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Commentaires

COMMENTS ON "DÉGLACIATION DE LA VALLÉE SUPÉRIEURE DE L'OUTAOUAIS, LE LAC BARLOW ET LE SUD DU LAC OJIBWAY, QUÉBEC", BY JEAN VEILLETTE

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VEILLETTE (1983) questioned the value of the mysid, *Mysis relicta* as a biological indicator of maximal paleolacustrine transgression. The environmental conditions required for *Mysis relicta* clearly indicate that this species is capable of tolerating a wide range of lake conditions.

The distribution of *Mysis relicta* in the freshwaters of North America is limited by temperature, oxygen and light conditions. The upper thermal limit for this species is from 18°C to 22°C (RICKER, 1959). JUDAY and BIRGE (1927) found *Mysis relicta* in water with an oxygen content of less than 1 cc/l in Green Lake and Trout Lake, Wisconsin. HOLMQUIST (1959) determined that mortality of this species followed within a few days when they were subjected to a supersaturation of oxygen. The supersaturation of oxygen in the epilimnion of lakes may account for the relative absence of *Mysis relicta* from surface waters (HOLMQUIST, 1959).

JUDAY and BIRGE (1927) observed negative phototropism of *Mysis relicta.* LARKIN (1948) noted that this species can exist in water when temperatures are between 16°C and 18°C, provided that this species is not subjected to light. This species was collected at Lac La Ronge, Saskatchewan, at night, when the water temperature was 20°C (RICKER, 1959).

Mysis relicta is incapable of swimming against currents greater than 10 cm/sec (DORMAAR, 1970). The conjunction of environmental and biological conditions required for *Mysis relicta* indicate that maximal paleolacustrine transgression was necessary for this species to be distributed to present day lakes which are located in regions of maximum uplift.

This argument is further reinforced by the fact that other glacial relict species, including *Senecella calanoides, Limnocalanus macrurus* and *Pontoporeia affinas*, commonly occur with *Mysis relicta.* The deep-water copepods, *Limnocalanus macrurus* and *Senecella calanoides*, are planktonic species which are incapable of swimming against currents (HUTCHINSON, 1967).

MARTIN and CHAPMAN (1965) determined the distribution of glacial relict species in Algonquin Park. Twelve lakes in the Algonquin Park region contain glacial relict species. The presence of these species was considered to be the result of a sluicing-up process associated with a readvance of the glacier from the Mattawa and Ottawa valleys (MARTIN and CHAPMAN, 1965). HARRISON (1970) did not find evidence for a readvance in the region described by MARTIN and CHAPMAN (1965).

In this case, the distribution of *Mysis relicta* and other glacial relict species in Algonquin Park is extremely important. The Main Lake Algonquin shoreline has not been traced above an elevation of 380 m (CHAPMAN, 1954). The upper mappable limit of Main Lake Algonquin is not traceable beyond Bernard Lake, Ontario. *Mysis relicta* is the only glacial relict species which occurs in this lake (MARTIN and CHAPMAN, 1965).

Mysis relicta, Senecella calanoides and *Pontoporeia affinas* colonized lakes in Algonquin Park which occur at a maximum elevation of 381 m. Since *Senecella calanoides* and *Pontoporeia affinas* are present in lakes at this maximum elevation, maximal paleolacustrine transgression, associated with Main Lake Algonquin, flooded the twelve lakes described by MARTIN and CHAPMAN (1965). The postulated sluicing-up process was disproven by HARRISON (1970). Since the planktonic species are incapable of swimming against currents (HUTCHINSON, 1967), it is necessary that Main Lake Algonquin flooded the Algonquin Park lakes which contain the glacial relict species because maximal paleolacustrine transgression occurred during the Main Lake Algonquin stage.

The mysid, *Mysis relicta*, also occurs with *Pontoporeia affinas* and *Senecella calanoides* in lakes which are located in Algonquin Park, at a maximum elevation of 381 m (MARTIN and CHAPMAN, 1965). *Mysis relicta* probably colonized the Algonquin Park lakes with *Pontoporeia affinas* and *Senecella calanoides* during the late stages of Main Lake Algonquin because this mysid is incapable of swimming up currents which are greater that 10 cm/sec.

The author considers the colonization of certain lakes in Algonquin Park by glacial relict species to have occurred during the late stage of Main Lake Algonquin because glaciolacustrine deposits associated with Main Lake Algonquin have not been recognized in north-

eastern and northwestern Algonquin Park (FORD, 1982; GEDDES, 1982). Maximal transgressive paleolacustrine sediments would not be well developed and glacio-fluvial processes would have reworked the sediments shortly after 10,600 years BP, when Main Lake Algonquin terminated (KARROW *et al.*, 1975). The second possibility for explaining the present distribution of glacial relict species in Algonquin Park is that Main Lake Algonquin bordered a remnant ice lobe which blocked the Ottawa valley. The depth of water at the ice margin may have been too deep for extensive beach development above Bernard Lake.

In either case, glacial relict species colonized the Algonquin Highland lakes when Main Lake Algonquin flooded the region. The distribution of *Mysis relicta* in regions of maximal paleolacustrine transgression should not be ignored. Contrary to the opinion of VEILLETTE (1983), *Mysis relicta* is very tolerable to a wide range of lake conditions, particularly in Canada. This glacial relict species can offer a great amount of information concerning the determination of maximal paleolacustrine margins and regions of subsequent uplift after deglaciation.

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