

2007 PATUXENT NWR WATERBIRD CENSUS

Dec. 2006 – Dec. 2007

Intensive surveys of waterbird use of the Patuxent Research Refuge have been conducted weekly since 1997. Surveys cover about 50 wetland areas encompassing approximately 560 acres, plus segment of the Patuxent and Little Patuxent Rivers. The amount and location of habitat have varied considerably over the years because of droughts and artificial drawdowns. Rogue Harbor has lost most of its value, particularly for broods, by repeated removal of beaver debris. Knowles 1 and 2 were drawn down much of the summer and fall to encourage shorebird use. Tables for common waterbird species by Quarter are attached. Results are compared with the ten year average of 1997 to 2006. The 1998 Report contains vegetation characterizations for most of the impoundments.

Weather

After three years of normal precipitation, a mini-drought reduced 2007 to about seven inches below normal. Fortunately the mini-drought did not begin until mid-June, after the peak of the breeding season.

Winter Quarter – The first ½ of the quarter was mild, followed by freeze-up of most impoundments from mid-January until the end of February. Precipitation was slightly below normal, but all impoundments and the river bottoms were full by the end of the quarter. There was very little snow-fall.

Spring quarter – Spring was chilly, with 20 degree readings in mid-March, mid-20s in early April, a near record 35 degree low on May 5 and 38 degrees in mid-May.

Summer Quarter – The mini-drought began in mid-June. July and August were ½ of normal.

Fall Quarter – The drought continued, with an interruption of 6 inches of rain in late October. There was no hard freeze during the quarter.

General Comments

After the record low in 2006, Canada geese populations returned to near the ten year average. Ring-neck ducks reached a record high, 25% above the ten year average. Mallards and hooded mergansers recorded record lows. Black ducks were near average, and for the first time ever, exceeded mallards in the Fall Quarter. Wood duck populations were near average. Other duck species as a group were well below average. Wading birds were about average. Shorebirds were 50% below average. Pied-billed grebes and belted kingfishers hit their second lowest numbers on record – 50% below the 10 year average. Bald eagles recorded the highest numbers on record, and ospreys their second highest. Numbers refer to days-use (number of birds seen on weekly counts multiplied by seven to give the total for the week).

Canada Goose

After reaching a record high in 2005 and declining to a second record low in 2006, Canada geese rebounded to 138,000 days use, just slightly below the ten year average of 150,000. Counts were near normal in the Winter Quarter, a record low for the Spring Quarter, a Summer Quarter below normal, and a record high Fall Quarter. These variations probably reflect the continuing decline of the breeding population with what appears to be an increase of fall migrants.

Ducks

Total days-use of all species of ducks in 2007 was 118,500, down by 7500 from 2006. The peak was 138,000 in 1997 and the low was 99,000 in 2003, during the depth of the drought. The ten year average was 121,000.

Wood Duck

Counts have been fairly consistent over the past four years, after recovery from the long term drought. Total days-use was about 40,000 in 2007, up from 36,000 in 2006 and slightly exceeding the ten year average of 38,600. Spring and Summer quarters were slightly below average. The Fall quarter was 25% above average.

Mallard

2007 had a record low of 17,500 days-use, 40% below the ten year average. This continues the long term trend that began in 2001. Although the Winter Quarter was below average, it was well above the record low. The other three quarters had record lows. The Spring and Summer Quarter record lows reflect the continuing decline in the breeding population and failure of nesting and brood rearing.

Black Duck

The 10,000 days-use was the highest since 2002, but only slightly above the ten year average of 9,000. This came in spite of a record Spring Quarter low, which was more than made up during the Fall quarter's 4,000; the highest since 1999. Black ducks reached a record high in 1998 and then declined to a record low in 2004 and have steadily increased since. There were two broods for the first time, which accounted for the increase in the Summer Quarter.

Hooded Merganser

2007 was a record low year of 5700 days-use, slightly below the previous record of 5775 set in 2003. This was 25% below the ten year average. The Winter quarter tied the 2003 record low of 1900 days, 50% below average, and was primarily responsible for the record low. Spring was near average. Failure of brood survival resulted in a very low summer count, and Fall was 25% below average.

Ring-neck Duck

This species is our only important migrant and wintering duck. Fluctuations cannot always be explained, but winter weather has a major impact on numbers. After a record high of 47,000 use-days in 2006, the second record high of 43,700 was set in 2007. This was 25% above the ten year average. Record highs during the Winter and Spring quarters were followed by a record low in the fall.

Other Species of Waterfowl

Totals of all other waterfowl were somewhat below the long term average. These included small numbers of green-wing and blue-wing teals, gadwall, American widgeon, ruddy duck, bufflehead, common goldeneye, redhead, red-breasted merganser, shoveler, lesser scaup, mallard/black duck

hybrid, snow goose, domestic/Canada goose hybrid, domestic duck, and tundra swan.

Pied-billed Grebe

The population continued at a low level. Use was 440 days, 50% below the ten year average. This was the second lowest record. Use is almost entirely confined to the Spring and Fall.

Two horned grebes were recorded.

Belted Kingfisher

After steadily increasing from the drought in 2003 of a record low of 800 days to 1800 days in 2006, the count plummeted to 860 in 2007. The second record low on record and 50% below the ten year average. The winter count was near normal but all other quarters were much below average.

Shorebirds

This was the third and final year of a study of the impacts of drawdowns on shorebird populations on Knowles 1 and 2. Knowles 2 was drained in mid-March and then returned to $\frac{1}{2}$ full pool in late April when Knowles 1 was drained to $\frac{1}{3}$ of full pool. Total shorebird counts fell to 4300 days, down 50% from the ten year average. The long term average is skewed by the high counts during the drought years; in 1998, use peaked at 19,000 days. Killdeer comprised well over $\frac{1}{2}$ of all shorebird use with 2700 days. No other species exceeded 400 days. Other common species included solitary and spotted sandpipers, greater and lesser yellowlegs, least sandpiper and common snipe. The only rarity this year was semi-palmated plover.

Waders

Total days use for all wading bird species was about 10,000; which was somewhat above the ten year average. Waders included great blue, little blue, green and black-crowned night herons, great and snowy egrets, American and least bitterns, and Virginia rail.

Great Blue Heron

Use was about 10% above the ten year average but below last year's near record. The decline occurred during the spring. Other quarters were near or above average.

Green Heron

After a steady decline to only 1200 days in 2006, green herons recovered to over 1600 days, just slightly below the ten year average. Spring quarter use continued to fall to the lowest level since 1998, 35% below average. Summer and fall quarters were near average.

Great Egret

Use is almost entirely in late summer and depends on water levels. The late summer mini-drought this year resulted in a slight increase in use to 1057 days, slightly below the ten year average; but well above years when impoundments are full.

Raptors

Bald Eagle

2007 had a record high of 343 use-days, 30% above the ten year average. They have become much more widespread over the Refuge, rather than being concentrated on Lake Redington. Use has particularly increased during the Fall quarter.

Osprey

Mostly due to successful fledging of three young, use increased to 60% above the ten year average at 560 days, Ospreys are only found on the refuge during the late spring and summer.

There was one record of a northern harrier.

Aquatic Mammals

Beaver – There are at least 40 lodges on the Refuge

Otter – In past years, there was never more than one sighting; in 2007 there were six sightings, and all but one were either two or three animals.

Muskrat – There were three sightings, the population appears to be quite low.

Mink – For the first time in the 25 years I have been on the Refuge, I saw one on Knowles 1

WATERBIRD DAYS USE BY QUARTER
Patuxent National Wildlife Research Refuge
Total

Species	10 yr avg 97-06			2007	2008	2009	2010
	avg	high	low				
CAGO	151,232	236,874 (05)	77,736 (03)	138,698			
WODU	38,624	49,462 (97)	29,258 (99)	39,578			
MALL	29,821	37,290 (02)	19,671 (03)	17,578			
ABDU	9,103	13,160 (98)	5,082 (04)	9,994			
HOME	7,846	9,527 (99)	5,775 (03)	5,663			
RNDU	32,608	47,369 (06)	18,396 (99)	43,709			
AGWT	1,491	2,650 (98, 05)	378 (03)	770			
OTHERS	1,599	5,100 (97)	539 (00)	1,134			
Total Waterfowl	272,324	347,000 (05)	178,000 (03)	257,129			
AMCO	244	896 (97)	21 (02)	308			
PBGR	819	1,547 (00)	273 (03)	441			
BEKI	1,593	1,918 (02)	791 (03)	861			
KILL	3,886	12,124 (98)	1,106 (03)	2,680			
SOSA	533	1,008 (99)	105 (04)	343			
SPSA	199	483 (99)	28 (04)	77			
YELE	350	987 (00)	91 (02, 04)	340			
WISN	826	2,555 (00)	203 (05)	364			
OTHERS	653	1,358 (98)	0 (03)	483			
Total Shorebirds	8,711	18,945 (98)	3,031 (03)	4,287			
GBHE	6,385	7,714 (98)	4,704 (03)	7,224			
GNHE	1,722	2,919 (99)	959 (97)	1,637			
GREG	1,120	3,794 (98)	203 (99)	1,057			
LBHE	90	245 (98)	0 (03, 05)	175			
OTHERS	49	112 (00)	28 (06)	77			
Total Wader	9,365	13,076 (98)	6,654 (03)	10,170			
BAEA	216	301 (05)	91 (97)	343			
OSPR	243	830 (05)	56 (99)	560			

WATERBIRD DAYS USE BY QUARTER
 Patuxent National Wildlife Research Refuge
 Winter

10 yr avg 97-06				2007	2008	2009	2010
Species	avg	high (YR)	low (YR)				
CAGO	50,052	120,015 (05)	14,168 (03)	37, 926			
WODU	756	1,106 (00)	105 (06)	462			
MALL	11,717	19,331 (02)	6,792 (97)	9, 205			
ABDU	4,269	6,664 (02)	2,226 (04,97)	5, 026			
HOME	3,783	5,082 (02)	1,995 (03)	1, 953			
RNDU	14,648	21,469 (06)	5,880 (99)	24, 410			
AGWT	346	1,736 (00)	0 (97)	42			
OTHERS	522	1,165 (99)	77 (01)	126			
Total Waterfowl	86, 093	153, 230 (05)	49, 783 (03)	80, 150			
KILL	829	3,282 (98)	0 (03,06)	392			
WISN	148	532 (99)	0 (97,03,05,06)	126			
Total Shorebirds	987	3,619 (98)	0 (04, 06)	518			
AMCO	15	56 (01)	0 (98,00,02,03,05)	49			
GBHE	437	861	168 (04)	413			
PBGR	69	168 (01)	0 (03)	70			
BEKI	197	371 (02)	35 (04)	147			
BAEA	41	98 (02)	7 (97, 03)	42			

WATERBIRD DAYS USE BY QUARTER
 Patuxent National Wildlife Research Refuge
 Spring

Species	10 yr avg 97-06			2007	2008	2009
	avg	high (YR)	low (YR)			
CAGO	36,262	53,305 (99)	28,448 (06)	25942		
WODU	11,403	14,714 (98)	7,350 (00)	10521		
MALL	8,818	13,895 (99)	4,424 (05)	3990		
ABDU	1,296	1,764 (00)	973 (06)	735		
HOME	2,603	3,920 (05)	1,493 (06)	2660		
RNDU	9,262	13,792 (04)	5,397 (05)	16415		
AGWT	530	1,869 (04)	42 (97)	203		
OTHERS	498	1,407 (04)	215 (99)	357		
Total Waterfowl	70,671	90,137 (99)	60,000 (02)	60823		
AMCO	161	735 (97)	0 (05)	224		
PBGR	404	980 (00)	112 (98, 05)	210		
BEKI	335	574 (06)	154 (04)	175		
KILL	552	1,519 (99)	56 (03)	280		
SOSA	294	588 (99)	7 (03)	196		
SPSA	132	322 (05)	7 (03)	70		
YELE	184	966 (00)	0 (04)	235		
WISN	661	2,450 (00)	14 (03)	161		
OTHERS	123	567 (00)	0 (97, 98, 03)	224		
Total Shorebirds	1,945	5,628 (00)	91 (03)	696		
GBHE	1,809	3,158 (01)	875 (03)	1414		
GNHE	200	357 (01)	0 (97)	132		
GREG	26	54 (03)	0 (97, 99)	14		
LBHE	6	28 (00)	0 (97, 98, 01, 03, 04, 05)	21		
OTHERS	37	91 (00)	7 (02, 04)	56		
Total Wader	2,078	3,564 (01)	1,125 (03)	1637		
BAEA	50	105 (06)	0 (97)	56		
OSPR	123	305 (05)	35 (99)	196		

WATERBIRD DAYS USE BY QUARTER
 Patuxent National Wildlife Research Refuge
 Summer

Species	10 yr avg 97-06			2007	2008	2009	2010
	avg	high	low				
CAGO	15,089	21,954 (04)	8,449 (05)	11,508			
WODU	13,314	17,731 (97, 04)	9,756 (99)	12,628			
MALL	2,339	4,606 (97)	553 (03)	469			
ABDU	251	826 (98)	7 (03, 06)	266			
HOME	174	350 (97)	7 (02)	91			
AGWT	4	14 (98, 00, 04)	0 (ALL OTHERS)	0			
OTHERS	23	98 (05)	0 (5 YRS)	7			
Total Waterfowl	31,195	42,079 (04)	20,600 (03,05)	24,969			
AMCO	21	14 (98)	0 (8 YRS)	14			
PBGR	40	154 (04)	7 (99, 02, 03, 06)	0			
BEKI	432	693 (02)	189 (06)	266			
KILL	1,368	4,368 (99)	35 (03)	1,015			
SOSA	167	567 (98)	7 (03)	56			
WISN	8	63 (02)	0 (6 YRS)	0			
OTHERS	289	1015 (98)	0 (03)	182			
Total Shorebirds	1,927	6,202 (98)	84 (03)	1252			
GBHE	2,858	4,025 (98)	2,310 (00, 03)	3801			
GNHE	1,268	2,464 (99)	630 (97)	1267			
GREG	726	2,709 (98)	28 (99)	721			
LBHE	58	203 (98)	0 (01, 03, 05)	28			
OTHERS	10	35 (04)	0 (4 YRS)	21			
Total Wader	4,921	8000 (98)	3,520 (03)	5838			
BAEA	29	63 (00, 01)	7 (99,04)	56			
OSPR	106	7 (99)	497 (05)	364			

WATERBIRD DAYS USE BY QUARTER
Patuxent National Wildlife Research Refuge
Fall

10 yr avg 97-06							
Species	avg	high	low	2007	2008	2009	2010
CAGO	49,829	71,529 (05)	24,675 (03)	63.322			
WODU	13,151	22,190 (01)	6,839 (99)	15.967			
MALL	6,947	9,331 (97)	4,567 (06)	3.919			
ABDU	3,286	6,146 (97)	1,505 (04)	3.967			
HOME	1,287	2,191 (99)	554 (05,06)	959			
RNDU	8,699	13,670 (06)	3,969 (03)	2.884			
AGWT	957	2,581 (05)	84 (03)	525			
OTHERS	970	4,452 (97)	77 (06)	644			
Total Waterfowl	85,125	109,000 (05)	47,000 (03)	92.187			
AMCO	65	119 (06)	0 (02)	21			
PBGR	307	644 (97)	126 (02,03)	161			
BEKI	630	829 (06)	160 (03)	273			
KILL	1,138	3,178 (98)	259 (04)	994			
SOSA	61	210 (03)	7 (99, 04)	91			
SPSA	14	39 (01)	0 (5 YRS)	7			
YELE	125	385 (98)	7 (00)	105			
WISN	157	679 (98)	0 (04)	77			
OTHERS	93	357 (05)	0 (03)	77			
Total Shorebirds	1,588	4,448 (98)	483 (04)	1351			
GBHE	1,461	1,967 (98,05)	1,050 (99)	1.596			
GNHE	253	546 (01)	112 (99)	238			
GREG	367	1,064 (98)	21 (05)	322			
LBHE	26	112 (00)	0 (99, 03, 05, 06)	126			
OTHERS	2	14 (00)	0 (8 YRS)	0			
Total Wader	2,110	3,269 (98)	1,337 (99)	2.282			
BAEA	95	154 (98, 05)	14 (99)	189			
OSPR	14	42 (98)	0 (04)	0			

Volunteers ↔ Friends

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The 2007 Patuxent Waterbird Census

By Frank McGilvrey, Volunteer

Each week throughout the year, waterbirds and aquatic mammals are censused on the some 50 wetlands totaling approximately 560 acres on the Refuge. This intensive census routine started in 1997 with the objective of tracking fluctuations in the main species using the Refuge.

After three years of normal precipitation, we experienced a mini-drought that began in mid-June and left us about seven inches below normal. Fortunately, most broods were on the wing before the wetlands started drying up. The winter was mild until mid-January. Most impoundments were covered with ice from then until the end of February. All wetlands were full at the beginning of the nesting season. The spring was chilly with low temperatures in the 20s until mid-March, the high 20s in late March, and the mid-30s until mid-May.

Summary of Waterbird Use:

Canada Geese, Wood Ducks, Black Ducks, and wading birds (herons, etc) were near the ten year average. Ring-necked Ducks and Bald Eagles reached record highs, and Ospreys were near record highs. Mallards and Hooded Mergansers were at record lows. Pied-billed Grebes and Belted Kingfishers were near record lows and shorebirds were 50% below average.

Canada Goose – Canada Geese went from a record high in 2005, to a record low in 2006, to about the ten year average in 2007. Counts were near normal during the Winter Quarter, a record low in the spring, near normal in the summer and at a record high in the fall. Numbers probably reflect the continuing decline in the breeding population with perhaps an increase in migrants.

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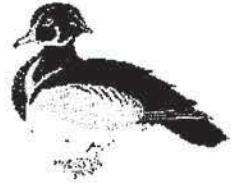
Angela Jackson checking a
wood duck box
photo by Brenda Stone, volunteer

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The 2007 Patuxent Waterbird Census

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Wood Duck – Counts have been fairly consistent over the past four years after recovering from the drought. Counts slightly exceeded the ten year average of 38,600 use-days.

Mallard – The Mallard population continued its decline that began in 2001 and reached a record low in 2007, 40% below the ten year average. The breeding population has basically collapsed.

Black Duck – In contrast, Black Duck counts have steadily increased from a record low in 2004. For the first time ever, Black Duck counts exceeded Mallards during the Fall Quarter. The annual count is still about ½ of the Mallard count.

Hooded Merganser – Although there is a small breeding population, this species is most abundant during migration and the winter. Counts fell to a record low in 2007 at 25% below the ten year average. The Winter Quarter was especially low, 50% below the ten year average.

Ring-necked Duck – This species is our only important migrant duck. Numbers were at a record high in 2006, and were followed by a second record high in 2007. Numbers were at a record high during the Winter and Spring Quarters, but fell to a record low in the Fall Quarter.

Other species of waterfowl – We recorded small numbers of Green-wing and Blue-wing teals, Gadwall, American Widgeon, Ruddy Duck, Bufflehead, Common Goldeneye, Redhead, Red-breasted Merganser, Shoveler, Lesser Scaup, Mallard/Black Duck hybrid, Snow Goose, domestic/Canada goose hybrid, domestic duck and Tundra Swan.

Shorebirds – Total shorebird use was about 50% below the ten year average. The average is skewed by the high numbers recorded during the drought years. Killdeer comprise over ½ of shorebird-use. Other common species include Solitary, Spotted and Least sandpipers, Greater and Lesser yellowlegs, and Wilson's Snipe.

Waders – Included in this category are Great Blue, Little Blue, Green and Black-crowned night herons, Great and Snowy egrets, American and Least bitterns and Virginia Rail. Three species are fairly common. The most abundant and ubiquitous is the Great Blue Heron. Numbers in 2007 were near the ten year average. Green Herons are not present during the winter. There is a small breeding population. They were also near the ten year average. Great Egrets only occur in late summer and early fall and numbers depend on water conditions. A dry late summer and fall in 2007 attracted enough use to approach the ten year average, which is inflated by high use during the drought years.

Aquatic mammals. - There are at least 40 beaver lodges on the Refuge. They can contain up to three generations of as many as ten animals in a large lodge. Prior to 2007 we never recorded more than one observation of otters during the year. In 2007, we had six sightings, all but one of two or three animals. Only three muskrats were seen. For the first time in the 25 years I have been on the Refuge, I saw a mink.

I owe particular thanks to Emy Holdridge for her assistance and willingness to take over when I am gone. There would be vast holes in the data without her.

For photos taken on the refuge, visit a gallery at
http://www.pbase.com/photoops2/patuxent_research_refuge