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Commentaire

COMMENT ON "TOPOGRAPHICALLY-CONTROLLED DEGLACIAL HISTORY OF THE HUMBER RIVER BASIN, WESTERN NEWFOUNDLAND", BY M. J. BATTERSON AND N. R. CATTO

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The saga of glacial Lake Howley continues... (M.J. Batterson and N.R. Catto, 2001. Topographically-controlled deglacial history of the Humber River basin, western Newfoundland, *Géographie physique et Quaternaire*, 55: 213-228).

I first encountered what became Lake Howley in 1991 when I reviewed a manuscript proposing the brief existence of an 1 850 km^2 glacial lake, shortly before 12.3 ka BP, during deglaciation of the basins of Grand Lake and Deer Lake, west central Newfoundland. Another colleague and I concurred with revision of the manuscript then rejection of its successor, based on long lists of objections to the interpretation of evidence, and the non-consideration of alternative scenarios. I suggested the name for the lake, in case its existence could be adequately demonstrated, honoring J.P. Howley, second Director of the Newfoundland Geological Survey, after whom a railway town was named, the site of which was covered by the proposed lake. The rejected paper later appeared in a UK journal (Batterson *et al.,* 1993) with acknowledgement to reviewers for "useful discussion", thus ensuring that we would not be chosen as reviewers again.

I wrote a Discussion of this paper (Brookes, 1995), concisely outlining objections, which were answered by the authors (Batterson *et al.,* 1995). In the same year, on a CANQUA field excursion in western Newfoundland led by two of the authors, the route passed a new exposure which added definitive evidence against the proposed existence, extent, and age of glacial Lake Howley, and which was recognised as such (albeit quietly) by both parties to the dispute (Batterson, 1997; Brookes, 1997).

Batterson (1997) and later in a provincial government report (Batterson, 2003), and then in the present paper (Batterson and Catto, 2001, published in 2003, the second author appearing as supervisor of the dissertation), gave glacial Lake Howley a "revised configuration", reducing its size to 650 km^2, and restricting its extent to the trough occupied by Grand Lake, the deepest glacial trough in insular Newfoundland (Batterson and Catto, 2001: 222-223). Overflow northeastwards was obstructed by glacial ice extending to Halls Bay, whereas an outlet was identified at its west extremity, draining into Harrys River lowland.

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Brookes (1995) objected to this outlet on the grounds that deposits around the supposed western outlet, identified as outwash by Batterson *et al.* (1993), were previously mapped (and later confirmed) as subglacial (Brookes, 1974; Grant, 1991). These deposits continue southwest along the flank of Harrys River lowland, where an esker system crosses the Indian Head Range through meltwater channels and a glacial trough into the hummocky Robinsons Head moraine inland of Stephenville. Abutting this moraine, a marine kame delta at 29 m is dated at 12.6 ka BP, the radiocarbon date of shells contained in stratified sands deposited nearby in relation to this sea-level (Brookes, 1977). Thus, not only were the "outwash" deposits near the proposed outlet of Lake Howley misinterpreted, but the Harrys River lowland was ice-covered as far as Stephenville at 12.6 ka BP, and could not therefore have been the route followed by Lake Howley overflow. The interpretation of Brookes (1995), based on previous work (Brookes, 1970, 1974, 1977) has been disputed in an obviously self-serving interpretation of radiocarbon dates from further west of Stephenville (Batterson *et al.,* 1995; Bell *et al.,* 2001, 2002), which leaves sufficient time for Harrys River lowland to become an ice-free overflow route of Lake Howley.

Apart from differences of interpretation at the Lake Howley outlet and beyond, Batterson and colleagues have omitted consideration of a more parsimonious interpretation of shoreline features above Grand Lake, an objection originally raised by Brookes (1995). Features such as deltas and weakly developed levels interpreted as strandlines (Batterson and Catto, 2001: 221; Batterson, 2003: 32) occur on the steep slopes of Grand Lake trough, not only Newfoundland's deepest glacial trough, but also adjacent to a major centre of glacial outflow on the Topsails Plateau, which, the present paper shows, shed ice westwards towards Gulf of St. Lawrence, across this trough. It is therefore least likely that the trough was deglaciated earlier than surrounding plateaus and lowlands. These shoreline features are more easily interpreted as formed in water bodies accumulated between plateaus deglaciated by surface downwasting and glacial ice lingering in Grand Lake trough, that is as glacier marginal lakes. Such an origin is noted by these authors as proposed earlier for ice-marginal deltas around nearby Birchy Lake (Liverman and St. Croix, 1989), but it is not considered for the Grand Lake features in the present paper or other publications cited here. Nor is any evidence or glaciological

explanation given of such a strange pattern of deglaciation, despite the prominence given the term "topographically controlled" in the 1993 and present papers. All that is offered in the latter is: "glacial Lake Howley developed rapidly during deglaciation as ice retreated across the Grand Lake basin. (…) The reconstruction represents the cumulative geomorphic signature of several temporary configurations, rather than a single lake" (Batterson and Catto, 2001: 220).

Even erosion of the putative Lake Howley overflow channel now followed by Junction Brook, at the northern extremity of Grand Lake, attributed by Batterson and Catto (2001: 223) to ice retreat from this locality, could have been achieved by drainage of a late-stage ice-marginal lake, with ice remaining (decaying) in Grand Lake trough. It is no more than speculation to assert that this channel was eroded by short-lived, high-volume overflow from a deglaciated Grand Lake trough (Batterson and Catto, 2001: 223), because no evidence is provided to show that this could not have happened at any other locality earlier in deglaciation. At least, this and the glacier-marginal alternatives could have been debated. Much else is absent from the argument in this and the related papers cited here, which seems to be aimed at supporting the original unlikely postulate, rather than assessing the evidence to arrive at a working hypothesis. Lake Howley has been "reconfigured" once; time now for its disappearance.

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REPLY TO COMMENT ON "TOPOGRAPHICALLY-CONTROLLED DEGLACIAL HISTORY OF THE HUMBER RIVER BASIN, WESTERN NEWFOUNDLAND"

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We are pleased to note that Dr. Brookes continues his interest in the Quaternary geology of Newfoundland. Although we respect the work of Dr. Brookes and acknowledge his many contributions to research in Newfoundland, we must disagree with his comments on glacial Lake Howley. We, among with other colleagues, regrettably have a long standing difference of opinion with Dr. Brookes regarding the re-interpretation of the late-glacial history of western Newfoundland. The publication of the Batterson *et al.* (1993) paper in the *Journal of Quaternary Science*, in which glacial Lake Howley was introduced as a feature of deglaciation in western Newfoundland, generated a useful and informative discussion and reply (Batterson *et al.*, 1995; Brookes, 1995). New exposures of Quaternary sediment at the mouth of Deer Lake allowed for a continued discussion of late-glacial events in the Humber River valley (Batterson, 1997; Brookes, 1997). Subsequently, a reappraisal of exposures of Quaternary sediment by Bell *et al.* (2001) was also the subject of a discussion and reply (Bell *et al.*, 2002; Brookes, 2002).

Dr. Brookes' discussion of our current paper appears to have two main thrusts. Firstly, that glacial Lake Howley could not have drained through the Harrys River valley into northern St. George's Bay because this area was ice-covered at 12.6 ka.

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