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**A Census of the Avifauna of the FAP 342 Project Area  
Including Addenda**

**by**

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**Center for Biodiversity  
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## Introduction

The Illinois Department of Transportation has proposed a northern extension of Illinois Route 53 (FAP 342) in Lake County, IL (Figure 1). In a previous report to IDOT Malmborg and Hofmann (1992) surveyed the avifauna in selected wetlands along the original FAP 342 corridor. As requested by IDOT, we are now conducting a four season census of the birds along the original corridor and alternative routes, addenda 1 and 2, not included in the original corridor. This report contains the results of a search of historical records for the occurrence of endangered and threatened avian species within Lake County, IL and of our breeding and fall migration censuses. The results of winter and spring censuses, which will be conducted in 1996, will be submitted as an addendum to this report.

In this report we: 1. describe potential and observed utilization of the habitats within the original FAP 342 corridor and addenda by bird species listed as Illinois and/or Federal endangered and threatened species, and 2. describe the bird communities that occur within this area.

## Historical Records

We consulted three sources, the Illinois Natural Heritage database, the Illinois Fish and Wildlife Information Service, and the Illinois Breeding Bird Atlas, to establish historic use of the area by endangered and threatened avian species, and to identify endangered and threatened species likely to occur within the project area. The results of this search are presented in Table 1.

*We found records of 26 Illinois Endangered, 4 Federally Endangered, and 8 Illinois Threatened species for Lake County over the past 20 years (1975-1994).*

We surveyed the corridor for the availability of breeding habitat for all of the species listed in Table 1. This was done by identifying potential breeding areas using aerial photographs and topographic maps, and then visiting all of the identified areas and making assessments of habitat quality. Our assessments are based on published breeding requirements for these species (Bohlen 1989; Herkert 1992).

Adequate or marginal breeding habitat exists within the corridor for seven endangered or threatened species (Table 1). These species were given special attention during our censuses.

## Census Methods

We established 14 census points representing all habitat types within the corridor (Figures 2-8). Legal descriptions of these points and the IDOT watershed zones in which they occur are given in Table 2. A brief description of the habitat surrounding each census point is provided in Table 3.

The year was divided into four census seasons corresponding to major periods of the avian life cycle in the midwest (Table 4). Because of the migratory habits of birds, each of these seasons is expected to have a different and distinctive complement of resident species.

Each census point was visited twice in each season. During these visits we used modified point-counts to determine species composition and abundance (Blondel et al. 1981).

We also scored the magnitude of the concern for each species in each season. For the breeding and winter seasons we used indices developed by the *Partners in Flight*, a working group of North American avian ecologists (Thompson et al. 1992). Birds are scored on a scale from 1 (low concern) to 5 (extremely high concern) (Hunter et al. 1992). In constructing these indices the



following factors were considered: abundance, distribution, threats (e.g. habitat loss, demographic vulnerability, etc.) and population trend (Hunter et al. 1992).

*The Partners in Flight* group has yet to develop a similar index for birds during migration so we developed our own with the help of Dr. J. Herkert of the Illinois Endangered Species Protection Board and Dr. S. K. Robinson of the Center for Wildlife Ecology at the Illinois Natural History Survey. Both Drs. Herkert and Robinson participated in the initial *Partners in Flight* work. We used three parameters in formulating the migratory concern index: 1. population size in the midwest (using the *Partners in Flight* abundance ranking), 2. population trend over the past ten years (using the *Partners in Flight* population estimates), and 3. the degree of migratory habitat specificity (i.e. how restrictive are the habitat requirements of the species during migration) as ranked by S. K. Robinson and D. A. Enstrom.

We provide these concern indices as a tool to help assess the relative importance of the various habitat types within the corridor to the avian community. Typically, endangered and threatened species have concern scores of 3 or above. Clearly, Endangered and Threatened species are not the only ones that are subject to significant threats or which should be considered when assessing the value of a particular parcel of land. Areas which support many species of moderate concern may be very important to the local avifauna. We define a 'species of concern' as one that is either officially designated as endangered or threatened (by the State or Federal governments) and/or one that has a concern index value  $\geq 3$  (Thompson et al. 1992; Robinson and Enstrom, unpublished data). Therefore, the number of species of concern present in a habitat provides a measure of the relative importance of that habitat to the avian community. We feel this measure is better than traditional measures of habitat quality (e.g. species richness or 'diversity') because it more accurately reflects the potential impact that the disturbance of a given parcel could have on the bird community of the surrounding area.

To date, the *Partners in Flight* group has focused its efforts on migratory species and, therefore, concern scores are not available for some species. Non-migrants, such as chickadees and some woodpeckers, or species that do not leave the United States during migration, such as some sparrows and most ducks, have yet to be scored.

### Census Results

We recorded 927 individuals of 82 species and 26 families during our surveys (Table 5). We also recorded 7 endangered or threatened species (Table 5).

### *Breeding Season*

We recorded 580 individuals representing 24 families and 67 species during the breeding season survey. Census data for all points are presented in Table 6. In Table 6 we also present values for species richness and indices of concern.

One Illinois Endangered species was found to breed within the corridor. **Yellow-headed Blackbirds (*Xanthocephalus xanthocephalus*)** nested in Lake County's Almond Road Marsh Forest Preserve (census point 11; Table 6). On May 31 four adult males were observed whose behavior was consistent with nesting activity. Five males were again observed on June 26 and seven males and four females were observed on July 1. No nests or young were observed.

An Illinois Threatened species, the **Pied-billed Grebe** (*Podilymbus podiceps*) also bred at the Almond Road Marsh Forest Preserve. On May 31 a grebe was heard calling during our census at the marsh. On June 26 two adult grebes with three young were observed and on July 1 five adults and five young were present at the marsh.

We also have circumstantial evidence that a second Illinois Threatened species, the **Common Moorhen** (*Gallinula chloropus*), breeds in the corridor. On May 31 we found the carcass of an adult Moorhen on Route 53 just west of census point 2 (see Figure 2).

Census point 11 (Almond Road Marsh Forest Preserve; Figure 6) had a particularly high species richness value (28) and we also recorded the largest number of species of concern (seven) at this point. This suggests that the Almond Road Marsh Forest Preserve is a critical breeding area for the local bird community.

At census points 7 and 8 on Indian Creek Marsh (Figure 4) we also recorded relatively high numbers of species of concern (six and five; see Table 6), again suggesting that this area is important to the local community of breeding birds.

### **Fall Season**

We recorded 347 individuals representing 18 families and 36 species during our fall survey (Table 7). Census data for all points are presented in Table 7. We also present indices of concern and species richness values in Table 7.

Two Illinois Endangered and two Illinois Threatened species were observed during the fall migration. Two **Pied-billed Grebes** (Illinois Threatened) were observed near census point 7 (Figure 4) and one **Great Egret** (Illinois Threatened) was observed in flight near census point 14 (Figure 8). A single **Sharp-shinned Hawk** (*Accipiter striatus*) (Illinois Endangered) was observed in flight near census point 11 (Figure 6), and one **Cooper's Hawk** (*Accipiter cooperii*) (Illinois Endangered) was observed in flight near census point 8 (Figure 4).

The two hawk species are not restricted in their habitat use during migration. Therefore, we feel that these sightings are not significant. The Grebe and Egret are restricted to wetlands and, therefore their presence may be more indicative of important migratory habitat.

Species richness and species of concern values were not high for any of the census areas during our fall censuses.

### **Heron Colony at Indian Creek**

A Heron colony was found within the addenda area at Indian Creek near census point 7 (Figures 4 and 9). At least 30 active Great Blue Heron (*Ardea herodias*) nests were counted at the colony on May 31 and again on July 1. This area has been designated a wetland of major significance by the Lake County ADID, however, reports detailing visits by that task force on May 30, 1991 and November 25, 1992 do not mention the existence of this colony. Thirteen nests were counted at the colony before the onset of breeding in 1993 (personal communication: Brad Semel, IL. Natural Heritage Biologist, District 4). We conclude that the colony was established during the breeding season of 1992.

Two Illinois Threatened species were also observed during the breeding season at the Heron colony: a single **Great Egret** (*Casmerodius albus*) and one **Double-crested Cormorant** (*Phalacrocorax auritus*). No nest for either of these species was found and neither appeared to be breeding.

## Summary

The wetland sites in the FAP 342 corridor provide potential breeding habitat for several Endangered and Threatened species. Adequate breeding habitat exists for seven endangered or threatened species in the study area (Table 1) and all of these species require wetlands for breeding.

Among the wetlands in the corridor, the one surveyed in the Almond Road Marsh Forest Preserve is most notable. This site had a large number of breeding species, a large number of breeding species of concern, and supports one breeding Illinois Endangered species, the **Yellow-headed Blackbird**, and one breeding Illinois Threatened species, the **Pied-billed Grebe**.

The Marsh at Indian Creek is also of special note. We recorded a number of species of concern breeding in this area and, in addition, the area supports a substantial Heron colony. All of the nests we found in this colony appeared to belong to Great Blue Herons. This species is not one of special concern, however, both **Great Egrets** (Illinois Threatened) and **Double-crested Cormorants** (Illinois Threatened) were recorded at the colony during the breeding season and are known to nest with Great Blue Herons. It is possible that one or both of these species could utilize this area for breeding in the future.

Earlier, we were asked to make a determination regarding the placement of the highway and toll plaza in relation to the Heron colony at Indian Creek. There have been very few studies of the effects of human disturbance on heron colonies (Vos et al. 1985; Mueller and Glass 1988; Rodgers in press). Vos et al. (1985) proposed a minimum buffer zone of 250 m between human activity and active heron colonies. However, this and other studies have focused on relatively low level disturbances (e.g. the approach of a single human on foot, or of a small boat or land vehicle) compared to the disturbance that the construction and operation of the tollway and toll plaza would present. Clearly, herons are very sensitive to new and unique disturbances that present themselves after the onset of breeding (Vos et al. 1985; Mueller and Glass 1988; Rodgers in press). However, under certain conditions herons appear to be able to withstand large amounts of human generated activity and noise. Large Heron colonies are known to persist adjacent to large roadways (Rodgers in press), and it appears that herons are sometimes unaffected by large, persistent disturbances *if the disturbance is present before the onset of the breeding season and the birds have time to habituate to local conditions* (Tremblay and Ellison 1979; Vos et al. 1985).

Based on the existing data we suggested two options:

**Option 1:** Place the roadway and toll plaza a minimum of 500 meters from the border of the existing colony. This figure is two times the Vos et al. (1985) recommended buffer zone. We feel this distance is warranted, however, given that the Vos analysis dealt with a much less severe disturbance.

**Option 2:**

**a:** Place the roadway and toll plaza a minimum of 250 meters (the Vos recommended buffer zone distance) from the edge of the colony.

**b:** Provide a noise abatement barrier.

**c:** Construct the noise abatement barrier *during that part of the year when birds are away from the nesting colony, i.e. between August 15 and April 1. The construction of the barrier should take place before the construction of the road or plaza begins.*

We stress that there is no hard data to support these scenarios. They represent our best estimates.

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Table 1. Endangered and Threatened bird species of Lake County, 1975 to present.

Species	Status	Lake Co. Breeding Record	Status of Breeding Habitat Within the Corridor
Pied-Billed Grebe	I-T	Yes	Adequate
Double-crested Cormorant	I-T	No	Marginal
Great Egret	I-T	No	Marginal
Snowy Egret	I-E	No	Marginal/Poor
Black-crowned Night Heron	I-E	Yes	Adequate
Yellow-crowned Night Heron	I-T	Yes	Marginal/Poor
American Bittern	I-E	Yes	Marginal
Least Bittern	I-E	Yes	Adequate
Northern Harrier	I-E	No	Marginal
Bald Eagle	I-E/F-E	No	Poor/Absent
Red-Shouldered Hawk	I-E	Yes	Poor/Absent
Cooper's Hawk	I-E	Yes	Poor
Sharp-shinned Hawk	I-E	No	Absent
Peregrine Falcon	I-E/F-E	No	Absent
Osprey	I-E	No	Absent
King Rail	I-E	Yes	Adequate
Yellow Rail	I-E	No	Adequate
Common Moorhen	I-T	Yes	Adequate
Sandhill Crane	I-E	Yes	Absent
Piping Plover	I-E/F-E	No	Absent
Upland Sandpiper	I-E	Yes	Poor/Absent
Wilson's Phalarope	I-E	No	Poor
Least Tern	I-E/F-E	No	Absent
Forester's Tern	I-E	Yes	Marginal/Poor
Common Tern	I-E	Yes	Poor/Absent
Black Tern	I-E	Yes	Poor
Short-eared Owl	I-E	No	Absent
Long-eared Owl	I-E	No	Absent
Brown Creeper	I-T	Yes	Absent
Bewick's Wren	I-E	No	Absent
Veery	I-T	Yes	Absent
Loggerhead Shrike	I-T	No	Absent
Henslow's Sparrow	I-E	Yes	Absent
Yellow-headed Blackbird	I-E	Yes	Adequate

I-T = Illinois Threatened  
I-E = Illinois Endangered  
F-E = Federal Endangered

**Table 2. Census point locations.** Legal location, watershed zone, and wetland number (Barton and Aschman) for each of the census points used during the avian censuses conducted in the FAP 342 (Rt. 53) project corridor.

Census point	Wetland number	Watershed Zone	Legal Location
1	8a	3	Lake Co., Il., SW/4, SW/4, SW/4, Sec. 25, T43N, R10E, 3rd P.M., Lake Zurich, Il. (7.5' Series, 1993 ed.) USGS Topographic Quadrangle Map.
2	4a	3	Lake Co., Il., NE/4, SE/4, NE/4, Sec. 35, T43N, R10E, 3rd P.M., Lake Zurich, Il. (7.5' Series, 1993 ed.) USGS Topographic Quadrangle Map.
3	12f	3	Lake Co., Il., NW/4, SE/4, NE/4, Sec. 26, T43N, R10E, 3rd P.M., Lake Zurich, Il. (7.5' Series, 1993 ed.) USGS Topographic Quadrangle Map.
4	12d	3	Lake Co., Il., SW/4, NW/4, NW/4, Sec. 25, T43N, R10E, 3rd P.M., Lake Zurich, Il. (7.5' Series, 1993 ed.) USGS Topographic Quadrangle Map.
5	NA	1	Lake Co., Il., NE/4, NW/4, NE/4, Sec. 24, T43N, R10E, 3rd P.M., Lake Zurich, Il. (7.5' Series, 1993 ed.) USGS Topographic Quadrangle Map.
6	1a-c	1	Lake Co., Il., NW/4, SE/4, NE/4, Sec. 23, T43N, R10E, 3rd P.M., Lake Zurich, Il. (7.5' Series, 1993 ed.) USGS Topographic Quadrangle Map.
7	29-a	4	Lake Co., Il., NW/4, SW/4, SW/4, Sec. 1, T43N, R10E, 3rd P.M., Lake Zurich, Il. (7.5' Series, 1993 ed.) USGS Topographic Quadrangle Map. (Indian Creek Wetlands)
8	29-a	4	Lake Co., Il., NE/4, SE/4, SE/4, Sec. 2, T43N, R10E, 3rd P.M., Lake Zurich, Il. (7.5' Series, 1993 ed.) USGS Topographic Quadrangle Map. (Indian Creek Wetlands)
9	1a	4	Lake Co., Il., SW/4, NE/4, NW/4, Sec. 1, T43N, R10E, 3rd P.M., Lake Zurich, Il. (7.5' series, 1993 ed.) USGS Topographic Quadrangle Map.
10	42-a	2	Lake Co., Il., NW/4, NW/4, NE/4, Sec. 35, T44N, R10E, 3rd P.M., Grayslake, Il. (7.5' Series, 1993 ed.) USGS Topographic Quadrangle Map.
11	79-a	6	Lake Co., Il., SW/4, NW/4, Sec. 32, T45N, R11E, 3rd P.M., Libertyville, Il. (7.5' Series, 1993 ed.) USGS Topographic Quadrangle Map. (Almond Road Marsh Forest Preserve)

Table 2. Census point locations (continued)

Census point	Wetland number	Watershed Zone	Legal Location
12	50-b	5	Lake Co., IL., NE/4, SE/4, Sec. 14, T44N, R10E, 3rd P.M., Grayslake, IL. (7.5' Series, 1993 ed.) USGS Topographic Quadrangle Map.
13	NA	6	Lake Co., IL., SW/4, NE/4, SE/4, Sec. 27, T45N, R11E, 3rd P.M., Libertyville, IL. (7.5' Series, 1993 ed.) USGS Topographic Quadrangle Map. (River Hill Forest Preserve)
14	NA	8	Lake Co., IL., SW/4, NW/4, SW/4, Sec. 33, T45N, R10E, 3rd P.M., Grayslake, IL. (7.5' Series, 1993 ed.) USGS Topographic Quadrangle Map. (Squaw Creek Timber)

**Table 3. Census point habitat descriptions.**


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<b>Census Point</b>	<b>Habitat Description</b>
1	Upland forest: Small wood lot with a few mature trees. Contains one permanent pond and one ephemeral pond.
2	Wetland: Marsh dominated by cattails with little or no open water.
3	Upland forest: Young woodland with few mature trees and little herbaceous ground cover. Contains one small pond.
4	Wetland: Large open water marsh with cattail border and stands of dead shrubs and trees.
5	Upland forest: Open deciduous woodland with sparse herbaceous ground cover layer.
6	Wetland: Sedge meadow with some spagum moss, wet meadow, drainage ditch, creek, and area of occasional standing water.
7	Wetland: Beaver created open water marsh with cattail border and large stand of dead cottonwoods.
8	Wetland: Large open water marsh with cattail edge created when beaver activity caused inundation of the former smaller marsh and sedge meadow.
9	Wetland: Marsh dominated by cattails with little or no open water, wet meadow.
10	Wetland: Marsh with open water, a few dead trees and cattails.
11	Wetland: Large complex with marsh dominated by cattails and swamp with numerous dead trees.
12	Wetland: Large marsh dominated by cattails with some open water and a drainage ditch.
13	Upland forest: Secondary forest with few mature trees.
14	Upland forest: Mature forest dominated by Oak with open understory.

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**Table 4. Census seasons.**

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<b>Season</b>	<b>Inclusive dates</b>
Winter	1 December to 28 February
Spring	1 March to 30 April
<b>Breeding</b>	<b>1 May to 31 August</b>
<b>Fall</b>	<b>1 September to 30 November</b>

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**Table 5. List of observed species.** Breeding and Fall season census periods. † = Illinois Endangered, †† = Illinois Threatened, \* = introduced species.

<i>Family / Species</i>	<i>Family / Species</i>	<i>Family / Species</i>
<i>Podicipedidae</i>	<i>Hirundinidae</i>	<i>Emberizidae(Emberizinae)</i>
Pied-billed Grebe †	Purple Martin	Rufous-sided Towhee
<i>Phalacrocoracidae</i>	Tree Swallow	Chipping Sparrow
Double-crested Cormorant †	N. Rough-winged Swallow	Field Sparrow
<i>Ardeidae</i>	Barn Swallow	Savannah Sparrow
Green Heron	<i>Corvidae</i>	Fox Sparrow
Great Blue Heron	Blue Jay	Song Sparrow
Great Egret ††	American Crow	Swamp Sparrow
<i>Anatidae</i>	<i>Paridae</i>	White-throated Sparrow
Mute Swan *	Black-capped Chickadee	Dark-eyed Junco
Canada Goose	Tufted Titmouse	<i>Emberizidae (Icterinae)</i>
Wood Duck	<i>Sittidae</i>	Red-winged Blackbird
Mallard	White-breasted Nuthatch	Common Grackle
Blue-winged Teal	<i>Troglodytidae</i>	Eastern Meadowlark
<i>Accipitridae</i>	House Wren	Yellow-headed Blackbird †
Sharp-shinned Hawk †	Winter Wren	Brown-headed Cowbird
Cooper's Hawk †	Marsh Wren	Northern Oriole
Red-tailed Hawk	<i>Mucicapidae (Sylviinae)</i>	<i>Fringillidae</i>
<i>Phasianidae</i>	Golden-crowned Kinglet	House Finch
Ring-necked Pheasant *	Ruby-crowned Kinglet	American Goldfinch
<i>Rallidae</i>	<i>Mucicapidae (Turdinae)</i>	<i>Passeridae</i>
Virginia Rail	Swainson's Thrush	House Sparrow *
Sora	Wood Thrush	
Common Moorhen ††	American Robin	
American Coot	<i>Mimidae</i>	
<i>Charadriidae</i>	Gray Catbird	
Killdeer	Brown Thrasher	
<i>Columbidae</i>	<i>Bombycillidae</i>	
Mourning Dove	Cedar Waxwing	
<i>Trochilidae</i>	<i>Sturnidae</i>	
Ruby-throated Hummingbird	European Starling *	
<i>Alcedinidae</i>	<i>Vireonidae</i>	
Belted Kingfisher	White-eyed Vireo	
<i>Picidae</i>	Solitary Vireo	
Red-headed Woodpecker	Warbling Vireo	
Red-bellied Woodpecker	Red-eyed Vireo	
Downy Woodpecker	<i>Emberizidae (Parulinae)</i>	
Hairy Woodpecker	Yellow Warbler	
Northern Flicker	Yellow-rumped Warbler	
<i>Tyrannidae</i>	Black-throated Green Warbler	
Eastern Wood-Pewee	Common Yellowthroat	
Willow Flycatcher	<i>Emberizidae (Cardinalinae)</i>	
Eastern Phoebe	Northern Cardinal	
Great Crested Flycatcher	Indigo Bunting	
Eastern Kingbird		

**Table 6. Breeding Census Data.** Standardized common names of bird species are used (A.O.U. Check-list of North American Birds, 1982). The values represent the highest count of the two censuses conducted at each census point. Counts for each species at each point are presented as well as the total count for each species. The "C" is a measure of the level of concern for each species (Thompson et al, 1992). † = Illinois Endangered, †† = Illinois Threatened, \* = introduced species.

Family / Species	Census Point														Total	C
	1	2	3	4	5	6	7	8	9	10	11	12	13	14		
<b>Podicipedidae</b>																
Pied-billed Grebe ††											12				12	
<b>Phalacrocoracidae</b>																
Double-crested Cormorant ††							1								1	
<b>Ardeidae</b>																
Great Blue Heron				1			30	6		1	1				39	
Great Egret †							1								1	
Green-backed Heron								2	1		3				6	
<b>Anatidae</b>																
Mute Swan *							9								9	
Canada Goose											3				3	
Wood Duck								10	1	4	4				19	
Mallard		1						5	1	4	16				27	
Blue-winged Teal											10				10	
<b>Accipitridae</b>																
Red-tailed Hawk											2				2	1
<b>Phasianidae</b>																
Ring-necked Pheasant *							1								1	
<b>Rallidae</b>																
Virginia Rail		1													1	
Sora									1						1	
American Coot											1				1	
<b>Charadriidae</b>																
Killdeer				1				2			1				4	1
<b>Columbidae</b>																
Mourning Dove		3					1			3		2	3		12	1
<b>Picidae</b>																
Red-headed Woodpecker				1											1	
Red-bellied Woodpecker	1			1									1		3	
Downy Woodpecker	1		1	2	1								1	1	7	
Hairy Woodpecker					1										1	
Northern Flicker										1			1		2	1
<b>Tyrannidae</b>																
Willow Flycatcher							1	1							2	3
Eastern Phoebe					1										1	2
Great Crested Flycatcher	1		1				2								4	3
Eastern Kingbird											1				1	2

Table 6. Breeding Census Data (continued)

Family / Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Total	C
<b>Hirundinidae</b>																
Purple Martin											2				2	3
Tree Swallow				1				2		1	4				8	3
N. Rough-winged Swallow											2				2	2
Barn Swallow						6			2			1	2		11	1
<b>Corvidae</b>																
Blue Jay	1			2	1					1			2	4	11	
American Crow	1		1	1							2		3	2	10	
<b>Paridae</b>																
Black-capped Chickadee	1		2	1	1		1	3		1	2		7	5	24	
Tufted Titmouse			2												2	
<b>Sittidae</b>																
White-breasted Nuthatch	1		1										2		4	
<b>Troglodytidae</b>																
House Wren			2	1		1					2		2		8	1
Marsh Wren				1					3		2	2			8	4
<b>Mucicapidae (Turdinae)</b>																
Swainson's Thrush						1									1	
Wood Thrush			1												1	4
American Robin	1	1	1	1	1	1	2		1	1	2		3	1	12	1
<b>Mimidae</b>																
Gray Catbird								1		1	1				3	3
Brown Thrasher		1									2		1	2	6	
<b>Bombycillidae</b>																
Cedar Waxwing	3			2	2		4								11	2
<b>Sturnidae</b>																
European Starling *	1						1						4		6	
<b>Vireonidae</b>																
White-eyed Vireo		1													1	3
Warbling Vireo		1		1						2					4	2
Red-eyed Vireo	1		1							2					4	2
<b>Emberizidae (Parulinae)</b>																
Yellow Warbler		1						1			1				3	3
Common Yellowthroat	1	2	1	1		2	2	2	1		6	1			19	2
<b>Emberizidae (Cardinalinae)</b>																
Northern Cardinal	1		2	1	1	1		1		1			2	1	11	
Indigo Bunting	3	1	1	1	1	2	1	1				1			12	2
<b>Emberizidae (Emberizinae)</b>																
Rufous-sided Towhee	1														1	3
Chipping Sparrow												1			1	2
Field Sparrow		1		1											2	
Savannah Sparrow						1									1	3
Song Sparrow	1	5				2	1		1	1	3	7		1	22	3

Table 6. Breeding Census Data (continued)

<i>Family / Species</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Total	C
<i>Emberizidae (Icterinae)</i>																
Red-winged Blackbird	1	30		15		4	10	16	8	9	8	17	3	3	124	2
Eastern Meadowlark						1									1	3
Yellow-headed Blackbird †											11				11	4
Common Grackle	1							10		3			1		15	
Brown-headed Cowbird	1			1		1			3	2				1	9	1
Northern Oriole							1	1		1			2	1	6	3
<i>Fringillidae</i>																
House Finch										2	2		1		5	
American Goldfinch	1	1		1				1			2	1	1	1	9	2
<i>Passeridae</i>																
House Sparrow *										2				4	6	
<b>Total Individuals</b>	<b>25</b>	<b>50</b>	<b>17</b>	<b>38</b>	<b>10</b>	<b>23</b>	<b>69</b>	<b>65</b>	<b>23</b>	<b>45</b>	<b>108</b>	<b>33</b>	<b>45</b>	<b>29</b>	<b>580</b>	
<b>Species Richness</b>	<b>21</b>	<b>14</b>	<b>12</b>	<b>21</b>	<b>9</b>	<b>12</b>	<b>17</b>	<b>17</b>	<b>17</b>	<b>21</b>	<b>28</b>	<b>9</b>	<b>21</b>	<b>14</b>	<b>67</b>	
<b># of Species of Concern</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>		<b>3</b>	<b>6</b>	<b>5</b>	<b>2</b>	<b>4</b>	<b>7</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>18</b>	

**Table 7. Fall Census Data.** Standardized common names of bird species are used (A.O.U. Check-list of North American Birds, 1982). The values represent sum of the counts for the point censuses. Counts for each species at each point are presented, as well as the total count for each species. "C" is a measure of the level of concern for each species (Thompson et al, 1992). †† = Illinois Threatened, \* = introduced species.

Family / Species	Census Point														Total	C
	1	2	3	4	5	6	7	8	9	10	11	12	13	14		
<i>Podicipedidae</i>																
Pied-billed Grebe ††							2								2	
<i>Ardeidae</i>																
Green-backed Heron								1							1	
<i>Anatidae</i>																
Mute Swan *							6								6	
Canada Goose							10								10	
Wood Duck							5	5			2				12	
Mallard				15			25	20							60	
<i>Accipitridae</i>																
Red-tailed Hawk							2								2	
<i>Rallidae</i>																
American Coot				14											14	
<i>Columbidae</i>																
Mourning Dove								3		1					4	1
<i>Picidae</i>																
Red-bellied Woodpecker										1					1	
Downy Woodpecker	2	2				2	1	1		3					12	
Northern Flicker			1	1		2	1			1					6	2.3
<i>Corvidae</i>																
Blue Jay		1											1		2	
American Crow							1			5	1				7	
<i>Paridae</i>																
Black-capped Chickadee	3	1	3	1			2	2	4	1	3		1		21	
<i>Sittidae</i>																
White-breasted Nuthatch	1		3								1				5	
<i>Troglodytidae</i>																
Winter Wren										1					1	
<i>Mucicapidae (Turdinae)</i>																
Golden-crowned Kinglet			3		5					1			6		15	2.3
Ruby-crowned Kinglet	1				1							1			3	
American Robin			5	5	1		1			5		2	1		20	1
<i>Bombycillidae</i>																
Cedar Waxwing	1	1		6		3	10								21	2.3
<i>Sturnidae</i>																
European Starling *										6					6	
<i>Vireonidae</i>																
Solitary Vireo										1					1	3
<i>Emberizidae (Parulinae)</i>																
Yellow-rumped Warbler			1		2				3				1		7	
Black-throated Green Warbler					1										1	2.3

Table 7: Fall Census Data (continued)

Family / Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Total	C
<i>Emberizidae</i> ( <i>Cardinalinae</i> )																
Northern Cardinal			1			3	1						1		6	
<i>Emberizidae</i> ( <i>Emberizinae</i> )																
Rufous-sided Towhee											1				1	1.7
Song Sparrow						6	1	2	3	2	6	3		1	24	1
Swamp Sparrow									1						1	2.7
White-throated Sparrow		2	1	3			5			3	2		1		17	
Dark-eyed Junco				1					2			3			6	
<i>Emberizidae</i> ( <i>Icterinae</i> )																
Red-winged Blackbird										10				10	20	2.3
Common Grackle											3				3	
Brown-headed Cowbird										3			1		4	
<i>Fringillidae</i>																
American Goldfinch	1		2	3		5	2		2	1	1			3	20	
<i>Passeridae</i>																
House Sparrow *										5					5	
<b>Total Individuals</b>	<b>9</b>	<b>7</b>	<b>20</b>	<b>49</b>	<b>10</b>	<b>21</b>	<b>75</b>	<b>34</b>	<b>15</b>	<b>50</b>	<b>20</b>	<b>6</b>	<b>6</b>	<b>24</b>	<b>347</b>	
<b>Species Richness</b>	<b>6</b>	<b>5</b>	<b>9</b>	<b>9</b>	<b>5</b>	<b>6</b>	<b>16</b>	<b>7</b>	<b>6</b>	<b>17</b>	<b>9</b>	<b>2</b>	<b>5</b>	<b>8</b>	<b>36</b>	
<b># of Species of Concern</b>							<b>1</b>			<b>1</b>					<b>2</b>	

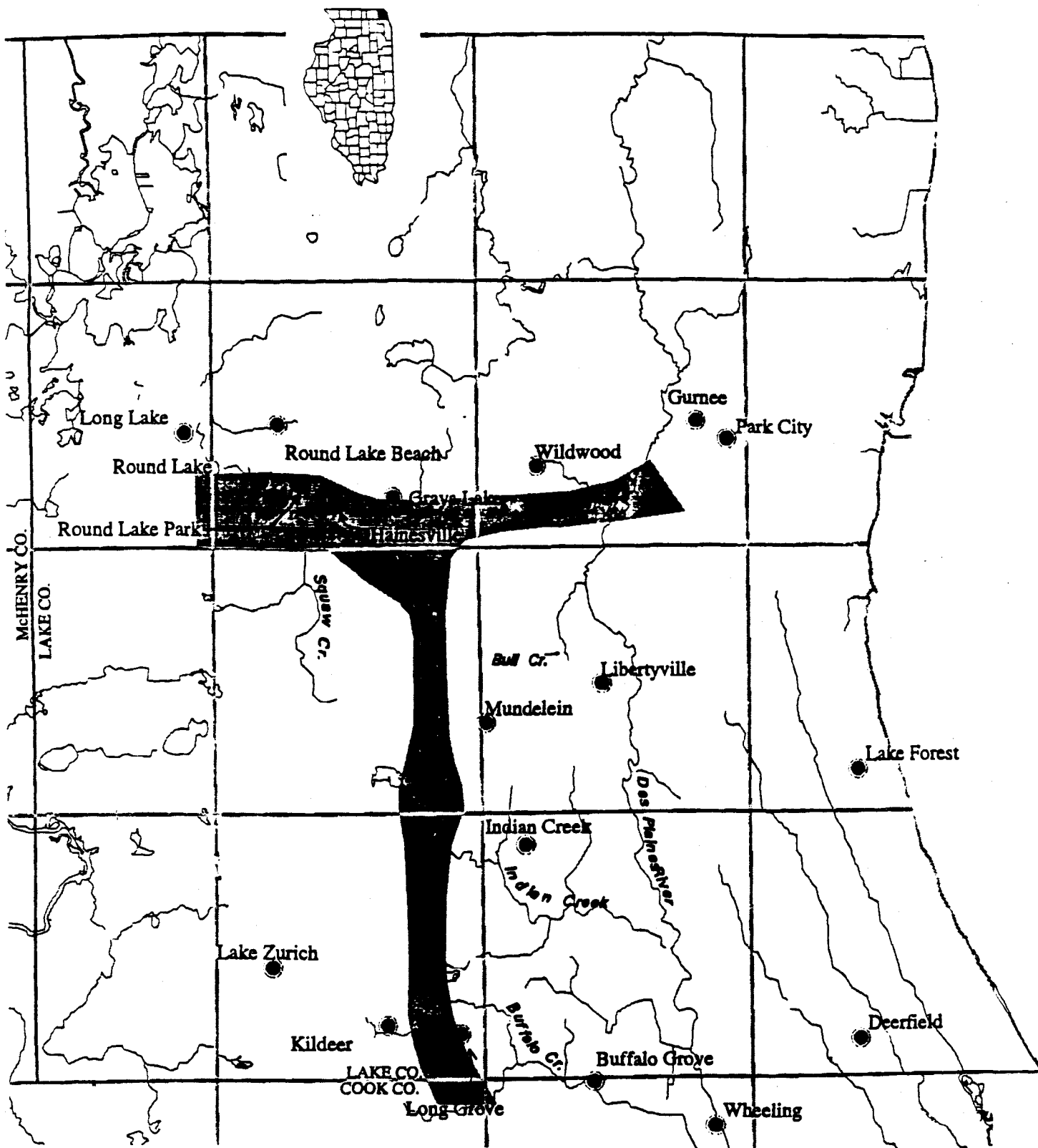


Figure 1. Approximate location of the FAP 342 (Rt. 53) project corridor, Lake County, Illinois.



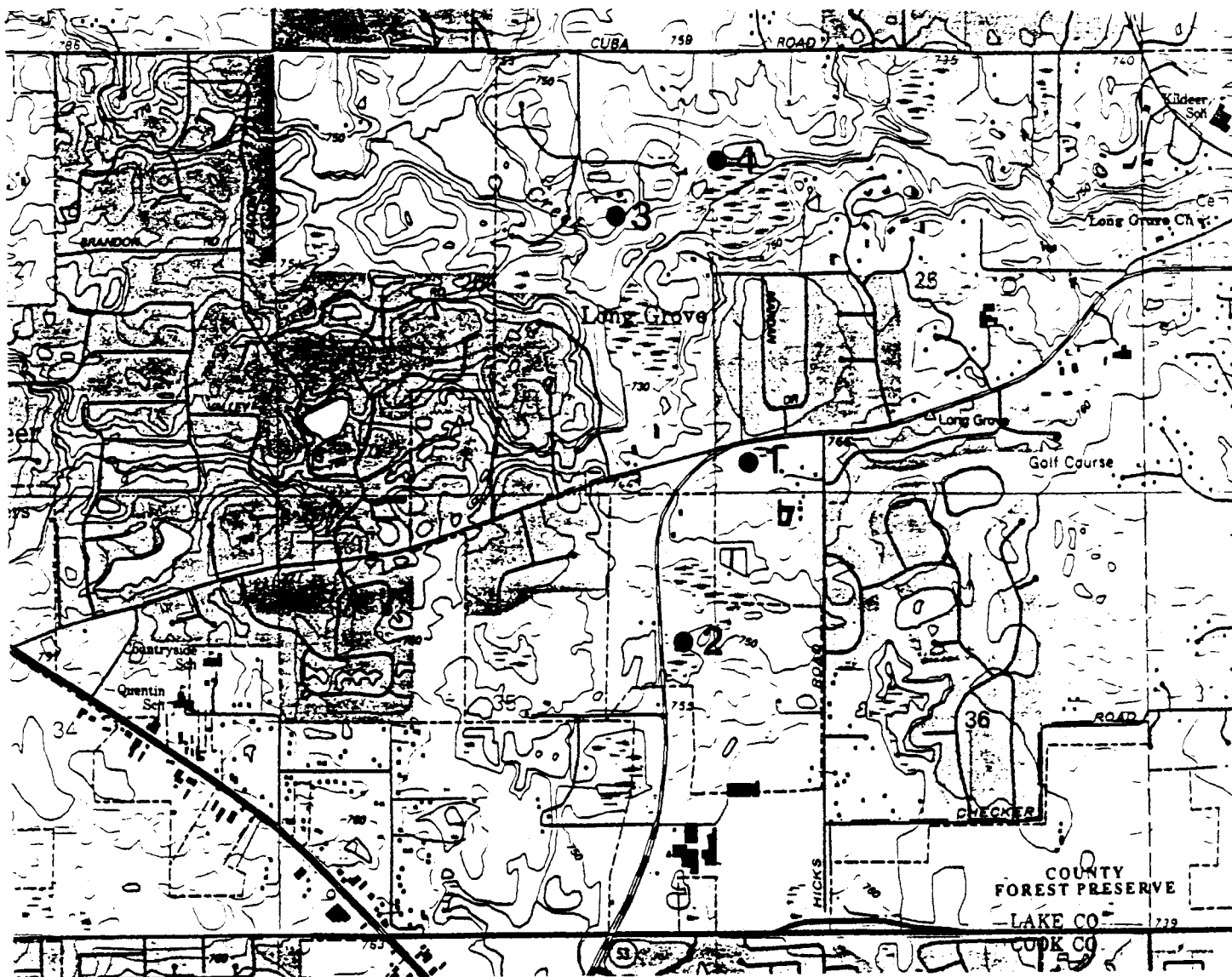


Figure 2. Location of avian census points 1-4 within the FAP 342 project area, Lake Co., Illinois [Lake Zurich, IL. (7.5' series, 1993 ed.) USGS Topographic Quadrangle Map].

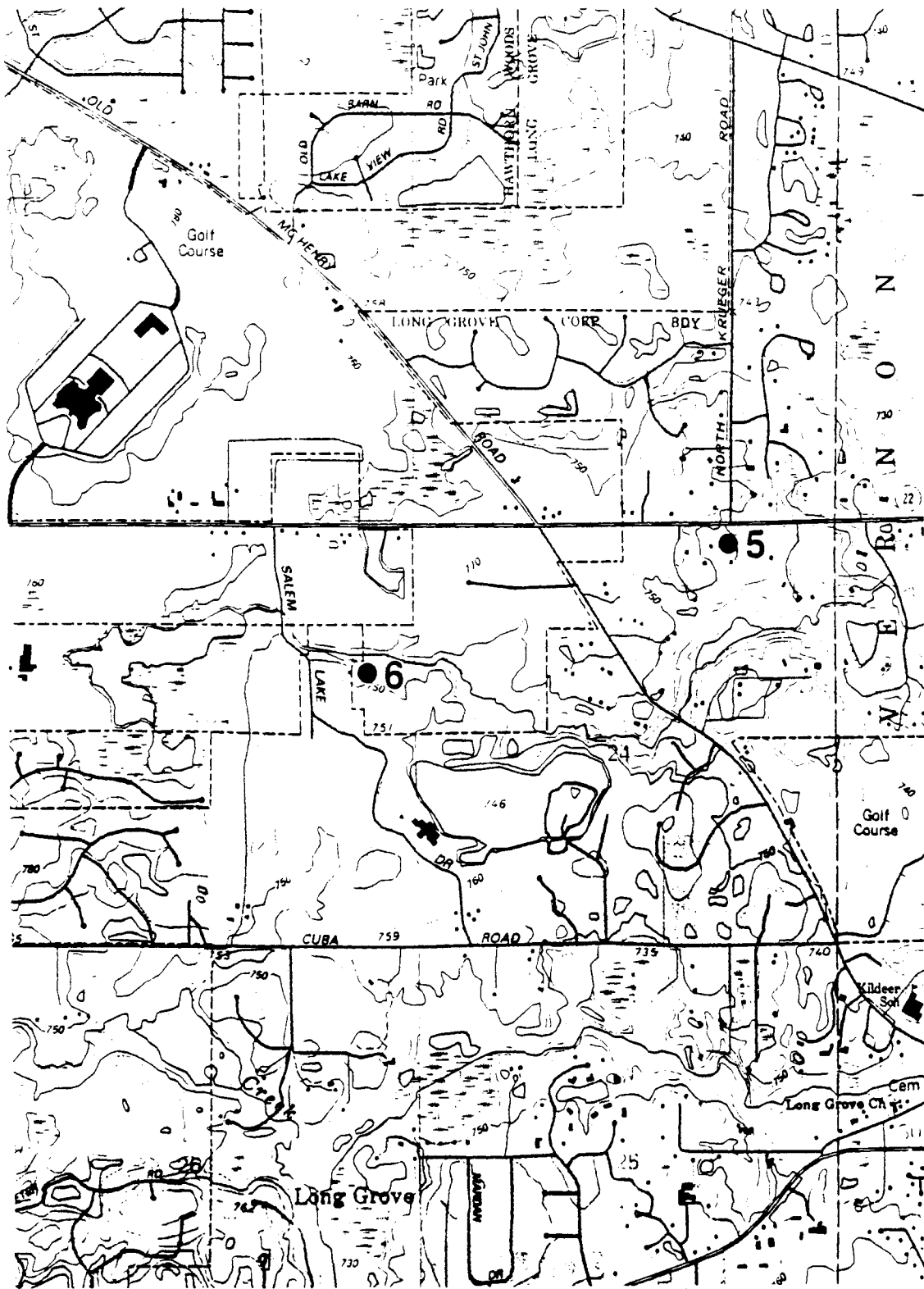


Figure 3. Location of avian census points 5 and 6 within the FAP 342 project area, Lake Co., Illinois [Lake Zurich, IL (7.5' series, 1993 ed.) USGS Topographic Quadrangle Map].

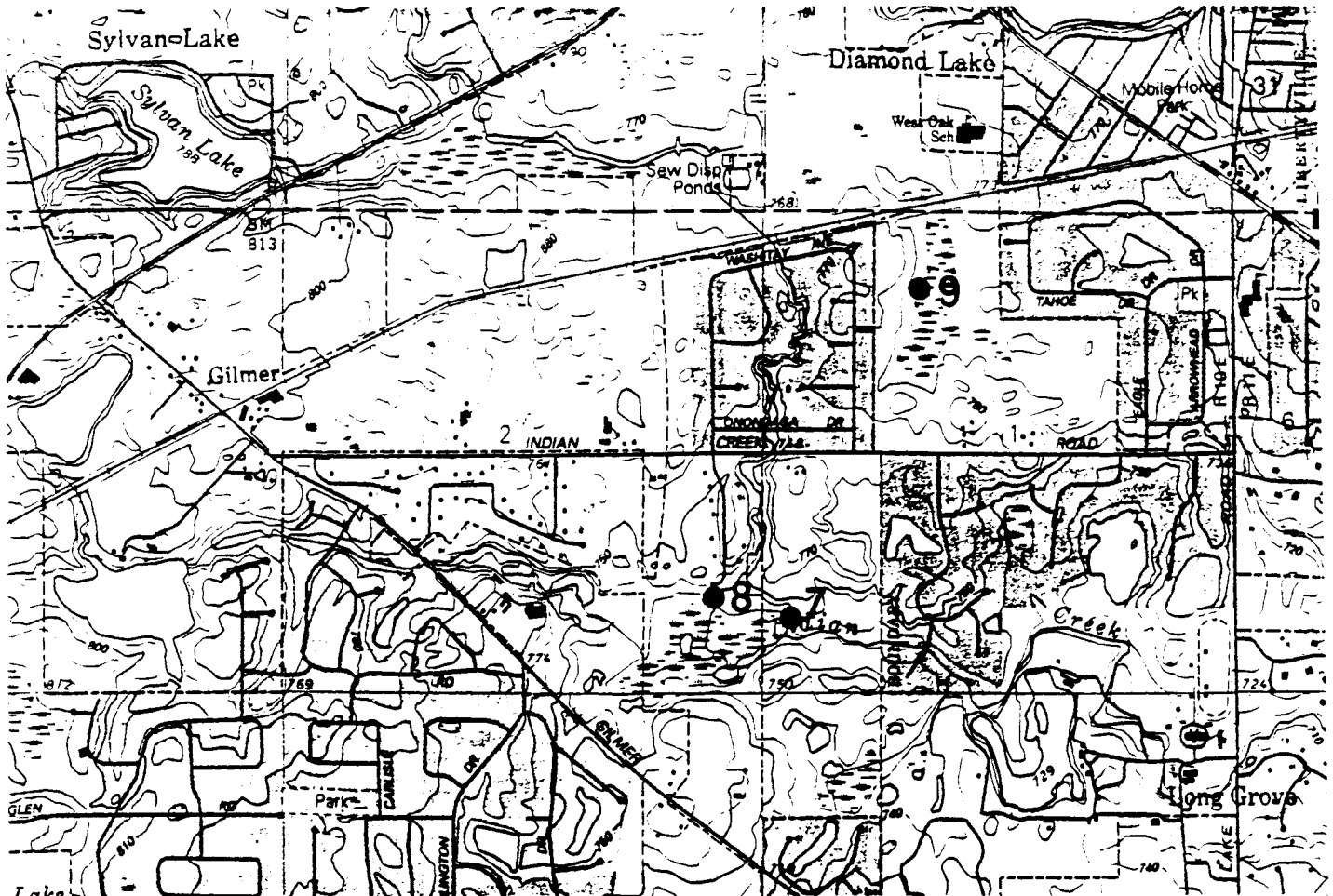


Figure 4. Location of avian census points 7-9 within the FAP 342 project area, Lake Co., Illinois [Lake Zurich, Il. (7.5' series, 1993 ed.) USGS Topographic Quadrangle Map].

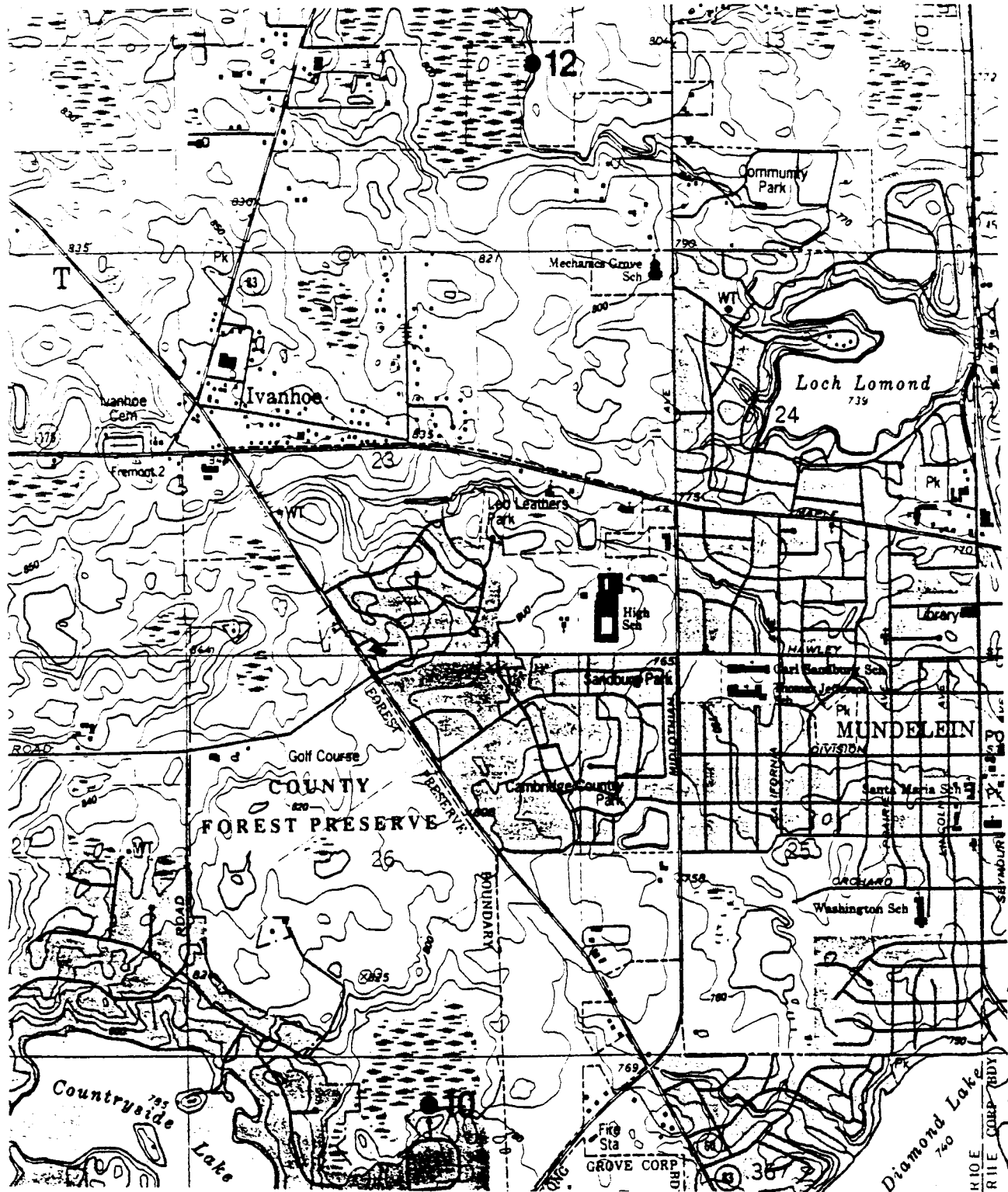


Figure 5. Location of avian census points 10 and 12 within the FAP 342 project area, Lake Co., Illinois [Lake Zurich, Il. (7.5' series, 1993 ed.) USGS Topographic Quadrangle Map].

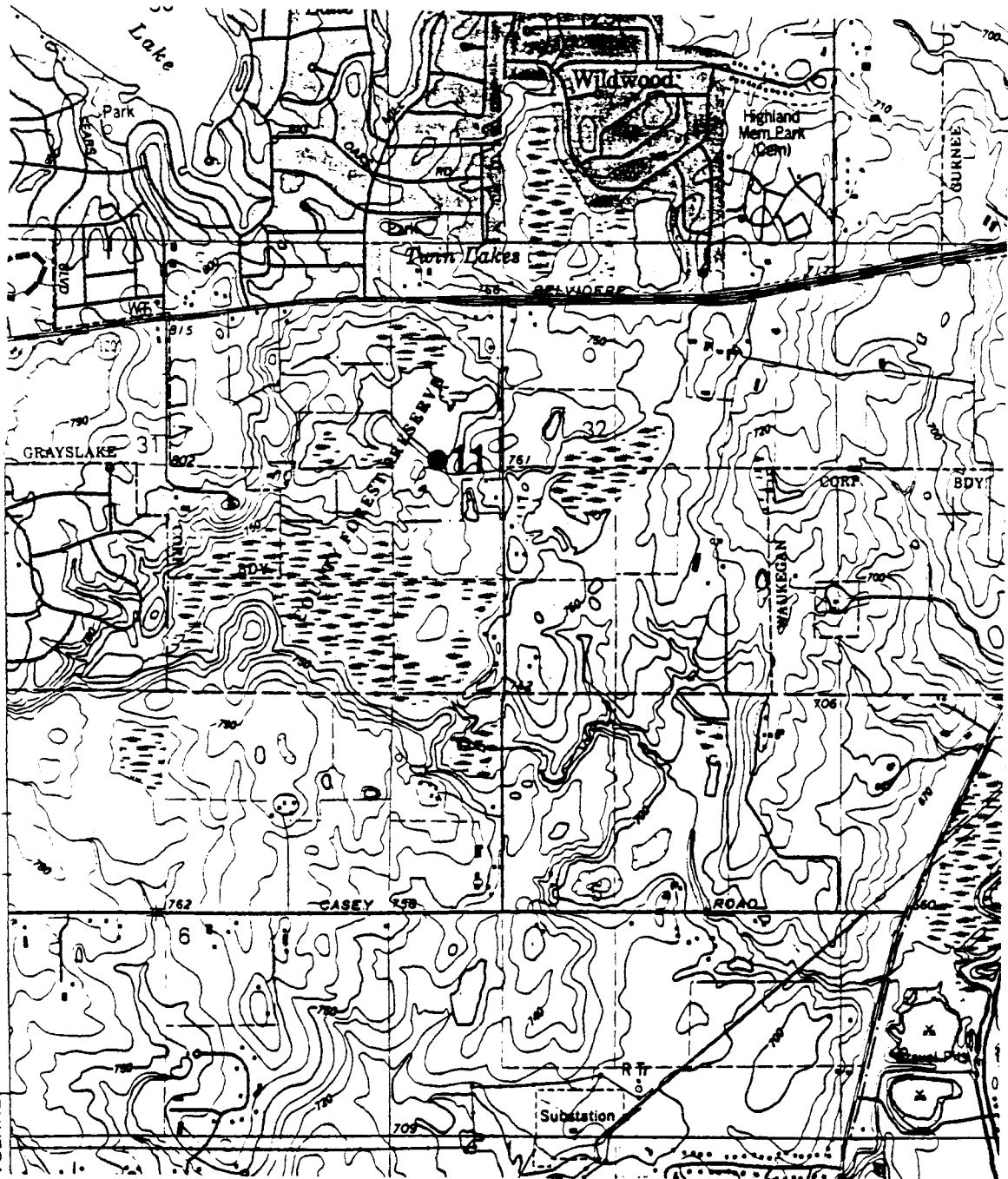


Figure 6. Location of avian census points 11 within the FAP 342 project area, Lake Co., Illinois [Lake Zurich, II. (7.5' series, 1993 ed.) USGS Topographic Quadrangle Map].

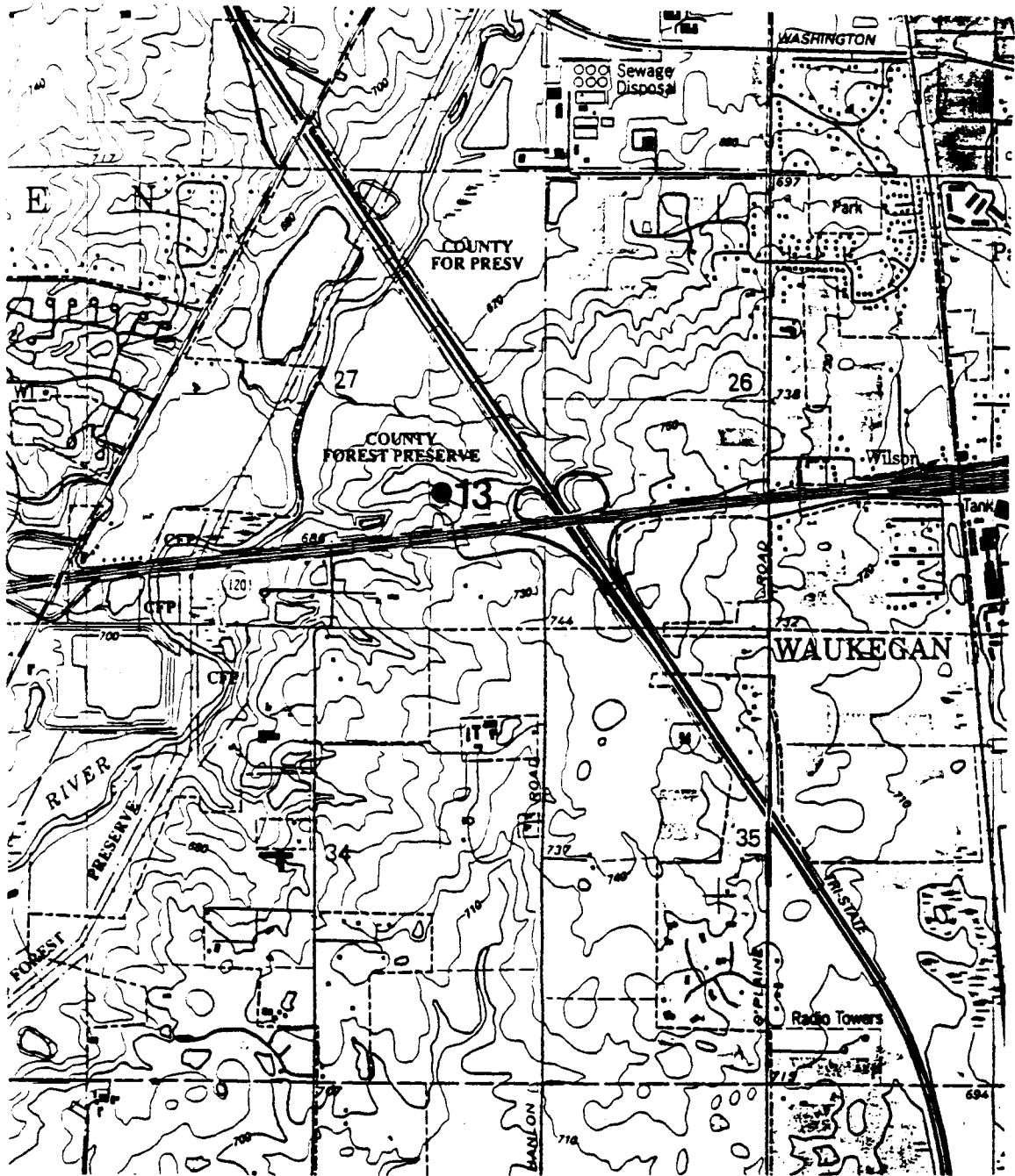


Figure 7. Location of avian census point 13 within the FAP 342 project area, Lake Co., Illinois [Libertyville, Il. (7.5' series, 1993 ed.) USGS Topographic Quadrangle Map].

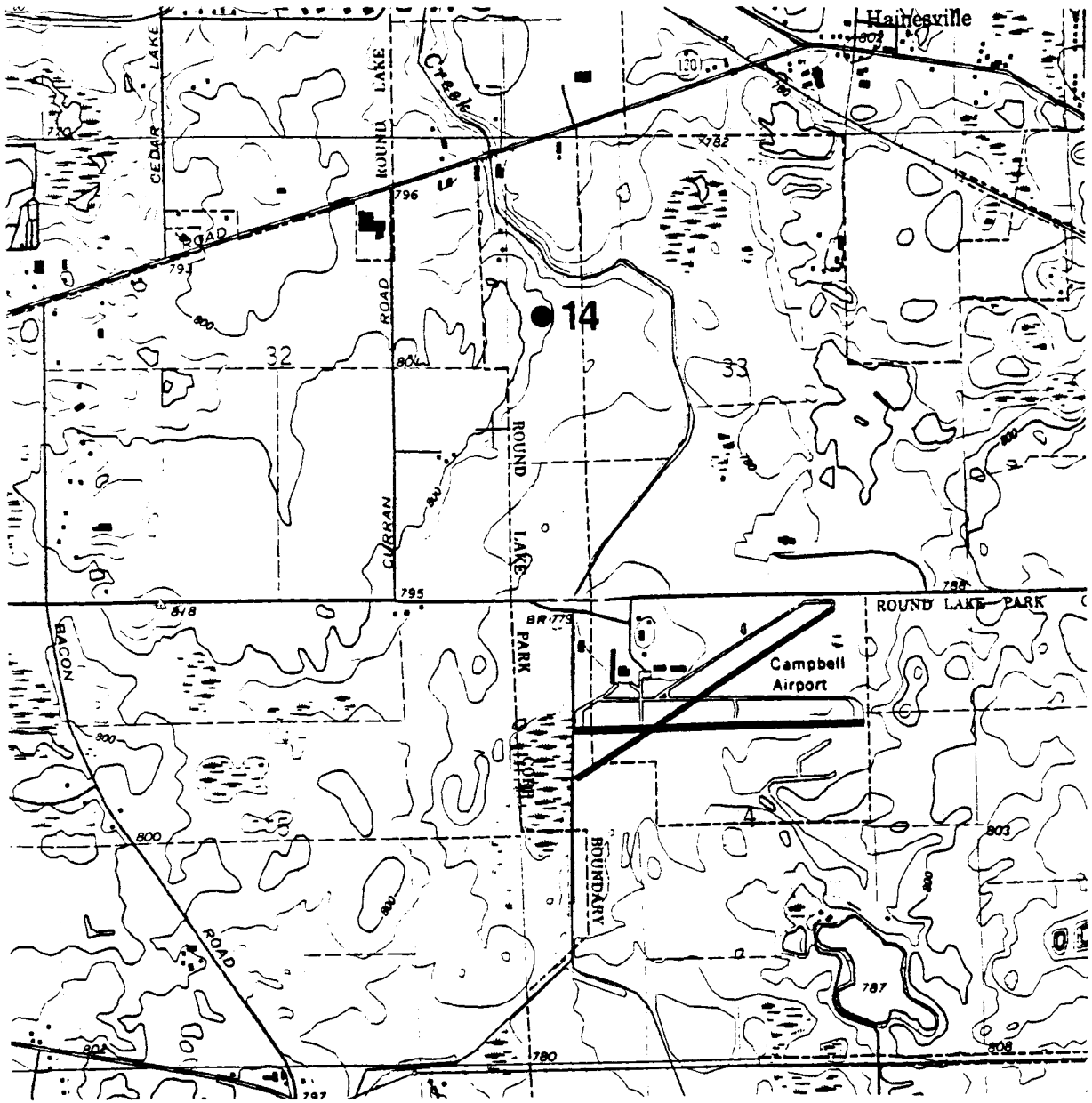


Figure 8 Location of avian census point 14 within the FAP 342 project area, Lake Co., Illinois [Libertyville, Il. (7.5' series, 1993 ed.) USGS Topographic Quadrangle Map].

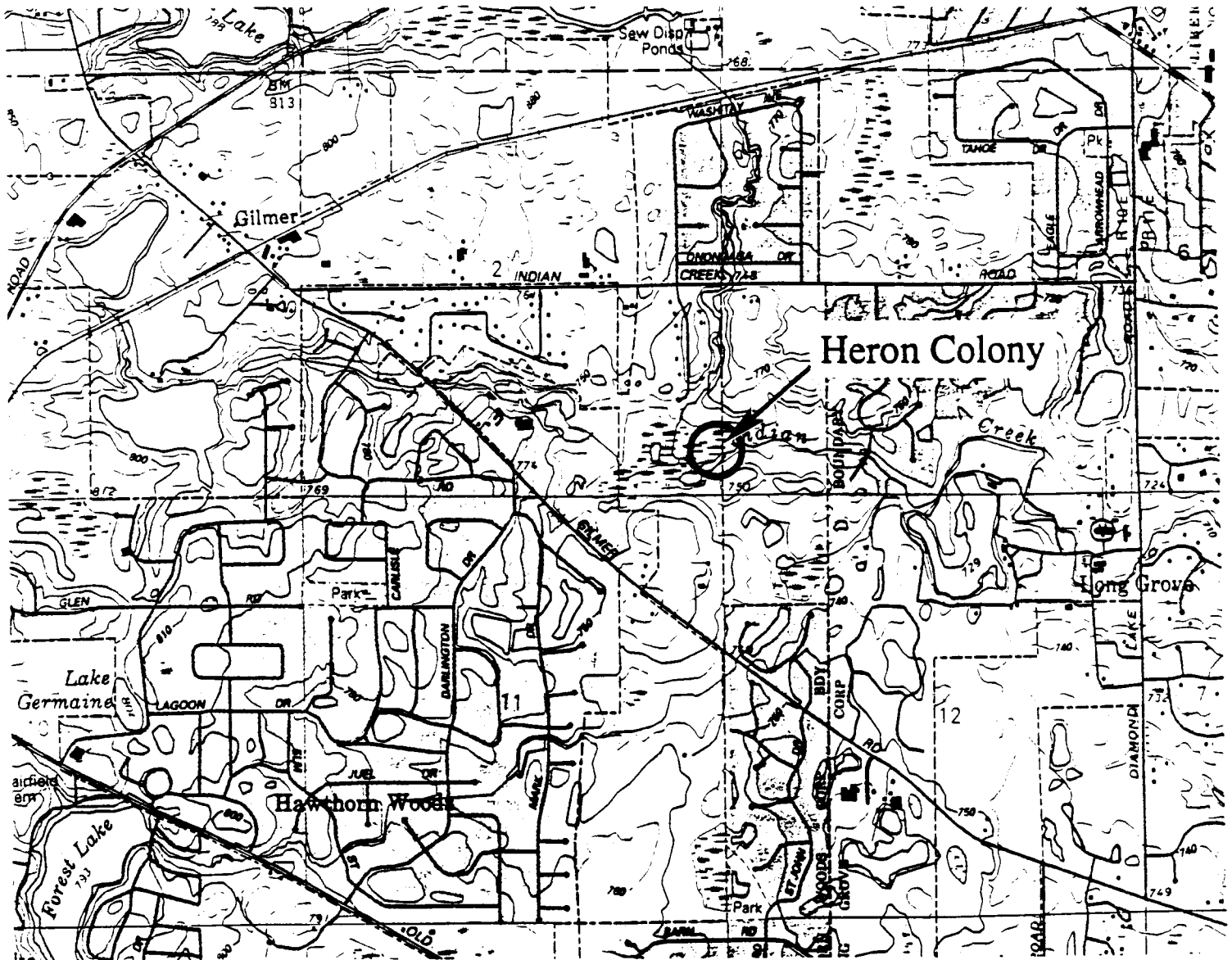


Figure 9. Location of the Indian Creek Wetlands Heron colony within the FAP 342 project area, Lake County, Illinois (Lake Zurich (7.5' series, 1993 ed.) USGS Topographic Quadrangle Map).