

Chapter Six: Conclusions

The removal of Edwards Dam in 1999 was a unique case of a dam removal, in that the benefit-cost analysis which preceded removal included an estimate of the benefits that would arise from the post-dam fishery. Whenever a dam is removed, continued data collection, assessment and monitoring are necessary. The survey described in this thesis collected post-removal data which was used in the present analysis of the post-Edwards Dam Kennebec River fishery. A major part of this analysis is a comparison between the economic benefit estimates made prior to dam removal by Boyle et al. (1991) and the estimates made from the present study.

The mail survey, entitled Kennebec River Survey was sent to a total of 1,530 anglers. One-time access was granted to the mailing lists of the Maine Coastal Conservation Association (CCA) and Maine Trout Unlimited (TU). 450 surveys were sent to CCA members, and 1,080 were sent to TU members. 45.76% of CCA members returned the survey, as did 37.01% of TU members, resulting in a total response rate of 39.59%.

Responses to questions regarding post-dam removal perceptions of the river and fishery in general suggest that most respondents held positive perceptions of the dam removal decision. 83.30% of respondents responded that they did indeed think removal was beneficial; 59.86% of respondents felt that water quality has improved since removal; 48.71% of respondents felt that the amount of wildlife surrounding the river had increased; and 66.55% of all respondents reported that they felt the numbers and types of fish in the river have increased since removal of Edwards Dam.

Significant increases in total travel costs were found by way of quantitative comparisons to the responses of the study by Boyle et al. The estimate of total travel costs to the freshwater section (Milstar Dam in Waterville to the transmission line crossing in Augusta) of the lower Kennebec River found by Boyle et al. was, in 2005 U.S. dollars, was \$103.69. The corresponding average value from the present study was \$332.66. For the tidal water section (transmission line crossing to Chops Point) of the river, total travel costs were estimated by Boyle et al. to be \$136.59; the present study found this value to be \$371.47. Total annual economic impacts from the freshwater section were estimated by Boyle et al. at \$159,595.00. Results from the present study estimate this value to be \$511,963.00. Total annual economic impacts accruing from the tidal water section were estimated at \$395,787.00 by Boyle et al. and \$1,076,526.00 by the present study. It is clear that the present study has found substantially larger total travel costs than were estimated by Boyle et al. (1991).

It should be noted again that the values above reported by Boyle et al. contained responses only from adjacent anglers, anglers who live in adjacent communities to the Kennebec River. Nonetheless, these large increases in economic benefits imply that the pre-removal study underestimated the economic potential of the post-removal fishery.

Regression analyses were done in hopes of determining which factors affected responses to the number of freshwater fishing days per year, number of tidal water fishing days per year and willingness-to-pay for one-day guide trips targeting brown trout, smallmouth bass, striped bass and Atlantic salmon.

Fishing days per year to the freshwater section of the lower Kennebec River were significantly affected by the number of years since last fishing the stretch and also respondent income. Days per year to the tidal section were significantly affected only by the number of years since last fishing the stretch.

Regressions attempting to explain the willingness-to-pay responses yielded mixed results. Willingness-to-pay for the brown trout fishing trip were significantly affected by whether or not the respondent targets brown trout, income, years of education and age. Willingness-to-pay for the smallmouth bass trip was significantly affected by whether or not the respondent targeted brown trout or smallmouth bass, and also income.

The willingness-to-pay for a striped bass fishing trip was significantly affected by the number of years since last fishing the tidal water stretch of the river and income. Willingness-to-pay for the Atlantic salmon fishing trip was significantly affected by the number of years since last fishing the tidal water stretch, income and also age.

The estimates made in this thesis can serve as an ex-post analysis of the economic benefits of the post-Edwards Dam Kennebec River fishery. Quantitative comparisons conducted in this thesis indicate that economic benefits have increased since removal of the Edwards Dam. Comparisons between total travel costs reported by Boyle et al. (1991) and analogous costs determined from the present mail survey show that the estimates made by Boyle et al. regarding the value of the Kennebec River post-Edwards Dam removal were underestimates. Removal of Edwards Dam has led to significant increases in economic benefits from the lower Kennebec River recreational fishery.