

First Confirmed Breeding of the Marbled Godwit, *Limosa fedoa*, in Québec

FRANÇOIS MORNEAU¹, BENOIT GAGNON,² and SIDNEY WHISKEYCHAN³

¹63 rue Champagne, Saint-Basile-le-Grand, Québec J3N 1C2 Canada

²Corresponding author. Hydro-Québec, Direction Environnement, 855 Sainte-Catherine Est, 9^e étage, Montréal, Québec H2L 4P5 Canada; e-mail: gagnon.benoit@hydro.qc.ca

³P.O. Box 167, Waskaganish, Québec J0M 1R0 Canada

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The objectives of this study were to confirm breeding of the Marbled Godwit (*Limosa fedoa*) in Rupert Bay, on the Québec coast of James Bay, and to assess population abundance. Nest search was conducted 17–20 June 2003, using several techniques. Two nests were found in the high marsh of Cabbage Willows Bay: these are the first confirmed breeding records of this species in Québec. The Rupert Bay region probably holds a breeding population of no more than a few dozen pairs.

Cette étude visait à confirmer la reproduction de la Barge marbrée (*Limosa fedoa*) dans la baie de Rupert située sur la côte est de la Baie James (Québec) et à estimer l'abondance de la population. Une recherche de nids a été réalisée entre le 17 et le 20 juin 2003 à l'aide de différentes techniques. Deux nids ont été découverts dans le haut marais de la baie Cabbage Willows. Ils confirment pour la première fois le statut nicheur de cette espèce au Québec. La région de la baie de Rupert abrite probablement une population nicheuse d'au plus quelques douzaines de couples.

Key Words: Marbled Godwit, *Limosa fedoa*, nest search, breeding, abundance, James Bay, Rupert Bay, Cabbage Willows Bay, Québec.

The Marbled Godwit (*Limosa fedoa*) breeds only in North America, in three disjunct areas: the grassland of the northern United States and southern Canada, the Alaska Peninsula, and James Bay (Gratto-Trevor 2000). The James Bay area probably holds only 1000–2000 birds (Gratto-Trevor 2000), but the species breeding has been confirmed only in Ontario (Morrison et al. 1976; Peck and James 1983; Morrison 1987).

In Québec, the species was first recorded on the James Bay coast by Spreadborough (*in* Macoun and Macoun 1909), who stated that the species bred on both coasts in 1904, although no direct evidence for breeding was reported. The Marbled Godwit was not recorded again on the east coast of James Bay before 1990. Since then it has been observed during the breeding season in and near Rupert Bay (Létourneau and Morrier 1996). Breeding behaviours were noted there in 1990 and 1991, but nesting was not confirmed.

In 2003, as part of the Eastmain-1-A and Rupert diversion hydroelectric project environmental studies, we sought to clarify the breeding status of the Marbled Godwit in Rupert Bay, on the Québec side of James Bay. The objectives of this study were to confirm breeding of the species in Québec and to assess population abundance.

Study Area and Methods

Field work was carried out in the coastal wetlands of Rupert Bay, Québec, Canada (Figure 1). These wetlands are particularly well developed owing to the sandy deposits and flat landscape. They are especially

extensive in Cabbage Willows Bay, which opens into Rupert Bay, and Boatswain Bay, which opens directly into James Bay, but are narrower in Hall Cove and elsewhere. They consist, in sequence from upland to open water, of swamps, fens, high marshes and low marshes (FORAMEC 2004*). The high marsh grounds are somewhat spongy but not covered by water. Low marshes are covered twice daily by the tide but the other wetlands are flooded only by storm tides and equinoctial tides.

Nest searches were conducted on 17–20 June 2003, using several techniques. The rope-drag method (Klett et al. 1986) was used on 0.3–1.4 km transects in parts of the high coastal marsh of Cabbage Willows Bay and Hall Cove. Nests were also searched for in the same areas by watching birds flying from the low marsh to potential nesting areas or vice versa. In addition, playbacks of taped breeding calls were used regularly on the high marsh and once in the low marsh. Finally, to increase ground coverage, we conducted a helicopter survey in Cabbage Willows Bay, in Hall Cove, over some Tamarack (*Larix laricina*) fens on Ministikawatin Peninsula, and on Jacob Island, north of Rupert Bay. We searched along 50-m parallel transects, at speeds that varied from 20 km/h to hover, and at altitudes varying from 3 to 9 m.

Breeding chronology was estimated assuming a mean egg-laying interval of 2 days and an incubation period of 25 days (Gratto-Trevor 2000). Abundance was estimated with counts of birds performing aerial display and nests.

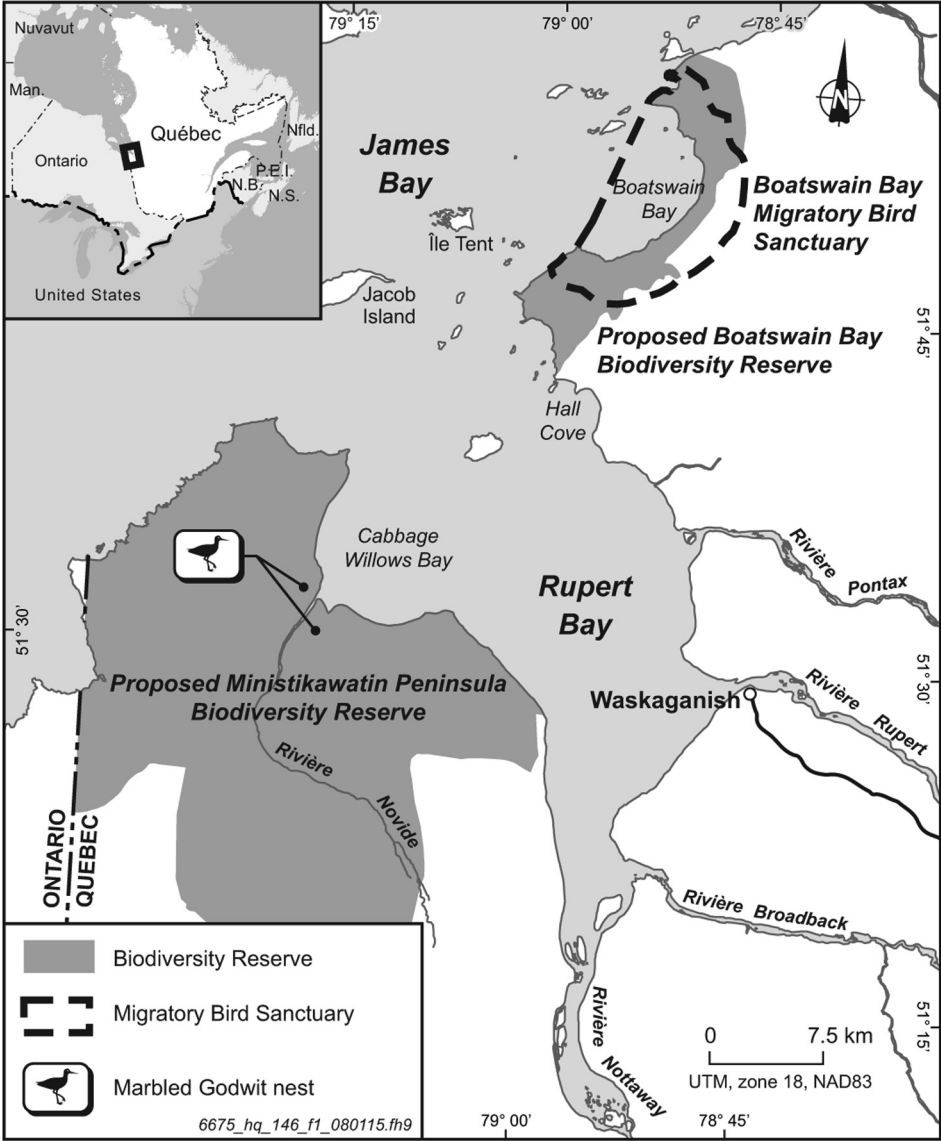


FIGURE 1. Location of Marbled Godwit study area and nests.

Results

The Marbled Godwit nest search was conducted on slightly over 20 km of line transects using the rope-drag method. It covered about 70 ha.

Two Marbled Godwit nests, 3.6 km apart, were discovered in the high coastal marsh of Cabbage Willows Bay in 2003 (Figure 1). The first nest (51°32.61'N, 79°16.13'W), containing four eggs (Figure 2) and one adult incubating, was found on 17 June using the rope-drag technique. The second nest (51°30.77'N,

79°15.13'W), discovered on 20 June following observation of courtship behaviour, contained only one egg, but two adults were within 30 m of the nest. The first nest was revisited again on 19 June and still contained four eggs.

Nests were 5 cm in depth and 20 cm in diameter at the rim. They were mostly, if not completely, made of dry stems of Sweet Grass (*Hierochloe odorata*). Both nests were found in the largest clumps of that species in the vicinity. The first nest was partly covered by



FIGURE 2. First Marbled Godwit nest discovered in Rupert Bay, Québec.

green stems. Throughout the high coastal marsh, grass cover, about 10–15 cm tall, was relatively sparse, with occasional clumps up to 15–25 cm.

In 2003, laying and potential incubation in Cabbage Willows Bay occurred at least between 11 June and 19 July.

No Godwit responded to several playback trials in the high coastal marsh. However, two individuals answered spontaneously to the single trial on the low coastal marsh, by flying and calling around the investigators. Over the same biotope, four different birds were seen engaging in aerial courtship behaviour during nest searches. Besides the birds associated with the nests, only one Marbled Godwit was seen in the high marsh: it was flying from the low marsh and landed in the high marsh, on a potential nesting area. Despite a long search, it was not seen again.

Partial aerial coverage of the Cabbage Willows Bay low coastal marsh enabled us to identify four adults. Another bird was spotted as it flew toward the low marsh during the aerial survey; it seemed to be coming from the second nest area. No birds were seen in Hall Cove or in Ministikawatin Peninsula or Jacob Island during aerial surveys.

Discussion

The two Marbled Godwit nests that we found in Cabbage Willows Bay represent the first definitive

breeding evidences of this species in Québec. Some previous observations had led us to believe the species was nesting there. On 17 June 1991, two copulating birds were observed in Cabbage Willows Bay. The same year, three Marbled Godwits were seen on 21 July in the same area, including two agitated birds giving alarm calls, indicating the probable presence of young (Létourneau and Morrier 1996). Finally, a similar observation was recorded on 27 July 2002, again in Cabbage Willows Bay, north of the Novide River (Hydro-Québec, unpublished data).

Breeding habitat in Cabbage Willows Bay is similar to that described elsewhere. In North Dakota, the Marbled Godwit shows a strong preference during breeding season for short, sparse to moderately dense cover along wetland shorelines and shorter vegetation in upland habitats (Ryan et al. 1984). In James Bay, Ontario, one nest was found in a raised, grassy ridge between two ponds, in an open coastal marsh (Peck and James 1983).

Estimated breeding chronology suggested that nest search was carried out in the egg-laying and early incubation period. This is consistent with the observed copulation (17 June 1991) and other previous records suggesting breeding (see above). The flight displays observed in 2003 also support the breeding chronology outline. Display behaviour is most frequent early in the breeding season and is commonly performed by

unpaired or nest-scraping males until incubation duties are initiated (Nowicki 1973). In Ontario, two breeding records from James Bay indicate that egg-laying was initiated approximately between 24 May and 31 May (Morrison et al. 1976; Peck and James 1983).

In 2003, the Marbled Godwit breeding population included at least four pairs in Cabbage Willows Bay. In 2002, the species was also recorded in Boatswain Bay, Jacob Island and Tent Island, between 23 July and 1 September (Hydro-Québec, unpublished data). However, considering the late dates and that no breeding behaviour was observed, it is likely that these birds were migrants rather than breeders. Although no Marbled Godwit was recorded during the aerial survey inland of Ministikawatin Peninsula, the species was located there in June 1990 and 1991, in three areas, including a bird on a shallow lake fen (Létourneau and Morrier 1996). In Ontario, the Marbled Godwit is also found up to 20 km inland (Gratto-Trevor 2000). Thus, the species probably breeds inland of Ministikawatin Peninsula. Its abundance there could exceed that of Cabbage Willows Bay because of the vast expanse of Tamarack fens. On 15 June 1991, 80 Marbled Godwits were counted in Cabbage Willows Bay (Létourneau and Morrier 1996). Their breeding status is questionable. As noted earlier, that date probably coincides with egg-laying and early incubation. Either these birds were on the point of dispersal for local breeding or were migrants on the way to northern James Bay breeding grounds in Ontario. However, if Marbled Godwits fly directly to breeding areas in spring from wintering sites on southeastern U.S. coasts, as the reverse is presumed to occur in the fall (Morrison et al. 1976), then those birds may have been local or regional breeders. Therefore, the Rupert Bay region probably holds a breeding population of between four pairs and a few dozens pairs.

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