

Status of the Harlequin Duck *Histrionicus histrionicus* on Baffin Island, Nunavut, Canada

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The eastern North American Harlequin Duck *Histrionicus histrionicus* is a small, uncommon seaduck that was last recorded on Baffin Island, Nunavut, Canada, in 1931. Between 1999 and 2001, Inuit hunters and elders were interviewed and river and coastal surveys were conducted to determine whether this duck still occurred on Baffin Island. Inuit community knowledge indicated that this species still inhabited the south-eastern part of the island (Meta Incognita Peninsula), but that it may occasionally be found further north than previously reported. Several hunters from Kimmirut also reported observing females with broods. Only three individuals were found near Iqaluit during surveys, suggesting that the species is uncommon and dispersed. None the less, this represents the first evidence in 70 years that this species is still extant on the island.

Key Words: Baffin Island, Harlequin Duck, *Histrionicus histrionicus*, Arctic, Nunavut

The Harlequin Duck *Histrionicus histrionicus* is a small seaduck that frequents flowing streams and rivers during the breeding season and overwinters along coastal rocky shorelines (Robertson & Goudie 1999). The eastern North American Harlequin Duck population was listed as 'endangered' under Canadian legislation

(Montevecchi *et al.* 1995) but was recently re-assessed as 'species of special concern' (COSEWIC 2001). Its known breeding range includes northern Quebec and Labrador and the Gaspé Peninsula (Robertson & Goudie 1999), and records from around 1930 indicated that it previously bred in southern Baffin Island (Soper 1946).

However, the occurrence of Harlequin Ducks on Baffin Island had not been confirmed since that time, and with declines in the eastern population there was some question whether this breeding population was still extant (Robertson & Goudie 1999).

As a result of its isolation and the associated expense incurred in surveying the far north, knowledge of the abundance and distribution of various wildlife species in arctic Canada is very incomplete. However, Inuit hunters (the aboriginal residents of the Canadian Arctic) travel great distances in search of prey and are astute observers of their environment (eg Hay 2000). Hence, in arctic communities, traditional or community ecological knowledge (or Inuit Qaujimajitugangit - IQ) gathered with interviews of hunters and elders can provide important information on the distribution of wildlife (Usher 2000) and can serve as an important companion to typical survey approaches (Gilchrist & Robertson 2000; Mallory *et al.* 2001).

The principal objective in this study was to determine whether Harlequin Ducks still occurred on Baffin Island. If evidence of their occurrence was found, an assessment would also be made to determine a) their current distribution on the island, and b) if there was evidence of breeding. To address these objectives, interviews were conducted with Inuit in communities of southern Baffin Island to gather information on the status of the Harlequin Duck. This IQ information was used to focus

ground-based waterfowl surveys along coastlines near some communities, as well as along selected rivers.

Study site and methods

Twelve Inuit hunters and elders were interviewed in four communities in southern Baffin Island in 2000: Cape Dorset (Kinngait), Kimmirut (Lake Harbour), Iqaluit (Frobisher Bay) and Pangnirtung (Mallory *et al.* 2001). Interviews were conducted in Inuktitut. Interviewees were provided with pictures of the Harlequin Duck as well as 1:250,000 topographic maps so they could show the precise locations of their observations. Details of these interview questions and responses are provided in Mallory *et al.* (2001). In addition to the interviews conducted in 2000, one interview was conducted in 2001 in English with a hunter in Qikiqtarjuaq (Broughton Island) and one with a hunter in Iqaluit.

Harlequin Duck surveys were conducted using several approaches. In some cases, surveyors walked the shorelines of suitable streams and rivers, particularly those close to the community of Iqaluit (**Table 1**). A survey was conducted by jetboat for 40km along the Sylvia Grinnell River, upstream of Iqaluit. The majority of survey time, however, was spent moving along shorelines (20-100m from shore) in a large freighter canoe equipped with an outboard motor (7m boat, 50hp), or by aluminium boat equipped with dual outboard motors (7m, 2x130hp) in suitable habitat

Table 1. Details of Harlequin Duck surveys on Baffin Island, 1999-2001. An (F) after the location descriptor refers to surveys on fresh water and (S) refers to surveys on salt water.

Location	Survey Type	Latitude	Longitude	Date	Harlequins observed?
Niaqunguk River (F)	Walk river	63°45.2'N	68°31.8'W	27 August 1999	No
				24 June 2000	No
				8 July 2000	1
				19 June 2001	No
Sylvia Grinnell River (F)	Walk river	63°45'N	68°32.3'W	1 July 2000	2
				25 June 2001	No
Hall Peninsula (S)	Coastline by boat	63°45'N	64°30'W	2-6 August 2000	No
Ward Inlet (S)	Coastline by boat	63°29'N	67°37'W	26 August 2000	No
				14 September 2000	No
North Frobisher Bay (S)	Coastline by boat	63°N	66°20'W	11-14 July 2001	No
Kimmirut & North Bay (F,S)	Coastline by boat + walk river	62°45'N	69°22'W	24-27 July 2001	No

locations suggested by IQ information. Shorelines were scanned constantly (x8 or x10 binoculars), and any areas with bird concentrations were investigated intensively, as were the outfalls of streams and rivers. During the Kimmirut coastal surveys (24-27 July 2001), the boat was beached near stream outfalls and upstream surveys were conducted, usually up to and including the headwater lake. In addition to these survey efforts, information on Harlequin Ducks was supplemented by opportunistic data gathered by Environment Canada staff during the course of other studies.

Results

Inuit interviews

Harlequin Ducks were known in all four communities; seven of the 12 (58%) hunters reported observing this species in southern Baffin Island. Most observations were made along the southeastern coast near Kimmirut (**Figure 1**), where all interviewees in this community had observed this species, although they noted that it was "not as common" as eider ducks (*Somateria* spp.). Inuit reported that during the pre-breeding period Harlequin pairs arrive in the spring and move along the floe edge or in polynyas, and are occasionally harvested at this time. One hunter shot a bird at a

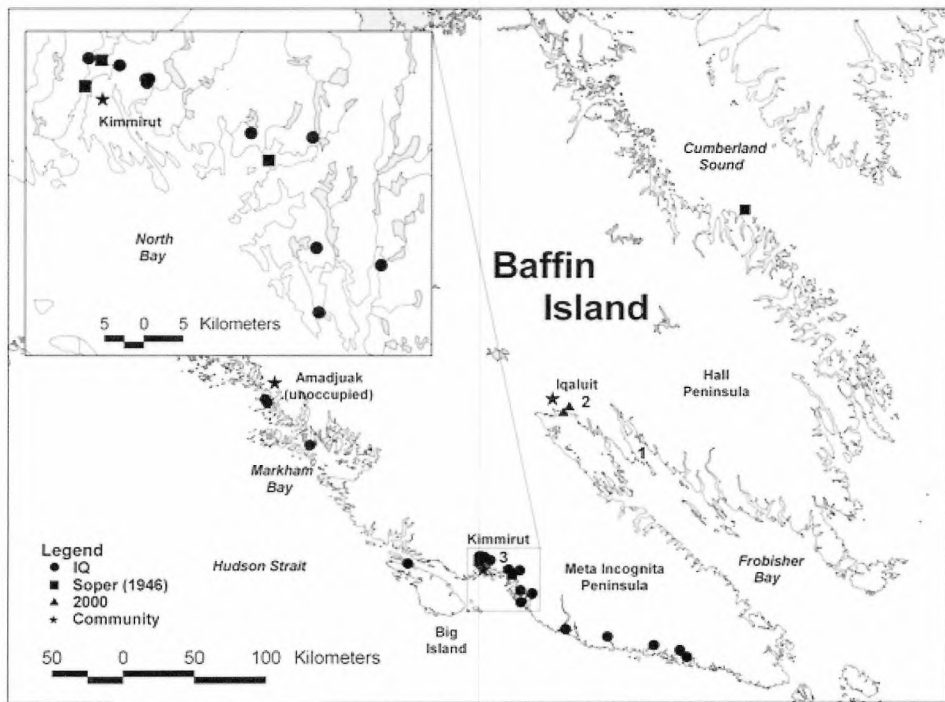


Figure 1. Reported locations of Harlequin Ducks on Baffin Island based on Inuit interviews (IQ), previous observations by J.D. Soper (1946), or Canadian Wildlife Service surveys. The inset provides further details of observations near Kimmirut, the main area where breeding has been confirmed. Numbers on the map correspond to specific sites mentioned in Table 1: 1) Ward Inlet, 2) Niaqunguk & Sylvia Grinnell Rivers and 3) Soper Lake/North Bay.

polynya in July, and it contained a nearly-complete egg; another hunter brought a dead adult specimen to his interview. The hunters also indicated that the ducks move inland to nest along lakes and rivers. Adults and broods were seen in July through September on small rivers, and particularly where small rivers met the ocean. Broods were reported to contain five to seven ducklings. During post-breeding, Harlequin Ducks were observed where freshwater streams meet the ocean, and ducks had generally left the area by November.

Individuals from Cape Dorset noted that they observed Harlequin Ducks only in Markham Bay near the old community of Amadjuak (**Figure 1**), about 200 km east of the current community. In Iqaluit, one hunter reported seeing a Harlequin Duck in Frobisher Bay, and another reported that he formerly encountered these ducks in the inlets and streams along the northern coast of Frobisher Bay, east of Ward Inlet (63°29'N, 67°37'W), but that he had not seen them there recently. A hunter in Pangnirtung noted that one of these ducks was shot in Cumberland Sound

"a few years ago". In Qikiqtarjuaq, a hunter reported that Harlequin Ducks were observed near Reid Bay (66°56'N, 61°46'W), along the easternmost tip of Baffin Island. For all of these observations, hunters described observations of adults but did not report broods or nests, and hence could not confirm breeding in these areas.

Surveys

Harlequin Duck surveys were conducted throughout the breeding season at various locations (Table 1). On 1 July 2000, a female Harlequin Duck was observed on a small, fast-flowing river 3km east of Iqaluit, and on 7 July an adult male and a subadult male were observed where the Sylvia Grinnell River joins the Koojesse Inlet of Frobisher Bay, inland and immediately west of Iqaluit. In August and September, approximately 1,000km of marine coastline were surveyed along the Hall Peninsula between Iqaluit and

Pangnirtung in the course of marine bird surveys (Fontaine *et al.* 2001), with no Harlequin Ducks observed.

In 2001, surveys were conducted on rivers around Iqaluit, including approximately 40km of the Sylvia Grinnell River. In July, marine coastal boat surveys covered approximately 175km of northern Frobisher Bay, as well as 100km of shoreline near Kimmirut where hunters regularly reported seeing this species. However, no Harlequin Ducks were observed in 2001 during Canadian Wildlife Service surveys, although one hunter in Kimmirut reported seeing a male and two female ducks near the community during the authors' surveys.

From separate reports by Environment Canada staff, a male Harlequin Duck was observed in July 1997 on land near the airport in Clyde River (Figure 2), and a male Harlequin Duck was observed on the coastline near 'The Minarets', southeast of Qikiqtarjuaq, in August 1985.

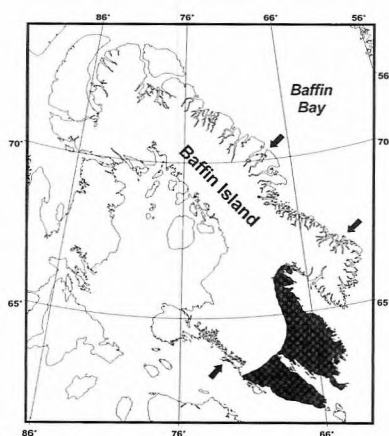


Figure 2. The reported range of the Harlequin Duck (Godfrey 1986), with arrows indicating extralimital observations from this study.

Discussion

Both Inuit community knowledge and ground-based surveys confirm that the Harlequin Duck still occurs on Baffin Island. This species was recognised in all of the communities in which we interviewed hunters and elders, but it appears to be most common near Kimmirut, along the southeastern coast of the island. Surveys by boat or on foot found few ducks, and none near Kimmirut where they are regularly observed, suggesting that this species is uncommon and probably well dispersed along the abundant coastal streams.

The use of Inuit knowledge to evaluate the status of this species proved very effective in this study. Inuit know this species as *turngaviaq* or *ivigaq*, and the descriptions of the habitat where they observe Harlequin Ducks (fast-flowing streams or outfalls of rivers at the ocean) matches the known habitat preferences for this species (Rodway 1998; Robertson & Goudie 1999). When Harlequin Duck observations identified on maps by different hunters were compared, there was considerable overlap, which enhanced the authors' confidence in the reliability of the reports (Mallory *et al.* 2001). Furthermore, the information from Qikiqtarjuaq hunters that Harlequin Ducks were found near The Minarets was substantiated by an observation of this species during a Canadian Wildlife Service seabird project at the site in 1985 (T. Gaston, pers. comm.).

Collectively, then, Inuit IQ has provided valuable data on the distribution of this uncommon duck in the eastern arctic.

There are approximately 1,800 Harlequin Ducks that winter in eastern North America and an unknown number that winter in Greenland (Mittelhauser 2000), with a total eastern North American population estimated at 5,000-10,000 birds (Brodeur *et al.* 2002). The portion of this population on Baffin Island is unknown, although it is likely that these birds winter in Greenland. With their observations of male and female birds during the pre-breeding and breeding seasons, the reports from hunters of paired birds in polynyas during pre-breeding and pairs and broods on inland rivers in July and August, and with abundant stream, river and coastal habitat along the Meta Incognita and Hall Peninsulas where this duck could breed, the authors are confident that a breeding population remains on Baffin Island. However, the logistics of trying to confirm breeding through comprehensive river or coastal surveys across this broad expanse would be difficult and expensive. Instead, community monitoring by hunters and trappers may prove to be a practical approach to long-term monitoring of Harlequin Ducks in eastern arctic Canada, and a monitoring programme was initiated in 2001. Evidence from the authors' surveys and hunter reports suggest that spring (pre-breeding) or autumn (brood-rearing) would be the best time to observe these ducks.

The information gathered in this study suggests that Harlequin Ducks are more broadly distributed across Baffin Island than previous range maps have suggested. Existing maps were based largely on the initial discoveries by Soper (1946), who found Harlequin Ducks near Kimmirut and Cumberland Sound. Brodeur *et al.* (2002) have recently identified migration pathways not known previously, and many birds that breed in Quebec or Labrador pass close to Baffin Island on their way to moult or winter in Greenland. The absence of reports of females or broods in the northern areas (Clyde River, The Minarets) may mean that these are moulting areas. To what extent the additional range the authors have suggested on Baffin Island (Figure 2) represents additional breeding, moulting or migration staging sites remains to be determined.

Acknowledgements

We are grateful to the Chicago Zoological Society for financial support for the Harlequin Duck project and to the World Wildlife Fund for financial support of our endangered species studies on Baffin Island. This research was conducted under Nunavut Research Institute Scientific Registry 00 and Government of Nunavut Wildlife Research Permit #WL000051. We thank the Qikiqtaaluk Wildlife Board, John Laird, Joanasie Akumalik, Simeonie Akpik, Loasie Aliqatuqtuq, Atsiaq Allasuaq, Peter Atsiqtaq, David Audlakiak, Daniel Coulombe, Mike

Fournier, Tony Gaston, Elijah Keenainak, Mangitak Kellypalik, Carolyn Mallory, Conor Mallory, M. Maniapik, Towkie Maniapik, Joeelee Papatsie and Sagiatok Sagiatok for all their assistance. Particular thanks go to Sandy Akavak (Kimmirut), Glenn Williams (Tukturnuk Outfitting Iqaluit) and Matt Knickelbein (Iqaluit) for quality guide services, and to J.-P. L. Savard and Greg Robertson for providing constructive reviews of this manuscript.

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