

Abstract

Within the western Great Lakes (WGL) region of the USA (Michigan, Minnesota, and Wisconsin), the ecological impact that the North American beaver *Castor canadensis* (hereafter, “beaver”) has on coldwater streams is generally considered to negatively affect salmonid populations where the two taxa interact. Beavers are common and widespread within the WGL region, while coldwater streams that support salmonid populations are scarcer landscape features; as such, all three states currently prioritize the habitat needs of salmonids in portions of each state by conducting beaver control in coldwater tributaries. In this paper, we review the history of beaver–salmonid interactions within the WGL region, describe how this relationship and management actions have evolved over the past century, and review all published studies from the region that have evaluated beaver–salmonid interactions. Our review suggests that beavers’ impact varies spatially and temporally depending on a variety of local ecological characteristics (e.g., stream gradient and prevalence of groundwater inputs). We found that beaver activity is often deleterious to salmonids in low-gradient stream basins but is generally beneficial in high gradient basins and that ample groundwater inputs can offset the potential negative effects of beavers by stabilizing the hydrologic and thermal regimes within streams. However, there was an obvious lack of empirical data and/or experimental controls within the reviewed studies, which we suggest emphasizes the need for more data-driven beaver–salmonid research in the WGL region. Resource managers are routinely faced with an ecological dilemma between maintaining natural environmental processes within coldwater ecosystems and conducting beaver control for the benefit of salmonids; this dilemma is further complicated when the salmonids in question belong to nonnative species. We anticipate that future beaver–salmonid research will lead to a greater understanding of this ecologically complex relationship, allowing managers to be better informed of when and where beaver control is necessary to achieve the desired management objectives.

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