Tidal Monitoring of a Barrier Breach: The Mysterious Case of the Unidentified Flying Object (UFO)

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INTRODUCTION

Breaching of barrier islands during storms and the subsequent healing is common on low, narrow, sandy barriers around the world. Some breaches develop into permanent tidal inlets, while others close progressively over a number of years (~5-10 years; Bryant, 1971). Such was the case of North Inlet in the Kouchibouguac barrier system located in Northumberland Strait, New Brunswick, Canada (Greenwood and Keay, 1979). The behaviour of this inlet, which opened in the winter of 1970-71, when a previous inlet to the north closed, was monitored until its gradual closure (Figure 1).

Each summer between 1973 and 1976, the tidal inlet was monitored as part of a larger research program funded by small ($4,000) annual grants to Brian Greenwood from the Geological Survey of Canada and the National Research Council of Canada on the coastal dynamics of the Kouchibouguac system (Davidson-Arnott, 1971; 1975; Davidson-Arnott and Greenwood, 2020; Hale, 1975; Mittler, 1981). This work was conducted by a small team of both graduate and undergraduate assistants. Monitoring the general topographic changes, especially the tidal inlet cross-section and the associated changes in the tidal prism, required at least three people to obtain continuous measurements of the flow dynamics over a number of full spring tidal cycles. The research design was to observe progressive changes both in the inlet morphology and the tidal amplitude and current speed within the inlet neck associated with its gradual constriction by a net southward littoral transport.

The tidal regime in Kouchibouguac Bay is mixed semi-diurnal and at spring tide it becomes diurnal, thus requiring tidal prism measurements to be made over a full 24 hours. In the summer months high tide is around 4 or 5:00 a.m. so we were particularly busy overnight and into the early morning. As with many field experiments, with limited personnel and limited equipment in the early 1970s, measurements were somewhat restricted and subject to the vagaries of the weather and, in our case, working in a National Park that was still under development as the land area for the park was assembled.

At the time, considerable conflict existed between the local Acadian residents (mainly fishers), who were losing their historical rights of access to certain areas, which had expropriation orders from the federal and provincial governments as well as being relocated to settlements outside the

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park boundaries. On one occasion towards the end of July in 1973, as we had just begun to survey the inlet, we were confronted by the leader of the protests and two other large fishermen who came out by boat and asked what we were doing there. Despite attempts to convince them that we were just university people and had nothing to do with the ongoing battle with expropriation, they suggested that if we were not gone very soon they would *stick us* with the (seemingly large!) fish filleting knives they carried. At this time discretion became the better part of valour and we left the area and did not return until some kind of truce was negotiated a few weeks later.

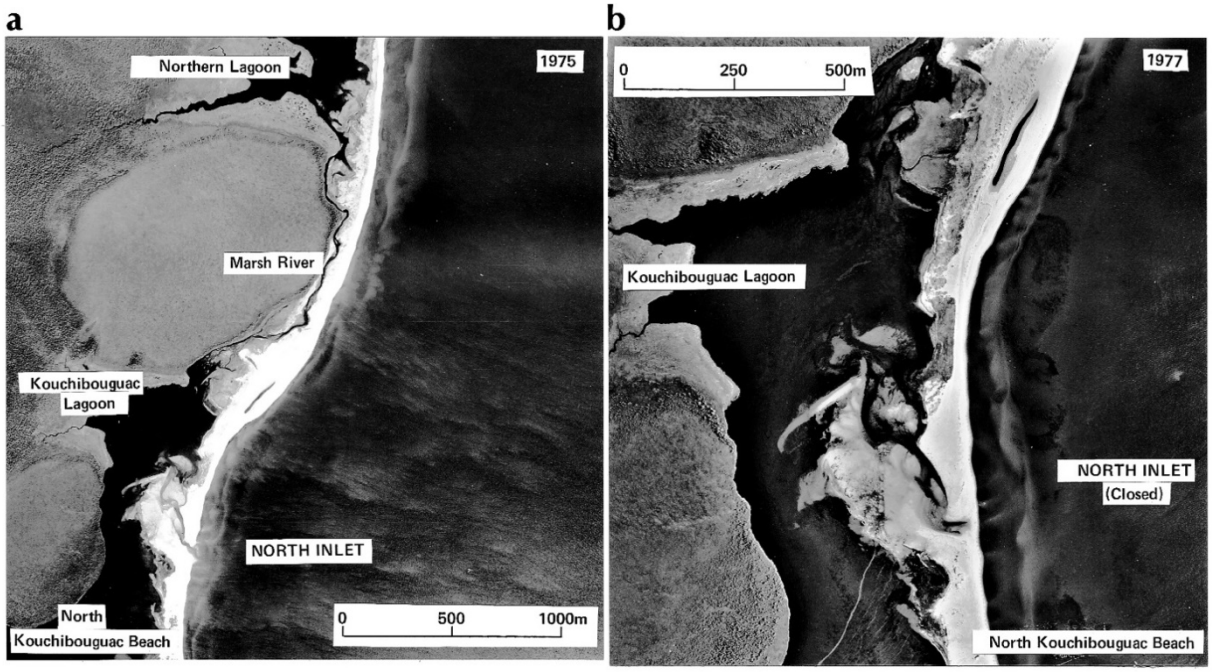

Figure 1. Vertical aerial photographs of North Inlet: (a) 1975. (Source: Air Photo Library, Maritime Resource Management Service, Amherst, Nova Scotia.); (b) 1977. (Source: National Air Photo Library, Ottawa, Ontario.) Note: (i) the extensive progradation of the northern updrift side of the inlet and completion of the re-orientation of the channel through the flood delta by 1975; and (ii) the complete destruction of the ebb delta and re-establishment of a wave-formed nearshore bar.

The trouble between the park and the former inhabitants continued for several years. Nevertheless, as we did have permission to work within the park, we soldiered on and actually managed to complete major consultancy reports for the Park in 1976 and 1977 (Greenwood, 1976; Greenwood and Davidson-Arnott, 1977). To return to the story, our strategy for monitoring the tidal prism was relatively simple. Once the narrowest cross-section had been selected, a rope was strung across the inlet neck anchored by sand augers on both sides (Figure 2). The rope was marked at 10 m intervals to provide the locations for depth and velocity measurements at 90-minute intervals through the full tidal cycle; it also provided stable anchorage positioning for the small aluminum boat during measurements. The field party simply moved from point to point measuring the water depth and the horizontal velocity at 0.2 and 0.8 of the total depth using a hand-held Ott current meter mounted on a 9 foot long steel rod at each sampling location (Figure 3). We simply left the rope in place between measurements. However, fairly early in the morning, a small boat came barrelling out of the lagoon at high speed across

the rope with the result that the outboard motor kicked up out of the water stopping its progress and eliciting some fairly unpleasant language from its Acadian occupants.

Figure 2. Oblique colour (a) and black and white labelled (b) aerial photographs taken in 1973. The general morphology of the inlet is shown as well as the inlet neck where the inlet dynamics were studied. (Photos: B. Greenwood.)

Figure 3. The University of Toronto team making measurements at North Inlet, July 1974. The boat is held against the tidal flow temporarily by a member of the team holding a rope affixed to the main rope across the inlet during the measurements; it took approximately 30-minutes to complete the full set of stations. Note: (i) the graduate student *muscle* at the bow (RD-A) maintaining boat stability; (ii) the *budding* scientist using the Ott current meter (Pat Keay); and (iii) the *careful* recorder seated comfortably amidships (BG). (Photo: B. Greenwood.)

The most interesting observation, however, was made during the night of one particular 24-hour monitoring episode. As with all good field stories, the weather was important. It was a clear and moonless night with little or no wind on July 1, 1973, that Brian Greenwood, Robin Davidson-Arnott and Peter Hale were assisting Pat Keay in a 24-hour monitoring of North Inlet as part of her M.Sc. thesis research (Keay, 1975). Some of you may realise that it was Canada Day 1973, but we assure you that we had not been celebrating nor were we hallucinating! While the four of us were in the boat moving from one measurement position to another, with only torches for light (each set of measurements took about 10 minutes), one of us (BG) noticed and mentioned what appeared to be a firefly (Family *Lampyridae*), not too far from the boat, which are common in the summer in New Brunswick. However, as we continued to move to subsequent stations to finish up as usual on the north-shore of the inlet, it was evident that what was observed was not a firefly. Instead, it was now obvious to all that what we were seeing was an extremely bright, white light in the sky to the south that now appeared to be a significant distance away and at some elevation in the sky. As there was no moon, we continued to observe this light as we had some time before our next set of measurements. It was also at this time that we observed several strange movements of the light:

(i) extremely rapid displacements in position, both horizontally and vertically; these movements appeared at least to our eyes to be almost instantaneous;
(ii) at times the light appeared stationary in the sky for minutes on end, and then would move almost instantly to a new position, both vertically and horizontally;
(iii) on one occasion, the light dropped close to the horizon and intensified rapidly; this gave the appearance of the light moving toward us at a rapid pace. This was rather

disturbing to say the least to some members of the group, who retreated rapidly northward along the barrier island. Of course, on an isolated barrier island in the middle of the night and in the middle of nowhere there was clearly nowhere to escape!!

It should be added at this point that:

(i) there was absolutely no sound involved, at least that we could hear, and the light moved erratically across the sky; winds were blowing from the south-west and might therefore have limited the sound. However, recorded winds were less than 12 mph over the two days of the measurements;
(ii) several commercial airliners were observed traversing the night sky, which clearly emitted enough sound to be heard at the inlet. The lights on the aircraft were also clearly identifiable and moved steadily across the night sky;
(iii) the light phenomenon lasted for a period of at least one hour.

The question therefore was, '*What could this light phenomenon be?*' Could this phenomenon have a simple, logical explanation or could it be classed as a UFO – unidentified flying object. Several possible explanations have been considered by the field team over the years:

(i) *meteorological balloons*: many unidentified flying objects have ultimately been attributed to reflection from helium balloons released to record meteorological data. However, the very rapid and erratic movements in the sky, especially the angular displacements, and the lack of strong winds, would seem to eliminate wind-driven objects as an explanation.
(ii) *the exhaust of a Harrier Jump Jet*: it is possible though unlikely that we were observing the exhaust of a harrier jet. The jump jet is able to hover in-place, to move rapidly horizontally and vertically and then hover again. This jet entered service with the British Airforce in 1969 while the US Marine Corp acquired a significant number between 1971 and 1976. This was clearly a possibility. However, Canada has never owned such jets and in any case the intensity of the white light would not seem to mimic jet exhaust.
(iii) *light reflected from a helicopter:* while clearly helicopters can remain stationary in the sky, it is unlikely that a helicopter could mimic the speed of horizontal translation across the sky. Also, as there was no moon, there would need to be another light source.
(iv) *commercial airlines*: as noted earlier several commercial jet aircraft were observed on this night, and could be clearly identified as such.

Immediately after the experience, we contacted the Canadian Forces Base, Chatham, N.B., a short distance north of the research site, which flew CF-101 Voodoos jets, and also had a Rescue Flight operating three CH-118 Huey helicopters. However, they did not admit to any knowledge of unusual sky phenomena on the night in question.

CONCLUSIONS

The phenomenon we observed on Canada Day 1973 therefore remains unexplained to this day (at least to us). However, sightings of unusual phenomena (many involving bright lights) in New Brunswick and the Maritimes in general are not that rare. For example, in New Brunswick in 2007, 24 sightings of unidentified flying objects were reported, according to an annual report

released by the Winnipeg-based *Ufology Research Institute*. The institute also reported a total of 836 sightings of unexplained phenomena in 2007 in Canada (Dittman and Rutkowski, 2014). If indeed it was a UFO that we witnessed, we were perhaps fortunate not to be abducted by aliens; although, of course, they could have just been extremely interested in our research on tidal inlet dynamics!!

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