

THE CAPE COD LAKE AND POND WATERFOWL CENSUS

by Blair Nikula, Chatham

In early November 1981, a group of volunteers under the auspices of the Bird Observer Field Studies Committee conducted a census of waterfowl in a number of lakes and ponds in eastern Massachusetts. The results of that effort were summarized by John Andrews (*BOEM* 10: 253, October 1982). The stated purpose of the census was "to determine the manner in which the various species of waterfowl were using lakes and ponds of different ecological character." The census was repeated in 1982 and 1983 but was then discontinued.

During the first weekend of November of 1983, the Cape Cod Bird Club, following the guidelines drawn up by the original census organizers, initiated a census of the lakes and ponds on Cape Cod. Participants were instructed to identify and count all the waterfowl (loons, grebes, geese, ducks, and coot) present on, but not flying over, each pond. If hunters or some other disturbance were present, the site was visited again the following day, Sunday. If a second visit was not possible, the disturbance was noted on the data sheets. The number of gulls present at a site was also recorded (but not included in waterfowl totals or in the following analyses).

An impressive list of 202 ponds was covered during the first Cape Cod census, and 3957 individuals of 22 species recorded. Buoyed by the success of that initial effort and the enthusiasm of the participants, we continued the project in 1984 but moved the dates by a month to the first weekend in December. Many ducks and geese do not arrive on Cape Cod until inland bodies of water begin to freeze, and we felt that the later dates would more closely coincide with peak waterfowl numbers locally. The results that year bore out our impressions: 213 ponds yielded 23 species and 8950 birds, more than double the previous year's total.

This past year, 1985, saw further increases in nearly every category: thirty-one observers censused 239 ponds recording 29 species and 10,521 individuals. The number of ponds censused, 239, may surprise many, but there are in fact over 300 bodies of water on Cape Cod classified as ponds. Many of these are very small, unproductive kettle holes or are temporary in nature - difficult to find on a map - and of little or no consequence to waterfowl. Therefore, the bird club's efforts have been very thorough and have included virtually all of the waterfowl present on the Cape's freshwater ponds during the count weekend. (It should be noted, however, that the highly productive ponds on south Monomoy Island are not included in the census, due to the difficulty of access at that season.)

The volume of data resulting from just one year's census is staggering and required several tedious hours with a calculator to accumulate just the basic results presented in Table 1. Clearly,

Table 1. Results of 1985 Cape Cod Waterfowl Survey by Township

	PROVINCETOWN	TURO	WELLSFLEET	EASTHAM	ORLEANS	CHATHAM	BREWSTER	HARWICH	DENNIS	YARMOUTH	BARNSTABLE	SANDWICH	MASHPEE	PALMOUTH	BOURNE	TOTALS	PERCENT CHANGE FROM 1984
Red-throated Loon																	
Common Loon																	
Pied-billed Grebe																	
Mute Swan				2	4	14	1	7	11	4	10	8	5	4	2	8	-37
Snow Goose			2				3	3		4	10	8	5	30	2	75	+17
Canada Goose				35	25	54	50	34	120	130	217	204	24	603	7	1504	+18
Wood Duck			1														
Green-winged Teal																	
American Black Duck	33	3	22	96	155	18	349	33	13	133	85	32	14	56	2	1044	+58
Mallard	8	40	2	16	53	27	26	33	64	174	393	417	162	288	28	1731	-25
Northern Pintail					1					85	3	2				91	0
Blue-winged Teal										1					2	3	
Northern Shoveler											1					1	
Gadwall								9				2				11	
Eurasian Wigeon					1											1	
American Wigeon						4										1	
Canvasback	1				1	70	89	78	255	399	193	8	2	9	23	1169	+44
Redhead				1													
Ring-necked Duck				47	4	3											
scaup species	1			109		8	23	53	89	325	51	30	6	75	2	168	-16
Greater Scaup																2645	+53
Lesser Scaup										1	150					151	
Common Goldeneye	1	1	4	1			5	34			6					6	
Bufflehead	20			58	6	29	70	37	86	202	56	25	79	141	10	178	+23
Hooded Merganser				56	5	4	28	8		24	28					819	-12
Common Merganser	10						30	194			9	40	5	171	324	324	+324
Red-breasted Merganser	1			1						5			7	67	82	291	+242
Ruddy Duck				1					1	5						151	+238
Common Moorhen								8			3					18	
American Coot				23	1	15		1		5	1	18	4	8	1	1	-57
Total number of birds	74	45	29	448	256	247	671	532	639	1499	1259	819	399	3553	51	10521	+18
Number of ponds	9	14	14	6	5	8	16	24	15	18	37	14	10	42	7	239	
Average birds per pond	8.2	3.2	2.0	74.7	51.2	30.9	41.9	22.2	42.6	83.3	34.0	58.5	39.9	84.6	7.3	44.1	
Total species	7	4	4	14	11	12	10	14	8	16	21	14	11	19	6	29	+21
Number of observers	2	2	2	2	1	1	2	2	4	2	6	3	1	8	1	31	

a computer is in order! In the following analysis, only the results from the 1985 census are used unless otherwise indicated.

Obviously, this type of annual census permits the detection of trends in local waterfowl populations over a period of time. Year-to-year fluctuations are to be expected and, even when sizable, may have little meaning over the long term. With just two years of data - the 1983 census was too early in the season to be comparable to subsequent years - we are still several years away from being able to detect any such trends. Nonetheless, it is interesting to note that pronounced increases in 1985 versus 1984 were recorded for Canvasback (+44%), scaup (53%), Hooded Merganser (+324%), and Common Merganser (+238%). Species exhibiting notable declines were Pied-billed Grebe (-37%), black duck (-27%), and American Coot (-57%). It will be interesting to watch the results for these species over the next few years.

One species that certainly is at a low ebb on the cape now is Redhead. This species has a history of fluctuating numbers in this area and apparently hit a peak in the mid-to-late 1970s only to decline dramatically over the last three or four years. Only two were found on the 1985 census and none in 1984, and for the first time ever, none were recorded on the Buzzards Bay Christmas Bird Count compared with a peak of 144 in 1976.

The census also provides an indication of the distribution of waterfowl on Cape Cod ponds. The totals by town show that Falmouth can lay undisputed claim to the title, "Duck Capital of Cape Cod," with a total of 3553 birds, over one-third of the census total and more than double the 1499 in runner-up Yarmouth. Falmouth has many more ponds than Yarmouth however, 42 versus 18, and when the totals are converted to the average number of birds per pond, the difference between the two towns is negligible (84.6 versus 83.3; see Table 1). It should also be noted that 56% of Falmouth's total was comprised of scaup. The most variety of waterfowl, 21 species, was in Barnstable, followed by Falmouth with 19 species. Wellfleet was at the bottom of both lists with only 29 birds of 4 species and a paltry average of 2 birds per pond - truly an anatid wasteland!

A look at the distribution of individual species across the census area reveals some interesting, and often curious, patterns. For example, Mute Swans are concentrated on the inner cape with 93% of the total recorded from Dennis westward. This species is slowly making inroads on the outer cape, and we can expect future censuses to reflect this eastward expansion. Scaup also show a strong concentration westward, with 71% of the total in Falmouth alone. Canvasbacks, on the other hand, exhibit a pronounced clumping toward the center of the cape: 93% of this species was in the area from Barnstable to Chatham. Mallards and black ducks, two taxonomically similar species, had strikingly different distributions. Mallards were heavily concentrated on the inner cape with 88% of the total from Dennis westward, whereas only 32% of the black ducks were in this same area. Are these contrasting

Table 2. Frequency (in a Total of 239 Ponds) and Primary Sites of Occurrence for the Most Common Species Censused.

SPECIES	No. of PONDS (%)	PRIMARY PONDS (No. of BIRDS)
Scaup (both species)	25 (11%)	Coonamessett Pond, Falmouth (700) Morse Pond, Falmouth (500) Cedar Pond, Falmouth (400) Dillingham Avenue, Falmouth (380) Long Pond, Yarmouth (325)
Mallard	104 (44%)	Snake Pond, Sandwich (240) Ashumet Pond, Mashpee (130)
Canada Goose	46 (19%)	Sider's Pond, Falmouth (200) Basbane's Pond, Barnstable (163) Sanke Pond, Sandwich (155)
American Black Duck	68 (29%)	Cliff Pond, Brewster (339) Crystal Lake, Orleans (95)
Canvasback	22 (9%)	Swan Pond, Dennis (255) Swan Pond, Yarmouth (195) Follin's Pond, Yarmouth (150) Mystic Lake, Barnstable (150)
Bufflehead	64 (27%)	Follin's Pond, Yarmouth (120) Swan Pond, Dennis (80)
Hooded Merganser	27 (11%)	Jemimah's Pond, Eastham (56) Bourne Pond, Falmouth (52)
Common Merganser	14 (6%)	Hinckley's Pond, Harwich (130)
Common Goldeneye	28 (12%)	Hinckley's Pond, Harwich (25) Mashpee/Wakeby Pond, Mashpee (25)
Ring-necked Duck	14 (6%)	Coonamessett Pond, Falmouth (70) Great Pond, Eastham (30)
Northern Pintail	5 (2%)	Hallet's Mill Pond, Yarmouth (85)
Red-breasted Merg.	11 (5%)	Fresh Pond, Falmouth (39)
American Coot	13 (5%)	Great Pond, Eastham (23) Shawme Pond, Sandwich (16)
Mute Swan	26 (11%)	Swan Pond, Dennis (11)
Pied-billed Grebe	20 (8%)	Lover's Lake, Chatham (8) Mashpee/Wakeby Pond, Mashpee (6)
Green-winged Teal	2 (1%)	Pond at Route 6A and Maple Street, Barnstable (35)
American Wigeon	5 (2%)	Mill Pond, E. Falmouth (9) Maple Street, Barnstable (8)
Ruddy Duck	5 (2%)	Hinckley's Pond, Harwich (8)

distributions the result of competition between the two species, or are some other factors responsible?

Distribution patterns can be examined on a finer scale by studying the results on a pond-by-pond basis. Overall, the top ponds in total number were Coonamessett Pond (798 birds), Morse Pond (617), and an unnamed pond on Dillingham Avenue (605), all in Falmouth. All three ponds were dominated by scaup with those species comprising from 63% to 83% of the total birds at these three locations. The best variety, twelve species, was on Great Pond, Eastham, followed by Upper Shawme Pond, Sandwich (ten species).

One or more birds were recorded on 160 of the 239 ponds (71%) with the remaining 70 ponds having no birds. Brewster ponds scored a perfect 100% (16 of 16) while Truro trailed the pack with only 29% (3 of 14). Mallard (some of dubious ancestry) was by far the most widespread species, occurring at 104 (44%) sites, followed distantly by black duck (68 sites: 29%) and Bufflehead (64 sites: 27%). See Table 2. Endless hours could be spent studying the relationship of individual species to individual ponds. That can wait for the computer!

The tendency for many species to cluster in large flocks at just a few sites, as suggested by Andrews (op. cit.), was very evident in this census. For example, 50% of the Canada Geese were at five sites, 42% of the black ducks at only two sites, 93% of the pintail at one site, 64% of the Canvasbacks at four sites, 60% of the Ring-necked Ducks at two sites, 89% of the scaup at six sites, 65% of the Hooded Mergansers at six sites, and 65% of the Common Mergansers at just two sites. Most other species showed similar, though less pronounced, clustering.

In order to get some idea of the response of primarily freshwater species to ponds icing over, I compared the results of this census from the five towns from Eastham to Harwich with the results from the Cape Cod Christmas Bird Count, which covered the same five towns just two weeks later, on December 22. Very cold weather in the interim completely froze all of the freshwater ponds, though a few had reopened by the twenty-second. Species that showed notable declines were Pied-billed Grebe, which dropped from 28 to 4 birds, Canvasback (238 to 37), and Hooded Merganser (101 to 67). Smaller declines were evident in most other species, but two species increased dramatically: Ring-necked Duck from 54 to 202 and Common Merganser from 224 to 701. Presumably, these increases were the result of influxes from the mainland during the freeze.

I have presented a random sampling of some of the results, trends, and patterns that can be drawn from the 1985 data. Those with an eye for numbers will undoubtedly find more such tidbits in the accompanying tables. As is often true, the results generate more questions than answers: Why do ponds that appear identical (to us) differ so greatly in their attractiveness to waterfowl? Why do some species gather in large, often monospecific, flocks? Why have Redheads disappeared from the Falmouth ponds? Why does

the distribution of Mallards differ so strikingly from that of American Black Ducks? Why do Canvasbacks concentrate in the mid-cape area and scaup in the Falmouth area?

Answers to such questions are complex and not likely to be provided by a simple census such as this; they will require rigorous in-depth study by someone trained in pond ecology as well as ornithology. Pond ecology is an intricate subject involving a multiplicity of interrelated factors. Determinants such as pond size, pond depth, geography, floral and faunal characteristics, and chemical aspects, among others, must be taken into account when examining a pond's importance to waterfowl. The value of this type of census is that it shows the various distribution patterns and species associations and, over time, will document changes in these patterns as well as changes in local populations.

The Cape Cod Lake and Pond Waterfowl Census is an excellent example of one way in which birders, regardless of their expertise, can gather useful data and make a meaningful contribution to our knowledge of the Massachusetts avifauna. Waterfowl are relatively conspicuous, generally easy to identify (except for the notorious scaup species), and thus readily censused with only a modest effort. Members of the Cape Cod Bird Club look forward to continuing this beneficial and enjoyable project and invite other clubs to consider undertaking a similar effort in their own areas.

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