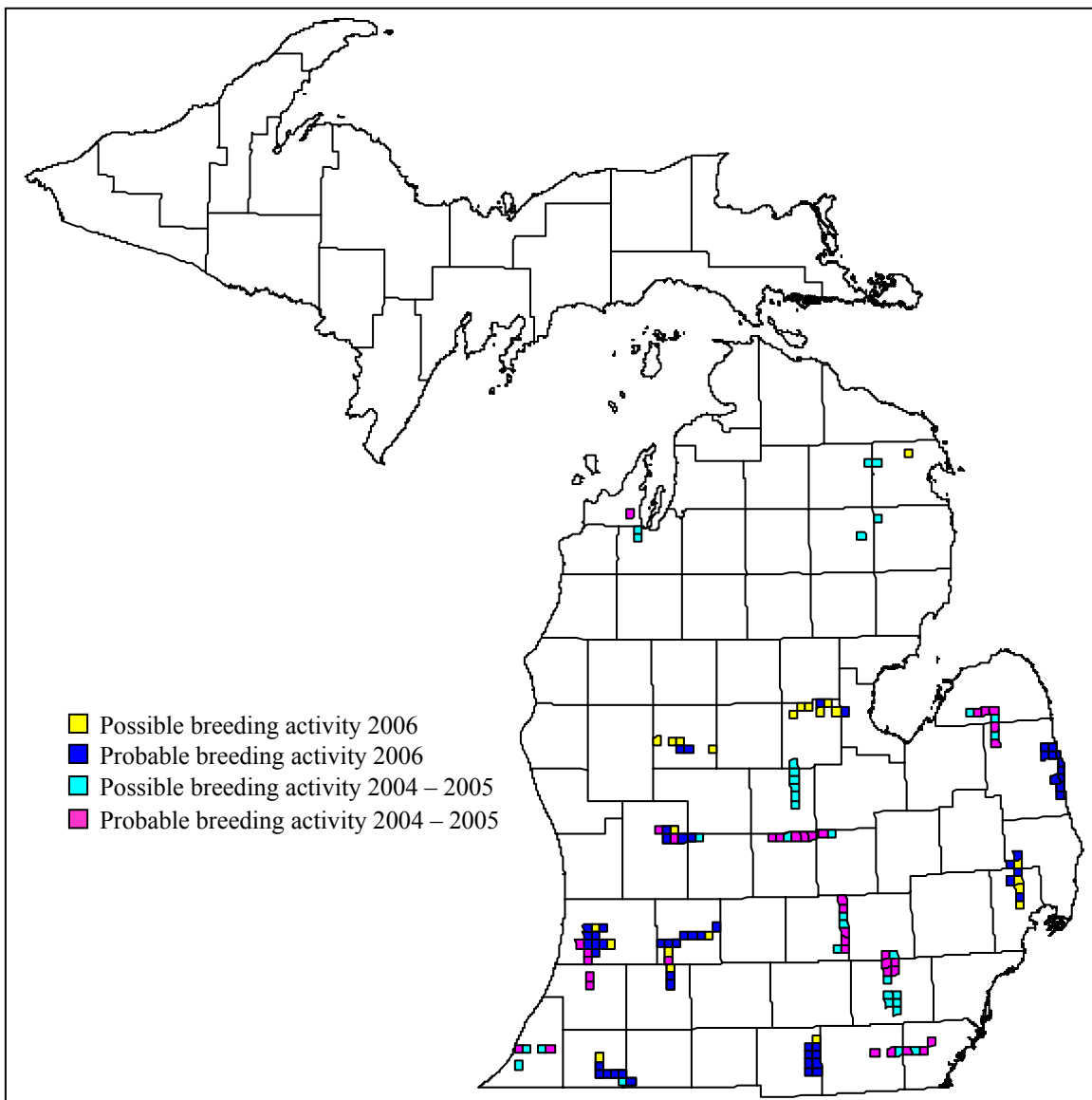


Figure 2. Observed breeding status for Eastern Screech-Owl by MBBA II survey block as determined from surveys conducted in Michigan during 2004 – 2006.

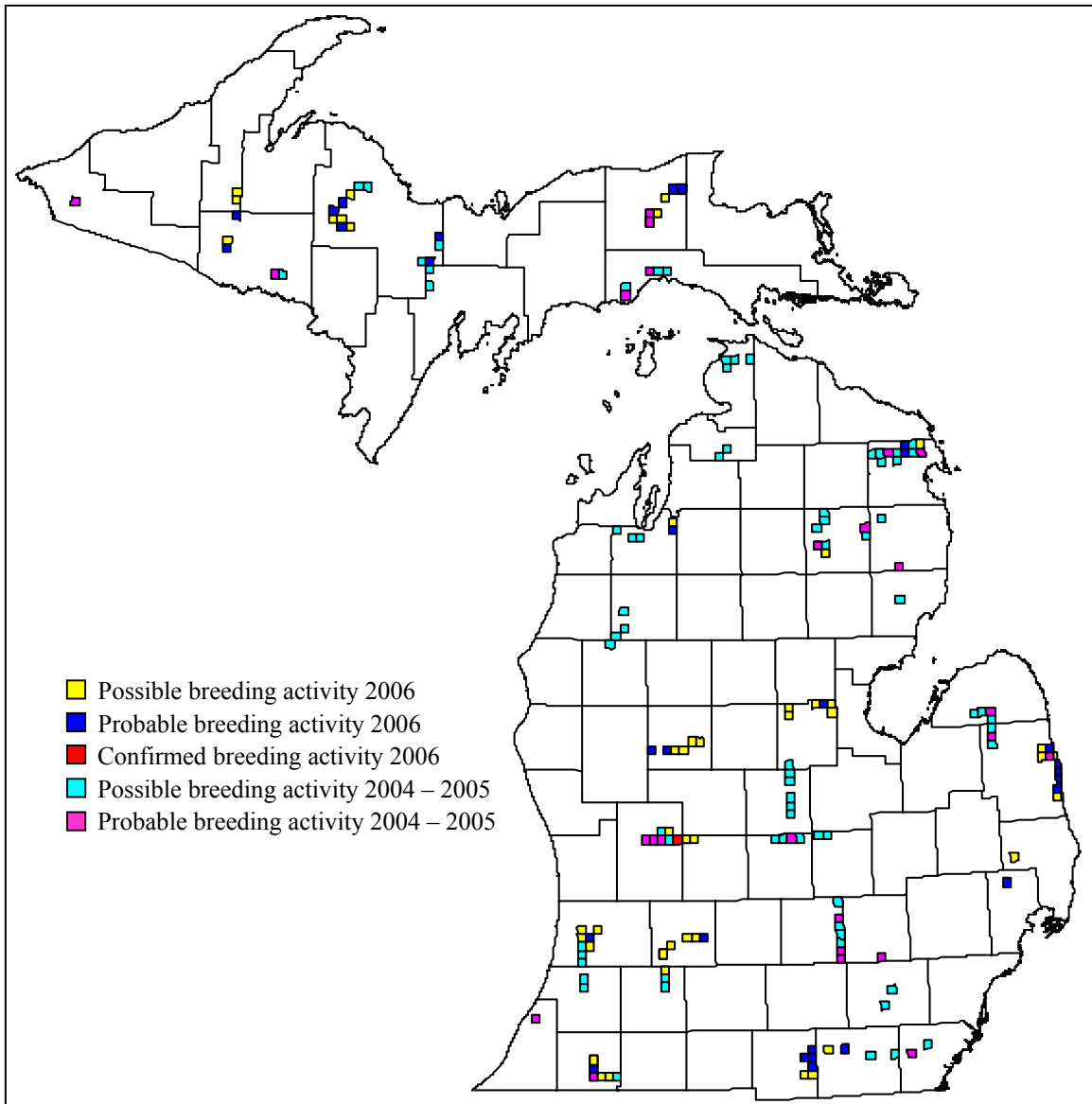


Figure 3. Observed breeding status for Great Horned Owl by MBBA II survey block as determined from surveys conducted in Michigan during 2004 – 2006.

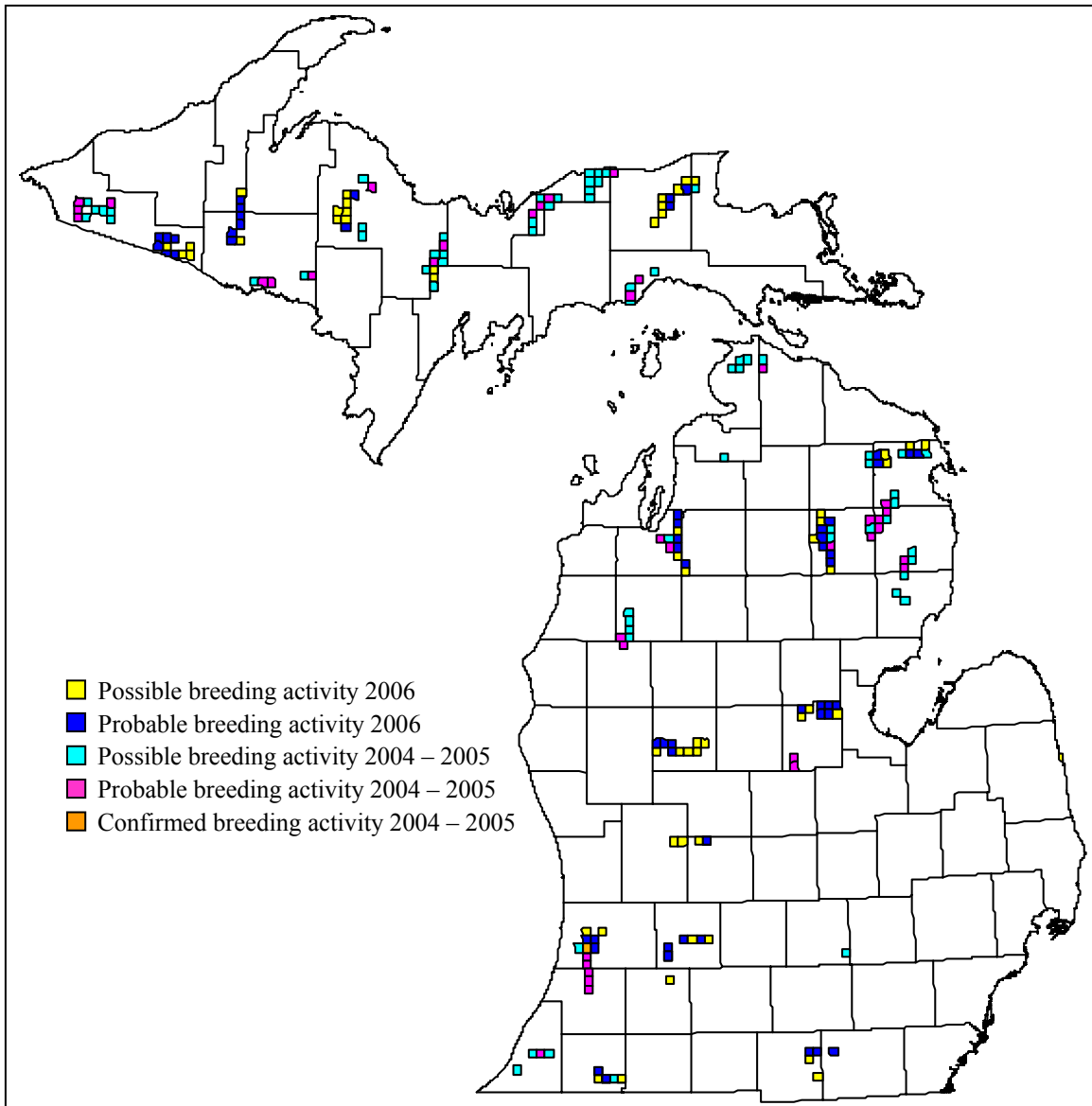


Figure 4. Observed breeding status for Barred Owl by MBBA II survey block as determined from surveys conducted in Michigan during 2004 – 2006.

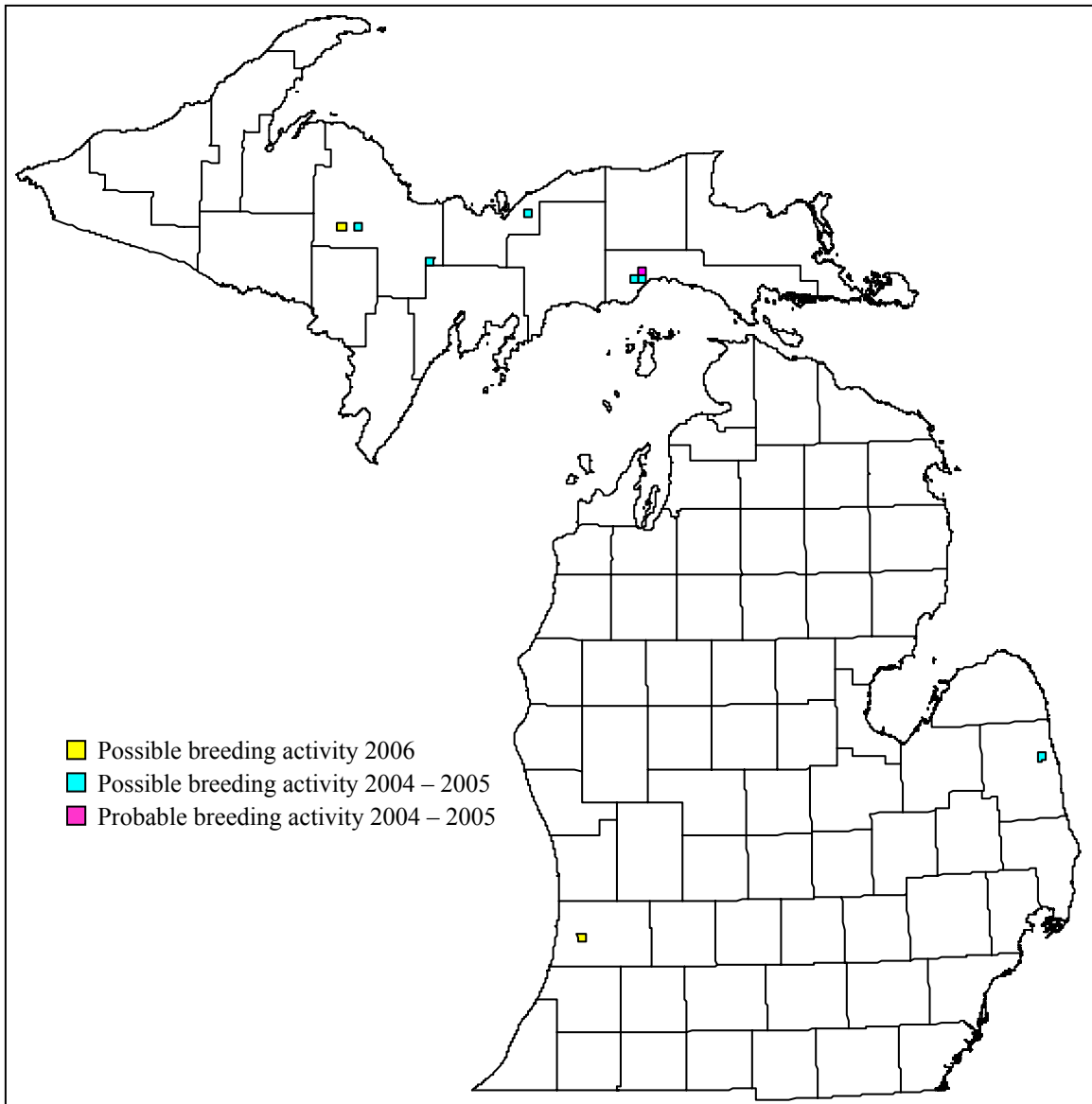


Figure 5. Observed breeding status for Long-eared Owl by MBBA II survey block as determined from surveys conducted in Michigan during 2004 – 2006.



Figure 6. Observed breeding status for Boreal Owl by MBBA II survey block as determined from surveys conducted in Michigan during 2004 – 2006.

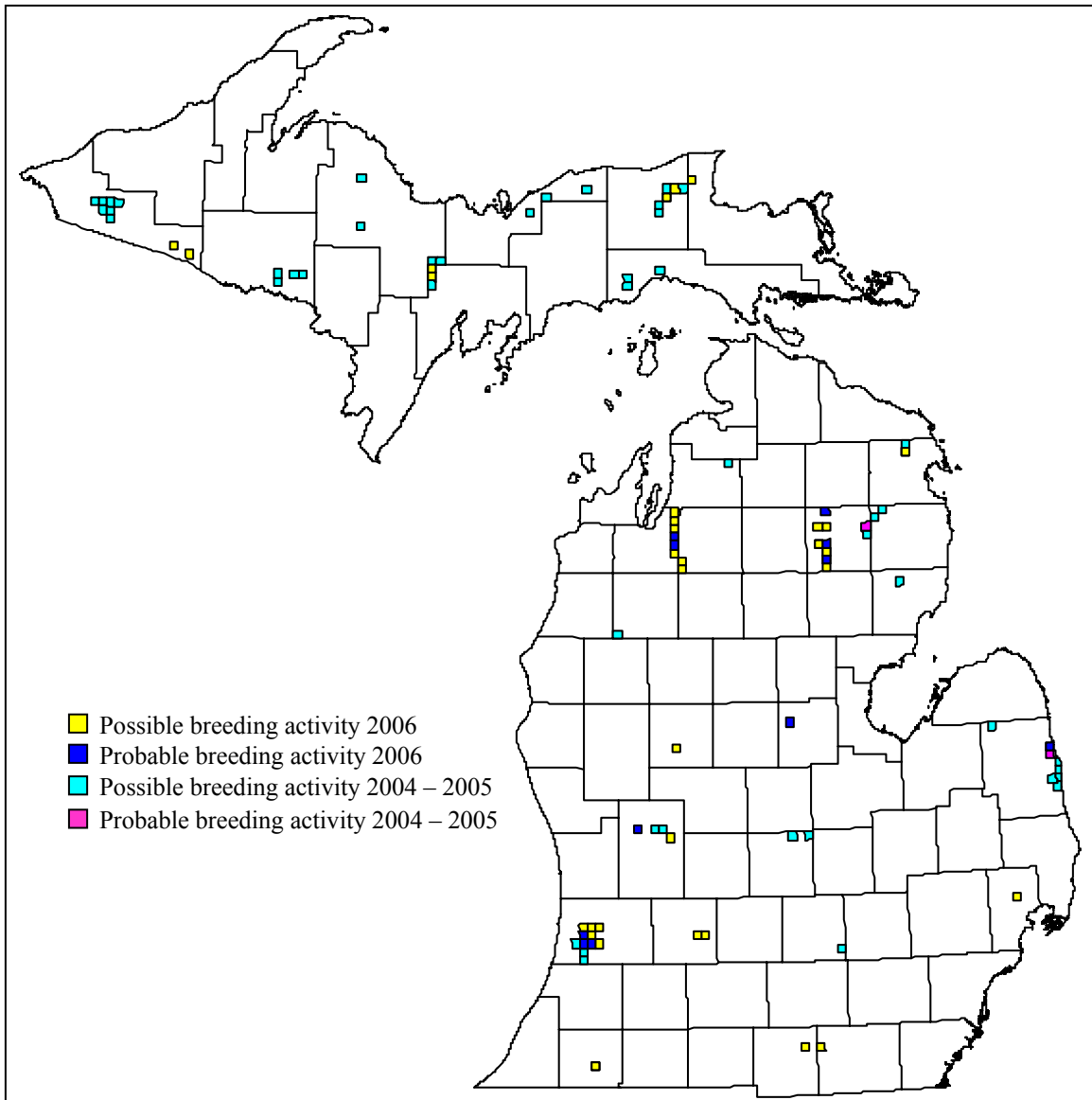


Figure 7. Observed breeding status for Northern Saw-whet Owl by MBBA II survey block as determined from surveys conducted in Michigan during 2004 – 2006.

Table 3. Number of blocks with incidental species observations by region and breeding status (according to MBBA II criteria) from owl surveys conducted in Michigan in 2006.

Species	SLP		NLP		UP		Total
	Possible	Probable	Possible	Probable	Possible	Probable	
Common Loon	---	---	---	---	11	---	11
Canada Goose	18	---	10	---	3	---	31
Wood Duck	1	---	---	---	---	---	1
Mallard	4	---	1	---	3	---	8
Common Goldeneye	1	---	---	---	---	---	1
Ring-necked Pheasant	---	---	2	---	1	---	3
Ruffed Grouse	---	---	---	---	8	---	8
Wild Turkey	1	---	1	---	1	---	3
Virginia Rail	1	---	---	---	---	---	1
Sora	1	---	---	---	---	---	1
Sandhill Crane	3	---	1	---	2	---	6
Killdeer	4	---	4	---	2	---	10
American Woodcock	7	---	7	---	18	---	32
Wilson's Snipe	---	---	3	---	7	---	10
Whip-poor-will	---	---	4	---	5	---	9
Common Nighthawk	---	---	1	---	---	---	1
Horned Lark	---	---	---	---	1	---	1
American Robin	---	---	---	---	1	---	1
Northern Cardinal	---	---	---	---	1	---	1
White-throated Sparrow	---	---	---	---	4	---	4
Song Sparrow	1	---	---	---	---	---	1
Red-winged Blackbird	1	---	---	---	---	---	1
Total	43	---	34	---	68	---	145

Northern Saw-whet broadcast), more Saw-whet Owls were observed after broadcast during the second period ($p=0.035$).

Our best-approximating model for 2006 Eastern Screech-Owl data included the covariates PC1 and time period and survey effects. Support was not strong for this model and was similar to the second best-approximating model, which contained wind as a covariate in place of time period (Table 4). Wind was the environmental covariate in the best-approximating models for both 2004 and 2005 analyses. Site occupancy appeared to be negatively related to PC1 indicating that the estimated proportion of sites occupied increased with increasing amounts of agriculture and herbaceous upland. The estimated proportion of sites occupied from the best model was 0.82, which is similar to our observed proportion of 0.77. Mean detection probability varied by survey and was lowest (0.42) in the third survey and highest (0.58) during the fourth

period. Our 2006 estimates were similar to those of 2004 and 2005 (Table 4). Using the range of estimated probabilities of detection, we estimated that two to three surveys would be needed to have 80% confidence that lack of detection means Eastern Screech-Owl is not present at a site.

The model best supported by our 2006 Great Horned Owl data included the covariates PC1, PC3, and wind (Table 4). Estimated proportion of sites occupied was negatively related to PC1 and PC3. This would indicate increasing site occupancy with increasing proportions of agricultural and herbaceous upland and decreasing levels of coniferous and mixed forest, water, and bare/sparsely vegetated ground. Wind was the covariate affecting detection probability in the best-approximating models of all three years (Table 4). The model-estimated site occupancy (0.87) was similar to the 2005 estimate and more than three times as high

Table 4. Summary of the model selection criteria and parameter estimates for three woodland owl species observed during surveys conducted in Michigan 2004 – 2006. The four best approximating models from our candidate sets are provided for each year. Δ AIC is the difference between the model with the lowest AIC and the given model, w is the Akaike weight, ψ is the estimated proportion of sites occupied, p is the estimated detection probability, and SE is the standard error of the parameter estimates.

Model	Δ AIC	w	K	$\hat{\psi}$ (SE) – Occupancy	\hat{p} (SE) – Detection Probability			
					Survey 1	Survey 2	Survey 3	Survey 4
Eastern Screech-Owl								
2006: $\psi(\text{PC1})p(\text{survey}, \text{time period})$	0	0.531	7	0.82 (0.05)	0.48 (0.05)	0.48 (0.05)	0.42 (0.05)	0.58 (0.05)
$\psi(\text{PC1})p(\text{survey}, \text{wind})$	0.26	0.466	7	0.83 (0.05)	0.48 (0.05)	0.48 (0.05)	0.41 (0.05)	0.58 (0.05)
$\psi(\text{PC1})p(\text{survey}, \text{noise})$	12.29	0.011	7	0.84 (0.05)	0.47 (0.05)	0.47 (0.05)	0.42 (0.05)	0.58 (0.05)
$\psi(\text{PC1})p(\text{survey}, \text{temp})$	12.38	0.011	7	0.83 (0.05)	0.47 (0.05)	0.48 (0.05)	0.42 (0.05)	0.58 (0.05)
2005: $\psi(\cdot)p(\text{survey}, \text{wind})$	0	0.677	6	0.69 (0.04)	0.52 (0.06)	0.52 (0.06)	0.37 (0.05)	0.32 (0.05)
$\psi(\cdot)p(\text{survey}, \text{noise})$	2.61	0.183	6	0.71 (0.05)	0.50 (0.06)	0.50 (0.06)	0.36 (0.05)	0.31 (0.05)
$\psi(\cdot)p(\text{survey}, \text{time period})$	4.71	0.064	6	0.70 (0.06)	0.51 (0.06)	0.51 (0.05)	0.36 (0.05)	0.31 (0.05)
$\psi(\cdot)p(\text{survey}, \text{moon})$	7.86	0.013	6	0.70 (0.05)	0.51 (0.06)	0.51 (0.06)	0.36 (0.05)	0.31 (0.05)
2004: $\psi(\text{PC1}, \text{PC2})p(\text{survey}, \text{wind})$	0	0.942	7	0.74 (0.09)	0.42 (0.07)	0.58 (0.06)	0.32 (0.06)	---
$\psi(\text{PC1}, \text{PC2})p(\text{survey}, \text{noise})$	5.62	0.057	7	0.78 (0.10)	0.36 (0.06)	0.55 (0.07)	0.30 (0.05)	---
$\psi(\text{PC1}, \text{PC2})p(\text{survey}, \text{temp})$	14.17	0.001	7	0.75 (0.09)	0.39 (0.07)	0.58 (0.07)	0.32 (0.06)	---
$\psi(\text{PC1}, \text{PC2})p(\text{survey}, \text{time period})$	21.58	0.000	7	0.71 (0.09)	0.42 (0.07)	0.61 (0.07)	0.33 (0.06)	---
Great Horned Owl								
2006: $\psi(\text{PC1}, \text{PC3})p(\text{wind})$	0	0.941	5	0.87 (0.09)	---	---	0.13 (0.02)	---
$\psi(\text{PC1}, \text{PC3})p(\text{temp})$	6.33	0.040	5	0.71 (0.16)	---	---	0.15 (0.03)	---
$\psi(\text{PC1}, \text{PC3})p(\text{time period})$	7.87	0.018	5	0.72 (0.22)	---	---	0.15 (0.04)	---
$\psi(\text{PC1}, \text{PC3})p(\text{noise})$	15.71	0.000	5	0.91 (0.06)	---	---	0.12 (0.02)	---
2005: $\psi(\text{PC2})p(\text{survey}, \text{wind})$	0	0.273	6	0.89 (0.10)	---	0.10 (0.02)	0.06 (0.02)	0.05 (0.01)
$\psi(\text{PC2})p(\text{survey}, \text{noise})$	0.92	0.176	6	0.89 (0.10)	---	0.10 (0.02)	0.06 (0.02)	0.05 (0.01)
$\psi(\text{PC2})p(\text{survey}, \text{temp})$	1.24	0.150	6	0.87 (0.12)	---	0.10 (0.02)	0.06 (0.02)	0.06 (0.02)
$\psi(\text{PC2})p(\text{survey}, \text{moon})$	1.43	0.137	6	0.86 (0.13)	---	0.10 (0.03)	0.06 (0.02)	0.06 (0.02)
2004: $\psi(\text{PC1}, \text{PC2}, \text{PC3})p(\text{survey}, \text{wind})$	0	0.992	8	0.62 (0.10)	0.10 (0.03)	0.20 (0.03)	0.13 (0.03)	---
$\psi(\text{PC1}, \text{PC2}, \text{PC3})p(\text{survey}, \text{noise})$	9.93	0.007	8	0.70 (0.12)	0.08 (0.02)	0.17 (0.03)	0.11 (0.03)	---
$\psi(\text{PC1}, \text{PC2}, \text{PC3})p(\text{survey}, \text{temp})$	14.25	0.001	8	0.67 (0.11)	0.08 (0.02)	0.18 (0.04)	0.11 (0.03)	---
$\psi(\text{PC1}, \text{PC2}, \text{PC3})p(\text{survey}, \text{time period})$	17.72	0.000	8	0.69 (0.12)	0.08 (0.02)	0.17 (0.03)	0.11 (0.03)	---

Table 4. Continued.

Model	ΔAIC	w	K	$\hat{\psi}$ (SE) – Occupancy	\hat{p} (SE) – Detection Probability				
					Survey 1	Survey 2	Survey 3	Survey 4	
Barred Owl									
2006: $\psi(PC1,PC2)p(\text{survey},\text{wind})$	0	0.764	7	0.65 (0.05)	---	0.17 (0.03)	0.30 (0.04)	0.57 (0.05)	
$\psi(PC1,PC2)p(\text{survey},\text{noise})$	2.59	0.209	7	0.68 (0.06)	---	0.16 (0.03)	0.29 (0.04)	0.53 (0.05)	
$\psi(PC1,PC2)p(\text{survey},\text{time period})$	6.77	0.026	7	0.65 (0.05)	---	0.18 (0.03)	0.32 (0.04)	0.58 (0.05)	
$\psi(PC1,PC2)p(\text{survey},\text{temp})$	14.63	0.001	7	0.65 (0.05)	---	0.18 (0.03)	0.32 (0.04)	0.58 (0.05)	
2005: $\psi(PC1,PC2)p(\text{survey},\text{noise})$	0	0.996	7	0.50 (0.05)	---	0.13 (0.03)	0.35 (0.05)	0.42 (0.05)	
$\psi(PC1,PC2)p(\text{survey},\text{cloud})$	11.19	0.004	7	0.50 (0.05)	---	0.13 (0.03)	0.33 (0.05)	0.43 (0.05)	
$\psi(PC1,PC2)p(\text{survey},\text{wind})$	16.05	0.000	7	0.48 (0.06)	---	0.14 (0.03)	0.35 (0.05)	0.45 (0.05)	
$\psi(PC1,PC2)p(\text{survey},\text{temp})$	18.42	0.000	7	0.48 (0.05)	---	0.14 (0.03)	0.38 (0.05)	0.46 (0.05)	
2004: $\psi(PC1)p(\text{survey},\text{noise})$	0	0.960	6	0.35 (0.06)	0.12 (0.04)	0.28 (0.06)	0.39 (0.07)	---	
$\psi(PC1)p(\text{survey},\text{time period})$	8.89	0.011	6	0.35 (0.06)	0.12 (0.03)	0.30 (0.06)	0.42 (0.07)	---	
$\psi(PC1)p(\text{survey},\text{cloud})$	9.49	0.008	6	0.33 (0.05)	0.13 (0.04)	0.31 (0.06)	0.42 (0.08)	---	
$\psi(PC1)p(\text{survey})$	10.63	0.005	5	0.33 (0.05)	0.13 (0.04)	0.32 (0.06)	0.44 (0.07)	---	

as the observed proportion of sites with Great Horned Owl present (0.26). Probability of detection in 2006 was low (0.13) and similar to estimates in 2004 and 2005. Models without survey effects had more support in 2006, while models in previous years indicated that detection probability varied by survey. Using the estimated 2006 detection probability, we calculated that 11 surveys would be required to have 80% confidence that Great Horned Owl is absent from a site when not detected.

The Barred Owl model best supported by our 2006 data contained PC1 and PC2 as site occupancy covariates and wind as a detection probability covariate (Table 4). The proportion of sites occupied appeared to increase with increasing proportions of forest and decreasing amounts of agriculture, herbaceous upland, and urbanized land. Wind had the most support as a detection probability covariate, whereas noise level appeared to affect detection in 2004 and 2005. The model-estimated proportion of sites occupied was 0.65 compared to our observed proportion of 0.47. The site occupancy estimate in 2006 was the highest of the three years. Similar to previous years, probability of detection increased with each successive survey (Table 4). Using the lowest and highest detection probabilities, we estimate that 2 – 9 surveys (mean of 4) would be needed to have 80% certainty that Barred Owl is really absent when not observed.

DISCUSSION

Atlas Data

This three-year owl survey resulted in 2,039 owl observations; however, it required substantial effort with more than 3,600 point counts conducted. Long-term owl surveys are clearly needed to adequately monitor these species. While monitoring data are needed for all owl species, they are especially important for rare species such as the State-threatened Long-eared Owl, which we only observed on two survey blocks in

2006 and nine over the three years. Periodic intensive surveys (e.g. every 5 – 10 years), such as this study, along with less intensive annual surveys (e.g. potential volunteer-based program) would be useful in tracking owl abundance and distribution in Michigan. Targetted surveys for rare owl species are also needed.

Survey Efficacy

Our observation of possible repeat detections of individual owls on adjacent survey points highlights the need for research that investigates optimal spacing of survey points for target owl species. While overall estimated repeat detection rates were low, repeat detections could be substantial for some species in a given survey period or geographic zone. Greater spacing of points may be warranted for Great Horned and Barred Owl if surveys aim to estimate population size.

A number of studies have shown increased rates of calling in response to broadcast conspecific calls for several owl species (Fuller and Mosher 1981, Gerhardt 1991, Morrell et al. 1991, Hardy and Morrison 2000, Proudfoot et al. 2002). While Eastern Screech-Owls were consistently recorded more often after broadcast, we did not observe similar patterns for other species. Unlike previous research, during some survey periods we observed fewer Barred and Great Horned Owl responses after conspecific broadcast compared to before. However, our study was not specifically designed to test broadcast effectiveness, and it is unknown what effect the playing of calls from several species prior to the Barred and Great Horned Owl broadcasts had on their responsiveness. McGarigal and Fraser (1985) observed a 62.5% Barred Owl response rate to broadcast conspecific calls; however, the authors did not include a prebroadcast period to determine if calls increased owl detections. Barred Owl was the only species observed at a higher rate after conspecific broadcasts were played during surveys conducted in Alberta (Takats

and Holroyd 1997). More research is needed before conclusions can be made about the effectiveness of broadcast calls for owl surveys in Michigan.

Our results indicate that substantial survey effort is required to have high confidence in the determination of presence/absence of forest-nesting owls at a given site. No clear patterns of detection probability by survey period emerged for Eastern Screech-Owl. Using 2006 detection probabilities, our survey design appears to exceed that needed (2-3 surveys) to achieve 80% confidence that lack of Eastern Screech-Owl detection equates to absence of the species. Given the low detection probability and high estimated site occupancy for Great Horned Owl, our survey protocol did not appear to adequately survey this species. Our data indicate that substantially more surveys would be needed to have high confidence that lack of Great Horned Owl detection means the species is absent from a site. Since Great Horned Owl is the earliest nesting owl in Michigan, surveys conducted in the late fall or early winter may increase detectability. Barred Owl detection increased with each subsequent survey. Because Barred Owls tend to nest later than other species, it is not surprising that detectability was highest during the last survey. Courtship usually begins in late winter and vocalizations increase in intensity until egg-laying, which spans early March to early May (Ebbers 1991). Our current survey protocol is probably adequate to reach the 80% confidence level, since we estimate an average of four surveys would be necessary to assume that Barred Owl is really absent when not detected.

Wind was the environmental variable in six of the nine best-approximating models for the three species examined and was negatively related to detection probability. Noise was the detection probability covariate in two of the remaining models best supported by our data. These variables were interrelated in that moderate to strong winds often increased the overall noise level

through the movement of trees and leaves. The most common cause of elevated noise level was automobile traffic. Both variables could influence owl detection in three ways: 1) restricting the ability of observers to hear calling owls; 2) limiting the number of owls that can hear broadcasts, thus reducing effectiveness and area covered; and 3) potentially changing the behavior of the owls such that calling is reduced or impeded. In the case of the Northern Saw-whet Owl, Johnsgard (2002) suggested moderate winds may actually increase rate of singing while high winds have a negative affect. Morrell et al. (1991) observed reduced Great Horned Owl responses with increasing wind speed, and never heard any owls when the wind speed exceeded 19 km/h. Wind has also been found to affect the detection of Mottled Owl (*Ciccaba virgata*), Elf Owl (*Micrathene whitneyi*), and Western Screech-Owl (*Megascops kennicottii*) (Hardy and Morrison 2000, Gerhardt 1991). Future surveys should carefully consider how wind and noise level might affect owl detectability and explore methods to reduce the potential negative impact these factors can have on owl detection. More work is needed to understand how environmental factors affect owl calling and detection, and how landscape level habitat influences owl site selection.

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LITERATURE CITED

- Burnham, K.P., and D.R. Anderson. 2002. Model selection and multimodel inference: a practical information-theoretic approach, second edition. Springer-Verlag, New York, NY. 488 pp.
- Ebbers, B.C. 1991. Barred Owl (*Strix varia*) species account. Pages 242-243 in The Atlas of Breeding Birds of Michigan (R. Brewer et al., eds.). Michigan State University Press, East Lansing, MI. 594 pp.
- Fuller, M.R., and J.A. Mosher. 1981. Methods of detecting and counting raptors: a review. Studies in Avian Biology 6:235-246.
- Gehlbach, F.R. 1995. Eastern Screech-Owl (*Otus asio*). In The Birds of North America, No. 165 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.
- Gerhardt, R.P. 1991. Response of Mottled Owls to broadcast of conspecific call. Journal of Field Ornithology 62(2):239-244.
- Hardy, P.C., and M.L. Morrison. 2000. Factors affecting the detection of Elf Owls and Western Screech Owls. Wildlife Society Bulletin 28(2):333-342.
- Johnsgard, P.A. 2002. North American owls: biology and natural history, second edition. Smithsonian Institution Press, Washington, D.C. 298 pp.
- Kalamazoo Nature Center. 2004. Michigan breeding bird atlas II handbook. 65 pp.
- MacKenzie, D.I., J.D. Nichols, G.B. Lachman, S. Droege, J.A. Royle, and C.A. Langtimm. 2002. Estimating site occupancy rates when detection probabilities are less than one. Ecology 83(8):2248-2255.
- _____, _____, J.E. Hines, M.G. Knutson, and A.B. Franklin. 2003. Estimating site occupancy, colonization, and local extinction when a species is detected imperfectly. Ecology 84(8):2200-2207.
- McGarigal, K., and J.D. Fraser. 1985. Barred owl responses to recorded vocalizations. Condor 87:552-553.
- McPeck, G.A. and R.J. Adams, Jr. 1991. The atlas survey. Pages 1-10 in The Atlas of Breeding Birds of Michigan (R. Brewer et al., eds.). Michigan State University Press, East Lansing, MI. 594 pp.
- Morrell, T.M., R.H. Yahner, and W.L. Harkness. 1991. Factors affecting detection of Great Horned Owls by using broadcast vocalizations. Wildlife Society Bulletin 19(4):481-488.
- Proudfoot, G.A., S.L. Beasom, F. Chavez-Ramirez, and J.L. Mays. 2002. Response distance of Ferruginous Pygmy-Owls to broadcast conspecific calls. Journal of Raptor Research 36(3):170-175.
- Reed, J.M. 1996. Using statistical probability to increase confidence of inferring species extinction. Conservation Biology 10(4):1283-1285.
- Sall, J., L. Creighton, and A. Lehman. 2005. JMP start statistics: a guide to statistics and data analysis using JMP and JMP IN software. Brooks/Cole – Thomson Learning, Belmont, CA. 560 pp.
- Takats, D.L., C.M. Francis, G.L. Holroyd, J.R. Duncan, K.M. Mazur, R.J.

Cannings, W. Harris, and D. Holt. 2001. Guidelines for nocturnal owl monitoring in North America. Beaverhill Bird Observatory and Bird Studies Canada, Edmonton, Alberta. 32 pp.

_____, and G.L. Holroyd. 1997. Owl broadcast surveys in the Foothills Model Forest, Alberta, Canada. In *Biology and Conservation of Owls of the Northern Hemisphere* (J.R. Duncan et al., eds.). USDA Forest Service General Technical Report NC-190.

Zar, J.H. 1996. *Biostatistical analysis*, third edition. Prentice Hall, Upper Saddle River, NJ. 662 pp. + appendices.

APPENDIX A

GIS Landscape Category Descriptions

Table A-1. Landscape categories and IFMAP classes used in land cover analysis of point-count stations and estimated owl locations from woodland owl surveys conducted in Michigan during 2004 – 2006.

Landscape Categories and Associated IFMAP Class Names and Grid Values ()	Class Descriptions
Urban (UR)	
Low Intensity Urban (Residential) (1)	Land area >10% and <25% manmade structures, including paved and gravel roads and parking lots.
High Intensity Urban (2)	Land area >25% solid impervious cover made from man-made materials, other than airports, roads, or parking lots.
Airports (3)	Impervious land within airport grounds, including runways.
Roads / Pavement (4)	Roads or parking lots.
Tilled Agricultural (AG)	
Non-vegetated agriculture (5)	Land area tilled for crop production with <25% currently vegetated.
Row Crops (6)	Vegetation is annual crops planted in rows (e.g. corn, soybeans).
Herbaceous Upland (HU)	
Forage Crops (7)	Vegetation used for fodder production (e.g. alfalfa, hay). Also includes land used for pasture, or non-tilled herbaceous agriculture.
Herbaceous Openland (10)	<25% of land area is covered by woody cover.
Low Density Trees (12)	The combination of woody shrubs and trees is >25% of the land area and >25% of the woody cover is trees. None mapped in SLP.
Parks, Golf Courses (13)	Upland open land maintained for recreational purposes.
Deciduous Forest (DF)	
Northern Hardwoods (14)	Combination of maples, beech, basswood, white ash, cherry, and yellow birch >60% of the canopy.
Oak Type (15)	Proportion of oaks >60% of the canopy.
Aspen Type (16)	Proportion of aspen >40% of the canopy.
Other Upland Deciduous (17)	Proportion of any other single species >60% of the canopy.
Mixed Upland Deciduous (18)	Proportion of deciduous trees >60% of the canopy.
Lowland Deciduous Forest (24)	Proportion of deciduous trees >60% of the canopy.
Coniferous Forest (CF)	
Pines (19)	Proportion of pines >60% of the canopy.
Other Conifers (20)	Proportion of non-pine upland conifers >60% of the canopy.
Mixed Upland Conifers (21)	Proportion of coniferous trees >60% of the canopy. None mapped in SLP.
Lowland Coniferous Forest (25)	Proportion of coniferous trees >60% of the canopy.

Table A-1. Continued.

Mixed Forest (MF)	
Upland Mixed Forest (22)	Mixed forest not falling into any other category. Proportion of conifers:deciduous ranges between 40%:60% to 60%:40%.
Lowland Mixed Forest (26)	Mixed forest not falling into any other category. Proportion of conifers:deciduous ranges between 40%:60% to 60%:40%.
Nonforested Wetland (WT)	
Floating Aquatic (27)	Proportion of floating aquatic vegetation >60% of non-water cover.
Lowland Shrub (28)	Proportion of lowland shrub >60% of non-water cover.
Emergent Wetland (29)	Proportion of emergent wetland >60% of non water cover.
Mixed Non-forest Wetland (30)	Non-forested wetlands not falling into any other category.
Water (WA)	
Water (23)	Proportion of open water >75% of the land area.
Bare/Sparsely Vegetated (BA)	
Sand, Soil (31)	Land cover is formed primarily of sand or bare soil.
Exposed rock (32)	Land cover is formed of solid rock. None mapped in SLP.
Other Bare\Sparsely Vegetated (35)	None.

APPENDIX B

Michigan Breeding Bird Atlas Data by Survey Block

Table B-1. Owl observation data by MBBA II survey block from surveys conducted in Michigan in 2006.

Species ^a	Owl Observation ID	No. Obs.	Date	Observer (s)	Code	Town	Range	Section	Block	Priority	Twp. Name	County
BDOW	BDOW-35-4-2	1	4/21/2006	JB	P	01N	10W	11	1	Y	Prairieville	Barry
BDOW	BDOW-35-4-3	1	4/21/2006	JB	P	01N	10W	11	1	Y	Prairieville	Barry
BDOW	BDOW-35-4-1	1	4/20/2006	JB	X	01S	10W	25	4	Y	Richland	Kalamazoo
BDOW	BDOW-32-4-10	1	4/28/2006	WP, JG	X	02N	07W	5	2	Y	Maple Grove	Barry
BDOW	BDOW-32-4-9	1	4/28/2006	WP, JG	X	02N	07W	5	2	Y	Maple Grove	Barry
BDOW	BDOW-32-3-1	1	3/21/2006	MS, WP	X	02N	08W	1	1	Y	Baltimore	Barry
BDOW	BDOW-32-4-8	1	4/28/2006	WP, JG	X	02N	08W	1	1	Y	Baltimore	Barry
BDOW	BDOW-32-4-7	1	4/28/2006	WP, JG	X	02N	08W	14	1	Y	Baltimore	Barry
BDOW	BDOW-32-4-5/6	2	4/28/2006	WP, JG	P	02N	08W	15	1	Y	Baltimore	Barry
BDOW	BDOW-32-4-4	1	4/28/2006	WP, JG	X	02N	08W	9	2	Y	Baltimore	Barry
BDOW	BDOW-32-4-2/3	2	4/28/2006	WP, JG	P	02N	09W	11	1	Y	Hope	Barry
BDOW	BDOW-32-4-1	1	4/27/2006	WP, JG	X	02N	10W	27	4	Y	Orangeville	Barry
BDOW	BDOW-35-4-4/5	2	4/21/2006	JB	P	02N	10W	35	4	Y	Orangeville	Barry
BDOW	BDOW-35-2-1	1	2/22/2006	JB	X	02N	10W	36	4	Y	Orangeville	Barry
BDOW	BDOW-37-4-4	1	4/24/2006	JB, ES	X	02N	14W	17	2	Y	Valley	Allegan
BDOW	BDOW-37-2-1	1	2/22/2006	JB	X	02N	14W	18	2	Y	Valley	Allegan
BDOW	BDOW-37-3-1	1	3/22/2006	BN	X	02N	14W	18	2	Y	Valley	Allegan
BDOW	BDOW-37-4-2/3	2	4/24/2006	JB, ES	P	02N	14W	20	3	Y	Valley	Allegan
BDOW	BDOW-37-2-2	1	2/22/2006	JB	X	02N	14W	29	3	Y	Valley	Allegan
BDOW	BDOW-907-3-9	1	3/20/2006	JB, ES	X	02N	14W	31	3	Y	Valley	Allegan
BDOW	BDOW-37-4-1	1	4/23/2006	JB, ES	X	02N	14W	32	3	Y	Valley	Allegan
BDOW	BDOW-907-3-10	1	3/20/2006	JB, ES	X	02N	14W	32	3	Y	Valley	Allegan
BDOW	BDOW-907-4-5	1	4/24/2006	JB	X	02N	15W	2	1	Y	Clyde	Allegan
BDOW	BDOW-907-2-1	1	2/21/2006	BN	X	02N	15W	10	1	Y	Clyde	Allegan
BDOW	BDOW-907-3-4/5	2	3/20/2006	JB, ES	P	02N	15W	10	1	Y	Clyde	Allegan
BDOW	BDOW-907-4-4	1	4/24/2006	JB	X	02N	15W	10	1	Y	Clyde	Allegan
BDOW	BDOW-907-2-2/3	2	2/21/2006	BN	P	02N	15W	11	1	Y	Clyde	Allegan
BDOW	BDOW-907-3-1/2	2	3/20/2006	JB, ES	P	02N	15W	12	1	Y	Clyde	Allegan
BDOW	BDOW-907-4-6	1	4/25/2006	JB	X	02N	15W	12	1	Y	Clyde	Allegan
BDOW	BDOW-907-1-1/2	2	1/25/2006	JB	P	02N	15W	23	4	Y	Clyde	Allegan
BDOW	BDOW-907-4-2	1	4/24/2006	JB	X	02N	15W	24	4	Y	Clyde	Allegan
BDOW	BDOW-907-3-7	1	3/20/2006	JB, ES	X	02N	15W	25	4	Y	Clyde	Allegan
BDOW	BDOW-907-3-8	1	3/20/2006	JB, ES	X	02N	15W	25	4	Y	Clyde	Allegan
BDOW	BDOW-907-4-1	1	4/24/2006	JB	X	02N	15W	25	4	Y	Clyde	Allegan

Table B-1. Continued.

Species ^a	Owl Observation ID	No. Obs.	Date	Observer (s)	Code	Town	Range	Section	Block	Priority	Twp. Name	County
BDOW	BDOW-907-4-3	1	4/24/2006	JB	X	02N	15W	25	4	Y	Clyde	Allegan
BDOW	BDOW-907-3-6	1	3/20/2006	JB, ES	X	02N	15W	26	4	Y	Clyde	Allegan
BDOW	BDOW-37-4-5	1	4/24/2006	JB, ES	X	03N	14W	23	4	Y	Heath	Allegan
BDOW	BDOW-907-4-7	1	4/25/2006	JB	X	03N	15W	22	4	Y	Manlius	Allegan
BDOW	BDOW-907-3-3	1	3/20/2006	JB, ES	X	03N	15W	34	4	Y	Manlius	Allegan
BDOW	BDOW-58-4-1/2	2	4/25/2006	WP, JG	P	06S	01E	12	1	Y	Rollin	Lenawee
BDOW	BDOW-58-4-3	1	4/26/2006	WP, JG	X	06S	01W	3	1	Y	Wheatland	Hillsdale
BDOW	BDOW-58-2-4	1	2/24/2006	WP, JG	P	06S	01W	15	1	Y	Wheatland	Hillsdale
BDOW	BDOW-58-2-1	1	2/24/2006	WP, JG	X	06S	01W	4	2	Y	Wheatland	Hillsdale
BDOW	BDOW-58-2-2	1	2/24/2006	WP, JG	X	06S	01W	9	2	Y	Wheatland	Hillsdale
BDOW	BDOW-58-2-3	1	2/24/2006	WP, JG	P	06S	01W	16	2	Y	Wheatland	Hillsdale
BDOW	BDOW-58-4-4	1	4/26/2006	WP, JG	X	06S	01W	28	3	Y	Wheatland	Hillsdale
BDOW	BDOW-58-4-5	1	4/26/2006	WP, JG	X	07S	01W	27	4	Y	Pittsford	Hillsdale
BDOW	BDOW-39-2-1	1	2/23/2006	JB	X	07S	13W	26	4	Y	Porter	Cass
BDOW	BDOW-39-3-2	1	3/26/2006	BN	X	07S	14W	8	2	Y	Calvin	Cass
BDOW	BDOW-39-4-6	1	4/27/2006	JB	X	07S	14W	8	2	Y	Calvin	Cass
BDOW	BDOW-39-3-1	1	3/26/2006	BN	X	07S	14W	17	2	Y	Calvin	Cass
BDOW	BDOW-39-4-4/5	2	4/27/2006	JB	P	07S	14W	17	2	Y	Calvin	Cass
BDOW	BDOW-39-4-3	1	4/27/2006	JB	X	07S	14W	19	3	Y	Calvin	Cass
BDOW	BDOW-39-4-1	1	4/27/2006	JB	X	07S	14W	28	3	Y	Calvin	Cass
BDOW	BDOW-39-1-1/2	2	1/26/2006	JB, ML	P	07S	14W	26	4	Y	Calvin	Cass
BDOW	BDOW-39-3-3	1	3/27/2006	JB, ES	P	07S	14W	26	4	Y	Calvin	Cass
BDOW	BDOW-39-3-4	1	3/27/2006	JB, ES	P	07S	14W	26	4	Y	Calvin	Cass
BDOW	BDOW-39-4-2	1	4/27/2006	JB	X	07S	14W	27	4	Y	Calvin	Cass
BDOW	BDOW-34-2-1/2	2	2/22/2006	WP, JG	P	08N	07W	6	2	Y	Orleans	Ionia
BDOW	BDOW-34-3-1	1	3/21/2006	MS, WP	P	08N	07W	6	2	Y	Orleans	Ionia
BDOW	BDOW-34-3-2	1	3/21/2006	MS, WP	P	08N	07W	6	2	Y	Orleans	Ionia
BDOW	BDOW-34-4-1	1	4/23/2006	WP, JG	X	08N	07W	6	2	Y	Orleans	Ionia
BDOW	BDOW-34-4-2	1	4/23/2006	WP, JG	X	08N	08W	1	1	Y	Belding	Ionia
BDOW	BDOW-34-2-3	1	2/22/2006	WP, JG	X	08N	08W	2	1	Y	Belding	Ionia
BDOW	BDOW-34-4-3	1	4/23/2006	WP, JG	X	08N	09W	3	1	Y	Grattan	Kent
BDOW	BDOW-34-2-4	1	2/22/2006	WP, JG	X	08N	09W	4	2	Y	Grattan	Kent
BDOW	BDOW-34-4-4	1	4/24/2006	WP, JG	X	08N	09W	5	2	Y	Grattan	Kent
BDOW	BDOW-70-3-1	1	3/24/2006	MS, WP	X	12N	16E	15	1	Y	Forester	Sanilac

Table B-1. Continued.

Species ^a	Owl Observation ID	No. Obs.	Date	Observer (s)	Code	Town	Range	Section	Block	Priority	Twp. Name	County
BDOW	BDOW-38-2-8	1	2/27/2006	MM, WP	X	14N	07W	18	2	N	Wheatland	Mecosta
BDOW	BDOW-38-4-11	1	5/2/2006	MS, WP	X	14N	08W	13	1	Y	Morton	Mecosta
BDOW	BDOW-38-4-10	1	5/2/2006	MS, WP	X	14N	08W	14	1	Y	Morton	Mecosta
BDOW	BDOW-38-4-7	1	5/2/2006	MS, WP	X	14N	08W	21	3	N	Morton	Mecosta
BDOW	BDOW-38-4-8	1	5/2/2006	MS, WP	X	14N	08W	22	4	N	Morton	Mecosta
BDOW	BDOW-38-4-9	1	5/2/2006	MS, WP	X	14N	08W	23	4	N	Morton	Mecosta
BDOW	BDOW-38-2-5	1	2/26/2006	MM, WP	P	14N	09W	16	2	Y	Austin	Mecosta
BDOW	BDOW-38-3-1	1	3/27/2006	DC, WP	X	14N	09W	17	2	Y	Austin	Mecosta
BDOW	BDOW-38-3-5	1	3/27/2006	DC, WP	X	14N	09W	18	2	Y	Austin	Mecosta
BDOW	BDOW-38-2-6	1	2/26/2006	MM, WP	P	14N	09W	20	3	N	Austin	Mecosta
BDOW	BDOW-38-3-2/3	2	3/27/2006	DC, WP	P	14N	09W	20	3	N	Austin	Mecosta
BDOW	BDOW-38-3-4	1	3/27/2006	DC, WP	X	14N	09W	20	3	N	Austin	Mecosta
BDOW	BDOW-38-4-3	1	5/2/2006	MS, WP	X	14N	09W	20	3	N	Austin	Mecosta
BDOW	BDOW-38-4-4	1	5/2/2006	MS, WP	X	14N	09W	20	3	N	Austin	Mecosta
BDOW	BDOW-38-2-7	1	2/26/2006	MM, WP	X	14N	09W	21	3	N	Austin	Mecosta
BDOW	BDOW-38-4-5	1	5/2/2006	MS, WP	X	14N	09W	23	4	Y	Austin	Mecosta
BDOW	BDOW-38-4-6	1	5/2/2006	MS, WP	X	14N	09W	27	4	Y	Austin	Mecosta
BDOW	BDOW-38-2-4	1	2/26/2006	MM, WP	X	14N	10W	13	1	Y	Mecosta	Mecosta
BDOW	BDOW-38-3-6	1	3/27/2006	DC, WP	X	14N	10W	14	1	Y	Mecosta	Mecosta
BDOW	BDOW-38-2-3	1	2/26/2006	MM, WP	X	14N	10W	15	1	Y	Mecosta	Mecosta
BDOW	BDOW-38-4-2	1	5/1/2006	MS, WP	X	14N	10W	15	1	Y	Mecosta	Mecosta
BDOW	BDOW-38-2-1/2	2	2/26/2006	MM, WP	P	14N	10W	9	2	N	Mecosta	Mecosta
BDOW	BDOW-38-3-7	1	3/27/2006	DC, WP	X	14N	10W	16	2	N	Mecosta	Mecosta
BDOW	BDOW-38-4-1	1	5/1/2006	MS, WP	X	14N	10W	19	3	Y	Mecosta	Mecosta
BDOW	BDOW-50-4-5	1	5/1/2006	MS, WP	P	16N	01E	10	1	N	Hope	Midland
BDOW	BDOW-50-4-6	1	5/1/2006	MS, WP	P	16N	01E	10	1	N	Hope	Midland
BDOW	BDOW-50-3-4	1	3/28/2006	WP, KB	X	16N	01E	13	1	N	Hope	Midland
BDOW	BDOW-50-3-2	1	3/28/2006	WP, KB	P	16N	01E	23	4	Y	Hope	Midland
BDOW	BDOW-50-3-3	1	3/28/2006	WP, KB	P	16N	01E	23	4	Y	Hope	Midland
BDOW	BDOW-50-4-7	1	5/1/2006	MS, WP	X	16N	01E	23	4	Y	Hope	Midland
BDOW	BDOW-50-4-8/9	2	5/1/2006	MS, WP	P	16N	01E	23	4	Y	Hope	Midland
BDOW	BDOW-50-4-4	1	5/1/2006	MS, WP	X	16N	01W	2	1	Y	Edenville	Midland
BDOW	BDOW-50-2-3	1	2/28/2006	MM, WP	X	16N	01W	4	2	Y	Edenville	Midland
BDOW	BDOW-50-2-4	1	2/28/2006	MM, WP	X	16N	01W	5	2	Y	Edenville	Midland

Table B-1. Continued.

Species ^a	Owl Observation ID	No. Obs.	Date	Observer (s)	Code	Town	Range	Section	Block	Priority	Twp. Name	County
BDOW	BDOW-50-4-2	1	4/30/2006	MS, WP	X	16N	01W	5	2	Y	Edenville	Midland
BDOW	BDOW-50-4-3	1	4/30/2006	MS, WP	X	16N	01W	9	2	Y	Edenville	Midland
BDOW	BDOW-50-4-1	1	4/30/2006	MS, WP	X	16N	01W	19	3	N	Edenville	Midland
BDOW	BDOW-50-3-1	1	3/27/2006	WP, KB	X	16N	01W	20	3	N	Edenville	Midland
BDOW	BDOW-50-3-10	1	3/28/2006	WP, KB	P	16N	02E	14	1	N	Mills	Midland
BDOW	BDOW-50-2-1	1	2/27/2006	MM, WP	X	16N	02E	15	1	N	Mills	Midland
BDOW	BDOW-50-3-11	1	3/28/2006	WP, KB	P	16N	02E	15	1	N	Mills	Midland
BDOW	BDOW-50-4-13	1	5/1/2006	MS, WP	X	16N	02E	15	1	N	Mills	Midland
BDOW	BDOW-50-4-12	1	5/1/2006	MS, WP	X	16N	02E	16	2	Y	Mills	Midland
BDOW	BDOW-50-3-7	1	3/28/2006	WP, KB	P	16N	02E	17	2	Y	Mills	Midland
BDOW	BDOW-50-3-5	1	3/28/2006	WP, KB	P	16N	02E	19	3	N	Mills	Midland
BDOW	BDOW-50-3-6	1	3/28/2006	WP, KB	P	16N	02E	19	3	N	Mills	Midland
BDOW	BDOW-50-4-10	1	5/1/2006	MS, WP	X	16N	02E	19	3	N	Mills	Midland
BDOW	BDOW-50-2-2	1	2/27/2006	MM, WP	X	16N	02E	20	3	N	Mills	Midland
BDOW	BDOW-50-3-8	1	3/28/2006	WP, KB	P	16N	02E	20	3	N	Mills	Midland
BDOW	BDOW-50-4-11	1	5/1/2006	MS, WP	X	16N	02E	21	3	N	Mills	Midland
BDOW	BDOW-50-3-9	1	3/28/2006	WP, KB	X	16N	02E	22	4	Y	Mills	Midland
BDOW	BDOW-50-4-14	1	5/1/2006	MS, WP	X	16N	02E	23	4	Y	Mills	Midland
BDOW	BDOW-50-4-16	1	5/1/2006	MS, WP	X	16N	02E	24	4	Y	Mills	Midland
BDOW	BDOW-50-4-15	1	5/1/2006	MS, WP	X	16N	02E	27	4	Y	Mills	Midland
BDOW	BDOW-50-3-12	1	3/28/2006	WP, KB	X	16N	02E	35	4	Y	Mills	Midland
BDOW	BDOW-50-4-17	1	5/1/2006	MS, WP	X	16N	02E	36	4	Y	Mills	Midland
BDOW	BDOW-47-4-3	1	5/3/2006	MS, WP	P	25N	02E	5	2	Y	Big Creek	Oscoda
BDOW	BDOW-47-3-3/4	2	3/29/2006	DC, WP	P	25N	02E	7	2	Y	Big Creek	Oscoda
BDOW	BDOW-47-4-2	1	5/3/2006	MS, WP	P	25N	02E	7	2	Y	Big Creek	Oscoda
BDOW	BDOW-47-2-6	1	2/29/2006	MM, WP	X	25N	02E	8	2	Y	Big Creek	Oscoda
BDOW	BDOW-47-3-2	1	3/29/2006	DC, WP	X	25N	02E	17	2	Y	Big Creek	Oscoda
BDOW	BDOW-47-4-1	1	5/3/2006	MS, WP	X	25N	02E	18	2	Y	Big Creek	Oscoda
BDOW	BDOW-47-3-1	1	3/29/2006	DC, WP	X	25N	02E	20	3	N	Big Creek	Oscoda
BDOW	BDOW-29-3-11/12	2	3/29/2006	DC, WP	P	25N	08W	18	2	N	Springfield	Kalkaska
BDOW	BDOW-29-4-1/2	2	5/2/2006	MS, WP	P	25N	08W	18	2	N	Springfield	Kalkaska
BDOW	BDOW-29-3-13	1	3/29/2006	DC, WP	X	25N	08W	31	3	Y	Springfield	Kalkaska
BDOW	BDOW-47-2-3	1	2/29/2006	MM, WP	X	26N	01E	2	1	Y	Big Creek	Oscoda
BDOW	BDOW-47-3-6	1	3/29/2006	DC, WP	X	26N	01E	2	1	Y	Big Creek	Oscoda

Table B-1. Continued.

Species ^a	Owl Observation ID	No. Obs.	Date	Observer (s)	Code	Town	Range	Section	Block	Priority	Twp. Name	County
BDOW	BDOW-47-2-4	1	2/29/2006	MM, WP	X	26N	01E	3	1	Y	Big Creek	Oscoda
BDOW	BDOW-47-3-5	1	3/29/2006	DC, WP	X	26N	02E	19	3	Y	Big Creek	Oscoda
BDOW	BDOW-47-4-5/6	2	5/3/2006	MS, WP	P	26N	02E	30	3	Y	Big Creek	Oscoda
BDOW	BDOW-47-2-5	1	2/29/2006	MM, WP	X	26N	02E	31	3	Y	Big Creek	Oscoda
BDOW	BDOW-47-4-4	1	5/3/2006	MS, WP	X	26N	02E	31	3	Y	Big Creek	Oscoda
BDOW	BDOW-29-3-7	1	3/29/2006	DC, WP	X	26N	09W	2	1	N	Union	Grand Traverse
BDOW	BDOW-29-4-3	1	5/3/2006	MS, WP	X	26N	09W	2	1	N	Union	Grand Traverse
BDOW	BDOW-29-3-8	1	3/29/2006	DC, WP	X	26N	09W	10	1	N	Union	Grand Traverse
BDOW	BDOW-29-3-10	1	3/29/2006	DC, WP	X	26N	09W	26	4	N	Union	Grand Traverse
BDOW	BDOW-29-3-9	1	3/29/2006	DC, WP	X	26N	09W	26	4	N	Union	Grand Traverse
BDOW	BDOW-47-2-1	1	2/28/2006	MM, WP	X	27N	01E	13	1	Y	Greenwood	Oscoda
BDOW	BDOW-47-3-9	1	3/30/2006	DC, WP	X	27N	01E	13	1	Y	Greenwood	Oscoda
BDOW	BDOW-47-4-7	1	5/4/2006	MS, WP	X	27N	01E	13	1	Y	Greenwood	Oscoda
BDOW	BDOW-47-2-2	1	2/28/2006	MM, WP	X	27N	01E	28	3	N	Greenwood	Oscoda
BDOW	BDOW-47-3-8	1	3/29/2006	DC, WP	X	27N	01E	22	4	Y	Greenwood	Oscoda
BDOW	BDOW-47-3-10/11	2	3/30/2006	DC, WP	P	27N	01E	24	4	Y	Greenwood	Oscoda
BDOW	BDOW-47-3-7	1	3/29/2006	DC, WP	X	27N	01E	34	4	Y	Greenwood	Oscoda
BDOW	BDOW-29-4-10	1	5/3/2006	MS, WP	X	27N	09W	10	1	Y	Whitewater	Grand Traverse
BDOW	BDOW-29-4-7	1	5/3/2006	MS, WP	X	27N	09W	14	1	Y	Whitewater	Grand Traverse
BDOW	BDOW-29-4-9	1	5/3/2006	MS, WP	X	27N	09W	15	1	Y	Whitewater	Grand Traverse
BDOW	BDOW-29-2-2	1	3/1/2006	MM, WP	X	27N	09W	22	4	N	Whitewater	Grand Traverse
BDOW	BDOW-29-4-8	1	5/3/2006	MS, WP	X	27N	09W	22	4	N	Whitewater	Grand Traverse
BDOW	BDOW-29-3-3	1	3/29/2006	DC, WP	X	27N	09W	23	4	N	Whitewater	Grand Traverse
BDOW	BDOW-29-2-1	1	3/1/2006	MM, WP	X	27N	09W	27	4	N	Whitewater	Grand Traverse
BDOW	BDOW-29-4-5	1	5/3/2006	MS, WP	X	27N	09W	27	4	N	Whitewater	Grand Traverse
BDOW	BDOW-29-4-6	1	5/3/2006	MS, WP	X	27N	09W	27	4	N	Whitewater	Grand Traverse
BDOW	BDOW-29-3-4	1	3/29/2006	DC, WP	P	27N	09W	34	4	N	Whitewater	Grand Traverse
BDOW	BDOW-29-3-5	1	3/29/2006	DC, WP	P	27N	09W	35	4	N	Whitewater	Grand Traverse
BDOW	BDOW-29-3-6	1	3/29/2006	DC, WP	X	27N	09W	35	4	N	Whitewater	Grand Traverse
BDOW	BDOW-29-4-4	1	5/3/2006	MS, WP	X	27N	09W	35	4	N	Whitewater	Grand Traverse
BDOW	BDOW-47-3-16	1	3/30/2006	DC, WP	X	28N	01E	13	1	Y	Greenwood	Oscoda
BDOW	BDOW-47-3-12	1	3/30/2006	DC, WP	X	28N	01E	25	4	N	Greenwood	Oscoda
BDOW	BDOW-47-3-14/15	2	3/30/2006	DC, WP	P	28N	02E	19	3	N	Elmer	Oscoda
BDOW	BDOW-47-3-13	1	3/30/2006	DC, WP	X	28N	02E	30	3	N	Elmer	Oscoda

Table B-1. Continued.

Species ^a	Owl Observation ID	No. Obs.	Date	Observer (s)	Code	Town	Range	Section	Block	Priority	Twp. Name	County
BDOW	BDOW-47-4-8	1	5/4/2006	MS, WP	X	28N	02E	30	3	N	Elmer	Oscoda
BDOW	BDOW-29-3-1	1	3/28/2006	DC, WP	X	28N	09W	14	1	N	Milton	Antrim
BDOW	BDOW-29-4-15	1	5/3/2006	MS, WP	X	28N	09W	14	1	N	Milton	Antrim
BDOW	BDOW-29-3-2	1	3/28/2006	DC, WP	X	28N	09W	23	4	Y	Whitewater	Grand Traverse
BDOW	BDOW-29-4-13/14	2	5/3/2006	MS, WP	P	28N	09W	23	4	Y	Whitewater	Grand Traverse
BDOW	BDOW-29-4-16	1	5/3/2006	MS, WP	X	28N	09W	23	4	Y	Whitewater	Grand Traverse
BDOW	BDOW-29-2-3	1	3/2/2006	MM, WP	X	28N	09W	24	4	Y	Whitewater	Grand Traverse
BDOW	BDOW-29-4-11	1	5/3/2006	MS, WP	X	28N	09W	25	4	Y	Whitewater	Grand Traverse
BDOW	BDOW-29-4-12	1	5/3/2006	MS, WP	X	28N	09W	26	4	Y	Whitewater	Grand Traverse
BDOW	BDOW-59-4-6	1	5/4/2006	MS, WP	X	31N	05E	2	1	Y	Wellington	Alpena
BDOW	BDOW-59-3-5	1	3/31/2006	DC, WP	X	31N	05E	5	2	Y	Wellington	Alpena
BDOW	BDOW-59-4-5	1	5/4/2006	MS, WP	X	31N	05E	5	2	Y	Wellington	Alpena
BDOW	BDOW-59-3-6	1	3/31/2006	DC, WP	X	31N	05E	6	2	Y	Wellington	Alpena
BDOW	BDOW-59-4-2	1	5/4/2006	MS, WP	X	31N	05E	6	2	Y	Wellington	Alpena
BDOW	BDOW-59-4-1	1	5/4/2006	MS, WP	X	32N	05E	31	3	N	Wellington	Alpena
BDOW	BDOW-59-4-3	1	5/4/2006	MS, WP	X	32N	05E	32	3	N	Wellington	Alpena
BDOW	BDOW-59-3-4	1	3/31/2006	DC, WP	X	32N	05E	33	3	N	Wellington	Alpena
BDOW	BDOW-59-4-4	1	5/4/2006	MS, WP	X	32N	05E	33	3	N	Wellington	Alpena
BDOW	BDOW-59-3-3	1	3/30/2006	DC, WP	X	32N	05E	35	4	Y	Wellington	Alpena
BDOW	BDOW-59-4-9	1	5/5/2006	MS, WP	X	32N	07E	16	2	Y	Maple Ridge	Alpena
BDOW	BDOW-59-2-1	1	3/3/2006	MM, WP	X	32N	07E	19	3	N	Maple Ridge	Alpena
BDOW	BDOW-59-4-7/8	2	5/5/2006	MS, WP	P	32N	07E	20	3	N	Maple Ridge	Alpena
BDOW	BDOW-59-4-10	1	5/5/2006	MS, WP	P	32N	07E	21	3	N	Maple Ridge	Alpena
BDOW	BDOW-59-4-11	1	5/5/2006	MS, WP	P	32N	07E	21	3	N	Maple Ridge	Alpena
BDOW	BDOW-59-3-2	1	3/30/2006	DC, WP	X	32N	07E	31	3	N	Maple Ridge	Alpena
BDOW	BDOW-59-3-1	1	3/30/2006	DC, WP	X	32N	07E	24	4	N	Maple Ridge	Alpena
BDOW	BDOW-59-4-13/14	2	5/5/2006	MS, WP	P	32N	07E	24	4	N	Maple Ridge	Alpena
BDOW	BDOW-59-4-12	1	5/5/2006	MS, WP	X	32N	08E	18	2	Y	Alpena	Alpena
BDOW	BDOW-9-3-2	1	4/11/2006	WP, AB	X	43N	23W	18	2	Y	Maple Ridge	Delta
BDOW	BDOW-9-3-3	1	4/11/2006	WP, AB	X	43N	23W	21	3	N	Maple Ridge	Delta
BDOW	BDOW-9-2-1	1	3/8/2006	MM, WP	X	43N	23W	32	3	N	Maple Ridge	Delta
BDOW	BDOW-9-3-1	1	4/11/2006	WP, AB	X	44N	23W	31	3	Y	Turin	Marquette
BDOW	BDOW-901-4-21	1	5/7/2006	MS, WP	X	44N	38W	16	2	N	Watersmeet	Gogebic
BDOW	BDOW-901-4-22	1	5/7/2006	MS, WP	X	44N	38W	21	3	N	Watersmeet	Gogebic

Table B-1. Continued.

Species ^a	Owl Observation ID	No. Obs.	Date	Observer (s)	Code	Town	Range	Section	Block	Priority	Twp. Name	County
BDOW	BDOW-901-4-17	1	5/7/2006	MS, WP	X	44N	39W	28	3	N	Watersmeet	Gogebic
BDOW	BDOW-901-2-1	1	3/7/2006	MM, WP	X	44N	39W	29	3	N	Watersmeet	Gogebic
BDOW	BDOW-901-3-1	1	4/5/2006	WP, AB	X	44N	39W	29	3	N	Watersmeet	Gogebic
BDOW	BDOW-901-4-15/16	2	5/7/2006	MS, WP	P	44N	39W	30	3	N	Watersmeet	Gogebic
BDOW	BDOW-901-4-18	1	5/7/2006	MS, WP	X	44N	39W	34	4	N	Watersmeet	Gogebic
BDOW	BDOW-901-4-19	1	5/7/2006	MS, WP	X	44N	39W	35	4	N	Watersmeet	Gogebic
BDOW	BDOW-901-4-20	1	5/7/2006	MS, WP	X	44N	39W	36	4	N	Watersmeet	Gogebic
BDOW	BDOW-901-4-12	1	5/7/2006	MS, WP	X	44N	40W	13	1	N	Watersmeet	Gogebic
BDOW	BDOW-901-3-5	1	4/5/2006	WP, AB	X	44N	40W	4	2	N	Watersmeet	Gogebic
BDOW	BDOW-901-4-8	1	5/6/2006	MS, WP	X	44N	40W	4	2	N	Watersmeet	Gogebic
BDOW	BDOW-901-3-6	1	4/5/2006	WP, AB	X	44N	40W	6	2	N	Watersmeet	Gogebic
BDOW	BDOW-901-4-1/2	2	5/6/2006	MS, WP	P	44N	40W	6	2	N	Watersmeet	Gogebic
BDOW	BDOW-901-4-3/4	2	5/6/2006	MS, WP	P	44N	40W	6	2	N	Watersmeet	Gogebic
BDOW	BDOW-901-3-2	1	4/5/2006	WP, AB	X	44N	40W	24	4	Y	Watersmeet	Gogebic
BDOW	BDOW-901-4-13/14	2	5/7/2006	MS, WP	P	44N	40W	25	4	Y	Watersmeet	Gogebic
BDOW	BDOW-8-4-24	1	5/8/2006	MS, WP	X	45N	35W	31	3	N	Iron River	Iron
BDOW	BDOW-8-4-28	1	5/8/2006	MS, WP	X	45N	35W	31	3	N	Iron River	Iron
BDOW	BDOW-8-4-16/17	2	5/8/2006	MS, WP	P	45N	36W	1	1	N	Iron River	Iron
BDOW	BDOW-8-4-18	1	5/8/2006	MS, WP	X	45N	36W	2	1	N	Iron River	Iron
BDOW	BDOW-8-4-22	1	5/8/2006	MS, WP	X	45N	36W	13	1	N	Iron River	Iron
BDOW	BDOW-8-4-19	1	5/8/2006	MS, WP	X	45N	36W	14	1	N	Iron River	Iron
BDOW	BDOW-8-4-20	1	5/8/2006	MS, WP	X	45N	36W	23	4	N	Iron River	Iron
BDOW	BDOW-8-4-21	1	5/8/2006	MS, WP	X	45N	36W	23	4	N	Iron River	Iron
BDOW	BDOW-8-4-25/26	2	5/8/2006	MS, WP	P	45N	36W	25	4	N	Iron River	Iron
BDOW	BDOW-8-4-23	1	5/8/2006	MS, WP	X	45N	36W	35	4	N	Iron River	Iron
BDOW	BDOW-8-4-27	1	5/8/2006	MS, WP	X	45N	36W	36	4	N	Iron River	Iron
BDOW	BDOW-901-4-10/11	2	5/7/2006	MS, WP	P	45N	39W	31	3	N	Watersmeet	Gogebic
BDOW	BDOW-901-4-5/6	2	5/6/2006	MS, WP	P	45N	40W	32	3	N	Watersmeet	Gogebic
BDOW	BDOW-901-3-3/4	2	4/5/2006	WP, AB	P	45N	40W	34	4	N	Watersmeet	Gogebic
BDOW	BDOW-901-4-7	1	5/6/2006	MS, WP	X	45N	40W	34	4	N	Watersmeet	Gogebic
BDOW	BDOW-901-4-9	1	5/6/2006	MS, WP	X	45N	40W	35	4	N	Watersmeet	Gogebic
BDOW	BDOW-24-4-16	1	5/6/2006	MS, WP	X	46N	10W	2	1	N	McMillan	Luce
BDOW	BDOW-11-4-8	1	5/9/2006	MS, WP	X	46N	29W	15	1	N	Humboldt	Marquette
BDOW	BDOW-11-4-6	1	5/9/2006	MS, WP	X	46N	29W	8	2	N	Republic	Marquette

Table B-1. Continued.

Species ^a	Owl Observation ID	No. Obs.	Date	Observer (s)	Code	Town	Range	Section	Block	Priority	Twp. Name	County
BDOW	BDOW-11-4-7	1	5/9/2006	MS, WP	X	46N	29W	16	2	N	Republic	Marquette
BDOW	BDOW-11-2-3	1	3/10/2006	MM, WP	X	46N	29W	26	4	Y	Humboldt	Marquette
BDOW	BDOW-11-3-1	1	4/2/2006	WP, AB	X	46N	29W	26	4	Y	Humboldt	Marquette
BDOW	BDOW-11-4-9	1	5/9/2006	MS, WP	X	46N	29W	26	4	Y	Humboldt	Marquette
BDOW	BDOW-11-4-10	1	5/9/2006	MS, WP	X	46N	29W	35	4	Y	Humboldt	Marquette
BDOW	BDOW-8-3-7	1	4/6/2006	WP, AB	X	46N	35W	5	2	N	Bates	Iron
BDOW	BDOW-8-2-2/3	2	3/6/2006	MM, WP	P	46N	35W	7	2	N	Bates	Iron
BDOW	BDOW-8-3-5	1	4/6/2006	WP, AB	X	46N	35W	7	2	N	Bates	Iron
BDOW	BDOW-8-4-5	1	5/8/2006	MS, WP	X	46N	35W	7	2	N	Bates	Iron
BDOW	BDOW-8-4-6	1	5/8/2006	MS, WP	X	46N	35W	7	2	N	Bates	Iron
BDOW	BDOW-8-3-6	1	4/6/2006	WP, AB	X	46N	35W	8	2	N	Bates	Iron
BDOW	BDOW-8-4-7	1	5/8/2006	MS, WP	X	46N	35W	17	2	N	Bates	Iron
BDOW	BDOW-8-4-8	1	5/8/2006	MS, WP	P	46N	35W	18	2	N	Bates	Iron
BDOW	BDOW-8-4-9	1	5/8/2006	MS, WP	P	46N	35W	18	2	N	Bates	Iron
BDOW	BDOW-8-3-3/4	2	4/6/2006	WP, AB	P	46N	35W	21	3	Y	Bates	Iron
BDOW	BDOW-8-4-10	1	5/8/2006	MS, WP	X	46N	35W	21	3	Y	Bates	Iron
BDOW	BDOW-8-3-1	1	4/6/2006	WP, AB	X	46N	35W	29	3	Y	Bates	Iron
BDOW	BDOW-8-3-2	1	4/6/2006	WP, AB	X	46N	35W	29	3	Y	Bates	Iron
BDOW	BDOW-8-4-11/12	2	5/8/2006	MS, WP	P	46N	35W	29	3	Y	Bates	Iron
BDOW	BDOW-8-4-13/14	2	5/8/2006	MS, WP	P	46N	35W	31	3	Y	Bates	Iron
BDOW	BDOW-8-4-15	1	5/8/2006	MS, WP	X	46N	35W	31	3	Y	Bates	Iron
BDOW	BDOW-24-2-3	1	3/6/2006	MM, WP	X	47N	09W	3	1	N	McMillan	Luce
BDOW	BDOW-24-4-13	1	5/6/2006	MS, WP	X	47N	09W	3	1	N	McMillan	Luce
BDOW	BDOW-24-4-14	1	5/6/2006	MS, WP	X	47N	09W	9	2	Y	McMillan	Luce
BDOW	BDOW-24-4-15	1	5/6/2006	MS, WP	X	47N	09W	20	3	N	McMillan	Luce
BDOW	BDOW-11-4-4	1	5/9/2006	MS, WP	X	47N	29W	10	1	N	Humboldt	Marquette
BDOW	BDOW-11-4-3	1	5/9/2006	MS, WP	X	47N	29W	13	1	N	Humboldt	Marquette
BDOW	BDOW-11-4-5	1	5/9/2006	MS, WP	X	47N	29W	32	3	N	Humboldt	Marquette
BDOW	BDOW-11-3-2	1	4/2/2006	WP, AB	X	47N	29W	22	4	N	Humboldt	Marquette
BDOW	BDOW-8-4-1	1	5/7/2006	MS, WP	X	47N	35W	5	2	N	Duncan	Houghton
BDOW	BDOW-8-3-10	1	4/6/2006	WP, AB	X	47N	35W	8	2	N	Duncan	Houghton
BDOW	BDOW-8-3-8/9	2	4/6/2006	WP, AB	P	47N	35W	8	2	N	Duncan	Houghton
BDOW	BDOW-8-4-2	1	5/7/2006	MS, WP	X	47N	35W	8	2	N	Duncan	Houghton
BDOW	BDOW-8-4-3	1	5/7/2006	MS, WP	X	47N	35W	29	3	Y	Duncan	Houghton

Table B-1. Continued.

Species ^a	Owl Observation ID	No. Obs.	Date	Observer (s)	Code	Town	Range	Section	Block	Priority	Twp. Name	County
BDOW	BDOW-8-2-1	1	3/6/2006	MM, WP	X	47N	35W	31	3	Y	Duncan	Houghton
BDOW	BDOW-8-4-4	1	5/8/2006	MS, WP	X	47N	35W	31	3	Y	Duncan	Houghton
BDOW	BDOW-24-4-2/3	2	5/5/2006	MS, WP	P	48N	08W	1	1	Y	McMillan	Luce
BDOW	BDOW-24-4-7	1	5/5/2006	MS, WP	X	48N	08W	2	1	Y	McMillan	Luce
BDOW	BDOW-24-4-4/5	2	5/5/2006	MS, WP	P	48N	08W	11	1	Y	McMillan	Luce
BDOW	BDOW-24-4-6	1	5/5/2006	MS, WP	X	48N	08W	11	1	Y	McMillan	Luce
BDOW	BDOW-24-4-9	1	5/6/2006	MS, WP	X	48N	08W	7	2	N	McMillan	Luce
BDOW	BDOW-24-4-8	1	5/6/2006	MS, WP	X	48N	08W	17	2	N	McMillan	Luce
BDOW	BDOW-24-2-2	1	3/5/2006	MM, WP	X	48N	08W	18	2	N	McMillan	Luce
BDOW	BDOW-24-4-12	1	5/6/2006	MS, WP	X	48N	09W	33	3	N	McMillan	Luce
BDOW	BDOW-24-4-11	1	5/6/2006	MS, WP	X	48N	09W	23	4	N	McMillan	Luce
BDOW	BDOW-24-3-1	1	4/2/2006	WP, AB	X	48N	09W	26	4	N	McMillan	Luce
BDOW	BDOW-24-4-10	1	5/6/2006	MS, WP	X	48N	09W	26	4	N	McMillan	Luce
BDOW	BDOW-11-4-1	1	5/8/2006	MS, WP	X	48N	28W	19	3	Y	Ely	Marquette
BDOW	BDOW-11-3-3	1	4/2/2006	WP, AB	X	48N	28W	30	3	Y	Ely	Marquette
BDOW	BDOW-11-4-2	1	5/8/2006	MS, WP	X	48N	28W	30	3	Y	Ely	Marquette
BDOW	BDOW-11-2-1	1	3/9/2006	MM, WP	X	48N	29W	25	4	Y	Champion	Marquette
BDOW	BDOW-11-2-2	1	3/9/2006	MM, WP	X	48N	29W	36	4	Y	Champion	Marquette
BDOW	BDOW-8-3-11	1	4/6/2006	WP, AB	X	48N	35W	28	3	N	Duncan	Houghton
BDOW	BDOW-8-3-12	1	4/6/2006	WP, AB	X	48N	35W	29	3	N	Duncan	Houghton
BDOW	BDOW-24-4-1	1	5/5/2006	MS, WP	X	49N	07W	32	3	N	Whitefish	Chippewa
BDOW	BDOW-24-2-1	1	3/5/2006	MM, WP	X	49N	08W	36	4	Y	McMillan	Luce
BOOW	BOOW-9-3-1	1	4/11/2006	WP, AB	X	43N	23W	17	2	Y	Maple Ridge	Delta
BOOW	BOOW-9-3-2	1	4/11/2006	WP, AB	X	43N	23W	17	2	Y	Maple Ridge	Delta
EASO	EASO-35-2-2	1	2/22/2006	JB	X	01N	10W	11	1	Y	Prairieville	Barry
EASO	EASO-35-1-1	1	1/26/2006	BN	X	01N	10W	12	1	Y	Prairieville	Barry
EASO	EASO-35-4-4	1	4/21/2006	JB	X	01N	10W	26	4	Y	Prairieville	Barry
EASO	EASO-907-1-7	1	1/26/2006	JB	X	01N	14W	6	2	Y	Cheshire	Allegan
EASO	EASO-907-3-8	1	3/20/2006	JB, BS	X	01N	14W	6	2	Y	Cheshire	Allegan
EASO	EASO-907-4-1/2	2	4/24/2006	JB	X	01N	14W	6	2	Y	Cheshire	Allegan
EASO	EASO-35-4-3	1	4/21/2006	JB	X	01S	10W	3	1	Y	Richland	Kalamazoo
EASO	EASO-35-4-2	1	4/21/2006	JB	X	01S	10W	11	1	Y	Richland	Kalamazoo

Table B-1. Continued.

Species ^a	Owl Observation ID	No. Obs.	Date	Observer (s)	Code	Town	Range	Section	Block	Priority	Twp. Name	County
EASO	EASO-35-1-2/3	2	1/26/2006	BN	P	01S	10W	25	4	Y	Richland	Kalamazoo
EASO	EASO-35-2-1	1	2/22/2006	BN	X	01S	10W	25	4	Y	Richland	Kalamazoo
EASO	EASO-32-1-11	1	1/26/2006	MM, WP	X	02N	07W	6	2	Y	Maple Grove	Barry
EASO	EASO-32-1-12	1	1/26/2006	MM, WP	X	02N	07W	8	2	Y	Maple Grove	Barry
EASO	EASO-32-1-7	1	1/25/2006	MM, WP	P	02N	08W	1	1	Y	Baltimore	Barry
EASO	EASO-32-1-8	1	1/25/2006	MM, WP	P	02N	08W	1	1	Y	Baltimore	Barry
EASO	EASO-32-1-10	1	1/25/2006	MM, WP	P	02N	08W	11	1	Y	Baltimore	Barry
EASO	EASO-32-1-9	1	1/25/2006	MM, WP	P	02N	08W	11	1	Y	Baltimore	Barry
EASO	EASO-32-4-5	1	4/28/2006	WP, JG	X	02N	08W	12	1	Y	Baltimore	Barry
EASO	EASO-32-4-6	1	4/28/2006	WP, JG	X	02N	08W	12	1	Y	Baltimore	Barry
EASO	EASO-32-1-6	1	1/25/2006	MM, WP	X	02N	08W	14	1	Y	Baltimore	Barry
EASO	EASO-32-2-1	1	2/20/2006	WP, JG	P	02N	08W	7	2	Y	Baltimore	Barry
EASO	EASO-32-2-2	1	2/20/2006	WP, JG	P	02N	08W	7	2	Y	Baltimore	Barry
EASO	EASO-32-1-4	1	1/25/2006	MM, WP	X	02N	08W	8	2	Y	Baltimore	Barry
EASO	EASO-32-1-5	1	1/25/2006	MM, WP	X	02N	08W	9	2	Y	Baltimore	Barry
EASO	EASO-32-1-3	1	1/25/2006	MM, WP	X	02N	09W	12	1	Y	Hope	Barry
EASO	EASO-32-2-3	1	2/20/2006	WP, JG	P	02N	09W	15	1	Y	Hope	Barry
EASO	EASO-32-2-4	1	2/20/2006	WP, JG	P	02N	09W	15	1	Y	Hope	Barry
EASO	EASO-32-1-1	1	1/25/2006	MM, WP	X	02N	09W	19	3	Y	Hope	Barry
EASO	EASO-32-4-3	1	4/27/2006	WP, JG	X	02N	09W	19	3	Y	Hope	Barry
EASO	EASO-32-1-2	1	1/25/2006	MM, WP	X	02N	09W	20	3	Y	Hope	Barry
EASO	EASO-32-2-5/6	2	2/20/2006	WP, JG	P	02N	09W	20	3	Y	Hope	Barry
EASO	EASO-32-2-7	1	2/20/2006	WP, JG	X	02N	09W	20	3	Y	Hope	Barry
EASO	EASO-32-2-8	1	2/20/2006	WP, JG	X	02N	09W	20	3	Y	Hope	Barry
EASO	EASO-32-3-1	1	3/22/2006	MS, WP	X	02N	09W	20	3	Y	Hope	Barry
EASO	EASO-32-4-4	1	4/27/2006	WP, JG	X	02N	09W	20	3	Y	Hope	Barry
EASO	EASO-35-2-4	1	2/22/2006	JB	X	02N	09W	31	3	Y	Hope	Barry
EASO	EASO-32-3-2	1	3/22/2006	MS, WP	X	02N	10W	21	3	Y	Orangeville	Barry
EASO	EASO-32-4-1	1	4/27/2006	WP, JG	P	02N	10W	28	3	Y	Orangeville	Barry
EASO	EASO-32-4-2	1	4/27/2006	WP, JG	P	02N	10W	28	3	Y	Orangeville	Barry
EASO	EASO-32-2-9	1	2/20/2006	WP, JG	X	02N	10W	24	4	Y	Orangeville	Barry
EASO	EASO-35-4-5	1	4/21/2006	JB	X	02N	10W	35	4	Y	Orangeville	Barry
EASO	EASO-35-2-3	1	2/22/2006	JB	X	02N	10W	36	4	Y	Orangeville	Barry
EASO	EASO-35-3-1	1	3/21/2006	BN	X	02N	10W	36	4	Y	Orangeville	Barry

Table B-1. Continued.

Species ^a	Owl Observation ID	No. Obs.	Date	Observer (s)	Code	Town	Range	Section	Block	Priority	Twp. Name	County
EASO	EASO-35-4-6	1	4/21/2006	JB	X	02N	10W	36	4	Y	Orangeville	Barry
EASO	EASO-37-3-9	1	3/22/2006	BN	X	02N	13W	30	3	Y	Allegan	Allegan
EASO	EASO-37-2-5	1	2/22/2006	JB	P	02N	14W	7	2	Y	Valley	Allegan
EASO	EASO-37-3-3	1	3/22/2006	BN	X	02N	14W	7	2	Y	Valley	Allegan
EASO	EASO-37-4-6	1	4/24/2006	JB, ES	X	02N	14W	7	2	Y	Valley	Allegan
EASO	EASO-37-2-6	1	2/22/2006	JB	P	02N	14W	8	2	Y	Valley	Allegan
EASO	EASO-37-2-7	1	2/22/2006	JB	X	02N	14W	18	2	Y	Valley	Allegan
EASO	EASO-37-4-5	1	4/24/2006	JB, ES	X	02N	14W	18	2	Y	Valley	Allegan
EASO	EASO-37-3-4	1	3/22/2006	BN	X	02N	14W	29	3	Y	Valley	Allegan
EASO	EASO-37-3-5	1	3/22/2006	BN	X	02N	14W	29	3	Y	Valley	Allegan
EASO	EASO-37-4-4	1	4/23/2006	JB, ES	X	02N	14W	29	3	Y	Valley	Allegan
EASO	EASO-907-3-7	1	3/20/2006	JB, ES	X	02N	14W	30	3	Y	Valley	Allegan
EASO	EASO-907-1-8	1	1/26/2006	JB	X	02N	14W	31	3	Y	Valley	Allegan
EASO	EASO-37-2-8	1	2/22/2006	JB	X	02N	14W	32	3	Y	Valley	Allegan
EASO	EASO-37-4-3	1	4/23/2006	JB, ES	X	02N	14W	32	3	Y	Valley	Allegan
EASO	EASO-37-1-1/2	2	1/25/2006	BN	P	02N	14W	33	3	Y	Valley	Allegan
EASO	EASO-37-3-6/7	2	3/22/2006	BN	P	02N	14W	33	3	Y	Valley	Allegan
EASO	EASO-37-2-3	1	2/19/2006	JB	X	02N	14W	25	4	Y	Valley	Allegan
EASO	EASO-37-2-2	1	2/19/2006	JB	X	02N	14W	26	4	Y	Valley	Allegan
EASO	EASO-37-2-1	1	2/19/2006	JB	X	02N	14W	27	4	Y	Valley	Allegan
EASO	EASO-37-3-8	1	3/22/2006	BN	X	02N	14W	27	4	Y	Valley	Allegan
EASO	EASO-37-4-1	1	4/23/2006	JB, ES	P	02N	14W	27	4	Y	Valley	Allegan
EASO	EASO-37-4-2	1	4/23/2006	JB, ES	P	02N	14W	27	4	Y	Valley	Allegan
EASO	EASO-907-3-1/2	2	3/20/2006	JB, ES	P	02N	15W	11	1	Y	Clyde	Allegan
EASO	EASO-907-1-4	1	1/26/2006	JB	X	02N	15W	24	4	Y	Clyde	Allegan
EASO	EASO-907-3-6	1	3/20/2006	JB, ES	X	02N	15W	24	4	Y	Clyde	Allegan
EASO	EASO-907-4-3	1	4/24/2006	JB	X	02N	15W	24	4	Y	Clyde	Allegan
EASO	EASO-907-1-5	1	1/26/2006	JB	P	02N	15W	25	4	Y	Clyde	Allegan
EASO	EASO-907-1-6	1	1/26/2006	JB	P	02N	15W	25	4	Y	Clyde	Allegan
EASO	EASO-907-2-1/2	2	2/21/2006	BN	P	02N	15W	25	4	Y	Clyde	Allegan
EASO	EASO-907-4-4	1	4/24/2006	JB	X	02N	15W	26	4	Y	Clyde	Allegan
EASO	EASO-907-1-3	1	1/25/2006	JB	X	02N	15W	27	4	Y	Clyde	Allegan
EASO	EASO-907-2-3	1	2/21/2006	BN	X	02N	15W	27	4	Y	Clyde	Allegan
EASO	EASO-907-3-5	1	3/20/2006	JB, ES	X	02N	15W	27	4	Y	Clyde	Allegan

Table B-1. Continued.

Species ^a	Owl Observation ID	No. Obs.	Date	Observer (s)	Code	Town	Range	Section	Block	Priority	Twp. Name	County
EASO	EASO-907-4-5	1	4/24/2006	JB	X	02N	15W	27	4	Y	Clyde	Allegan
EASO	EASO-35-1-4	1	1/26/2006	BN	X	02S	10W	1	1	Y	Comstock	Kalamazoo
EASO	EASO-35-4-1	1	4/20/2006	JB	X	02S	10W	1	1	Y	Comstock	Kalamazoo
EASO	EASO-32-1-13	1	1/26/2006	MM, WP	X	03N	07W	34	4	Y	Castleton	Barry
EASO	EASO-32-4-7	1	4/28/2006	WP, JG	X	03N	07W	34	4	Y	Castleton	Barry
EASO	EASO-73-3-1	1	3/22/2006	MS, WP	X	03N	13E	10	1	Y	Macomb	Macomb
EASO	EASO-73-4-7	1	4/25/2006	WP, JG	X	03N	13E	11	1	Y	Macomb	Macomb
EASO	EASO-907-4-6	1	4/25/2006	JB	X	03N	14W	31	3	Y	Heath	Allegan
EASO	EASO-37-3-1	1	3/22/2006	BN	X	03N	14W	25	4	Y	Heath	Allegan
EASO	EASO-37-4-8	1	4/24/2006	JB, ES	X	03N	14W	26	4	Y	Heath	Allegan
EASO	EASO-37-2-4	1	2/22/2006	JB	X	03N	14W	27	4	Y	Heath	Allegan
EASO	EASO-37-4-7	1	4/24/2006	JB, ES	X	03N	14W	27	4	Y	Heath	Allegan
EASO	EASO-37-3-2	1	3/22/2006	BN	X	03N	14W	34	4	Y	Heath	Allegan
EASO	EASO-907-3-3	1	3/20/2006	JB, ES	X	03N	15W	22	4	Y	Manlius	Allegan
EASO	EASO-907-1-2	1	1/25/2006	JB	X	03N	15W	26	4	Y	Manlius	Allegan
EASO	EASO-907-2-4	1	2/21/2006	BN	X	03N	15W	26	4	Y	Manlius	Allegan
EASO	EASO-907-3-4	1	3/20/2006	JB, ES	X	03N	15W	26	4	Y	Manlius	Allegan
EASO	EASO-907-4-7	1	4/25/2006	JB	X	03N	15W	26	4	Y	Manlius	Allegan
EASO	EASO-907-1-1	1	1/25/2006	JB	X	03N	15W	27	4	Y	Manlius	Allegan
EASO	EASO-907-2-5	1	2/21/2006	BN	X	03N	15W	27	4	Y	Manlius	Allegan
EASO	EASO-907-4-8	1	4/25/2006	JB	X	03N	15W	27	4	Y	Manlius	Allegan
EASO	EASO-73-4-4	1	4/25/2006	WP, JG	X	04N	13E	10	1	Y	Ray	Macomb
EASO	EASO-73-2-7	1	2/20/2006	WP, JG	X	04N	13E	22	4	Y	Ray	Macomb
EASO	EASO-73-4-5	1	4/25/2006	WP, JG	X	04N	13E	22	4	Y	Ray	Macomb
EASO	EASO-73-3-2	1	3/22/2006	MS, WP	X	04N	13E	23	4	Y	Ray	Macomb
EASO	EASO-73-4-6	1	4/25/2006	WP, JG	X	04N	13E	34	4	Y	Ray	Macomb
EASO	EASO-73-1-5	1	1/24/2006	MM, WP	X	05N	13E	3	1	Y	Armada	Macomb
EASO	EASO-73-1-4	1	1/24/2006	MM, WP	X	05N	13E	10	1	Y	Armada	Macomb
EASO	EASO-73-2-5	1	2/20/2006	WP, JG	X	05N	13E	10	1	Y	Armada	Macomb
EASO	EASO-73-3-7	1	3/23/2006	MS, WP	X	05N	13E	10	1	Y	Armada	Macomb
EASO	EASO-73-3-8	1	3/23/2006	MS, WP	X	05N	13E	10	1	Y	Armada	Macomb
EASO	EASO-73-4-2	1	4/24/2006	WP, JG	X	05N	13E	10	1	Y	Armada	Macomb
EASO	EASO-73-1-2/3	2	1/23/2006	MM, WP	P	05N	13E	21	3	Y	Armada	Macomb
EASO	EASO-73-3-5	1	3/23/2006	MS, WP	X	05N	13E	21	3	Y	Armada	Macomb

Table B-1. Continued.

Species ^a	Owl Observation ID	No. Obs.	Date	Observer (s)	Code	Town	Range	Section	Block	Priority	Twp. Name	County
EASO	EASO-73-3-6	1	3/23/2006	MS, WP	P	05N	13E	21	3	Y	Armada	Macomb
EASO	EASO-73-4-3	1	4/24/2006	WP, JG	X	05N	13E	21	3	Y	Armada	Macomb
EASO	EASO-73-1-1	1	1/23/2006	MM, WP	X	05N	13E	28	3	Y	Armada	Macomb
EASO	EASO-73-2-6	1	2/20/2006	WP, JG	X	05N	13E	28	3	Y	Armada	Macomb
EASO	EASO-73-3-4	1	3/23/2006	MS, WP	X	05N	13E	28	3	Y	Armada	Macomb
EASO	EASO-73-3-3	1	3/23/2006	MS, WP	X	05N	13E	34	4	Y	Armada	Macomb
EASO	EASO-58-1-8	1	1/22/2006	MM, WP	X	05S	01W	36	4	Y	Somerset	Hillsdale
EASO	EASO-73-1-7/8	2	1/24/2006	MM, WP	X	06N	13E	10	1	Y	Berlin	St. Clair
EASO	EASO-73-2-1/2	2	2/20/2006	WP, JG	P	06N	13E	10	1	Y	Berlin	St. Clair
EASO	EASO-73-3-14	1	3/23/2006	MS, WP	X	06N	13E	10	1	Y	Berlin	St. Clair
EASO	EASO-73-3-13	1	3/23/2006	MS, WP	X	06N	13E	15	1	Y	Berlin	St. Clair
EASO	EASO-73-1-6	1	1/24/2006	MM, WP	X	06N	13E	21	3	Y	Berlin	St. Clair
EASO	EASO-73-3-12	1	3/23/2006	MS, WP	X	06N	13E	21	3	Y	Berlin	St. Clair
EASO	EASO-73-2-3/4	2	2/20/2006	WP, JG	P	06N	13E	28	3	Y	Berlin	St. Clair
EASO	EASO-73-3-10	1	3/23/2006	MS, WP	X	06N	13E	28	3	Y	Berlin	St. Clair
EASO	EASO-73-3-9	1	3/23/2006	MS, WP	X	06N	13E	33	3	Y	Berlin	St. Clair
EASO	EASO-73-4-1	1	4/24/2006	WP, JG	X	06N	13E	33	3	Y	Berlin	St. Clair
EASO	EASO-73-3-11	1	3/23/2006	MS, WP	X	06N	13E	22	4	Y	Berlin	St. Clair
EASO	EASO-58-1-7	1	1/22/2006	MM, WP	X	06S	01W	1	1	Y	Wheatland	Hillsdale
EASO	EASO-58-1-6	1	1/22/2006	MM, WP	X	06S	01W	3	1	Y	Wheatland	Hillsdale
EASO	EASO-58-4-1	1	4/26/2006	WP, JG	X	06S	01W	3	1	Y	Wheatland	Hillsdale
EASO	EASO-58-2-1	1	2/24/2006	WP, JG	X	06S	01W	4	2	Y	Wheatland	Hillsdale
EASO	EASO-58-4-2	1	4/26/2006	WP, JG	X	06S	01W	9	2	Y	Wheatland	Hillsdale
EASO	EASO-58-2-2	1	2/24/2006	WP, JG	X	06S	01W	16	2	Y	Wheatland	Hillsdale
EASO	EASO-58-3-3	1	3/19/2006	MS, WP	X	06S	01W	16	2	Y	Wheatland	Hillsdale
EASO	EASO-58-4-3	1	4/26/2006	WP, JG	P	06S	01W	16	2	Y	Wheatland	Hillsdale
EASO	EASO-58-4-4	1	4/26/2006	WP, JG	P	06S	01W	16	2	Y	Wheatland	Hillsdale
EASO	EASO-58-2-3	1	2/24/2006	WP, JG	X	06S	01W	28	3	Y	Wheatland	Hillsdale
EASO	EASO-58-4-6	1	4/26/2006	WP, JG	X	06S	01W	28	3	Y	Wheatland	Hillsdale
EASO	EASO-58-4-5	1	4/26/2006	WP, JG	X	06S	01W	22	4	Y	Wheatland	Hillsdale
EASO	EASO-58-1-5	1	1/22/2006	MM, WP	X	06S	01W	27	4	Y	Wheatland	Hillsdale
EASO	EASO-58-1-4	1	1/22/2006	MM, WP	X	06S	01W	34	4	Y	Wheatland	Hillsdale
EASO	EASO-58-2-4	1	2/24/2006	WP, JG	X	06S	01W	34	4	Y	Wheatland	Hillsdale
EASO	EASO-58-4-7	1	4/26/2006	WP, JG	X	06S	01W	34	4	Y	Wheatland	Hillsdale

Table B-1. Continued.

Species ^a	Owl Observation ID	No. Obs.	Date	Observer (s)	Code	Town	Range	Section	Block	Priority	Twp. Name	County
EASO	EASO-39-1-11	1	1/26/2006	JB, ML	X	06S	14W	29	3	Y	Penn	Cass
EASO	EASO-58-1-3	1	1/22/2006	MM, WP	X	07S	01W	3	1	Y	Pittsford	Hillsdale
EASO	EASO-58-4-8	1	4/26/2006	WP, JG	X	07S	01W	3	1	Y	Pittsford	Hillsdale
EASO	EASO-58-4-9	1	4/26/2006	WP, JG	P	07S	01W	10	1	Y	Pittsford	Hillsdale
EASO	EASO-58-1-2	1	1/22/2006	MM, WP	X	07S	01W	15	1	Y	Pittsford	Hillsdale
EASO	EASO-58-2-5	1	2/24/2006	WP, JG	X	07S	01W	4	2	Y	Pittsford	Hillsdale
EASO	EASO-58-2-6	1	2/24/2006	WP, JG	X	07S	01W	4	2	Y	Pittsford	Hillsdale
EASO	EASO-58-4-10	1	4/26/2006	WP, JG	P	07S	01W	9	2	Y	Pittsford	Hillsdale
EASO	EASO-58-2-7	1	2/24/2006	WP, JG	X	07S	01W	16	2	Y	Pittsford	Hillsdale
EASO	EASO-58-4-11	1	4/26/2006	WP, JG	X	07S	01W	16	2	Y	Pittsford	Hillsdale
EASO	EASO-58-2-8	1	2/24/2006	WP, JG	P	07S	01W	21	3	Y	Pittsford	Hillsdale
EASO	EASO-58-4-12	1	4/26/2006	WP, JG	X	07S	01W	21	3	Y	Pittsford	Hillsdale
EASO	EASO-58-3-1	1	3/19/2006	MS, WP	X	07S	01W	33	3	Y	Pittsford	Hillsdale
EASO	EASO-58-4-15	1	4/26/2006	WP, JG	P	07S	01W	33	3	Y	Pittsford	Hillsdale
EASO	EASO-58-1-1	1	1/22/2006	MM, WP	X	07S	01W	22	4	Y	Pittsford	Hillsdale
EASO	EASO-58-2-9	1	2/24/2006	WP, JG	P	07S	01W	22	4	Y	Pittsford	Hillsdale
EASO	EASO-58-2-10/11	2	2/24/2006	WP, JG	P	07S	01W	27	4	Y	Pittsford	Hillsdale
EASO	EASO-58-3-2	1	3/19/2006	MS, WP	X	07S	01W	27	4	Y	Pittsford	Hillsdale
EASO	EASO-58-4-13	1	4/26/2006	WP, JG	X	07S	01W	27	4	Y	Pittsford	Hillsdale
EASO	EASO-58-2-12	1	2/24/2006	WP, JG	X	07S	01W	34	4	Y	Pittsford	Hillsdale
EASO	EASO-58-4-14	1	4/26/2006	WP, JG	P	07S	01W	34	4	Y	Pittsford	Hillsdale
EASO	EASO-39-1-5	1	1/26/2006	JB, ML	X	07S	13W	28	3	Y	Porter	Cass
EASO	EASO-39-2-4	1	2/24/2006	JB	X	07S	13W	28	3	Y	Porter	Cass
EASO	EASO-39-2-5	1	2/24/2006	JB	X	07S	13W	28	3	Y	Porter	Cass
EASO	EASO-39-3-8	1	3/27/2006	JB, ES	X	07S	13W	28	3	Y	Porter	Cass
EASO	EASO-39-3-9	1	3/27/2006	JB, ES	X	07S	13W	28	3	Y	Porter	Cass
EASO	EASO-39-3-6	1	3/27/2006	JB, ES	X	07S	13W	30	3	Y	Porter	Cass
EASO	EASO-39-4-8	1	4/26/2006	JB	X	07S	13W	30	3	Y	Porter	Cass
EASO	EASO-39-1-6	1	1/26/2006	JB, ML	X	07S	13W	32	3	Y	Porter	Cass
EASO	EASO-39-3-7	1	3/27/2006	JB, ES	X	07S	13W	32	3	Y	Porter	Cass
EASO	EASO-39-4-7	1	4/26/2006	JB	X	07S	13W	32	3	Y	Porter	Cass
EASO	EASO-39-1-3	1	1/26/2006	JB, ML	X	07S	13W	26	4	Y	Porter	Cass
EASO	EASO-39-1-4	1	1/26/2006	JB, ML	X	07S	13W	27	4	Y	Porter	Cass
EASO	EASO-39-2-3	1	2/24/2006	JB	X	07S	13W	27	4	Y	Porter	Cass

Table B-1. Continued.

Species ^a	Owl Observation ID	No. Obs.	Date	Observer (s)	Code	Town	Range	Section	Block	Priority	Twp. Name	County
EASO	EASO-39-3-10	1	3/27/2006	JB, ES	X	07S	13W	27	4	Y	Porter	Cass
EASO	EASO-39-4-4	1	4/26/2006	JB	X	07S	13W	27	4	Y	Porter	Cass
EASO	EASO-39-4-5/6	2	4/26/2006	JB	P	07S	13W	27	4	Y	Porter	Cass
EASO	EASO-39-1-2	1	1/26/2006	JB, ML	X	07S	13W	36	4	Y	Porter	Cass
EASO	EASO-39-4-1	1	4/26/2006	JB	X	07S	13W	36	4	Y	Porter	Cass
EASO	EASO-39-4-2	1	4/26/2006	JB	X	07S	13W	36	4	Y	Porter	Cass
EASO	EASO-39-4-13	1	4/27/2006	JB	X	07S	14W	4	2	Y	Calvin	Cass
EASO	EASO-39-1-9	1	1/27/2006	JB, ML	X	07S	14W	8	2	Y	Calvin	Cass
EASO	EASO-39-2-1	1	2/23/2006	BN	X	07S	14W	8	2	Y	Calvin	Cass
EASO	EASO-39-3-4	1	3/26/2006	BN	X	07S	14W	8	2	Y	Calvin	Cass
EASO	EASO-39-1-10	1	1/26/2006	JB, ML	X	07S	14W	9	2	Y	Calvin	Cass
EASO	EASO-39-4-12	1	4/27/2006	JB	X	07S	14W	17	2	Y	Calvin	Cass
EASO	EASO-39-3-2/3	2	3/26/2006	BN	P	07S	14W	18	2	Y	Calvin	Cass
EASO	EASO-39-4-11	1	4/27/2006	JB	X	07S	14W	18	2	Y	Calvin	Cass
EASO	EASO-39-1-8	1	1/27/2006	JB, ML	X	07S	14W	28	3	Y	Calvin	Cass
EASO	EASO-39-3-1	1	3/26/2006	BN	X	07S	14W	28	3	Y	Calvin	Cass
EASO	EASO-39-4-10	1	4/27/2006	JB	X	07S	14W	28	3	Y	Calvin	Cass
EASO	EASO-39-2-2	1	2/23/2006	JB	X	07S	14W	29	3	Y	Calvin	Cass
EASO	EASO-39-1-7	1	1/26/2006	JB, ML	X	07S	14W	26	4	Y	Calvin	Cass
EASO	EASO-39-3-5	1	3/27/2006	JB, ES	X	07S	14W	26	4	Y	Calvin	Cass
EASO	EASO-39-4-9	1	4/26/2006	JB	X	07S	14W	26	4	Y	Calvin	Cass
EASO	EASO-34-1-7	1	2/3/2006	MM, WP	X	08N	08W	5	2	Y	Otisco	Ionia
EASO	EASO-34-2-1	1	2/22/2006	WP, JG	X	08N	08W	5	2	Y	Otisco	Ionia
EASO	EASO-34-4-1	1	4/23/2006	WP, JG	X	08N	08W	5	2	Y	Otisco	Ionia
EASO	EASO-34-1-5/6	2	2/3/2006	MM, WP	P	08N	08W	6	2	Y	Otisco	Ionia
EASO	EASO-34-2-2	1	2/22/2006	WP, JG	P	08N	08W	6	2	Y	Otisco	Ionia
EASO	EASO-34-2-3	1	2/22/2006	WP, JG	P	08N	08W	6	2	Y	Otisco	Ionia
EASO	EASO-34-2-4/5	2	2/22/2006	WP, JG	P	08N	08W	6	2	Y	Otisco	Ionia
EASO	EASO-34-3-2	1	3/21/2006	MS, WP	X	08N	08W	6	2	Y	Otisco	Ionia
EASO	EASO-34-4-2	1	4/23/2006	WP, JG	X	08N	08W	6	2	Y	Otisco	Ionia
EASO	EASO-34-3-3	1	3/21/2006	MS, WP	X	08N	08W	7	2	Y	Otisco	Ionia
EASO	EASO-34-1-4	1	2/3/2006	MM, WP	X	08N	09W	1	1	Y	Grattan	Kent
EASO	EASO-34-2-6	1	2/22/2006	WP, JG	X	08N	09W	1	1	Y	Grattan	Kent
EASO	EASO-34-1-3	1	2/3/2006	MM, WP	X	08N	09W	2	1	Y	Grattan	Kent

Table B-1. Continued.

Species ^a	Owl Observation ID	No. Obs.	Date	Observer (s)	Code	Town	Range	Section	Block	Priority	Twp. Name	County
EASO	EASO-34-3-1	1	3/21/2006	MS, WP	X	08N	09W	2	1	Y	Grattan	Kent
EASO	EASO-34-4-3	1	4/23/2006	WP, JG	X	08N	09W	2	1	Y	Grattan	Kent
EASO	EASO-34-2-7	1	2/22/2006	WP, JG	X	08N	09W	3	1	Y	Grattan	Kent
EASO	EASO-34-2-8	1	2/22/2006	WP, JG	X	08N	09W	4	2	Y	Grattan	Kent
EASO	EASO-34-2-9	1	2/22/2006	WP, JG	X	08N	09W	4	2	Y	Grattan	Kent
EASO	EASO-34-1-1	1	2/2/2006	MM, WP	X	08N	10W	1	1	Y	Cannon	Kent
EASO	EASO-34-4-4	1	4/24/2006	WP, JG	P	08N	10W	1	1	Y	Cannon	Kent
EASO	EASO-34-4-5	1	4/24/2006	WP, JG	P	08N	10W	1	1	Y	Cannon	Kent
EASO	EASO-34-2-12	1	2/23/2006	WP, JG	X	08N	10W	3	1	Y	Cannon	Kent
EASO	EASO-39-1-1	1	1/26/2006	JB, ML	X	08S	12W	18	2	Y	Mottville	St. Joseph
EASO	EASO-39-4-3	1	4/26/2006	JB	X	08S	12W	18	2	Y	Mottville	St. Joseph
EASO	EASO-34-2-10	1	2/22/2006	WP, JG	X	09N	09W	32	3	Y	Oakfield	Kent
EASO	EASO-34-1-2	1	2/2/2006	MM, WP	X	09N	10W	36	4	Y	Courtland	Kent
EASO	EASO-34-2-11	1	2/22/2006	WP, JG	X	09N	10W	36	4	Y	Courtland	Kent
EASO	EASO-70-2-7	1	2/21/2006	WP, JG	X	10N	16E	1	1	Y	Lexington	Sanilac
EASO	EASO-70-3-17	1	3/24/2006	MS, WP	X	10N	16E	1	1	Y	Lexington	Sanilac
EASO	EASO-70-4-4	1	4/26/2006	WP, JG	X	10N	16E	1	1	Y	Lexington	Sanilac
EASO	EASO-70-1-14	1	1/27/2006	DC, WP	X	10N	16E	2	1	Y	Lexington	Sanilac
EASO	EASO-70-3-15	1	3/24/2006	MS, WP	X	10N	16E	2	1	Y	Lexington	Sanilac
EASO	EASO-70-2-9	1	2/21/2006	WP, JG	X	10N	16E	3	1	Y	Lexington	Sanilac
EASO	EASO-70-1-15	1	1/27/2006	DC, WP	X	10N	16E	11	1	Y	Lexington	Sanilac
EASO	EASO-70-2-5	1	2/21/2006	WP, JG	X	10N	16E	13	1	Y	Lexington	Sanilac
EASO	EASO-70-2-6	1	2/21/2006	WP, JG	X	10N	16E	13	1	Y	Lexington	Sanilac
EASO	EASO-70-4-2/3	2	4/26/2006	WP, JG	P	10N	16E	13	1	Y	Lexington	Sanilac
EASO	EASO-70-1-16	1	1/27/2006	DC, WP	X	10N	16E	14	1	Y	Lexington	Sanilac
EASO	EASO-70-2-3/4	2	2/21/2006	WP, JG	P	10N	16E	14	1	Y	Lexington	Sanilac
EASO	EASO-70-1-19	1	1/27/2006	DC, WP	X	10N	16E	23	4	Y	Lexington	Sanilac
EASO	EASO-70-1-17	1	1/27/2006	DC, WP	X	10N	16E	24	4	Y	Lexington	Sanilac
EASO	EASO-70-1-18	1	1/27/2006	DC, WP	X	10N	16E	24	4	Y	Lexington	Sanilac
EASO	EASO-70-2-1	1	2/21/2006	WP, JG	X	10N	16E	24	4	Y	Lexington	Sanilac
EASO	EASO-70-2-2	1	2/21/2006	WP, JG	X	10N	16E	24	4	Y	Lexington	Sanilac
EASO	EASO-70-3-18	1	3/24/2006	MS, WP	X	10N	16E	24	4	Y	Lexington	Sanilac
EASO	EASO-70-4-1	1	4/26/2006	WP, JG	X	10N	16E	24	4	Y	Lexington	Sanilac
EASO	EASO-70-1-10	1	1/26/2006	DC, WP	X	11N	16E	2	1	Y	Sanilac	Sanilac

Table B-1. Continued.

Species ^a	Owl Observation ID	No. Obs.	Date	Observer (s)	Code	Town	Range	Section	Block	Priority	Twp. Name	County
EASO	EASO-70-3-9	1	3/24/2006	MS, WP	X	11N	16E	2	1	Y	Sanilac	Sanilac
EASO	EASO-70-2-13	1	2/21/2006	WP, JG	X	11N	16E	3	1	Y	Sanilac	Sanilac
EASO	EASO-70-3-8	1	3/24/2006	MS, WP	X	11N	16E	3	1	Y	Sanilac	Sanilac
EASO	EASO-70-4-15	1	4/27/2006	WP, JG	X	11N	16E	3	1	Y	Sanilac	Sanilac
EASO	EASO-70-4-16	1	4/27/2006	WP, JG	X	11N	16E	3	1	Y	Sanilac	Sanilac
EASO	EASO-70-2-12	1	2/21/2006	WP, JG	X	11N	16E	10	1	Y	Sanilac	Sanilac
EASO	EASO-70-3-11	1	3/24/2006	MS, WP	X	11N	16E	10	1	Y	Sanilac	Sanilac
EASO	EASO-70-4-13	1	4/27/2006	WP, JG	X	11N	16E	10	1	Y	Sanilac	Sanilac
EASO	EASO-70-3-10	1	3/24/2006	MS, WP	X	11N	16E	11	1	Y	Sanilac	Sanilac
EASO	EASO-70-4-14	1	4/27/2006	WP, JG	X	11N	16E	11	1	Y	Sanilac	Sanilac
EASO	EASO-70-4-12	1	4/27/2006	WP, JG	X	11N	16E	14	1	Y	Sanilac	Sanilac
EASO	EASO-70-2-11	1	2/21/2006	WP, JG	X	11N	16E	15	1	Y	Sanilac	Sanilac
EASO	EASO-70-1-11	1	1/27/2006	DC, WP	X	11N	16E	33	3	Y	Sanilac	Sanilac
EASO	EASO-70-1-12	1	1/27/2006	DC, WP	X	11N	16E	33	3	Y	Sanilac	Sanilac
EASO	EASO-70-4-6	1	4/26/2006	WP, JG	P	11N	16E	33	3	Y	Sanilac	Sanilac
EASO	EASO-70-4-7	1	4/26/2006	WP, JG	P	11N	16E	33	3	Y	Sanilac	Sanilac
EASO	EASO-70-3-12	1	3/24/2006	MS, WP	X	11N	16E	23	4	Y	Sanilac	Sanilac
EASO	EASO-70-4-10	1	4/27/2006	WP, JG	P	11N	16E	23	4	Y	Sanilac	Sanilac
EASO	EASO-70-4-11	1	4/27/2006	WP, JG	P	11N	16E	23	4	Y	Sanilac	Sanilac
EASO	EASO-70-2-10	1	2/21/2006	WP, JG	X	11N	16E	26	4	Y	Sanilac	Sanilac
EASO	EASO-70-3-14	1	3/24/2006	MS, WP	X	11N	16E	26	4	Y	Sanilac	Sanilac
EASO	EASO-70-4-9	1	4/27/2006	WP, JG	X	11N	16E	26	4	Y	Sanilac	Sanilac
EASO	EASO-70-3-13	1	3/24/2006	MS, WP	X	11N	16E	27	4	Y	Sanilac	Sanilac
EASO	EASO-70-1-13	1	1/27/2006	DC, WP	X	11N	16E	34	4	Y	Sanilac	Sanilac
EASO	EASO-70-2-8	1	2/21/2006	WP, JG	X	11N	16E	34	4	Y	Sanilac	Sanilac
EASO	EASO-70-3-16	1	3/24/2006	MS, WP	X	11N	16E	34	4	Y	Sanilac	Sanilac
EASO	EASO-70-4-5	1	4/26/2006	WP, JG	X	11N	16E	34	4	Y	Sanilac	Sanilac
EASO	EASO-70-4-8	1	4/27/2006	WP, JG	X	11N	16E	34	4	Y	Sanilac	Sanilac
EASO	EASO-70-2-24	1	2/22/2006	WP, JG	X	12N	15E	1	1	Y	Bridgehampton	Sanilac
EASO	EASO-70-3-1	1	3/23/2006	MS, WP	X	12N	15E	1	1	Y	Bridgehampton	Sanilac
EASO	EASO-70-2-19	1	2/22/2006	WP, JG	X	12N	16E	3	1	Y	Forester	Sanilac
EASO	EASO-70-2-18	1	2/22/2006	WP, JG	X	12N	16E	10	1	Y	Forester	Sanilac
EASO	EASO-70-1-5	1	1/26/2006	DC, WP	X	12N	16E	15	1	Y	Forester	Sanilac
EASO	EASO-70-1-6	1	1/26/2006	DC, WP	X	12N	16E	15	1	Y	Forester	Sanilac

Table B-1. Continued.

Species ^a	Owl Observation ID	No. Obs.	Date	Observer (s)	Code	Town	Range	Section	Block	Priority	Twp. Name	County
EASO	EASO-70-2-16	1	2/22/2006	WP, JG	X	12N	16E	15	1	Y	Forester	Sanilac
EASO	EASO-70-2-17	1	2/22/2006	WP, JG	X	12N	16E	15	1	Y	Forester	Sanilac
EASO	EASO-70-4-19	1	4/27/2006	WP, JG	X	12N	16E	15	1	Y	Forester	Sanilac
EASO	EASO-70-1-3/4	2	1/26/2006	DC, WP	P	12N	16E	4	2	Y	Forester	Sanilac
EASO	EASO-70-3-4	1	3/23/2006	MS, WP	P	12N	16E	4	2	Y	Forester	Sanilac
EASO	EASO-70-4-22	1	4/27/2006	WP, JG	P	12N	16E	5	2	Y	Forester	Sanilac
EASO	EASO-70-3-2	1	3/23/2006	MS, WP	X	12N	16E	6	2	Y	Forester	Sanilac
EASO	EASO-70-3-3	1	3/23/2006	MS, WP	X	12N	16E	6	2	Y	Forester	Sanilac
EASO	EASO-70-4-21	1	4/27/2006	WP, JG	X	12N	16E	6	2	Y	Forester	Sanilac
EASO	EASO-70-4-23	1	4/27/2006	WP, JG	P	12N	16E	6	2	Y	Forester	Sanilac
EASO	EASO-70-1-7	1	1/26/2006	DC, WP	X	12N	16E	22	4	Y	Sanilac	Sanilac
EASO	EASO-70-1-8	1	1/26/2006	DC, WP	X	12N	16E	22	4	Y	Sanilac	Sanilac
EASO	EASO-70-1-9	1	1/26/2006	DC, WP	X	12N	16E	26	4	Y	Sanilac	Sanilac
EASO	EASO-70-2-15	1	2/21/2006	WP, JG	X	12N	16E	26	4	Y	Sanilac	Sanilac
EASO	EASO-70-4-18	1	4/27/2006	WP, JG	X	12N	16E	26	4	Y	Sanilac	Sanilac
EASO	EASO-70-2-14	1	2/21/2006	WP, JG	X	12N	16E	35	4	Y	Sanilac	Sanilac
EASO	EASO-70-3-17	1	3/24/2006	MS, WP	X	12N	16E	35	4	Y	Sanilac	Sanilac
EASO	EASO-70-3-6	1	3/24/2006	MS, WP	P	12N	16E	35	4	Y	Sanilac	Sanilac
EASO	EASO-70-3-7	1	3/24/2006	MS, WP	P	12N	16E	35	4	Y	Sanilac	Sanilac
EASO	EASO-70-1-1	1	1/26/2006	DC, WP	X	13N	15E	34	4	Y	Marion	Sanilac
EASO	EASO-70-4-26	1	4/27/2006	WP, JG	X	13N	15E	35	4	Y	Marion	Sanilac
EASO	EASO-70-1-2	1	1/26/2006	DC, WP	X	13N	15E	36	4	Y	Marion	Sanilac
EASO	EASO-70-2-23	1	2/22/2006	WP, JG	X	13N	15E	36	4	Y	Marion	Sanilac
EASO	EASO-70-4-25	1	4/27/2006	WP, JG	X	13N	15E	36	4	Y	Marion	Sanilac
EASO	EASO-70-2-22	1	2/22/2006	WP, JG	X	13N	16E	31	3	Y	Forester	Sanilac
EASO	EASO-70-4-24	1	4/27/2006	WP, JG	X	13N	16E	31	3	Y	Forester	Sanilac
EASO	EASO-70-3-5	1	3/23/2006	MS, WP	P	13N	16E	32	3	Y	Forester	Sanilac
EASO	EASO-70-2-20	1	2/22/2006	WP, JG	P	13N	16E	33	3	Y	Forester	Sanilac
EASO	EASO-70-2-21	1	2/22/2006	WP, JG	P	13N	16E	33	3	Y	Forester	Sanilac
EASO	EASO-70-4-20	1	4/27/2006	WP, JG	X	13N	16E	33	3	Y	Forester	Sanilac
EASO	EASO-38-2-4	1	2/27/2006	MM, WP	X	14N	07W	22	4	N	Wheatland	Mecosta
EASO	EASO-38-4-6	1	5/2/2006	MS, WP	X	14N	07W	23	4	N	Wheatland	Mecosta
EASO	EASO-38-2-3	1	2/27/2006	MM, WP	X	14N	08W	19	3	N	Morton	Mecosta
EASO	EASO-38-3-1	1	3/26/2006	DC, WP	X	14N	08W	19	3	N	Morton	Mecosta

Table B-1. Continued.

Species ^a	Owl Observation ID	No. Obs.	Date	Observer (s)	Code	Town	Range	Section	Block	Priority	Twp. Name	County
EASO	EASO-38-4-4	1	5/2/2006	MS, WP	X	14N	08W	19	3	N	Morton	Mecosta
EASO	EASO-38-4-5	1	5/2/2006	MS, WP	X	14N	08W	19	3	N	Morton	Mecosta
EASO	EASO-38-4-3	1	5/2/2006	MS, WP	X	14N	09W	15	1	N	Austin	Mecosta
EASO	EASO-38-4-1	1	5/1/2006	MS, WP	X	14N	09W	17	2	Y	Austin	Mecosta
EASO	EASO-38-2-2	1	2/26/2006	MM, WP	X	14N	09W	22	4	Y	Austin	Mecosta
EASO	EASO-38-3-2	1	3/27/2006	DC, WP	P	14N	09W	22	4	Y	Austin	Mecosta
EASO	EASO-38-3-3	1	3/27/2006	DC, WP	P	14N	09W	22	4	Y	Austin	Mecosta
EASO	EASO-38-4-2	1	5/2/2006	MS, WP	X	14N	09W	23	4	Y	Austin	Mecosta
EASO	EASO-38-2-1	1	2/26/2006	MM, WP	X	14N	10W	16	2	N	Mecosta	Mecosta
EASO	EASO-50-2-3	1	2/27/2006	MM, WP	X	16N	01E	10	1	N	Hope	Midland
EASO	EASO-50-4-2	1	5/1/2006	MS, WP	X	16N	01E	10	1	N	Hope	Midland
EASO	EASO-50-2-2	1	2/27/2006	MM, WP	X	16N	01E	13	1	N	Hope	Midland
EASO	EASO-50-4-4	1	5/1/2006	MS, WP	X	16N	01E	13	1	N	Hope	Midland
EASO	EASO-50-4-3	1	5/1/2006	MS, WP	X	16N	01E	24	4	Y	Hope	Midland
EASO	EASO-50-4-1	1	5/1/2006	MS, WP	X	16N	01W	12	1	Y	Edenville	Midland
EASO	EASO-50-2-4	1	2/28/2006	MM, WP	X	16N	01W	18	2	Y	Edenville	Midland
EASO	EASO-50-2-5	1	2/28/2006	MM, WP	X	16N	01W	18	2	Y	Edenville	Midland
EASO	EASO-50-2-6	1	2/28/2006	MM, WP	X	16N	01W	18	2	Y	Edenville	Midland
EASO	EASO-50-3-1	1	3/28/2006	WP, KB	X	16N	02E	18	2	Y	Mills	Midland
EASO	EASO-50-2-1	1	2/27/2006	MM, WP	X	16N	02E	24	4	Y	Mills	Midland
EASO	EASO-50-4-5	1	5/1/2006	MS, WP	X	16N	02E	24	4	Y	Mills	Midland
EASO	EASO-50-2-7	1	2/28/2006	MM, WP	X	16N	02W	24	4	Y	Warren	Midland
EASO	EASO-50-3-2/3	2	3/28/2006	WP, KB	P	16N	03E	31	3	Y	Garfield	Bay
EASO	EASO-59-4-1	1	5/5/2006	MS, WP	X	32N	07E	30	3	N	Maple Ridge	Alpena
GHOW	GHOW-35-2-1	1	2/22/2006	JB	X	01N	10W	2	1	Y	Prairieville	Barry
GHOW	GHOW-35-4-1	1	4/21/2006	JB	X	01N	10W	11	1	Y	Prairieville	Barry
GHOW	GHOW-35-1-1	1	1/26/2006	BN	X	01S	10W	13	1	Y	Richland	Kalamazoo
GHOW	GHOW-32-1-6	1	1/26/2006	MM, WP	X	02N	07W	4	2	Y	Maple Grove	Barry
GHOW	GHOW-32-4-1	1	4/28/2006	WP, JG	X	02N	07W	4	2	Y	Maple Grove	Barry
GHOW	GHOW-32-1-4	1	1/25/2006	MM, WP	X	02N	08W	1	1	Y	Baltimore	Barry
GHOW	GHOW-32-1-5	1	1/26/2006	MM, WP	X	02N	08W	1	1	Y	Baltimore	Barry
GHOW	GHOW-32-1-3	1	1/25/2006	MM, WP	X	02N	08W	10	1	Y	Baltimore	Barry
GHOW	GHOW-32-1-1	1	1/25/2006	MM, WP	X	02N	08W	8	2	Y	Baltimore	Barry

Table B-1. Continued.

Species ^a	Owl Observation ID	No. Obs.	Date	Observer (s)	Code	Town	Range	Section	Block	Priority	Twp. Name	County
GHOW	GHOW-32-1-2	1	1/25/2006	MM, WP	X	02N	08W	8	2	Y	Baltimore	Barry
GHOW	GHOW-32-3-1	1	3/22/2006	MS, WP	X	02N	09W	19	3	Y	Hope	Barry
GHOW	GHOW-32-2-1	1	2/20/2006	WP, JG	X	02N	09W	20	3	Y	Hope	Barry
GHOW	GHOW-37-2-3/4	2	2/22/2006	JB	P	02N	14W	8	2	Y	Valley	Allegan
GHOW	GHOW-37-2-5	1	2/22/2006	JB	X	02N	14W	28	3	Y	Valley	Allegan
GHOW	GHOW-907-4-1	1	4/25/2006	JB	X	02N	15W	1	1	Y	Clyde	Allegan
GHOW	GHOW-37-2-1	1	2/21/2006	JB	X	03N	14W	26	4	Y	Heath	Allegan
GHOW	GHOW-37-2-2	1	2/22/2006	JB	X	03N	14W	27	4	Y	Heath	Allegan
GHOW	GHOW-907-3-1	1	3/20/2006	JB, ES	X	03N	15W	26	4	Y	Manlius	Allegan
GHOW	GHOW-73-1-1	1	1/23/2006	MM, WP	X	05N	13E	21	3	Y	Armada	Macomb
GHOW	GHOW-73-2-1	1	2/20/2006	WP, JG	P	05N	13E	21	3	Y	Armada	Macomb
GHOW	GHOW-73-2-2	1	2/20/2006	WP, JG	P	05N	13E	21	3	Y	Armada	Macomb
GHOW	GHOW-73-3-1	1	3/23/2006	MS, WP	P	05N	13E	21	3	Y	Armada	Macomb
GHOW	GHOW-73-3-2	1	3/23/2006	MS, WP	X	06N	13E	15	1	Y	Berlin	St. Clair
GHOW	GHOW-58-4-1	1	4/25/2006	WP, JG	X	06S	01E	12	1	Y	Rollin	Lenawee
GHOW	GHOW-58-3-1	1	3/19/2006	MS, WP	X	06S	01W	1	1	Y	Wheatland	Hillsdale
GHOW	GHOW-58-3-2	1	3/19/2006	MS, WP	X	06S	01W	2	1	Y	Wheatland	Hillsdale
GHOW	GHOW-58-4-2	1	4/26/2006	WP, JG	X	06S	01W	2	1	Y	Wheatland	Hillsdale
GHOW	GHOW-58-2-1	1	2/24/2006	WP, JG	P	06S	01W	21	3	Y	Wheatland	Hillsdale
GHOW	GHOW-58-2-3	1	2/24/2006	WP, JG	X	06S	01W	21	3	Y	Wheatland	Hillsdale
GHOW	GHOW-58-2-2	1	2/24/2006	WP, JG	P	06S	01W	22	4	Y	Wheatland	Hillsdale
GHOW	GHOW-58-1-1	1	1/23/2006	MM, WP	P	06S	02E	15	1	Y	Rome	Lenawee
GHOW	GHOW-58-1-2	1	1/23/2006	MM, WP	P	06S	02E	15	1	Y	Rome	Lenawee
GHOW	GHOW-39-1-3	1	1/27/2006	JB, ML	X	06S	14W	32	3	Y	Penn	Cass
GHOW	GHOW-58-2-4	1	2/24/2006	WP, JG	X	07S	01W	15	1	Y	Pittsford	Hillsdale
GHOW	GHOW-58-4-3	1	4/26/2006	WP, JG	X	07S	01W	15	1	Y	Pittsford	Hillsdale
GHOW	GHOW-58-2-6	1	2/24/2006	WP, JG	X	07S	01W	21	3	Y	Pittsford	Hillsdale
GHOW	GHOW-58-2-5	1	2/24/2006	WP, JG	X	07S	01W	22	4	Y	Pittsford	Hillsdale
GHOW	GHOW-58-2-7	1	2/24/2006	WP, JG	X	07S	01W	27	4	Y	Pittsford	Hillsdale
GHOW	GHOW-39-2-2	1	2/24/2006	JB	X	07S	13W	28	3	Y	Porter	Cass
GHOW	GHOW-39-3-1	1	3/27/2006	JB, ES	X	07S	13W	32	3	Y	Porter	Cass
GHOW	GHOW-39-1-2	1	1/27/2006	JB, ML	X	07S	14W	8	2	Y	Calvin	Cass
GHOW	GHOW-39-1-1	1	1/27/2006	JB, ML	X	07S	14W	17	2	Y	Calvin	Cass
GHOW	GHOW-39-2-1	1	2/23/2006	BN	X	07S	14W	17	2	Y	Calvin	Cass

Table B-1. Continued.

Species ^a	Owl Observation ID	No. Obs.	Date	Observer (s)	Code	Town	Range	Section	Block	Priority	Twp. Name	County
GHOW	GHOW-39-4-2	1	4/27/2006	JB	X	07S	14W	19	3	Y	Calvin	Cass
GHOW	GHOW-39-4-1	1	4/27/2006	JB	X	07S	14W	27	4	Y	Calvin	Cass
GHOW	GHOW-34-1-2	1	2/3/2006	MM, WP	X	08N	08W	1	1	Y	Belding	Ionia
GHOW	GHOW-34-1-1	1	2/3/2006	MM, WP	X	08N	08W	7	2	Y	Otisco	Ionia
GHOW	GHOW-34-4-1	1	4/23/2006	WP, JG	FL	08N	09W	1	1	Y	Grattan	Kent
GHOW	GHOW-34-4-2	1	4/23/2006	WP, JG	X	08N	09W	1	1	Y	Grattan	Kent
GHOW	GHOW-34-2-1	1	2/23/2006	WP, JG	X	08N	10W	3	1	Y	Cannon	Kent
GHOW	GHOW-34-4-3	1	4/24/2006	WP, JG	X	09N	09W	32	3	Y	Oakfield	Kent
GHOW	GHOW-70-3-5	1	3/24/2006	MS, WP	X	10N	16E	1	1	Y	Lexington	Sanilac
GHOW	GHOW-70-1-3	1	1/27/2006	DC, WP	X	10N	16E	2	1	Y	Lexington	Sanilac
GHOW	GHOW-70-2-1	1	2/21/2006	WP, JG	X	10N	16E	2	1	Y	Lexington	Sanilac
GHOW	GHOW-70-3-6	1	3/24/2006	MS, WP	X	10N	16E	12	1	Y	Lexington	Sanilac
GHOW	GHOW-70-3-7	1	3/24/2006	MS, WP	X	10N	16E	26	4	Y	Lexington	Sanilac
GHOW	GHOW-70-1-2	1	1/27/2006	DC, WP	X	11N	16E	10	1	Y	Sanilac	Sanilac
GHOW	GHOW-70-4-3	1	4/27/2006	WP, JG	X	11N	16E	10	1	Y	Sanilac	Sanilac
GHOW	GHOW-70-4-2	1	4/27/2006	WP, JG	X	11N	16E	14	1	Y	Sanilac	Sanilac
GHOW	GHOW-70-3-3	1	3/24/2006	MS, WP	P	11N	16E	23	4	Y	Sanilac	Sanilac
GHOW	GHOW-70-4-1	1	4/27/2006	WP, JG	X	11N	16E	23	4	Y	Sanilac	Sanilac
GHOW	GHOW-70-3-4	1	3/24/2006	MS, WP	P	11N	16E	27	4	Y	Sanilac	Sanilac
GHOW	GHOW-70-2-5	1	2/22/2006	WP, JG	X	12N	15E	2	1	Y	Bridgehampton	Sanilac
GHOW	GHOW-70-4-5	1	4/27/2006	WP, JG	X	12N	16E	3	1	Y	Forester	Sanilac
GHOW	GHOW-70-2-2	1	2/22/2006	WP, JG	X	12N	16E	22	4	Y	Sanilac	Sanilac
GHOW	GHOW-70-2-3	1	2/22/2006	WP, JG	X	12N	16E	22	4	Y	Sanilac	Sanilac
GHOW	GHOW-70-4-4	1	4/27/2006	WP, JG	X	12N	16E	22	4	Y	Sanilac	Sanilac
GHOW	GHOW-70-3-2	1	3/24/2006	MS, WP	X	12N	16E	26	4	Y	Sanilac	Sanilac
GHOW	GHOW-70-2-6	1	2/22/2006	WP, JG	X	13N	15E	34	4	Y	Marion	Sanilac
GHOW	GHOW-70-4-6	1	4/27/2006	WP, JG	X	13N	15E	35	4	Y	Marion	Sanilac
GHOW	GHOW-70-1-1	1	1/26/2006	DC, WP	X	13N	16E	32	3	Y	Forester	Sanilac
GHOW	GHOW-70-2-4	1	2/22/2006	WP, JG	X	13N	16E	32	3	Y	Forester	Sanilac
GHOW	GHOW-70-3-1	1	3/23/2006	MS, WP	X	13N	16E	32	3	Y	Forester	Sanilac
GHOW	GHOW-38-2-4	1	2/27/2006	MM, WP	X	14N	07W	18	2	N	Wheatland	Mecosta
GHOW	GHOW-38-2-3	1	2/27/2006	MM, WP	X	14N	08W	14	1	Y	Morton	Mecosta
GHOW	GHOW-38-2-2	1	2/27/2006	MM, WP	X	14N	08W	15	1	Y	Morton	Mecosta
GHOW	GHOW-38-3-1	1	3/26/2006	DC, WP	X	14N	08W	19	3	N	Morton	Mecosta

Table B-1. Continued.

Species ^a	Owl Observation ID	No. Obs.	Date	Observer (s)	Code	Town	Range	Section	Block	Priority	Twp. Name	County
GHOW	GHOW-38-3-2/3	2	3/27/2006	DC, WP	P	14N	09W	21	3	N	Austin	Mecosta
GHOW	GHOW-38-2-1	1	2/26/2006	MM, WP	X	14N	09W	23	4	Y	Austin	Mecosta
GHOW	GHOW-38-3-4/5	2	3/27/2006	DC, WP	P	14N	10W	19	3	Y	Mecosta	Mecosta
GHOW	GHOW-50-3-1	1	3/28/2006	WP, KB	X	16N	01E	13	1	N	Hope	Midland
GHOW	GHOW-50-3-4	1	3/28/2006	WP, KB	X	16N	02E	15	1	N	Mills	Midland
GHOW	GHOW-50-3-5	1	3/28/2006	WP, KB	X	16N	02E	15	1	N	Mills	Midland
GHOW	GHOW-50-2-1	1	2/27/2006	MM, WP	X	16N	02E	16	2	Y	Mills	Midland
GHOW	GHOW-50-3-2/3	2	3/28/2006	WP, KB	P	16N	02E	18	2	Y	Mills	Midland
GHOW	GHOW-50-4-1	1	5/1/2006	MS, WP	X	16N	02E	35	4	Y	Mills	Midland
GHOW	GHOW-50-2-2	1	2/28/2006	MM, WP	X	16N	02W	13	1	N	Warren	Midland
GHOW	GHOW-50-2-3	1	2/28/2006	MM, WP	X	16N	02W	25	4	Y	Warren	Midland
GHOW	GHOW-47-2-1	1	2/29/2006	MM, WP	X	26N	01E	2	1	Y	Big Creek	Oscoda
GHOW	GHOW-47-2-2	1	2/29/2006	MM, WP	X	26N	02E	19	3	Y	Big Creek	Oscoda
GHOW	GHOW-47-2-3	1	2/29/2006	MM, WP	X	26N	02E	32	3	Y	Big Creek	Oscoda
GHOW	GHOW-29-4-2	1	5/3/2006	MS, WP	X	27N	09W	3	1	Y	Whitewater	Grand Traverse
GHOW	GHOW-29-3-1	1	3/29/2006	DC, WP	X	27N	09W	11	1	Y	Whitewater	Grand Traverse
GHOW	GHOW-29-4-1	1	5/3/2006	MS, WP	X	27N	09W	11	1	Y	Whitewater	Grand Traverse
GHOW	GHOW-29-2-2	1	3/2/2006	MM, WP	X	28N	09W	26	4	Y	Whitewater	Grand Traverse
GHOW	GHOW-29-2-1	1	3/2/2006	MM, WP	X	28N	09W	34	4	Y	Whitewater	Grand Traverse
GHOW	GHOW-59-2-3	1	3/3/2006	MM, WP	P	32N	07E	16	2	Y	Maple Ridge	Alpena
GHOW	GHOW-59-3-1	1	3/30/2006	DC, WP	X	32N	07E	16	2	Y	Maple Ridge	Alpena
GHOW	GHOW-59-2-1	1	3/3/2006	MM, WP	X	32N	07E	20	3	N	Maple Ridge	Alpena
GHOW	GHOW-59-4-1	1	5/5/2006	MS, WP	X	32N	07E	20	3	N	Maple Ridge	Alpena
GHOW	GHOW-59-2-2	1	3/3/2006	MM, WP	P	32N	07E	21	3	N	Maple Ridge	Alpena
GHOW	GHOW-59-3-2	1	3/30/2006	DC, WP	X	32N	07E	21	3	N	Maple Ridge	Alpena
GHOW	GHOW-59-4-2/3	2	5/5/2006	MS, WP	P	32N	07E	21	3	N	Maple Ridge	Alpena
GHOW	GHOW-59-2-5	1	3/3/2006	MM, WP	X	32N	08E	17	2	Y	Alpena	Alpena
GHOW	GHOW-59-2-4	1	3/3/2006	MM, WP	X	32N	08E	20	3	N	Alpena	Alpena
GHOW	GHOW-9-2-3	1	3/9/2006	MM, WP	X	44N	23W	21	3	Y	Turin	Marquette
GHOW	GHOW-9-3-1	1	4/11/2006	WP, AB	X	44N	23W	30	3	Y	Turin	Marquette
GHOW	GHOW-9-2-1	1	3/8/2006	MM, WP	P	44N	23W	31	3	Y	Turin	Marquette
GHOW	GHOW-9-2-2	1	3/8/2006	MM, WP	P	44N	23W	31	3	Y	Turin	Marquette
GHOW	GHOW-8-2-2/3	2	3/7/2006	MM, WP	P	44N	36W	1	1	N	Iron River	Iron
GHOW	GHOW-8-3-1	1	4/5/2006	WP, AB	X	44N	36W	1	1	N	Iron River	Iron

Table B-1. Continued.

Species ^a	Owl Observation ID	No. Obs.	Date	Observer (s)	Code	Town	Range	Section	Block	Priority	Twp. Name	County
GHOW	GHOW-9-2-4	1	3/9/2006	MM, WP	P	45N	23W	13	1	Y	Skandia	Marquette
GHOW	GHOW-9-2-5	1	3/9/2006	MM, WP	P	45N	23W	13	1	Y	Skandia	Marquette
GHOW	GHOW-8-3-2	1	4/5/2006	WP, AB	X	45N	36W	25	4	N	Iron River	Iron
GHOW	GHOW-8-3-3	1	4/5/2006	WP, AB	X	45N	36W	25	4	N	Iron River	Iron
GHOW	GHOW-24-4-10	1	5/6/2006	MS, WP	X	46N	10W	14	1	N	McMillan	Luce
GHOW	GHOW-24-4-9	1	5/6/2006	MS, WP	X	46N	10W	14	1	N	McMillan	Luce
GHOW	GHOW-11-2-6	1	3/10/2006	MM, WP	X	46N	28W	30	3	N	Ely	Marquette
GHOW	GHOW-11-2-3	1	3/10/2006	MM, WP	X	46N	29W	15	1	N	Humboldt	Marquette
GHOW	GHOW-11-2-2	1	3/10/2006	MM, WP	X	46N	29W	6	2	N	Republic	Marquette
GHOW	GHOW-11-4-4	1	5/9/2006	MS, WP	X	46N	29W	22	4	Y	Humboldt	Marquette
GHOW	GHOW-11-3-1	1	4/2/2006	WP, AB	X	46N	29W	23	4	Y	Humboldt	Marquette
GHOW	GHOW-11-2-4	1	3/10/2006	MM, WP	P	46N	29W	25	4	Y	Humboldt	Marquette
GHOW	GHOW-11-2-5	1	3/10/2006	MM, WP	P	46N	29W	26	4	Y	Humboldt	Marquette
GHOW	GHOW-8-3-4/5	2	4/6/2006	WP, AB	P	46N	35W	5	2	N	Bates	Iron
GHOW	GHOW-24-4-6	1	5/6/2006	MS, WP	X	47N	09W	20	3	N	McMillan	Luce
GHOW	GHOW-24-4-7	1	5/6/2006	MS, WP	X	47N	09W	30	3	N	McMillan	Luce
GHOW	GHOW-24-4-8	1	5/6/2006	MS, WP	X	47N	10W	36	4	N	McMillan	Luce
GHOW	GHOW-11-3-5	1	4/2/2006	WP, AB	X	47N	29W	14	1	N	Humboldt	Marquette
GHOW	GHOW-11-4-1	1	5/9/2006	MS, WP	X	47N	29W	14	1	N	Humboldt	Marquette
GHOW	GHOW-11-4-2/3	2	5/9/2006	MS, WP	P	47N	29W	14	1	N	Humboldt	Marquette
GHOW	GHOW-11-3-4	1	4/2/2006	WP, AB	X	47N	29W	28	3	N	Humboldt	Marquette
GHOW	GHOW-11-3-2/3	2	4/2/2006	WP, AB	P	47N	29W	29	3	N	Humboldt	Marquette
GHOW	GHOW-8-2-1	1	3/6/2006	MM, WP	X	47N	35W	8	2	N	Duncan	Houghton
GHOW	GHOW-24-2-1	1	3/5/2006	MM, WP	P	48N	08W	10	1	Y	McMillan	Luce
GHOW	GHOW-24-2-2	1	3/5/2006	MM, WP	P	48N	08W	10	1	Y	McMillan	Luce
GHOW	GHOW-24-3-3	1	4/2/2006	WP, AB	P	48N	08W	10	1	Y	McMillan	Luce
GHOW	GHOW-24-4-1	1	5/5/2006	MS, WP	X	48N	08W	11	1	Y	McMillan	Luce
GHOW	GHOW-24-3-2	1	4/2/2006	WP, AB	P	48N	08W	9	2	N	McMillan	Luce
GHOW	GHOW-24-3-4	1	4/2/2006	WP, AB	X	48N	08W	9	2	N	McMillan	Luce
GHOW	GHOW-24-4-2/3	2	5/5/2006	MS, WP	P	48N	08W	16	2	N	McMillan	Luce
GHOW	GHOW-24-3-1	1	4/2/2006	WP, AB	X	48N	08W	17	2	N	McMillan	Luce
GHOW	GHOW-24-4-4	1	5/6/2006	MS, WP	X	48N	09W	27	4	N	McMillan	Luce
GHOW	GHOW-24-4-5	1	5/6/2006	MS, WP	X	48N	09W	34	4	N	McMillan	Luce
GHOW	GHOW-11-2-1	1	3/9/2006	MM, WP	X	48N	28W	30	3	Y	Ely	Marquette

Table B-1. Continued.

Species ^a	Owl Observation ID	No. Obs.	Date	Observer (s)	Code	Town	Range	Section	Block	Priority	Twp. Name	County
GHOW	GHOW-8-3-6	1	4/6/2006	WP, AB	X	48N	35W	33	3	N	Duncan	Houghton
LEOW	LEOW-907-2-2	1	2/21/2006	BN	X	02N	15W	1	1	Y	Clyde	Allegan
LEOW	LEOW-907-2-1	1	2/21/2006	BN	X	02N	15W	11	1	Y	Clyde	Allegan
LEOW	LEOW-11-2-1	1	3/10/2006	MM, WP	X	46N	29W	23	4	Y	Humboldt	Marquette
NSWO	NSWO-32-4-1	1	4/28/2006	WP, JG	X	02N	07W	9	2	Y	Maple Grove	Barry
NSWO	NSWO-32-2-1	1	2/19/2006	WP, JG	X	02N	08W	10	1	Y	Baltimore	Barry
NSWO	NSWO-37-2-2	1	2/22/2006	JB	X	02N	14W	5	2	Y	Valley	Allegan
NSWO	NSWO-37-2-3	1	2/22/2006	JB	X	02N	14W	18	2	Y	Valley	Allegan
NSWO	NSWO-37-2-4	1	2/22/2006	JB	X	02N	14W	29	3	Y	Valley	Allegan
NSWO	NSWO-37-3-1	1	3/22/2006	BN	X	02N	14W	29	3	Y	Valley	Allegan
NSWO	NSWO-907-2-1	1	2/21/2006	BN	X	02N	14W	30	3	Y	Valley	Allegan
NSWO	NSWO-37-3-2	1	3/22/2006	BN	X	02N	14W	32	3	Y	Valley	Allegan
NSWO	NSWO-37-3-3	1	3/22/2006	BN	X	02N	14W	27	4	Y	Valley	Allegan
NSWO	NSWO-907-2-3	1	2/21/2006	BN	X	02N	15W	11	1	Y	Clyde	Allegan
NSWO	NSWO-907-2-4	1	2/21/2006	BN	X	02N	15W	11	1	Y	Clyde	Allegan
NSWO	NSWO-907-2-5	1	2/21/2006	BN	X	02N	15W	12	1	Y	Clyde	Allegan
NSWO	NSWO-907-3-1	1	3/20/2006	JB, ES	X	02N	15W	12	1	Y	Clyde	Allegan
NSWO	NSWO-907-4-2	1	4/25/2006	JB	X	02N	15W	12	1	Y	Clyde	Allegan
NSWO	NSWO-907-4-1	1	4/24/2006	JB	X	02N	15W	15	1	Y	Clyde	Allegan
NSWO	NSWO-907-1-1	1	1/25/2006	JB	X	02N	15W	22	4	Y	Clyde	Allegan
NSWO	NSWO-907-1-2	1	1/26/2006	JB	X	02N	15W	25	4	Y	Clyde	Allegan
NSWO	NSWO-907-2-2	1	2/21/2006	BN	X	02N	15W	25	4	Y	Clyde	Allegan
NSWO	NSWO-907-3-2	1	3/20/2006	JB, ES	X	03N	14W	31	3	Y	Heath	Allegan
NSWO	NSWO-37-2-1	1	2/22/2006	JB	X	03N	14W	34	4	Y	Heath	Allegan
NSWO	NSWO-907-3-3	1	3/20/2006	JB, ES	X	03N	15W	22	4	Y	Manlius	Allegan
NSWO	NSWO-907-2-6	1	2/21/2006	BN	X	03N	15W	36	4	Y	Manlius	Allegan
NSWO	NSWO-73-1-1	1	1/23/2006	MM, WP	#	04N	13E	22	4	Y	Ray	Macomb
NSWO	NSWO-58-1-2	1	1/22/2006	MM, WP	X	06S	01E	5	2	Y	Rollin	Lenawee
NSWO	NSWO-58-1-1	1	1/22/2006	MM, WP	#	06S	01W	16	2	Y	Wheatland	Hillsdale
NSWO	NSWO-39-2-1	1	2/23/2006	BN	X	07S	14W	4	2	Y	Calvin	Cass
NSWO	NSWO-39-1-1	1	1/27/2006	JB, ML	X	07S	14W	18	2	Y	Calvin	Cass
NSWO	NSWO-34-1-1	1	2/2/2006	MM, WP	#	08N	09W	4	2	Y	Grattan	Kent

Table B-1. Continued.

Species ^a	Owl Observation ID	No. Obs.	Date	Observer (s)	Code	Town	Range	Section	Block	Priority	Twp. Name	County
NSWO	NSWO-34-2-1	1	2/23/2006	WP, JG	X	09N	11W	32	3	Y	Algoma	Kent
NSWO	NSWO-34-4-1	1	4/24/2006	WP, JG	X	09N	11W	32	3	Y	Algoma	Kent
NSWO	NSWO-70-1-1	1	1/26/2006	DC, WP	X	13N	16E	33	3	Y	Forester	Sanilac
NSWO	NSWO-70-2-1	1	2/22/2006	WP, JG	X	13N	16E	33	3	Y	Forester	Sanilac
NSWO	NSWO-38-2-1	1	2/26/2006	MM, WP	X	14N	09W	23	4	Y	Austin	Mecosta
NSWO	NSWO-38-2-2	1	2/26/2006	MM, WP	X	14N	09W	23	4	Y	Austin	Mecosta
NSWO	NSWO-38-2-3	1	2/26/2006	MM, WP	X	14N	09W	23	4	Y	Austin	Mecosta
NSWO	NSWO-50-2-1	1	2/28/2006	MM, WP	X	15N	02W	1	1	Y	Geneva	Midland
NSWO	NSWO-50-3-1	1	3/27/2006	WP, KB	X	15N	02W	1	1	Y	Geneva	Midland
NSWO	NSWO-47-2-3	1	2/29/2006	MM, WP	X	25N	02E	5	2	Y	Big Creek	Oscoda
NSWO	NSWO-47-3-3/4	2	3/29/2006	DC, WP	2X	25N	02E	5	2	Y	Big Creek	Oscoda
NSWO	NSWO-47-3-2	1	3/29/2006	DC, WP	X	25N	02E	18	2	Y	Big Creek	Oscoda
NSWO	NSWO-47-3-1	1	3/29/2006	DC, WP	X	25N	02E	19	3	N	Big Creek	Oscoda
NSWO	NSWO-29-3-12	1	3/29/2006	DC, WP	X	25N	08W	18	2	N	Springfield	Kalkaska
NSWO	NSWO-29-4-1	1	5/2/2006	MS, WP	X	25N	08W	19	3	Y	Springfield	Kalkaska
NSWO	NSWO-47-3-8	1	3/29/2006	DC, WP	X	26N	01E	3	1	Y	Big Creek	Oscoda
NSWO	NSWO-47-3-7	1	3/29/2006	DC, WP	X	26N	02E	18	2	N	Big Creek	Oscoda
NSWO	NSWO-47-4-1	1	5/3/2006	MS, WP	X	26N	02E	18	2	N	Big Creek	Oscoda
NSWO	NSWO-47-3-5	1	3/29/2006	DC, WP	X	26N	02E	31	3	Y	Big Creek	Oscoda
NSWO	NSWO-47-3-6	1	3/29/2006	DC, WP	X	26N	02E	32	3	Y	Big Creek	Oscoda
NSWO	NSWO-29-2-2	1	3/1/2006	MM, WP	X	26N	09W	2	1	N	Union	Grand Traverse
NSWO	NSWO-29-3-6	1	3/29/2006	DC, WP	X	26N	09W	10	1	N	Union	Grand Traverse
NSWO	NSWO-29-3-7	1	3/29/2006	DC, WP	X	26N	09W	11	1	N	Union	Grand Traverse
NSWO	NSWO-29-3-9	1	3/29/2006	DC, WP	X	26N	09W	13	1	N	Union	Grand Traverse
NSWO	NSWO-29-2-1	1	3/1/2006	MM, WP	X	26N	09W	14	1	N	Union	Grand Traverse
NSWO	NSWO-29-4-2	1	5/3/2006	MS, WP	X	26N	09W	14	1	N	Union	Grand Traverse
NSWO	NSWO-29-3-8	1	3/29/2006	DC, WP	X	26N	09W	24	4	N	Union	Grand Traverse
NSWO	NSWO-29-3-11	1	3/29/2006	DC, WP	X	26N	09W	26	4	N	Union	Grand Traverse
NSWO	NSWO-29-3-10	1	3/29/2006	DC, WP	X	26N	09W	36	4	N	Union	Grand Traverse
NSWO	NSWO-47-3-10	1	3/30/2006	DC, WP	X	27N	01E	13	1	Y	Greenwood	Oscoda
NSWO	NSWO-47-3-9	1	3/30/2006	DC, WP	X	27N	01E	13	1	Y	Greenwood	Oscoda
NSWO	NSWO-47-2-2	1	2/28/2006	MM, WP	X	27N	02E	18	2	N	Elmer	Oscoda
NSWO	NSWO-29-3-2	1	3/28/2006	DC, WP	X	27N	09W	3	1	Y	Whitewater	Grand Traverse
NSWO	NSWO-29-2-8	1	3/1/2006	MM, WP	#	27N	09W	14	1	Y	Whitewater	Grand Traverse

Table B-1. Continued.

Species ^a	Owl Observation ID	No. Obs.	Date	Observer (s)	Code	Town	Range	Section	Block	Priority	Twp. Name	County
NSWO	NSWO-29-2-7	1	3/1/2006	MM, WP	X	27N	09W	15	1	Y	Whitewater	Grand Traverse
NSWO	NSWO-29-4-6	1	5/3/2006	MS, WP	X	27N	09W	22	4	N	Whitewater	Grand Traverse
NSWO	NSWO-29-2-6	1	3/1/2006	MM, WP	X	27N	09W	23	4	N	Whitewater	Grand Traverse
NSWO	NSWO-29-3-3	1	3/29/2006	DC, WP	X	27N	09W	23	4	N	Whitewater	Grand Traverse
NSWO	NSWO-29-4-7	1	5/3/2006	MS, WP	X	27N	09W	23	4	N	Whitewater	Grand Traverse
NSWO	NSWO-29-2-4	1	3/1/2006	MM, WP	X	27N	09W	26	4	N	Whitewater	Grand Traverse
NSWO	NSWO-29-4-3	1	5/3/2006	MS, WP	X	27N	09W	26	4	N	Whitewater	Grand Traverse
NSWO	NSWO-29-3-4	1	3/29/2006	DC, WP	X	27N	09W	27	4	N	Whitewater	Grand Traverse
NSWO	NSWO-29-4-5	1	5/3/2006	MS, WP	X	27N	09W	27	4	N	Whitewater	Grand Traverse
NSWO	NSWO-29-4-4	1	5/3/2006	MS, WP	X	27N	09W	34	4	N	Whitewater	Grand Traverse
NSWO	NSWO-29-2-3	1	3/1/2006	MM, WP	X	27N	09W	35	4	N	Whitewater	Grand Traverse
NSWO	NSWO-29-2-5	1	3/1/2006	MM, WP	#	27N	09W	35	4	N	Whitewater	Grand Traverse
NSWO	NSWO-29-3-5	1	3/29/2006	DC, WP	X	27N	09W	35	4	N	Whitewater	Grand Traverse
NSWO	NSWO-47-2-1	1	2/28/2006	MM, WP	X	28N	02E	18	2	N	Elmer	Oscoda
NSWO	NSWO-47-3-11	1	3/30/2006	DC, WP	X	28N	02E	18	2	N	Elmer	Oscoda
NSWO	NSWO-47-3-12	1	3/30/2006	DC, WP	X	28N	02E	18	2	N	Elmer	Oscoda
NSWO	NSWO-29-2-9	1	3/2/2006	MM, WP	#	28N	09W	13	1	N	Milton	Antrim
NSWO	NSWO-29-3-1	1	3/28/2006	DC, WP	X	28N	09W	25	4	Y	Whitewater	Grand Traverse
NSWO	NSWO-59-2-1	1	3/3/2006	MM, WP	X	32N	07E	21	3	N	Maple Ridge	Alpena
NSWO	NSWO-9-3-1	1	4/11/2006	WP, AB	X	43N	23W	6	2	Y	Maple Ridge	Delta
NSWO	NSWO-9-3-3	1	4/11/2006	WP, AB	X	43N	23W	16	2	Y	Maple Ridge	Delta
NSWO	NSWO-9-3-2	1	4/11/2006	WP, AB	X	43N	23W	17	2	Y	Maple Ridge	Delta
NSWO	NSWO-9-3-6	1	4/11/2006	WP, AB	X	43N	23W	31	3	N	Maple Ridge	Delta
NSWO	NSWO-9-3-5	1	4/11/2006	WP, AB	X	43N	23W	32	3	N	Maple Ridge	Delta
NSWO	NSWO-9-3-4	1	4/11/2006	WP, AB	X	43N	23W	33	3	N	Maple Ridge	Delta
NSWO	NSWO-901-4-2	1	5/7/2006	MS, WP	X	44N	38W	29	3	N	Watersmeet	Gogebic
NSWO	NSWO-901-4-1	1	5/7/2006	MS, WP	X	44N	39W	6	2	N	Watersmeet	Gogebic
NSWO	NSWO-24-4-2	1	5/6/2006	MS, WP	X	48N	08W	18	2	N	McMillan	Luce
NSWO	NSWO-24-3-1	1	4/2/2006	WP, AB	X	48N	09W	26	4	N	McMillan	Luce
NSWO	NSWO-24-4-1	1	5/5/2006	MS, WP	X	49N	07W	29	3	N	Whitefish	Chippewa

^a Species: BDOW = Barred Owl; BOOW = Boreal Owl; EASO = Eastern Screech-Owl; GHOW = Great Horned Owl; LEOW = Long-eared Owl; and NSWO = Northern Saw-whet Owl.

^b Observers: KB = Kim Borland; AB = Adrienne Bozic; JB = John Brenneman; DC = David Cuthrell; JG = Julie Gibson; ML = Mitch LeHow; MM = Michael Monfils; MS = Michael Sanders; BN = Brian Nelson; WP = Wilfred Previant; ES = Elizabeth Skare.

^c Breeding criteria codes: # = species observed in suitable nesting habitat during its breeding season; X = singing male present in suitable nesting habitat during its breeding season; P = pair observed in suitable nesting habitat during breeding season; and FL = fledgling observed.

^d Priority survey block: Y = yes and N = no.

Table B-2. Incidental species observation data by MBBA II survey block from owl surveys conducted in Michigan in 2006.

Species ^a	Point ID Number	No. Obs.	Date	Observer(s) ^b	Code ^c	Town	Range	Section	Block	Priority ^d	Twp. Name	County
AMRO	009-24	1	4/11/2006	WP, AB	X	44N	23W	20	Y	3	Turin	Marquette
AMWO	907-40	1	3/20/2006	JB, ES	#	02N	15W	27	Y	4	Clyde	Allegan
AMWO	073-09	1	3/22/2006	MS, WP	X	03N	13E	11	Y	1	Macomb	Macomb
AMWO	073-19	1	3/22/2006	MS, WP	X	04N	13E	10	Y	1	Ray	Macomb
AMWO	073-21	1	4/25/2006	WP, JG	X	04N	13E	3	Y	1	Ray	Macomb
AMWO	073-23	1	4/25/2006	WP, JG	X	04N	13E	3	Y	1	Ray	Macomb
AMWO	073-11	1	4/25/2006	WP, JG	X	04N	13E	35	Y	4	Ray	Macomb
AMWO	073-13	1	4/25/2006	WP, JG	X	04N	13E	27	Y	4	Ray	Macomb
AMWO	073-26	1	3/23/2006	MS, WP	X	05N	13E	33	Y	3	Armada	Macomb
AMWO	034-37	1	4/24/2006	WP, JG	#	09N	10W	32	Y	3	Courtland	Kent
AMWO	070-07	1	4/27/2006	WP, JG	#	13N	16E	32	Y	3	Forester	Sanilac
AMWO	038-10	1	3/26/2006	DC, WP	X	14N	08W	13	Y	1	Morton	Mecosta
AMWO	038-18	1	3/26/2006	DC, WP	X	14N	08W	21		3	Morton	Mecosta
AMWO	038-26	1	3/27/2006	DC, WP	X	14N	09W	23	Y	4	Austin	Mecosta
AMWO	038-43	1	3/27/2006	DC, WP	X	14N	10W	10	Y	1	Mecosta	Mecosta
AMWO	059-39	1	3/31/2006	DC, WP	X	32N	05E	34	Y	4	Wellington	Alpena
AMWO	059-03	≥2	3/30/2006	DC, WP	X	32N	07E	13	Y	1	Maple Ridge	Alpena
AMWO	059-05	1	3/30/2006	DC, WP	X	32N	07E	13	Y	1	Maple Ridge	Alpena
AMWO	059-01	1	3/30/2006	DC, WP	X	32N	08E	19		3	Alpena	Alpena
AMWO	009-48	1	4/11/2006	WP, AB	X	42N	23W	6	N	2	Maple Ridge	Delta
AMWO	009-33	1	4/11/2006	WP, AB	X	43N	23W	8	Y	2	Maple Ridge	Delta
AMWO	009-40	1	4/11/2006	WP, AB	X	43N	23W	28	N	3	Maple Ridge	Delta
AMWO	009-46	1	4/11/2006	WP, AB	X	43N	23W	32	N	3	Maple Ridge	Delta
AMWO	009-20	1	4/11/2006	WP, AB	X	44N	23W	21	Y	3	Turin	Marquette
AMWO	009-22	≥2	4/11/2006	WP, AB	X	44N	23W	20	Y	3	Turin	Marquette
AMWO	009-24	≥2	4/11/2006	WP, AB	X	44N	23W	20	Y	3	Turin	Marquette
AMWO	009-26	1	4/11/2006	WP, AB	X	44N	23W	30	Y	3	Turin	Marquette
AMWO	009-29	1	4/11/2006	WP, AB	X	44N	23W	31	Y	3	Turin	Marquette
AMWO	008-02	≥2	4/5/2006	WP, AB	X	44N	35W	6	Y	2	Iron River	Iron
AMWO	009-01	1	4/10/2006	WP, AB	X	45N	23W	11	Y	1	Skandia	Marquette
AMWO	009-05	1	4/10/2006	WP, AB	X	45N	23W	22	N	4	Skandia	Marquette
AMWO	008-14	≥2	4/5/2006	WP, AB	X	45N	36W	2	N	1	Iron River	Iron
AMWO	011-49	1	5/9/2006	MS, WP	X	46N	28W	31	N	3	Ely	Marquette

Table B-2. Continued.

Species ^a	Point ID Number	No. Obs.	Date	Observer(s) ^b	Code ^c	Town	Range	Section	Block	Priority ^d	Twp. Name	County
AMWO	008-28	1	5/8/2006	MS, WP	X	46N	35W	20	Y	3	Bates	Iron
AMWO	024-34	1	4/1/2006	WP, AB	X	47N	09W	16	Y	2	McMillan	Luce
AMWO	024-36	1	4/1/2006	WP, AB	X	47N	09W	20	N	3	McMillan	Luce
AMWO	011-20	≥2	4/6/2006	WP, AB	X	47N	29W	11	N	1	Humboldt	Marquette
AMWO	011-22	≥2	4/6/2006	WP, AB	X	47N	29W	14	N	1	Humboldt	Marquette
AMWO	011-26	≥2	4/6/2006	WP, AB	X	47N	29W	28	N	3	Humboldt	Marquette
AMWO	011-28	≥2	4/6/2006	WP, AB	X	47N	29W	28	N	3	Humboldt	Marquette
AMWO	008-43	1	5/7/2006	MS, WP	X	47N	35W	8	N	2	Duncan	Houghton
AMWO	024-13	1	5/5/2006	MS, WP	X	48N	08W	10	Y	1	McMillan	Luce
AMWO	011-08	1	4/6/2006	WP, AB	X	48N	28W	30	Y	3	Ely	Marquette
AMWO	011-10	1	4/6/2006	WP, AB	X	48N	29W	36	Y	4	Champion	Marquette
CAGO	035-21	UK (>1)	4/20/2006	JB	#	01S	10W	13	Y	1	Richland	Kalamazoo
CAGO	035-25	2	4/21/2006	JB	X	01S	10W	12	Y	1	Richland	Kalamazoo
CAGO	035-16	UK (>1)	3/23/2006	BN	#	01S	10W	25	Y	4	Richland	Kalamazoo
CAGO	032-17	UK (>1)	3/21/2006	MS, WP	O	02N	08W	10	Y	1	Baltimore	Barry
CAGO	032-33	2	2/20/2006	WP, JG	O	02N	09W	21	Y	3	Hope	Barry
CAGO	032-36	UK (>1)	3/21/2006	MS, WP	O	02N	09W	20	Y	3	Hope	Barry
CAGO	032-48	1	4/27/2006	WP, JG	#	02N	10W	21	Y	3	Orangeville	Barry
CAGO	032-44	UK (>1)	3/21/2006	MS, WP	O	02N	10W	23	Y	4	Orangeville	Barry
CAGO	907-05	1	3/20/2006	JB, ES	#	03N	15W	26	Y	4	Manlius	Allegan
CAGO	907-08	1	3/20/2006	JB, ES	#	03N	15W	36	Y	4	Manlius	Allegan
CAGO	073-35	1	4/24/2006	WP, JG	#	05N	13E	10	Y	1	Armada	Macomb
CAGO	058-30	UK (>1)	3/19/2006	MS, WP	#	05S	01E	31	Y	3	Woodstock	Lenawee
CAGO	058-30	1	1/22/2006	MM, WP	O	05S	01E	31	Y	3	Woodstock	Lenawee
CAGO	058-23	UK (>1)	2/24/2006	WP, JG	O	06S	01W	4	Y	2	Wheatland	Hillsdale
CAGO	039-25	1	3/27/2006	JB, ES	#	07S	13W	30	Y	3	Porter	Cass
CAGO	039-40	1	3/26/2006	BN	#	07S	14W	18	Y	2	Calvin	Cass
CAGO	034-03	1	4/23/2006	WP, JG	#	08N	08W	1	Y	1	Belding	Ionia
CAGO	034-11	UK (>1)	3/20/2006	MS, WP	O	08N	08W	5	Y	2	Otisco	Ionia
CAGO	034-22	1	4/23/2006	WP, JG	#	08N	09W	4	Y	2	Grattan	Kent
CAGO	034-30	1	4/24/2006	WP, JG	#	08N	10W	1	Y	1	Cannon	Kent
CAGO	034-35B	UK (>1)	4/24/2006	WP, JG	O	08N	10W	3	Y	1	Cannon	Kent
CAGO	034-28B	3	2/2/2006	MM, WP	O	09N	10W	36	Y	4	Courtland	Kent

Table B-2. Continued.

Species ^a	Point ID Number	No. Obs.	Date	Observer(s) ^b	Code ^c	Town	Range	Section	Block	Priority ^d	Twp. Name	County
CAGO	070-26	1	3/24/2006	MS, WP	#	11N	16E	3	Y	1	Sanilac	Sanilac
CAGO	070-28	2	2/21/2006	WP, JG	O	11N	16E	10	Y	1	Sanilac	Sanilac
CAGO	038-05	2	3/26/2006	DC, WP	#	14N	07W	16		2	Wheatland	Mecosta
CAGO	038-26	UK (>1)	3/27/2006	DC, WP	O	14N	09W	23	Y	4	Austin	Mecosta
CAGO	050-32	1	3/28/2006	WP, KB	#	16N	01E	13		1	Hope	Midland
CAGO	050-39	1	3/28/2006	WP, KB	#	16N	02E	15		1	Mills	Midland
CAGO	050-37	1	3/28/2006	WP, KB	#	16N	02E	16	Y	2	Mills	Midland
CAGO	050-45	1	3/28/2006	WP, KB	#	16N	02E	25	Y	4	Mills	Midland
CAGO	029-02	1	3/28/2006	DC, WP	#	28N	09W	14		1	Milton	Antrim
CAGO	059-41	1	3/31/2006	DC, WP	#	32N	05E	32		3	Wellington	Alpena
CAGO	059-32	UK (>1)	3/30/2006	DC, WP	#	32N	06E	31	Y	3	Long Rapids	Alpena
CAGO	059-18	UK (>1)	5/5/2006	MS, WP	O	32N	07E	19		3	Maple Ridge	Alpena
CAGO	009-03	1	4/10/2006	WP, AB	#	45N	23W	11	Y	1	Skandia	Marquette
CAGO	024-49	1	5/6/2006	MS, WP	#	46N	10W	14	N	1	McMillan	Luce
CAGO	024-49	1	4/1/2006	WP, AB	#	46N	10W	14	N	1	McMillan	Luce
CAGO	024-38	1	4/1/2006	WP, AB	#	47N	09W	19	N	3	McMillan	Luce
CAGO	024-40	1	4/1/2006	WP, AB	#	47N	09W	30	N	3	McMillan	Luce
COGO	907-40	1	3/20/2006	JB, ES	O	02N	15W	27	Y	4	Clyde	Allegan
COLO	009-20	1	4/11/2006	WP, AB	X	44N	23W	21	Y	3	Turin	Marquette
COLO	901-25	1	5/7/2006	MS, WP	X	44N	39W	18	N	2	Watersmeet	Gogebic
COLO	901-30	≥2	5/7/2006	MS, WP	X	44N	39W	6	N	2	Watersmeet	Gogebic
COLO	901-22	1	5/7/2006	MS, WP	X	44N	39W	19	N	3	Watersmeet	Gogebic
COLO	901-46	≥2	5/6/2006	MS, WP	X	44N	40W	6	N	2	Watersmeet	Gogebic
COLO	901-44	≥2	5/6/2006	MS, WP	X	45N	40W	32	N	3	Watersmeet	Gogebic
COLO	901-36	≥2	5/6/2006	MS, WP	X	45N	40W	35	N	4	Watersmeet	Gogebic
COLO	901-38	≥2	5/6/2006	MS, WP	X	45N	40W	34	N	4	Watersmeet	Gogebic
COLO	901-40	2	5/6/2006	MS, WP	X	45N	40W	34	N	4	Watersmeet	Gogebic
COLO	011-35	2	5/9/2006	MS, WP	X	46N	29W	8	N	2	Republic	Marquette
COLO	008-30	1	5/8/2006	MS, WP	X	46N	35W	17	N	2	Bates	Iron
COLO	008-25	≥2	5/8/2006	MS, WP	X	46N	35W	21	Y	3	Bates	Iron
COLO	008-43	several	5/7/2006	MS, WP	X	47N	35W	8	N	2	Duncan	Houghton
COLO	008-37	1	5/8/2006	MS, WP	X	47N	35W	29	Y	3	Duncan	Houghton

Table B-2. Continued.

Species ^a	Point ID Number	No. Obs.	Date	Observer(s) ^b	Code ^c	Town	Range	Section	Block	Priority ^d	Twp. Name	County
CONI	047-48	1	5/3/2006	MS, WP	#	25N	02E	19		3	Big Creek	Oscoda
HOLA	024-47	1	5/6/2006	MS, WP	X	46N	10W	11	N	1	McMillan	Luce
KILL	039-12	1	3/27/2006	JB, ES	X	07S	13W	26	Y	4	Porter	Cass
KILL	034-20	1	4/23/2006	WP, JG	X	08N	09W	3	Y	1	Grattan	Kent
KILL	034-28B	1	4/23/2006	WP, JG	X	09N	10W	36	Y	4	Courtland	Kent
KILL	070-03	1	4/27/2006	WP, JG	X	13N	15E	35	Y	4	Marion	Sanilac
KILL	059-46	1	3/31/2006	DC, WP	X	32N	04E	36	Y	4	Montmorency	Montmorency
KILL	059-30	1	3/30/2006	DC, WP	X	32N	06E	32	Y	3	Long Rapids	Alpena
KILL	059-03	1	3/30/2006	DC, WP	X	32N	07E	13	Y	1	Maple Ridge	Alpena
KILL	059-18	1	5/5/2006	MS, WP	X	32N	07E	19		3	Maple Ridge	Alpena
KILL	009-46	1	4/11/2006	WP, AB	X	43N	23W	32	N	3	Maple Ridge	Delta
KILL	009-03	1	4/10/2006	WP, AB	X	45N	23W	11	Y	1	Skandia	Marquette
MALL	037-11	1	4/23/2006	JB, ES	#	03N	14W	26	Y	4	Heath	Allegan
MALL	907-05	1	3/20/2006	JB, ES	#	03N	15W	26	Y	4	Manlius	Allegan
MALL	039-25	1	3/27/2006	JB, ES	#	07S	13W	30	Y	3	Porter	Cass
MALL	070-26	1	3/24/2006	MS, WP	#	11N	16E	3	Y	1	Sanilac	Sanilac
MALL	059-01	1	3/30/2006	DC, WP	#	32N	08E	19		3	Alpena	Alpena
MALL	009-37	1	4/11/2006	WP, AB	#	43N	23W	21	N	3	Maple Ridge	Delta
MALL	009-03	1	4/10/2006	WP, AB	#	45N	23W	11	Y	1	Skandia	Marquette
MALL	024-01	1	5/5/2006	MS, WP	#	49N	07W	29	N	3	Whitefish	Chippewa
NOCA	039-40	2	3/26/2006	BN	X	07S	14W	18	Y	2	Calvin	Cass
RIPH	038-43	1	3/27/2006	DC, WP	X	14N	10W	10	Y	1	Mecosta	Mecosta
RIPH	029-50	1	3/26/2006	DC, WP	X	25N	08W	31	Y	3	Springfield	Kalkaska
RIPH	009-46	1	4/11/2006	WP, AB	X	43N	23W	32	N	3	Maple Ridge	Delta
RUGR	009-48	1	4/11/2006	WP, AB	X	42N	23W	6	N	2	Maple Ridge	Delta
RUGR	009-50	1	4/11/2006	WP, AB	X	42N	23W	7	N	2	Maple Ridge	Delta
RUGR	009-35	1	4/11/2006	WP, AB	X	43N	23W	17	Y	2	Maple Ridge	Delta
RUGR	009-37	1	4/11/2006	WP, AB	X	43N	23W	21	N	3	Maple Ridge	Delta

Table B-2. Continued.

Species ^a	Point ID Number	No. Obs.	Date	Observer(s) ^b	Code ^c	Town	Range	Section	Block	Priority ^d	Twp. Name	County
RUGR	009-40	1	4/11/2006	WP, AB	X	43N	23W	28	N	3	Maple Ridge	Delta
RUGR	009-44	1	4/11/2006	WP, AB	X	43N	23W	28	N	3	Maple Ridge	Delta
RUGR	009-46	1	4/11/2006	WP, AB	X	43N	23W	32	N	3	Maple Ridge	Delta
RUGR	009-12	1	4/11/2006	WP, AB	X	44N	23W	3	N	1	Turin	Marquette
RUGR	009-20	1	4/11/2006	WP, AB	X	44N	23W	21	Y	3	Turin	Marquette
RUGR	009-26	1	4/11/2006	WP, AB	X	44N	23W	30	Y	3	Turin	Marquette
RUGR	008-14	1	5/8/2006	MS, WP	X	45N	36W	2	N	1	Iron River	Iron
RUGR	024-49	1	4/1/2006	WP, AB	X	46N	10W	14	N	1	McMillan	Luce
RUGR	008-28	1	5/8/2006	MS, WP	X	46N	35W	20	Y	3	Bates	Iron
RWBL	070-26	1	4/27/2006	WP, JG	X	11N	16E	3	Y	1	Sanilac	Sanilac
SACR	035-39	12	4/21/2006	JB	#	01N	10W	11	Y	1	Prairieville	Barry
SACR	035-25	3	4/21/2006	JB	X	01S	10W	12	Y	1	Richland	Kalamazoo
SACR	907-03	1	3/20/2006	JB, ES	#	03N	15W	27	Y	4	Manlius	Allegan
SACR	907-08	1	3/20/2006	JB, ES	#	03N	15W	36	Y	4	Manlius	Allegan
SACR	050-14	2	3/27/2006	WP, KB	O	16N	01W	5	Y	2	Edenville	Midland
SACR	009-24	≥2	4/11/2006	WP, AB	#	44N	23W	20	Y	3	Turin	Marquette
SACR	024-49	≥2	5/6/2006	MS, WP	X	46N	10W	14	N	1	McMillan	Luce
SORA	035-21	1	4/20/2006	JB	X	01S	10W	13	Y	1	Richland	Kalamazoo
SORA	035-25	2	4/21/2006	JB	X	01S	10W	12	Y	1	Richland	Kalamazoo
SOSP	032-01	1	4/28/2006	WP, JG	X	03N	07W	33	Y	3	Castleton	Barry
VIRA	035-25	2	4/21/2006	JB	X	01S	10W	12	Y	1	Richland	Kalamazoo
WISN	050-27	1	4/30/2006	MS, WP	X	16N	01E	15		1	Hope	Midland
WISN	047-48	1	5/3/2006	MS, WP	X	25N	02E	19		3	Big Creek	Oscoda
WISN	059-32	1	5/4/2006	MS, WP	X	32N	06E	31	Y	3	Long Rapids	Alpena
WISN	008-02	7	5/8/2006	MS, WP	X	44N	35W	6	Y	2	Iron River	Iron
WISN	024-47	1	5/6/2006	MS, WP	X	46N	10W	11	N	1	McMillan	Luce
WISN	024-38	1	5/6/2006	MS, WP	X	47N	09W	19	N	3	McMillan	Luce
WISN	011-28	1	5/9/2006	MS, WP	X	47N	29W	28	N	3	Humboldt	Marquette

Table B-2. Continued.

Species ^a	Point ID Number	No. Obs.	Date	Observer(s) ^b	Code ^c	Town	Range	Section	Block	Priority ^d	Twp. Name	County
WISN	024-11	1	5/5/2006	MS, WP	X	48N	08W	11	Y	1	McMillan	Luce
WISN	024-13	several	5/5/2006	MS, WP	X	48N	08W	10	Y	1	McMillan	Luce
WISN	024-15	≥2	5/6/2006	MS, WP	X	48N	08W	8	N	2	McMillan	Luce
WISN	008-48	1	5/7/2006	MS, WP	X	48N	35W	33	N	3	Duncan	Houghton
WITU	039-15	1	3/27/2006	JB, ES	#	07S	13W	27	Y	4	Porter	Cass
WITU	038-14	1	3/26/2006	DC, WP	X	14N	08W	22		4	Morton	Mecosta
WITU	009-26	1	3/8/2006	MM, WP	X	44N	23W	30	Y	3	Turin	Marquette
WODU	907-05	1	3/20/2006	JB, ES	#	03N	15W	26	Y	4	Manlius	Allegan
WPWI	047-42	1	5/3/2006	MS, WP	X	25N	02E	5	Y	2	Big Creek	Oscoda
WPWI	047-46	1	5/3/2006	MS, WP	X	25N	02E	17	Y	2	Big Creek	Oscoda
WPWI	047-48	1	5/3/2006	MS, WP	X	25N	02E	19		3	Big Creek	Oscoda
WPWI	047-40	1	5/3/2006	MS, WP	X	26N	02E	31	Y	3	Big Creek	Oscoda
WPWI	047-21	1	5/4/2006	MS, WP	X	27N	01E	14	Y	1	Greenwood	Oscoda
WPWI	029-22	1	5/3/2006	MS, WP	X	27N	09W	35		4	Whitewater	Grand Traverse
WPWI	011-49	2	5/9/2006	MS, WP	X	46N	28W	31	N	3	Ely	Marquette
WPWI	011-46	1	5/9/2006	MS, WP	X	46N	29W	26	Y	4	Humboldt	Marquette
WPWI	008-34	1	5/8/2006	MS, WP	X	46N	35W	5	N	2	Bates	Iron
WPWI	008-37	1	5/8/2006	MS, WP	X	47N	35W	29	Y	3	Duncan	Houghton
WPWI	008-39	1	5/7/2006	MS, WP	X	47N	35W	20	Y	3	Duncan	Houghton
WPWI	008-50	1	5/7/2006	MS, WP	X	48N	35W	28	N	3	Duncan	Houghton
WTSP	901-09	1	5/7/2006	MS, WP	X	44N	39W	25	N	4	Watersmeet	Gogebic
WTSP	008-14	1	5/8/2006	MS, WP	X	45N	36W	2	N	1	Iron River	Iron
WTSP	901-36	1	5/6/2006	MS, WP	X	45N	40W	35	N	4	Watersmeet	Gogebic
WTSP	024-49	1	5/6/2006	MS, WP	X	46N	10W	14	N	1	McMillan	Luce

^a Species: AMRO = American Robin; AMWO = American Woodcock; CAGO = Canada Goose; COGO = Common Goldeneye; COLO = Common Loon; CONI = Common Nighthawk; HOLA = Horned Lark; KILL = Killdeer; MALL = Mallard; NOCA = Northern Cardinal; RWBL = Red-winged Blackbird; RIPH = Ring-necked Pheasant; RUGR = Ruffed Grouse; SACR = Sandhill Crane; SOSP = Song Sparrow; SORA = Sora; VIRA = Virginia Rail; WPWI = Whip-poor-will; WITU = Wild Turkey; WISN = Wilson's Snipe; WTSP = White-throated Sparrow; and WODU = Wood Duck.

^b Observers: KB = Kim Borland; AB = Adrienne Bozic; JB = John Brenneman; DC = David Cuthrell; JG = Julie Gibson; ML = Mitch LeHow; MM = Michael Monfils; MS = Michael Sanders; BN = Brian Nelson; WP = Wilfred Previant; ES = Elizabeth Skare.

^c Breeding criteria codes: # = species observed in suitable nesting habitat during its breeding season; X = singing male present in suitable nesting habitat during its breeding season; and O = species observed during the breeding season, but no evidence of breeding in block.

^d Priority survey block: Y = yes and N = no.

APPENDIX C

Summary Information for Principal Components Analysis

Table C-1. Eigenvectors for principal components (PC) one through five derived from principal components analysis of landscape-level habitat surrounding survey stations used during woodland owl surveys conducted in Michigan during 2004 – 2006. The eigenvalue, percent of variation explained, and cumulative percent of variation explained are provided for each PC. Landscape variable names refer to the land cover category (UR = urban, NF = nonforested, DF = deciduous forest, CF = coniferous forest, MF = mixed forest, WT = nonforested wetland, WA = water, and BA = bare/sparsely vegetated).

Landscape Variable by Year		PC1	PC2	PC3	PC4	PC5
Eastern Screech-Owl Survey Sites (SLP points only)						
2006:	UR	0.11583	0.50245	0.28233	0.07415	0.05645
	AG	-0.45811	0.00004	0.08996	-0.15578	-0.61800
	HU	-0.36402	0.23666	-0.35262	0.05637	0.65011
	DF	0.38937	-0.48752	0.03124	0.37079	-0.03325
	CF	0.38564	0.27399	-0.47716	-0.04286	-0.24602
	MF	0.45733	0.17322	-0.37955	-0.14390	-0.08614
	WT	0.28842	-0.28090	0.39527	-0.35406	0.34838
	WA	0.20870	0.40861	0.40001	-0.40150	-0.01257
	BA	0.08932	0.32082	0.31446	0.72143	-0.04078
	Eigenvalue	2.7602	1.5129	1.3025	0.9797	0.8900
	Percent	30.6692	16.8097	14.4719	10.8859	9.8887
	Cum Percent	30.6692	47.4789	61.9508	72.8367	82.7254
2005:	UR	0.13723	0.50733	0.30839	-0.42248	0.51479
	AG	-0.45596	-0.08569	0.27455	-0.05001	-0.36135
	HU	-0.28589	0.22511	-0.61365	0.05375	0.38228
	DF	0.43629	-0.40578	0.01698	0.05907	0.12363
	CF	0.34016	0.28798	-0.31092	0.30343	-0.38305
	MF	0.42977	0.19295	-0.22767	0.11567	-0.02220
	WT	0.37605	-0.39010	0.16860	-0.10555	0.19806
	WA	0.23487	0.46688	0.29166	-0.15039	-0.40420
	BA	-0.06476	0.17214	0.43666	0.82063	0.30523
	Eigenvalue	3.3366	1.1794	1.1550	0.9523	0.9080
	Percent	37.0736	13.1046	12.8335	10.5813	10.0890
	Cum Percent	37.0736	50.1782	63.0117	73.5931	83.6820
2005:	UR	0.22817	0.37589	0.29581	0.36763	-0.42766
	AG	-0.47839	0.28193	-0.05706	-0.33638	-0.16874
	HU	-0.05263	-0.61847	0.36104	0.43040	0.24234
	DF	0.40256	-0.04103	-0.42928	0.15015	-0.27687
	CF	0.41083	-0.16742	0.25356	-0.45728	-0.15301
	MF	0.47461	-0.13524	0.15287	-0.28547	-0.16256
	WT	0.28272	0.12089	-0.56874	0.26926	0.29673
	WA	0.26570	0.31717	0.15755	-0.25833	0.71380
	BA	0.09850	0.48322	0.39833	0.33777	0.07651
	Eigenvalue	3.1270	1.5100	1.2906	1.0548	0.8341
	Percent	34.7448	16.7776	14.3403	11.7197	9.2682
	Cum Percent	34.7448	51.5224	65.8627	77.5824	86.8506

Table C-1. Continued.

Landscape Variable by Year		PC1	PC2	PC3	PC4	PC5
Great Horned and Barred Owl Survey Sites (statewide points)						
2006:	UR	-0.20855	0.40855	0.36885	-0.01612	-0.23993
	AG	-0.46812	0.03821	-0.18096	0.02698	0.13872
	HU	-0.52768	0.16036	-0.14129	-0.15326	0.02927
	DF	0.17304	-0.65890	0.34525	-0.34815	-0.09741
	CF	0.47521	0.32342	-0.32431	0.12673	0.11831
	MF	0.43697	0.29422	-0.13860	-0.30131	-0.05984
	WT	0.05945	-0.22981	0.04830	0.84593	0.05826
	WA	0.07404	0.30552	0.54964	0.17108	-0.45001
	BA	0.05658	0.18556	0.51305	-0.05102	0.83028
	Eigenvalue	2.4016	1.4187	1.2409	1.1467	0.8841
	Percent	26.6839	15.7639	13.7880	12.7414	9.8235
	Cum Percent	26.6839	42.4478	56.2358	68.9772	78.8007
2005:	UR	0.25737	0.22054	0.16770	-0.08710	0.79875
	AG	0.50933	-0.01694	-0.15284	0.08551	-0.26910
	HU	0.52952	0.00644	-0.12916	-0.12729	0.00136
	DF	-0.28200	-0.53196	0.56489	-0.11631	-0.00650
	CF	-0.41417	0.32183	-0.43208	-0.00382	-0.08615
	MF	-0.28884	0.20642	-0.18197	-0.61375	0.06199
	WT	-0.23306	-0.01144	-0.16345	0.73841	0.28198
	WA	-0.05734	0.54909	0.43867	0.01944	0.07345
	BA	0.04301	0.46929	0.41687	0.18176	-0.43973
	Eigenvalue	2.4522	1.3994	1.2088	1.1513	0.9316
	Percent	27.2467	15.5489	13.4308	12.7924	10.3511
	Cum Percent	27.2467	42.7956	56.2265	69.0188	79.3699
2005:	UR	-0.16697	0.38541	-0.17966	-0.24650	0.72640
	AG	-0.48793	-0.20137	0.08023	0.05237	-0.27438
	HU	-0.50624	0.06262	-0.09404	-0.21766	0.06910
	DF	0.31032	0.00656	-0.63727	0.41467	-0.10561
	CF	0.41648	-0.06796	0.46160	-0.44369	-0.09608
	MF	0.41922	0.13132	-0.24680	-0.39399	-0.00270
	WT	0.17242	-0.19939	0.42879	0.53117	0.52692
	WA	0.03688	0.63616	0.14798	0.24575	-0.11672
	BA	-0.03438	0.58363	0.25804	0.15014	-0.28394
	Eigenvalue	2.3490	1.3843	1.3098	1.0827	0.9391
	Percent	26.1000	15.3809	14.5534	12.0300	10.4344
	Cum Percent	26.1000	41.4810	56.0343	68.0643	78.4987

APPENDIX D

Woodland Owl Survey Data Form

BBS Route Number:		Date:		Visit Number:		Time Period(s):	
Moon Phase:		County:		Surveyor(s):			

Station No.:		GPS Pt. Name:			Start Time:		Wind Speed:	[]km/h []mph []Beaufort Index		
Snow Cover:	[]none []patchy []continuous /	Approx. depth:	[]cm []in	Temp.:	[]°F []°C	Noise Level	[]1 []2 []3 []4			
Precip.:	[]none []light []medium / []snow []rain	Cloud Cover (%):			Notes:					
SPECIES	2-MIN	BROADCAST PERIOD (shaded species UP only)				2-MIN	SEX	BEARING	ESTIMATED DISTANCE (km, circle one)	
		N	B	E	L	B	G	G		(<.1) (.1-.25) (.25-.5) (.5-.75) (.75-1) (>1)
		S	O	A	E	D	G	H		(<.1) (.1-.25) (.25-.5) (.5-.75) (.75-1) (>1)
		W	O	S	O	O	O	O		(<.1) (.1-.25) (.25-.5) (.5-.75) (.75-1) (>1)
		O	W	O	W	W	W	W		(<.1) (.1-.25) (.25-.5) (.5-.75) (.75-1) (>1)
Comments:										

Station No.:		GPS Pt. Name:			Start Time:		Wind Speed:	[]km/h []mph []Beaufort Index		
Snow Cover:	[]none []patchy []continuous /	Approx. depth:	[]cm []in	Temp.:	[]°F []°C	Noise Level	[]1 []2 []3 []4			
Precip.:	[]none []light []medium / []snow []rain	Cloud Cover (%):			Notes:					
SPECIES	2-MIN	BROADCAST PERIOD (shaded species UP only)				2-MIN	SEX	BEARING	ESTIMATED DISTANCE (km, circle one)	
		N	B	E	L	B	G	G		(<.1) (.1-.25) (.25-.5) (.5-.75) (.75-1) (>1)
		S	O	A	E	D	G	H		(<.1) (.1-.25) (.25-.5) (.5-.75) (.75-1) (>1)
		W	O	S	O	O	O	O		(<.1) (.1-.25) (.25-.5) (.5-.75) (.75-1) (>1)
		O	W	O	W	W	W	W		(<.1) (.1-.25) (.25-.5) (.5-.75) (.75-1) (>1)
Comments:										

Station No.:		GPS Pt. Name:			Start Time:		Wind Speed:	[]km/h []mph []Beaufort Index		
Snow Cover:	[]none []patchy []continuous /	Approx. depth:	[]cm []in	Temp.:	[]°F []°C	Noise Level	[]1 []2 []3 []4			
Precip.:	[]none []light []medium / []snow []rain	Cloud Cover (%):			Notes:					
SPECIES	2-MIN	BROADCAST PERIOD (shaded species UP only)				2-MIN	SEX	BEARING	ESTIMATED DISTANCE (km, circle one)	
		N	B	E	L	B	G	G		(<.1) (.1-.25) (.25-.5) (.5-.75) (.75-1) (>1)
		S	O	A	E	D	G	H		(<.1) (.1-.25) (.25-.5) (.5-.75) (.75-1) (>1)
		W	O	S	O	O	O	O		(<.1) (.1-.25) (.25-.5) (.5-.75) (.75-1) (>1)
		O	W	O	W	W	W	W		(<.1) (.1-.25) (.25-.5) (.5-.75) (.75-1) (>1)
Comments:										

Station No.:		GPS Pt. Name:			Start Time:		Wind Speed:	[]km/h []mph []Beaufort Index		
Snow Cover:	[]none []patchy []continuous /	Approx. depth:	[]cm []in	Temp.:	[]°F []°C	Noise Level	[]1 []2 []3 []4			
Precip.:	[]none []light []medium / []snow []rain	Cloud Cover (%):			Notes:					
SPECIES	2-MIN	BROADCAST PERIOD (shaded species UP only)				2-MIN	SEX	BEARING	ESTIMATED DISTANCE (km, circle one)	
		N	B	E	L	B	G	G		(<.1) (.1-.25) (.25-.5) (.5-.75) (.75-1) (>1)
		S	O	A	E	D	G	H		(<.1) (.1-.25) (.25-.5) (.5-.75) (.75-1) (>1)
		W	O	S	O	O	O	O		(<.1) (.1-.25) (.25-.5) (.5-.75) (.75-1) (>1)
		O	W	O	W	W	W	W		(<.1) (.1-.25) (.25-.5) (.5-.75) (.75-1) (>1)
Comments:										