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GEOGRAPHICAL PAPER No. 13

Notes on Small Boat Harbours, N.W.T.

J. Ross Mackay

GEOGRAPHICAL BRANCH

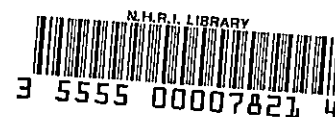
**Department of Mines and
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PREFACE

During the period 1951 to 1955 field work was carried out by Geographical Branch survey parties on the physical and human geography of the Mackenzie delta area and the coastal zone eastwards to Cape Bathurst. This paper forms a minor part of the study, the balance of which will be published later in other series issued by the branch.

These notes are published with a view to providing data of use in the navigation of the waters along the northern mainland coast.

N. L. Nicholson,
Director,
Geographical Branch.

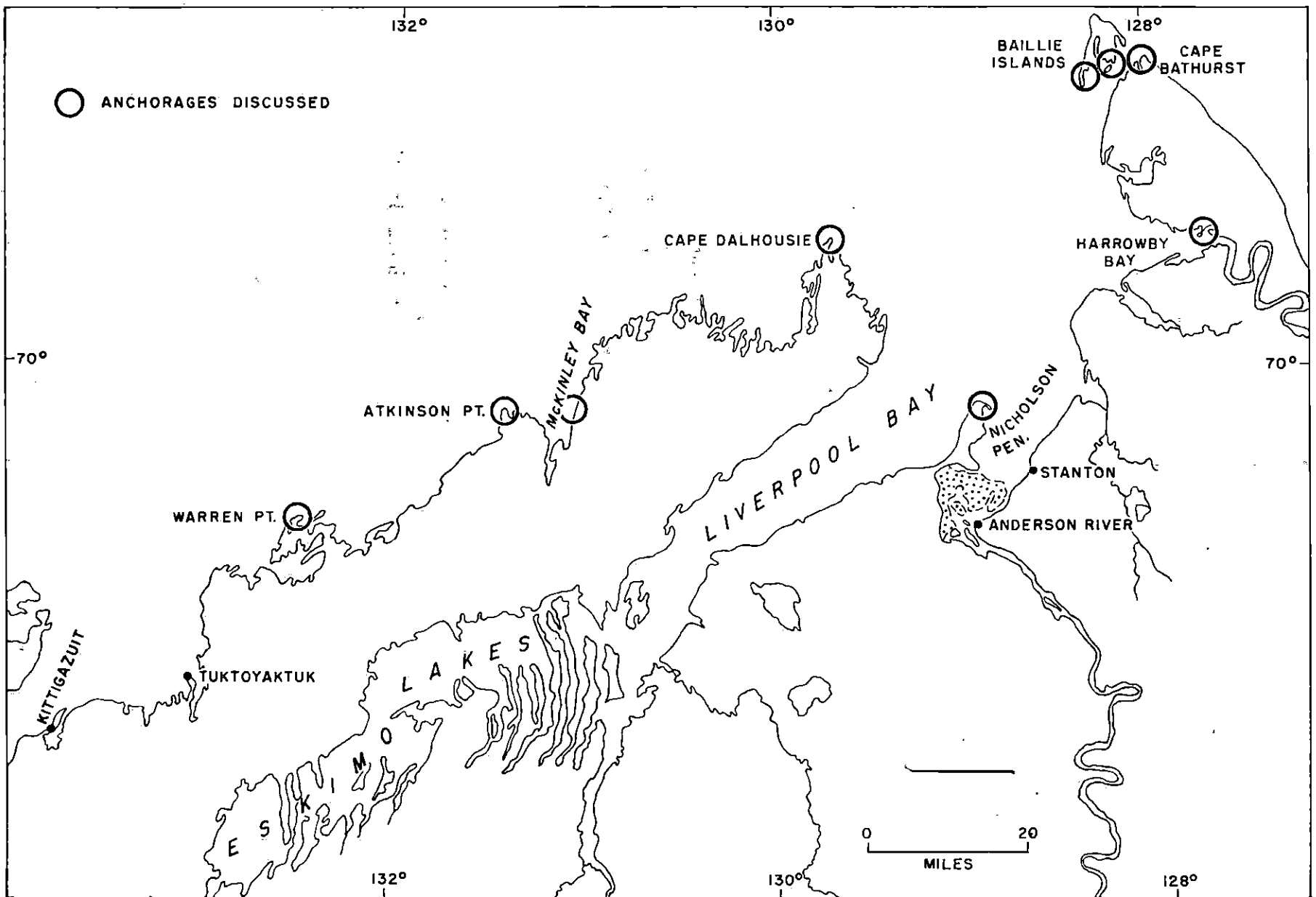


Figure 1. Location Map

NOTES ON SMALL BOAT HARBOURS BETWEEN TUKTOYAKTUK AND
CAPE BATHURST, N.W.T.

J. Ross Mackay¹

The following notes on small boat harbours between Tuktoyaktuk and Cape Bathurst, N.W.T., were compiled in the summer of 1955. The information presented was collected during the course of a geographical survey of part of the coastlands of the Beaufort Sea. The purpose of the report is to provide information that supplements the hydrographic charts available for the area. The diagrams and sailing directions included in the text are not to be used for navigation purposes but only to supplement the official sailing directions. In addition to hydrographic data the report outlines some of the physiographic features of the coastal area that may be of use to navigators sailing in these waters.

Large sea-going vessels and small coastal boats ply the mainland coast in the western Arctic. The sea-going vessels, such as the Hudson's Bay Company Fort Hearne or other supply ships, can sail along the coast under almost any weather conditions because of their size, seaworthiness, and navigational aids. However, the coastal boats used by trappers are small, not very seaworthy, carry no modern navigational aids, and thus must seek shelter at the first sign of a storm. This report deals with some of the harbours that can be used by coastal boats ranging from 20 to 40 feet in length and 2 to 5 feet in draught. Most of them are equipped with a gas engine and auxiliary sail.

¹ J. Ross Mackay, B.A. (Clark, 1939); M.A. (Boston, 1941); Ph.D. (Montreal, 1949), was leader of a Geographical Branch field survey party to the coastlands between the Mackenzie Delta and Cape Bathurst in 1955. He was assisted in the field by Jack K. Stathers, B.A. (U.B.C. 1954) and by two local assistants John Wiedemann and Fred Jacobson.

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All the harbours, save that at Cape Dalhousie, may be entered by boats drawing up to 5 feet of water. Since shoals are common and the water level is often raised or lowered several feet by a storm, constant sounding is usually necessary in entering and leaving the harbours. As a generalization, the water level is raised by strong westerly winds and lowered by strong easterly winds. A rise in sea level of 2 or 3 feet is usually sufficient to submerge the offshore bars and spits that enclose some of the harbours, but even when the bars and spits are awash they still help to reduce the violence of the storm waves.

The diagrams that accompany this report have been prepared from air photographs. The depths are given in feet and are expressed, as far as possible, in terms of low tide level.

The anchorages in all the harbours are in sand or mud, and there are no rocky bottoms. Since the depths in the harbours are usually under 10 feet, a long anchor chain is unnecessary. Most of the coastal boats use kedge or stockless (patent) anchors. The safety of a boat requires dependable anchoring equipment because gale winds exceeding 60 m.p.h. are not uncommon along the coast.

Even though the coast is covered with thousands of lakes, fresh water is often hard to obtain because many of the coastal lakes are flooded by sea water during westerly storms. Consequently, most coastal boats carry a good supply of fresh water with them.

CAPE DALHOUSIE

The harbour at Cape Dalhousie (Figure 2) is advantageously situated at the northeastern extremity of "Tuk Peninsula". For boats sailing eastward in early July, it may provide shelter when Liverpool Bay is unnavigable because of ice or bad weather. On a westward journey from Cape Bathurst to Tuktoyaktuk, it provides the first shelter for boats that have crossed the open water of Liverpool Bay.

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The shelter at Cape Dalhousie is almost closed on the west, north, and east by offshore sandbars. Along the north and west there is a long curving sandbar that links together three detached "island" remnants of the mainland. These linked islands rise about 10 to 20 feet above the sandbars. The western island is about 350 yards long, the central island 450 yards long, and the eastern is 600 yards long. The islands are clearly visible from a distance of several miles offshore. It was reported locally that there was formerly another island (Haystack Island) about 20 feet high that has been removed by waves within the past 20 years.

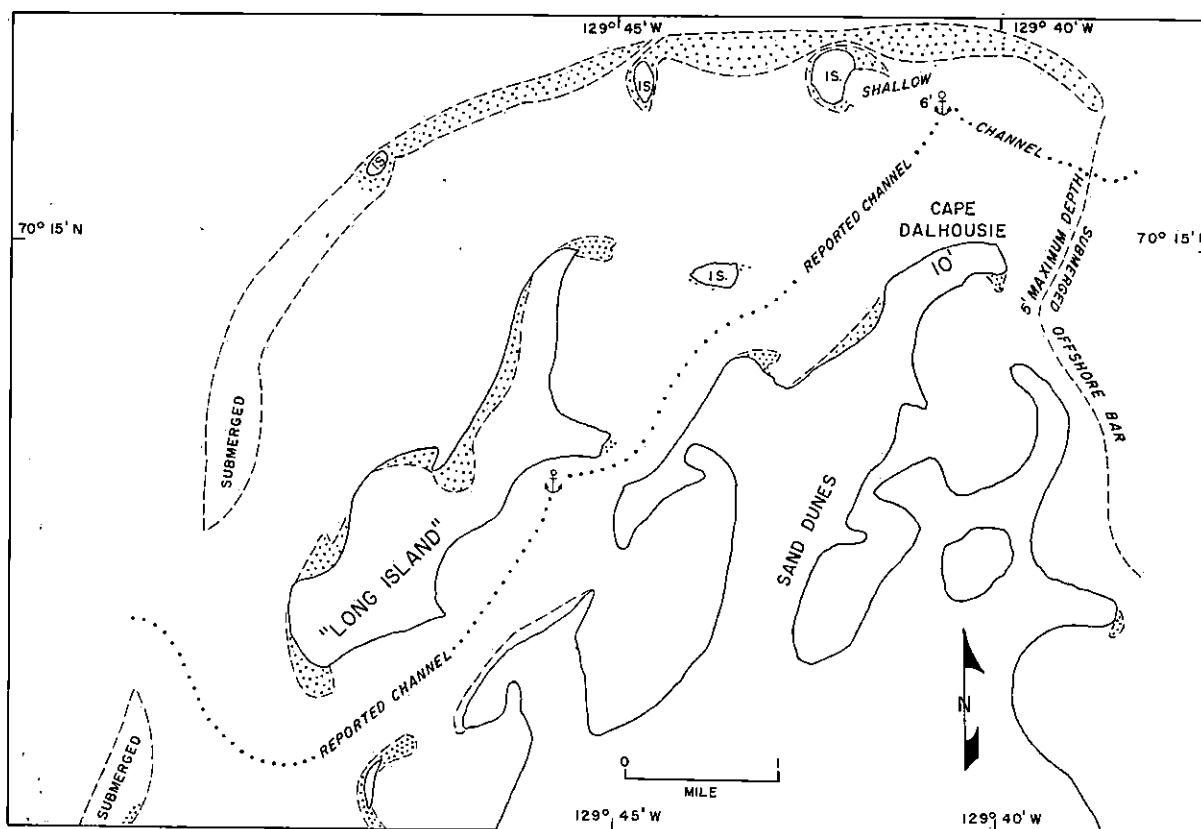


Figure 2. The Harbour at Cape Dalhousie

On the eastern side of the entrance to Cape Dalhousie there is a submerged offshore sandbar trending north-south, the position of which is shown clearly by ice cakes that ground on it. In 1955, the writer crossed the bar at low water with a depth of 5 to

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6 feet. Once past the eastern submerged sandbar, a boat can proceed to within half a mile of the eastern island and anchor in 6 feet of water with a good sandy bottom. During the overnight stop made at Cape Dalhousie by the survey party an easterly current of 1 to 2 miles per hour was observed at the anchorage with a falling tide, and a westerly current of similar velocity with a rising tide.

In view of the shallowness of the lagoon between the offshore sandbars and the mainland, the recommended arrival and departure courses are the same. It has been reported that boats of shallow draught, such as scows or schooners drawing only 2 feet, can use the western entrance provided constant soundings are taken.

Fresh water can be obtained about 2 miles from the anchorage. Water may sometimes be obtained from some of the fissures of polygons at Cape Dalhousie and also from ice wedges. Natives have on occasions used ice found by digging into sand dunes.

The 10-to 15-foot high cliffs of the mainland at Cape Dalhousie are cut into a brownish sand. The sand and beach are stone-free. Some stretches of the low cliffs are being rapidly undercut so that large blocks cave in as they become undermined. Ice wedges of large tundra polygons, 50 to 100 feet in diameter, are exposed along the coast. Inland from Cape Dalhousie sand dunes reach a height of about 50 or 60 feet above sea level. Much of the windblown sand comes from the floors of drained, or partially drained lakes, which range from half a mile to several miles in length, and are oriented nearly true north-south. Strong easterly winds have built up sand dunes on the western sides of the lakes, and as lyme grass becomes established on the dunes they tend to become stabilized. Blowouts, however, are common so that some sand dune areas are hummocky with bare depressions and grass-covered knobs that resemble haystacks. Natives report that sand blown onto the sea ice in winter may make sledding difficult along the coast.

The most destructive storm winds are from the west and these may raise the

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water level 5 feet or more to submerge the offshore sandbars and low coastal areas. As the waves wash ashore they build storm beaches that are often V- or U-shaped, with the apexes pointing west.

Cape Dalhousie is well within the tundra region. In the low areas around ponds and in the middle of low-centred polygons, the ground is sedgy. On the drier peaty areas of high-centred polygons, there are many avens, 2-inch high prostrate willows, reindeer moss, sedges, and salmonberry. About 5 per cent of the surface is bare.

CAPE BATHURST - BAILLIE ISLANDS

These anchorages (Figure 3) have been used relatively frequently by ships and small boats since about 1890 and these notes supplement Canadian Hydrographic Service chart No. 5712 "Baillie Islands and Approaches", 1951. The deep water anchorage is

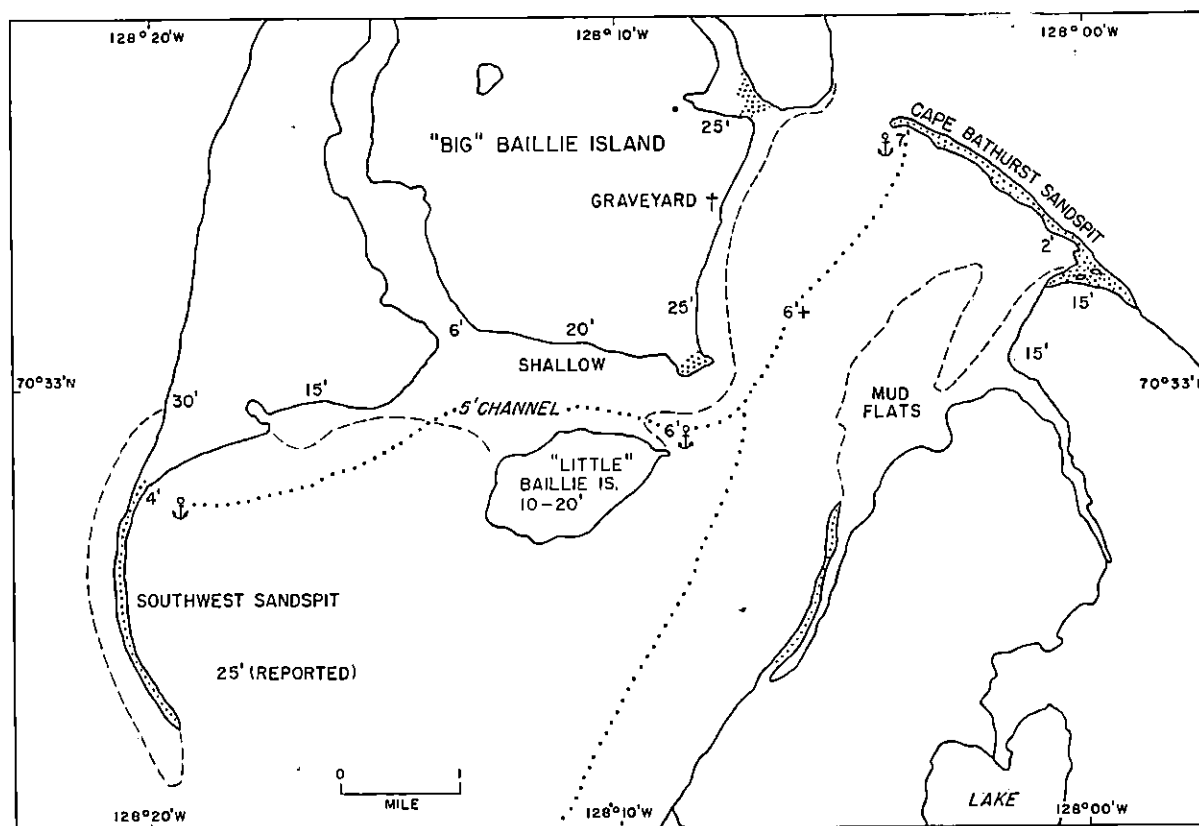


Figure 3. The anchorages at Cape Bathurst - Baillie Islands

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on the east side of the southwest sandspit of "Big" Baillie Island.

The sandspit trending northwest from the tip of Cape Bathurst was broken in the summer of 1955. However, the position, shape, and continuity of the sandspit often changes in a single storm so that its appearance varies from year to year. In 1955, anchorage was obtained in 7 feet of water 100 yards offshore in the shelter of the hook at the northwest end of the sandspit. In that year, a moderate storm with wind velocities of 40 to 50 miles per hour swept water completely over low points of the sandspit.

The channel between the two Baillie Islands was reported as being very shallow — "hardly deep enough to float a whaleboat" — several decades ago. In 1955, anchorage in 6 feet of water was secured at the northeast sandspit of "Little" Baillie Island and the channel between the two islands was at least 5 feet deep.

Small boats using the Cape Bathurst-Baillie Islands anchorage can find shelter from winds blowing from any direction by shifting anchorage. There is no single shelter from winds that may come from any direction.

HARROWBY BAY

Harrowby Bay is probably the most protected harbour and one of the easiest to enter between Tuktoyaktuk and Cape Bathurst (Figure 4). The Harrowby Bay estuary has a uniform depth of 11 feet. The anchorage is in an estuarine valley on the north side of the bay at latitude $70^{\circ} 15' N.$, longitude $127^{\circ} 40' W.$ The entrance to the harbour is difficult to see from more than a mile offshore because of overlapping headlands, but is not hard to locate on closer approach. Sandbars partially enclose the entrance to the anchorage, but as the channel is over 100 feet wide, it can be followed with ease. Once past the entrance, depths of about 9 feet continue for about a mile. A boat drawing 3 feet of water can almost rest its prow on shore. The beach around the harbour is of gravel with wave cut bluffs 15 to 25 feet high above it.

 SMALL BOAT HARBOURS: NORTHWEST TERRITORIES

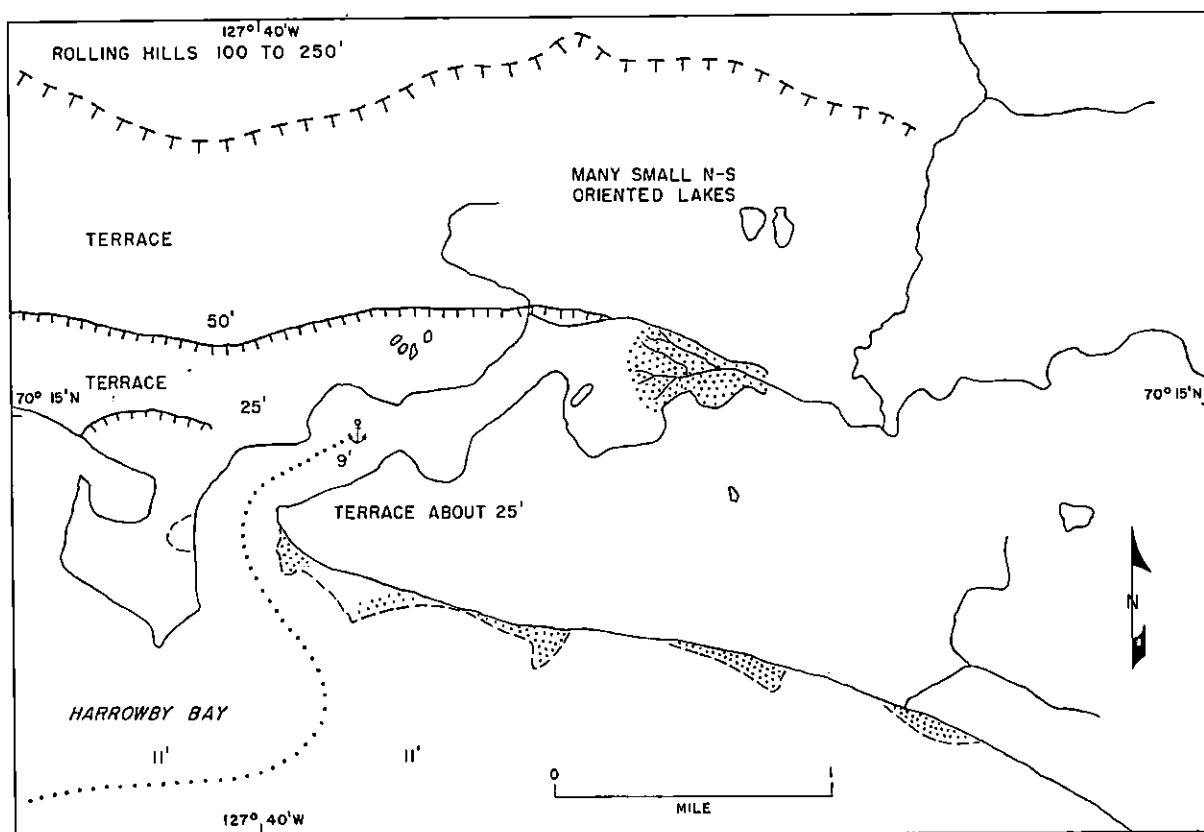


Figure 4. The harbour at Harrowby Bay

Fresh water is obtainable from small ponds within a quarter of a mile of the north side of the estuary. Driftwood is scarce. A trapper and family have a small frame cabin near the head of the estuary.

The estuary of Harrowby Bay can probably be ascended by boats drawing 3 or 4 feet of water for 10 miles beyond the anchorage described above.

POINT ATKINSON

The harbour at Point Atkinson (Figure 5) lies in the shelter of a 6-mile-long sandspit curving northeastwards like the blade of a giant scythe from the sandy hills of the point. The sandspit is about 500 yards wide near the base and narrows gradually towards its free end. The base of the spit rises just above high tide level, but the entire spit may be submerged in a storm.

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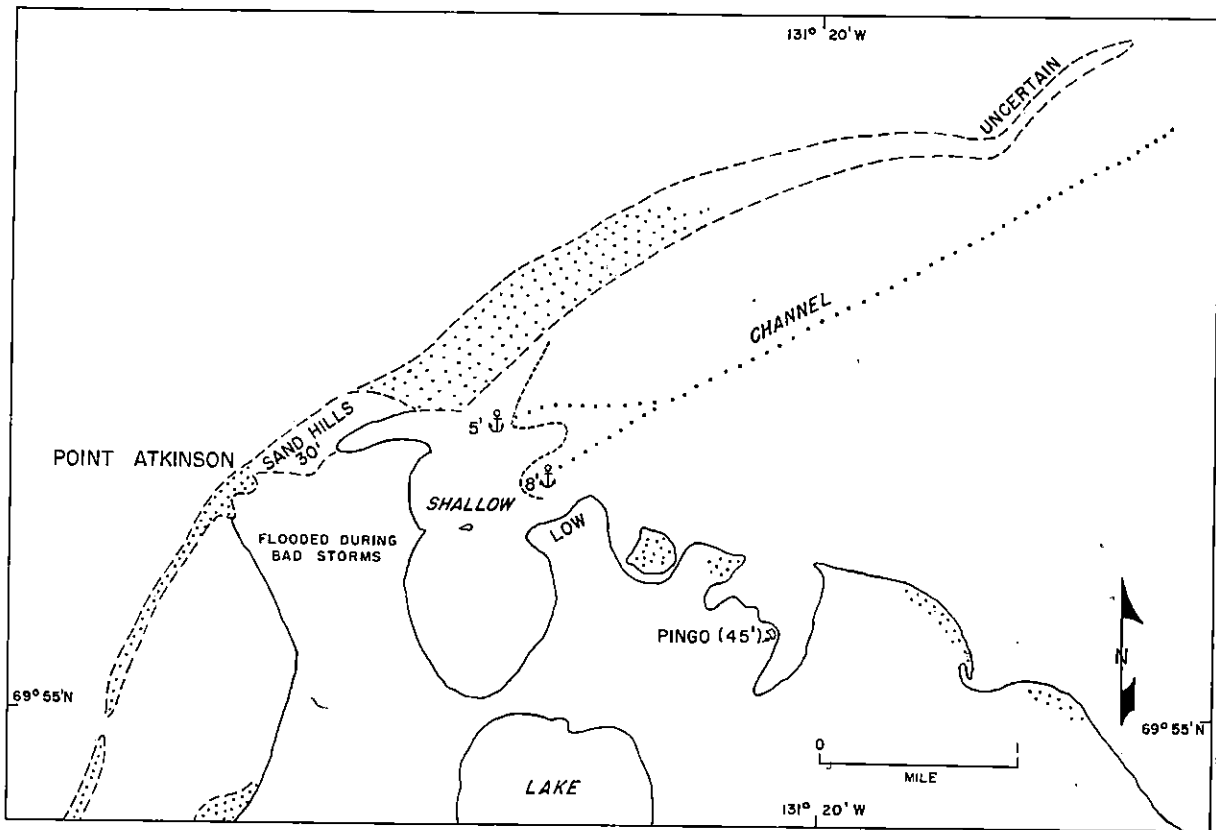


Figure 5. The harbour at Point Atkinson

Anchorage for small boats is towards the base of the sandspit at the north end of a shallow bay. Depths do not decrease uniformly towards shore, because there are several shoals, and constant sounding may be necessary to locate an anchorage.

As the low coastal flats are subject to flooding, low-lying ponds tend to be brackish and unsuitable for drinking water. Fresh water may be obtained from a round, unnamed lake about 2 miles south southeast of the sandhills.

The Point Atkinson sandhills at the base of the sandspit are high enough to be conspicuous for several miles out to sea. They are about 1,000 yards long, 100 to 200 yards wide, and up to 30 feet high. The surface of the hills is hummocky with hillocks 10 to 20 feet long and up to 6 feet high. The sandy hillocks are elongated in an east-west direction and are held together by lyme grass with bare sandy blowouts between them. The sandhills are being driven steadily southwards as the coast is being

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cut back. One storm in August, 1955, cut back parts of the sandhills 10 to 15 feet. When the sandhills were first seen by the explorer Sir John Richardson in the summer of 1826, he referred to the hills as "Atkinson Island". At the time, the hills were separated from the coast by a narrow creek, now gone. According to the accounts of trappers familiar with the area the hills have been driven some distance inland.

A low flat neck, about a mile long and not quite a mile wide connects the sandhills with the slightly higher land to the south. Little, if any, of the peninsula rises 10 feet above low tide level. Almost all of it is awash when the water level is raised during severe storms. Driftwood and storm beaches are found over the neck.

The sandspit extending a mile southwest from the sandhills encloses a shallow bay that provided a good anchorage 30 to 40 years ago. Boats drawing up to 3 feet of water used to be tracked or sailed through the channel at high water and anchored in the bay. The bay is now shallower and can be used by only very shallow draft boats.

McKINLEY BAY

Small boats travelling along the coast between Warren Point and Cape Dalhousie may have occasion to stop near Point Atkinson but may not wish to go into the shelter of the long sandspit, because the length of the sandspit must be twice covered in doing so. If the weather is fine, or there is an easterly wind, boats may obtain anchorage on the east side of McKinley Bay in line with a conspicuous saddle-backed pingo lying 4 miles inland. If the winds shift to the west, a boat may make for shelter at Point Atkinson. There is anchorage in about 8 feet of water within 300 yards of the north-south trending sandbar that rises 2 or 3 feet above low tide level. The coast is so low that storm waves have washed driftwood over the sandbar and 100 yards or more inland. Storm beaches rise at least 9 feet above low tide level. Some of the lakes have conspicuous sand dunes on their western sides formed by easterly winds. A bisected pingo standing at sea level and 20 feet high may be used as a local landmark.

NICHOLSON PENINSULA

The sandspit extending several miles to the southeast from the northern tip of Nicholson Peninsula (Figure 6) offers an excellent harbour for small craft. Once the long sandspit is rounded, there is clear passage for a boat to the base of the sandspit. The harbour is deep enough for boats that draw 6 or more feet. There is good protection from westerly winds and fairly good protection from northerly and easterly winds. The harbour is exposed to southerly winds but these are reported to be weak in the area. During severe westerly storms, the entire sandspit may be flooded.

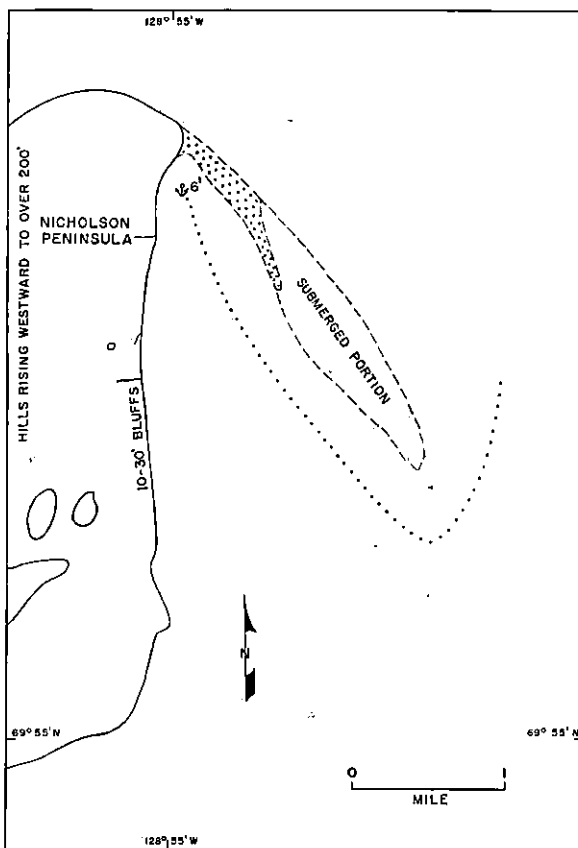


Figure 6. Nicholson Peninsula anchorage

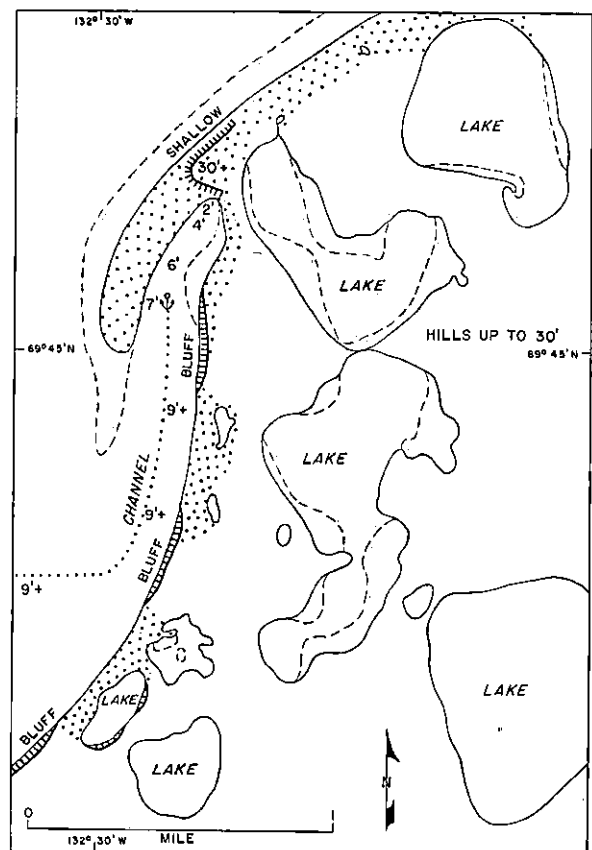


Figure 7. Warren Point anchorage

There is another southeast trending sandspit about 8 miles south of the northern sandspit described above that provides good shelter from all but southerly winds. Fresh water may be obtained from creeks and lakes within a mile of each anchorage.

SMALL BOAT HARBOURS: NORTHWEST TERRITORIES

There is no harbour at the settlement of Stanton due east of Nicholson Peninsula. Wood Bay, south of Nicholson Peninsula, is very shallow due to sedimentation from the Anderson River.

WARREN POINT

Warren Point (Figure 7) lies midway between Tuktoyaktuk and Point Atkinson. The harbour is formed by a sandspit trending nearly north-south, at the base of which there are windblown sandy hills 30 feet high. The sandspit is about 1,000 yards long at low tide with a submerged portion covered by shallow water continuing for 500 yards. It rises 3 to 4 feet above low tide level but is frequently covered by water during bad storms. On the west side of the sandspit the water shelves very gradually to seaward so that, at a distance of several hundred yards offshore, depths are only 1 to 3 feet at low tide. The lagoon enclosed by the sandspit is from 7 to 9 feet deep. Sandy bluffs 15 to 20 feet high line the coast south of the anchorage. Inland there are low hills that rise 30 feet or more above sea level. Drinking water is easily secured from nearby lakes.

The harbour offers good protection from all but strong westerly winds. Small boats have safely ridden out hurricane winds in the anchorage even when the sandspit has been submerged. However, it is recommended that small boats should be securely anchored if a severe westerly wind is anticipated.

Hydrographic chart No. 6374, "Approaches to Port Brabant", shows a shoal that has been reported some 3 to 4 miles northeast of Warren Point. On the eastward trip made by the writer in 1955, the sea was calm and no sign was seen of the shoal. On the return trip, the sea was rough and a long line of breakers, extending east-west for about a mile, marked the northern side of the shoal. The line of breakers was very sharp, indicating that the water was probably deep right up to the shoal. The shoal was skirted at an estimated 300 to 500 yards to the north, no bottom being reached at 3 fathoms with the sounding lead.