

**Sensitive Species Surveys for the White Pines Wind Resource
Area:
Summary of 2008 Field Seasons - Annual Report**



Prepared By:
Joelle Gehring, Ph.D.
Senior Conservation Scientist-Zoology Section Leader
Michigan State University, Michigan Natural Features Inventory
P.O. Box 30444 Lansing, MI 48909-7944

Prepared For:
Western EcoSystems Technologies
2003 Central Ave., Cheyenne, WY 82001

BP Alternative Energy
700 Louisiana St, 33rd Floor, Houston, TX 77002

Report number 2008-22



MICHIGAN STATE
UNIVERSITY
EXTENSION

Sensitive species surveys were conducted for the White Pines Wind Resource Area (WPWRA) in the Huron-Manistee National Forest in the spring and summer of 2008. This report provides an overview of: the natural histories of seven target sensitive species, the survey methods used to quantify their presence/absence, and summaries and interpretations of the survey results. In addition to collecting field data, Michigan's portion of the international NatureServe database, housed and maintained by Michigan Natural Features Inventory (MNFI), was queried to identify past records (Element Occurrences) of rare and declining species in the WPWRA. This database consists of quality controlled information on the location of rare and declining species of plants, animals, and ecosystems throughout Michigan. This report provides a summary of the Element Occurrences found in the WPWRA.

King Rail

Natural History

The King Rail (*Rallus elegans*) is a Michigan endangered species that inhabits permanent, herbaceous, freshwater wetlands. In Michigan, King Rails have been found in expanses of monotypic cattails (*typha* spp.) as well as mixtures of cattails, grasses (Poaceae), and sedges (Cyperaceae; Evers 1984, Rabe 1986). Foraging in water approximately 4 cm in depth, King Rails feed mainly on small crustaceans, fish, frogs, and insects (Rabe 2001). King Rail populations have declined dramatically over the last 30 years mainly as a result of the loss of wetlands and pesticide use. This species has also been documented to collide with lit structures such as communication towers and tall buildings during migration (Rabe 2001).

Methods

The King Rail is a secretive bird that is rarely seen but can be more frequently heard during courtship and incubation periods (Rabe 2001). Following the protocol suggested in the Proceedings of the Marsh Bird Monitoring Workshop (USFWS and USGS 1999) surveys for King Rails were completed within 4 hours of sunrise in wetland habitats (Fig. 1) along the proposed development corridors between mid-April and mid-May 2008. Surveys consisted of 3 minutes of silent listening at each broadcast survey point, followed by one minute of broadcast king rail vocalizations alternating with 1 minute of silent listening. This sequence was repeated 3 times at each broadcast survey point. Surveys were discontinued if winds were greater than 15 km per hour or if moderate or heavy precipitation fell.

Results and Conclusions

Fourteen sites were surveyed in the WPWRA (Fig. 1). No King Rails were detected. Few of the wetland sites located along the development corridors of the WPWRA would be considered high quality King Rail habitat as most were forested, or had dense woody vegetation. The large herbaceous wetland complex located along the transmission line corridor initially proposed to be constructed southeast of the turbine array would likely provide the best habitat for this species. However, King Rail surveys did not detect them in the area.

Nocturnal Birds

Natural History

Four species were targeted in the nocturnal bird surveys: Long-eared Owl (*Asio otus*), Northern Saw-whet Owl (*Aegolius acadicus*), Common Nighthawk (*Chordeiles minor*), and Whip-poor-will (*Caprimulgus vociferus*). The Long-eared Owl is protected as a threatened species in Michigan. They use a diversity of forest communities but tend to be more closely associated with conifer forests located in close proximity to open grassy areas (Marks et al. 1994, Michigan Natural Features Inventory 2007). Their diet consists mainly of small mammals and some birds. Population declines are thought to be a result of land development and related habitat loss. The Northern Saw-whet Owl is not listed as threatened or endangered in Michigan. They use densely forested areas with increased use of conifers during the winter. Similar to the Long-eared Owl, the Northern Saw-whet eats both small mammals and birds as well large insects (Cannings 1993).

Neither the Common Nighthawk nor the Whip-poor-will are listed as threatened or endangered in Michigan; however, there is growing concern that their populations are declining (Poulin et al. 1996, Cink 2002). Both species typically inhabit forested areas with the Common Nighthawk also using more open agricultural and urban areas as well. In a recent Michigan study, both species tended to be associated with clearcut forest areas, especially for foraging activities (Barton 2007). Both insectivores, these species forage for aerial insects occasionally using concentrations of insects found in proximity to anthropogenic light sources. Population declines are thought to be related to habitat loss as previously clearcut areas regenerate into mature forests; thereby, eliminating foraging sites (Poulin et al. 1996, Cink 2002).

Methods

Nocturnal bird surveys were conducted at the WPWRA from June to early July 2008. These surveys were conducted along the proposed development corridors at 800-m intervals and protocols were based on the United States Nightjar Survey Network Protocol (CCB 2004) and the Guidelines for Nocturnal Owl Monitoring in North America (Takats et al. 2001). Surveys were initiated approximately 30 minutes after sunset and ended 30 minutes before sunrise. Each survey consisted of 6 minutes of silence at each broadcast location, followed by 2 minutes of broadcasted Northern Saw-whet Owl calls and 2 minutes of broadcasted Long-eared Owl calls, followed by 2 minutes of silent listening. According to the protocol, environmental conditions were monitored throughout the survey nights to avoid surveying during periods of rain, cloud cover of more than 50% and winds were greater than 24 km per hour.

Results and Conclusions

Forty-two nocturnal bird surveys were conducted in WPWRA. Neither of the target owl species were detected; however, two non-target owl species were detected. A total of nine Barred Owls (*Strix varia*) were detected at a total of five survey points (Fig. 2) and three Great Horned Owls (*Bubo virginianus*) were detected at five survey points (Fig. 3). Their locations were consistent with their habitat preferences with the Barred Owl

responses in larger tracts of forested areas and the Great-horned Owl responses in closer proximity to agricultural areas.

Thirteen survey points had Whip-poor-will responses ranging from 1-3 individual birds detected (Fig. 4) for a total of 19 Whip-poor-wills. Fewer Common Nighthawks were detected with only two individuals at one survey point (Fig. 5). Similar to the owls, the Whip-poor-will and Common Nighthawk detections were consistent with their habitat preferences, with the former found more in the clearcut areas within extensive forested areas and the latter detected in more open habitats. The Common Nighthawks were observed foraging near the yard light of a nearby human inhabitation.

Raptors

Natural History

The Red-shouldered Hawk (*Buteo lineatus*) is considered a threatened species in Michigan and the Northern Goshawks (*Accipiter gentilis*) is listed as a species of special concern. Both raptors inhabit mature forested areas with the Red-shouldered Hawk demonstrating a greater propensity for forested wetland areas (Cooper 1999a and b). The Red-shouldered Hawk eats a diversity of prey including small mammals, amphibians, reptiles, birds, and invertebrates. The Northern Goshawk preys on many bird species, including Ruffed Grouse (*Bonasa umbellus*), but also forages on small and medium mammals. Both species are thought to be declining as a result of habitat loss due to timber harvest and wetland elimination (Cooper 1999a and b).

Methods

Broadcast call surveys for both Red-shouldered Hawks and Northern Goshawks were conducted twice along the development corridors between May and mid-July 2008 (Fig. 6). Surveys were conducted after sunrise and before sunset. Broadcast survey points were set up approximately every 300 m within the development corridors following the Huron-Manistee protocol provided by Chris Schumacher (USFS). At each broadcast survey point, hawk vocalizations were broadcast for 10 seconds, followed by 30 seconds of silence during which the observer listened and watched for responses by raptors, followed by another 10 second broadcast and 30 seconds of listening and watching. Each sequence of broadcast hawk calls were played to the right, to the left, and to the front of the observer at each broadcast survey point as the observer progressed down the development corridor. Surveys for both hawk species were conducted at all points within 800 m of forested areas > 40 years old and within 800 m of wetland areas. Only Northern Goshawk calls were broadcast from survey points that were within 800 m of forested areas but farther than 800 m from wetland areas. Similar to other survey protocols, surveys were discontinued when winds were greater than 24 km per hour or if there was medium to heavy precipitation.

Results and Conclusions

One hundred and fifteen survey points were surveyed for raptors in the WPWRA. Nine survey points detected a total of 10 Red-shouldered Hawks during the first visit (Fig. 6) and one survey point detected two individuals of this species during the second visit (Fig. 7). The survey point where the Red-shouldered Hawks were detected during the second

visit was the only survey point where Red-shouldered Hawks were detected during both visits. Red-shouldered Hawks tend to be very vocal during the breeding season suggesting that this species was potentially responding to the broadcast caller some distance away from their nests. None of the Red-shouldered Hawk responses were particularly indicative of an active nest within the development corridor (i.e., strong responses indicating an active nest typically include two hawks vocalizing in close proximity to the observer). This is further supported by the lack of nest structures detected by botanists and other researchers during their data collection in the WPWRA. The general locations of the Red-shouldered Hawk responses are consistent with their habitat preferences for forested wetlands (Figs. 6 and 7). Only one Northern Goshawk was detected during the surveys (Fig. 8). The individual flew into the survey point from outside of the project area (from the north), vocalized very briefly, and then left the survey point immediately upon observing human observers. The Northern Goshawk is notorious for its fervent defense of nest areas against any intruder. The behavior of this hawk was not consistent with the presence of a nest. Three non-target hawk species were observed during only the first visit to their respective survey points: Red-tailed Hawk (*Buteo jamaicensis*, Fig. 9), Cooper's Hawk (*Accipiter cooperii*, Fig. 10), and Sharp-shinned Hawk (*Accipiter striatus*, Fig. 11).

Element Occurrence Records

A query of Michigan Natural Features Inventory's NatureServe database for Element Occurrences found several records for three species of rare plants, nine animal species and four natural communities in the WPWRA. This report will include summaries of information on the nine animal species. Subsequent reports on the plants of the WPWRA are expected to provide information on the rare plants and communities present in the area. Records for animal Element Occurrences require that birds show evidence of breeding at the location. Although the same standard is attempted with reptiles, additional verifiable records are included for non-breeding individuals provided appropriate habitat is present upon observation (NatureServe 2008).

Eastern massasauga (*Sistrurus C. Catenatus*) records from 1989 include predominantly the northern and eastern portions of the WPWRA. This secretive Michigan species of special concern is difficult to detect; thereby, making surveys difficult. In the Huron-Manistee National Forest the Eastern massasauga typically uses open grass or sedge habitats within larger forested areas in close proximity to wetlands (Kingsbury 2002). Relative to this proposed project, road construction and habitat disturbance are some of the issues critical to consider when managing this rare species. While Eastern massasauga might benefit from the creation of some forest openings the disturbance of the site should take place when the snakes are inactive (i.e., between October and April). Avoiding the disturbance of riparian areas would also help to prevent habitat loss and disturbance of this species (1 km buffer should be effective; Kingsbury 2002). Roads can be barriers to the movement of massasauga and also cause collision related fatalities. Narrow, unpaved roads are recommended to reduce these risks (Kingsbury 2002).

Michigan Natural Features Inventory has records of Eastern box turtles (*Terrapene c. Carolina*) and Blanding's turtles (*Emys blandingii*) using predominantly the southeast portion of the WPWRA. These species are both considered to be species of

special concern in Michigan. The box turtle uses more upland habitats than other Michigan turtle species, although it appears that interspersed wetland areas are an important part of their habitat requirements (Hyde 1999b). Large scale forest fragmentation and road development limits the dispersal abilities of this species and can lead to collision related fatalities. Limiting these habitat disturbances can potentially prevent further population declines of this species. The Blanding's turtle uses clean, shallow wetlands with soft, muddy bottoms but is known to migrate long distances over dry land. Their populations can suffer declines due to habitat loss or degradation and road collisions. Buffering wetland habitats during construction and maintaining connectivity among habitat patches can prevent some of this loss (Lee 1999).

The Northern Goshawk record was located in the southern portion of the WPWRA; however, the Red-shouldered Hawk record was more than 1700 m south of the project. Given the habitat preferences mentioned previously, both of these species are likely to occur in the WPWRA, with at one known nesting attempt by the Red-shouldered Hawk in 2008. Buffering nest areas from timber harvest and temporally planning disturbance activities around nesting season are believed to be some of the most important variables to consider when preventing further population decline (Cooper 1999a and b).

The records for the Cerulean Warbler (*Dendroica cerulean*), Prairie Warbler (*Dendroica discolor*), Bald Eagle (*Haliaeetus leucocephalus*), and Piping Plover (*Charadrius melodus*) were all south of the WPWRA ranging from 1,000 m to more than 3,000 m to the nearest project corridor. However, these species should be considered in project activities by minimizing disturbance in appropriate habitats. Both the Piping Plover and Prairie Warbler are listed as endangered species and use specific habitats currently avoided in the WPWRA project array. The Piping Plover specializes in using beaches and shoreline areas (Hyde 1999a). In Michigan, the Prairie Warbler is found most frequently in scrub-shrub dune areas along the lake shores; however, they have also been found in large areas of inland scrub-shrub (Cooper 2000). The Cerulean Warbler, a Michigan species of special concern, prefers large areas of moist to wet mature deciduous forest, occasionally also using dry mature forests (Hyde et al. 2000). Minimizing the fragmentation of large tracts of their preferred habitats is an important part of this species' conservation. The Bald Eagle was recently delisted but will soon be designated to be a Michigan species of special concern. This species tends to nest near large bodies of water in tall pines or aspen trees. It is important to avoid disturbing nest areas during critical nesting periods (Gehring 2006).

Acknowledgements

B. Noel and S. Pulich provided field assistance for this project. M. Monfils researched and provided materials and protocol for nocturnal bird surveys. C. Schumucher provided logistical support and protocol for the raptor surveys. Michigan Natural Features Inventory provided logistical support with specific appreciation extended to R. Rogers, Y. Lee, and N. Toben. W. Erickson also provided support throughout the project.

Literature Cited

- Barton, B. 2007. Whip-poor-will and Common Nighthawk Surveys in Support of the Michigan Breeding Bird Atlas II – 2007 Final Report. Report Number MNFI 2007-17. Report to the Michigan Department of Natural Resources, Wildlife Division, Lansing, MI.
- Cannings, R. 1993. Northern Saw-whet (*Aegolius acadicus*). In *The Birds of North America*, No. 42 (a. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.
- Center for Conservation Biology (CCB). 2004. United States Nightjar Survey Network: Nightjar Survey Protocols and Instructions. <http://ccb.wm.edu/nightjar/protocols.htm>
- Cink, C. 2002. Whip-poor-will (*Caprimulgus vociferus*). In *The Birds of North America*, No. 620 (a. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.
- Cooper, J. 1999a. Special animal abstracts for *Accipiter gentilis* (Northern Goshawk). Michigan Natural Features Inventory, Lansing, MI.
- Cooper, J. 1999b. Special animal abstracts for *Buteo lineatus* (Red-shouldered Hawk). Michigan Natural Features Inventory, Lansing, MI.
- Cooper, J. 2000. Special animal abstracts for *Dendroica discolor* (Prairie Warbler). Michigan Natural Features Inventory, Lansing, MI.
- Evers, D. 1984. King Rail Survey-1984. Michigan Natural Features Inventory, Unpublished Report.
- Gehring, J. 2006. Special animal abstracts for *Haliaeetus leucocephalus* (Bald Eagle). Michigan Natural Features Inventory, Lansing, MI.
- HawkWatch. 2007. HawkWatch International. Online. <http://www.hawkwatch.org/home/>
- Hyde, D. 1999a. Special animal abstracts for *Charadrius melodus* (Piping Plover). Michigan Natural Features Inventory, Lansing, MI.
- Hyde, D. 1999b. Special animal abstracts for *Terrapene c. carolina* (Eastern box turtle). Michigan Natural Features Inventory, Lansing, MI.
- Hyde, D., Thomson, D., and J. Legge. 2000. Special animal abstracts for *Dendroica cerulea* (Cerulean Warbler). Michigan Natural Features Inventory, Lansing, MI.
- Kingsbury, B. 2002. Conservation Approach for Eastern Massasauga (*Sistrurus C. Catenatus*), USDA Forest Service, Eastern Region.

- Lee, Y. 1999. Special animal abstracts for *Emys blandingii* (Blanding's turtle). Michigan Natural Features Inventory, Lansing, MI.
- Marks, J., D. Evans, and D. Holt. 1994. Long-eared Owl (*Asio otus*). In *The Birds of North America*, No. 133 (a. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.
- Michigan Natural Features Inventory. 2007. Rare Species Explorer (Web Application). Available online at <http://web4.msue.edu/mnfi/explorer>
- NatureServe. 2008. Natural Heritage Methodology. <http://www.natureserve.org/prodServices/heritagemethodology.jsp>
- Poulin, R., S. Grindal, and R. Brigham. 1996. Common Nighthawk (*Chordeiles minor*). In *The Birds of North America*, No. 213 (a. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.
- Rabe, M. 1986. King Rail Census- 1986: population status and habitat utilization. Michigan Department of Natural Resources, Unpublished Report.
- Rabe, M. 2001. Special Animal Abstracts for *Rallus elegans* (King Rail). Michigan Natural Features Inventory. Lansing, Michigan.
- Takats, D., D. Francis, G. Holroyd, J. Duncan, K. Mazur, R. Cannings, W. Harris, and D. Holt. 2001. Guidelines for Nocturnal Owl Monitoring in North America. Beaverhill Bird Observatory and Bird Studies Canada, Edmonton, Alberta.
- US Fish and Wildlife Service (USFWS) and US Geological Survey (USGS). 1999. Proceedings of the Marsh Bird Monitoring Workshop. Denver, Colorado.

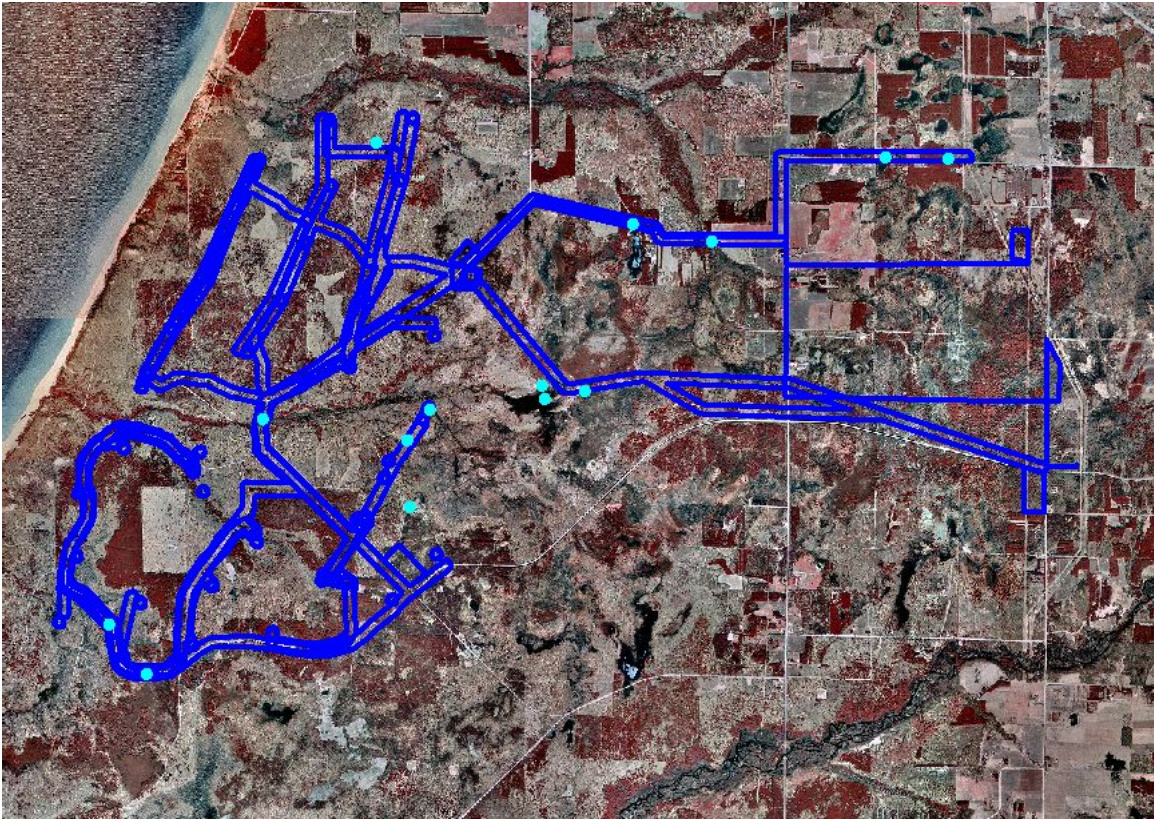


Figure 1. Survey points for King Rails were established in wetland habitats along the proposed development corridors for the Wind Pines Wind Resource Area, Michigan. These sites were surveyed in between mid-April and mid-May 2008. No King Rails were detected.

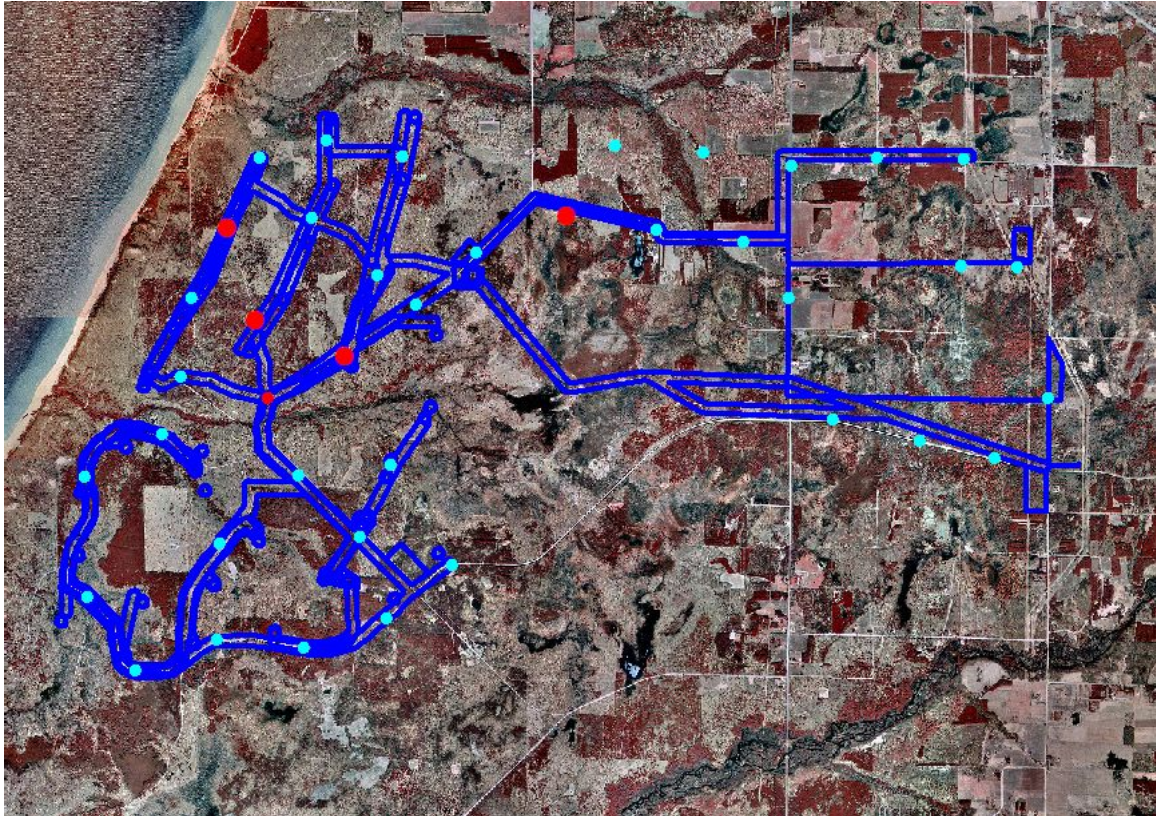


Figure 2. Survey points were established at 800-m intervals along the proposed development corridors for the Wind Pines Wind Resource Area, Michigan. These sites were surveyed from June to early July 2008. Barred Owl responses are shown in red with larger circles representing the detection of two individuals and smaller circles representing one individual.

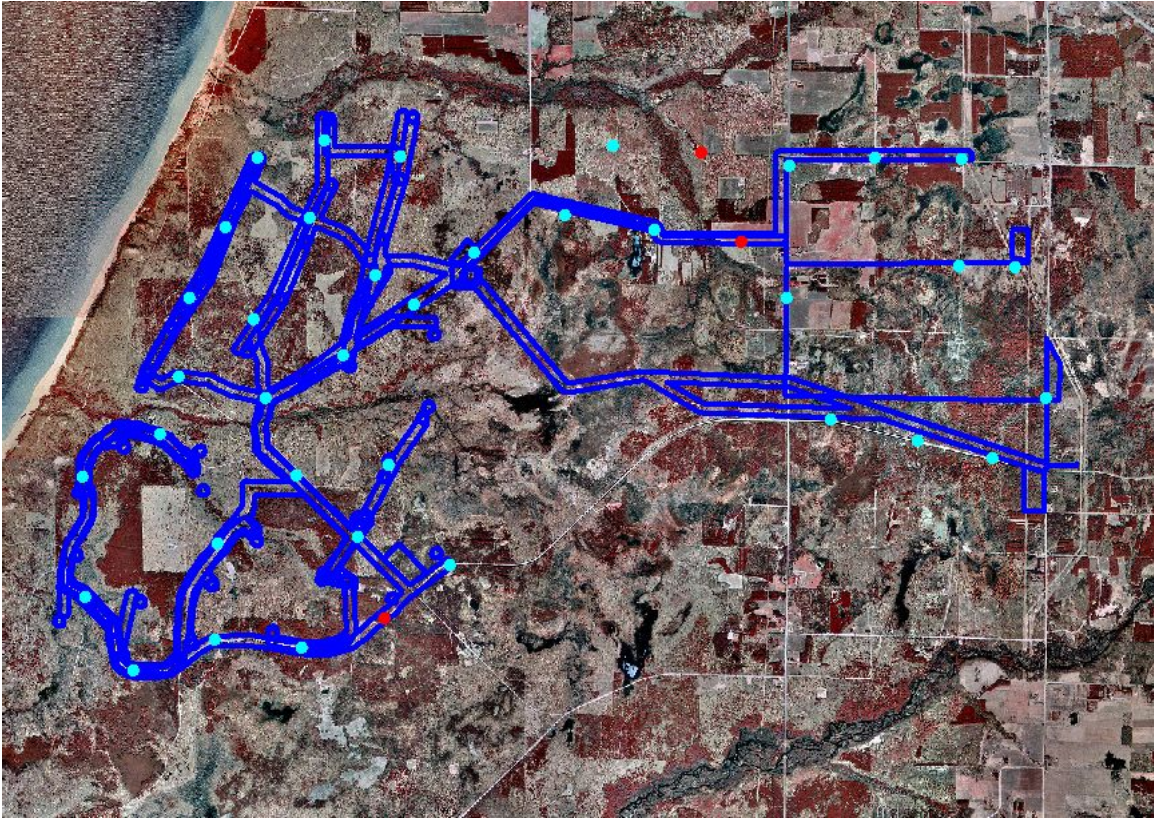


Figure 3. Survey points were established at 800-m intervals along the proposed development corridors for the Wind Pines Wind Resource Area, Michigan. These sites were surveyed from June to early July 2008. Great-horned Owl responses are shown in red (one individual each).

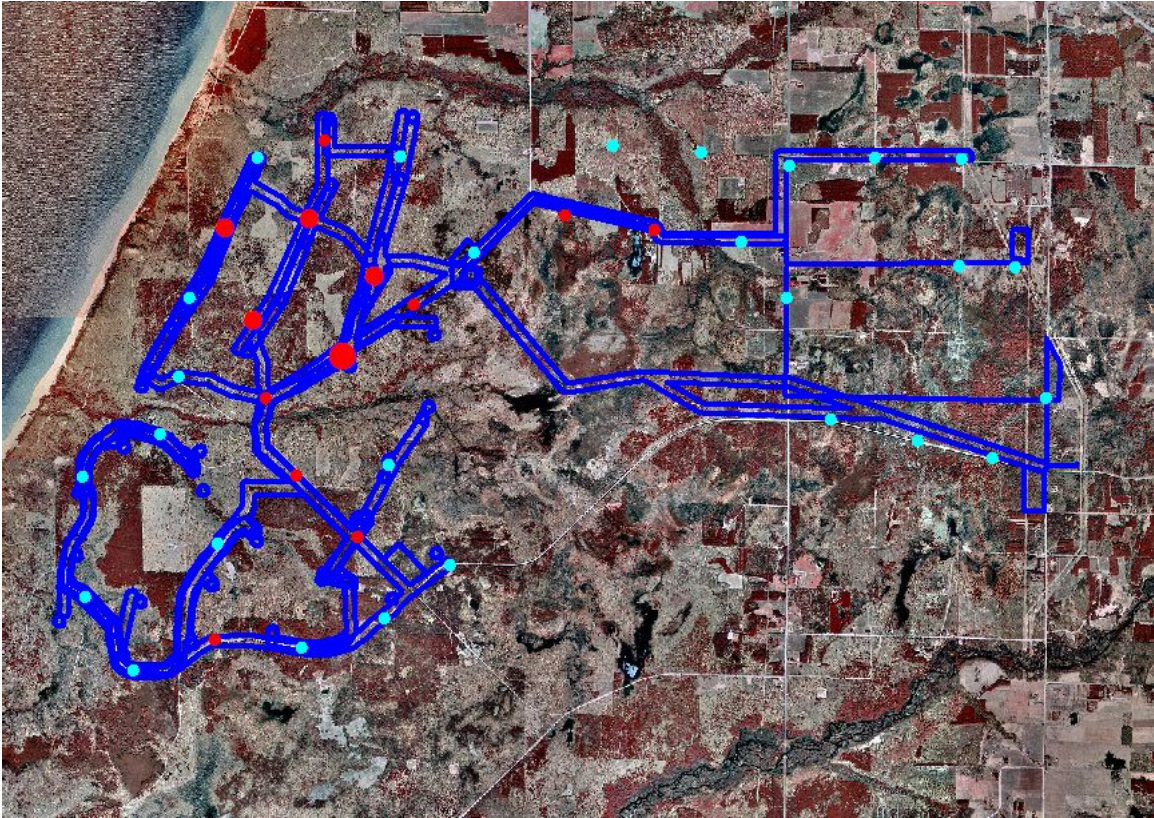


Figure 4. Survey points were established at 800-m intervals along the proposed development corridors for the Wind Pines Wind Resource Area, Michigan. These sites were surveyed from June to early July 2008. Whip-poor-will responses are shown in red with the largest circles representing the detection of three individuals, smaller circles representing two individuals, and the smallest red circles representing one individual.

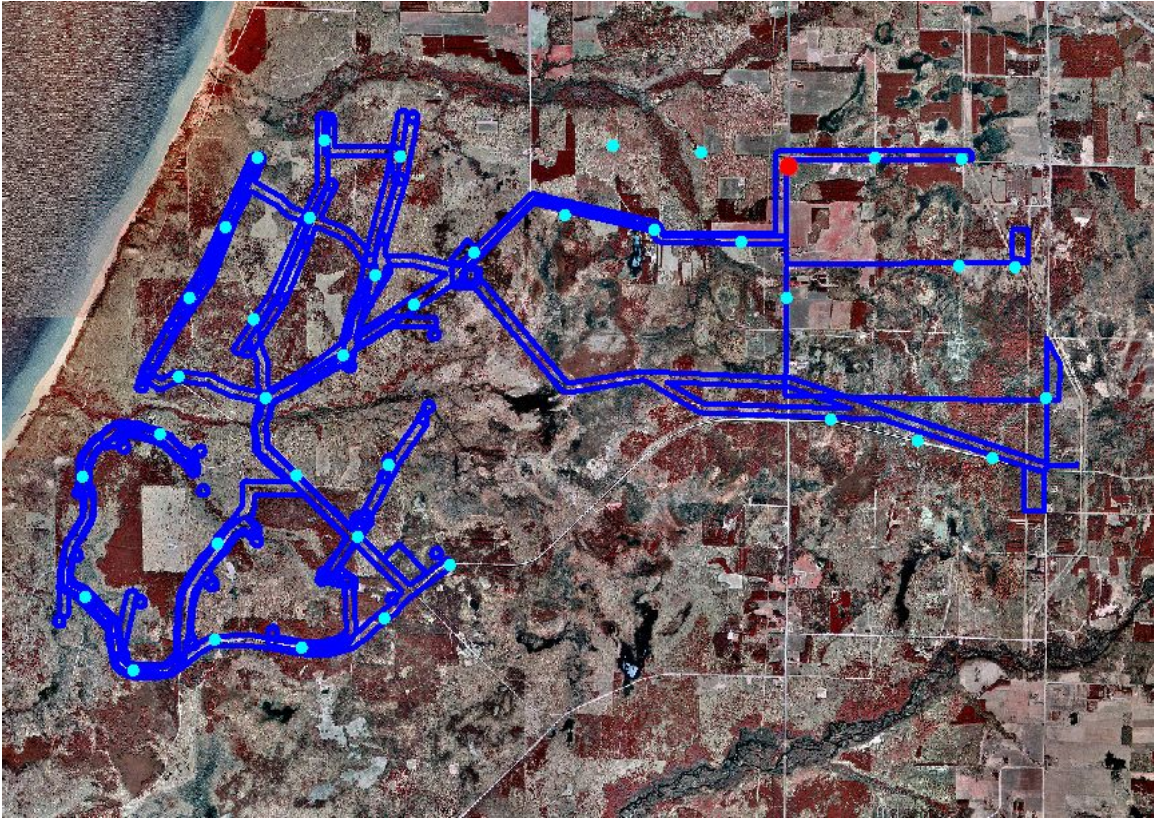


Figure 5. Survey points were established at 800-m intervals along the proposed development corridors for the Wind Pines Wind Resource Area, Michigan. These sites were surveyed from June to early July 2008. Common Nighthawk responses are shown in red (two individuals detected at this site).

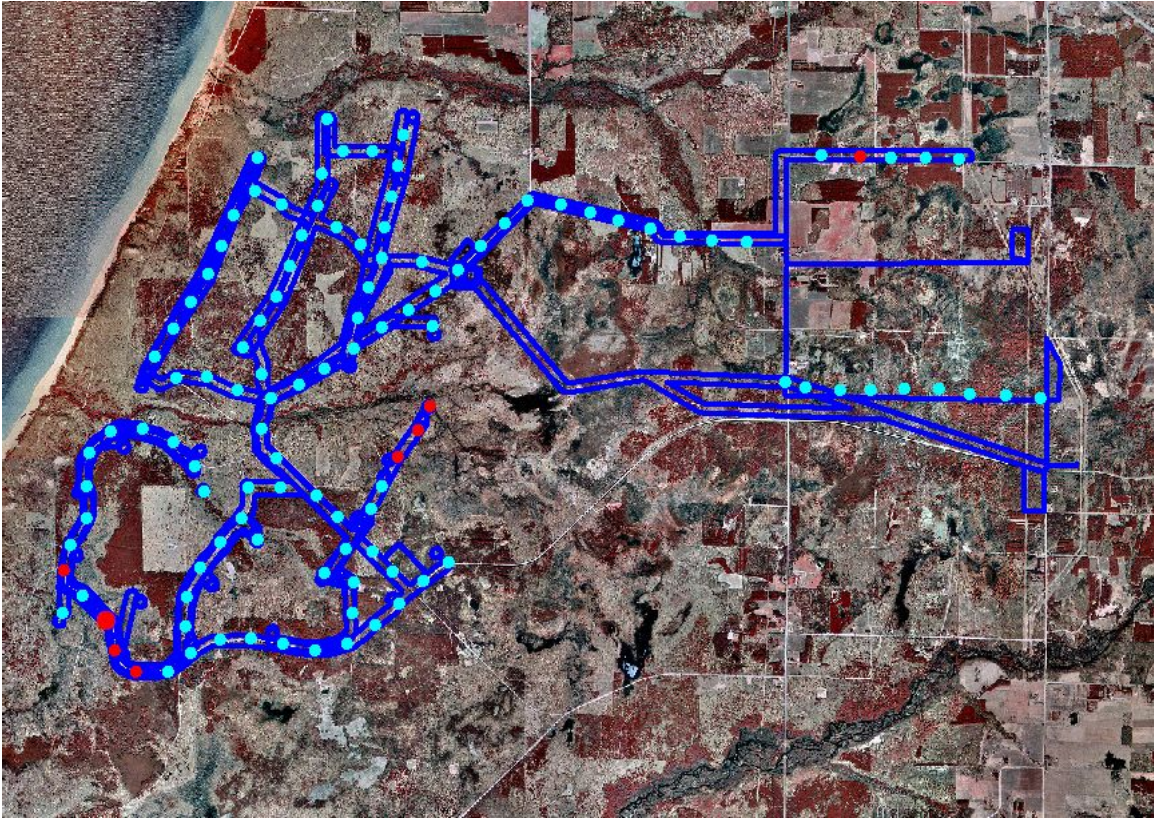


Figure 6. Survey points were established at 300-m intervals along the proposed development corridors for the Wind Pines Wind Resource Area, Michigan. These sites were surveyed two times between May and mid-July 2008. Red-shouldered Hawk responses during the first visit are shown in red with larger circles representing the detection of two individuals and smaller circles representing one individual.

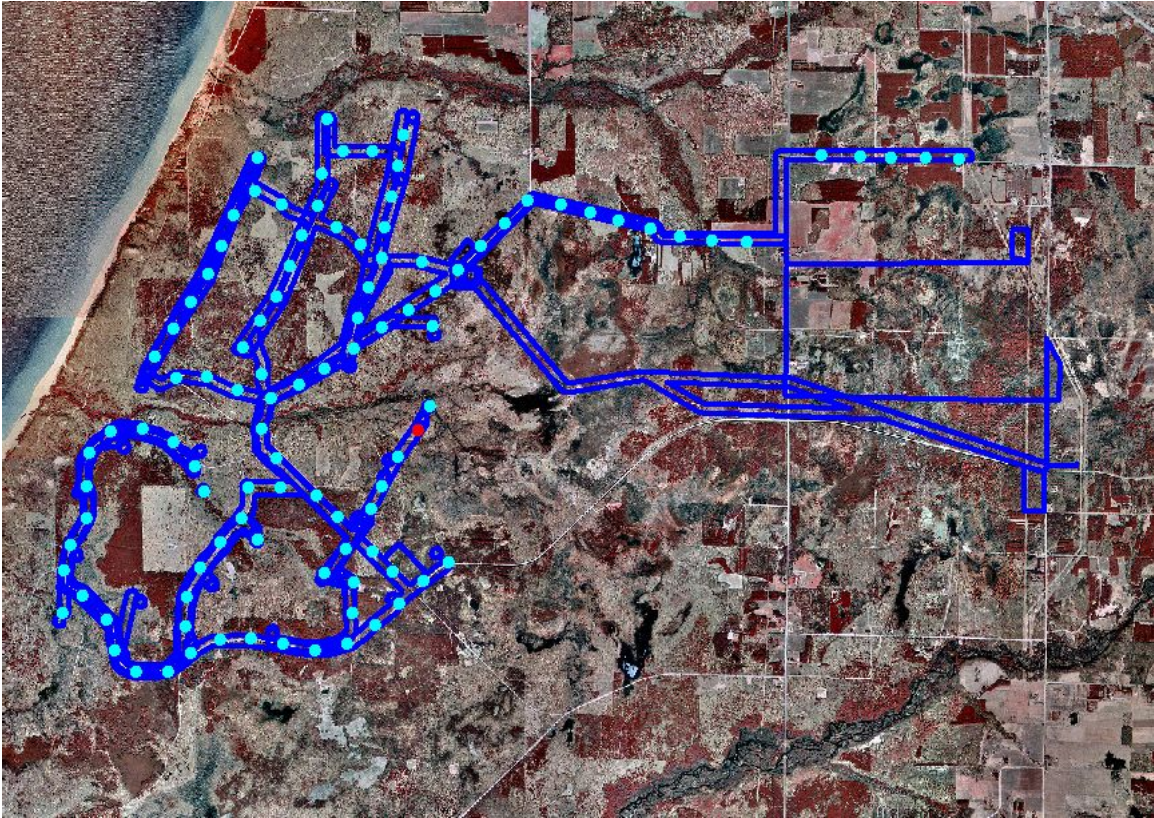


Figure 7. Survey points were established at 300-m intervals along the proposed development corridors for the Wind Pines Wind Resource Area, Michigan. These sites were surveyed two times between May and mid-July 2008. Red-shouldered Hawk responses during the second visit are shown in red (two individuals present).

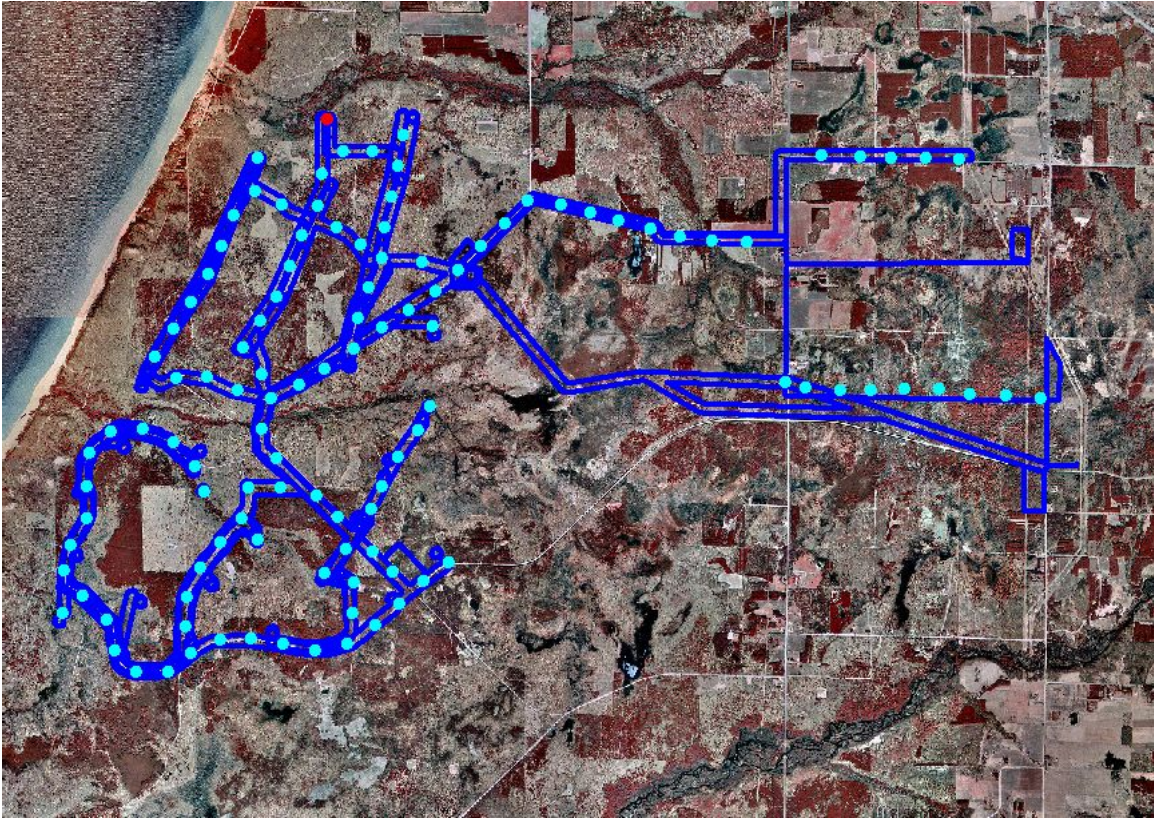


Figure 8. Survey points were established at 300-m intervals along the proposed development corridors for the Wind Pines Wind Resource Area, Michigan. These sites were surveyed two times between May and mid-July 2008. The one Northern Goshawk response is shown in red.

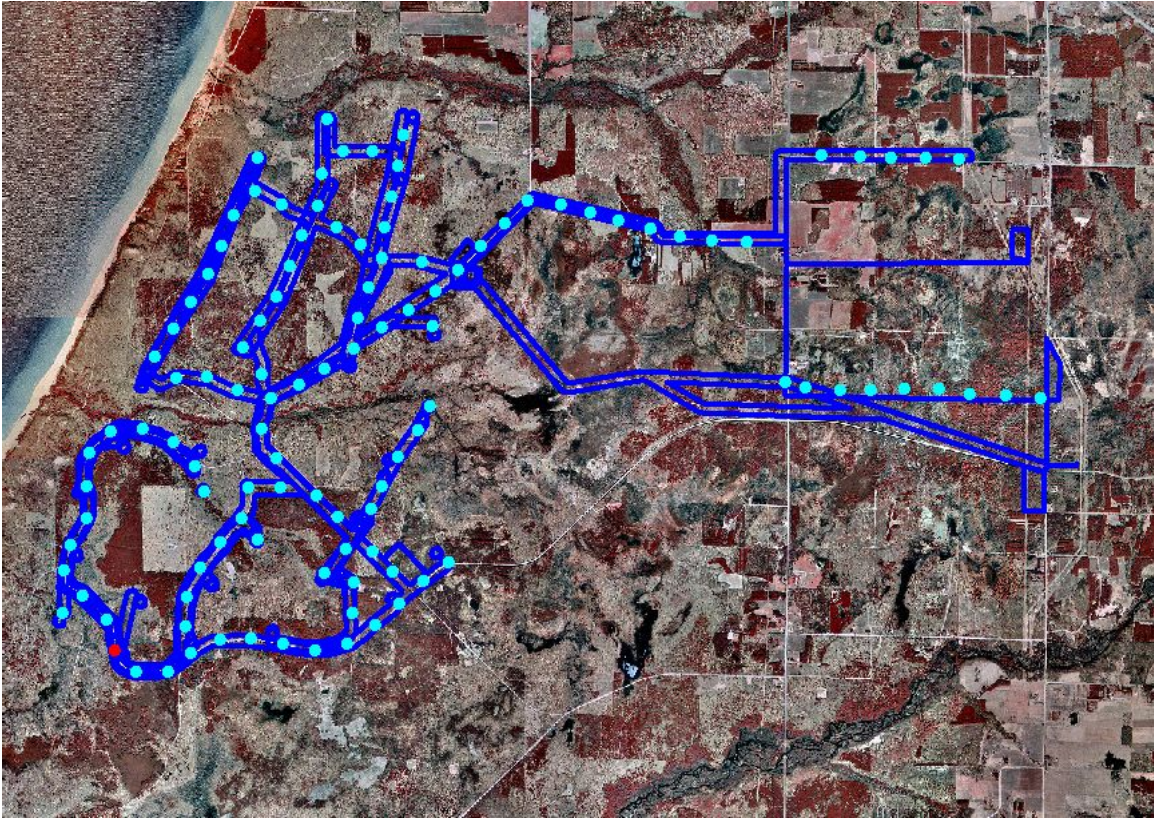


Figure 9. Survey points were established at 300-m intervals along the proposed development corridors for the Wind Pines Wind Resource Area, Michigan. These sites were surveyed two times between May and mid-July 2008. The one Red-tailed Hawk response is shown in red.

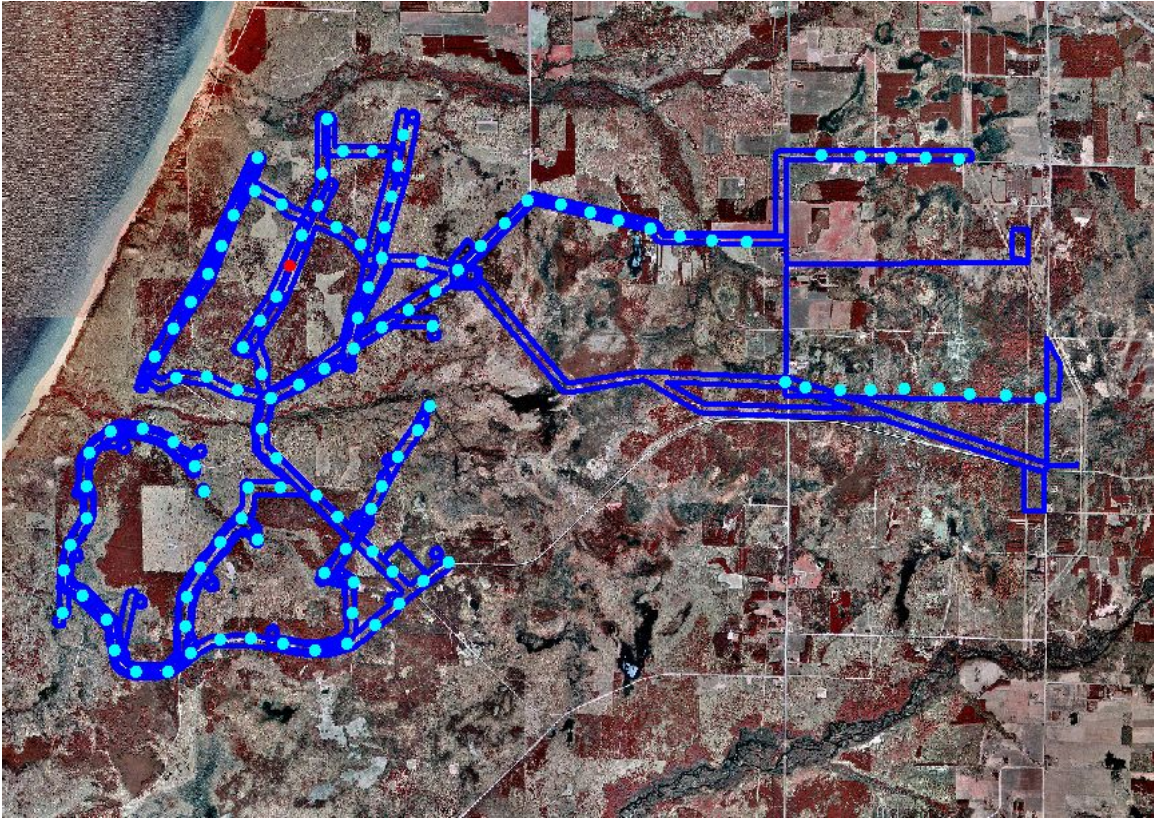


Figure 10. Survey points were established at 300-m intervals along the proposed development corridors for the Wind Pines Wind Resource Area, Michigan. These sites were surveyed two times between May and mid-July 2008. The one Cooper's Hawk response is shown in red.

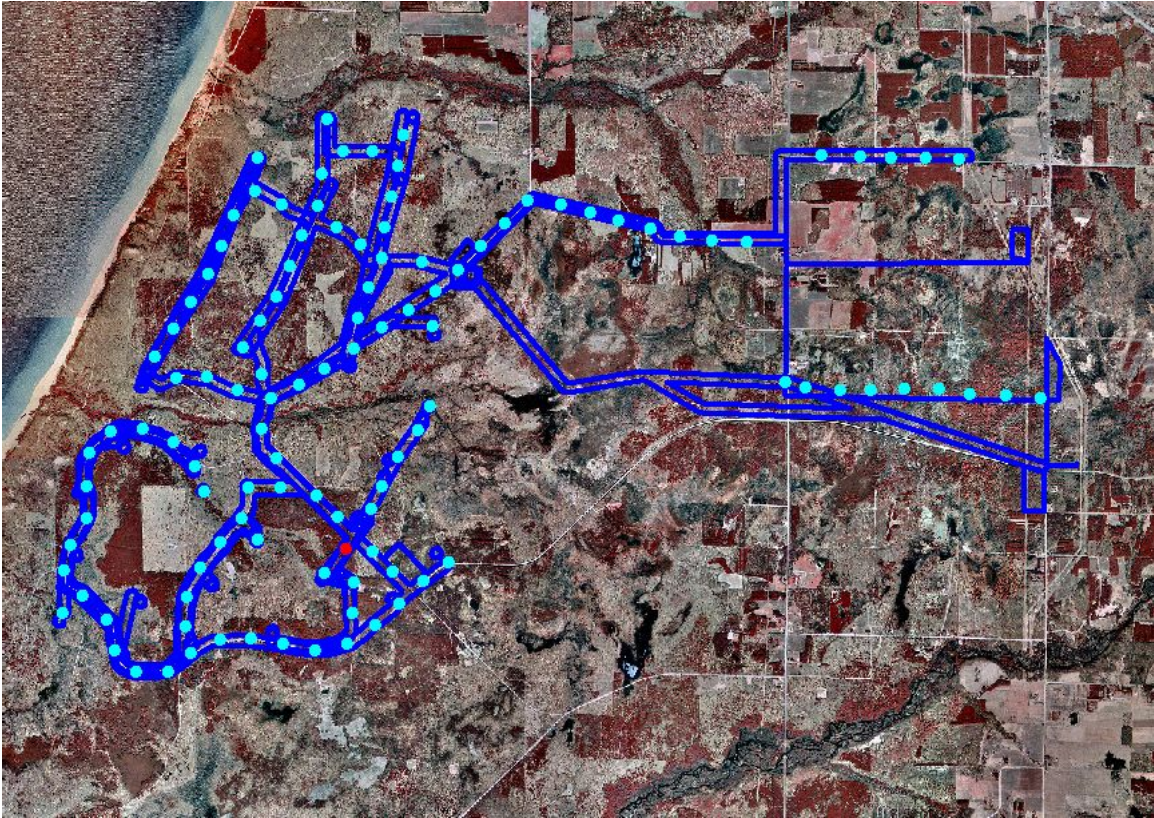


Figure 11. Survey points were established at 300-m intervals along the proposed development corridors for the Wind Pines Wind Resource Area, Michigan. These sites were surveyed two times between May and mid-July 2008. The one Sharp-shinned Hawk response is shown in red.