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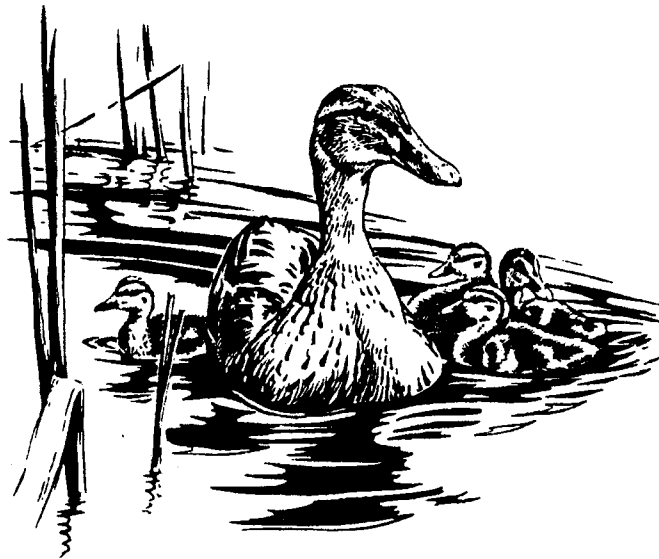
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# ILLINOIS NATURAL HISTORY SURVEY

CENTER FOR WILDLIFE ECOLOGY



**1997-1998 Aerial Waterbird Inventories of Chautauqua National Wildlife  
Refuge and Peoria Lake Environmental Management Program Sites**

**Annual Report**

**by**

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**25 August 1998**



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The purpose of this project was to aeri ally inventory waterfowl (ducks and geese), bald eagles, double-crested cormorants, and white pelicans during fall and spring, 1997-1998, at Upper Peoria Lake and Lake Chautauqua Environmental Management Program (EMP) sites. Inventories were conducted from light aircraft flying at low levels. Fall inventories were made on 3 and 10 September; 6, 14, 20, and 27 October; 4, 10, 17, and 24 November; 1, 11, and 16 December; and 13 January. Spring inventories were made on 12 and 24 February; 5, 10, and 23 March; and 2 and 10 April. Species of waterbirds (Table 1) and their respective numbers were recorded during each inventory.

The inventory data are summarized by site in tabular form displaying the peak (highest number counted for all inventories) population count by species for each compartment at each site and for the entire site during fall (September - January) and spring (February - April) (Tables 2 and 9). The peak number for the entire site may not represent the sum of the peaks for all the compartments because the peak numbers in the various compartments could have occurred on different flights. Additionally, the results of each waterfowl inventory are provided by date for each site (Tables 7, 8, 10, and 11). Copies of maps delineating the areas inventoried at each site are also provided (Figures 1 and 2).

### **Upper Peoria Lake**

The Upper Peoria Lake EMP site is divided into two inventory areas, the lake segment and the 168-acre Forested Wetland Management Area (FWMA) (Figure 1). In the lake segment, construction of a barrier island extending roughly one mile and the dredging of the East River side channel was completed in December 1994. A second island was formed during construction of the barrier island from dredged material

unsuitable for use in the barrier island. The second island runs parallel to the barrier island. The fall of 1997 was the third waterfowl aerial censusing period (September - January) since the completion of the islands. The peak numbers for several species of waterbirds in the lake segment during fall 1997 were the highest recorded since INHS began monitoring in 1991. These species included mallards, American black ducks, northern pintails, American wigeons, ring-necked ducks, and American coots. During the falls of 1995, 1996, and 1997 the majority of the dabbling ducks, particularly mallards, and Canada geese were observed on and around the barrier islands. Peak numbers for the lake segment, fall 1991 through 1997 and spring 1992 through 1998, are provided in tables 3 and 4, respectively.

In the beginning of this monitoring project we were unsure if the FWMA could be accurately surveyed from a fixed-wing plane. Waterfowl utilizing forested wetlands are difficult to inventory because they are concealed by vegetation and their numbers are underestimated (Geis 1966, Hawkins and Addy 1966, Conroy et al. 1988, Sherman 1990). The fall of 1997 was the third waterfowl aerial censusing period (September - January) of the FWMA since the levees were constructed and the area was inundated. Construction was reported as completed by July 1996. Waterfowl that could positively be identified by species and enumerated were recorded. For the 1996-1997 survey period, we began recording waterfowl that could not be identified by species as "unknowns", thereby acknowledging that there are visibility biases but still treating the observations as an index to the relative abundance of waterfowl. Peak numbers for the FWMA, fall 1991 through 1997 and spring 1992 through 1998, are provided in tables 5 and 6, respectively.

## **Lake Chautauqua**

The Lake Chautauqua EMP site is divided into two inventory areas, Upper and Lower (Figure 2). Illinois River water levels remained high through mid-July which complicated drawdown of the lower pool. Although drawdown was relatively late, moist-soil plants became established and produced a good waterfowl food crop and sufficient water made the food available to waterfowl. This was not the case during fall 1996 when water levels on lower Chautauqua were maintained at minimum levels to facilitate construction activities food availability to waterfowl was minimal. Waterfowl responded to the food resource during fall 1997 and the peak number of total ducks observed in the lower pool increased 482% from fall 1996 to fall 1997. Peak numbers for Upper and Lower Chautauqua, fall 1997 and spring 1998, are provided in Table 9.



Table 1. Common names of waterbirds aerially inventoried and abbreviations used in the report.

Common name		Abbreviation
<b>Dabbling ducks</b>		
Mallard	=	MALLARD
American black duck	=	BLK
Northern pintail	=	PNT
Blue-winged teal	=	BWT
Green-winged teal	=	GWT
American wigeon	=	WIG
Gadwall	=	GAD
Northern shoveler	=	SH
<b>Diving ducks</b>		
Lesser and greater scaup	=	SCAUP
Ring-necked duck	=	RN
Canvasback	=	CNVB
Redhead	=	RH
Ruddy duck	=	RDY
Common goldeneye	=	GLD
Bufflehead	=	BH
<b>Mergansers</b>		
Common merganser	=	CM
Red-breasted merganser	=	RBM
Hooded merganser	=	HM
<b>Unknown</b>	=	UNK
<b>Geese</b>		
Canada goose	=	CG
Lesser snow goose	=	SG
<b>American coot</b>	=	COOT
<b>Bald Eagles</b>		
Adult	=	AD
Immature	=	IMM
<b>Double-crested cormorant</b>	=	CORM
<b>White pelican</b>	=	PEL

# UPPER PEORIA LAKE

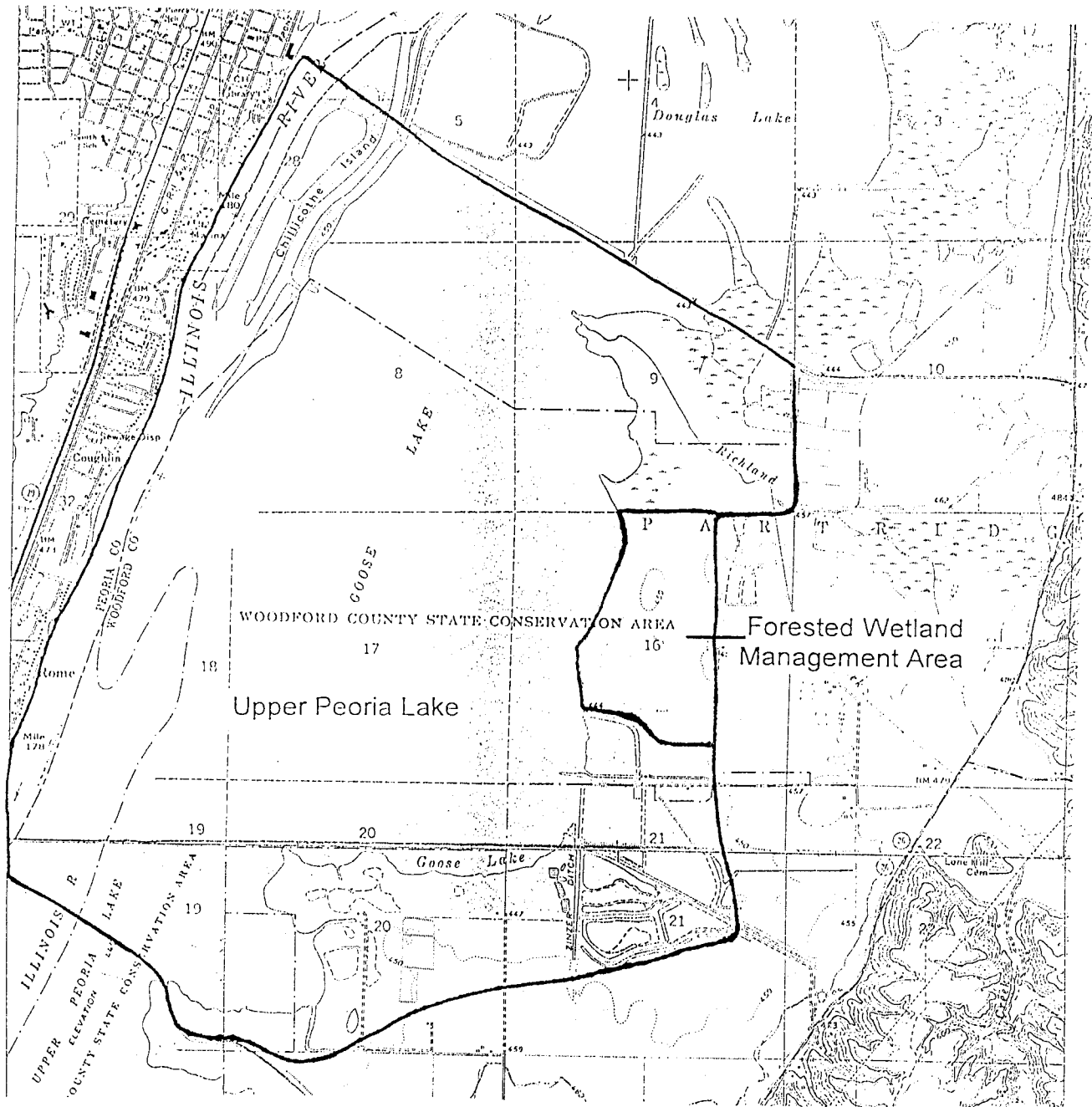


Figure 1. The Upper Peoria Lake EMP site with boundaries drawn delineating the census areas.

Table 2. Peak numbers of waterbirds aerially inventoried by the Illinois Natural History Survey at the Upper Peoria Lake EMP site, fall 1997 and spring 1998<sup>a</sup>.

	Upper Peoria Lake		Forested Wetland Management Area		Total EMP site	
	Fall	Spring	Fall	Spring	Fall	Spring
<b>Dabbling ducks</b>						
Mallard	63,000	2,550	600	300	63,100	2,550
American black duck	7,000	200	0	10	7,000	200
Northern pintail	2,500	150	0	0	2,500	150
Blue-winged teal	50	0	0	20	50	20
Green-winged teal	200	0	0	0	200	0
American wigeon	700	25	0	0	700	25
Gadwall	1,500	100	0	0	1,500	100
Northern shoveler	0	0	0	0	0	0
All dabbling ducks	70,700	2,750	600	320	70,800	2,750
<b>Diving ducks</b>						
Lesser & greater scaup	800	150	0	0	800	150
Ring-necked duck	1,500	400	0	0	1,500	400
Canvasback	100	100	0	0	100	100
Redhead	0	50	0	0	0	50
Ruddy duck	0	20	0	0	0	20
Common goldeneye	900	0	0	0	900	0
Bufflehead	0	0	0	0	0	0
All diving ducks	1,800	500	0	0	1,800	500
<b>Mergansers</b>						
Common merganser	500	0	0	0	500	0
Red-breasted merganser	0	0	0	0	0	0
Hooded merganser	0	0	0	0	0	0
All mergansers	500	0	0	0	500	0
<b>Unknown</b>	0	0	200	0	200	0
<b>All ducks</b>	70,700	2,775	600	320	70,800	2,935
<b>Geese</b>						
Canada goose	1,500	200	0	0	1,500	200
Lesser snow goose	300	0	0	0	300	0
<b>American coot</b>	3,000	200	0	300	3,000	500
<b>Bald eagles</b>						
Adult	1	1	0	0	1	1
Immature	2	2	0	0	2	2
All eagles	3	2	0	0	3	2
<b>Double-crested cormorant</b>	300	0	0	0	300	0
<b>White pelican</b>	20	0	0	0	20	0

<sup>a</sup> The peak number for the entire site may not represent the sum of the peaks for all the compartments because the peak numbers in the various compartments could have occurred on different flights.

Table 3. Peak numbers of waterbirds aerially inventoried by the Illinois Natural History Survey at the Upper Peoria Lake EMP site during fall, 1991-1997.

	1991	1992	1993	1994	1995	1996	1997
<b>Dabbling ducks</b>							
Mallard	1,000	3,000	1,000	400	5,000	29,000	63,100
American black duck	75	150	50	50	400	3,000	7,000
Northern pintail	200	0	50	0	600	700	2,500
Blue-winged teal	20	0	0	0	30	200	50
Green-winged teal	0	0	50	300	50	500	200
American wigeon	0	0	0	0	0	100	700
Gadwall	800	0	0	0	1,000	2,500	1,500
Northern shoveler	0	0	0	0	0	75	0
All dabbling ducks	1,850	3,150	1,050	700	6,000	35,700	70,800
<b>Diving ducks</b>							
Lesser and greater scaup	250	300	0	0	0	1,200	800
Ring-necked duck	0	300	0	100	300	500	1,500
Canvasback	0	0	0	0	0	100	100
Redhead	0	0	0	0	0	0	0
Ruddy duck	0	0	0	0	0	0	0
Common goldeneye	50	2,000	3,500	200	100	500	900
Bufflehead	0	0	0	0	0	4,500	0
All diving ducks	250	2,000	3,500	200	300	5,500	1,800
<b>Mergansers</b>							
Common merganser	0	1,000	1,000	0	700	50	500
Red-breasted merganser	0	0	0	0	0	0	0
Hooded merganser	0	0	0	0	0	0	0
All mergansers	0	0	1,000	0	700	50	500
<b>All ducks</b>	<b>2,050</b>	<b>5,310</b>	<b>4,500</b>	<b>800</b>	<b>6,000</b>	<b>41,200</b>	<b>70,800</b>
<b>Geese</b>							
Canada goose	100	0	50	100	2,000	1,500	1,500
Lesser snow goose	0	0	0	0	50	500	300
<b>American coot</b>	<b>300</b>	<b>1,000</b>	<b>0</b>	<b>1,000</b>	<b>1,000</b>	<b>2,300</b>	<b>3,000</b>
<b>Bald eagles</b>							
Adult	0	1	0	0	8	2	1
Immature	0	2	0	0	3	0	2
All eagles	0	3	0	0	11	2	3
<b>Double-crested cormorant</b>	<b>0</b>	<b>50</b>	<b>25</b>	<b>0</b>	<b>100</b>	<b>800</b>	<b>300</b>
<b>White pelican</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>50</b>	<b>20</b>

Table 4. Peak numbers of waterbirds aerially inventoried by the Illinois Natural History Survey at the Upper Peoria Lake EMP site during spring, 1992-1998.

	1992	1993	1994	1995	1996	1997	1998
<b>Dabbling ducks</b>							
Mallard	300	0	100	700	2,100	700	2,550
American black duck	0	0	0	0	50	0	200
Northern pintail	0	0	0	0	0	0	150
Blue-winged teal	100	0	0	0	0	0	20
Green-winged teal	100	0	0	0	0	0	0
American wigeon	200	0	0	0	0	0	25
Gadwall	0	0	0	0	0	0	100
Northern shoveler	0	0	0	0	0	0	0
All dabbling ducks	300	0	100	700	2,150	700	2,750
<b>Diving ducks</b>							
Lesser and greater scaup	200	100	50	0	0	0	150
Ring-necked duck	0	0	50	0	0	0	400
Canvasback	0	0	0	150	0	150	100
Redhead	0	0	0	0	0	0	50
Ruddy duck	0	0	0	0	0	0	20
Common goldeneye	400	0	25	50	750	50	0
Bufflehead	0	0	0	0	0	0	0
All diving ducks	600	100	50	150	750	150	500
<b>Mergansers</b>							
Common merganser	100	100	400	4,000	1,800	4,000	0
Red-breasted merganser	0	0	0	0	0	0	0
Hooded merganser	0	0	0	0	0	0	0
All mergansers	100	100	400	4,000	1,800	4,000	0
<b>All ducks</b>	<b>1,000</b>	<b>100</b>	<b>500</b>	<b>4,350</b>	<b>2,825</b>	<b>4,350</b>	<b>2,935</b>
<b>Geese</b>							
Canada goose	50	300	0	500	40	500	200
Lesser snow goose	0	0	0	0	0	0	0
<b>American coot</b>	<b>200</b>	<b>0</b>	<b>600</b>	<b>0</b>	<b>100</b>	<b>0</b>	<b>500</b>
<b>Bald eagles</b>							
Adult	0	0	0	0	3	23	1
Immature	0	0	0	0	2	15	2
All eagles	0	0	0	0	5	38	2
<b>Double-crested</b>	<b>0</b>	<b>50</b>	<b>25</b>	<b>0</b>	<b>100</b>	<b>800</b>	<b>0</b>
<b>White pelican</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>50</b>	<b>0</b>

Table 5. Peak numbers of waterbirds aerially inventoried by the Illinois Natural History Survey at the Forested Wetland Management Area EMP site during fall 1991-1996.

	1991	1992	1993	1994	1995 <sup>a</sup>	1996 <sup>b</sup>	1997
<b>Dabbling ducks</b>							
Mallard	0	0	0	0	300	300	600
American black duck	0	0	0	0	50	50	0
Northern pintail	0	0	0	0	0	25	0
Blue-winged teal	0	0	0	0	0	0	0
Green-winged teal	0	0	0	0	0	0	0
American wigeon	0	0	0	0	0	0	0
Gadwall	0	0	0	0	0	0	0
Northern shoveler	0	0	0	0	0	0	0
All dabbling ducks	0	0	0	0	350	300	600
<b>Diving ducks</b>							
Lesser and greater scaup	0	0	0	0	0	0	0
Ring-necked duck	0	0	0	0	0	0	0
Canvasback	0	0	0	0	0	0	0
Redhead	0	0	0	0	0	0	0
Ruddy duck	0	0	0	0	0	0	0
Common goldeneye	0	0	0	0	0	0	0
Bufflehead	0	0	0	0	0	0	0
All diving ducks	0	0	0	0	0	0	0
<b>Mergansers</b>							
Common merganser	0	0	0	0	0	0	0
Red-breasted merganser	0	0	0	0	0	0	0
Hooded merganser	0	0	0	0	0	0	0
All mergansers	0	0	0	0	0	0	0
<b>Unknown</b>						100	200
<b>All ducks</b>	0	0	0	0	350	400	600
<b>Geese</b>							
Canada goose	0	0	0	0	0	0	0
Lesser snow goose	0	0	0	0	0	0	0
<b>American coot</b>	0	0	0	0	0	0	0
<b>Bald eagles</b>							
Adult	0	0	0	0	0	0	0
Immature	0	0	0	0	0	0	0
All eagles	0	0	0	0	0	0	0
<b>Double-crested cormorant</b>	0	0	0	0	0	0	0
<b>White pelican</b>	0	0	0	0	0	0	0

<sup>a</sup> The first fall waterfowl censusing period (September - January) for the FWMA.

<sup>b</sup> The first fall waterfowl censusing period (September - January) that unidentifiable waterfowl in the FWMA were recorded as "unknown".

Table 6. Peak numbers of waterbirds aerially inventoried by the Illinois Natural History Survey at the Forested Wetland Management Area EMP site during spring, 1992-1998.

	1992	1993	1994	1995	1996 <sup>a</sup>	1997 <sup>b</sup>	1998
<b>Dabbling ducks</b>							
Mallard	0	0	0	0	25	225	300
American black duck	0	0	0	0	0	0	10
Northern pintail	0	0	0	0	0	0	0
Blue-winged teal	0	0	0	0	0	0	20
Green-winged teal	0	0	0	0	0	0	0
American wigeon	0	0	0	0	0	0	0
Gadwall	0	0	0	0	0	0	0
Northern shoveler	0	0	0	0	0	0	0
All dabbling ducks	0	0	0	0	25	225	320
<b>Diving ducks</b>							
Lesser and greater scaup	0	0	0	0	0	0	0
Ring-necked duck	0	0	0	0	0	0	0
Canvasback	0	0	0	0	0	0	0
Redhead	0	0	0	0	0	0	0
Ruddy duck	0	0	0	0	0	0	0
Common goldeneye	0	0	0	0	0	0	0
Bufflehead	0	0	0	0	0	0	0
All diving ducks	0	0	0	0	0	0	0
<b>Mergansers</b>							
Common merganser	0	0	0	0	0	0	0
Red-breasted merganser	0	0	0	0	0	0	0
Hooded merganser	0	0	0	0	0	0	0
All mergansers	0	0	0	0	0	0	0
<b>Unknown</b>						0	0
<b>All ducks</b>	0	0	0	0	25	225	320
<b>Geese</b>							
Canada goose	0	0	0	0	0	0	0
Lesser snow goose	0	0	0	0	0	0	0
<b>American coot</b>	0	0	0	0	0	0	300
<b>Bald eagles</b>							
Adult	0	0	0	0	0	0	0
Immature	0	0	0	0	0	0	0
All eagles	0	0	0	0	0	0	0
<b>Double-crested cormorant</b>	0	0	0	0	0	0	0
<b>White pelican</b>	0	0	0	0	0	0	0

<sup>a</sup> The first spring waterfowl censusing period (February - April) for the FWMA.

<sup>b</sup> The first spring waterfowl censusing period (February - April) that unidentifiable waterfowl in the FWMA were recorded as "unknown".





Table 8. Waterbird aerial inventory data for each individual flight for the Upper Peoria Lake EMP site, spring 1998.

	MALLARD	BLK	PNT	BWT	GWT	WIG	GAD	SH SCAUP	RN CNVB	RH	RDY	GLD	BH	CM	RBM	HM UNK	DABBLERS	TOTAL TOTAL DIVERS	MERC.	TOTAL TOTAL DUCKS	CG	SG	COOT	BALD EAGLES						
																								AD	IMM	TOT	CORM	PEL		
Upper Peoria Lake																														
02/12/98	2,550	200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,750	200	0	0	0	1	0	1			
02/24/98	200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	200	0	0	0	0	2	2	0	0		
03/05/98	130	10	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	140	10	150	0	0	0	0	0	0	0		
03/10/98	2,300	0	0	0	0	0	0	125	0	50	0	0	0	0	0	0	0	2,300	175	2,475	20	0	0	0	1	1	0	0		
03/23/98	2,000	0	150	0	0	25	100	0	400	100	0	0	0	0	0	0	0	2,275	500	2,775	0	0	50	0	0	0	0	0		
04/02/98	0	0	0	0	0	0	0	0	150	0	0	0	0	0	0	0	0	0	150	0	150	0	0	0	0	0	0	0		
04/10/98	0	0	0	0	0	0	0	0	0	0	20	0	0	0	0	0	0	0	20	0	20	0	0	200	0	0	0	0		
Forested Wetland Management Area																														
02/12/98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
02/24/98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
03/05/98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03/10/98	125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	125	0	125	0	0	0	0	0	0	0	0	0	0
03/23/98	150	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	160	0	160	0	0	0	0	0	0	0	0	0	0
04/02/98	300	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	320	0	320	0	0	0	0	0	0	0	0	0	0
04/10/98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	300	0	0	0	0	0	0	0
Upper Peoria Lake EMP Area Total																														
02/12/98	2,550	200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,750	0	2,750	200	0	0	1	0	1	0	0	0	
02/24/98	200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	200	0	200	0	0	0	0	2	2	0	0	0	0
03/05/98	130	10	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	140	10	150	0	0	0	0	0	0	0	0	0	0
03/10/98	2,425	0	0	0	0	0	0	125	0	50	0	0	0	0	0	0	0	2,425	175	2,600	20	0	0	0	1	1	0	0	0	
03/23/98	2,150	10	150	0	0	25	100	0	400	100	0	0	0	0	0	0	0	2,435	500	2,935	0	0	50	0	0	0	0	0	0	
04/02/98	300	0	0	20	0	0	0	0	150	0	0	0	0	0	0	0	0	320	150	470	0	0	0	0	0	0	0	0	0	
04/10/98	0	0	0	0	0	0	0	0	0	0	20	0	0	0	0	0	0	0	20	0	20	0	0	500	0	0	0	0	0	0

# LAKE CHAUTAUQUA

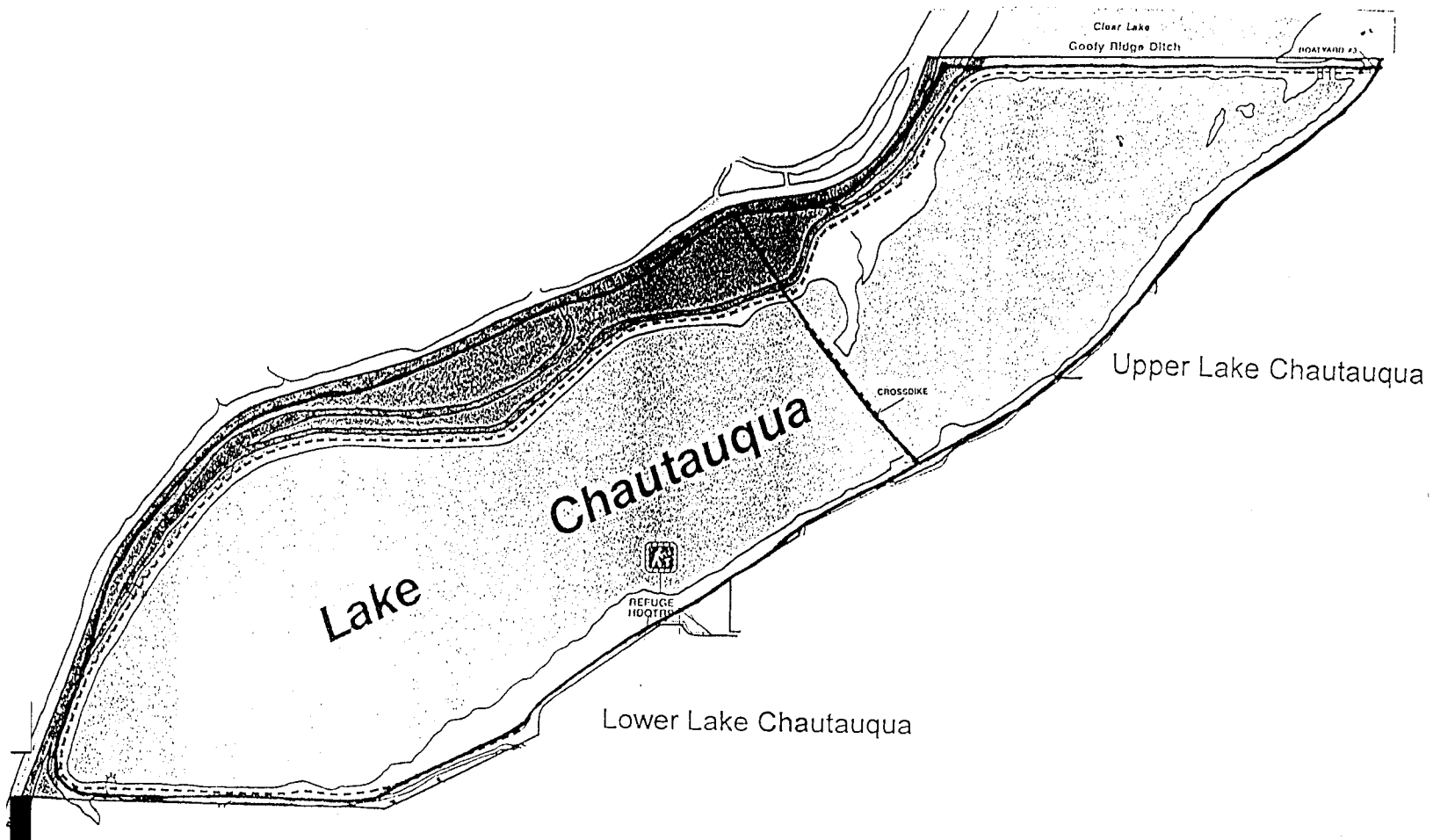


Figure 2. The Lake Chautauqua EMP site with boundaries drawn delineating the census areas.

Table 9. Peak numbers of waterbirds aerially inventoried by the Illinois Natural History Survey at the Lake Chautauqua EMP site, fall 1997 and spring 1998<sup>a</sup>.

	Upper Chautauqua		Lower Chautauqua		Total EMP site	
	Fall	Spring	Fall	Spring	Fall	Spring
<b>Dabbling ducks</b>						
Mallard	4,500	900	198,200	1,650	199,200	2,000
American black duck	500	10	5,700	30	6,200	40
Northern pintail	1,000	20	20,600	150	20,700	150
Blue-winged teal	2,000	0	9,400	0	9,850	0
Green-winged teal	5,000	30	13,000	100	18,000	100
American wigeon	200	0	4,500	50	4,500	50
Gadwall	300	0	9,160	50	9,160	50
Northern shoveler	25	50	2,000	30	2,000	50
All dabbling ducks	7,200	1,010	224,720	1,790	225,720	2,110
<b>Diving ducks</b>						
Lesser & greater scaup	0	300	1,500	5,500	1,500	5,500
Ring-necked duck	600	100	5,500	3,500	6,100	3,600
Canvasback	0	0	3,300	3,000	3,300	3,000
Redhead	0	0	1,100	100	1,100	100
Ruddy duck	0	0	800	400	800	400
Common goldeneye	0	10	25	50	25	50
Bufflehead	200	0	1,100	0	1,300	0
All diving ducks	800	400	12,800	10,500	13,600	10,500
<b>Mergansers</b>						
Common merganser	30	0	300	200	330	200
Red-breasted merganser	0	0	0	0	0	0
Hooded merganser	0	0	50	0	50	0
All mergansers	30	0	300	200	330	200
<b>All ducks</b>	<b>7,200</b>	<b>1,020</b>	<b>237,520</b>	<b>11,350</b>	<b>239,320</b>	<b>11,350</b>
<b>Geese</b>						
Canada goose	1,150	115	21,450	50	21,850	125
Snow goose	600	0	1,600	510	1,600	510
<b>American coot</b>	<b>2,300</b>	<b>120</b>	<b>19,000</b>	<b>530</b>	<b>19,000</b>	<b>650</b>
<b>Bald eagles</b>						
Adult	2	9	5	9	6	18
Immature	1	3	12	7	12	8
All eagles	3	10	17	16	17	26
<b>Double-crested cormorant</b>	<b>180</b>	<b>10</b>	<b>0</b>	<b>25</b>	<b>180</b>	<b>35</b>
<b>White pelican</b>	<b>475</b>	<b>5</b>	<b>5</b>	<b>0</b>	<b>475</b>	<b>5</b>

<sup>a</sup> The peak number for the entire site may not represent the sum of the peaks for all the compartments because the peak numbers in the various compartments could have occurred on different flights.



Table 11. Waterbird aerial inventory data for each individual flight for the Lake Chautauqua EMP site, spring 1998.

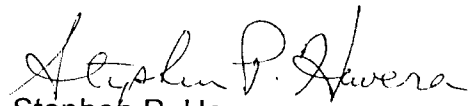
	MALLARD	BLK	PNT	BWT	GWT	WIG	GAD	SH	SCAUP	RN	CNVB	RH	RDY	GLD	BH	CM	RBM	HM	DABBLERS	TOTAL				BALD EAGLES								
																				TOTAL	DIVERS	MERG.	DUCKS	CG	SG	COOT	AD	IMM	TOT	CORM	PEL	
Upper Lake Chautauqua																																
02/12/98	145	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	155	0	0	155	115	0	0	0	9	1	10	0	0
02/24/98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	0	0	0	5	3	8	0	0
03/05/98	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0	0	20	0	0	0	0	3	0	3	0	0
03/10/98	900	10	20	30	0	0	0	50	0	0	0	0	10	0	0	0	0	0	0	1,010	10	0	1,020	0	0	0	0	1	1	2	0	0
03/23/98	50	0	0	0	0	0	0	0	300	100	0	0	0	0	0	0	0	0	0	50	400	0	450	30	0	0	1	2	3	0	0	
04/02/98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	10	5
04/10/98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	120	0	0	0	0	
Lower Lake Chautauqua																																
02/12/98	1,650	30	30	0	0	0	0	0	1,100	1,500	900	0	0	50	0	200	0	0	0	1,710	3,550	200	5,460	10	510	0	9	7	16	0	0	
02/24/98	700	25	0	0	0	0	0	0	5,500	2,000	3,000	0	0	0	125	0	0	0	0	725	10,500	125	11,350	50	0	0	7	3	10	0	0	
03/05/98	1,550	20	150	0	0	20	50	0	1,000	1,000	1,625	0	0	0	10	0	0	0	0	1,790	3,625	10	5,425	30	0	0	7	4	11	0	0	
03/10/98	1,100	0	0	0	0	0	0	0	900	2,300	1,550	0	150	0	0	0	0	0	0	1,100	4,900	0	6,000	0	0	0	500	1	5	6	0	0
03/23/98	1,500	10	0	100	50	0	0	30	500	3,500	1,500	100	400	10	40	0	0	0	0	1,690	6,010	40	7,740	20	0	0	100	3	2	5	0	0
04/02/98	0	0	0	0	0	0	0	10	0	20	0	0	0	0	0	0	0	0	0	10	20	0	30	0	0	0	320	1	0	1	25	0
04/10/98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	530	0	0	0	25	0	
Lake Chautauqua Total																																
02/12/98	1,795	40	30	0	0	0	0	0	1,100	1,500	900	0	0	50	0	200	0	0	0	1,865	3,550	200	5,615	125	510	0	18	8	26	0	0	
02/24/98	700	25	0	0	0	0	0	0	5,500	2,000	3,000	0	0	0	125	0	0	0	0	725	10,500	125	11,350	80	0	0	12	6	18	0	0	
03/05/98	1,570	20	150	0	0	20	50	0	1,000	1,000	1,625	0	0	0	10	0	0	0	0	1,810	3,625	10	5,445	30	0	0	10	4	14	0	0	
03/10/98	2,000	10	20	30	0	30	0	50	900	2,300	1,550	0	150	10	0	0	0	0	0	2,110	4,910	0	7,020	0	0	0	500	2	6	8	0	0
03/23/98	1,550	10	0	100	50	0	0	30	800	3,600	1,500	100	400	10	40	0	0	0	0	1,740	6,410	40	8,190	50	0	0	100	4	4	8	0	0
04/02/98	0	0	0	0	0	0	0	10	0	20	0	0	0	0	0	0	0	0	0	10	20	0	30	10	0	0	320	1	0	1	35	5
04/10/98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	650	0	0	0	25	0	

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