Studying the Passage of American Shad (*Alosa sapidissima*) at the Fishway on the Brunswick Hydroelectric Dam

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American Shad (*Alosa sapidissima*) is an anadromous fish species of significant ecological and economic importance in the Androscoggin River. However, shad populations have seen declines due to overfishing, industrial pollution, and dam building. Each year shad return to the Androscoggin River to spawn, but the Brunswick hydroelectric dam prevents their upstream passage. Although a fish ladder is installed on the dam, it passes only a handful of shad each year. In collaboration with the Androscoggin River Alliance and Brookfield Environmental, the dam owner, I conducted an experimental study that aims to determine if a fish lift installed at the Brunswick dam would attract shad into a collector bucket. A fish lift acts as an elevator for fish and could be the best solution short of removing the dam for increasing the annual shad migration on the Androscoggin. As part of the study, an electrically powered flow inducer consisting of two spinning turbines was installed at the base of the dam. The flow inducer increased the flow of water (200 cubic feet per second) to mimic the conditions of a fish lift. Underwater cameras were placed in the river to monitor and quantify shad entering near the flow inducer. The flow inducer was then turned on and off every 24 hours to provide experimental and control conditions. Preliminary evidence suggests placement of a fish lift would have a significant effect on its efficacy.