

2010 PATUXENT NWR WATERBIRD CENSUS

Dec. 2009 – Dec. 2010

Surveys of waterbird species use of the Patuxent Research Refuge have been conducted weekly since 1997. Surveys cover about 50 wetland areas encompassing approximately 560 acres, plus approximately ¾ mile segments each of the Patuxent and Little Patuxent Rivers. Water levels have varied considerably over the years and within years because of droughts, modifications due to beaver activities, and impoundment drawdowns.

Weather

Precipitation in 2010 was about two inches above normal, with a dry spell in late Spring and early Summer.

Winter Quarter

December was normal at the beginning of the month, followed by 22 inches of snow the last week. January was dry and cold with ice until the end of the month. February saw a record snowfall of over 50 inches. Because of the snow and trees on the roads due to the heavy snow, there was no access to the Refuge until the last week of the month. The ice melted at the end of the month.

Spring Quarter

March began a record of nine straight months of above average temperatures. There were no below freezing temperatures in April. April was the fourth warmest on record; May was the second warmest. Rainfall was 1 1/2 inches above normal in March, dry in April and ½ inch below normal in May. Water levels started falling at the end of May.

Summer Quarter

The dry spell continued through June and early July. Late July and August were about two inches above normal, but the above normal temperatures continued to cause a drop in water levels. This was hottest Summer Quarter on record.

Fall Quarter

The above average temperatures continued; September was the fourth warmest on record. There was no killing frost until the end of November. The weather continued dry until the end of September, when we received 5 ½ inches of rain. October rains were normal and all units were full. November precipitation was one inch below normal.

Impoundment Management

In cooperation with Ducks Unlimited, a beaver baffle control structure was placed across a shallow swale near the Endangered Species area incubator house. The control boards were lowered in November and a small amount of water was in the unit by the end of the year. The problem with the Endangered Species area is that we cannot census in the area for most of the year.

There has been an ongoing attempt to control Nuphar with winter drawdowns. This year Lake Allen, Knowles 3, and Hance 1 and 2 were drained in mid-summer and left dry overwinter. They were reflooded in March. This technique has failed. The winters are not severe enough to freeze the bulbs. Millrace was partially drained in January to remove beaver debris from drains under the road. It was near full pool again by late Spring.

Patuxent Marsh and Green-tree ponds were drained in early May to prevent trees from being killed

by flooding.

Hobbs Pond and Knowles 2 were drained in late June and reflooded in late October to provide emergent food plants for fall waterfowl migrants.

We finally got a new control structure with a beaver baffle installed on Mabbott Pond in early December.

Beaver problems have been alleviated considerably by trapping nuisance animals. They continue to be a problem in Bailey Pond, Hance 1 and Duval 1. They have also plugged up the drain under the road just inside the Millrace road gate. This problem will be addressed during the winter of 2010/11.

Summary of 2010 waterbird census

Canada geese numbers continued to be much below the 1997-2006 ten year average. Mallards and black ducks were at record lows. Ring-neck ducks, green herons, great egrets and shorebirds were below the long-term average. Killdeer were well below. Hooded mergansers rebounded slightly from last year's low. Wood ducks, green-wing teal, pied-billed grebes, belted kingfishers, great blue herons, common snipe, and bald eagles were above the long-term average. Ospreys were much above average. The accompanying tables provide details.

Species Accounts

Total Waterfowl

This includes geese, ducks and swans. There were 247,000 waterfowl days-use in 2010. This was about the same as the last two years and continues to be well below the ten year average of 272,000. Peak use was 347,000 days in 2005 and the low was 178,000 in 2003.

Canada goose

Total days use for 2010 was 134,000, the same as last year and comparable with the last three years. This was well below the ten year average of 151,000. The record high was 237,000 in 2005 and the low was 78,000 in 2003. Winter quarter counts were 34,500, which was considerably below the long term average of 50,000. This is a reflection of the hard winter. The record high was 120,000 in 2005 and the low 14,000 in 2003. The Spring Quarter rebounded from last year's record low of 18,000 to 27,000. This reflects increased nesting success. The long term average is 36,000 and the high of 53,000 was recorded in 1999. The Summer Quarter count of 12,000 was the highest in four years, reflecting the increased number of broods and gosling survival. This was still below the long term average of 15,000. The low was 9700 in 1999 and the high was 18,000 in 2004. For the second year in a row, migrants were present for a very short period during the Fall Quarter resulting in a count similar to last year of 39,500. The long-term average is 50,000; the high was 71,000 in 2005 and the low was 25,000 in 2003.

Wood Duck

Total days use was 42,000, somewhat below last year's 47,000 but still above the 38,000 long term average. This was due to the high Fall Quarter count of over 20,000 days-use, close to last fall's record high. Again, we had a very mild and long fall which held the migrants. There is basically no winter use. Spring exactly matched the long-term average of 11,400. The peak was 15,000 in 1998, and the low was 7300 in 2000. The Summer count of 9200 was the lowest on record. The long-term average is 13,000, and the peak was 18,000 in 1997 and 2004.

Mallard

The species continues to decline on the Refuge. The total for the year was 13,000 days, a steep decline from the previous low of 17,000 in 2007. Mallards peaked at 37,000 in 2002. The long term average was 30,000 days. The Winter Quarter only recorded 4300 days, far below the previous low of 6800 in 1997. Although the hard winter had an impact, we have had other winters just as severe. The Spring Quarter also brought a record low 3600 days, 4000 below the previous low in 2007. There were only 500 days-use recorded in the Summer Quarter. The Fall Quarter resulted in a slight rebound from last year's record low of 2500 to 4600. But this was still below the high of 7000 and the record high of 9300 in 1997.

Black Duck

This species also continued to decline in numbers to a new low of 4800 days. The previous low was 5100 in 2004. The long term average is 9100. The peak was 13,000 in 1998. Both Winter and Spring Quarters registered record lows. They have disappeared from the summer quarter.

Hooded Merganser

There was a rebound from last year's record low of 3700 days to 5200 days. But this was still a second record low. The long term average was 7800 and the peak was 9500 in 1999. Since this is primarily a migrant species, hard winters have a significant impact on totals for the year. The Winter Quarter recorded 2660 days, much above last year, but still considerably below the long term average of 3800. The peak was 5000 in 2002. For unknown reasons, Fall counts have been well below the long term average for the last four years. The 500 days in 2010 was above the last two years, but still below the average of 1300. The peak was 2200 in 1999.

Ring-neck Duck

This species is strictly a migrant and our most abundant wintering species. Populations vary considerably from year to year, depending on weather, and for reasons unknown. There were only 25,000 days-use in 2010, well below counts for the last four years, but still well above the record low of 18,000 in 1999. The long term average is 33,000 and the peak was 47,000 in 2006. The population is concentrated on the Refuge during the Winter Quarter. Less than 10,000 days were recorded in 2010, well below the last four years and the long term average of 15,000, but still well above the low of 6000 in 1999.

American Green-wing Teal

This species is strictly a migrant, almost entirely confined to the Fall Quarter. Populations vary considerable from year to year for reasons unknown. There were 2200 days use in 2010, slightly below last year, but still above the long term average of 1500 days. Flooding of impoundments drawn down in late summer to encourage red-root sedge is very attractive to this species.

Other More Common Species

American Coot

Coots vary in numbers considerably from year to year for no known reason. They are only present during the Spring and Fall Quarters. We had 200 days use in 2010, almost all recorded in the Fall. Some years, the peak is in the spring. In 1997 we recorded 735 days use. The average for the year is 244 and the peak of 900 was recorded in 1997. Some years, none are seen.

Pied-billed Grebe

There were 800 days use, which was near the long term average and well above the 400 to 450 days recorded the last three years. The peak was 1500 in 2000 and the low was 270 in 2003. Birds are concentrated in the Spring and Fall Quarters. A mild Fall resulted in close to 600 days use compared to 200 last year and only 70 in 2008.

Belted Kingfisher

We recorded 1659 days use in 2010; right at the long term average but well above figures for the last five years. The most significant increase was the Summer Quarter, from a low of 190 days in 2006 to 570 in 2010. The record low was 800 in 2003 and the peak was 1900 in 200

Shorebirds

Shore bird abundance and species variety are heavily dependent on availability of dry, or nearly dry, wetlands. Over 13,000 days use were recorded in the drought year of 1998. This compares with a low of 2700 days during the wet year of 2008. Spring and early summer drawdowns of some impoundments on Central Tract have seen a slight increase in use, but as soon as vegetation starts to come in, most use ceases. Late summer use is limited even in drought years because most species depart rather quickly. The 2010 total use of 2850 days use was consistent with the last three years. The long term average is 8711 days. Killdeer and common snipe continued to be the common species of shorebirds and the only ones present during the Winter Quarter. Killdeer is the only nesting shorebird and a few attempt to winter. The 1300 days were the fewest since the 1100 days use in 2003. The long term average is 3900 and the peak was 12,000 in the 1998 drought year. Snipe counts were at their highest point since the turn of the century. The 1000 days were well above the long term average of 800 days but still well below the peak of 2555 in 2000. The low was 200 in 2005.

Waders

Total days-use by all species of waders was 9200, just at the ten-year average. Waders included great blue herons, green herons, little blue herons, great egrets, and American bitterns. The peak was 13,000 in 1998, and the low was 6600 in 2003.

Great Blue Heron

This species comprises over 75% of total waders. The growing nesting colony continues to contribute to a substantial population growth from the low of 4700 in 2003; after the collapse of the nesting colony on Millrace Pond and before the establishment of the new colony on Emys Pond. The almost 7000 days use in 2010 is the same as last year and right at the long term average. The peak was 7700 in 1998, the last year of the Millrace colony. This is the only wader that attempts to winter and use falls substantially in hard winters like 2010 when only 200 days were recorded. This compares with 860 in the open winter of 2002.

Green Heron

For unknown reasons this species saw a substantial drop in use from 1900 days last year to only 1400 this year. This compares with the long term average of 1700, a low of 959 in 1997, and a high of 2100 in 1999. Even though we had a very mild fall, green herons departed much earlier than normal and there was a record low count of 84 days use.

Great Egret

Refuge use by this species is very erratic. Most birds use the refuge in late summer and early fall and are likely to be most common when summer dry conditions cause impoundment drawdowns. The

770 days use in 2010 was well below the long term average of 1120 but well above the low of 200 in 1999. The peak was 3800 days in 1998, during a drought.

Raptors

In addition to bald eagles and ospreys, we recorded two northern harriers. We also record red-shouldered and red-tailed hawks when seen in the vicinity of the census areas.

Bald Eagle

The 427 days use was only slightly below last year's record of 476. The long term average is 216 and the low was 133 in 1999. We are recording more and more juveniles, reflecting the increasing population in the region. There is probably a nesting pair somewhere in the Patuxent river bottoms, but we have been unable to find the nest.

Osprey

Counts rebounded substantially from the average of 500 days each of the past three years to 800 days in 2010. This was near the peak of 830 in 2005 and well above the long term average of 243. The low was 56 in 1999. The increase was due to a large increase in numbers during the Spring Quarter, to over 500 days; well above the previous high of 300 in 2005. This would imply a large increase in young birds, but there was still no attempted nesting beyond the usual one pair. There are no records during the Winter Quarter.

WATERBIRD DAYS USE BY QUARTER
 Patuxent National Wildlife Research Refuge
 Winter

10 yr avg 97-06							
Species	avg	high (YR)	low (YR)	2007	2008	2009	2010
CAGO	50,052	120,015 (05)	14,168 (03)	37, 926	39,174	70,560	34,566
WODU	756	1,526 (08)	105 (06)	462	1,526	627	798
MALL	11,717	19,331 (02)	6,792 (97)	9, 205	7609	10,307	4298
ABDU	4,269	6,664 (02)	2,226 (04,97)	5, 026	5,537	2545	1848
HOME	3,783	5,082 (02)	1,995 (03)	1, 953	4,858	2477	2660
RNDU	14,648	24,410 (07)	5,880 (99)	24, 410	16,527	14,510	9443
AGWT	346	1,736 (00)	0 (97)	42	21	0	0
OTHERS	522	1,165 (99)	77 (01)	126	189	196	147
Total Waterfowl	86, 093	153, 230 (05)	49, 783 (03)	80, 150	75,441	101,222	53,760
KILL	829	3,282 (98)	0 (03,06)	392	140	280	49
COSN	148	532 (99)	0 (97,03,05,06)	126	42	63	175
Total Shorebirds	987	3,619 (98)	0 (04, 06)	518	182	343	224
AMCO	15	56 (01)	0 (98,00,02,03,05)	49	0	21	28
GBHE	437	861 (02)	168 (04)	413	385	189	210
PBGR	70	168 (01)	0 (03)	70	70	35	28
BEKI	197	371 (02)	35 (04)	147	147	140	105
BAEA	41	98 (02)	7 (97, 03)	42	70	133	70

WATERBIRD DAYS USE BY QUARTER
Patuxent National Wildlife Research Refuge
Spring

Species	10 yr avg 97-06			2007	2008	2009	2010
	avg	high (YR)	low (YR)				
CAGO	36,262	53,305 (99)	25942 (07)	25942	28882	18304	27440
WODU	11,403	14,714 (98)	7,350 (00)	10521	11179	10570	11403
MALL	8,818	13,895 (99)	3990 (07)	3990	6104	4568	3619
ABDU	1,296	1,764 (00)	735 (07)	735	1386	777	686
HOME	2,603	3,920 (05)	1283 (08)	2660	1283	1029	1876
RNDU	9,262	13,792 (04)	5,397 (05)	16415	11900	9136	5726
AGWT	530	1,869 (04)	42 (97)	203	154	1428	105
OTHERS	498	1,407 (04)	215 (99)	357	875	329	427
Total Waterfowl	70,671	90,137 (99)	60,000 (02)	60823	61763	46141	51282
AMCO	161	735 (97)	0 (05)	224	189	140	14
PBGR	404	980 (00)	112 (98, 05)	210	280	154	203
BEKI	335	574 (06)	154 (04)	175	217	91	385
KILL	552	1,519 (99)	56 (03)	280	133	196	175
SOSA	294	588 (99)	7 (03)	196	56	231	63
SPSA	132	322 (05)	7 (03)	70	35	70	63
YELE	184	966 (00)	0 (04)	235	7	0	7
COSN	661	2,450 (00)	14 (03)	161	133	154	406
OTHERS	123	567 (00)	0 (97,99,08)	224	0	49	0
Total Shorebirds	1,945	5,628 (00)	91 (03)	696	364	700	714
GBHE	1,809	3,158 (01)	875 (03)	1414	1764	2023	2688
GRHE	200	357 (01)	0 (97)	132	105	182	175
GREG	26	54 (03)	0 (97,99,08)	14	0	28	7
LBHE	6	28 (00)	(97,98, 01, 03, 04, 05)	21	0	0	0
OTHERS	37	91 (00)	7 (02, 04)	56	28	42	68
Total Wader	2,078	3,564 (01)	1,125 (03)	1637	1897	2275	2938
BAEA	50	105 (06)	0 (97)	56	91	140	126
OSPR	123	305 (05)	35 (99)	196	259	231	553

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)	6244 (08)	11,508	6244	9940	12,264
WODU	13,314	17,731 (97, 04)	9,756 (99)	12,628	10,227	14,451	9212
MALL	2,339	4,606 (97)	406 (08)	469	406	385	532
ABDU	251	826 (98)	7 (03, 06)	266	56	112	21
HOME	174	350 (97)	0 (08)	91	0	7	168
AGWT	4	14 (98, 00, 04)	0 (ALL OTHERS)	0	0	0	0
OTHERS	23	98 (05)	0 (5 YRS)	7	0	28	0
Total Waterfowl	31,195	42,079 (04)	20,600 (03,05)	24,969	16,933	24,923	22,197
AMCO	21	14 (98)	0 (8 YRS)	14	0	0	0
PBGR	40	154 (04)	0 (07)	0	28	14	7
BEKI	432	693 (02)	189 (06)	266	189	294	567
KILL	1,368	4,368 (99)	35 (03)	1,015	728	560	448
SOSA	167	567 (98)	7 (03)	56	35	70	28
COSN	8	63 (02)	0 (6 YRS)	0	0	0	0
OTHERS	289	1015 (98)	0 (03)	182	52	49	161
Total Shorebirds	1,927	6,202 (98)	84 (03)	1252	815	679	637
GBHE	2,858	4,025 (98)	2,310 (00, 03)	3801	2597	3236	3066
GRHE	1,268	2,464 (99)	630 (97)	1267	1463	1486	1127
GREG	726	2,709 (98)	28 (99)	721	252	665	553
LBHE	58	203 (98)	0 (01, 03, 05)	28	14	35	28
OTHERS	10	35 (04)	0 (4 YRS)	21	7	14	0
Total Waders	4,921	8000 (98)	3,520 (03)	5838	4333	5436	4774
BAEA	29	63 (00, 01)	7 (99,04)	56	21	63	84
OSPR	106	497 (05)	7 (99)	364	245	231	231

WATERBIRD DAYS USE BY QUARTER
 Patuxent National Wildlife Research Refuge
 Fall

Species	10 yr avg 97-06			2007	2008	2009	2010
	avg	high	low				
CAGO	49,829	71,529 (05)	24,675 (03)	63.322	60,108	34,482	39,557
WODU	13,151	22,190 (01)	6,839 (99)	15.967	13,657	21,434	20,722
MALL	6,947	9,331 (97)	3,919 (07)	3.919	6495	2569	4655
ABDU	3,286	6,146 (97)	1,505 (04)	3.967	2702	2086	2219
HOME	1,287	2,191 (99)	413 (08)	959	413	252	483
RNDU	8,699	13,670 (06)	3,969 (03)	2.884	4151	13,614	10,220
AGWT	957	2,581 (05)	84 (03)	525	294	1155	2121
OTHERS	970	4,452 (97)	77 (06)	644	476	259	280
Total Waterfowl	85,125	109,000 (05)	47,000 (03)	92.187	88,296	75,851	100,257
AMCO	65	119 (06)	0 (02)	21	0	35	189
PBGR	307	644 (97)	70 (08)	161	70	196	557
BEKI	630	829 (06)	160 (03)	273	609	693	602
KILL	1,138	3,178 (98)	259 (04)	994	945	1127	609
SOSA	61	210 (03)	7 (99, 04)	91	21	91	42
SPSA	14	39 (01)	0 (5 YRS)	7	0	49	35
YELE	125	385 (98)	7 (00)	105	224	42	21
COSN	157	679 (98)	0 (04)	77	203	42	427
OTHERS	93	357 (05)	0 (03)	77	0	0	21
Total Shorebirds	1,588	4,448 (98)	483 (04)	1351	1393	1351	1155
GBHE	1,461	1,967 (98,05)	973 (08)	1.596	973	1729	959
GRHE	253	546 (01)	112 (99)	238	246	280	84
GREG	367	1,064 (98)	21 (05)	322	259	175	203
LBHE	26	112 (00)	0 (99, 03, 05, 06)	126	63	28	7
OTHERS	2	14 (00)	0 (8 YRS)	0	14	0	0
Total Waders	2,110	3,269 (98)	1,337 (99)	2.282	1555	2212	1253
BAEA	95	154 (98, 05)	14 (99)	189	133	140	147
OSPR	14	42 (98)	0 (04)	0	0	7	14

WATERBIRD DAYS USE
Patuxent National Wildlife Research Refuge
Total for the Year

Species	10 yr avg 97-06			2007	2008	2009	2010
	avg	high	low				
CAGO	151,232	236,874 (05)	77,736 (03)	138,698	134,408	133,286	133,827
WODU	38,624	49,462 (97)	29,258 (99)	39,578	36,589	47,082	42,135
MALL	29,821	37,290 (02)	17,578 (07)	17,578	20,614	17,829	13,104
ABDU	9,103	13,160 (98)	5,082 (04)	9,994	9681	5520	4774
HOME	7,846	9,527 (99)	5,663 (07)	5,663	6554	3765	5187
RNDU	32,608	47,369 (06)	18,396 (99)	43,709	32,578	37,260	25,389
AGWT	1,491	2,650 (98, 05)	378 (03)	770	469	2583	2226
OTHERS	1,599	5,100 (97)	539 (00)	1,134	1540	833	791
Total Waterfowl	272,324	347,000 (05)	178,000 (03)	257,129	242,433	248,137	247,433
AMCO	244	896 (97)	21 (02)	308	189	196	205
PBGR	819	1,547 (00)	273 (03)	441	448	399	795
BEKI	1,593	1,918 (02)	791 (03)	861	1162	1218	1659
KILL	3,886	12,124 (98)	1,106 (03)	2,680	1946	2163	1281
SOSA	533	1,008 (99)	105 (04)	343	112	392	133
SPSA	199	483 (99)	28 (04)	77	35	168	266
YELE	350	987 (00)	91 (02, 04)	340	231	42	21
COSN	826	2,555 (00)	203 (05)	364	378	259	1008
OTHERS	653	1,358 (98)	0 (03)	483	52	0	147
Total Shorebirds	8,711	18,945 (98)	2,754 (08)	4,287	2754	3024	2856
GBHE	6,385	7,714 (98)	4,704 (03)	7,224	5719	7177	6923
GRHE	1,722	2,919 (99)	959 (97)	1,637	1814	1948	1386
GREG	1,120	3,794 (98)	203 (99)	1,057	511	868	770
LBHE	90	245 (98)	0 (03, 05)	175	77	63	7
OTHERS	49	112 (00)	28 (06)	77	49	56	159
Total Wader	9,365	13,076 (98)	6,654 (03)	10,170	8170	10,112	9245
BAEA	216	476 (09)	133 (99)	343	315	476	427
OSPR	243	830 (05)	56 (99)	560	504	469	798