

LLOYD CENTER ESTUARINE WINTER WATERFOWL CENSUS

by John O. Hill, Jr., and Mark J. Mello

Two Sunday mornings, one in early December and one in late January or early February, fifteen to twenty staff from the Lloyd Center for Environmental Studies and volunteer birders disperse to twenty-one coastal estuaries and salt ponds that are located between Apponagansett Bay in South Dartmouth, Massachusetts, and the Sakonnet River in Tiverton, Rhode Island (Figure 1). The purpose of this Sunday ritual is to census the ducks, geese, and swans using estuarine habitats along this stretch of coastline. Provided with maps of each salt pond or embayment, birders identify and count all waterfowl within "their" site during the morning hours, then report this information back to the Lloyd Center for tabulation. The percentage of the site that is frozen is also recorded.

The original concept, conceived in the winter of 1987-1988, was to survey southeastern Massachusetts and Rhode Island coastal waterways to count American Black Ducks (*Anas rubripes*), obtaining information that would supplement the Lloyd Center's study of habitat use by and activity patterns of wintering black ducks at Allens Pond in South Dartmouth. A regional count of black ducks would indicate the relative importance of Allens Pond to black ducks wintering in southeastern New England. It took only a little imagination to expand the census to include all waterfowl in the area and to do the count twice each winter to compare early- and late-winter waterfowl distribution, which can vary because of migratory patterns and the availability of open water at local ponds and marshes. The waterfowl survey has become a casual and enjoyable long-term monitoring project conducted by local volunteer birders. At the conclusion of each census, birders are treated to a steaming bowl of homemade soup at the Center, while their data are tabulated.

A total of 54,346 waterfowl comprising twenty-four species, plus a variety of domestic geese and ducks, have been counted over eight surveys from January 1988 through December 1991. Table 1 shows the average number of individuals in a species over the eight survey periods. The table also shows data from selected survey sites, including the total density of waterfowl per forty hectares. American Black Ducks (32.5 percent) and Canada Geese (30.5 percent) contribute about two-thirds of all waterfowl counted during this period. These two species and Buffleheads (11.1 percent), Red-breasted Mergansers (5.9 percent), Mallards (4.3 percent), Mute Swans (4.0 percent), Common Goldeneyes (2.9 percent), and Canvasbacks (2.7 percent) constitute 94 percent of the waterfowl counted over the past four years.

Throughout the four years of the census the average number of Common Goldeneyes was higher during the January counts (326) than in the December

Table 1. Average Number of Individuals Per Species For Selected Locations, 1988-1991

Species	Selected Locations						Average For All Sites		
	1	9	10A	10B	11	19	Total	Jan.	Dec.
Mute Swan	9	4	18	68	35	2	269	252	286
Snow Goose			<1				<1	1	0
Canada Goose	32	258	310	545	105	340	2069	2367	1772
Brant		<1	3				3	<1	6
American Black Duck	57	370	714	320	8	19	2206	1968	2444
Mallard	125	30	25	4		6	291	308	275
Mallard/black duck	4						4	5	3
Northern Pintail	<1	1	19	1			22	23	21
Blue-winged Teal							2	0	4
Green-winged Teal					<1		4	<1	8
Gadwall		1				1	2	3	2
American Wigeon	<1	2		<1	2		4	2	6
Canvasback	1		33	63	70	<1	185	299	70
Redhead					<1		1	2	0
Greater Scaup	18		30	23	20		145	202	88
Lesser Scaup	6			1	28		70	3	137
Scaup species	1		6	<1			80	119	41
White-winged Scoter	<1						<1	0	<1
Surf Scoter							1	0	1
Common Goldeneye	3	6	40	67	4	1	197	326	69
Bufflehead	162	34	137	150	2	9	751	725	778
Ringed-neck Duck							<1	1	0
Ruddy Duck					1		4	0	9
Hooded Merganser	1	<1	2	5			15	8	22
Common Merganser			3	35		<1	45	39	52
Red-breasted Merganser	34	11	135	66	15	7	404	326	481
Domestic Waterfowl	11			4		1	17	17	19
Total Number Individuals	462	717	1475	1352	290	385	6794	6994	6593
Total Hectares	342	158	1202	2106	45	89	5060	5060	5060
Density (birds/hectare)	54	182	49	26	258	173	54	55	52

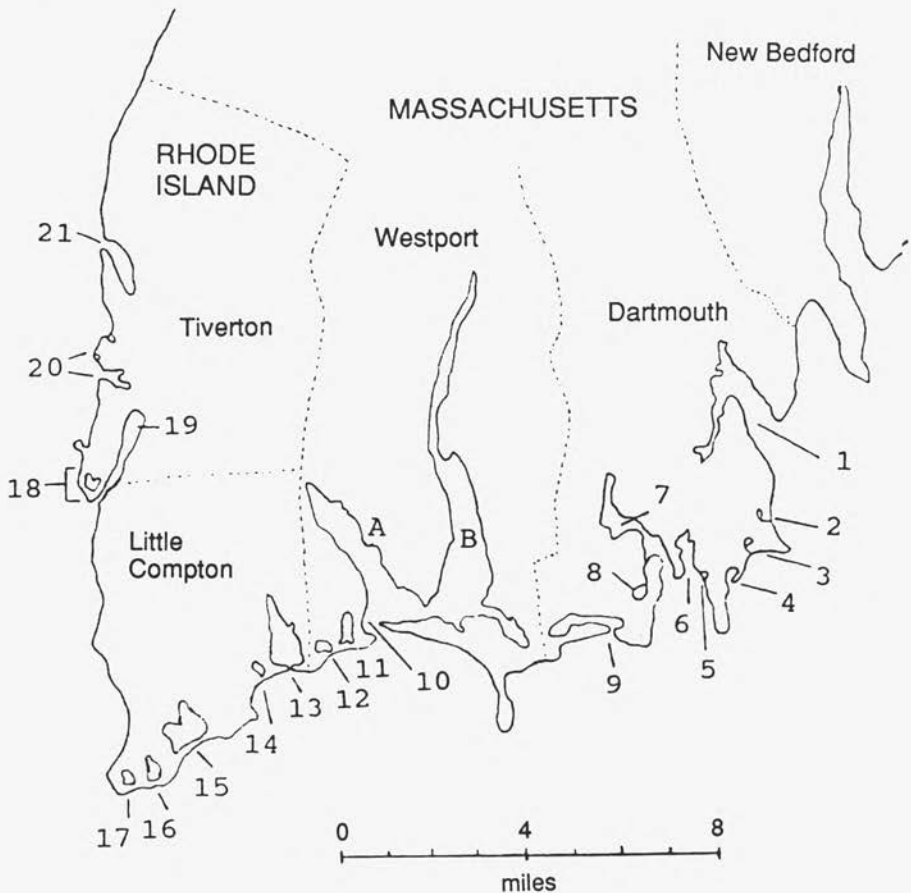
Map Location Key: (1) Apponagansett Bay; (9) Allens Pond; (10A) West Branch, Westport River; (10B) East Branch, Westport River; (11) Cockeast Pond; (19) Nonquitt Pond.

Average columns show average number of individuals for all locations combined for eight survey periods (total), for four survey periods in January (Jan.), or for four survey periods in December (Dec.).

Contact the Lloyd Center for an expanded table detailing all sites.

Figure 1. Locations of Survey Sites for Lloyd Center Estuarine Winter Waterfowl Census

- | | |
|-----------------------|----------------------------|
| 1 Apponagansett Bay | 11 Cockeast Pond |
| 2 Nonquitt Marsh | 12 Richmond Pond |
| 3 Meadows Shore Marsh | 13 Quicksand Pond |
| 4 Salters Pond | 14 Tunipus Pond |
| 5 Teal Pond | 15 Briggs Marsh |
| 6 Little River | 16 Long Pond |
| 7 Slocum River | 17 Round Pond |
| 8 Georges Pond | 18 Fogland Marsh |
| 9 Allens Pond | 19 Nonquitt Pond |
| 10 Westport River | 20 Sapowet Wildlife Refuge |
| A West Branch | 21 Nannaquaket Pond |
| B East Branch | |



counts (69), and a similar pattern was observed for Canvasbacks and scaup (Table 1). This could be due to their late migration and preference for freshwater ponds and lakes, where they will stay until these bodies of water have frozen, and they are forced to move into bays and estuaries. The December 1988 count produced only eight Common Goldeneyes. This was a mild month, and inland ponds and lakes had no ice. But a month later, the January count had 469 goldeneyes, and many of the locations had some ice or were completely frozen over. Other species, such as Bufflehead, have not shown a similar set pattern according to the limited data. The number of Buffleheads ranged from 450 in January 1988 to 888 in December 1990, the highest count of all eight censuses. The same is true with the Red-breasted Mergansers, where the lowest count was in January 1988, and the highest count (720) was in December 1990. However, neither month consistently had the highest count within a season, as was the case with goldeneyes, scaup, and Canvasbacks. We suspect that the relative percentage of ice may be a controlling, but not necessarily seasonal, factor (during some winters, more ice was reported in December than in January) in these fluctuations, but statistical analysis will require several more years of data. A few species, particularly Mallards and Mute Swans (non-native species), were evenly distributed throughout each time period.

Waterfowl density varied greatly among the estuaries, from an average of sixteen birds per forty hectares at Teal Pond to 365 birds per forty hectares at Nonquitt Marsh in South Dartmouth. Nonquitt Marsh has two hectares of open water, but has potentially twenty hectares of water depending on spring tides and the volume of fresh water that flows in from the creek after rain or snow. Most of this water is less than a foot deep, allowing the waterfowl to feed throughout the pond and marsh. Interestingly, the six highest waterfowl densities were found in smaller systems of forty-five hectares or less.

The largest estuary censused was the East (2106 hectares) and West (1202 hectares) branches of the Westport River. Of all the areas surveyed, the Westport River supports the highest number of birds, although the density in the combined branches was only thirty-four birds per forty hectares. Overall density for all systems surveyed was fifty-four birds per forty hectares (Table 1).

Some of the fluctuation in the numbers of waterfowl seen between the eight survey days could be attributed to the severity of the winter and whether or not ice had formed over the inland ponds and marshes, pushing the birds into the coastal estuaries and salt ponds. For example, during the January 1988 census, 3458 Canada Geese were observed, and many of the ponds were frozen, but in December 1988 only 859 Canada Geese were counted, and all of the ponds were free of ice. This pattern also holds true for the American Black Duck, where observers counted 2463 black ducks in January 1988, but only 1916 in December 1988. In general, if the estuarine habitats are iced over, one can assume that all but the largest local freshwater habitats are completely frozen.

Many of these geese and black ducks were seen on Allens Pond, Slocum River, and Westport River, which have daily tidal flows, thus remaining at least partially ice free even during the coldest winters.

Allens Pond contains ideal habitat for black ducks and other wintering waterfowl, with its shallow bottom for feeding and the many creeks and ditches to use as cover and resting spots. The most numerous waterfowl counted at Allens Pond was the American Black Duck, with approximately 370 individuals per survey (Table 1), or about ninety-four ducks per forty hectares. Although more black ducks were within the Westport River, the density of black ducks was only thirteen birds per forty hectares. Some of the very small (6-8 hectares) systems supported higher densities of black ducks (300 birds per 40 hectares at Fogland Marshes; 193 birds per 40 hectares at Georges Pond). Thus, the numerous pocket marshes and salt ponds that dot the southern New England coastline are significant black duck habitats.

One of the most notable observations was that species were not equally distributed throughout the sites. Canvasbacks, pintails, Ruddy Ducks, and scaups, all of which were virtually absent from Allens Pond and sites east, were concentrated in the Westport River and south-facing Rhode Island salt ponds.

Although the data cover too short a timespan to predict trends, we have made some interesting observations. In time, we hope to report trends for each of the dominant species within the region and to define more precisely the major factors influencing both seasonal and yearly fluctuations in the number and distribution of wintering waterfowl in the coastal estuaries of southern New England.

JOHN O. HILL, Jr., has been research assistant since 1988 and is responsible for the monitoring and management of Piping Plovers in Bristol County in cooperation with the Massachusetts Division of Fisheries and Wildlife. He also coordinates and conducts, along with Mark and a host of interns, the Allens Pond weekly bird census, initiated in 1985.

MARK J. MELLO has been director of the Lloyd Center since 1990 and research coordinator from 1986-1990. Although his specialty is distribution and ecology of state-listed moths, much of the research he coordinates at the Lloyd Center involves birds.

The authors wish to thank the many volunteer birders who participated in the winter waterfowl census: Spencer Anderson, Richard Bachand, Mary Beth Bishop, Mike Boucher, Kristin Brown, Maryann Buehler, Robert and Terry Caron, Dave Christensen, Bob Deegan, Gil and Jo Fernandez, Alan Hankin, George Haydock, Patrick Loafman, James Lyons, John Macedo, Bob Maker, Rob Marshall, Richard McGeough, George Mock, Carol Muchie, Pete Padone, Danielle Perillat, Steven Reinert, Michael Rogovsky, Peggy Russell, Mike

Sylvia, and Krystal Tolley. For detailed survey data or for information on assisting future census efforts, readers may contact the authors at the Lloyd Center for Environmental Studies, P.O. Box 87037, South Dartmouth, MA 02748, telephone 508-990-0505.



OSPREY TOURS 1994
NATURAL HISTORY TRIPS

ESCORTED TOURS

COSTA RICA - Birding and Natural History

Jan. 22 - Feb. 2, 1994

HONDURAS - A New Destination In Birding

Feb. 11 - Feb. 22, 1994

BELIZE - GUATEMALA

Birding & Mayan Ruins

Mar. 9 - Mar. 23, 1994

GUIDED TOURS

Monthly Departures For Costa Rica - 9 Days

"The Best of Costa Rica"

P.O. Box 832, W. Tisbury, MA 02575

508-645-9049 Fax 508-645-3244