Tier 2 and Tier 3 Wildlife, Bird, and Bat Study Summary

Heritage Prairie Wind Project

Livingston County, Illinois

Prepared for:

Illinois Generation LLC

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INTRODUCTION

Illinois Generation LLC is considering the development of the Heritage Prairie Wind Project (Project) in Livingston and Kankakee Counties, in Illinois. The Project is located near multiple operating wind farms (Figure 1). This report was prepared as part of the Livingston County permitting process, and only covers the Livingston County portion of the Project. Illinois Generation LLC contracted Western EcoSystems Technology, Inc. (WEST) to assist in creating a biological resources report to summarize the findings of Tier 2 and Tier 3 studies completed at the Project in Livingston County from 2019–2022 (Table 1). WEST followed recommendations of the 2012 US Fish and Wildlife Service (USFWS) *Land-based Wind Energy guidelines*, the 2013 USFWS *Eagle Conservation Plan Guidance*, *Range-wide Indiana Bat & Northern Long-eared Bat Summer Survey Guidelines* (Guidelines; 2022b), and Illinois Department of Natural Resources (IDNR) recommendations through the Ecological Compliance Assessment Tool (EcoCAT) for all biological surveys and desktop assessments.

METHODS

Biological portions of the 2021 site characterization study (SCS) were evaluated through a desktop review of existing information for the Project and Livingston County and biological resources from publicly available datasets. Available data were reviewed to evaluate the potential for sensitive species and/or habitat to occur in the Project, based on species ranges, distributions, and habitat associations. Data sources included the following:

1. Information about the presence of sensitive species and/or habitat in the Project and 2.0-mile (mi; 3.2-kilometer [km]) buffer according to the USFWS Information for Planning and Consultation (IPaC) Resource List (Appendix A) and IDNR EcoCAT (Appendix A).
2. Habitat Mapping Summary.
3. Post-construction monitoring data from other wind-energy facilities in Illinois and the Midwest.
4. State- or federally protected lands from the US Geological Survey (USGS) Protected Area of the US Database (USGS Gap Analysis Program 2020) and The Nature Conservancy (2021).
5. Records of observations for avian species of concern from the eBird database.
6. The National Audubon Society (Audubon) Important Bird Areas (IBAs; 2023).
7. USFWS Birds of Conservation Concern (BCC; USFWS 2021).
8. USGS Breeding Bird Survey (BBS) route data (USGS 2018b).
9. Bat distribution and locations of maternity roosts and hibernacula from the USFWS, IDNR, and Bats of Illinois (Feldhamer et al. 2015).
10. The Illinois Breeding Bird Atlas (Kleen et al. 2004).
11. Pre-construction surveys completed for the proposed Project.
12. Heritage Prairie Bat Conservation Plan.
13. Published literature regarding wind energy impacts to wildlife.

Tier 2 and Tier 3 studies were completed in Livingston County for the Heritage Prairie Wind Project from 2020–22. The SCS took place in January 2021. WEST completed initial bat activity studies in 2020, and acoustic presence/probable absence bat surveys were completed in 2022. WEST biologists completed raptor nest surveys aerially within the Project boundary and its 10-mi (16-km) buffer in 2020, and ground-based raptor nest surveys in 2021. Year 1 avian use surveys took place in Livingston County from 2019–20, and Year 2 avian use surveys were completed from 2020–2021 (Table 1).

Table 1. Tier 2 and Tier 3 studies completed in Livingston County for the Heritage Prairie Wind Project boundary from 2020–2022.

Study Completed	Tier	Year Completed
Site Characterization Study	2	2021
Bat Activity Acoustic Studies	3	2020
Bat Presence/Probable Absence Acoustic Surveys	3	2022
Year 1 Raptor Nest Surveys	3	2020
Year 2 Raptor Nest Surveys	3	2021
Year 1 Avian Use Surveys	3	2019–20
Year 2 Avian Use Surveys	3	2020–21

PROJECT AREA

Land Cover

The Project is located in northeastern Illinois and encompasses 32,356.8 acres (ac; 13,094.3 hectares [ha]; Table 2, Figure 2). According to the National Land Cover Database (NLCD; 2019), the majority (99.6%) of the Project is comprised of cultivated cropland (95.2%) and developed areas (4.4%). Woody wetlands composed 0.2% of the Project and all other land cover types accounted for 0.1% or less of the Project, individually (NLCD 2019; Table 2, Figure 2).

Table 2. Land cover types, coverage (acres), and percent (%) for the Heritage Prairie Wind Project boundary.

Land Cover Types	Coverage (Acres)	% Composition
Cultivated Crops	30,787.6	95.2
Developed	1,424.4	4.4
Woody Wetlands	50.9	0.2
Mixed Forest	26.2	0.1
Deciduous Forest	23.6	0.1
Hay/Pasture	15.0	<0.1
Open Water	10.2	<0.1
Herbaceous	8.9	<0.1
Emergent Herbaceous Wetland	6.0	<0.1
Barren Land	3.6	<0.1
Evergreen Forest	0.4	<0.1
Total	**32,356.8**	**100**

Source: National Land Cover Database 2019.

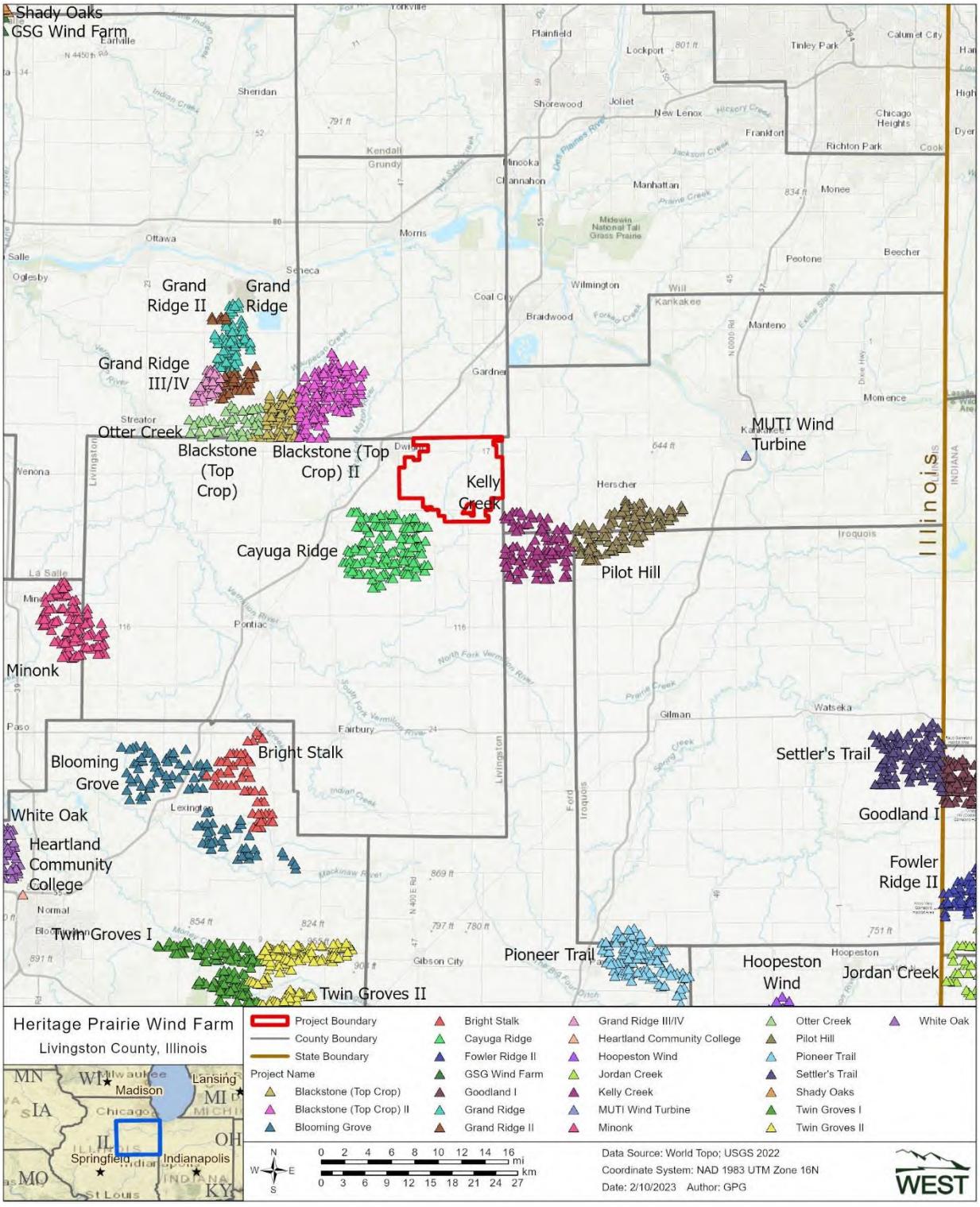

Figure 1. Location of the Heritage Prairie Wind Project in relation to adjacent operating wind farms.

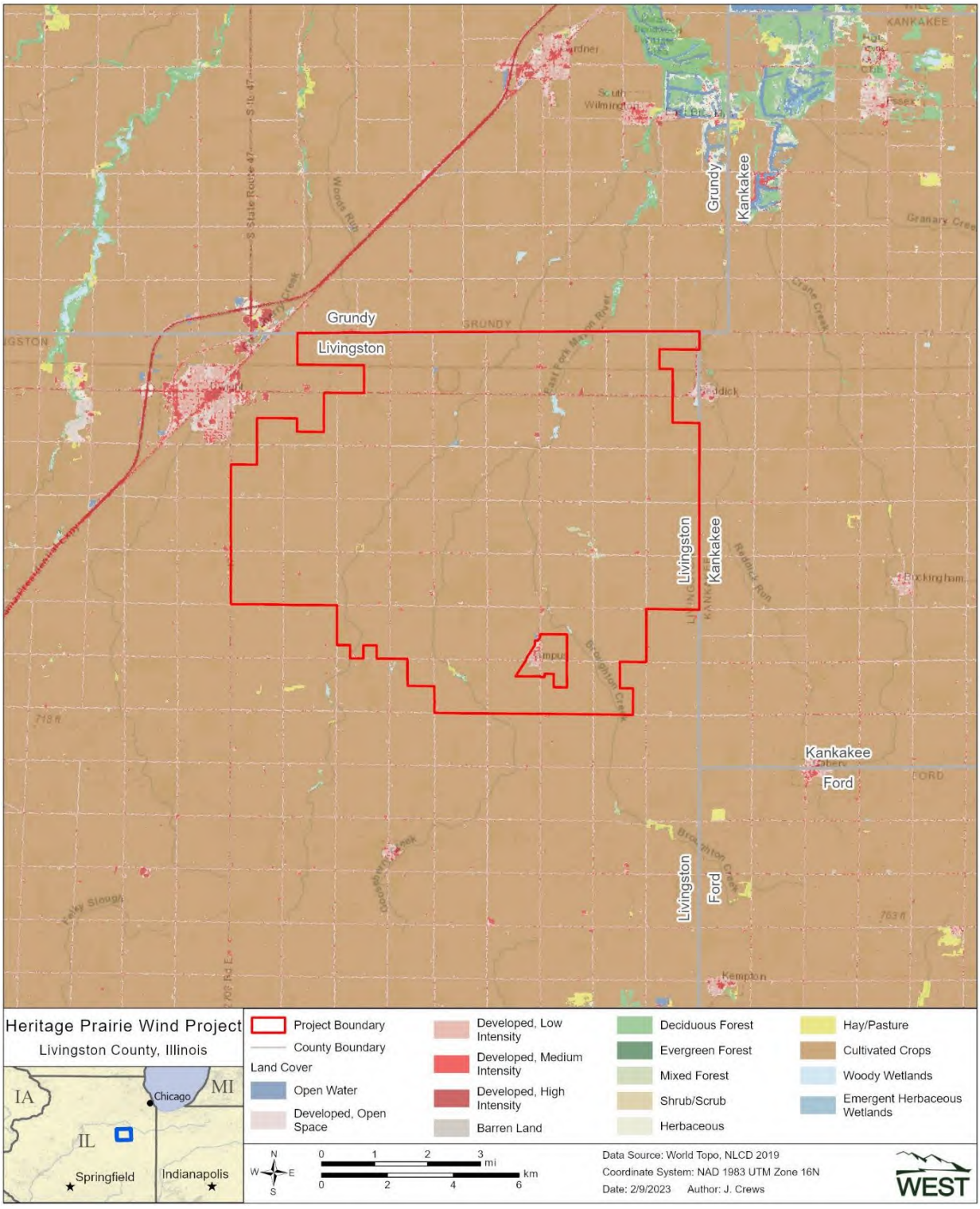

Figure 2. Land cover types for the Heritage Prairie Wind Project.

Protected and High-quality Natural Areas

No IDNR nature preserves or Illinois Natural Area Inventory (INAI) areas occur within the Project (Figure 3; Appendix A). The EcoCAT report identified the Goodrich Railroad Prairie site as an area designated as an INAI site. The Goodrich Railroad Prairie is located 11.05 mi (17.78 km) from the current Project boundary, and beyond the 0.25 mi (0.40 km) setback recommended by the IDNR (Table 3). There are no lands protected by The Nature Conservancy in Livingston County (Mcalexander and Malone 2021). The Mazonia-Braidwood State Fish and Wildlife Area is the closest state-protected land but is located 3.97 mi (6.39 km) north of the Project (Table 3, Figure 3).

IDNR has recommended a 1,000-foot (ft; 305-meter [m]) setback from any forested area five ac (two ha) or larger or forested riparian zones, and a 300-ft (91-m) setback from any perennial streams with a non-forested riparian zone. Current setback recommendations include Broughton Creek and the East Fork Mazon River (Figure 4). Setback recommendations are in place to reduce impacts in areas that have a greater likelihood of harboring greater levels of wildlife diversity within the Project, and turbines were sited by Illinois Generation LLC outside of the setback buffers (Figure 4).

Table 1. Protected and high-quality natural areas identified near the Heritage Prairie Wind Project.

Protected Area	Type	Size (Acres)	Distance from Boundary (Miles)
Mazonia-Braidwood State Fish and Wildlife Area	State land	1,017	3.97
Goodrich Railroad Prairie	INAI	1	11.05

INAI = Illinois Natural Area Inventory

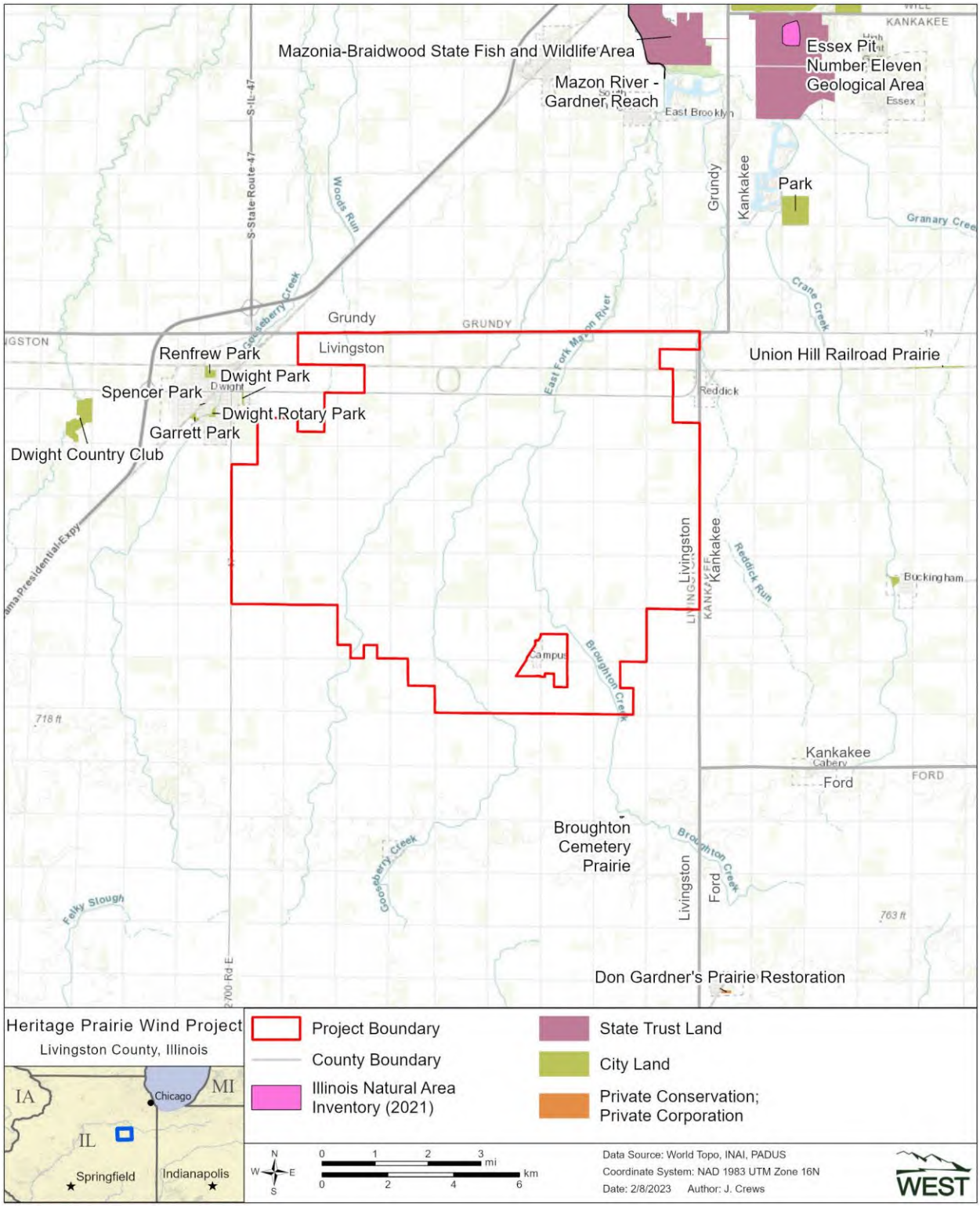

Figure 3. Protected and high-quality natural areas within and near the Heritage Prairie Wind Project.

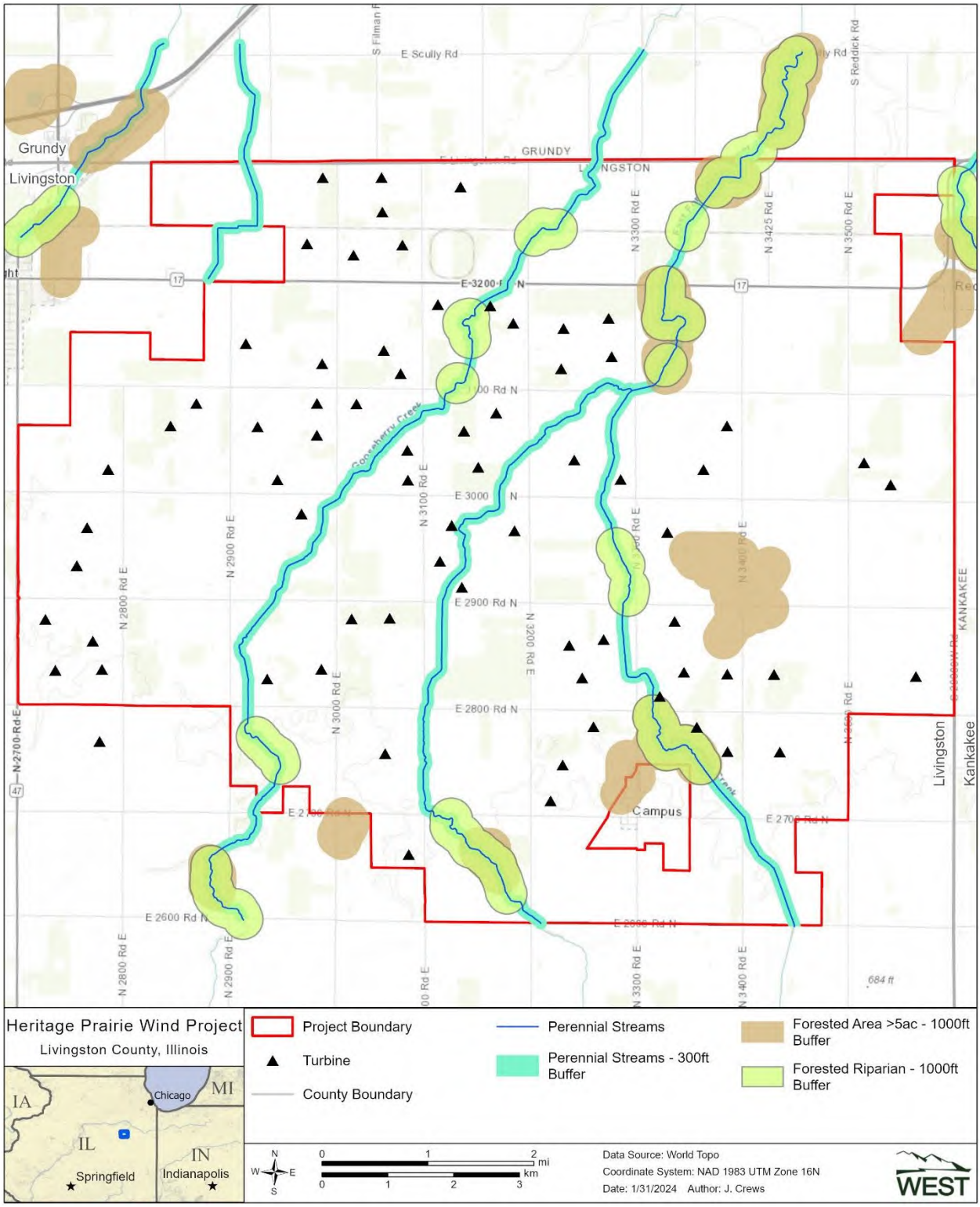

Figure 4. Stream and forested ripiarian area setbacks for the Heritage Prairie Wind Project.

WILDLIFE AND PLANTS

Federally and State-listed Species

The IPaC planning tool was used to verify if any federally listed plant and animal species (Endangered Species Act [ESA] 1973) could occur within the Project boundary in Livingston County. The IPaC requested on February 3, 2023, included four species federally listed as endangered, threatened, or candidate with the potential to occur within the Project boundary in Livingston County; including the Indiana bat (INBA; *Myotis sodalis*), northern long-eared bat (NLEB; *M. septentrionalis*), monarch butterfly (*Danaus plexippus*), and eastern prairie fringed orchid (*Platanthera leucophaea*; Table 4; Appendix A). According to the IPaC, there were no critical habitats for any federally listed or candidate species with the potential to be located within the Project (Appendix A). Additionally, the USFWS is currently reviewing the status of the tricolored bat (*Perimyotis subflavus*) and little brown bat (*M. lucifugus*; USFWS 2022a). Neither species is currently listed under the ESA (Table 4). No INBA or NLEB calls were recorded during bat studies at the Project, and few calls were recorded from tricolored bat (n=1) and little brown bat (n=7; McAlexander and Sirajuddin 2023). No federally listed species were observed during the site visit in January 2021, or during any Tier 3 studies completed at the Project.

According to the EcoCAT, there were no known records of occurrence of state-listed species within the Project. However, the EcoCAT noted the potential for rattlesnake master borer moth (*Papaipema eryngii*), a state-listed threatened insect, to occur in areas where rattlesnake master (*Eryngium yuccifolium*) is present (Appendix A). This species primarily occurs in native prairie remnants along highways in Illinois; no native prairie remnants are known to occur in the Project, therefore, this species is unlikely to occur. Two state-listed endangered bird species were observed during two years (408 survey hours) of avian use surveys at the Project, including short-eared owl (*Asio flammeus*; n=4) and northern harrier (*Circus hudsonius*; n=24; McAlexander 2021, McAlexander and Kobler 2022).

Birds

Eagles

Bald (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) are species protected under the Bald and Golden Eagle Protection Act (1940). Bald eagles typically nest in forested areas adjacent to large bodies of fish-bearing rivers, lakes, and reservoirs. There are no large rivers or lakes within the Project, and forested riparian habitat along the perennial streams in the Project is very limited. The nearest areas containing greater amounts of highly suitable nest habitat are approximately four mi (six km) from the Project along the Kankakee River, its tributaries, and the Mazonia-Braidwood State Fish and Wildlife Area north of the Project.

Only 11 bald eagle observations were recorded over two years of avian use surveys. Thirty-one bald eagle exposure minutes were recorded over 408 hours of avian use surveys. Bald eagles were recorded during fall, winter, and spring; however, use was relatively low in each season.

Table 4. Federally and state-listed threatened and endangered species with records of occurrence or the potential to occur in the Heritage Prairie Wind Project.

Common Name	Status	Habitat	Potential to Occur in the Project
Mammals			
Indiana bat *Myotis sodalis*	FE, SE	Hibernates in caves and mines during winter. Summer habitat includes a variety of forested/wooded areas and may include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of fields and pastures. Roosts and forages in small stream corridors with well-developed riparian woods, upland forests (USFWS 2022b).	No known occurrences have been documented in the Project and 2.0-mile (mi; 3.2 kilometer [km]) buffer. Suitable summer habitat is limited; only 0.2% of the Project is forested (Table 1), no Indiana bats were recorded during surveys at the Project. Indiana bat may occur during spring and fall migration periods.
northern long-eared bat *Myotis septentrionalis*	FE, SE	Likely hibernates in caves and mines during winter. Summer habitat includes a variety of forested/wooded areas and may include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of fields and pastures. Roosts and forages in small stream corridors with well-developed riparian woods, upland forests. May also roost in old buildings, barns, bridges (USFWS 2022b).	No known occurrences have been documented in the Project and 2.0-mi buffer. Nearest record of occurrence is 4.0 mi (6.4 km) from the Project (Appendix A). Suitable summer habitat is limited; only 0.2% of the Project is forested (Table 1), and no northern long-eared bats were recorded during surveys at the Project. Northern long-eared bat may occur during spring and fall migration periods.
little brown bat *Myotis lucifugus*	FC, Under Review	Regional migrants forming nursery colonies in buildings, attics, and other man-made structures. Use a variety of habitats. Hibernate in caves or mines. Forage around trees and in open areas around water (Bat Conservation International [BCI] 2022).	Little brown bats have low potential to occur during summer. Suitable summer habitat is limited; only 0.2% of the Project is forested (Table 1). Little brown bats were rarely recorded during Project surveys; only 7 little brown bat calls were identified out of 8,458 total bat calls recorded at the Project.
tricolored bat *Perimyotis subflavus*	FC, Under Review	Found in open woods near the edges of water and roost in rock crevices, caves, buildings, and tree foliage during summer. Winter in mines and caves (BCI 2022).	Tricolored bats have low potential to occur during summer. Suitable summer habitat is limited; only 0.2% of the Project is forested (Table 1). One tricolored bat call was recorded out of 8,458 total bat calls during surveys at the Project.

Table 4. Federally and state-listed threatened and endangered species with records of occurrence or the potential to occur in the Heritage Prairie Wind Project.

Common Name	Status	Habitat	Potential to Occur in the Project
Birds			
bald eagle *Haliaeetus leucocephalus*	BGEPA, MBTA	Mature forested riparian areas near fish-bearing waterbodies and rivers; increasingly using a variety of habitat types in the Midwest, including isolated mature trees in cultivated cropland (Buehler 2022).	Bald eagles rarely occur in the Project. Eleven bald eagle observations were recorded during 408 hours of avian surveys over two years. Bald eagles are not expected to nest within the Project, as more suitable nesting habitat is present along the Kankakee River, its tributaries, and the Mazonia-Braidwood State Fish and Wildlife Area approximately 4 mi north and east of the Project.
golden eagle *Aquila chrysaetos*	BGEPA, MBTA	Winter habitat consists of open and semi-open areas relatively free from human disturbance such as river valleys, prairies, savannas, and wetlands, but also forested ridges in the eastern US (Katzner et al. 2020, Kochert et al. 2020).	No golden eagles were observed during two years of avian use surveys. Golden eagles are unlikely to occur within the Project, as they are most often observed in the western US. However, they may occur as a rare migrant.
short-eared owl *Asio flammeus*	SE, MBTA	Large open areas with woodlots, stubble fields, marshes, weedy fields, dumps, gravel pits and rock quarries; prefers grasslands with dense, short grass (Wiggins et al. 2020).	Short-eared owls rarely occur within the Project. Only four observations were recorded during during two years (408 survey hours) of avian use surveys at the Project (McAlexander 2021, McAlexander and Kobler 2023).
northern harrier *Circus hudsonius*	SE, MBTA	Open marshes, lightly grazed pastures, old fields, upland prairies, croplands, and riparian woodlands (Smith et al. 2020).	Similar to every other wind project in Illinois, northern harriers occur infrequently within the Project. Twenty-four observations were recorded during two years (408 survey hours) of avian use surveys at the Project.
Reptiles and Amphibians			
ornate box turtle *Terrapene ornata*	ST	Grassland, pasture, field, sandhills, and open woodland; they are terrestrial but sometimes enter shallow streams and creek pools (NatureServe 2021).	Ornate box turtles have not been reported in Livingston County (INHD 2021). Ornate box turtles may use grassy vegetation along transmission lines. The Project lacks suitable habitat for the ornate box turtle.
Insects			
Eastern prairie fringed orchid *Platanthera leucophaea*	FT, ST	Occurs primarily in remnant wet native prairie, but can also occur in sedge meadows, bogs and fens (Bowles et al. 2005).	No records exist in or near the Project. The Project is composed of over 99% tilled agriculture and developed areas, and lacks native prairies. Suitable habitat is absent from the Project.

FE = federally listed endangered; FT = federally listed threatened; FC = federal candidate; SE = state-listed endangered; ST = state-listed threatened; BGEPA = Bald and Golden Eagle Protection Act; MBTA = Migratory Bird Treaty Act; USFWS = US Fish and Wildlife Service; IDNR = Illinois Department of Natural Resources; IPaC = Information for Planning and Consultation; INHD = Illinois Natural Heritage Database.

Bald eagle observations were recorded near perennial waterways associated with Broughton Creek and East Forth Mazon River (McAlexander 2021, McAlexander and Kobler 2023). Bald eagle nest records were not identified within the Project boundary (T. Porter, IL-USFWS, pers. comm., February 13, 2020; T. Kieninger, IDNR, pers. comm., February 7, 2020). Additionally, no bald eagle nests were identified within the Project boundary during raptor nest surveys conducted at the Project (Schmitt and Wilson 2020). As year-round residents in the region (Fink et al. 2021), there is potential for bald eagles to use the Project throughout the year. However, there is limited habitat present within the Project for nesting and foraging, and, as such, the potential for bald eagles to use the Project for nesting and foraging is greatly reduced (McAlexander and Malone 2021).

Golden eagles favor partially or completely open country, especially around mountains, hills, and cliffs. They are found mostly in the western half of the US and only rarely in the eastern states but may occur as passing migrants through the Project. WEST biologists did not record any golden eagle observations over two years of avian use surveys (McAlexander 2021, McAlexander and Kobler 2023). Non-breeding migratory golden eagles are occasionally observed in Illinois; only five publicly available observations of golden eagles have been previously documented in Livingston County within the past 10 years (eBird 2023). Due to the rarity of golden eagles near the Project, there is a very low risk for impacts to golden eagles.

Potential for Raptor Migration

Several factors influence the migratory pathways of raptors, the most significant of which is geography. Two geographical features are primarily used by raptors during migration, including ridgelines and the shorelines of large bodies of water (Liguori 2005). Raptors tend to follow corridors or pathways, such as prominent ridges with defined edges, during migration. The Project is located on flat to gently rolling agricultural fields that lack defined topographical ridges or large bodies of water that may concentrate raptor migration. There were no large concentrations of migrating raptors observed at the Project over the two years of avian use surveys (McAlexander 2021, McAlexander and Kobler 2023).

General Avian Migration

Similar to other wind-energy projects in Illinois, the Project is located within the Mississippi Flyway, which is used by waterfowl, waterbirds, shorebirds, songbirds, and raptors migrating from breeding grounds in Canada and northern US to wintering grounds along the Gulf of Mexico and in Central and South America (Flyways.us 2017). There is potential for migrating birds to use agricultural fields, forested areas, wetlands, and streams in the Project as stopover habitats.

Sandhill cranes (*Antigone canadensis;* n=753) were recorded during two years of avian use surveys at the Project. Sandhill cranes were observed during their spring and fall migration (McAlexander 2021, McAlexander and Kobler 2023). Sandhill cranes are unlikely to collide with wind turbines during migration because flight altitudes are well above typical turbine heights, and additionally may show some degree of avoidance regarding wind turbines (Stehn 1998, Nagy et al. 2012). However, they may fly at turbine height when ascending and descending during takeoff and landing, or when migrating in poor weather.

American golden-plovers (*Pluvialis dominica*; n =46) were recorded in low numbers during two years of avian use surveys at the Project (McAlexander 2021). American golden-plovers are a species of interest to the USFWS and IDNR due to its use of cropland in the Midwest as staging/stopover areas during spring migration, the only season when this species has the potential to occur in the region (O'Neal and Alessi 2008, Johnson et al. 2021). The USFWS has expressed concern over the potential for wind projects to displace American golden-plover from areas used during spring migration, and are interested in gaining information on landscape-level use by American golden-plover relative to wind energy development (USFWS 2017); however, a study on displacement effects of wind turbines on American golden-plovers was conducted in western Indiana and found no evidence of large scale displacement (Homoya et al. 2017). Collision risk of American golden-plovers is relatively low, with only one American golden-plover documented as a fatality at a wind facility in the US (Good et al. 2017, WEST 2021).

Important Bird Areas

There are no IBAs located within the Project or 2.0-mi buffer. Audubon has identified IBAs that provide essential habitat for breeding, wintering, and/or migrating bird species and are important for the conservation of bird populations (Audubon 2023). The nearest IBAs are the Midewin National Tallgrass Prairie global IBA located approximately 12 mi (19 km) north of the Project, which provides crucial habitat for grassland and shrubland bird communities, the Des Plains State Conservation Area state IBA located approximately 14 mi (23 km) northwest of the Project, which provides habitat for waterbirds, marshbirds, shrubland and forest birds, Goose Lake Prairie State Park global IBA located approximately 14 mi northwest of the Project, which provides important habitat for marshbirds and grassland birds, Bartel Grassland located approximately 40 mi (64 km) northeast of the Project, and Pembroke Township located approximately 20 mi (32 km) east, which provides habitat for shrubland and savanna birds (Figure 5).

The BBS is a collaborative effort between the USGS Patuxent Wildlife Research Center and Canada's Wildlife Service. The objective of the survey is to monitor the status and trends of North American bird populations via standardized protocol data collected by participants along thousands of randomly established roadside routes throughout the continent (USGS 1998). The Essex BBS route runs along the southern portion of the Project, and the Streator Route intersects the western side of Project (USGS 2018a; Figure 6). Data from these nearest routes may give some indication of the bird species potentially breeding or migrating through the Project. Both of these routes were last surveyed in 2021. During the last 10 years, the bird species most commonly observed on the Essex route were red-winged blackbird (*Agelaius phoeniceus*), common grackle (*Quiscalus quiscula*), American robin (*Turdus migratorius*), house sparrow (*Passer domesticus*) and European starling (*Sturnus vulgaris*; Pardieck et al. 2020). The Streator route lists bird species most commonly observed on the Streator route. The northern harrier, a state-listed endangered species, was observed on this route in 2019, and the red-headed woodpecker (*Melanerpes erythrocephalus*) was observed in 2019 (Pardieck et al. 2020). No federally listed species or eagles have been observed along these routes to date.

During 2021 BBS surveys, there were 34 bird species and 804 individuals observed along the Essex Route. Similarly, 48 species and 1,116 individuals were observed during 2021 BBS surveys on the Streator Route. No additional BCC were observed during surveys on both routes. Additionally, the species composition observed in 2021 is similar to observations recorded on both routes within the last 10 years (USGS 1998).

US Fish and Wildlife Service Birds of Conservation Concern

The Project falls within the USFWS Eastern Tallgrass Prairie Bird Conservation Region (BCR 22), where 25 species of birds are listed as BCC (USFWS 2021). This conservation region was once characterized by lush grasslands, prairie, and savanna, but the landscape is now dominated by agriculture (US North American Bird Conservation Initiative 2016). Historically, 11 of the 25 BCC species have been recorded along the Essex and/or Streator BBS routes (Appendix B). The IPaC resource list includes five BCC species, the Henslow's sparrow (*Centronyx henslowii*), chimney swift (*Chaetura pelagica*), red-headed woodpecker, rusty blackbird (*Euphagus carolinus*), and wood thrush (*Hylocichla mustelina*) with potential to occur within the Project (Appendix A).

Three of the 25 BCC species were recorded over two years of avian use surveys at the Project, including American golden-plover (n=46), northern harrier (n=24), and short-eared owl (n=4; McAlexander 2021, McAlexander and Kobler 2023; Appendix A and B). American golden-plover observations were recorded in the spring and were observed using cropland habitat, which is not considered breeding habitat for this species (Johnson et al. 2021). Northern harrier were observed throughout the Project during two years of avian use surveys. In Illinois, this species is most commonly observed in the fall and winter seasons and is not expected to nest within the Project (Johnson et al. 2021). Short eared-owl observations were recorded during the first year of avian use surveys and were observed during the fall and winter seasons. In Illinois, this species is an uncommon migrant and winter resident (Fink et al. 2021).

Based on the latest publically available data, 20 BCC species were recorded in Livingston County within the last 10 years (eBird 2023). However, only three BCC species, northern harrier (n=2; 2021), Henslow's sparrow (n=3; 2017), and chimney swift (n=28; 2018), were recorded within the Project boundary. All observations within the Project were recorded near Campus, Illinois. Although BCC species were recorded in Livingston County, suitable habitat for is limited within the Project.

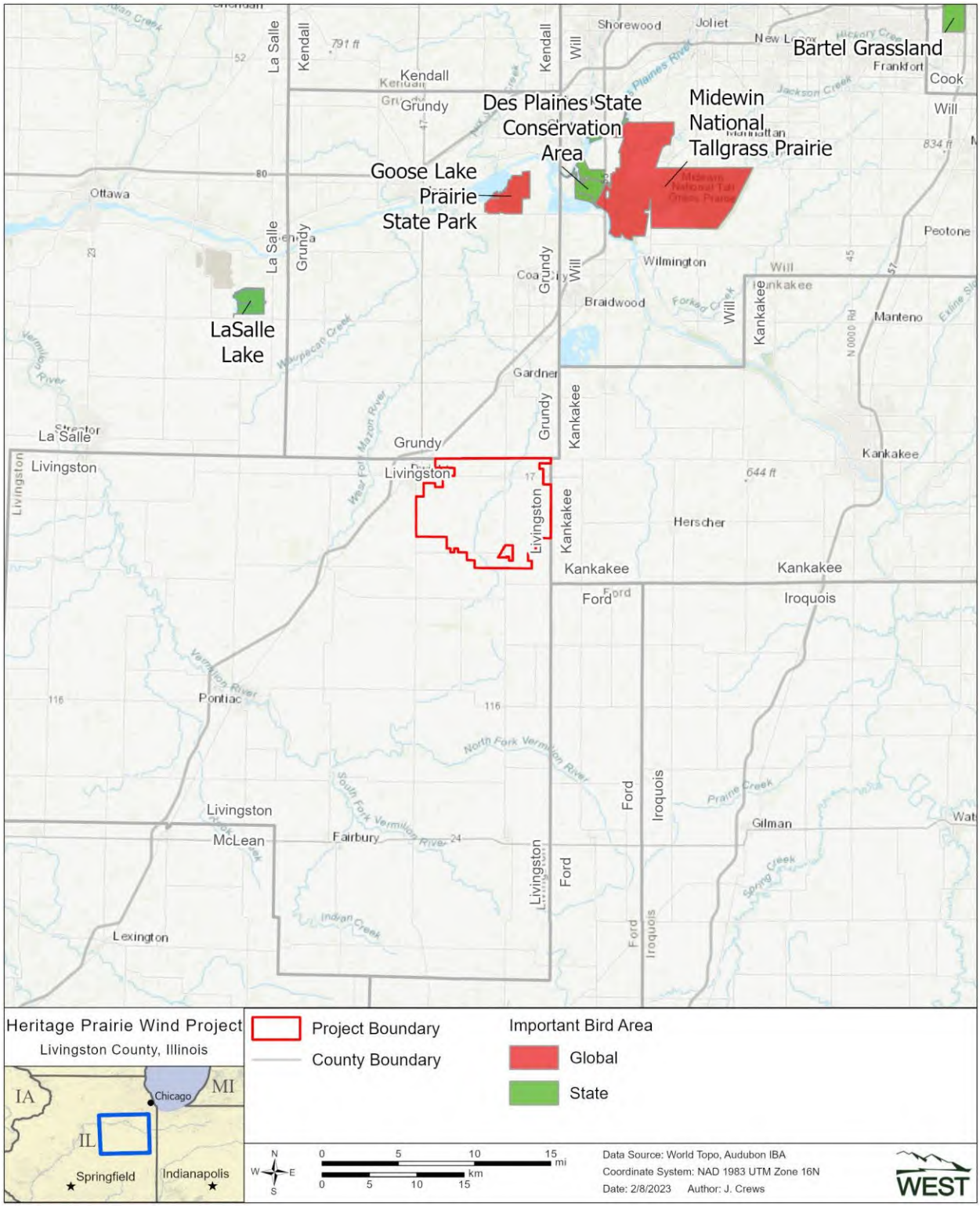

Figure 5. National Audubon Society Important Bird Areas that occur near the Heritage Prairie Wind Project.

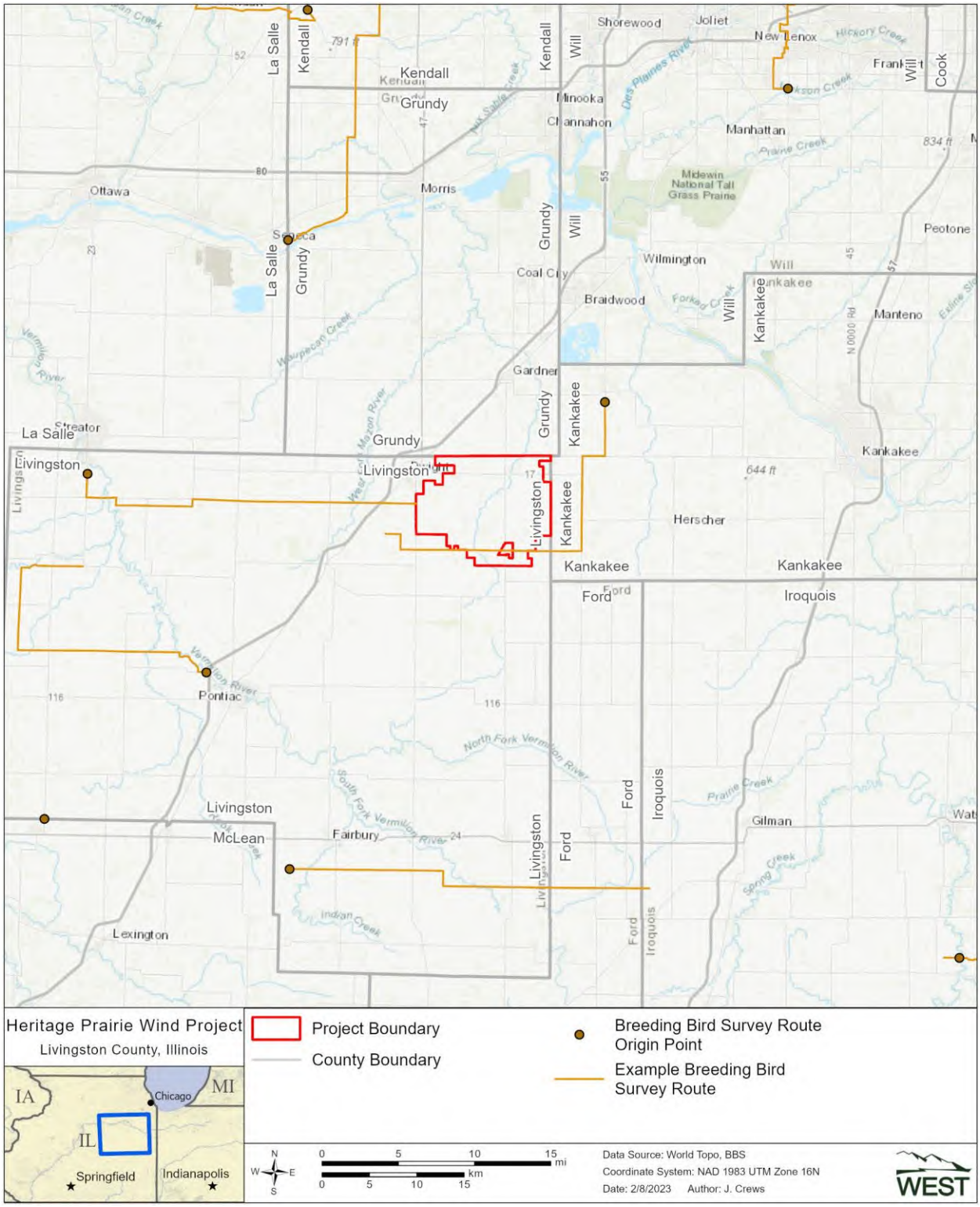

Figure 6. US Geological Survey Breeding Bird Survey (2022b) routes that occur near the Heritage Prairie Wind Project.

Bats

The federally listed as endangered INBA and NLEB have the potential to occur within the Project. The tricolored bat, currently being considered for listing as a threatened species by the USFWS, also could occur in the Project. A Species Status Assessment (SSA) is a scientific and analytical evaluation of species that are being considered for protection under the ESA. An SSAs is currently in development/review for the little brown bat, which also could occur in the Project. The USFWS will review the SSA and decide if the species warrants listing under the ESA. If the species is determined to be warranted for either federal listing, as endangered or threatened, the USFWS will develop a proposed rule that will be published in the federal register.

The majority of the Project is composed of cultivated cropland, and there are limited forested and riparian areas that may provide suitable summer habitat for INBA and NLEB. There is a historical record of occurrence of NLEB in Livingston County from July 2011 (INHD 2021). There are no known records of occurrence of INBA in Livingston County (Feldhamer et al. 2015). There are no known INBA hibernacula in Livingston County; the nearest known hibernaculum is Blackball Mine, located approximately 40 mi northwest of the Project along the Illinois River in LaSalle County (USFWS 2007).

INBA within central Illinois are known to follow the Illinois River and tributaries when migrating from Blackball Mine in the spring to summer maternity colony locations. The Project lacks any forested riparian areas that might be used by bats migrating from Blackball Mine, and no INBA were documented by Hicks et al. (2012) to migrate through or form maternity colonies within the Project. The migratory pathways of INBA and NLEB are less well known during the fall, and it is uncertain whether they use landscape features such as rivers or tree lines during fall migration (USFWS 2011).

INBA or NLEB calls were not recorded during any surveys at the Project. Tricolored bat and little brown bat calls were rare, accounting for less than 0.03% of the 18,617 recorded bat calls across all bat surveys. WEST followed the USFWS Guidelines for identification of bat calls, and only one little brown bat call and one tricolored bat call were recorded out of 10,132 bat calls recorded during the 2022 presence/absence surveys. Only six little brown bat calls and no tricolored bat call were recorded out of 8,485 calls recorded during migration surveys (McAlexander and Sirajuddin 2023).

A significant number of post-construction monitoring studies also have been conducted within Illinois at other wind-energy facilities over the past 10 years. Research completed to date has shown the risk of collision for migrating INBA and NLEB is not equal throughout the species range in Illinois; no INBA and NLEB fatalities have been documented at wind energy projects in central Illinois that operated at manufacturer cut-in speeds despite the species occurrence within forested habitats during the summer in central Illinois, including existing wind projects located adjacent to the proposed Project. The reasons for the unequal risk are likely related to the migration habits and pathways of INBA and NLEB. While INBA and NLEB fatalities have been recorded at other

wind-energy facilities that lack forest cover during fall migration (Good et al. 2011), the lack of fatalities in central Illinois suggests the risk to both species is low at the Project.

The majority of bat casualties at wind energy facilities, to date, are migratory tree-roosting species such as eastern red bat (*Lasiurus borealis*), hoary bat (*L. cinereus*), and silver-haired bat (*Lasionycteris noctivagans*) that conduct long migrations between summer maternity roosts and winter hibernacula (Kunz et al. 2007, National Academy of Science 2007, Arnett et al. 2008, Arnett and Baerwald 2013, WEST 2021). Bat mortalities from wind turbine collisions have been documented during spring, summer, and fall, and most bat fatalities have occurred during late summer and fall, suggesting that bats may be particularly susceptible during fall migration (Kunz et al. 2007, Arnett et al. 2008, Baerwald and Barclay 2011, Pruitt and Okajima 2014).

TIER 3 QUESTIONS

A summary of the potential for impacts to sensitive species and/or habitat within the Project is summarized below in response to the Tier 3 questions in the *Land-based Wind Energy Guidelines* (USFWS 2012). Data collected at the Project from 2019–2022 was used to address the Tier 3 questions.

1. **Do field studies indicate that species of concern are present on or are likely to use the proposed site?**

   There is limited suitable habitat for federally and state-listed species within the Project; 99.6% of the Project is composed of cultivated cropland and developed areas, which do not provide primary habitat for threatened and endangered species that could occur in the Project. During two years of avian use surveys at the Project, no federally listed endangered or threatened species were observed. Two state-listed endangered species were observed at the Project (northern harrier and short-eared owl) in low numbers. Likewise, bald eagles were observed during the 2019–21 avian use surveys in the Project in low numbers. The Project does not contain suitable nesting habitat for eagles. Large areas of more suitable nesting habitat is present outside of the Project boundary north of the Project along the Kankakee River, its tributaries, and the Mazonia-Braidwood State Fish and Wildlife Area.

   No calls were identified for any federally listed species during bat acoustic surveys (McAlexander and Sirajuddin 2023) at the Project. Calls of two species being considered for listing under the endangered species act, the tricolored and little brown bat, were recorded in low numbers at the Project. Similar to other wind energy facilities, migratory bird and bat species may pass through the Project and utilize portions of the Project for stopover habitat and foraging.

   As noted in the IPAC and EcoCAT, eastern prairie fringed orchid and rattlesnake master borer moth were identified to have potential to occur within the Project, if suitable habitat is present. However, the Project lacks native prairie which both species require to occur.

2. Do field studies indicate the potential for significant adverse impacts on an affected population of species of habitat fragmentation concern?

The Project is highly fragmented and dominated by tilled agriculture. Species of habitat fragmentation concern are not expected to occur.

3. What is the distribution, relative abundance, behavior, and site use of species of concern identified in Tiers 1 or 2, and to what extent do these factors expose these species to risk from the proposed wind energy project?

Land cover within the Project consists of 99.6% of cultivated crops and developed areas, which do not provide suitable habitat for most sensitive species. Two state-endangered species (northern harrier, short-eared owl) were observed at the Project (McAlexander 2021, McAlexander and Kobler 2022). The 24 total northern harrier observations occurred primarily during fall and winter with few observations during spring and one observation during summer. Northern harriers nest on the ground in undisturbed wetlands or grasslands with thick vegetation (Smith et al. 2020) which is not present in the Project. Northern harriers typically fly close to the ground, with some studies reporting up to 97% of flights below 66 ft (20 m; Whitfield and Madders 2006). Northern harriers are frequently observed at almost every Illinois wind project. As of 2020, relatively few northern harrier fatalities (20) have been recorded among publicly available studies in the Midwest (American Wind Wildlife Institute [AWWI] 2020); the risk of northern harrier collisions occurring at the Project are low based on their low abundance and low flight heights.

Short-eared owls were observed at low numbers at the Project (four observations). Short-eared owls often occur in the region during non-breeding months (fall through early spring) and prefer open habitats for hunting (Wiggins et al. 2020). As of 2020, relatively few (18) short-eared owl have been recorded as fatalities at operating wind facilities in the US (AWWI 2020). Short-eared owls also fly close to the ground, which reduces potential risk of collision.

The state-listed as endangered insect Eryngium stem borer, which has potential to be federally listed, could occur within the Project. The species has historic records within Livingston County; however, this species utilizes only one food source (rattlesnake master) which is not expected to occur given the lack of native prairie habitat within the Project. Turbines will be sited in cultivated croplands and developed areas, therefore, avoiding and minimizing potential impacts to listed plant species and associated insects.

NLEB and INBA calls were not recorded during summer presence absence surveys. (McAlexander and Hammond 2021, McAlexander and Sirajuddin 2023). Both species have potential to migrate through the Project in the spring and fall.

The most common avian species observed during large bird surveys were generally similar across both years of surveys and included Canada geese (*Branta canadensis*) and other species typical of Illinois agricultural landscapes. Aside from migrating waterfowl, the majority of the most commonly observed large bird species occur year-round in Illinois, such as mourning dove (*Zenaida macroura*), or as migrants and summer residents, such as killdeer (*Charadrius vociferus*). These most commonly observed species are widespread species within the region that are typical of avian communities in agricultural areas of the Midwest (Kleen et al. 2004). Potential collision risk for these species will be restricted to the seasons when they occur.

Bald eagles were rarely observed during surveys. Eleven bald eagles were observed during two years of avian use surveys and incidentally from in Livingston County (McAlexander 2021, McAlexander and Kobler 2023). These bald eagle observations resulted in 31 eagle risk minutes during 408 hours of survey. One eagle was recorded in the spring; all others were recorded in the fall and winter.

Additionally, the IPAC noted that the federally listed threatened eastern prairie fringed orchid have potential to occur within the Project; however, the Project lacks suitable habitat for this species.

4. What are the potential risks of adverse impacts of the proposed wind energy project to individuals and local populations of species of concern and their habitats? (In the case of rare or endangered species, what are the possible impacts to such species and their habitats?)

Due to the limited amount of forested habitat within the Project, impacts to bats are largely limited to collision risk during the fall migration season. There are no known critical areas of congregation for bats within the Project. Suitable summer habitat for bats is very limited (0.3% forested areas) within the Project. Protected bat species are not expected to occur during the summer; occurrence of protected bat species is limited to the migration periods. No calls of INBA and NLEB were recorded during on-site surveys, and calls from little brown and tricolored bats composed less than 0.03% of all calls recorded. There are no known hibernacula in Livingston County (Hicks et al. 2012).

Bird fatality rates in the Midwest and Illinois have typically been low (AWWI 2020, WEST 2021); bird mortality due to building and tower collisions, and cat predation, is orders of magnitude greater than bird mortality due to wind turbines (Loss et al. 2014, North American Bird Conservation Initiative 2014). No IBAs or critical areas of congregation for birds are known to occur within the Project. The nearest IBAs are the Midewin National Tallgrass Prairie global IBA located approximately 12 mi north of the Project, the Des Plains State Conservation Area state IBA located approximately 14 mi northwest of the Project, Goose Lake Prairie State Park global IBA located approximately 14 mi northwest of the Project, Bartel Grassland located approximately 40 mi northeast of the Project, and Pembroke Township located approximately 20 mi east of the Project.

The Project generally lacks suitable nesting and hunting habitat for eagles. Overall use of the Project by bald eagles was low.

In accordance with the recommendations of IDNR, the Project will operate at (16.4 ft [5.0 m] per second), from one hour after sunset to sunrise from July 15 – October 15 to avoid impacts to INBA and NLEB and reduce impacts to non-listed species of migratory bats (Appendix A).

5. How can developers mitigate identified significant adverse impacts?

Illinois Generation LLC has committed to siting turbines and associated infrastructure outside of high-risk areas to mitigate significant impacts at the Project. Specifically, turbines will be sited 300 ft from perennial streams identified by the IDNR, and 1,000 ft from forested areas five ac or larger and forested riparian zones.

Additionally, the Project will curtail turbines below 5.0 meters per second, from one hour after sunset to sunrise from July 15 – October 15, to avoid impacts to INBA and NLEB and reduce impacts to non-listed species of migratory bats.

Illinois Generation LLC will avoid impacts to aquatic species by siting infrastructure to avoid streams and wetlands to the greatest extent possible, repairing drain tiles, using horizontal boring, where practicable, to reduce potential impacts to streams and wetlands, and abiding by erosion control measures and best management practices contained in a Stormwater Pollution Prevention Plan and an Agricultural Impact Mitigation Agreement.

6. Are there studies that should be initiated at this stage that would be continued in post-construction?

In accordance with USFWS and IDNR recommendations, Illinois Generation LLC will conduct five years of post-construction monitoring for avian and bat species. Both of these post-construction studies will be implemented in Tier 4 studies in coordination with the USFWS and IDNR.

Impacts from the Project are expected to be similar to other wind energy facilities in Illinois and the Midwest. Illinois Generation LLC will review the results of the Tier 4 studies with the USFWS and determine if additional avoidance or mitigation measures are necessary, such as if significant adverse impacts are observed.

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Appendix A. US Fish and Wildlife Service Information for Planning and Consultation Resource List and Illinois Department of Natural Resources Ecological Compliance Assessment Tool

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Livingston County, Illinois

Local office

Illinois-Iowa Ecological Services Field Office

(309) 757-5800
(309) 757-5807

Illinois & Iowa Ecological Services Field Office

Illinois & Iowa Ecological Services Field Office
1511 47th Ave
Moline, IL 61265-7022

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Indiana Bat Myotis sodalis Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat Myotis septentrionalis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Threatened

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Flowering Plants

NAME	STATUS
Eastern Prairie Fringed Orchid Platanthera leucophaea Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/601	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON

Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Oct 15 to Aug 31
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Henslow's Sparrow *Ammodramus henslowii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3941	Breeds May 1 to Aug 31
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Rusty Blackbird *Euphagus carolinus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Wood Thrush *Hylocichla mustelina* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (▬)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

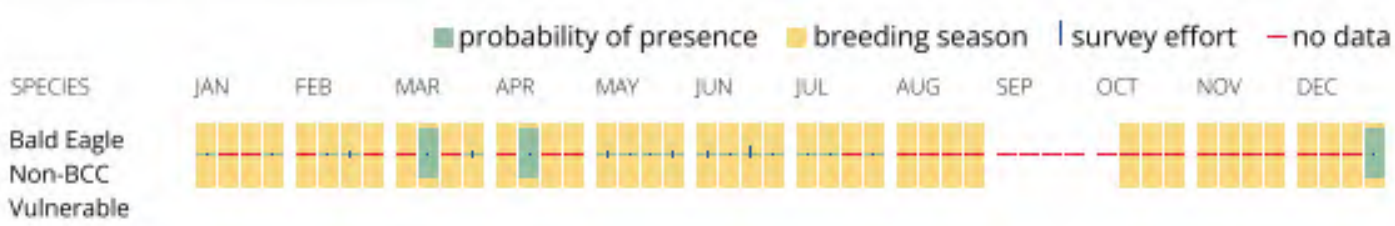
Breeding Season ( )
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local

government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Illinois Department of Natural Resources

JB Pritzker, Governor • Natalie Phelps Finnie, Director
One Natural Resources Way • Springfield, Illinois 62702-1271
www.dnr.illinois.gov

April 19, 2023

John Kuba
ConnectGen, LLC
1001 McKinney Street
Suite 700
Houston, TX 77002

RE: Heritage Prairie Wind
Consultation Program
EcoCAT Review #2312269 [2300366]
Livingston County

Dear Mr. Kuba:

The Department has received your submission for this project for the purposes of consultation pursuant to the *Illinois Endangered Species Protection Act* [520 ILCS 10/11], the *Illinois Natural Areas Preservation Act* [525 ILCS 30/17], and Title 17 *Illinois Administrative Code* Part 1075.

The proposed action consists of updating the previous review issued on March 29th, 2021, for the Heritage Prairie Wind project in eastern Livingston County.

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

State Listed
Eryngium Stem Borer *(Papaipema eryngii)*

Pattern Energy and ConnectGen initiated correspondence with the Department on January 30th, 2023. Correspondence indicated that the following recommendations had been considered and resulted in the following:

- No critical habitat for Eryngium Stem Borer *(Papaipema eryngii)* was identified within the project area.
- Presence/absence surveys were conducted in the area for the state and federally listed Northern Long-eared Bat. No individuals of the species were observed at that time.
- Habitat mapping for the Ornate Box Turtle *(Terrapene ornate)* was conducted and yielded negative results for suitable habitat within the project footprint.

- All turbines will abide by the previously recommended setbacks:
    - Minimum of 300-foot setback from perennial streams with a non-forested zone.
    - Minimum of 1,000-foot setback from any forested area five acres or larger or forested riparian zones.
    - All turbines sited a minimum of 0.25 miles from the Goodrich Prairie Illinois Natural Areas Inventory Site.

During discussion and reviews of similar projects in the surrounding area, the following alterations to the Departments recommended curtailment were proposed:

- Turbine operations below wind speeds of 5.0 meters/second, 1 hour after sunset to sunrise, between July 15th and October 15th.

Given the evidence provided, the Department concurs with the alterations to the recommended curtailment. However, the Department maintains that cut-in speeds of 6.9 meters/second is the best recommendations for total avoidance of Take.

The Department recommends the following be considered:

- Post construction monitoring reports be forwarded to the Department annually.
- If Take of a state or federally listed species occurs, the Applicant apply for Incidental Take Authorization.
- Please note that due to the federal status of the Northern-long Eared Bat, and its potential occurrence in the project area, coordination with the U.S. Fish and Wildlife Service may be necessary and is separate from this consultation and Illinois State regulations.

In accordance with 17 Ill. Adm. Code 1075.40(h), please notify the Department of your decision regarding these recommendations.

Consultation on the part of the Department is closed, unless the applicant desires additional information or advice related to this proposal. Consultation for Part 1075 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 action 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 project being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are unexpectedly encountered during the project's implementation, the applicant must comply with the applicable statutes and regulations.

This letter does not serve as permission to take any listed or endangered species. As a reminder, no take of an endangered species is permitted without an Incidental Take Authorization or the required permits. Anyone who takes a listed or endangered species without an Incidental Take

Authorization or required permit may be subject to criminal and/or civil penalties pursuant to the *Illinois Endangered Species Act*, the *Fish and Aquatic Life Act*, the *Wildlife Code* and other applicable authority.

The Department also offers the following conservation measures be considered to help protect native wildlife and enhance natural areas in the project area:

If temporary or permanent lighting is required, the Department recommends the following lighting recommendation to minimize adverse effects to wildlife:

- All lighting should be fully shielded fixtures that emit no light upward.
- Only "warm-white" or filtered LEDs (CCT < 3,000 K; S/P ratio < 1.2) should be used to minimize blue emission.
- Only light the exact space with the amount (lumens) needed to meet facility safety requirement.
- If LEDs are to be used, avoid the temptation to over-light based on the higher luminous efficiency of LEDs.

If erosion control blanket is to be used, the Department also recommends that wildlife-friendly plastic-free blanket be used around wetlands and adjacent to natural areas, if not feasible to implement project wide, to prevent the entanglement of native wildlife.

Please contact me with any questions about this review.
Sincerely,

Kyle Burkwald

Kyle Burkwald
Impact Assessment Section
Division of Real Estate Services and Consultation
Office of Realty & Capital Planning
Illinois Department of Natural Resources
One Natural Resources Way
Springfield, IL 62702
Kyle.Burkwald@Illinois.gov
Phone: (217) 785-4984

CC Bradley Hayes – IDNR
Heather Osborn – IDNR
Amber Schorge – USFWS
Chuck Schoop – Livingston County Zoning Commission

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IL Department of Natural Resources Contact
Impact Assessment Section
217-785-5500
Division of Ecosystems & Environment

Disclaimer

The Illinois Natural Heritage Database cannot provide a conclusive statement on the presence, absence, or condition of natural resources in Illinois. This review reflects the information existing in the Database at the time of this inquiry, 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, compliance with applicable statutes and regulations is required.

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EcoCAT
Ecological Compliance Assessment Tool

ILLINOIS DEPARTMENT OF NATURAL RESOURCES

EcoCAT Receipt

Project Code 2310410

APPLICANT	DATE
Allen Wynn Allen Wynn 1201 Louisiana Street Suite 3201 Houston, TX 77002	2/17/2023

DESCRIPTION	FEE	CONVENIENCE FEE	TOTAL PAID
EcoCAT Consultation	$ 25.00	$ 1.00	$ 26.00

TOTAL PAID $ 26.00

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Appendix B. US Fish and Wildlife Service Bird Conservation Region 22 – Eastern Tallgrass Prairie – Species List and Records of Occurrence on Breeding Bird Survey

In Partnership with:

North American Breeding Bird Survey

Breeding and Non-breeding Species List By Route

BBS Route 34015 (ESSEX,IL) 101 **Query date: 02/01/2024**

This list contains all historical records of breeding and migrants bird species detected at sample locations along this route.

Species List	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
(Yellow-shafted Flicker) Northern Flicker	0	0	0	0	0	-	0	0	1	1	0	0	0	0	0	1	0	-	-	-	-	0	1	1	1	0	0	-	0	0
American Crow	18	20	17	38	5	-	12	7	20	19	7	2	13	13	7	7	2	-	-	-	-	8	3	6	3	4	3	-	4	5
American Goldfinch	3	5	11	2	2	-	19	8	9	10	4	11	5	9	10	25	15	-	-	-	-	5	9	4	5	14	3	-	6	5
American Kestrel	1	5	2	1	0	-	1	0	1	6	0	1	0	3	1	0	0	-	-	-	-	3	1	1	1	1	0	-	2	0
American Robin	40	58	67	75	53	-	81	66	107	77	97	75	72	75	66	104	92	-	-	-	-	69	71	64	60	84	62	-	116	83
Baltimore Oriole	1	0	0	1	0	-	0	0	1	1	0	0	0	0	0	1	0	-	-	-	-	1	0	0	0	0	0	-	0	13
Bank Swallow	0	0	0	0	0	-	0	0	2	0	0	0	0	2	0	0	0	-	-	-	-	0	0	0	0	0	0	-	0	0
Barn Swallow	5	16	9	10	6	-	17	12	12	14	15	24	10	12	16	9	5	-	-	-	-	21	19	23	32	25	17	-	22	3
Blue Jay	0	1	0	1	2	-	0	1	7	2	0	0	0	1	0	0	0	-	-	-	-	0	2	0	0	1	2	-	3	0
Blue-gray Gnatcatcher	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	0	0	0	0	1	0	-	0	0
Bobolink	4	1	0	6	0	-	1	0	3	0	0	0	0	0	0	0	0	-	-	-	-	0	0	1	0	0	1	-	0	1
Brown Thrasher	1	5	2	6	4	-	0	1	0	0	1	1	0	1	0	3	0	-	-	-	-	3	1	5	1	0	2	-	1	0
Brown-headed Cowbird	6	21	5	11	18	-	24	8	37	10	8	26	28	45	48	37	14	-	-	-	-	15	31	21	17	37	16	-	42	36
Cedar Waxwing	0	0	0	0	0	-	0	0	0	0	0	0	0	1	1	0	0	-	-	-	-	1	0	4	1	0	4	-	0	0
Chimney Swift	15	4	11	10	14	-	8	6	5	11	11	9	6	6	5	16	11	-	-	-	-	7	8	10	22	3	12	-	0	3
Chipping Sparrow	10	16	8	2	2	-	11	10	15	14	16	15	12	26	18	14	16	-	-	-	-	25	12	20	21	19	21	-	10	9
Cliff Swallow	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	25	50	25	2	3	34	-	1	25
Common Grackle	179	99	87	150	133	-	70	68	137	159	226	483	125	82	53	115	94	-	-	-	-	119	158	127	175	256	92	-	112	64
Common Nighthawk	0	0	0	0	0	-	1	0	0	0	0	0	0	0	0	0	0	-	-	-	-	0	0	0	0	0	0	-	0	0
Common Yellowthroat	2	4	3	3	0	-	4	3	3	1	1	1	1	0	3	2	3	-	-	-	-	2	4	5	4	4	2	-	1	2
Cooper's Hawk	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	1	0	0	0	1	0	-	0	0
Dickcissel	8	2	2	12	1	-	4	4	3	1	0	6	5	13	11	10	11	-	-	-	-	3	18	19	38	33	73	-	25	21
Downy Woodpecker	0	0	0	0	0	-	0	0	1	0	0	0	0	0	1	0	0	-	-	-	-	0	0	0	0	0	0	-	0	0
Eastern Bluebird	0	0	0	0	0	-	0	0	0	0	0	2	0	0	0	0	0	-	-	-	-	0	2	7	0	1	0	-	0	0
Eastern Kingbird	1	5	0	0	0	-	0	0	0	4	1	2	0	0	1	2	1	-	-	-	-	1	1	1	1	2	1	-	0	2
Eastern Meadowlark	16	17	9	21	27	-	6	20	25	14	14	24	20	12	26	33	31	-	-	-	-	26	16	22	15	13	29	-	19	17
Eastern Phoebe	0	0	0	0	1	-	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	1	1	2	2	2	2	-	0	0
Eastern Wood-Pewee	0	1	1	0	0	-	0	0	1	0	0	0	0	0	1	1	0	-	-	-	-	1	1	0	2	0	2	-	0	0
Eurasian Collared-0 Dove		0	0	0	0	-	0	0	0	0	0	0	2	1	0	0	0	-	-	-	-	1	4	5	1	8	6	-	3	3
European Starling	98	46	61	225	128	-	57	317	119	186	105	106	105	62	43	44	25	-	-	-	-	68	91	51	126	34	92	-	31	51
Field Sparrow	0	0	0	0	1	-	0	2	0	0	0	0	0	0	0	0	0	-	-	-	-	1	0	2	0	0	1	-	0	0
Grasshopper Sparrow	3	0	1	0	0	-	0	0	2	0	0	0	0	0	0	0	0	-	-	-	-	0	0	0	0	0	0	-	0	0
Gray Catbird	0	1	0	0	1	-	1	0	0	0	0	0	0	0	0	0	0	-	-	-	-	2	0	0	1	1	1	-	1	0
Great Blue Heron	0	0	0	2	0	-	0	0	2	0	0	0	0	0	0	0	0	-	-	-	-	0	0	4	1	0	1	-	0	0
Great Crested Flycatcher	0	0	0	0	0	-	0	1	0	0	0	0	0	0	0	0	0	-	-	-	-	0	0	0	0	0	0	-	0	0
Great Horned Owl	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	0	0	0	0	1	0	-	0	0
Green Heron	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	0	0	0	1	0	0	-	0	0
Horned Lark	33	22	28	49	73	-	32	43	35	13	37	34	55	50	50	34	37	-	-	-	-	26	18	33	16	4	15	-	14	9
House Finch	0	2	16	5	0	-	0	0	0	1	0	1	0	3	0	1	0	-	-	-	-	1	1	1	1	0	1	-	2	4
House Sparrow	34	71	36	146	16	-	10	35	12	47	83	13	36	38	40	36	49	-	-	-	-	17	31	37	14	23	36	-	95	17
House Wren	3	3	8	2	0	-	3	3	7	11	4	4	8	5	4	8	2	-	-	-	-	7	3	6	4	11	11	-	7	7
Indigo Bunting	10	12	5	4	2	-	2	2	2	3	1	5	1	2	1	5	3	-	-	-	-	3	3	4	0	11	4	-	8	4

Killdeer	10	22	16	21	21	-	15	17	15	19	13	8	18	11	17	21	14	-	-	-	-	20	20	30	24	48	28	-	33	31
Mallard	1	0	4	4	2	-	0	1	0	0	0	0	0	0	0	0	0	-	-	-	-	0	2	8	1	1	2	-	0	0
Mourning Dove	8	16	12	32	11	-	17	16	9	25	29	37	40	41	31	26	17	-	-	-	-	16	16	5	26	34	18	-	26	16
Northern Bobwhite	0	0	0	0	0	-	1	0	0	0	0	1	0	0	0	0	0	-	-	-	-	2	0	0	0	0	0	-	0	0
Northern Cardinal	2	1	3	9	0	-	4	6	2	6	3	5	6	3	3	3	5	-	-	-	-	5	7	7	6	6	2	-	7	5
Northern Harrier	0	0	2	0	0	-	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	0	0	0	0	0	1	-	0	0
Northern Mockingbird	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	0	0	0	1	0	0	-	0	0
Northern Rough-winged Swallow	0	2	0	1	0	-	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	4	11	8	3	1	2	-	2	0
Red-bellied Woodpecker	0	0	1	0	0	-	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	0	0	0	0	0	0	-	0	0
Red-eyed Vireo	0	0	0	0	0	-	0	1	0	0	0	0	0	0	0	0	0	-	-	-	-	0	0	0	1	1	1	-	0	0
Red-headed Woodpecker	0	0	0	0	0	-	0	0	0	0	1	0	0	0	0	0	0	-	-	-	-	0	0	0	0	0	1	-	0	0
Red-tailed Hawk	0	1	2	0	0	-	0	0	1	2	0	3	1	2	2	0	0	-	-	-	-	2	1	4	3	5	2	-	5	4
Red-winged Blackbird	65	62	74	286	136	-	105	81	45	126	210	102	135	87	57	67	97	-	-	-	-	185	188	208	187	155	189	-	163	140
Ring-necked Pheasant	19	27	22	21	4	-	7	3	5	0	6	6	10	13	8	3	7	-	-	-	-	3	2	9	3	3	5	-	8	5
Rock Pigeon	11	6	3	17	17	-	3	22	0	23	3	2	13	11	3	12	0	-	-	-	-	8	10	14	13	28	12	-	4	3
Rose-breasted Grosbeak	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	1	-	-	-	-	0	0	0	0	0	0	-	0	0
Ruby-throated Hummingbird	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	0	0	1	0	0	0	-	0	0
Savannah Sparrow	0	2	0	0	2	-	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	2	0	0	0	0	0	-	0	0
Sedge Wren	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	0	0	0	0	1	0	-	0	0
Song Sparrow	16	24	26	29	8	-	36	22	38	52	35	45	38	37	37	28	29	-	-	-	-	9	21	9	7	14	17	-	7	12
Tree Swallow	1	0	0	0	0	-	0	0	0	0	0	3	3	4	0	6	2	-	-	-	-	11	22	4	4	9	7	-	4	3
Turkey Vulture	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	0	1	1	1	0	0	-	0	0
Vesper Sparrow	9	20	15	15	2	-	13	6	6	11	1	8	13	5	11	7	16	-	-	-	-	25	26	35	26	23	19	-	19	14
Warbling Vireo	0	0	0	0	0	-	0	2	0	1	0	0	0	0	0	0	0	-	-	-	-	0	1	1	2	1	7	-	0	1
Western Meadowlark	4	2	4	1	0	-	0	0	0	0	0	1	0	0	0	0	0	-	-	-	-	2	0	4	2	0	0	-	1	0
White-breasted Nuthatch	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	0	0	0	0	1	0	-	0	0
Willow Flycatcher	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	1	-	-	-	-	0	1	2	0	0	0	-	0	0
Wood Duck	0	0	5	0	0	-	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	0	0	0	0	0	0	-	0	0
Yellow Warbler	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	0	1	0	0	0	0	-	0	0
Yellow-billed Cuckoo	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	0	1	0	0	2	0	-	0	0
Total Species	**33**	**36**	**35**	**34**	**28**	**0**	**29**	**31**	**34**	**31**	**26**	**33**	**27**	**32**	**30**	**31**	**27**	**0**	**0**	**0**	**0**	**43**	**44**	**46**	**45**	**44**	**45**	**0**	**34**	**33**
Total individuals	**637**	**622**	**578**	**1218**	**692**	**0**	**565**	**794**	**690**	**870**	**932**	**1066**	**781**	**676**	**575**	**681**	**600**	**0**	**0**	**0**	**0**	**757**	**891**	**861**	**878**	**930**	**859**	**0**	**804**	**618**

In Partnership with:

North American Breeding Bird Survey

Breeding and Non-breeding Species List By Route

BBS Route 34013 (STREATOR,IL) 101 **Query date: 02/01/2024**

This list contains all historical records of breeding and migrants bird species detected at sample locations along this route.

Species List	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
(Yellow-shafted Flicker) Northern Flicker	0	0	0	0	0	0	1	0	0	-	-	-	1	1	0	-	0	0	0	0	0	0	0	0	0	0	0	-	0	0
American Crow	24	42	50	23	34	32	39	30	27	-	-	-	19	27	18	-	14	27	21	33	20	14	24	24	24	12	12	-	13	1
American Goldfinch	2	2	1	1	3	7	2	4	2	-	-	-	14	7	10	-	15	5	0	13	6	4	18	6	21	10	4	-	3	4
American Kestrel	4	7	5	1	4	1	3	8	12	-	-	-	3	3	7	-	2	7	0	0	2	2	3	2	1	1	1	-	2	0
American Robin	46	59	43	53	56	48	41	40	50	-	-	-	148	133	148	-	158	169	175	100	144	95	121	158	146	101	91	-	82	102
American White Pelican	0	0	0	0	0	0	0	0	0	-	-	-	0	0	0	-	0	0	0	0	0	1	0	0	0	0	0	-	0	0
Baltimore Oriole	5	0	0	0	0	0	0	1	0	-	-	-	1	1	0	-	1	0	0	0	0	0	1	0	0	0	0	-	2	0
Barn Swallow	33	16	11	8	16	18	5	13	18	-	-	-	42	53	74	-	57	54	32	50	14	15	22	40	25	39	25	-	29	16
Black-capped Chickadee	0	0	1	0	0	0	0	0	0	-	-	-	0	0	0	-	0	0	1	0	2	2	1	1	1	1	0	-	0	2
Blue Grosbeak	0	0	0	0	0	0	0	0	0	-	-	-	0	0	1	-	0	0	0	1	0	0	1	1	0	1	0	-	1	1
Blue Jay	3	0	5	2	0	7	1	2	1	-	-	-	5	3	3	-	2	2	6	4	2	2	3	1	0	6	3	-	2	3
Blue-gray Gnatcatcher	0	0	0	0	0	0	0	0	0	-	-	-	0	0	1	-	2	0	0	0	0	0	0	0	0	1	1	-	0	0
Bobolink	0	0	0	0	0	0	0	0	0	-	-	-	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	-	1	0
Brown Thrasher	0	1	0	0	3	1	2	2	3	-	-	-	4	6	5	-	7	7	1	0	5	0	2	4	2	5	1	-	5	5
Brown-headed Cowbird	3	9	17	22	14	3	5	8	9	-	-	-	46	74	81	-	57	52	6	14	29	9	2	19	23	13	22	-	16	46
Canada Goose	0	0	0	0	0	0	0	0	0	-	-	-	0	23	0	-	0	0	0	1	0	0	0	0	0	0	0	-	5	55
Carolina Wren	0	0	0	0	0	0	0	0	0	-	-	-	1	0	0	-	0	0	0	0	2	0	0	0	0	0	0	-	0	0
Cedar Waxwing	0	1	0	0	1	0	0	0	0	-	-	-	5	8	2	-	0	3	0	0	0	7	7	0	0	2	0	-	0	0
Chimney Swift	2	7	0	4	1	3	1	3	4	-	-	-	9	2	2	-	0	2	1	0	3	3	2	0	2	2	0	-	0	1
Chipping Sparrow	0	7	5	9	12	2	11	5	11	-	-	-	31	30	42	-	45	43	19	14	14	9	19	12	10	3	8	-	4	4
Cliff Swallow	0	0	0	0	0	0	0	0	0	-	-	-	0	0	0	-	0	0	0	2	0	0	0	0	0	0	0	-	3	4
Common Grackle	27	50	52	21	44	45	21	50	53	-	-	-	181	164	134	-	297	271	127	112	45	92	79	170	120	134	176	-	162	92
Common Nighthawk	0	0	0	0	0	0	0	0	0	-	-	-	1	1	0	-	0	0	0	0	0	0	0	0	0	0	0	-	0	0
Common Yellowthroat	1	3	1	2	5	7	3	0	2	-	-	-	3	5	5	-	6	2	6	2	3	4	4	3	3	4	4	-	1	5
Cooper's Hawk	0	0	0	0	0	0	0	0	0	-	-	-	0	0	0	-	0	0	0	0	0	0	0	1	0	0	0	-	0	1
Dickcissel	9	5	9	3	2	4	8	7	8	-	-	-	29	52	34	-	44	56	47	49	47	22	48	43	51	44	61	-	40	46
Downy Woodpecker	0	0	0	0	0	1	0	0	0	-	-	-	0	0	1	-	0	0	0	0	0	1	1	0	0	0	0	-	0	0
Eastern Bluebird	0	0	0	1	0	0	0	0	0	-	-	-	0	1	0	-	0	0	0	1	0	0	1	0	0	0	0	-	0	0
Eastern Kingbird	1	0	0	3	0	0	0	0	1	-	-	-	3	6	5	-	2	2	0	0	6	1	0	1	1	3	3	-	1	2
Eastern Meadowlark	24	35	57	33	36	45	52	21	15	-	-	-	76	71	63	-	51	59	52	34	58	41	40	36	34	36	34	-	23	28
Eastern Phoebe	0	0	0	0	0	0	0	0	0	-	-	-	4	2	2	-	3	3	3	1	1	0	2	2	2	0	1	-	0	0
Eastern Towhee	0	0	0	0	0	0	1	0	0	-	-	-	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	-	0	0
Eastern Wood-Pewee	0	2	0	2	1	2	1	0	2	-	-	-	2	3	0	-	0	1	1	2	0	1	1	2	0	3	1	-	0	1
Eurasian Collared-0 Dove		0	0	0	0	0	0	0	0	-	-	-	0	0	0	-	0	0	2	3	1	1	6	2	2	4	3	-	7	1
European Starling	199	86	122	81	59	151	58	114	61	-	-	-	223	134	265	-	291	327	97	112	62	78	51	42	83	52	158	-	44	47
Field Sparrow	2	1	7	0	2	3	2	2	3	-	-	-	2	2	4	-	6	7	2	2	8	2	3	2	3	2	2	-	5	2
Grasshopper Sparrow	2	1	0	4	1	0	1	0	0	-	-	-	4	1	1	-	1	1	0	0	0	0	0	0	0	0	0	-	0	0
Gray Catbird	1	1	1	0	3	0	1	0	1	-	-	-	0	4	2	-	7	2	5	6	2	7	3	2	3	4	0	-	1	2
Great Blue Heron	0	1	0	0	0	0	0	0	0	-	-	-	2	1	11	-	2	0	0	2	2	1	3	0	1	3	0	-	2	1
Great Crested Flycatcher	0	0	0	0	0	0	0	0	0	-	-	-	0	1	0	-	0	0	2	0	0	0	0	1	0	0	1	-	2	2

Green Heron	0	0	0	0	0	0	0	0	0	-	-	-	0	0	0	-	1	0	0	0	0	0	0	0	0	0	0	-	0	0
Hairy Woodpecker	0	0	0	0	0	0	0	0	0	-	-	-	0	0	0	-	0	0	0	0	1	0	0	0	0	0	0	-	0	0
Henslow's Sparrow	0	0	0	0	0	0	0	0	0	-	-	-	0	0	0	-	0	0	0	0	1	0	0	0	0	0	0	-	0	0
Horned Lark	14	45	47	32	30	25	24	8	4	-	-	-	38	62	43	-	52	28	5	20	7	18	13	3	3	6	6	-	3	2
House Finch	0	7	3	7	1	0	0	1	2	-	-	-	2	14	16	-	10	6	0	9	4	3	1	4	2	1	0	-	0	2
House Sparrow	25	83	65	25	76	80	17	28	51	-	-	-	105	52	76	-	51	49	43	24	84	40	38	33	50	37	39	-	87	55
House Wren	4	4	2	1	4	5	3	3	1	-	-	-	16	13	16	-	24	18	11	13	20	15	13	11	17	17	14	-	13	9
Indigo Bunting	2	1	3	1	0	0	5	6	3	-	-	-	14	9	21	-	18	14	6	5	3	4	9	5	1	4	5	-	3	2
Killdeer	20	17	15	17	39	26	28	41	27	-	-	-	60	32	25	-	40	48	26	21	13	16	13	34	25	25	25	-	30	20
Mallard	2	0	2	0	0	2	0	0	0	-	-	-	0	0	0	-	0	4	2	0	0	0	1	0	0	0	4	-	0	2
Mourning Dove	13	15	22	21	18	19	37	16	26	-	-	-	77	68	100	-	49	47	23	38	41	28	18	20	24	30	17	-	20	27
Northern Bobwhite	0	0	0	1	0	0	0	1	0	-	-	-	5	8	0	-	0	0	0	0	0	0	0	0	0	0	0	-	0	0
Northern Cardinal	5	2	2	5	4	13	7	1	4	-	-	-	11	13	15	-	22	11	6	11	9	10	14	6	11	5	15	-	19	12
Northern Harrier	0	0	0	0	1	0	0	0	0	-	-	-	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	-	0	1
Northern Rough-winged Swallow	0	0	1	0	1	0	1	0	0	-	-	-	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	-	0	0
Orchard Oriole	0	0	0	0	0	0	0	0	0	-	-	-	0	0	0	-	0	2	0	0	1	0	0	0	0	0	1	-	1	0
Purple Martin	0	0	0	0	0	0	0	0	0	-	-	-	1	0	0	-	0	0	0	0	0	4	3	0	0	0	1	-	1	1
Red-bellied Woodpecker	0	0	0	1	1	3	0	0	0	-	-	-	1	4	1	-	0	1	1	1	4	2	2	4	4	1	1	-	5	1
Red-eyed Vireo	0	0	0	0	0	0	0	0	0	-	-	-	0	0	0	-	0	0	0	0	0	0	0	0	0	1	0	-	0	0
Red-headed Woodpecker	0	0	0	1	0	1	0	0	0	-	-	-	0	0	1	-	0	0	0	1	0	1	0	0	0	0	1	-	0	0
Red-tailed Hawk	2	1	1	2	0	1	2	1	1	-	-	-	7	3	4	-	3	5	1	5	2	1	1	4	6	4	2	-	1	3
Red-winged Blackbird	110	152	125	193	219	173	144	95	99	-	-	-	211	154	144	-	200	202	293	359	227	149	195	383	394	326	399	-	438	274
Ring-necked Pheasant	12	17	37	21	28	13	15	1	7	-	-	-	31	55	24	-	8	17	16	14	7	2	3	6	5	6	5	-	6	6
Rock Pigeon	25	7	3	11	7	1	2	3	1	-	-	-	1	0	2	-	9	1	3	13	0	0	0	3	1	2	5	-	1	0
Rose-breasted Grosbeak	0	0	0	0	0	0	0	0	0	-	-	-	0	1	1	-	0	1	1	0	1	0	1	0	1	0	0	-	1	3
Ruby-throated Hummingbird	1	0	0	0	0	0	0	0	0	-	-	-	0	0	0	-	0	0	0	0	0	0	0	1	0	0	0	-	0	0
Savannah Sparrow	0	0	0	0	0	0	0	0	0	-	-	-	1	1	0	-	0	0	0	0	0	0	0	0	0	0	0	-	0	0
Song Sparrow	23	15	22	12	12	10	12	5	7	-	-	-	24	31	36	-	26	23	22	21	9	10	8	7	14	18	10	-	11	9
Tree Swallow	0	0	0	0	0	0	0	0	0	-	-	-	3	0	0	-	0	0	1	0	2	0	0	0	0	6	0	-	2	0
Tufted Titmouse	0	1	0	2	3	3	1	1	0	-	-	-	1	0	0	-	0	0	0	0	0	0	0	1	0	0	1	-	0	0
Turkey Vulture	0	0	0	0	0	0	0	0	0	-	-	-	0	0	0	-	0	0	0	0	0	4	1	0	0	0	0	-	0	0
Upland Sandpiper	0	0	0	0	0	0	0	0	0	-	-	-	3	0	2	-	0	0	0	0	0	0	0	0	0	0	2	-	0	0
Vesper Sparrow	0	4	5	1	0	2	7	4	3	-	-	-	37	41	64	-	47	43	21	29	21	16	25	23	15	10	6	-	9	0
Warbling Vireo	0	0	0	0	0	0	0	0	0	-	-	-	0	0	1	-	0	1	1	3	0	0	1	0	0	1	1	-	2	1
Western Meadowlark	1	11	4	7	0	5	1	3	0	-	-	-	7	8	9	-	3	11	9	4	4	4	6	5	2	4	3	-	3	4
White-breasted Nuthatch	0	0	0	0	0	0	0	1	1	-	-	-	0	0	0	-	0	0	0	1	2	1	1	2	0	0	1	-	0	1
Wild Turkey	0	0	0	0	0	2	0	0	0	-	-	-	0	0	0	-	0	1	1	0	0	0	0	1	1	7	0	-	0	1
Willow Flycatcher	0	3	0	0	0	0	0	0	0	-	-	-	0	0	1	-	0	0	0	1	0	0	0	0	0	0	0	-	1	0
Wood Duck	0	0	0	0	0	0	0	0	0	-	-	-	0	0	0	-	0	0	0	0	0	0	1	2	5	0	1	-	0	4
Wood Thrush	0	0	0	0	0	0	0	0	0	-	-	-	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	-	1	0
Yellow Warbler	0	0	0	1	0	0	0	0	0	-	-	-	0	0	0	-	0	0	0	0	0	0	1	0	1	0	0	-	0	0
Yellow-billed Cuckoo	2	0	0	0	0	0	0	0	0	-	-	-	0	1	0	-	0	0	0	0	0	0	0	1	0	0	2	-	0	0
Yellow-throated Vireo	0	0	0	0	0	0	0	0	0	-	-	-	0	0	0	-	0	0	0	0	0	0	0	1	0	1	0	-	2	0
Total Species	**34**	**37**	**33**	**38**	**34**	**36**	**37**	**34**	**34**	**0**	**0**	**0**	**48**	**48**	**46**	**0**	**38**	**43**	**40**	**42**	**44**	**43**	**50**	**47**	**41**	**46**	**46**	**0**	**48**	**48**
Total individuals	**649**	**721**	**746**	**635**	**741**	**764**	**565**	**529**	**520**	**0**	**0**	**0**	**1515**	**1389**	**1523**	**0**	**1633**	**1635**	**1098**	**1151**	**941**	**742**	**837**	**1135**	**1140**	**998**	**1179**	**0**	**1116**	**914**