

SHORT COMMUNICATIONS

Distribution and population status of Harlequin Ducks (*Histrionicus histrionicus*) wintering in eastern North America.—In the western Atlantic, Harlequin Ducks (*Histrionicus histrionicus*) winter primarily on saltwater off outer islands, and along exposed ledges, and headlands (Bent 1925, Godfrey 1986) from southern Labrador and Newfoundland to Massachusetts, and, in diminishing numbers, south to Virginia (Armistead 1981, 1982, 1985). The species also occurs in very small numbers in North Carolina and, as vagrants, south to Florida, Texas, and points inland (A.O.U. 1983). Bent (1925) and Kortright (1943) both considered the species rare in the east and Palmer (1976:335) stated that “the total numbers of Harlequins cannot be large; the number that travels s. to Nfld., the Maritimes, and farther southward probably is in the hundreds, certainly not now in thousands.” Since the 19th century, concentrations of Harlequin Ducks have recurred at particular sites every winter (Palmer 1949; Griscom and Snyder 1955; Tufts 1986; R. R. Veit, unpubl. data). Here I summarize the current knowledge of winter distribution and population size of Harlequin Ducks in eastern North America and include data on recent Harlequin Duck censuses around Isle au Haut and surrounding islands in Penobscot Bay, Maine.

Methods.—I examined all Christmas Bird Count (CBC) data collected from 1979–80 to 1984–85, from Atlantic Canada, New England, and the Mid-Atlantic region (Am. Birds) and reviewed literature on the winter distribution of Harlequin Ducks.

Since 1976, I have been an observer on seven boat trips that have attempted to circumnavigate Isle au Haut; rough sea conditions prevented full coverage on four of these trips. During earlier trips, the islands adjacent to Isle au Haut were not censused (Table 1). In 1983, I conducted an aerial survey of the waters surrounding Isle au Haut, adjacent islands, and all outer islands from the Kennebec River to eastern Penobscot Bay. Harlequin Ducks are small and dark (Vickery 1983) and are often difficult to detect and identify from the air. The single engine Cessna 152 was flown at 25 to 75 m above sea level at a speed of 60–80 knots and facilitated close approach and permitted ready identification of this species. The plane passed along the perimeter and in each cove of each island.

Atlantic Canada.—The literature regarding the Harlequin Duck's historical status in Atlantic Canada has been unclear (Taverner 1937, Todd 1963, Godfrey 1986) though Phillips (1925:381) reported a “marked reduction” in the Atlantic Maritimes in the late 19th–early 20th century. Between 1979–80 and 1984–85, CBCs have been conducted in as many as 42 areas along the Atlantic Canada coast (Fig. 1). Only two CBCs in Atlantic Canada have recorded more than 5 Harlequin Ducks (Table 2). The largest and most consistent concentration, present annually at Cape St. Mary's, Newfoundland, recorded a high count of 145 individuals in 1980–81. Historically, Harlequin Ducks seem to have been absent or unrecorded from the St. Lawrence River in Québec (Wintle 1896), though Ouellet (1974) considered the species occasional. Several additional winter sightings have been noted in recent years (H. R. Ouellet, pers. comm.). Harlequin Ducks may have been more numerous off Anticosti Island, Québec, in the 19th century (Brewster 1884), though Ouellet (1969) believes that the species has been rare in winter throughout this century.

CBCs in Atlantic Canada do not extend along the north shore of the St. Lawrence beyond Baie-Comeau, Québec, and Harlequin Ducks could occur in this remote part of the Gulf. However, a recent 3-year winter survey of sea ducks (1974–1976) in the northern part of the Gulf of St. Lawrence, including the Gaspé Peninsula, Anticosti Island, and the north shore to Blanc Sablon, Québec, conducted by the Canadian Wildlife Service found only three individuals (Reed and Bourget 1977). Atlantic Canada CBCs from the Gaspé Peninsula, Prince Edward Island, New Brunswick, and Nova Scotia, further indicate that Harlequin

TABLE 1
HARLEQUIN DUCK CENSUSES AT ISLE AU HAUT AND SURROUNDING ISLANDS, MAINE

Date	Census type	Degree of coverage		Minimum no. observed	Source
		Isle au Haut	Other Islands*		
7 Mar. 1976	Boat	Complete	Uncensused	130	Finch (1976)
18 Mar. 1979	Boat	Complete	Uncensused	149	Vickery (1979)
6 Mar. 1983	Boat	Partial	Complete	155	Heil (1983)
17 Mar. 1983	Flight	Complete	Complete	240	Lucey (1983)
25 Mar. 1984	Boat	Complete	Partial	210	Despres (1984)

* These islands include Great Spoon, Little Spoon, Whitehorse, Blackhorse, Eastern Ear.

Ducks are absent, or rare, in the Gulf of St. Lawrence in winter. Peters and Burleigh (1951) considered Harlequin Ducks uncommon winter residents in Newfoundland; Tuck (1948) reported the species as rare in winter near Argentinia-Dunville. Tuck and Borotra (1972) considered them uncommon in winter on St. Pierre-Miquelon, and CBCs have not recorded them on these French islands.

Canadian Wildlife Service waterfowl biologist Ian Goudie (pers. comm.) suggests that wintering Harlequin Ducks around Newfoundland may have numbered in the low thousands prior to 1940 and that heavy hunting pressure may have reduced their populations since then. In the absence of specific data, Goudie cites anecdotal evidence from local hunters and the colloquial references in place names, e.g., Lord and Lady Cove, to support this contention. In addition to the Cape St. Mary's concentration, he also reports 20–30 individuals from the Ramea archipelago on the southwest coast and believes that <200 additional Harlequin Ducks probably winter in Newfoundland.

CBC data have recorded fewer than 20 Harlequin Ducks for Nova Scotia and New Brunswick combined. In Nova Scotia, Tufts (1986) noted several localities where, although uncommon, small numbers occurred with some regularity. Squires (1952) believed that Harlequin Ducks rarely wintered in New Brunswick. He stated that 10 specimens were collected near The Wolves (small islands near Grand Manan Island) and that several individuals recurred at Pt. Lepreau, both localities in the Bay of Fundy. During Canadian Wildlife Service winter sea duck aerial surveys, P. Hicklin (pers. comm.) has observed small numbers of Harlequin Ducks near The Wolves; a boat census of 87 individuals, 14 April 1986, may reflect a spring migratory concentration, but Hicklin believes >50 may winter regularly at this locality. In addition, in recent years N. Famous (pers. comm.) has observed up to 22 Harlequin Ducks off East Quoddy Head, Campobello Island, New Brunswick.

Maine and New Hampshire.—Norton (1896) reported that Harlequin Ducks were common only in the eastern part of Maine. Knight (1908) believed that fewer than 200 individuals wintered along the coast at the turn of the century but stated, without providing evidence, that they had been more numerous previously. Palmer (1949) specifically reported Isle au Haut and its surrounding islands as an area where Harlequin Ducks have wintered regularly for at least 60 years.

CBC data and Isle au Haut surveys indicate that Harlequin Ducks (>5 individuals) are presently known to winter along the Maine coast at only six locations (Table 3). The estimated total of 300 individuals wintering in Maine in recent years may reflect a population increase from Knight's report (1908), but the difference could also be due to improved censusing

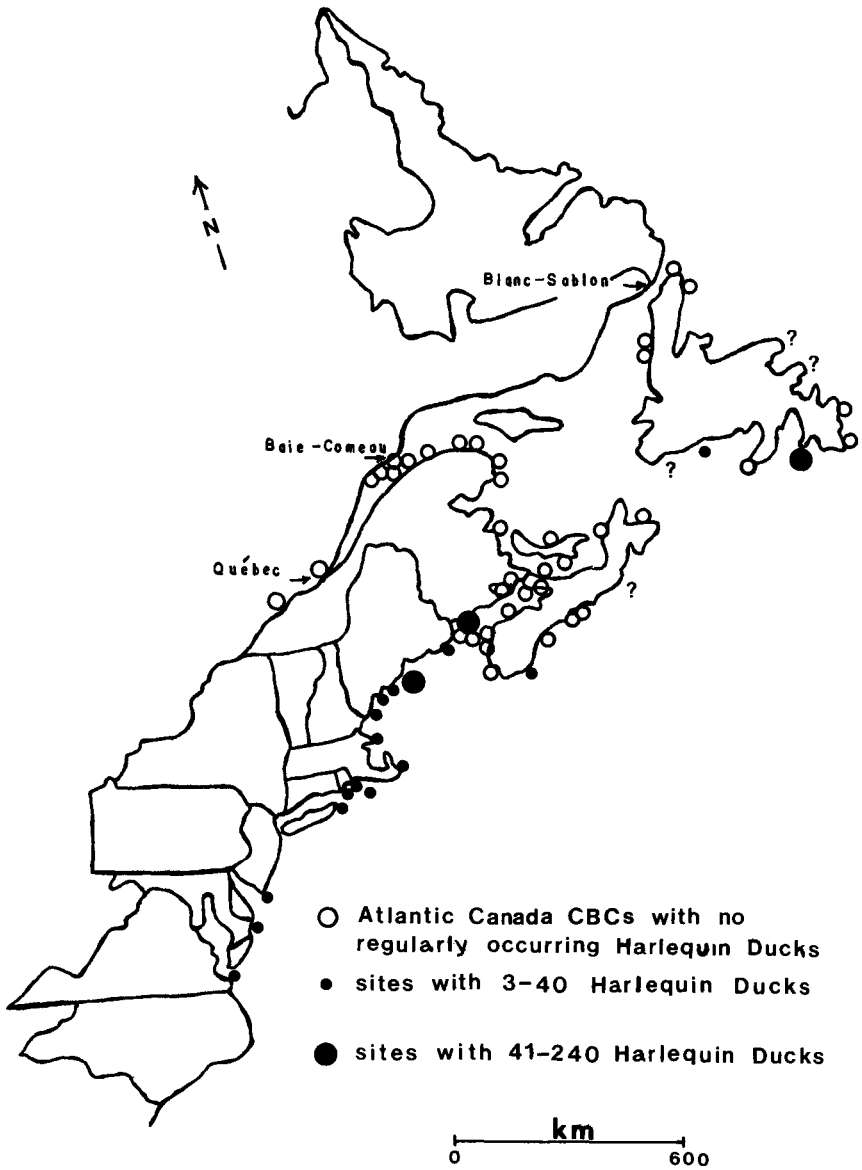


FIG. 1. Distribution of recurring Harlequin Duck concentrations along the Atlantic coast of eastern North America.

TABLE 2
NUMBER OF HARLEQUIN DUCKS SEEN ON COASTAL ATLANTIC CANADA CHRISTMAS BIRD
COUNTS, 1979-1984

Year	No. counts	Total No. Harlequins	Cape St. Mary's, Newfoundland	Port Hebert, Nova Scotia	Others
1979-80	31	89	80	5	4
1980-81	35	145	143	0	2
1981-82	39	108	101	0	7
1982-83	42	91	71	13	7
1983-84	41	71	56	10	5
1984-85	39	101	90	8	3
Mean (\pm SE)	37.8 \pm 1.7	100.8 \pm 10.2	90.2 \pm 2.3	6.0 \pm 2.2	4.7 \pm 0.8

efforts. Harlequin Ducks occur irregularly and only in small numbers along the New Hampshire coast (D. J. Abbott, pers. comm.).

Massachusetts south to Virginia. — Griscom and Snyder (1955) believed Harlequin Ducks had declined and were extremely rare in Massachusetts at the turn of the 19th century, although they noted the species had increased since that time. They reported as many as 35 individuals wintering regularly off Squibnocket, Martha's Vineyard. Since 1979, 10 or more Harlequin Ducks have been found annually in Rhode Island (D. L. Emerson, pers. comm.). In February 1981, 18 individuals were observed at Sachuest Pt. (Vickery 1981), where similar numbers have returned each winter. Twenty-two occurred there in 1984-85 (Heil 1985). It seems that Sachuest Pt. (Newport County), Rhode Island, and Martha's Vineyard, Massachusetts (\approx 60 km apart), may share a common population; in the past three years, increases at one locality were matched by equivalent decreases at the other locality (Table 4). A small concentration of 2-7 Harlequin Ducks off Montauk, Long Island, New York has persisted for many years (Bull 1964). The species was basically unknown in southern New Jersey (Stone 1937), or Virginia (Bailey 1913) at the turn of the century.

Coastal CBCs for Massachusetts, Rhode Island, Connecticut, New York, New Jersey, and Maryland form a near continuous series of winter censuses with a high level of coverage.

TABLE 3
LOCALITIES IN COASTAL MAINE RECORDING HARLEQUIN DUCKS (> 5 INDIVIDUALS)

Locality	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85
Isle au Haut	149	—	—	240	210	—
York County	10	14	22	35	23	17
Scarborough	12	5	9	6	6	6
Jonesport*	—	—	—	—	23	—
Biddeford Pool	0	0	0	2	6	0
Georgetown	0	0	2	2	3	9
Total	—	—	—	285	271	—

* Difficulty of access has prevented annual census of this concentration.

TABLE 4
CHRISTMAS BIRD COUNTS FROM MASSACHUSETTS TO MARYLAND IN WHICH HARLEQUINS
DUCKS WERE RECORDED, 1979-1984

Count	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	Mean (\pm SE)
Massachusetts							
Cape Ann	2	cw ^a	3	3	3	0	2.0 \pm 0.5
Cape Cod	1	0	2	3	2	6	2.3 \pm 0.6
Martha's Vineyard	0	3	6	10	20	5	7.3 \pm 2.9
All others	1	3	2	1	0	2	1.5 \pm 0.4
Rhode Island							
Newport-Westport	8	3	6	17	7	22	10.5 \pm 3.0
South Kingston	0	1	6	1	2	1	1.8 \pm 0.9
New York							
Montauk, Long Island	2	0	3	1	4	4	2.3 \pm 0.7
All others	0	0	0	0	0	4 ^b	0.7 \pm 0.7
New Jersey							
Cape May	5	3	4	8	cw	0	3.5 \pm 1.2
All others	0	1	1	0	1	5 ^c	1.3 \pm 0.8
Maryland							
Ocean City	0	0	0	0	7	7	2.3 \pm 1.5
Total No. Harlequin Ducks seen	19	15	33	44	47	56	35.7 \pm 6.6

^a cw = Harlequin Duck seen during count week, calculated as 1 individual.

^b All on South Nassau County, Long Island CBC.

^c All on Barnaget CBC.

The number of wintering Harlequin Ducks clearly diminishes southward (Table 4). An additional 2-4 individuals regularly winter at the Chesapeake Bay-Bridge Tunnel, Virginia, not included in any CBC (Armistead 1981, 1982, 1985); a high count of 15 individuals was noted there 5 March 1978 (Virginia Checklist Comm. 1979). Other recent maxima include 6 at Virginia Beach, Virginia, in 1981 (Armistead 1981), and 5 at Rodanthe, North Carolina Jan. 1984 (LeGrand 1984). Almost all Harlequin Ducks from New Jersey south are found at stone jetties or bridge abutments, all recent man-made constructions.

CBC data from Massachusetts south, 1979-1985, indicate that Harlequin Ducks have increased significantly at the southern limit of their range during this period ($r_s = 0.943$, $P < 0.01$) (Fig. 2).

Discussion.—Two natural influences probably contribute to the Harlequin Duck's distribution in eastern North America. First, Harlequin Ducks appear to require rocky ledges or exposed headlands and outcroppings as winter habitat, possibly for the high energy food sources available at such sites (Goudie and Ankney 1986). Most of the coastline south of Maine is sand. The species' only regular wintering locality on the sandy terminal moraine of Cape Cod is an area of scattered rocks at East Orleans (R. R. Veit, unpubl. data). The expansion in winter range to southern New Jersey, Maryland, and Virginia may be linked to the relatively modern construction of bridge abutments and stone jetties, which mimic rocky shoreline.

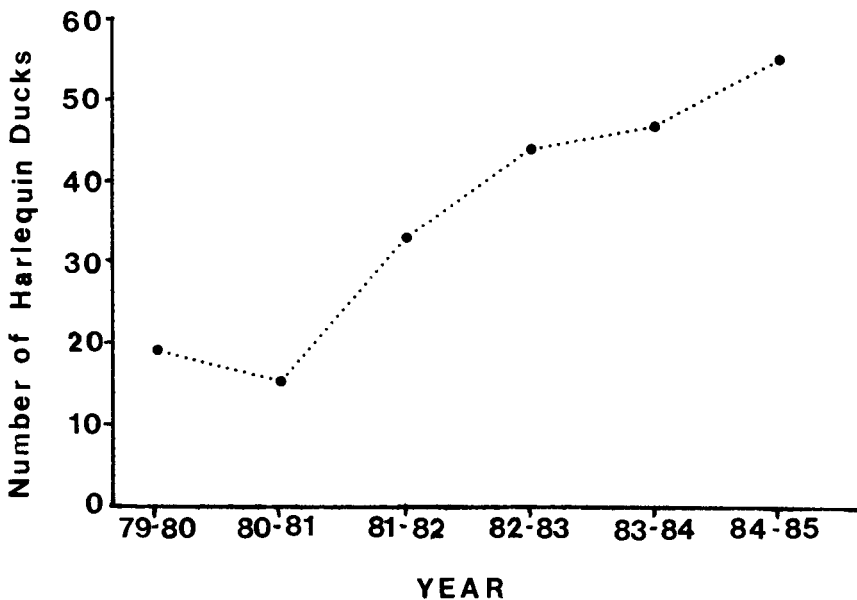


FIG. 2. Numbers of Harlequin Ducks seen on all coastal CBCs between Massachusetts and Virginia 1979-80 to 1984-85. Spearman rank correlation indicates a highly significant increase ($r_s = 0.943$, $P < 0.01$) during this period.

Second, it appears that Harlequin Ducks are faithful to specific wintering localities; 90% of the individuals observed on CBCs and at Isle au Haut, Maine, 1979-1985, were recorded annually at the same localities. Site fidelity requires predictably tolerable wintering conditions at these sites. The consistently ice-free conditions along the Maine coastline, Bay of Fundy, and the southeast coast of Newfoundland may help explain the comparatively large numbers found there. Conversely, the Gulf of St. Lawrence, especially the north shore to Blanc Sablon, is characterized by frequent, extensive ice build-ups (Reed and Bourget 1977; M. Gosselin, pers. comm.).

Ice-free rocky shoreline is available along much of the southern and eastern coasts of Newfoundland, and Harlequin Ducks may occur there in greater numbers than those registered on the Cape St. Mary's, Newfoundland, CBCs. To date the rest of this coastline has not been censused adequately. Although additional concentrations may exist, the absence of literature references from Newfoundland or St. Pierre-Miquelon (Tuck 1948, Peters and Burleigh 1951, Tuck and Borotra 1972), suggests that it is unlikely that the species was obviously widespread or abundant in this region.

The two limiting habitat factors—rocky shoreline and predictable ice-free conditions—notwithstanding, the western Atlantic Harlequin population appears to be well below its wintering carrying capacity, occupying only a small fraction of the seemingly suitable sites available.

Approximately 650-700 Harlequin Ducks are presently known to winter in eastern North America, supporting Palmer's (1976) contention. An additional 200-300 individuals may occur along the coasts of Newfoundland and Nova Scotia, but such numbers have yet to

be documented. Although the species is presently increasing at the southern limit of its range, it seems likely that Harlequin Ducks in eastern North America are now and have historically been quite rare and of local distribution.

Acknowledgments.—I thank H. Kimball, whose competence as a pilot made the aerial survey possible. The Penobscot Valley Chapter of the Maine Audubon Society scheduled the boat trips around Isle au Haut. A. J. Erskine, N. Famous, R. I. Goudie, P. Hicklin, and H. R. Ouellet generously made available previously unpublished data. M. Gosselin was especially helpful with useful information and insights. R. Banks, K. Bildstein, R. A. Lautenschlager, H. Ouellet, B. Vickery, and an anonymous referee reviewed this manuscript several times, providing many useful ideas and considerably improving the original text. In addition, P. Brown, W. Halteman, M. Hunter, W. Glanz, and W. Krohn supplied valuable suggestions. The Maine Chapter of The Nature Conservancy supplied facilities and support for which the author is grateful. This is contribution No. 1208 of The Maine Agricultural Experimental Station.

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Wilson Bull., 100(1), 1988, pp. 126-128

Evidence of intraspecific brood parasitism in the Tree Swallow.—Intraspecific brood parasitism is of interest because it selects against the evolutionary maintenance of parental care and genetically rewards individuals who do not provide care (i.e., parasites) and genetically punishes those who do (i.e., hosts). In the best known examples (e.g., Evans 1980, Power et al. 1981, Brown 1984, Gowaty and Karlin 1984, Emlen and Wrege 1986) brood parasitism appears to be related to competition for access to a limited number of nest sites (see Yom-Tov 1980). Here I present evidence of intraspecific brood parasitism in a nest-site limited