Title: High-density rearing of white sturgeon *Acipenser transmontanus* induces white sturgeon iridovirus disease among asymptomatic carriers.
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Abstract:
This study was conducted to determine the range of initial stocking densities that would result in a viral disease outbreak in fish known to be asymptomatic carriers of white sturgeon iridovirus (WSIV). To demonstrate the use of rearing density as a stressor to induce WSIV disease, juvenile white sturgeon were randomly stocked into 50-litre circular flowthrough tanks, in triplicate, at initial densities of either 3, 5, 9 or 13 g/litre and represented low (L), medium (M), high (H) and very high (VH) density treatments, respectively. Cellular changes were apparent in the first moribund fish sampled from each treatment group within 16 days following initial rearing, although WSIV disease signs were inapparent, suggesting that these fish were carriers of WSIV and that it was being amplified. Infected cells were also apparent in the first mortalities sampled in the H, M and L density groups on days 4, 11 and 16, respectively. During the last 10 days of the study, noticeable disease signs were apparent in all treatment groups, except for the L density treatment tanks. In general, the smallest fish in the tanks exhibited the greatest incidence of clinical symptoms of WSIV disease. Mortality trends, histological results and presence of clinical disease signs within treatment groups suggested that a low-level infection persisted in the M and L groups, and the infection manifested to a disease state in the H and VH groups. Results demonstrated that the sturgeon harboured WSIV prior to the initiation of the study and suggested that WSIV contributed to mortality. The inability to detect WSIV-infected cells in skin samples from fish at initiation of the study further supported stress as inducer of WSIV manifestation. A relationship between the initial stocking density and occurrence of disease leading to mortality was suggested. The need to minimize stress to reduce the risk of outbreaks of WSIV under culture conditions was emphasized.