PERFORMANCE REPORT

State: **New Hampshire** **Grant W-89-R-5**

Grant Type: **Survey and Inventory**

Period Covered: **July 1, 2004 – June 30, 2005**

Project IV: **WATERFOWL RESEARCH AND MANAGEMENT**

Job 1: **Mute Swan Management**

Job Objective: To monitor the distribution and abundance of the State's feral mute swan population.

Summary: In coastal areas between April 28 and May 26, breeding and non-breeding free-flying mute swans were located (Table 1). A total of seven pairs nested with non-breeding swans being located at four additional sites. Swan nests were located during the incubation period with a minimum of 33 eggs being produced at the swan nest locations. The average clutch size of the swan nests surveyed was 6.6 eggs/nest with a range of 3-9 eggs/nest. In addition to the swan locations listed in Table 1, five swans were reported by the public in the towns of Goffstown, Moultonborough, and Wakefield. Department biologists were not able to verify these reports.

Target Date: June 30, annually.

Status of Progress: On schedule.

Significant Deviations: None.

Total Cost:

Procedures: Population monitoring efforts will include annual winter and spring counts, and a summer count every three years according to AFTS protocol.

Recommendations and Remarks: Continue job as planned.

The spring, 2005 season is the first known time that a "wild" pair of mute swans has attempted to nest at a site other than at a coastal location. The nest failed due to heavy rain and floodwaters. This spring, states were allowed to return to population control practices. One adult mute swan was removed from the Great Bay NWR and 33 eggs were removed from production at known nest locations in the seacoast. Locating swan nests and removing eggs from production is a very effective method to control population growth and has been instrumental in keeping the seacoast population from expanding. The sighting of mute swans at inland locations this spring follows two years of zero population control as a result of litigation against the U.S. Fish and Wildlife

Service. It's critical that control measures continue in the future and monitoring efforts be expanded to inland locations south of the Lakes Region in central areas.

Table 1

NEW HAMPSHIRE
MUTE SWAN DATA

SPRING 2005

TOWN	LOCATION	NEST	TOTAL EGGS	ADULT SWANS	COMMENTS
Durham	Adams Point	No	0	4	Non-breeders
Durham	Mill Pond	Yes	8	2	-
Durham	Young's Drive	Yes	9	2	-
Hampton	Meadow Pond	-	-	2	No nest found
Laconia	Winni. River	Yes	0	2	Nest flooded
Newmarket	Lamprey River	No	0	1	No nest found
Newington	Great Bay NWR	No	-	1	-
Nottingham	Nottingham Lake	Yes	6	2	-
Rollinsford	Salmon Falls River	Yes	3	2	Re-nest
Rye	Eel Pond	Yes	7	2	-
Rye	Fuller Farm	Yes	Unk	2	Not checked

PERFORMANCE REPORT

State: **New Hampshire** **Grant W-89-R-5**

Grant Type: **Survey and Inventory**

Period Covered: **July 1, 2004 – June 30, 2005**

Project IV: **WATERFOWL RESEARCH AND MANAGEMENT**

Job 2: **Winter Population Studies**

Job Objective: To inventory New Hampshire's coastal waterfowl resources with respect to wintering populations and to acquire census data which will contribute to Atlantic Flyway population estimates. To inventory known inland locations to determine numbers of waterfowl that winter outside traditional coastal locations.

Summary: New Hampshire conducted the annual coastal survey on January 15, 2005, which was a week later than usual due to poor weather conditions. All four coastal areas (Great Bay, Hampton/Seabrook saltmarshes, the coastline, and the Isles of Shoals) were surveyed. Overall, the 2005 winter coastal count of 4,385 waterfowl was slightly below the 54-year average of 4,507. Great Bay and the coastal rivers and saltmarshes were completely ice free and there was no snow cover on the agricultural fields. Birds were widely distributed and difficult to count. Great Bay continues to winter the bulk of the waterfowl (74%) in the seacoast area. The Canada goose count (2,736) and the sea duck count (892), primarily eiders, were nearly identical to last year and well above the long-term average. The black duck count (234) was one of the lowest recorded and was significantly below the long-term average of 1,385 birds.

New Hampshire's count (Table 2) has significantly more value when incorporated into the total flyway count as winter weather greatly influences the number of waterfowl that winter in the state.

During January and February, known inland wintering locations were surveyed to determine the abundance of mallards, black ducks and Canada geese that winter outside the coastal region. Wintering populations of waterfowl were surveyed by vehicle at 116 inland locations in ten counties. The number of the three primary species targeted was 5,838 waterfowl, which includes 4,479 mallards, 505 black ducks, and 854 Canada geese. The 2005 mallard and black duck counts were considered average and the Canada goose count was the third highest on record due primarily to snow-free conditions for a substantial part of the winter.

Table 3 depicts the number of waterfowl surveyed in each county for 2005 and Table 4 summarizes the species data since 1988.

Target Date: June 30, annually.

Status of Progress: On Schedule.

Significant Deviations: None.

Total Costs:

Recommendations and Remarks: An aerial waterfowl census of New Hampshire's coastline, Isles of Shoals, Great Bay, and the Hampton / Seabrook Marsh area will be carried out during early January according to procedures prescribed by the U.S. Fish and Wildlife Service. A vehicle survey of known inland wintering locations will be conducted in January and February. State Fish and Game personnel conduct both surveys. Wildlife Biologist Eric Orff and Wildlife Biologist Julie Robinson conducted the coastal survey through flight arrangements with the Concord Airport. Regional Wildlife Biologists and Technicians conducted the inland survey.

TABLE 3

2005 WINTERING WATERFOWL POPULATIONS AT INLAND LOCATIONS

COUNTY	MALLARDS	BLACK DUCKS	CANADA GEESE
Belknap	146	0	71
Carroll	580	3	0
Cheshire	42	0	100
Coos	22	2	0
Grafton	15	0	0
Hillsborough	862	8	6
Merrimack	901	44	160
Rockingham	1,355	421	13
Strafford	313	23	504
Sullivan	243	4	0
TOTAL	**4,479**	**505**	**854**

TABLE 4

1988 – 2005 WINTERING WATERFOWL POPULATIONS AT INLAND LOCATIONS

YEAR	MALLARDS	BLACK DUCKS	CANADA GEESE
2005	4,479	505	854
2004	3,466	427	847
2003	5,316	561	371
2002	4,870	802	1,367
2001	6,909	721	281
2000	7,107	809	1,025
1999	4,821	267	297
1998	4,161	520	764
1997	4,306	203	334
1996	5,592	357	195
1995	5,124	262	470
1994	4,336	428	114
1993	4,941	278	827
1992	4,667	296	578
1991	3,713	446	--
1990	3,194	201	--
1989	2,750	--	--
1988	1,800	--	--
18 Yr Avg.	**4,531**	**443**	**595**

PERFORMANCE REPORT

State: **New Hampshire** **Grant W-89-R-5**

Grant Type: **Survey and Inventory**

Period Covered: **July 1, 2004 – June 30, 2005**

Project IV: **WATERFOWL RESEARCH AND MANAGEMENT**

Job 3: **Technical Assistance and Coordination**

Job Objective: To participate in programs associated with waterfowl research and management in New Hampshire and to assist federal, state, and private agencies in implementing a Waterfowl Management Plan for the Atlantic Flyway.

Summary: Several waterfowl-related meetings were held or attended during the project segment. These include the Atlantic Flyway Council and Technical Section meetings and one annual waterfowl regulation meeting. Waterfowl hunting seasons were determined through rule-making procedures. Numerous correspondence related to migratory game birds was processed.

Target Date: June 30, annually.

Status of Progress: On schedule.

Significant Deviations: None.

Total Cost:

Recommendations and Remarks: Continue with job.

The following meetings were attended:

1. Atlantic Flyway Technical Section and Council Meeting, July 19 – July 23, 2004, Dover DE.

2. New Hampshire's Early Selection Migratory Game Bird Regulations Hearing was held on July 14, 2004 in Concord, NH. The 2004 – 2005 New Hampshire Migratory Game Bird seasons were adopted through Federal rulemaking from the agenda.

3. New Hampshire's Waterfowl Regulations Hearing was held on August 16, 2004 in Concord, NH. The 2004 – 2005 New Hampshire Waterfowl Hunting season was adopted through Federal rulemaking from the agenda.

4. Atlantic Flyway Technical Section Meeting, February 28 – March 4, 2005, Mystic, CT.

The hunting season dates for all migratory game bird species are described in detail in the 2004-2005 New Hampshire Migratory Bird Hunting Regulations leaflet.

PERFORMANCE REPORT

State: **New Hampshire** **Grant W-89-R-5**

Grant Type: **Survey and Inventory**

Period Covered: **July 1, 2004 – June 30, 2005**

Project IV: **WATERFOWL RESEARCH AND MANAGEMENT**

Job 4: **Statewide Breeding Waterfowl Population Study**

Job Objective: To determine the status, distribution, abundance and ecology of breeding waterfowl populations in New Hampshire.

Summary: The annual Mallard / Waterfowl Breeding Survey was conducted from April 18 – May 6, 2005. Timing of the survey was similar to past years. Seventy-five randomly established one-kilometer square plots, (Figure 1), were surveyed following guidelines developed by the Mallard Committee of the Atlantic Flyway Waterfowl Council Technical Section. The 2005 survey was the seventeenth consecutive year of the breeding survey conducted in the Northeastern section of the Atlantic Flyway.

Target Date: June 30, annually.

Status of Progress: On schedule.

Significant Deviations: None

Total Cost:

Recommendations and Remarks: Continue with job.

The Atlantic Flyway Breeding Waterfowl Survey was conducted for the seventeenth consecutive spring. Data from the survey was summarized and provided to the Atlantic Flyway Technical Section and the U.S. Fish and Wildlife Service for inclusion in the annual Waterfowl Population Trend Report. As in previous years, the mallard continued to be the most abundant breeding waterfowl species in the State, with the wood duck and the Canada goose being the next most common breeders (Table 5). Breeding units for the three primary puddle duck species in the State (mallard, wood duck, and black duck) were nearly identical to last year. The Canada goose breeding unit was the highest ever recorded, as was the total number of geese observed. In total, eleven species of breeding waterfowl were recorded in the 2005 survey. Long-term data for New Hampshire and the Northeast United States is summarized in Tables 6 and 7.

TABLE 5 WATERFOWL BREEDING PAIR INDEX IN NEW HAMPSHIRE
APRIL 18-MAY 6, 2005
BREEDING UNITS

PHYSIOLOGICAL ZONE	NUMBER OF PLOTS	MALLARD	BLACK DUCK	WOOD DUCK	CANADA GEESE
SM + 12	12	11	1	10	12
27	32	37	6	31	8
28	31	26	7	10	5
TOTALS:	75	74	14	51	25

TABLE 6 TOTAL NUMBER OF BREEDING PAIRS CALCULATED FOR NEW HAMPSHIRE (1989 – 2005)

YEAR	MALLARD PAIRS	BLACK DUCK PAIRS	WOOD DUCK PAIRS	CANADA GEESE
1989	9,918	5,793	10,451	-
1990	13,389	4,921	9,998	-
1991	16,948	6,567	19,802	-
1992	25,169	7,607	22,385	-
1993	22,555	7,513	11,514	-
1994	18,725	3,118	7,646	898
1995	17,598	7,853	13,361	4,264
1996	20,557	5,785	13,221	6,368
1997	16,060	3,463	7,553	3,408
1998	13,083	4,582	7,692	6,790
1999	18,576	3,836	8,140	4,985
2000	16,724	3,671	10,616	7,591
2001	11,063	1,330	4,407	5,166
2002	16,677	4,151	16,503	5,630
2003	12,570	4,887	11,022	5,728
2004	25,406	4,407	19,496	5,938
2005	24,693	4,606	17,575	6,686

TABLE 7 TOTAL NUMBER OF BREEDING PAIRS CALCULATED FOR THE NORTHERN ATLANTIC FLYWAY STATES (1989 – 2005)

YEAR	MALLARD PAIRS	BLACK DUCK PAIRS	WOOD DUCK PAIRS	TOTAL # OF CANADA GEESE
1989	243,552	22,073	119,193	
1990	304,120	27,574	112,546	
1991	360,851	35,144	153,721	
1992	292,614	43,015	176,679	500,388
1993	315,443	39,169	131,637	595,273
1994	418,656	29,457	137,447	608,297
1995	403,588	32,660	166,243	736,708
1996	403,821	31,645	156,160	932,592
1997	383,252	29,780	186,107	1,013,324
1998	374,589	31,817	184,708	970,055
1999	421,369	38,661	194,468	999,469
2000	357,114	36,383	172,931	1,015,920
2001	384,875	31,842	186,142	1,011,264
2002	400,989	28,969	202,157	965,982
2003	347,280	28,863	167,135	1,083,180
2004	388,399	25,052	172,845	980,433
2005	358,214	21,471	195,916	1,064,696

PERFORMANCE REPORT

State: **New Hampshire** **Grant W-89-R-5**

Grant Type: **Survey and Inventory**

Period Covered: **July 1, 2004 – June 30, 2005**

Project IV: **WATERFOWL RESEARCH AND MANAGEMENT**

Job 5: **Statewide Waterfowl Banding**

Job Objective: To band waterfowl to obtain needed data on mortality, survival, productivity, and general information on migration and distribution of the kill.

Summary: In September, mallards, black ducks, and wood ducks were captured and banded at five sites, two in Coos County, one in Strafford County, and two in Rockingham County. Rocket nets were used to capture ducks at three sites and bait traps were used at two sites.

In winter 2005, banding occurred at the historical Fresh Creek site in Dover in an effort to target mallards and black ducks.

In mid to late May, nest boxes were checked on selected Department waterfowl management areas. Nesting female wood ducks and hooded mergansers were captured and banded.

In late June and early July, Canada geese were captured during the molt and then leg banded. A total of 23 capture drives were conducted in Belknap, Cheshire, Coos, Hillsborough, Merrimack, Rockingham and Strafford counties.

Target Date: June 30, annually.

Status of Progress: On schedule.

Significant Deviation: None.

Total Cost:

Recommendations and Remarks: Continue with job and continue efforts to meet Atlantic Flyway banding quotas.

Ducks

A total of 488 ducks were captured during the project segment. This includes 459 newly banded ducks and 29 previously banded ducks.

Pre-hunting season banding efforts in late summer 2004 resulted in 394 ducks being banded, which represents the highest number banded in the last sixteen years. Rocket netting accounted for the capture of 269 ducks while bait trapping was used to capture 125 ducks. A total of 218 mallards, 133 wood ducks, 42 black ducks, and one mallard/black duck hybrid were banded (Table 8). The Department participated in the North American Harvest Reporting Rate Study with 214 ducks (100 wood ducks, 79 mallards and 35 black ducks) being banded with "special" bands.

The age ratio of juveniles to adult females was 2.8 for mallards and black ducks and 4.7 juveniles to adult females for wood ducks. This indicates that duckling survival was good but slightly lower than in 2003.

Winter banding continued at one coastal site at Fresh Creek in Dover. On February 8, 2005, 94 ducks were captured including 91 mallards, 2 black ducks, and one mallard/black duck hybrid. New bands were placed on 62 mallards, 2 black ducks and one mallard/black duck hybrid. Twenty-nine mallards were recaptured with four being summer banded in New Hampshire in previous years and 25 being winter banded at Fresh Creek in previous years. Banding of adult hen wood ducks and hooded mergansers in nest boxes has occurred annually since 1987. During the spring of 2005 no effort was directed toward this job due to other priorities.

Canada Geese

In 2005, 741 Canada geese were captured during the molt. Leg bands were placed on 620 geese and 121 previously banded geese were recaptured (Tables 9 and 10). Most of the recaptured geese were banded in the State in previous years.

A total of 80 complete broods of geese were captured. The average brood size was 5.2 goslings/brood, which is high and indicates that the cold and rainy weather in the month of May didn't have a negative impact on Canada goose gosling survival.

New Hampshire's banding effort for ducks and geese is part of the New England Zone Cooperative Effort and all data is forwarded to the U.S. Fish and Wildlife Service for analysis with other Atlantic Flyway banding data.

TABLE 8

2004 PRE-HUNTING SEASON
WATERFOWL BANDING SUMMARY

COUNTY	SPECIES	HYM	HYF	AHYM	AHYF	TOTAL
Coos (2 Sites-Rocket Nets)	Wood Duck	39	46	30	18	133
	Mallard	4	1	0	3	8
	Black Duck	3	2	0	1	6
County Total						**147**
Strafford (1 site-Rocket Net)	Mallard	39	28	30	21	118
	Black Duck	0	2	1	0	3
	Mal/Black	1	0	0	0	1
County Total						**122**
Rockingham (1 Site -Trap)	Mallard	27	12	30	23	92
	Black Duck	14	9	8	2	33
County Total						**125**

HY = Hatch Year (Juvenile)
AHY = After Hatch Year (Adult)

State Totals:	Wood Ducks	133
	Mallards	218
	Black Ducks	42
	Mal/Bl Duck Hybrid	1
		394
Region Totals:	Region 1	147
	Region 3	247

TABLE 9

2005 CANADA GOOSE BANDING

DATE	COUNTY	TOWN	LOCATION	HY	SY	ASY	RECAP.	TOTAL
6-23-05	Strafford	Rochester	Garland Farm	11	7	8	8	**34**
6-23-05	Rockingham	Kingston	Rt 125 Campground	10	0	4	0	**14**
6-23-05	Rockingham	Atkinson	Bryand Woods	6	2	2	2	**12**
6-23-05	Rockingham	Atkinson	Woods Farm	23	0	4	10	**37**
6-23-05	Rockingham	Atkinson	Cowbell Corner	11	0	2	2	**15**
6-24-05	Hillsborough	Nashua	Twin Brook	31	6	10	30	**77**
6-24-05	Hillsborough	Merrimack	Fidelity, Inc.	27	4	3	10	**44**
6-24-05	Merrimack	Hooksett	Granite Hills	8	0	4	1	**13**
6-27-05	Cheshire	Winchester	Kelley Farm	30	0	6	12	**48**
6-27-05	Cheshire	Fitzwilliam	Bowkerville Rd.	0	7	3	3	**13**
6-27-05	Cheshire	Walpole	Whitcomb Rd.	13	0	6	4	**23**
6-28-05	Cheshire	Swanzey	Faulkners	15	0	6	0	**21**
6-28-05	Cheshire	Alstead	Fullers	17	1	12	0	**30**
6-28-05	Cheshire	Alstead	Pratt Farm	10	0	5	0	**15**
6-29-05	Merrimack	Dunbarton	Gorham Pond Rd.	23	2	5	12	**42**
6-29-05	Hillsborough	Bedford	Hardy Road	28	1	19	3	**51**
6-29-05	Rockingham	Auburn	Route 121	7	1	5	0	**13**
6-29-05	Rockingham	Chester	Route 102	10	0	4	0	**14**
6-30-05	Belknap	Tilton	J. Jill	9	0	2	2	**13**
6-30-05	Belknap	Center Harbor	Waukewan CC	20	8	14	2	**44**
6-30-05	Merrimack	Pittsfield	Globe	8	0	4	0	**12**
7-12-05	Coos	Northumberland	Connecticut River	85	5	24	18	**132**
7-12-05	Coos	Northumberland	Connecticut River	16	1	5	2	**24**
	TOTALS:	**23 Capture Drives**		**418**	**45**	**157**	**121**	**741**

TABLE 10

2005 CANADA GOOSE BANDING
COUNTY SUMMARY

County	New Bands	Recaptures	Total Geese
Belknap	53	4	57
Cheshire	131	19	150
Coos	136	20	156
Hillsborough	129	43	172
Merrimack	54	13	67
Rockingham	91	14	105
Strafford	26	8	34
TOTALS	**620**	**121**	**741**

PERFORMANCE REPORT

State: **New Hampshire** **Grant W-89-R-5**

Grant Type: **Survey and Inventory**

Period Covered: **July 1, 2004 – June 30, 2005**

Project IV: **WATERFOWL RESEARCH AND MANAGEMENT**

Job 6: **Woodcock Singing Ground Survey**

Job Objective: To obtain an annual index to the relative size of the breeding woodcock populations in New Hampshire.

Summary: The survey was coordinated by the Department's migratory bird biologist who issued cooperators the necessary forms and materials supplied by the U.S. Fish and Wildlife Service.

Sixteen of the 18 New Hampshire routes were surveyed during the three-week period from April 25 through May 15, 2005.

Target Date: June 30, annually.

Status of Progress: On schedule.

Significant Deviations: None

Total Cost:

Recommendations and Remarks: Continue with Job.

The annual breeding population index for the Eastern Region was 1.84 singing males per route for 2005. This year's index was essentially unchanged from the 2004 index. The New Hampshire index of 4.22 singing males per route decreased from 5.25 singing males per route in 2004. Generally, northern routes in the State have higher numbers of singing males per route than in other areas of the State. In 2005, the northern routes averaged 6.4 singing males per route. The central routes averaged 3.2 singing males per route, and the southern routes averaged 1.0 singing males per route.

The index of daily hunting success for 2004 in the Eastern Region was 2.1 woodcock per successful hunt, which was the same as in 2003. Seasonal hunting success in the Eastern Region in 2004 was 9.0 woodcock per successful hunter compared to 10.4 woodcock per successful hunter in 2003. The index of daily hunting success in New Hampshire was 2.0 woodcock per

successful hunt, did not change from 2003. Seasonal hunting success increased from 8.2 woodcock per successful hunt in 2003 to 9.4 woodcock per successful hunt in 2004.

Overall, the long-term trend (1968-2005) from the singing ground survey continues to be negative in the Eastern Region (-2.0% per year). The major causes of the decline are thought to be degradation and loss of suitable habitat on both the breeding and wintering areas. If current trends in land-use practices persist, then continued long-term population declines are likely.

Literature cited:

Kelly, J.R., Jr. and R.D. Rau. 2005, American Woodcock Population Status, 2005. U.S. Fish and Wildlife Service, Laurel, Maryland. 15pp.

PERFORMANCE REPORT

State: **New Hampshire** **Grant W-89-R-5**

Grant Type: **Survey and Inventory**

Period Covered: **July 1, 2004 – June 30, 2005**

Project IV: **WATERFOWL RESEARCH AND MANAGEMENT**

Job 7: **Mourning Dove Call Count Survey**

Job Objective: To obtain an annual index to the relative size of the breeding mourning dove population in New Hampshire.

Summary: Seven survey routes were run by Department biologists during the survey framework of May 20 through May 31, 2005. Routes were run in each of the four Fish and Game regions.

Target Date: June 30, annually.

Status of Progress: On schedule.

Significant Deviations: None.

Total Cost:

Recommendations and Remarks: Continue with job.

The average number of doves heard per route increased 5.8% in the Eastern Management Unit. The 2005 population index of 16.1 doves heard per route for the unit was higher than 15.6 in 2004. The long-term population trend (1966-2005) for the unit continues to decline, but for the New England States as a group, the long-term population trend (1966-2005) continues to increase. In 2005, the average number of doves heard per route decreased from 9.3 in 2004 to 7.5 for the New England States as a group.

In New Hampshire, seven dove routes were surveyed this year; two in the north, two in the central section, and three in the southern section of the state. In 2005 the northern routes averaged 1.0 doves heard and seen per route, the central routes averaged 5.0 per route and the southern routes averaged 16.7 per route. The statewide average of 8.9 doves heard and seen for all routes combined in 2005 was substantially lower than the 13.3 doves heard and seen in 2004.

Literature cited:

Dolton, D.D., and R.D. Rau. 2005. Mourning Dove Population Status, 2005. U.S. Fish and Wildlife Service, Laurel, Maryland. 19pp.