



# Illinois Department of Natural Resources

One Natural Resources Way Springfield, Illinois 62702-1271  
<http://dnr.state.il.us>

Pat Quinn, Governor  
Marc Miller, Director

February 9, 2011

Mr. Melvyn A. Skvarla  
University of Illinois at Urbana-Champaign  
Facilities & Services, Planning Division  
1501 South Oak Street, M/c 800  
Champaign, IL 61820-6905

RE: Wind Turbines–South Campus Installation, Urbana, Champaign County  
Endangered Species Consultation Program  
EcoCAT Review #1104787

Dear Mr. Skvarla:

Thank you for submitting this proposed action for consultation in accordance with the *Illinois Endangered Species Protection Act* (IESPA) [520 ILCS 10/11], the *Illinois Natural Areas Preservation Act* (INAPA) [525 ILCS 30/17], and Title 17 *Illinois Administrative Code* Part 1075. Because the University is a “state agency” for purposes of the *Interagency Wetland Policy Act of 1989* (IWPA) [20 ILCS 830], the project will also be reviewed under Title 17 *Illinois Administrative Code* Part 1090.

## **Wetland Review**

No wetlands identified through the National Wetlands Inventory (NWI) are present in the vicinity; therefore the wetland review has been terminated. However, smaller wetlands which may be jurisdictional under the IWPA might be present. Care should be taken to identify and avoid adverse impacts to any such jurisdictional wetlands.

## **Wildlife/Natural Areas Review**

Following are the biological opinions of the Department of Natural Resources pertaining to Natural Areas and those endangered or threatened species protected by the statutes identified above, which require the University’s consultation with the Department. The Attachment to this letter states the Department’s opinions and recommendations pertaining to those species covered by the *Fish and Aquatic Life Code* [515 ILCS 5] and the *Illinois Wildlife Code* [520 ILCS 5].

**Indiana Bat, *Myotis sodalis***. As demonstrated by fatalities of Indiana Bats at an Indiana wind farm (only 60 miles northwest of the project) in 2009 and 2010, this species is vulnerable to collision with utility-scale wind turbines. The project footprint contains no known hibernation sites (caves) for the Indiana Bat, a species listed as “endangered” by both the federal government

and the State of Illinois, and potential roosting habitat for the Indiana Bat is absent from the immediate vicinity of the project.

Summer colonies of the Indiana Bat were documented in Champaign County in July 2010 along the Middle Fork of the Vermillion River along the northern boundary of the county, 25 miles to the north. Other summer colony locations for this species are known from the Little Vermillion River, 33 miles to the east, while potential summer colony habitat exists along the Salt Fork between St. Joseph and Sidney, as little as six miles east of the project area.

Many Indiana Bats migrate significant distances, up to 300 miles, to their summer habitats. It is not known whether individual Indiana Bats consistently use the same summer colony areas and the same winter caves, or if they consistently follow specific migratory routes.

Indiana Bat summer colonies in Champaign and Vermilion Counties may contain bats which hibernate as far north as the Blackball Mine near LaSalle-Peru in Illinois, or in caves and mines in southern Indiana and southern Illinois. Data from telemetry experiments with this species suggest they do not migrate in a straight line, although the characteristics of weather and terrain which may influence movements are not well-understood.

Many standard sources on this species suggest they forage mainly within or above the forest canopy, especially along riparian corridors or near water bodies or migrate along riparian corridors. However, a number of recent studies in Illinois detected or captured this species in locations inconsistent with this perception, sometimes at significant distances from likely “essential habitat.” The two migratory fatalities in Indiana occurred at a large wind farm with no recognized bat habitat or large streams in the vicinity.

Based on existing information, it is the biological opinion of the Department the proposed action is unlikely to adversely affect any essential habitat for the Indiana Bat. However, the Department cannot state categorically that the probability of taking migratory Indiana Bats is zero. Please see the Attachment for additional important information about non-listed bats.

*Recommendation #1. The Department recommends the University should conduct at least one fall migratory season of post-construction acoustic and mortality monitoring to quantify the level of bat activity near the turbines and the numbers of bats taken during turbine operations, and to determine whether they include Indiana Bats. IDNR requests a complete copy of all reports within 60 days of survey completion.*

**Franklin’s Ground Squirrel, *Spermophilus franklinii*.** The State-listed Franklin’s Ground Squirrel has been documented from at least five locations in and near Champaign-Urbana within the last decade. The largest known extant population in the vicinity is centered in and near the **Barnhart Prairie Restoration Nature Preserve** (see below), located directly south of and adjacent to the project area, south of Old Church Road.

In 2002, this population numbered around 30 individuals; dispersal studies conducted by researchers associated with the Illinois Natural History Survey documented that some animals from this group, in a single season, migrated to and permanently occupied suitable habitat as

much as two miles away, *to the north*. This behavior creates a strong probability that any suitable habitat within the project area may be occupied by this species.

Long regarded as a species endemic to native tallgrass prairie, the Franklin's Ground Squirrel appears to actually be more of an "edge" specialist, requiring some level of periodic disturbance or ecosystem gradient to flourish. It prefers tall herbaceous vegetation, but can be found in the same areas as the Thirteen-Lined Ground Squirrel, which prefers much shorter plant growth. The Franklin's Ground Squirrel is now most often found in Illinois along active or abandoned railroads; the rights-of-way of roads and highways; windbreaks, shelter belts, and orchards; old fields; drainage ditch banks and grassed waterways; and areas recently disturbed by construction, especially vegetated soil stockpiles.

The proposed project area abuts the known population concentration, which is centered just south of the intersection of Philo Road and Old Church Road. In addition to the roadsides, a wind break extends northward along the west side of Philo Road, and an orchard-like area is located just north and west of the Philo/Old Church intersection. (Studies at Barnhart Prairie showed that burrows were most often located near a shrub.) Old Church Road intersects a drainage ditch running to the north along the west side of the project area. Each of these features appears to provide suitable habitat for the Franklin's Ground Squirrel.

Franklin's Ground Squirrels hibernate in solitary underground burrows for an extended period, from September through April. Soils must be well-drained, so that this species is often found hibernating in embankments and other slight elevations. Males emerge first, followed within two weeks by females. Mating occurs in May; young are born in early June, and by late July females drive their young away. Each Squirrel has a home territory of from one to two acres, but territories are not exclusive and often overlap in a loose extensive colony. The Squirrel gives an alarm call which rises from the audible into the ultra-sonic range above the limits of human hearing, earning it the nickname of "whistle-pig" in some parts of its range. It may be heard more often than seen.

The species is diurnal, being observed aboveground most often on bright sunny days in mid-morning and late afternoon; however, it is estimated to spend nearly 90% of its time underground. Populations are most often detected through the recovery of road-kills.

The Franklin's Ground Squirrel feeds on shoots of vegetation, but has a much higher proportion of animal protein in its diet (approaching nearly 50% in some cases) than other Illinois rodents. Animal prey consists of large insects; the immature young of smaller rodents, such as mice and voles; and bird eggs and unfledged young (the Squirrel will climb shrubs and trees to raid bird nests). The Squirrel is in turn preyed upon by snakes, badgers, foxes, coyotes, and hawks.

The Franklin's Ground Squirrel may be adversely affected by the construction and operation of wind turbines in a number of ways. The excavation of turbine foundations, the installation of underground power lines, and the grading and construction of access roads and lay-down yards may destroy burrows (with their occupants) and fragment habitats. The operation of wind turbines may harass this species through ground vibrations, shadow flicker, and ELF/UHF noise which might interfere with metabolic functions or intra-specific communications. The

construction and operation of wind turbines may alter the density and distribution of other species, including both potential prey and predators, with subsequent impacts to the Squirrel's own population densities.

At this time (mid-winter) it is impossible to positively identify and map the presence of burrows for this species on lands owned by the University where wind turbine installation is proposed. However, given the close proximity of a relatively large population, there is a high probability that portions of the project area which would be altered or impacted are occupied by the Franklin's Ground Squirrel. Furthermore, since these potential impacts to this species have not been studied, it is possible that some effects may extend into off-site areas known to be currently occupied by this species.

The Department is aware that some trapping studies were done, on nearby University lands formerly proposed to host wind turbines, which did not reveal the presence of the Franklin's Ground Squirrel. However, it remains unclear how exhaustive or thorough those efforts may have been, and whether those results can be used to evaluate the risks the current project may pose to individuals of this species.

It is the biological opinion of the Department the proposed action is likely to adversely affect the essential habitat of the Franklin's Ground Squirrel, and might result in the incidental taking of this species. In light of the project schedule, we offer the following recommendations.

*Recommendation #2. Delay project implementation until after the presence or distribution of Franklin's Ground Squirrels in the vicinity has been determined. If this is not possible, the University should consider whether to seek an Incidental Take Authorization for this species from the IDNR pursuant to Part 1080 of the Administrative Rules, to address the possibility that individuals of this species may be taken incidentally during construction of the project.*

*Recommendation #3. Plan a detailed survey of areas within one-quarter mile of each proposed wind turbine to determine the presence and/or density of Franklin's Ground Squirrels in the vicinity of project operations. [Surveying for burrows may be facilitated by mowing or otherwise removing vegetative cover without disturbing the soil surface (i.e. burning) where it can be easily accomplished.] Surveys should include trapping efforts (May 15 to early June) extensive enough to provide reliable population estimates. All such surveying for a listed species requires a permit from IDNR pursuant to Part 1070 of the Administrative Rules. Surveying within a dedicated Nature Preserve requires additional permits from the Illinois Nature Preserves Commission and the Preserve Owner; surveying on private property will require the permission of the owners.*

*Recommendation #4. Plan project operations to avoid or minimize alteration of suitable habitat for the Franklin's Ground Squirrel.*

*Recommendation #5. Plan post-construction studies to determine (a) whether construction operations have resulted in changes to the density/distribution of the Franklin's Ground Squirrel in the vicinity, and (b) whether operation of the turbine(s) has altered or impacted the behavior*

*of the Franklin's Ground Squirrels in the vicinity. Flicker and noise are two vectors of impact which should be considered for study.*

*Recommendation #6. Plan actions to mitigate adverse impacts to habitat, or to enhance existing habitat, to promote conservation and recovery of the Franklin's Ground Squirrel.*

**Upland Sandpiper, *Bartramia longicauda*.** This State-listed threatened grassland bird prefers habitat of short-grass prairie/pasture. For many years this ground-nesting species was thought to be area sensitive, requiring ten acres or more of grassland habitat for successful breeding. However, many recent breeding efforts are occurring in grassed waterways of row-crop fields, in no-till corn stubble, and from along roadsides. Champaign County breeding records are associated with University Farms and the Champaign-Urbana Airport.

The Upland Sandpiper engages in an aerial courtship display which passes through the rotor-swept elevations of utility-scale wind turbines, placing it at risk of collision mortality. Whether this species will be sensitive to the proximity of vertical structures, or to shadow "flicker" on potential nesting areas, has not been demonstrated. Anecdotal reports have been received that this species continues to nest in the vicinity of wind turbines, but the Department remains unaware of any useful studies targeting the effects of wind turbines on this species.

Given the age of past records in the area, it is the biological opinion of the Department the proposed action is unlikely to adversely affect the essential habitat of the Upland Sandpiper.

**Northern Harrier, *Circus cyaneus*.** The State-listed endangered Northern Harrier is a ground-nesting grassland hawk. It has been documented as recently as 2004 as nesting in Champaign County north of Rantoul, and in Vermilion County east of Royal. Also a frequently-observed migrant, the species has a statewide range. While many sources indicate the species needs large open areas of habitat, Illinois studies have demonstrated this hawk can use relatively small patches of habitat for successful breeding, especially in the vicinity of larger habitats. Breeding is often associated with wetlands such as marshes, sedge meadows, and wet prairies.

While most hunting activities occur at fairly low altitudes, below typical rotor-swept elevations, hunting can expose this bird to collision risk. Like the Upland Sandpiper, this species engages in an aerial courtship display which places it at risk of collision with wind turbines. Wind turbine construction and operation may alter concentrations of prey species. This hawk relies heavily on its acute hearing to locate prey, and turbines might adversely affect their ability to hunt near them, reducing available food resources.

It is the biological opinion of the Department the proposed action is unlikely to adversely affect the essential habitat of the Northern Harrier.

**Barn Owl, *Tyto alba*.** This endangered raptor nests in larger tree cavities and in barns or abandoned buildings, sometimes within city limits. A breeding record exists for Champaign County, about four miles northwest of Rantoul. This owl hunts both open woodlands and grasslands; its preferred prey consists of small rodents such as mice and voles. The main risk posed by wind power facilities to this species is the removal of suitable nesting trees and

abandoned buildings to facilitate transportation of wind turbine components or to maximize wind energy conversion.

It is the biological opinion of the Department the proposed action is unlikely to adversely affect the essential habitat of the Barn Owl.

**Loggerhead Shrike, *Lanius ludovicianus*.** The threatened Loggerhead Shrike is adapted to the savanna conditions of interspersed grasslands, shrubs, and trees. This species has been adversely affected by the decline in animal husbandry and the abandonment of the "shelter-belt" fence-row conservation practice, which has severely reduced both breeding and foraging habitat. The Shrike, also known as the "butcher bird," needs thorny trees and shrubs, even barbed wire, on which to impale its prey, which may be left for several days before being eaten. Areas which support large insects and small rodents, major food items, are also necessary. Due to losses of suitable habitat, Loggerhead Shrikes may attempt reproduction in trees near human habitations and in other areas where they would normally not be expected. The Shrike has been reported as breeding in southern Champaign County, north of Villa Grove.

The primary consideration for wind energy facilities is the potential for further loss of remaining habitat, if fence-rows are cleared to avoid wind turbulence or to improve turbine exposure, or if road-side trees are cleared to create turning radii for turbine carriers or to establish power lines. A pre-construction survey to identify the presence of Shrike nests should be conducted for areas with suitable habitat if work is proposed during the breeding season in order to avoid direct mortality. "Resident" foraging birds are not thought to be at significant risk from operating wind turbines, but potential risk associated with migrants should be considered.

It is the biological opinion of the Department the proposed action is unlikely to adversely affect the essential habitat of the Loggerhead Shrike.

**Barnhart Prairie Restoration Nature Preserve and INAI Site.** This INAI Site consists of 100 acres of restored native grassland prairie, eighty acres of which were dedicated in 2005 as an Illinois Nature Preserve. Occupying most of the northwest quarter of Section 4, the INAI site lies only 500 feet south of the southernmost proposed wind turbine, although the closest portion of the Nature Preserve is about 1000 feet south. The site is also noteworthy because of its contributions to the understanding of the ecology of the State-listed threatened **Franklin's Ground Squirrel**.

At this distance, the southernmost wind turbine will be visible from all points within the Nature Preserve, and may be audible from most points within it under favorable conditions (though noise will not exceed Illinois Pollution Control Board standards). However, visitors may still choose viewing locations and select an orientation which will omit the sight of the turbine(s), if not the sound. And under most conditions windy enough to promote turbine operation, the noise of wind in the vegetation of the Preserve is likely to effectively mask turbine noises, at least to human ears.

A very small portion of the Nature Preserve at its northwest corner will sustain around 30 hours per year of flicker shadows from the southernmost turbine, which will occur for less than hour in

the early mornings for about a month on either side of the summer solstice. The Department regards flicker as an adverse modification of existing environmental conditions within INAI Sites (because it may alter animal behaviors essential to their ecological maintenance), but this is an unacceptable modification of the environment inside a Nature Preserve or a Land & Water Reserve.

Relocating the southern turbine a short distance to the north or west would alleviate this condition with only minor loss to turbine elevation (and power). But a turbine can also be managed to avoid flicker at those times when atmospheric conditions would produce it. Authorized scientific research might constitute the only condition under which such an impact would be permissible.

At 1,000 feet and more, vibration and noise impacts to wildlife within the Nature Preserve are less likely, but not impossible. While the Franklin's Ground Squirrel is the only known endangered or threatened species to be present within the Nature Preserve, all wildlife within a Nature Preserve is protected to an equal degree, so any alteration of behavior reasonably related to the proximity of the wind turbine(s) would be problematic.

*Recommendation #7. Relocate the southernmost turbine a sufficient distance north or west so shadow flicker models illustrate Barnhart Prairie Nature Preserve will not be subject to shadow flicker.*

*Recommendation #8. If the turbine is constructed where proposed, program the operating system to park the turbine during those periods when shadow flicker is predicted to occur within the Nature Preserve.*

*Recommendation #9. Propose scientific research projects regarding the effects of shadow flicker, noise, and visibility on wildlife within the Nature Preserve. Research in a Nature Preserve must be duly authorized by the Illinois Nature Preserves Commission and the owner of the Preserve.*

### **Brownfield Woods INAI Site**

The University of Illinois acquired this 60-acre forest tract northeast of Urbana in 1939; it is closed to the public and used for scientific research. It is rated as a Category I natural community for its upland mesic forest. The Site is significant biologically, among other reasons, as a stop-over point for migratory birds. At a distance of five miles, turbines associated with the project may be visible from the forest edges, but are likely to be screened by intervening urban development.

It is the biological opinion of the Department the Brownfield Woods INAI Site is unlikely to be adversely modified by the proposed action.

## **Trelease Woods INAI Site**

This forested 60-acre site, northeast of Urbana but a mile southeast of Brownfield Woods, has been owned by the University of Illinois since 1917 and serves as an area for scientific research. Once known as University Woods, it is rated as a Category I natural community for its upland mesic forest. Formerly, the Site supported a heron rookery but, perhaps due in part to a major chemical spill and fish kill along the entire length of the nearby Saline Branch Ditch in 2003 which degraded the food supply, it appears the rookery was last used in 2004, when only two nests were present, and it has been abandoned since then. The Site doubtless retains significant biological importance as a stop-over point for migratory birds

At a distance of six miles over open terrain, turbines associated with the project will be clearly visible from the southern forest verge, but are unlikely to be obtrusive to viewers, even there. No turbines will be seen from the interior of the site, and the location lies far beyond the reach of other potential impacts.

It is the biological opinion of the Department the Trelease Woods INAI Site is unlikely to be adversely modified by the proposed action.

**Please review the Attachment for additional important information.** Consultation on the part of the Department is terminated, unless the University desires additional information or advice related to this proposal. In accordance with 17 Ill. Adm. Code 1075.40(h), the University must notify the Department of its decisions regarding these recommendations, whether it will:

- Allow the action to proceed as originally proposed;
- Require the action to be modified per Department recommendations (please specify which measures if not all will be required); or
- Forgo the action.

This consultation is valid for two years unless new information becomes available which was not previously considered; the proposed action is modified; or additional species, essential habitat, or Natural Areas are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary.

The natural resource review reflects the information existing in the Illinois Natural Heritage Database at the time of the project submittal, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, the applicant must comply with the applicable statutes and regulations. Also, note that termination does not imply IDNR's authorization or endorsement of the proposed action.

Please contact me if you have questions regarding this review.

Sincerely,

A handwritten signature in black ink that reads "Keith M. Shank". The signature is written in a cursive style with a large, stylized 'K' and 'S'.

Keith M. Shank  
Impact Assessment Section  
Division of Ecosystems and Environment  
[keith.shank@illinois.gov](mailto:keith.shank@illinois.gov)  
(217) 785-5500

cc: Jenny Skufca, Illinois Nature Preserves Commission

## ATTACHMENT

### University Wind Turbines Champaign County

Pursuant to the Department's authority to conserve and to protect the fauna and flora of Illinois, the following information is provided about possible impacts to non-listed species and important conservation resources that are or may be found in the area. In certain instances it also provides recommendations for the consideration of the University.

**Avian Wildlife.** The construction of large-scale wind turbines has implications for a broad range of wildlife; it may result in increased mortality, fragmentation of essential habitats, and displacement of important life-cycle activities, such as feeding and nesting. To assess the effects of such facilities, it is imperative to establish a base-line of wildlife presence and activity within and near the proposed facility to which later conditions may be compared in order to discern how they may have been affected by the wind energy facility or other human modifications of the area.

*Recommendation #A1. The Department recommends pre- and post-construction assessments of avian usage within the project area. Consideration of all seasons should be included, but particularly migratory seasons. Such studies should include mapping of habitats within and adjacent to the project footprint, and consideration should be given to periodic repetition of such studies during the life of the project to detect/monitor significant shifts in wildlife usage.*

*Recommendation #A2. The Department recommends at least a single year's worth of post-construction avian mortality studies to document the numbers and species of birds killed and injured, by season. IDNR requests a complete copy of all reports within 60 days of survey completion.*

**Bats.** Although the Indiana Bat is currently the only federally-listed or state-listed bat believed to occur in or near Champaign County, other bat species are present in the area. IDNR considers the cumulative risk to species, and the high bat mortality that can be found at some wind farms, coupled with the westward movement of White-Nose Syndrome, suggests increasing threats to bat species in Illinois.

In anticipation of the arrival of White Nose Syndrome (WNS), Wisconsin recently listed four additional species of bats, all of which are present in Champaign County. Illinois is awaiting the results of investigations of winter hibernaculae in early 2011 before considering what measures may be appropriate in response to WNS. The four species newly listed by Wisconsin are: **Northern Long-Eared Bat** (*Myotis septentrionalis*), **Little Brown Bat** (*Myotis lucifugus*), **Big Brown Bat** (*Eptesicus fuscus*), and the **Tricolor Bat** (*Perimyotis subflavus*), formerly known as the **Eastern Pipistrelle**.

*Recommendation #A3. The Department recommends the University perform at least one fall migration season (July-October) of acoustic bat monitoring to assess the level of bat activity within and through the project footprint. The Department recommends consideration of a requirement to periodically repeat, perhaps on a five-year cycle, monitoring activities in order to*

*detect significant shifts in bat species or abundance. The use of full-spectrum acoustic equipment offers an improved opportunity to identify the species of bats present without also conducting mist-net sampling. If acoustic monitoring indicates a high level of bat activity, further assessment is appropriate, including mist-net studies and telemetry studies to confirm species identification and roosting locations. At a minimum, high levels of pre-construction bat activity should prompt post-construction mortality studies. IDNR requests a complete copy of all reports within 60 days of survey completion.*

*Recommendation #A4. Operational curtailment is one method demonstrated to consistently and significantly reduce bat mortality at wind energy facilities with minimal losses in power production. Curtailment consists of adjusting the operational “cut-in” wind speed at which wind turbines initiate rotation. If bat activity in the area is high, the University may wish to consider implementing a curtailment policy to minimize bat mortality.*