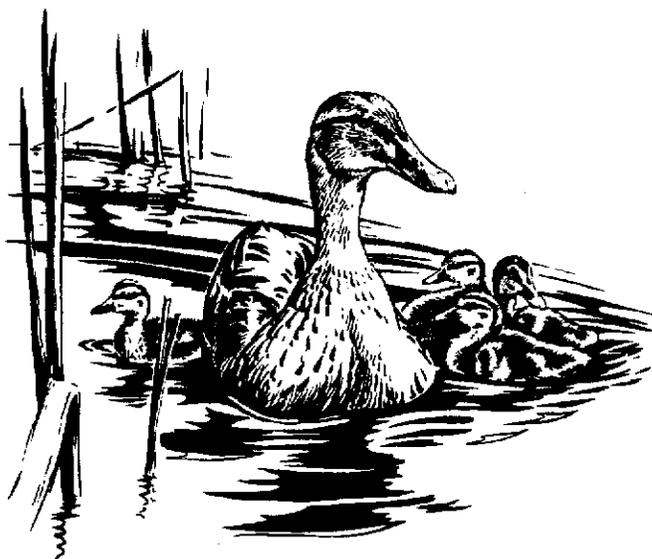


**ILLINOIS
NATURAL HISTORY
SURVEY**

CENTER FOR WILDLIFE ECOLOGY



**1996-1997 Aerial Waterbird Inventories of Chautauqua National Wildlife
Refuge and Peoria Lake Environmental Management Program Sites**

Annual Report

by

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25 August 1997

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The purpose of this project was to aerially inventory waterfowl (ducks and geese), bald eagles, double-crested cormorants, and white pelicans during fall and spring, 1996-1997, 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 10 and 30 September; 7 (Lake Chautauqua), 10 (Upper Peoria Lake), 15, 21, and 28 October; 4, 12, 18, and 26 November; 2 and 9 December; and 6 January. Spring inventories were made on 17 and 24 February; 3, 10, 17, and 31 March; and 9 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 5). 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).

The Upper Peoria Lake EMP site is divided into two inventory areas, the lake segment and the 168-acre Forested Wetland Management Area (FWMA) (Fig. 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 1996 was the second 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 1996 were the highest recorded since INHS began monitoring in 1991. These species included mallards, northern pintails, gadwalls, lesser and greater scaups, buffleheads, American coots, and double-crested cormorants. During the falls of 1995 and 1996, 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 1991-1996 and spring 1992-1997, 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, wood ducks in particular, 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 1996 was the second 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 1991-1996 and spring 1992-1997, are provided in tables 5 and 6, respectively.

The Lake Chautauqua EMP site is divided into two inventory areas, Upper and Lower (Fig. 2). Water levels on lower Chautauqua were maintained at minimum levels

during fall 1996 to facilitate construction activities. As a result, food availability to waterfowl was minimal. Consequently, on lower Chautauqua, the peak number of total ducks for fall 1996 (33,200) was 81% lower than the 1995 fall peak (179,100). The spring 1997 peak (3,300) on Lake Chautauqua was also lower than the 1996 peak (72,400). It is anticipated that as construction activities on the upper and lower pools of Lake Chautauqua are completed and a stable food source is provided each year, numbers of waterfowl using the area will be much higher than what was recorded in 1996.

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

Common name		Abbreviation
Dabbling ducks		
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
Diving ducks		
Lesser and greater scaup	=	SCAUP
Ring-necked duck	=	RN
Canvasback	=	CNVB
Redhead	=	RH
Ruddy duck	=	RDY
Common goldeneye	=	GLD
Bufflehead	=	BH
Mergansers		
Common merganser	=	CM
Red-breasted merganser	=	RBM
Hooded merganser	=	HM
Unknown	=	UNK
Geese		
Canada goose	=	CG
Lesser snow goose	=	SG
American coot	=	COOT
Bald Eagles		
Adult	=	AD
Immature	=	IMM
Double-crested cormorant	=	CORM
White pelican	=	PEL

UPPER PEORIA LAKE

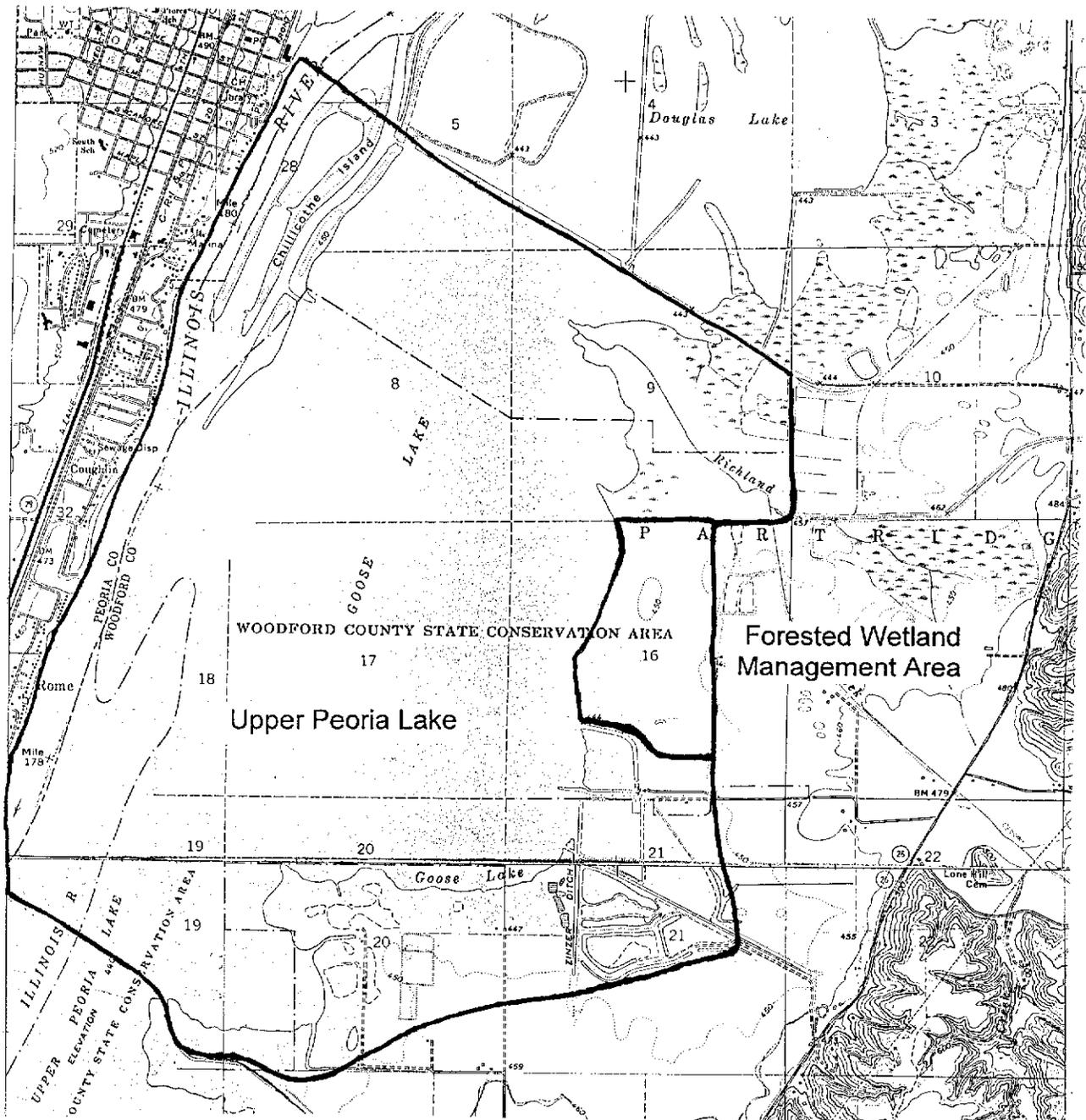


Figure 1. The Upper Peoria Lake EMP site with boundaries drawn delineating the census areas.

Table 2. Peak numbers of waterbirds aerially inventoried by the Illinois Natural History Survey at Upper Peoria Lake EMP site, fall 1996 and spring 1997^a.

	Upper Peoria Lake		Forested Wetland Management Area		Total EMP site	
	Fall	Spring	Fall	Spring	Fall	Spring
Dabbling ducks						
Mallard	29,000	700	300	225	29,000	925
American black duck	3,000	0	50	0	3,000	0
Northern pintail	700	0	25	0	700	0
Blue-winged teal	200	0	0	0	200	0
Green-winged teal	500	0	0	0	500	0
American wigeon	100	0	0	0	100	0
Gadwall	2,500	0	0	0	2,500	0
Northern shoveler	75	0	0	0	75	0
All dabbling ducks	35,700	700	300	225	35,700	925
Diving ducks						
Lesser & greater scaup	1,200	0	0	0	1,200	0
Ring-necked duck	500	0	0	0	500	0
Canvasback	100	150	0	0	100	150
Redhead	0	0	0	0	0	0
Ruddy duck	0	0	0	0	0	0
Common goldeneye	500	50	0	0	500	50
Bufflehead	4,500	0	0	0	4,500	0
All diving ducks	5,500	150	0	0	5,500	150
Mergansers						
Common merganser	50	4,000	0	0	50	4,000
Red-breasted merganser	0	0	0	0	0	0
Hooded merganser	0	0	0	0	0	0
All mergansers	50	4,000	0	0	50	4,000
Unknown			100	0		
All ducks	41,200	4,350	400	225	41,200	4,350
Geese						
Canada goose	1,500	500	0	0	1,500	500
Lesser snow goose	500	0	0	0	500	0
American coot	2,300	0	0	0	2,300	0
Bald eagles						
Adult	2	23	0	0	2	23
Immature	0	15	0	0	0	15
All eagles	2	38	0	0	2	38
Double-crested cormorant	800	0	0	0	800	0
White pelican	50	0	0	0	50	0

^a 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 aerielly inventoried by the Illinois Natural History Survey at Upper Peoria Lake EMP site during fall 1991-1996.

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

Table 4. Peak numbers of waterbirds aerially inventoried by the Illinois Natural History Survey at Upper Peoria Lake EMP site during spring 1992-1997.

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

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

^a The first fall waterfowl censusing period (September - January) for the FWMA.

^b 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 1992-1997.

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

^a The first spring waterfowl censusing period (February - April) for the FWMA.

^b 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 Upper Peoria Lake EMP site, spring 1997.

	MALLARD	BLK	PNT	BWT	GMT	WIG	GAD	SH	SCAUP	RN	CNVB	RH	RDY	GLD	BH	CH	RBM	HM	UNK	TOTAL DABLERS	TOTAL DIVERS	TOTAL MERG. DUCKS	CG	SG	COOT	BALD EAGLE							
																										AD	IMM	TOT					
Upper Peoria Lake																																	
02/17/97	300	0	0	0	0	0	0	0	0	0	0	0	0	50	0	4,000	0	0	0	300	50	4,000	4,350	500	0	0	23	15	38				
02/24/97	500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	200	0	0	0	500	0	0	500	70	0	0	2	0	2				
03/03/97	700	0	0	0	0	0	0	0	0	0	150	0	0	0	0	1,050	0	0	0	700	150	200	1,050	100	0	0	0	0	0	0			
03/10/97	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			
03/17/97	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			
03/31/97	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	0			
04/09/97	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			
Forested Wetland Management Area																																	
02/17/97	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			
02/24/97	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	0		
03/03/97	225	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	225	0	0	225	0	0	0	0	0	0	0	0		
03/10/97	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	0		
03/17/97	200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	200	0	0	200	0	0	0	0	0	0	0	0		
03/31/97	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	0		
04/09/97	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	0		
Upper Peoria Lake EMP Area Total																																	
02/17/97	300	0	0	0	0	0	0	0	0	0	0	0	0	50	0	4,000	0	0	0	300	50	4,000	4,350	500	0	0	23	15	38	0	0		
02/24/97	500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	200	0	0	0	500	0	0	500	70	0	0	2	0	2	0	0	0	
03/03/97	925	0	0	0	0	0	0	0	0	0	150	0	0	0	0	1,275	0	0	0	925	150	200	1,275	100	0	0	0	0	0	0	0	0	
03/10/97	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	0	0	
03/17/97	200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	200	0	0	200	0	0	0	0	0	0	0	0	0	0
03/31/97	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	0	0	0	0
04/09/97	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	0	0	0

LAKE CHAUTAUQUA

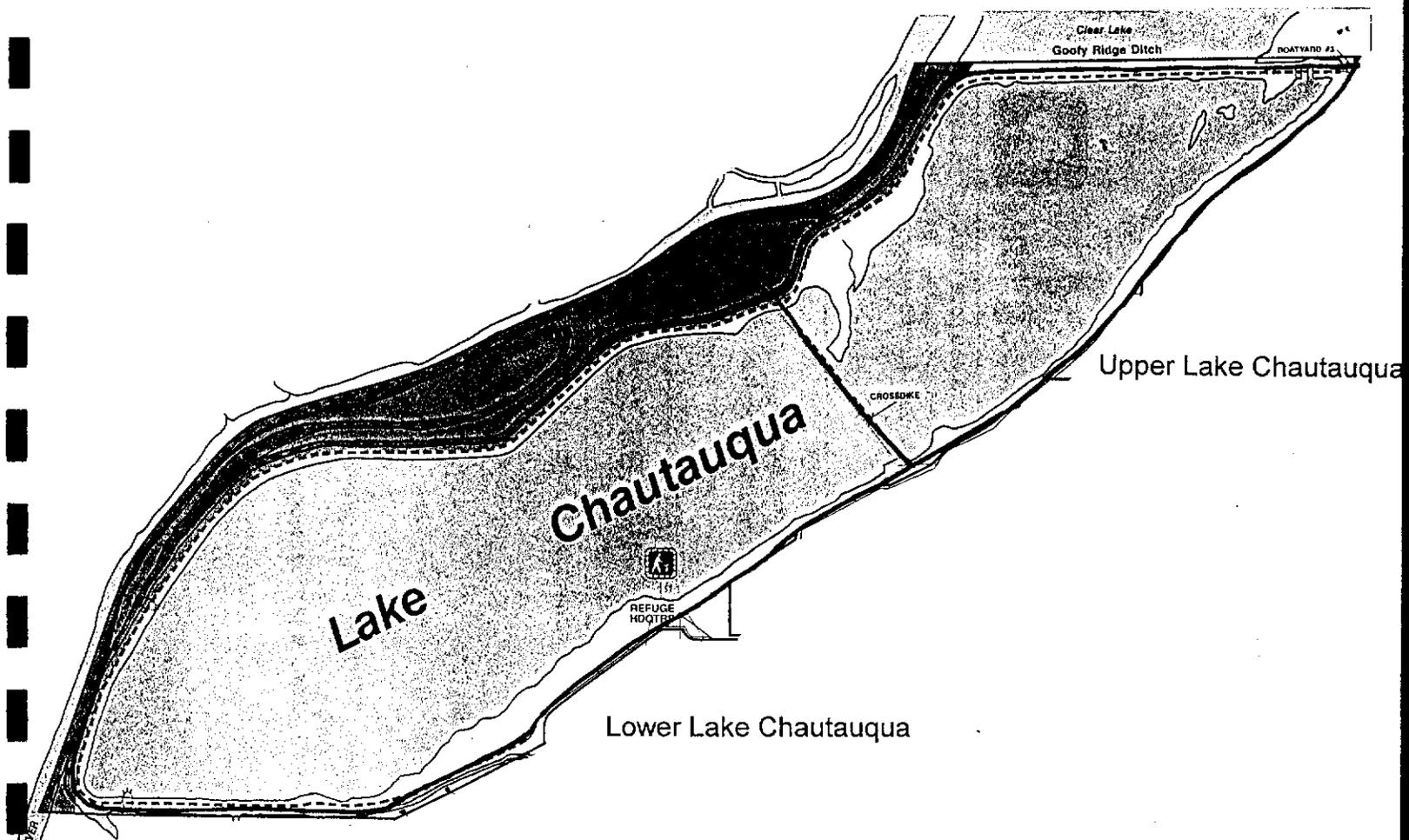


Figure 2. The Lake Chautauqua EMP site with boundaries drawn delineating the census areas.

Table 9. Peak numbers of waterbirds aerially inventoried by the Illinois Natural History Survey at Lake Chautauqua EMP site, fall 1996 and spring 1997^a.

	Upper Chautauqua		Lower Chautauqua		Total EMP site	
	Fall	Spring	Fall	Spring	Fall	Spring
Dabbling ducks						
Mallard	3,000	900	20,000	400	23,000 ✓	1,300
American black duck	0	0	900	0	900 ✓	0
Northern pintail	200	0	3,500	0	3,500 ✓	0
Blue-winged teal	1,100	0	5,000	0	6,100 ✓	0
Green-winged teal	3,000	0	4,000	0	7,000 ✓	0
American wigeon	100	0	1,800	0	1,800 ✓	0
Gadwall	200	0	2,500	0	2,550 ✓	0
Northern shoveler	1,000	0	1,800	0	2,000 ✓	0
All dabbling ducks	7,000	900	32,900	400	39,900	1,300
Diving ducks						
Lesser & greater scaup	900	50	0	1,100	900 ✓	1,100
Ring-necked duck	0	0	300	900	300 ✓	900
Canvasback	0	30	0	200	0 ✓	200
Redhead	0	0	0	0	0 ✓	0
Ruddy duck	0	0	0	0	0 ✓	0
Common goldeneye	0	0	0	0	0 ✓	0
Bufflehead	0	0	0	0	0 ✓	0
All diving ducks	900	80	300	1,500	1,200	1,500
Mergansers						
Common merganser	0	900	0	490	0	900
Red-breasted merganser	0	0	0	0	0	0
Hooded merganser	0	0	0	0	0 ✓	0
All mergansers	0	900	0	490	0	900
All ducks						
	7,900	1,800	33,200	1,500	41,100	3,300
Geese						
Canada goose	1,450	125	3,900	200	4,000 ✓	325
Snow goose	200	0	500	0	500 ✓	0
American coot						
	6,500	100	3,000	300	9,500 ✓	400
Bald eagles						
Adult	14	11	4	14	15	25
Immature	21	14	2	9	22	23
All eagles	35	25	6	23	37 ✓	48
Double-crested cormorant						
	1,700	0	400	10	1,700 ✓	10
White pelican						
	300	0	0	60	300 ✓	60

^a 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.

15 72

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DATE: 25 August 1997