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SURVEY

23 August 1999

Ms. Charlene Carmack
U.S. Army Corps of Engineers
Rock Island District
Clock Tower Building
P.O. Box 2004
Rock Island, IL 61204-2004

Dear Charlene,

Enclosed please find our report for the aerial inventories of waterfowl conducted during fall 1998 and spring 1999 at the Upper Peoria Lake and Lake Chautauqua EMP sites.

Sincerely,

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Director
Forbes Biological Station

c: Dr. Patrick W. Brown

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ILLINOIS NATURAL HISTORY SURVEY

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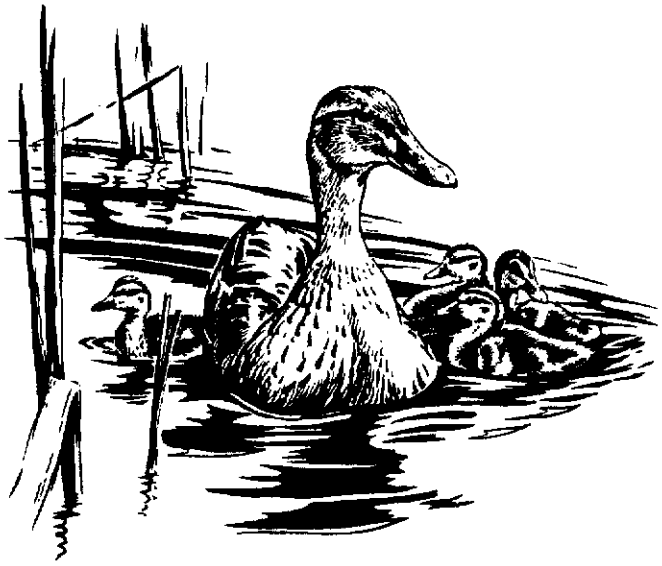

1998-1999 Aerial Waterbird Inventories of Chautauqua National Wildlife Refuge and Peoria Lake Environmental Management Program Sites

Annual Report

by

Michelle M. Horath
and
Stephen P. Havera

23 August 1999

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Summary

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, 1998-1999, 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 2 and 8 September; 7, 13, 20, and 26 October; 4, 12, 17, and 23 November; 1, 7, 14, and 22 December; and 7 January. Spring inventories were made on 9, 17, and 22 February; 1, 10, 15, 22, and 29 March; and 7 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, 16, and 17). 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 were 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 1998 was the fourth 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 1998 were the highest recorded since INHS began monitoring in 1991. These species included northern pintails, green-winged teals, American wigeons, northern shoveler, lesser and greater scaups, ring-necked ducks, canvasbacks, redheads, and American coots. During the falls of 1995, 1996, 1997, and 1998 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 1998 and spring 1992 through 1999, 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 1998 was the fourth 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 1998 and spring 1992 through 1999, are provided in tables 5 and 6, respectively.

Lake Chautauqua

The Lake Chautauqua EMP site is divided into two inventory areas, Upper (Kikunessa) Pool and Lower (Wasenza) Pool (Figure 2). High water levels through mid-July of 1998 complicated drawdown of the lower pool which limited the exposure of mud flats. Exposed mud flats were colonized by vegetation but an outbreak of avian botulism in early September forced refuge personnel to raise water levels in the lake in mid-September to lessen the problem. Therefore, the combination of a late drawdown and early inundation due to botulism limited the amount of vegetation available to waterfowl. Compared with 1997, waterfowl use of Lake Chautauqua was lower during fall 1998. Peak numbers for Upper and Lower Chautauqua, fall 1998 and spring 1999, are provided in Table 9. Peak numbers for Lake Chautauqua, fall 1991 through 1998 and spring 1992 through 1999, are provided in tables 10 and 13, respectively. Peak numbers for Upper Chautauqua, fall 1991 through 1998 and spring 1992 through 1999, are provided in tables 11 and 14, respectively. Peak numbers for Lower Chautauqua, fall 1991 through 1998 and spring 1992 through 1999, are provided in tables 12 and 15, respectively.

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

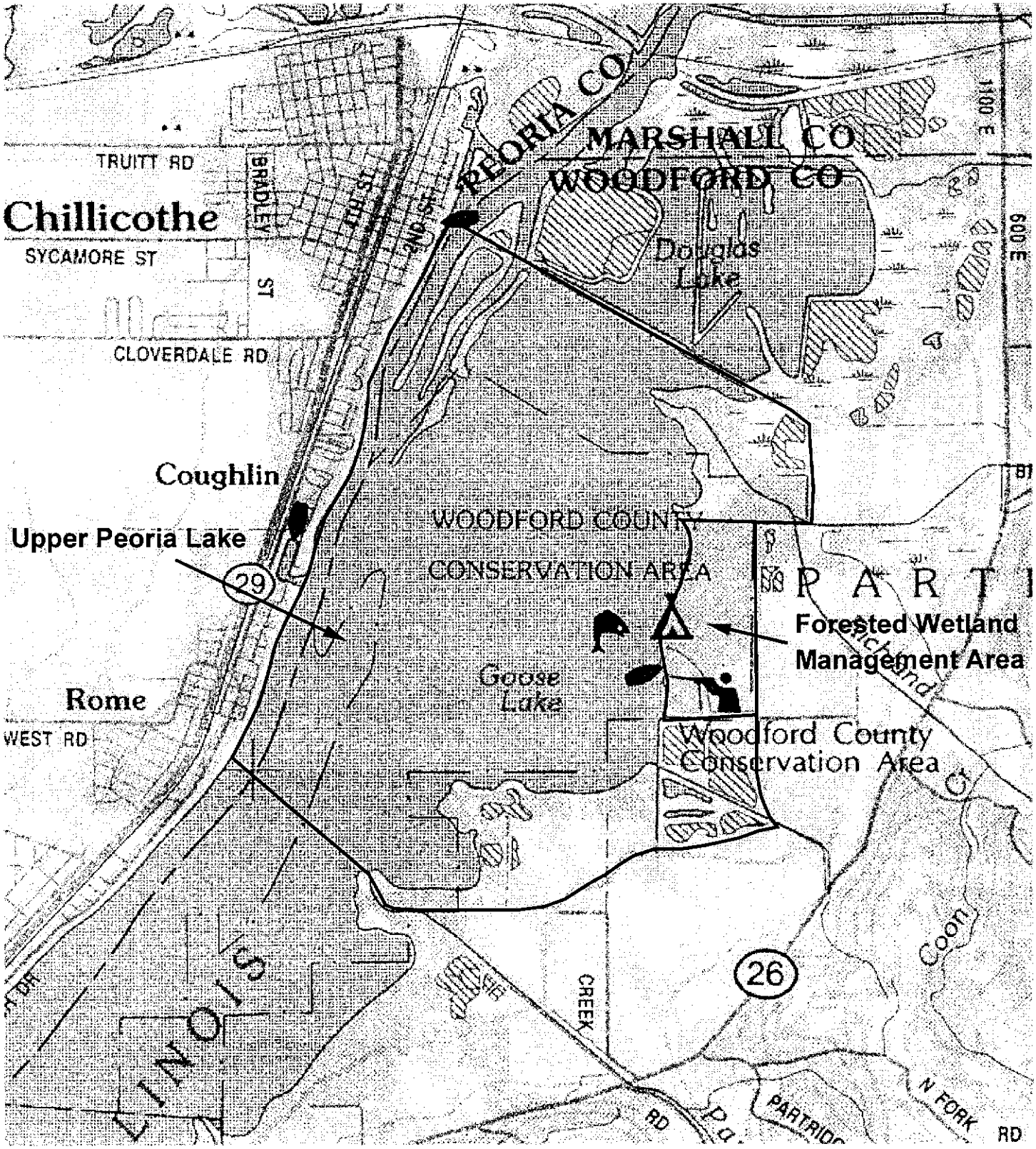

Figure 1. The Upper Peoria Lake EMP site with boundaries drawn delineating the census areas.

Table 2. Peak numbers of waterbirds aerially inventoried by the Illinois Natural History Survey at the Upper Peoria Lake EMP site, fall 1998 and spring 1999[a].

Species	Upper Peoria Lake		Forested Wetland Management Area		Total EMP Site	
	Fall	Spring	Fall	Spring	Fall	Spring
Dabbling ducks						
Mallard	35,000	1,200	600	400	35,100	1,200
American black duck	2,500	0	50	0	2,500	0
Northern pintail	5,000	600	0	0	5,000	600
Blue-winged teal	10	0	0	0	10	0
Green-winged teal	1,000	50	0	0	1,000	50
American wigeon	500	0	0	0	500	0
Gadwall	2,000	0	0	0	2,000	0
Northern shoveler	500	10	0	0	500	10
All dabbling ducks	45,000	1,200	600	400	45,100	1,200
Diving ducks						
Lesser & greater scaup	2,500	600	0	0	2,500	600
Ring-necked duck	3,000	0	0	0	3,000	0
Canvasback	500	3,000	0	0	500	3,000
Redhead	50	0	0	0	50	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	5,550	3,000	0	0	5,550	3,000
Mergansers						
Common merganser	0	900	0	0	0	900
Red-breasted merganser	0	0	0	0	0	0
Hooded merganser	0	0	0	0	0	0
All mergansers	0	900	0	0	0	900
Unknown	0	0	100	0	100	0
All ducks	50,550	3,450	700	400	50,650	3,450
Geese						
Canada goose	800	800	0	0	800	800
Lesser snow goose	0	0	0	0	0	0
American coot	3,600	100	0	0	3,600	100
Bald eagles						
Adult	1	0	0	0	1	0
Immature	0	0	0	0	0	0
All eagles	1	0	0	0	1	0
Double-crested cormorant	400	20	0	0	400	20
White pelican	25	0	0	0	25	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 aerially inventoried by the Illinois Natural History Survey at the Upper Peoria Lake EMP site during fall, 1991-1998.

Species	1991	1992	1993	1994	1995	1996	1997	1998
Dabbling ducks								
Mallard	1,000	3,000	1,000	400	5,000	29,000	63,100	35,100
American black duck	75	150	50	50	400	3,000	7,000	2,500
Northern pintail	200	0	50	0	600	700	2,500	5,000
Blue-winged teal	20	0	0	0	30	200	50	10
Green-winged teal	0	0	50	300	50	500	200	1,000
American wigeon	0	0	0	0	0	100	700	500
Gadwall	800	0	0	0	1,000	2,500	1,500	2,000
Northern shoveler	0	0	0	0	0	75	0	500
All dabbling ducks	1,850	3,150	1,050	700	6,000	35,700	70,8000	45,1000
Diving ducks								
Lesser and greater scaup	250	300	0	0	0	1,200	800	2,500
Ring-necked duck	0	300	0	100	300	500	1,500	3,000
Canvasback	0	0	0	0	0	100	100	500
Redhead	0	0	0	0	0	0	0	50
Ruddy duck	0	0	0	0	0	0	0	0
Common goldeneye	50	2,000	3,500	200	100	500	900	0
Bufflehead	0	0	0	0	0	4,500	0	0
All diving ducks	250	2,000	3,500	200	300	5,500	1,800	5,550
Mergansers								
Common merganser	0	1,000	1,000	0	700	50	500	0
Red-breasted merganser	0	0	0	0	0	0	0	0
Hooded merganser	0	0	0	0	0	0	0	0
All mergansers	0	0	1,000	0	700	50	500	0
All ducks	2,050	5,310	4,500	800	6,000	41,200	70,800	50,6500
Geese								
Canada goose	100	0	50	100	2,000	1,500	1,500	800
Lesser snow goose	0	0	0	0	50	500	300	0
American coot	300	1,000	0	1,000	1,000	2,300	3,000	3,600
Bald eagles								
Adult	0	1	0	0	8	2	1	1
Immature	0	2	0	0	3	0	2	0
All eagles	0	3	0	0	11	2	3	1
Double-crested cormorant	0	50	25	0	100	800	300	400
White Pelican	0	0	0	0	0	50	20	25

Table 4. Peak numbers of waterbirds aerially inventoried by the Illinois Natural History Survey at the Upper Peoria Lake EMP site during spring, 1992-1999.

Species	1992	1993	1994	1995	1996	199	1998	1999
Dabbling ducks								
Mallard	300	0	100	700	2,100	700	2,550	1,200
American black duck	0	0	0	0	50	0	200	0
Northern pintail	0	0	0	0	0	0	150	600
Blue-winged teal	100	0	0	0	0	0	20	0
Green-winged teal	100	0	0	0	0	0	0	50
American wigeon	200	0	0	0	0	0	25	0
Gadwall	0	0	0	0	0	0	100	0
Northern shoveler	0	0	0	0	0	0	0	10
All dabbling ducks	300	0	100	700	2,150	700	2,750	1,200
Diving ducks								
Lesser and greater scaup	200	100	50	0	0	0	150	600
Ring-necked duck	0	0	50	0	0	0	400	0
Canvasback	0	0	0	150	0	150	100	3,000
Redhead	0	0	0	0	0	0	50	0
Ruddy duck	0	0	0	0	0	0	20	0
Common goldeneye	400	0	25	50	750	50	0	0
Bufflehead	0	0	0	0	0	0	0	0
All diving ducks	600	100	50	150	750	150	500	3,000
Mergansers								
Common merganser	100	100	400	4,000	1,800	4,00	0	900
Red-breasted merganser	0	0	0	0	0	0	0	0
Hooded merganser	0	0	0	0	0	0	0	0
All mergansers	100	100	400	4,000	1,800	4,00	0	900
All ducks	1,000	100	500	4,350	2,825	4,35	2,935	3,450
Geese								
Canada goose	50	300	0	500	40	500	200	800
Lesser snow goose	0	0	0	0	0	0	0	0
American coot	200	0	600	0	100	0	500	100
Bald eagles								
Adult	0	0	0	0	3	23	1	0
Immature	0	0	0	0	2	15	2	0
All eagles	0	0	0	0	5	38	2	0
Double-crested cormorant	0	50	25	0	100	800	0	20
White pelican	0	0	0	0	0	50	0	0

Table 5. Peak numbers of waterbirds aerially inventoried by the Illinois Natural History Survey at the Forested Wetland Management Area EMP site during fall 1991-1998.

Species	1991	1992	1993	1994	1995[a]	1996[b]	1997	1998
Dabbling ducks								
Mallard	0	0	0	0	300	300	600	600
American black duck	0	0	0	0	50	50	0	50
Northern pintail	0	0	0	0	0	25	0	0
Blue-winged teal	0	0	0	0	0	0	0	0
Green-winged teal	0	0	0	0	0	0	0	0
American wigeon	0	0	0	0	0	0	0	0
Gadwall	0	0	0	0	0	0	0	0
Northern shoveler	0	0	0	0	0	0	0	0
All dabbling ducks	0	0	0	0	350	300	600	600
Diving ducks								
Lesser and greater scaup	0	0	0	0	0	0	0	0
Ring-necked duck	0	0	0	0	0	0	0	0
Canvasback	0	0	0	0	0	0	0	0
Redhead	0	0	0	0	0	0	0	0
Ruddy duck	0	0	0	0	0	0	0	0
Common goldeneye	0	0	0	0	0	0	0	0
Bufflehead	0	0	0	0	0	0	0	0
All diving ducks	0	0	0	0	0	0	0	0
Mergansers								
Common merganser	0	0	0	0	0	0	0	0
Red-breasted merganser	0	0	0	0	0	0	0	0
Hooded merganser	0	0	0	0	0	0	0	0
All mergansers	0	0	0	0	0	0	0	0
Unknown						100	200	100
All ducks	0	0	0	0	350	400	600	700
Geese								
Canada goose	0	0	0	0	0	0	0	0
Lesser snow goose	0	0	0	0	0	0	0	0
American coot	0	0	0	0	0	0	0	0
Bald eagles								
Adult	0	0	0	0	0	0	0	0
Immature	0	0	0	0	0	0	0	0
All eagles	0	0	0	0	0	0	0	0
Double-crested cormorant	0	0	0	0	0	0	0	0
White pelican	0	0	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, 1992-1999.

Species	1992	1993	1994	1995	1996[a]	1997[b]	1998	1999
Dabbling ducks								
Mallard	0	0	0	0	25	225	300	400
American black duck	0	0	0	0	0	0	10	0
Northern pintail	0	0	0	0	0	0	0	0
Blue-winged teal	0	0	0	0	0	0	20	0
Green-winged teal	0	0	0	0	0	0	0	0
American wigeon	0	0	0	0	0	0	0	0
Gadwall	0	0	0	0	0	0	0	0
Northern shoveler	0	0	0	0	0	0	0	0
All dabbling ducks	0	0	0	0	25	225	320	400
Diving ducks								
Lesser and greater scaup	0	0	0	0	0	0	0	0
Ring-necked duck	0	0	0	0	0	0	0	0
Canvasback	0	0	0	0	0	0	0	0
Redhead	0	0	0	0	0	0	0	0
Ruddy duck	0	0	0	0	0	0	0	0
Common goldeneye	0	0	0	0	0	0	0	0
Bufflehead	0	0	0	0	0	0	0	0
All diving ducks	0	0	0	0	0	0	0	0
Mergansers								
Common merganser	0	0	0	0	0	0	0	0
Red-breasted merganser	0	0	0	0	0	0	0	0
Hooded merganser	0	0	0	0	0	0	0	0
All mergansers	0	0	0	0	0	0	0	0
Unknown						0	0	0
All ducks	0	0	0	0	25	225	320	400
Geese								
Canada goose	0	0	0	0	0	0	0	0
Lesser snow goose	0	0	0	0	0	0	0	0
American coot	0	0	0	0	0	0	300	0
Bald eagles								
Adult	0	0	0	0	0	0	0	0
Immature	0	0	0	0	0	0	0	0
All eagles	0	0	0	0	0	0	0	0
Double-crested cormorant	0	0	0	0	0	0	0	0
White pelican	0	0	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 7. Waterbird aerial inventory data for each individual flight for the Upper Peoria Lake EMP site, fall 1998.

	MALLARD	BLK	PNT	BWT	GWT	WIG	GAD	SH	SCAUP	RN	CNVB	RH	RDY	GLD	BH	CM	RBM	HM	UNK	TOTAL DABBLERS	TOTAL DIVERS	TOTAL MERG.	TOTAL DUCKS	BALD EAGLES CG	SG	COOT	AD	IMM	TOT	CORM	PEL
Upper Peoria Lake																															
09/02/98	50	0	0	10	200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	260	0	0	260	250	0	0	0	0	0	0	0
09/08/98	300	0	25	0	200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	525	0	0	525	800	0	0	0	0	0	50	0
10/07/98	200	0	0	0	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	230	0	0	230	0	0	600	0	0	0	100	0
10/13/98	3,400	0	200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,600	0	0	3,600	400	0	1,400	0	0	0	250	0
10/20/98	2,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,000	0	0	2,000	0	0	3,600	0	0	0	400	0
10/26/98	3,800	0	500	0	300	500	1,000	0	0	0	0	0	0	0	0	0	0	0	0	6,100	0	0	6,100	0	0	0	0	0	0	0	25
11/04/98	9,000	1,000	500	0	500	0	1,000	0	100	800	300	0	0	0	0	0	0	0	0	12,000	1,200	0	13,200	75	0	0	0	0	0	0	0
11/12/98	35,000	2,500	5,000	0	500	0	1,500	500	2,500	2,500	500	50	0	0	0	0	0	0	0	45,000	5,550	0	50,550	400	0	800	0	0	0	0	0
11/23/98	11,000	1,600	900	0	500	0	2,000	0	0	0	0	0	0	0	0	0	0	0	0	16,000	0	0	16,000	400	0	0	0	0	0	0	0
12/01/98	17,500	1,500	2,000	0	1,000	0	800	0	1,000	0	0	0	0	0	0	0	0	0	0	22,800	1,000	0	23,800	200	0	0	0	0	0	0	0
12/07/98	9,000	1,000	0	0	0	0	200	50	500	3,000	0	0	0	0	0	0	0	0	0	10,250	3,500	0	13,750	200	0	0	0	0	0	0	0
12/14/98	10,500	1,000	0	0	100	0	0	0	300	200	0	0	0	0	0	0	0	0	0	11,600	500	0	12,100	200	0	0	0	0	0	0	0
12/22/98	900	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,000	0	0	1,000	0	0	0	0	0	0	0	0
01/07/99	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	1	0	1	0	0
Forested Wetland Management Area																															
09/02/98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09/08/98	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	0
10/07/98	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	0
10/13/98	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	0
10/20/98	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	0	0	0	0
10/26/98	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	0
11/04/98	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
11/12/98	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0	100	0	0	0	0	0	0	0	0
11/23/98	400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	400	0	0	400	0	0	0	0	0	0	0	0
12/01/98	600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	600	0	0	700	0	0	0	0	0	0	0	0
12/07/98	430	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	480	0	0	480	0	0	0	0	0	0	0	0
12/14/98	240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	240	0	0	240	0	0	0	0	0	0	0	0
12/22/98	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	0
01/07/99	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																															
09/02/98	50	0	0	10	200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	260	0	0	260	250	0	0	0	0	0	0	0
09/08/98	300	0	25	0	200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	525	0	0	525	800	0	0	0	0	0	50	0
10/07/98	200	0	0	0	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	230	0	0	230	0	0	600	0	0	0	100	0
10/13/98	3,400	0	200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,600	0	0	3,600	400	0	1,400	0	0	0	250	0
10/20/98	2,020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,020	0	0	2,020	0	0	3,600	0	0	0	400	0
10/26/98	3,800	0	500	0	300	500	1,000	0	0	0	0	0	0	0	0	0	0	0	0	6,100	0	0	6,100	0	0	0	0	0	0	0	25
11/04/98	9,200	1,000	500	0	500	0	1,000	0	100	800	300	0	0	0	0	0	0	0	0	12,200	1,200	0	13,400	75	0	0	0	0	0	0	0
11/12/98	35,100	2,500	5,000	0	500	0	1,500	500	2,500	2,500	500	50	0	0	0	0	0	0	0	45,100	5,550	0	50,650	400	0	800	0	0	0	0	0
11/23/98	11,400	1,600	900	0	500	0	2,000	0	0	0	0	0	0	0	0	0	0	0	0	16,400	0	0	16,400	400	0	0	0	0	0	0	0
12/01/98	18,100	1,500	2,000	0	1,000	0	800	0	1,000	0	0	0	0	0	0	0	0	0	100	23,400	1,000	0	24,500	200	0	0	0	0	0	0	0
12/07/98	9,430	1,050	0	0	0	0	200	50	500	3,000	0	0	0	0	0	0	0	0	0	10,730	3,500	0	14,230	200	0	0	0	0	0	0	0
12/14/98	10,740	1,000	0	0	100	0	0	0	300	200	0	0	0	0	0	0	0	0	0	11,840	500	0	12,340	200	0	0	0	0	0	0	0
12/22/98	900	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,000	0	0	1,000	0	0	0	0	0	0	0	0
01/07/99	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	1	0	1	0	0

Table 8. Waterbird aerial inventory data for each individual flight for the Upper Peoria Lake EMP site, spring 1999.

	MALLARD	BLK	PNT	BWT	GWT	WIG	GAD	SH	SCAUP	RN	CNVB	RH	RDY	GLD	BH	CM	RBM	HM	UNK	TOTAL DABBLERS	TOTAL DIVERS	TOTAL MERG.	TOTAL DUCKS	CG	SG	COOT	BALD EAGLES AD	IMM	TOT	CORM	PEL
Upper Peoria Lake																															
02/09/99	1,200	0	0	0	0	0	0	0	200	0	400	0	0	0	0	0	0	0	0	1,200	600	0	1,800	0	0	0	0	0	0	0	0
02/17/99	300	0	20	0	0	0	0	0	0	0	1,000	0	0	0	0	50	0	0	0	320	1,000	50	1,370	20	0	0	0	0	0	0	0
02/22/99	350	0	0	0	0	0	0	0	0	0	3,000	0	0	0	0	100	0	0	0	350	3,000	100	3,450	470	0	0	0	0	0	0	0
03/01/99	400	0	600	0	0	0	0	0	0	0	500	0	0	0	0	300	0	0	0	1,000	500	300	1,800	800	0	0	0	0	0	0	0
03/10/99	200	0	0	0	0	0	0	0	600	0	0	0	0	0	0	900	0	0	0	200	600	900	1,700	50	0	0	0	0	0	0	0
03/15/99	1,200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	500	0	0	0	1,200	0	500	1,700	210	0	0	0	0	0	0	0
03/22/99	50	0	0	0	50	0	0	10	0	0	0	0	0	0	0	0	0	0	0	110	0	0	110	0	0	100	0	0	0	0	0
03/29/99	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
04/07/99	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	20	0
Forested Wetland Management Area																															
02/09/99	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
02/17/99	400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	400	0	0	400	0	0	0	0	0	0	0	0
02/22/99	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
03/01/99	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
03/10/99	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
03/15/99	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
03/22/99	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
03/29/99	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
04/07/99	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																															
02/09/99	1,200	0	0	0	0	0	0	0	200	0	400	0	0	0	0	0	0	0	0	1,200	600	0	1,800	0	0	0	0	0	0	0	0
02/17/99	700	0	20	0	0	0	0	0	0	0	1,000	0	0	0	0	50	0	0	0	720	1,000	50	1,770	20	0	0	0	0	0	0	0
02/22/99	350	0	0	0	0	0	0	0	0	0	3,000	0	0	0	0	100	0	0	0	350	3,000	100	3,450	470	0	0	0	0	0	0	0
03/01/99	400	0	600	0	0	0	0	0	0	0	500	0	0	0	0	300	0	0	0	1,000	500	300	1,800	800	0	0	0	0	0	0	0
03/10/99	200	0	0	0	0	0	0	0	600	0	0	0	0	0	0	900	0	0	0	200	600	900	1,700	50	0	0	0	0	0	0	0
03/15/99	1,200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	500	0	0	0	1,200	0	500	1,700	210	0	0	0	0	0	0	0
03/22/99	50	0	0	0	50	0	0	10	0	0	0	0	0	0	0	0	0	0	0	110	0	0	110	0	0	100	0	0	0	0	0
03/29/99	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
04/07/99	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	20	0

LAKE CHAUTAUQUA

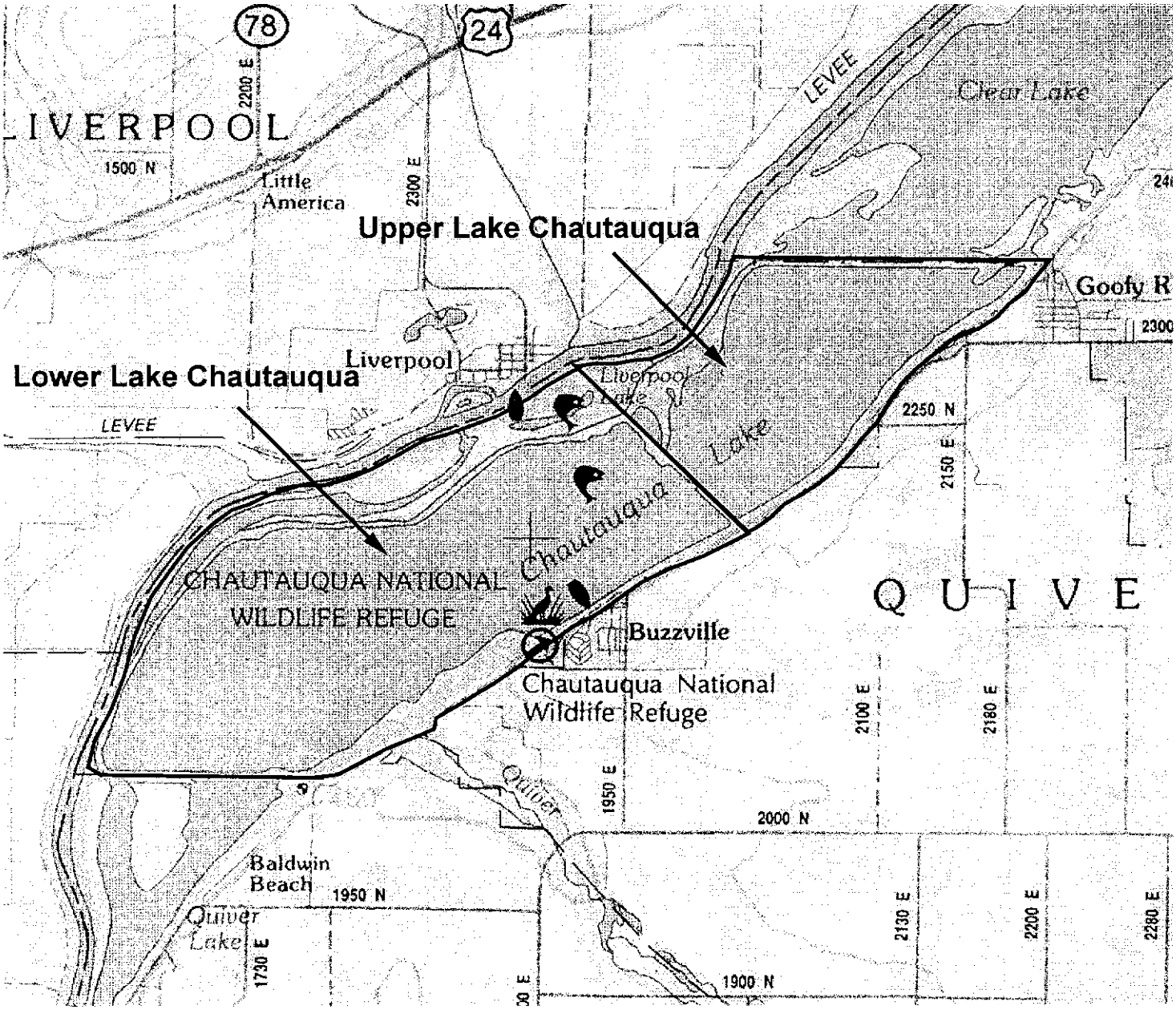

Figure 2. The Lake Chautauqua EMP site with boundaries drawn delineating the census area.

Table 9. Peak numbers of waterbirds aerially inventoried by the Illinois Natural History Survey at the Lake Chautauqua EMP site, fall 1998 and spring 1999[a].

Species	Upper Chautauqua		Lower Chautauqua		Total EMP Site	
	Fall	Spring	Fall	Spring	Fall	Spring
Dabbling ducks						
Mallard	12,000	350	64,300	14,300	78,000	14,650
American black duck	500	40	2,400	800	2,400	800
Northern pintail	1,500	0	9,850	1,500	11,350	1,500
Blue-winged teal	1,100	0	4,020	0	4,820	0
Green-winged teal	5,000	200	5,000	50	9,200	200
American wigeon	600	0	3,500	0	3,500	0
Gadwall	9,000	20	8,200	100	17,200	100
Northern shoveler	3,000	1,620	3,000	250	5,310	1,620
All dabbling ducks	20,500	1,620	85,160	15,450	105,660	16,040
Diving ducks						
Lesser & greater scaup	0	900	4,850	650	4,850	1,500
Ring-necked duck	0	150	5,000	2,050	5,000	2,050
Canvasback	0	0	1,600	500	1,600	500
Redhead	0	0	800	25	800	25
Ruddy duck	600	800	2,800	500	2,800	1,100
Common goldeneye	0	0	0	120	0	120
Bufflehead	0	155	600	100	600	155
All diving ducks	600	1,400	13,550	3,000	13,550	3,400
Mergansers						
Common merganser	0	200	0	2,100	0	2,300
Red-breasted merganser	0	0	0	0	0	0
Hooded merganser	0	0	0	10	0	10
All mergansers	0	200	0	2,100	0	2,300
All ducks	20,500	1,990	98,710	17,450	11,9210	19,440
Geese						
Canada goose	1,870	1,645	3,500	800	4,300	1,645
Snow goose	400	0	1,000	0	1,000	0
American coot	500	600	12,300	1,100	12,800	1,700
Bald eagles						
Adult	2	5	2	65	4	70
Immature	5	3	2	26	5	27
All eagles	7	7	4	91	7	97
Double-crested cormorant	600	750	50	35	600	785
White pelican	200	60	10	270	200	275

[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 10. Peak numbers of waterbirds aerially inventoried by the Illinois Natural History Survey at the Lake Chautauqua EMP site during fall, 1991-1998.

Species	1991	1992	1993	1994	1995	1996	1997	1998
Dabbling ducks								
Mallard	17,500	58,000	12,430	320,300	165,000	23,000	199,200	78,000
American black duck	400	1,000	300	2,400	3,000	900	6,200	2,400
Northern pintail	1,550	4,000	500	20,000	10,500	3,500	20,700	11,350
Blue-winged teal	320	3,900	0	5,800	9,700	6,100	9,850	4,820
Green-winged teal	400	7,500	0	11,000	5,000	7,000	18,000	9,200
American wigeon	3,000	3,500	300	6,000	1,150	1,800	4,500	3,500
Gadwall	2,800	5,000	1,000	17,000	4,000	2,550	9,160	17,200
Northern shoveler	0	0	0	15,000	2,100	2,000	2,000	5,310
All dabbling ducks	21,855	76,840	14,030	368,800	180,600	39,900	225,720	105,660
Diving ducks								
Lesser and greater scaup	600	300	600	1,000	0	900	1,500	4,850
Ring-necked duck	100	2,300	1,200	5,000	400	300	6,200	5,000
Canvasback	425	125	800	4,000	500	0	3,300	1,600
Redhead	25	0	0	0	0	0	1,100	800
Ruddy duck	0	0	100	0	0	0	800	2,800
Common goldeneye	4,120	4,200	450	0	100	0	25	0
Bufflehead	25	50	240	0	0	0	1,300	600
All diving ducks	4,120	4,200	2,300	6,500	600	1,200	13,600	13,550
Mergansers								
Common merganser	200	4,300	250	0	0	0	330	0
Red-breasted merganser	0	0	0	0	0	0	0	0
Hooded merganser	0	900	0	400	0	0	50	0
All mergansers	200	5,200	250	400	0	0	330	0
All ducks	22,335	78,390	16,330	375,600	181,200	41,100	239,320	119,210
Geese								
Canada goose	155	1,500	400	60,200	23,100	4,000	21,850	4,300
Lesser snow goose	0	500	0	15,000	300	500	1,600	1,000
American coot	4,300	5,100	1,225	50,000	6,900	9,500	19,000	12,800
Bald eagles								
Adult	43	26	18	13	15	15	6	4
Immature	27	18	8	16	25	22	12	5
All eagles	70	44	26	29	40	37	17	7
Double-crested cormorant	810	1,125	590	200	130	1,700	180	600
White pelican	0	0	0	0	0	300	475	200

Table 11. Peak numbers of waterbirds aerially inventoried by the Illinois Natural History Survey at the Upper Lake Chautauqua EMP site during fall, 1991-1998.

Species	1991	1992	1993	1994	1995	1996	1997	1998
Dabbling ducks								
Mallard	9,000	4,300	700	73,000	2,200	3,000	4,500	12,000
American black duck	300	120	0	1,500	0	0	500	500
Northern pintail	1,050	400	0	9,000	500	200	1,000	1,500
Blue-winged teal	270	1,000	0	3,800	3,500	1,100	2,000	1,100
Green-winged teal	400	5,500	0	6,000	2,000	3,000	5,000	5,000
American wigeon	500	200	50	5,000	650	100	200	600
Gadwall	1,000	0	0	6,000	0	200	300	9,000
Northern shoveler	0	0	0	3,000	150	1,000	25	3,000
All dabbling ducks	9,180	9,825	700	86,500	5,300	7,000	7,200	20,500
Diving ducks								
Lesser and greater scaup	100	100	0	0	0	900	0	0
Ring-necked duck	0	2,000	100	5,000	0	0	600	0
Canvasback	100	0	0	0	0	0	0	0
Redhead	25	0	0	0	0	0	0	0
Ruddy duck	0	0	0	0	0	0	0	600
Common goldeneye	625	1,300	50	0	0	0	0	0
Bufflehead	25	0	220	0	0	0	200	0
All diving ducks	650	2,100	220	5,000	0	900	800	600
Mergansers								
Common merganser	50	500	150	0	0	0	30	0
Red-breasted merganser	0	0	0	0	0	0	0	0
Hooded merganser	0	0	0	200	0	0	0	0
All mergansers	50	500	150		0	0	30	0
All ducks	9,180	9,825	800	87,500	5,300	7,900	7,200	20,500
Geese								
Canada goose	130	300	300	5,000	1,000	1,450	1,150	1,870
Lesser snow goose	0	0	0	700	0	200	600	400
American coot	1,700	1,000	600	30,000	1,100	6,500	2,300	500
Bald eagles								
Adult	9	14	11	3	2	14	2	2
Immature	13	11	6	4	2	21	1	5
All eagles	22	25	17	7	4	35	3	7
Double-crested cormorant	710	105	425	200	130	1,700	180	600
White pelican	0	0	0	0	0	300	475	200

Table 12. Peak numbers of waterbirds aerially inventoried by the Illinois Natural History Survey at the Lower Lake Chautauqua EMP site during fall, 1991-1998.

Species	1991	1992	1993	1994	1995	1996	1997	1998
Dabbling ducks								
Mallard	16,000	56,000	12,400	320,000	164,000	20,000	198,200	64,300
American black duck	320	1,000	300	2,000	3,000	900	5,700	2,400
Northern pintail	500	4,000	500	20,000	10,000	3,500	20,600	9,850
Blue-winged teal	270	3,100	0	3,200	6,200	5,000	9,400	4,020
Green-winged teal	250	4,800	0	8,000	5,000	4,000	13,000	5,000
American wigeon	3,000	3,500	300	5,000	700	1,800	4,500	3,500
Gadwall	2,400	5,000	1,000	11,000	4,000	2,500	9,160	8,200
Northern shoveler	0	0	0	15,000	2,000	1,800	2,000	3,000
All dabbling ducks	21,720	74,800	14,000	368,500	178,500	32,900	224,720	85,160
Diving ducks								
Lesser and greater scaup	600	300	600	1,000	0	0	1,500	4,850
Ring-necked duck	100	1,100	1,200	3,000	400	300	5,500	5,000
Canvasback	425	125	800	4,000	500	0	3,300	1,600
Redhead	0	0	0	0	0	0	1,100	800
Ruddy duck	0	0	100	0	0	0	800	2,800
Common goldeneye	3,620	4,000	400	0	100	0	25	0
Bufflehead	0	50	20	0	0	0	1,100	600
All diving ducks	3,620	4,000	2,300	6,500	600	300	12,800	13,550
Mergansers								
Common merganser	200	4,300	100	0	0	0	300	0
Red-breasted merganser	0	0	0	0	0	0	0	0
Hooded merganser	0	900	0	300	0	0	50	0
All mergansers	200	5,200	100	300	0	0	300	0
All ducks	22,420	75,750	16,300	375,300	179,100	33,200	237,520	98,710
Geese								
Canada goose	100	1,500	300	60,000	23,000	3,900	21,540	3,500
Lesser snow goose	0	500	0	15,000	300	500	1,600	1,000
American coot	3,500	4,500	1,000	45,000	6,000	3,000	19,000	12,300
Bald eagles								
Adult	36	12	7	13	15	4	5	2
Immature	16	7	2	16	25	2	12	2
All eagles	52	19	9	29	40	6	17	4
Double-crested cormorant	400	1,050	300	50	0	400	0	50
White pelican	0	0	0	0	0	0	5	10

Table 13. Peak numbers of waterbirds aerially inventoried by the Illinois Natural History Survey at the Lake Chautauqua EMP site during spring, 1992-1999.

Species	1992	1993	1994	1995	1996	1997	1998	1999
Dabbling ducks								
Mallard	10,450	700	1,400	12,600	52,000	1,300	2,000	14,650
American black duck	30	0	0	200	100	0	40	800
Northern pintail	20	0	0	3,200	10,000	0	150	1,500
Blue-winged teal	350	0	0	800	1,700	0	0	0
Green-winged teal	125	0	0	5,100	8,800	0	100	200
American wigeon	300	50	25	3,400	0	0	50	0
Gadwall	0	30	0	5,000	250	0	50	100
Northern shoveler	300	0	0	6,700	1,000	0	50	1,620
All dabbling ducks	10,650	750	1,400	25,300	63,900	1,300	2,110	16,040
Diving ducks								
Lesser and greater scaup	6,800	250	200	600	3,000	1,100	5,500	1,500
Ring-necked duck	2,000	500	0	1,500	1,000	900	3,600	2,050
Canvasback	4,300	2,400	300	1,000	6,500	200	3,000	500
Redhead	0	0	0	0	0	0	100	25
Ruddy duck	0	0	0	0	0	0	400	1,100
Common goldeneye	250	2,550	350	100	50	0	50	120
Bufflehead	0	0	0	0	0	0	0	155
All diving ducks	11,450	3,100	500	1,700	8,000	1,500	10,500	3,400
Mergansers								
Common merganser	50	875	800	4,500	500	900	200	2,300
Red-breasted merganser	0	0	0	0	0	0	0	0
Hooded merganser	0	0	0	0	0	0	0	10
All mergansers	50	875	800	4,500	500	900	200	2,300
All ducks	22,100	3,625	2,400	25,950	72,400	3,300	11,350	19,440
Geese								
Canada goose	55	525	25	9,200	20,000	325	125	1,645
Lesser snow goose	0	0	25	0	500	0	510	0
American coot	4,800	250	350	5,500	0	400	650	1,700
Bald eagles								
Adult	10	9	20	19	8	25	18	70
Immature	6	5	10	20	4	23	8	27
All eagles	16	14	24	39	12	48	26	97
Double-crested cormorant	125	150	545	10	0	10	35	785
White pelican	0	0	0	0	40	60	5	275

Table 14. Peak numbers of waterbirds aerially inventoried by the Illinois Natural History Survey at the Upper Lake Chautauqua EMP site during spring, 1992-1999.

Species	1992	1993	1994	1995	1996	1997	1998	1999
Dabbling ducks								
Mallard	650	50	150	5,200	2,000	900	900	350
American black duck	10	0	0	200	0	0	10	40
Northern pintail	0	0	0	2,700	0	0	20	0
Blue-winged teal	0	0	0	500	200	0	0	0
Green-winged teal	0	0	0	5,000	800	0	30	200
American wigeon	0	0	25	1,600	0	0	0	0
Gadwall	0	0	0	4,000	0	0	0	20
Northern shoveler	70	0	0	5,000	50	0	50	1,620
All dabbling ducks	650	50	150	15,700	2,000	900	1,010	1,620
Diving ducks								
Lesser and greater scaup	3,000	150	0	100	0	50	300	900
Ring-necked duck	500	225	5	0	0	0	100	150
Canvasback	500	200	0	0	0	30	0	0
Redhead	0	0	0	0	0	0	0	0
Ruddy duck	0	0	0	0	0	0	0	800
Common goldeneye	200	2,550	100	0	50	0	10	0
Bufflehead	0	0	0	0	0	0	0	155
All diving ducks	4,000	2,775	100	100	50	80	400	1,400
Mergansers								
Common merganser	50	800	600	25	0	900	0	200
Red-breasted merganser	0	0	0	0	0	0	0	0
Hooded merganser	0	0	0	0	0	0	0	0
All mergansers	50	800	600	25	0	900	0	200
All ducks	4,450	3,625	750	15,700	2,000	1,800	1,020	1,990
Geese								
Canada goose	25	500	0	5,800	10	125	115	1,645
Lesser snow goose	0	0	0	0	0	0	0	0
American coot	1,000	250	25	1,000	0	100	120	600
Bald eagles								
Adult	7	5	11	6	4	11	9	5
Immature	6	3	9	7	3	14	3	3
All eagles	13	8	14	13	5	25	10	7
Double-crested cormorant	30	40	200	10	0	0	10	750
White pelican	0	0	0	0	0	0	5	60

Table 15. Peak numbers of waterbirds aerially inventoried by the Illinois Natural History Survey at the Lower Lake Chautauqua EMP site during spring, 1992-1999.

Species	1992	1993	1994	1995	1996	1997	1998	1999
Dabbling ducks								
Mallard	10,000	700	1,400	7,400	50,000	400	1,650	14,650
American black duck	25	0	0	200	100	0	30	800
Northern pintail	20	0	0	1,100	10,000	0	150	1,500
Blue-winged teal	350	0	0	800	1,700	0	0	0
Green-winged teal	125	0	0	900	8,000	0	100	200
American wigeon	300	50	0	1,800	0	0	50	0
Gadwall	0	30	0	1,000	250	0	50	100
Northern shoveler	300	0	0	1,700	1,000	0	30	1,620
All dabbling ducks	10,200	750	1,400	9,600	61,900	400	1,790	16,040
Diving ducks								
Lesser and greater scaup	4,000	200	200	600	3,000	1,100	5,500	1,500
Ring-necked duck	1,900	500	0	1,500	1,000	900	3,500	2,050
Canvasback	4,000	2,400	300	1,000	6,500	200	3,000	500
Redhead	0	0	0	0	0	0	100	25
Ruddy duck	0	0	0	0	0	0	400	1,100
Common goldeneye	50	200	250	100	0	0	50	120
Bufflehead	0	0	0	0	0	0	0	155
All diving ducks	9,900	3,100	500	1,600	8,000	1,500	10,500	3,400
Mergansers								
Common merganser	0	750	700	4,500	500	490	200	2,300
Red-breasted merganser	0	0	0	0	0	0	0	0
Hooded merganser	0	0	0	0	0	0	0	10
All mergansers	0	750	700	4,500	500	490	200	2,300
All ducks	17,650	3,400	2,400	12,300	70,400	1,500	11,350	19,440
Geese								
Canada goose	30	25	25	3,400	20,000	200	50	1,645
Lesser snow goose	0	0	25	0	500	0	510	0
American coot	3,800	0	325	4,500	0	300	530	1,700
Bald eagles								
Adult	3	4	9	19	4	14	9	70
Immature	1	2	4	18	3	9	7	27
All eagles	4	6	10	37	7	23	16	97
Double-crested cormorant	105	150	400	0	0	10	25	785
White pelican	0	0	0	0	40	60	0	275

Table 16. Waterbird aerial inventory data for each individual flight for the Lake Chautauqua EMP site, fall 1998.

	MALLARD	BLK	PNT	BWT	GWT	WIG	GAD	SH	SCAUP	RN	CNVB	RH	RDY	GLD	BH	CM	RBM	HM	TOTAL DABBLERS	TOTAL DIVERS	TOTAL MERG.	TOTAL DUCKS	BALD EAGLES CG	BALD EAGLES SG	BALD EAGLES COOT	BALD EAGLES AD	BALD EAGLES IMM	BALD EAGLES TOT	CORM	PEL
Uppper Lake Chautauqua																														
09/02/98	0	0	0	1,100	100	0	0	0	0	0	0	0	0	0	0	0	0	0	1,200	0	0	1,200	0	0	0	0	0	0	500	0
09/08/98	100	0	0	800	1,500	0	0	20	0	0	0	0	0	0	0	0	0	0	2,420	0	0	2,420	90	0	0	1	0	1	70	0
10/07/98	300	0	50	0	200	0	0	0	0	0	0	0	0	0	0	0	0	0	550	0	0	550	20	0	0	0	0	0	0	0
10/13/98	200	0	0	0	70	0	0	0	0	0	0	0	0	0	0	0	0	0	270	0	0	270	0	0	0	0	0	0	0	0
10/20/98	900	0	1,500	150	1,000	0	0	0	0	0	0	0	0	0	0	0	0	0	3,550	0	0	3,550	500	0	0	0	0	0	600	0
10/26/98	1,500	0	500	0	5,000	0	0	0	0	0	0	0	0	0	0	0	0	0	7,000	0	0	7,000	1,870	0	150	0	0	0	0	0
11/04/98	1,000	0	200	0	4,000	0	0	200	0	0	0	0	0	0	0	0	0	0	5,400	0	0	5,400	1,300	400	500	0	0	0	0	150
11/12/98	5,000	500	1,500	0	1,500	0	9,000	3,000	0	0	0	0	0	0	0	0	0	0	20,500	0	0	20,500	200	0	0	0	0	0	0	100
11/23/98	6,500	0	0	0	3,100	0	4,000	600	0	0	0	0	0	0	0	0	0	0	14,200	0	0	14,200	410	0	0	1	2	3	0	25
12/01/98	2,000	0	100	0	3,000	0	700	0	0	0	0	0	600	0	0	0	0	0	5,800	600	0	6,400	510	0	0	0	0	0	0	50
12/07/98	4,500	500	400	0	4,000	600	2,200	0	0	0	0	0	0	0	0	0	0	0	12,200	0	0	12,200	800	0	0	2	5	7	0	80
12/14/98	12,000	0	0	0	4,000	0	0	0	0	0	0	0	0	0	0	0	0	0	16,000	0	0	16,000	920	0	0	2	1	3	0	200
12/22/98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	200	0	0	0	0	0	0	100
01/07/99	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
Lower Lake Chautauqua																														
09/02/98	300	0	30	2,500	3,400	100	0	150	0	0	0	0	0	0	0	0	0	0	6,480	0	0	6,480	600	0	0	1	0	1	30	0
09/08/98	800	0	400	4,020	5,000	500	0	600	0	0	0	0	0	0	0	0	0	0	11,320	0	0	11,320	470	0	0	0	0	0	50	0
10/07/98	8,300	20	2,600	450	1,000	600	450	400	0	0	0	0	0	0	0	0	0	0	13,820	0	0	13,820	800	0	2,700	0	0	0	20	0
10/13/98	17,500	100	3,500	500	2,000	1,700	1,000	3,000	0	0	0	0	0	0	0	0	0	0	29,300	0	0	29,300	1,800	0	6,000	0	0	0	0	0
10/20/98	19,900	400	4,500	1,500	4,500	3,500	3,000	2,100	0	0	50	0	300	0	0	0	0	0	39,400	350	0	39,750	1,800	0	8,000	0	0	0	0	0
10/26/98	31,850	500	4,900	100	4,200	2,650	2,450	1,200	200	0	300	0	600	0	0	0	0	0	47,850	1,100	0	48,950	1,400	0	5,000	0	0	0	0	0
11/04/98	42,000	1,200	3,900	0	4,500	1,800	4,500	1,800	400	1,000	400	0	800	0	0	0	0	0	59,700	2,600	0	62,300	3,000	0	12,300	1	0	1	0	0
11/12/98	59,000	1,000	9,850	0	4,000	800	8,200	2,310	4,850	5,000	1,600	800	1,000	0	300	0	0	0	85,160	13,550	0	98,710	3,500	0	6,850	0	2	2	0	0
11/23/98	72,000	2,400	2,400	0	1,600	400	1,600	1,300	4,000	1,200	0	0	200	0	600	0	0	0	81,700	6,000	0	87,700	1,600	150	100	2	1	3	0	0
12/01/98	47,000	1,750	2,800	0	1,300	0	400	800	150	700	0	0	800	0	0	0	0	0	54,050	1,650	0	55,700	2,100	0	0	0	0	0	0	0
12/07/98	45,550	1,350	500	0	0	0	2,000	500	850	1,500	0	0	300	0	50	0	0	0	49,900	2,700	0	52,600	700	1,000	100	0	0	0	0	10
12/14/98	64,300	2,400	400	0	1,800	0	1,600	400	0	800	0	0	2,800	0	600	0	0	0	70,900	4,200	0	75,100	1,900	50	0	2	0	2	0	0
12/22/98	32,700	20	100	0	0	0	0	0	0	0	0	0	0	0	20	0	0	0	32,820	20	0	32,840	800	0	0	2	2	4	0	0
01/07/99	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 Total																														
09/02/98	300	0	30	3,600	3,500	100	0	150	0	0	0	0	0	0	0	0	0	0	7,680	0	0	7,680	600	0	0	1	0	1	530	0
09/08/98	900	0	400	4,820	6,500	500	0	620	0	0	0	0	0	0	0	0	0	0	13,740	0	0	13,740	560	0	0	1	0	1	120	0
10/07/98	8,600	20	2,650	450	1,200	600	450	400	0	0	0	0	0	0	0	0	0	0	14,370	0	0	14,370	820	0	2,700	0	0	0	20	0
10/13/98	17,700	100	3,500	500	2,070	1,700	1,000	3,000	0	0	0	0	0	0	0	0	0	0	29,570	0	0	29,570	1,800	0	6,000	0	0	0	0	0
10/20/98	20,800	400	6,000	1,650	5,500	3,500	3,000	2,100	0	0	50	0	300	0	0	0	0	0	42,950	350	0	43,300	2,300	0	8,000	0	0	0	600	0
10/26/98	33,350	500	5,400	100	9,200	2,650	2,450	1,200	200	0	300	0	600	0	0	0	0	0	54,850	1,100	0	55,950	3,270	0	5,150	0	0	0	0	0
11/04/98	43,000	1,200	4,100	0	8,500	1,800	4,500	2,000	400	1,000	400	0	800	0	0	0	0	0	65,100	2,600	0	67,700	4,300	400	12,800	1	0	1	0	150
11/12/98	64,000	1,500	11,350	0	5,500	800	17,200	5,310	4,850	5,000	1,600	800	1,000	0	300	0	0	0	105,660	13,550	0	119,210	3,700	0	6,850	0	2	2	0	100
11/23/98	78,500	2,400	2,400	0	4,700	400	5,600	1,900	4,000	1,200	0	0	200	0	600	0	0	0	95,900	6,000	0	101,900	2,010	150	100	3	3	6	0	25
12/01/98	49,000	1,750	2,900	0	4,300	0	1,100	800	150	700	0	0	1,400	0	0	0	0	0	59,850	2,250	0	62,100	2,610	0	0	0	0	0	0	50
12/07/98	50,050	1,850	900	0	4,000	600	4,200	500	850	1,500	0	0	300	0	50	0	0	0	62,100	2,700	0	64,800	1,500	1,000	100	2	5	7	0	90
12/14/98	76,300	2,400	400	0	5,800	0	1,600	400	0	800	0	0	2,800	0	600	0	0	0	86,900	4,200	0	91,100	2,820	50	0	4	1	5	0	200
12/22/98	32,700	20	100	0	0	0	0	0	0	0	0	0	0	0	20	0	0	0	32,820	20	0	32,840	1,000	0	0	2	2	4	0	100
01/07/99	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

Table 17. Waterbird aerial inventory data for each individual flight for the Lake Chautauqua EMP site, spring 1999.

	MALLARD	BLK	PNT	BWT	GWT	WIG	GAD	SH	SCAUP	RN	CNVB	RH	RDY	GLD	BH	CM	RBM	HM	TOTAL DABBLERS	TOTAL DIVERS	TOTAL MERG.	TOTAL DUCKS	CG	SG	COOT	BALD EAGLES AD	IMM	TOT	CORM	PEL
Upper Lake Chautauqua																														
02/09/99	50	0	0	0	0	0	20	0	0	0	0	0	300	0	0	200	0	0	70	300	200	570	1,645	0	0	5	1	6	0	0
02/17/99	150	0	0	0	0	0	0	0	40	0	0	0	0	0	0	0	0	0	150	40	0	190	800	0	0	2	3	5	0	0
02/22/99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	480	0	0	2	1	3	0	0
03/01/99	0	0	0	0	0	0	0	0	0	0	0	0	500	0	155	50	0	0	0	655	50	705	160	0	0	3	1	4	0	0
03/10/99	350	0	0	0	0	0	0	0	825	150	0	0	120	0	0	30	0	0	350	1,095	30	1,475	10	0	0	4	3	7	0	0
03/15/99	350	40	0	0	200	0	0	0	900	100	0	0	400	0	0	0	0	0	590	1,400	0	1,990	270	0	100	1	0	1	0	60
03/22/99	20	0	0	0	0	0	0	1,100	0	0	0	0	800	0	0	0	0	0	1,120	800	0	1,920	100	0	200	1	0	1	0	0
03/29/99	0	0	0	0	0	0	0	1,150	0	0	0	0	300	0	0	0	0	0	1,150	300	0	1,450	5	0	600	1	1	2	0	0
04/07/99	0	0	0	0	0	0	0	1,620	0	0	0	0	25	0	0	0	0	0	1,620	25	0	1,645	0	0	400	1	0	1	750	5
Lower Lake Chautauqua																														
02/09/99	480	0	0	0	0	0	0	0	200	0	0	0	0	120	0	2,100	0	0	480	320	2,100	2,900	0	0	0	65	26	91	20	0
02/17/99	0	0	0	0	0	0	0	0	0	80	20	0	0	0	0	0	0	0	0	100	0	100	25	0	0	25	23	48	0	0
02/22/99	1,400	0	300	0	50	0	0	0	400	2,000	500	0	0	0	100	1,900	0	0	1,750	3,000	1,900	6,650	170	0	400	9	8	17	10	0
03/01/99	2,300	0	100	0	0	0	0	0	20	2,050	25	0	0	0	0	100	0	0	2,400	2,095	100	4,595	320	0	50	22	4	26	10	0
03/10/99	12,300	800	1,500	0	0	0	50	0	0	100	150	0	350	0	0	350	0	0	14,650	600	350	15,600	800	0	200	7	8	15	0	0
03/15/99	14,300	300	500	0	0	0	100	250	600	500	400	0	500	0	0	0	0	0	15,450	2,000	0	17,450	800	0	0	5	5	10	0	0
03/22/99	400	20	0	0	0	0	0	50	650	85	400	25	300	0	0	70	0	0	470	1,460	70	2,000	90	0	600	6	13	19	10	0
03/29/99	25	0	0	0	25	0	0	0	170	0	10	0	500	0	0	0	0	0	50	680	0	730	10	0	1,100	0	1	1	25	0
04/07/99	70	0	0	0	0	0	0	0	30	0	25	0	125	0	0	0	0	10	70	180	10	260	45	0	640	0	8	8	35	270
Lake Chautauqua Total																														
02/09/99	530	0	0	0	0	0	20	0	200	0	0	0	300	120	0	2,300	0	0	550	620	2,300	3,470	1,645	0	0	70	27	97	20	0
02/17/99	150	0	0	0	0	0	0	0	40	80	20	0	0	0	0	0	0	0	150	140	0	290	825	0	0	27	26	53	0	0
02/22/99	1,400	0	300	0	50	0	0	0	400	2,000	500	0	0	0	100	1,900	0	0	1,750	3,000	1,900	6,650	650	0	400	11	9	20	10	0
03/01/99	2,300	0	100	0	0	0	0	0	20	2,050	25	0	500	0	155	150	0	0	2,400	2,750	150	5,300	480	0	50	25	5	30	10	0
03/10/99	12,650	800	1,500	0	0	0	50	0	825	250	150	0	470	0	0	380	0	0	15,000	1,695	380	17,075	810	0	200	11	11	22	0	0
03/15/99	14,650	340	500	0	200	0	100	250	1,500	600	400	0	900	0	0	0	0	0	16,040	3,400	0	19,440	1,070	0	100	6	5	11	0	60
03/22/99	420	20	0	0	0	0	0	1,150	650	85	400	25	1,100	0	0	70	0	0	1,590	2,260	70	3,920	190	0	800	7	13	20	10	0
03/29/99	25	0	0	0	25	0	0	1,150	170	0	10	0	800	0	0	0	0	0	1,200	980	0	2,180	15	0	1,700	1	2	3	25	0
04/07/99	70	0	0	0	0	0	0	1,620	30	0	25	0	150	0	0	0	0	10	1,690	205	10	1,905	45	0	1,040	1	8	9	785	275

Literature Cited

Conroy, M.J., J.R. Goldsberry, J.E. Hines, and D.B. Stotts. 1988. Evaluation of aerial transect surveys for wintering American black ducks. J. Wildl. Manage. 52:694-703.

Geis, A. D. 1966. Establishing the status of wood duck populations-successes and problems. Pages 183-192 in J.B. Trefethen, ed. Wood duck management and research: a symposium. Wildl. Manage. Inst., Washington, D.C.

Hawkins, A.S., and C.E. Addy. 1966. Problems in flyway-wide appraisal of wood duck habitat. Pages 45-51 in J.B. Trefethen, ed. Wood duck management and research: a symposium. Wildl. Manage. Inst., Washington, D.C.

Sherman, D.E. 1990. Line-transect sampling and indices to estimate wintering wood ducks and mallards in Mississippi green-tree reservoirs. M.S. Thesis. Mississippi State Univ., Mississippi State. 122 pp.

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