

2007 Narragansett Bay Winter Waterfowl Survey
Survey Results
February, 2007

The 2007 Narragansett Bay Winter Waterfowl Survey was completed on January 12, 2007 by seven teams composed of 2-4 observers who surveyed waterfowl at 67 locations throughout Narragansett Bay. The objectives of the survey are to 1) provide an continuing record of waterfowl abundance and distribution in Narragansett Bay, and 2) to supplement annual aerial surveys of Narragansett Bay carried out by the Rhode Island Department of Environmental Management, Division of Fish and Wildlife and local surveys by the US Fish and Wildlife Service.

METHODS

Survey locations were known public access points located throughout Narragansett Bay, and were selected to provide as complete coverage of the Bay as possible (Table 1). This was a ground-based survey, and observers used direct counts to record all waterfowl present at a location at the time of the survey. The earliest census began at 0805 in the morning and the last census was completed at approximately 1530 in the afternoon. Each survey team visited the locations within their segments sequentially, and start and end times were not coordinated between the segments.

Direct counts were used to determine the abundance of all waterfowl at a location. Counting was completed from a stationary point from which the entire area (i.e., cove or embayment) to be surveyed was scanned with binoculars or a spotting scope. Every bird seen on the water surface or on the adjoining shoreline up to 50 m from the water was counted. There was no set time limit for the census, observers took only as much time as necessary to accurately count and record each bird seen. Most locations required between 10 - 20 minutes to survey.

Observers counted individuals of all waterfowl species seen at each location. We define waterfowl species as ducks, geese, and swans. When possible, observers noted whether individuals are male, female, or juvenile (first year birds). Large flocks of greater than 100 birds were estimated by counting in groups of ten or one hundred. Observers attempted to note the numbers of common shorebirds such as gulls and sandpipers, and waterbirds such as cormorants and grebes, although large flocks of gulls and sandpipers were roughly estimated to save time. Any species unusual in the area were noted and details of the observation were included to support the siting.

Disturbance present at the time of census that may have influenced waterfowl at the location was noted. Disturbance included human activity (hunting, boating, people or pets walking along the shore), and natural phenomena such as the presence of predators (e.g., a hawk circling nearby).

Weather conditions were noted for each location:

- 1) Temperature: air temperature was recorded in degrees Celsius
- 2) Wind Direction: wind direction was indicated using the eight inter-cardinal points (N, NE, E, SE, S, SW, W, NW)
- 3) Cloud cover: observers estimated the percentage of the sky covered with clouds (0 - 100%)
- 4) Precipitation: three scenarios: Fog, Rain, or Snow. Observers entered a "0" if not present; and

if present entered 1, 2, or 3 to indicate the severity of the precipitation (1 = light; 2 = moderate; 3 = heavy).

5) Sea State: whether seas are calm, choppy, or pounding surf.

6) Tide: an estimate of whether the tide is high or low, or intermediate between the two (med.).

7) Ice: Observers included an estimate the extent of ice coverage: none; partial; total.

Standard data sheets were used to record survey data. Data was returned to the survey coordinator who entered the data from the original forms into an excel spreadsheet (BayWideSurvey2007.xls).

RESULTS

A total of 18,455 waterfowl were reported during the survey, representing 20 species (Table 2). In addition, there were 2 redhead *Aythya americana* reported in Apponaug Cove, 1 canvasback *Aythya americana* in the upper Providence River, and 1 Eurasian wigeon *Anas penelope* in Warwick Cove. Most abundant were scaup spp. *Aythya marila*, *Aythya affinis* (6712 individuals, located in the Providence River between Sabin Point and Pawtuxet Neck), followed by brant *Branta bernicla* (2,733 individuals, located primarily in the upper Bay at Gaspee Point and Colt State Park), common goldeneye *Bucephala clangula* (1400 individuals) and American black ducks *Anas rubripes* (1199 individuals). Both common goldeneye and American black ducks were more or less equally distributed throughout the Bay. Mallards *Anas platyrhynchos* and American wigeon *Anas americana* were equally abundant in the Bay (616 and 810 individuals, respectively). Observers reported a total of 27 harlequin ducks *Histrionicus histrionicus* at Sachuest Point National Wildlife Refuge, 24 at Beavertail Point, and 6 at Sakonnet Point. A Barrow's goldeneye *Bucephala islandica* was seen on the east side of Jamestown near Bull Point, in an area known as the Dumplings.

More waterfowl were found in the upper Bay with 53.3% (9,841 individuals) reported in the Providence River (north of a dividing line running roughly from Warwick Neck to Colt State Park). A total of 5,209 individuals (28.7%) were reported in the mid Bay (north of Jamestown to the Providence River), and 3,315 individuals (18.0%) in the lower Bay (Jamestown island south to the Bay mouth). The most waterfowl (9,545 individuals, comprising 51.7% of the total in the Bay) were reported within the East Bay segment. The abundance of waterfowl at a location ranged from 5,438 individuals at Sabin Point (mostly scaup) to 0 at Arnold Point in Portsmouth. The top ten most populated sites, along with the dominant species at each, are listed in Table 3. Apponaug Cove, the third most populated site in 2007, and Bullock's Cove (7th most populated in 2007) were the only sites that were in the top ten most populated sites in the 2005 survey. Species richness at the survey locations ranged from 1-11 species per site. The top ten locations with the highest waterfowl species richness are listed in Table 4. Species appeared to be somewhat evenly distributed among sites in the Bay: at 6 sites between 8 and 10 species were reported, and 10 sites reported 7 species.

The average air temperature during the survey was 8.4°C. Winds were relatively strong out of the south-southwest early in the day with sustained winds in the lower bay approaching 20 knots with gusts up to 27 knots. Winds subsided somewhat by mid-afternoon (i.e., 1300 hrs on). The average cloud cover was 90%. No ice coverage was reported at any sites. During the time of the survey, the water temperature in the Bay averaged 6.0°C at Newport, and 5.5°C at

Providence (water temperature data from Quonset Point and Conimicut Point were unavailable).

DISCUSSION

Overall, the 2007 Narragansett Bay Winter Waterfowl Survey reported 31.8% fewer waterfowl than the 2005 Survey. The largest single species decrease in abundance from 2005 to 2007 was seen with mallards whose numbers decreased by 75.1%, followed by *Scaup* spp. (65.1% decrease), Canada geese *Branta canadensis* (62.1% decrease), harlequin ducks (45.5% decrease) and hooded mergansers *Lophodytes cucullatus* (35.7% decrease). Decreases in the abundances of mallards, Canada geese, and hooded mergansers may to some extent be attributed to higher than average daily temperatures experienced by the region in the weeks leading up to the survey. Although these mild temperatures kept Bay waters free of ice, they also resulted in open water at many nearby inland ponds and lakes. Dabbling ducks and Canada geese may favor inland freshwater feeding and roosting sites if available. Conditions leading up to the 2005 survey resulted in near total freezing of nearby inland freshwater ponds, possibly forcing dabbling ducks to utilize available open water in the Bay.

Numbers of brant increased almost 3-fold in 2007, from 1434 to 3806 individuals. Red breasted mergansers *Mergus serrator* (404-718 individuals), bufflehead *Bucephala albeola* (470-625 individuals), and American wigeon *Anas americana* (123-357 individuals) also increased in numbers.

Brush Neck Cove showed large increases in species richness and abundance in 2007, which may have resulted in part from a large reduction in ice cover (from almost total ice coverage in 2005 to no ice coverage in 2007). Similar reductions in ice coverage were seen in Warwick Cove and Watchemoket Cove, and each showed increases in species richness and abundance.

DISPOSITION OF THE DATA

The original copies of the data sheets will be retained at the US EPA Atlantic Ecology Division in Narragansett, RI. Data was entered into an excel spreadsheet (BayWideSurvey2007.xls) which is posted on the Narragansett Bay Winter Waterfowl Survey website at <http://www.epa.gov/aed/html/research/fowl/index.html> (go to the "Data" page). The spreadsheet contains site-specific waterfowl abundances for each of the 67 survey locations. Electronic copies of the spreadsheet can be requested via email (mckinney.rick@epa.gov) or by phone (401-782-3133).

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Table 1. Survey locations for the Narragansett Bay Winter Waterfowl Survey.

Segment 1: Narragansett	Segment 2: West Bay	Segment 3: East Bay	Segment 4: Prudence	Segment 5: Sakonnet	Segment 6: Aquidneck
Point Judith	Mount View	J.L.Lewis Park	T-Dock	Portsmouth Cove	Newport Harbor
Narragansett South	Potowomut	Upper Prov. River	Lighthouse	Sakonnet River / Island Park	Fort Adams
Narragansett Central	Greenwich Cove	Watchemoket Cove	Ferry Landing	Tiverton Harbor	Brenton Point
Bonnet Point	Apponaug Cove	Sabin Point	Nag Pond	Nannaquacket	Newport East
Narragansett North	Greenwich Bay North	Bullock's Cove	Prudence West	Sapowet	Sachuest NWR
Casey Point	Brush Neck Cove	Bullock's Point	Potter Cove	Fogland Point	Sandy Point
Plum Point	Warwick Cove	Barrington Beach	Coggeshal Cove	Mary Donovan	McCorrie Point
Bissel Cove	Lower Prov. River	Barrington River	Providence Point	Sakonnet Point	Sakonnet River NW
Wickford Harbor	Gaspee Point	Warren River			Arnold Point
Quonset Point	Passeonkquis Cove	Kikemuit River			Jamestown East
Davisville	Pawtuxet Cove	Colt State Park			Jamestown North
Allen Harbor	Prov. River NW	Bristol Harbor			Jamestown West
					Beavertail
					Hull Cove
					Mackerel / Sheffield Coves

Table 2. Abundance of waterfowl counted during the 2007 Narragansett Bay Winter Waterfowl Survey, January 12, 2007.

TOTALS:							
Section Number:	1	2	3	4	5	6	TOTAL
Section Name:	Narragansett	West Bay	East Bay	Prudence	Sakonnet	Aquidneck	ALL SITES
SPECIES							
Common Eider	106	0	0	2	268	611	987
King Eider	0	0	0	0	0	0	0
Spectacled Eider	0	0	0	0	0	0	0
Steller's Eider	0	0	0	0	0	0	0
Harlequin Duck	0	0	0	0	6	51	57
Oldsquaw	0	0	0	0	0	0	0
Black Scoter	2	0	0	0	0	202	204
Surf Scoter	6	0	0	0	6	75	87
White-winged Scoter	0	0	0	0	3	7	10
Common Goldeneye	84	352	181	170	246	367	1400
Barrow's Goldeneye	0	0	0	0	0	1	1
Bufflehead	119	132	92	44	150	201	738
Hooded Merganser	47	97	31	12	0	0	187
Common Merganser	0	0	7	0	0	20	27
Red-breasted Merganser	255	350	104	70	57	186	1022
Greater Scaup	0	5	150	0	0	95	250
Lesser Scaup	0	0	6462	0	0	0	6462
American Black Duck	150	387	104	168	121	269	1199
Mallard	90	163	107	2	226	28	616
American Wigeon	0	563	238	0	0	9	810
Gadwall	0	73	0	0	0	25	98
Gulls	757	84	465	228	782	454	2770
Swans	2	273	110	1	2	0	388
Canada Geese	84	297	571	10	9	208	1179
Brant	12	1017	1388	18	214	84	2733
Common Loons	9	0	0	0	0	79	88
Horned Grebes	4	2	0	7	5	18	36
Cormorants	9	0	3	0	28	1	41
TOTAL WATERFOWL	957	3709	9545	497	1308	2439	18455
TOTAL OTHER SPECIES	779	86	468	235	815	552	2935
TOTAL ALL WATERBIRDS	1736	3795	10013	732	2123	2991	21390

Scientific names: common eider *Somateria mollissima*, king eider *Somateria spectabilis*, harlequin duck *Histrionicus histrionicus*, long-tailed duck *Clangula hyemalis*, scoter *Melanitta* spp., common goldeneye *Bucephala clangula*, Barrow's goldeneye *Bucephala islandica*, bufflehead *Bucephala albeola*, hooded merganser *Mergus cucullatus*, common merganser *Mergus merganser*, red-breasted merganser *Mergus serrator*, scaup *Aythya* spp., American black duck *Anas rubripes*, mallard *Anas platyrhynchos*, American wigeon *Anas americana*, gadwall *Anas strepera*, mute swan *Cygnus olor*, Canada geese *Branta canadensis*, brant *Branta bernicla*.

Table 3. The top ten locations with highest waterfowl abundances (individuals per site), along with the dominant species at each, reported during the 2007 Narragansett Bay Winter Waterfowl Survey, January 12, 2007.

Location	Abundance	Dominant Species
Sabin Point	5438	Scaup
Apponaug Cove	823	Brant
Colt State Park	807	Brant
Gaspee Point	717	Brant
Potowomut River	521	Common goldeneye
Bullock's Cove	753	American wigeon
Brenton Point	427	Common eider
Warwick Cove	402	American wigeon
Brush Neck Cove	388	American black duck
Wickford Harbor	377	Red-breasted merganser

Table 4. The top ten locations with the highest number of waterfowl species (species per site) reported during the 2007 Narragansett Bay Winter Waterfowl Survey, January 12, 2007.

Location	Species Richness
Apponaug Cove	10
Warwick Cove	10
Sabin Point	9
Sachuest NWR	9
Brush Neck Cove	9
Lower Providence River	8
Wickford Harbor	8
Jamestown East	8
10 sites ¹	7

¹Bissel Cove, Bristol Harbor, Bullock's Cove, Gaspee Point, Jamestown West, Kikamuit River, Mackerel Cove, Potowomut River, Sakonnet Point, Watchemoket Cove