

Instream Values Symposium Agenda 2008

8:00 - Registration

8:30 **Tryg Hoff - Department of Ecology**
Introduction and Overview

8:45 **Mark Plummer Ph. D. - NOAA Fisheries**
Valuing Multiple Programs to Improve Multi-Species Fisheries

Regulatory efforts to conserve natural resources rarely consist of a single program covering a single type of resource. Evaluating the benefits and costs of multiple programs affecting multiple resources presents regulators with a problem because the net benefits of any one program depends on the effects of the others. Washington state is currently considering a number of different programs that would each mitigate negative impacts upon its multi-species fisheries. A program-by-program attempt to estimate these net benefits independently would be expensive and cumbersome. We use the Stated Preference method to estimate benefit functions for different types of fish, which allow programs to be evaluated incrementally conditional upon the amount of fish population improvements to date.

9:30 **Noelwah R. Netusil Ph. D., Stanley H. Cohn Professor of Economics, Reed College**
Matthew Summers, Reed College
Valuing Fisheries Benefits from Instream Flows using the Hedonic Price Method

The Oregon Water Trust (OWT) uses a market-based approach to protect and enhance instream flows in Oregon. Detailed data on the price and characteristics of OWT transactions from 1994 to 2007 are used to estimate the relationship between price and transaction type (leases, purchases, stored water contracts, conserved water projects, and water use agreements), geographic location, and presence and type of fish species. The effect of fish species is modeled using several different approaches including if a species is listed as threatened or endangered under the Endangered Species Act.

10:15 - Break

10:30 **John Duffield, Ph.D. – University of Montana**
Non-market Valuation of Instream Flows for Fisheries: Methods, Applications, and Validation

Changes in instream flows intended to benefit fisheries potentially result in positive changes in a wide range of environmental services. These services are largely nonmarket in nature and include both direct use, including recreational or commercial fisheries, boating, water quality changes (for example impacting drinking water services), and impacts on proximate residential property, as well as passive use values. The latter may derive from existence or bequest motives for the integrity or health of a fishery or the broader ecosystem. Nonmarket methods include travel cost, hedonic, contingent valuation, and choice experiments. A number of applications will be presented, including recreation use studies of Montana's Big Hole and Bitterroot River, the entire Upper Missouri River Drainage in Montana (for purposes of a water rights adjudication), and total valuation studies using contingent valuation for streamflows in the Upper Missouri, and for streamflows on critical spawning tributaries to benefit several species of special concern – Arctic grayling and Yellowstone Cutthroat. The latter study, conducted in 1992, focused on validation of stated preference methods through a paired comparison of cash transactions and contingent valuation, and was replicated in 2005. A final application is to Colorado River flows through the Grand Canyon, where both direct recreational use (anglers, whitewater boaters) and passive use values for ecosystem services (including the endangered humpback chub) have been estimated.

11:15 **John Loomis Ph. D. - Colorado State University**
Methodologies for estimating use and passive use economic values of instream flows for recreation and fisheries.

Several methods will be presented that have been employed to estimate how recreation use values change with instream flow, and passive use value of fisheries. The methods include the Travel Cost (TCM) and Contingent Valuation Methods (CVM) for recreational fishing and instream flow based recreation, as well as CVM of passive use values of fisheries. In addition, I illustrate the potential of using actual market transactions for instream flow and benefit-transfer of existing values. Results are presented for the economic values of instream flow for recreation in three California rivers, several rivers in Colorado for rafting, fishing and kayaking, one river in Idaho (aesthetic value of water over Shoshone Falls) and New Mexico (rafting). I also present market transaction values of water for environmental purposes.

12:00 – Lunch

Scott Cole, EnviroEconomics Sweden, and Swedish Agricultural University (SLU) in Umeå, Sweden

The Swedish Agricultural University in Umeå Sweden, along with Karlstad University in Karlstad, Sweden, is leading a 10-year multidisciplinary project to value changes in river management. The third phase (2008 – 2010) will develop a framework to estimate the socio-economic effects of alternative river regulation and focus on two “case study” rivers in Sweden. Economists will identify and value socio-economics changes associated with the river management objectives. This process will include valuation surveys aimed at identifying the value individuals hold for, improved sportsfishing, aesthetic/cultural values, and ecological values. We will also examine the environmental and socio-economic costs associated with lost hydropower production and the costs of fish/habitat measures.

1:00 Mark Buckley Ph.D./ Ernie Niemi - ECONorthwest *Instream Values of Watershed-Restoration Programs*

We will describe our experience with watershed-restoration programs, in the Lake Tahoe Basin and elsewhere that involve revealing and estimating values for ecosystem services associated with streams and watersheds. We also will illustrate the benefit-cost framework developed by the California Department of Water Resources for evaluating proposals seeking funding for watershed-restoration and other projects.

1:45 Douglass Shaw Ph. D. - Dept of Agricultural Economics, Texas A&M University *Allocating Resources in an Uncertain World: Water Management and Endangered Species*

Instream flows may be essential in protecting aquatic species that are threatened or endangered. An economic model of the optimal allocation of water under pure uncertainty is developed, with particular attention paid to the situation when a species characterized by critical depensation is affected by instream flows. We adopt the notion of pure uncertainty that Frank Knight and Daniel Ellsberg intended, which applies when decision makers cannot reduce their uncertainty to a unique probability distribution. Following recent work by Hansen, Sargent and others, we employ robust control as a way to deal with this problem.

2:30 Break

- Afternoon Discussion -

2:45 Daniel D. Huppert Ph. D. - University of Washington *Summary of Talks/Studies and discussion development with symposium panel and attendees*

- How can we develop a model that reliably assigns an economic value to fish caught based upon key characteristics – like location, species, population status, fish type (hatchery/wild), and fishery type (recreational/commercial/subsistence)?
- Can we expand that valuation model to include non-consumptive values – existence, bequest, and observation values?
- How would be utilize these fish values to develop a useful tool for valuing instream flows?
- Do existing instream (and out-of-stream) flow value studies reflect all categories of value (consumptive/non-consumptive, recreational and commercial, passive use)?
- What is a practical means of incorporating uncertainty into a useful model for routine agency decisions?
- If perfection in valuation methodology is not feasible, what is the baseline? How could we judge whether a given model is defensible?

4:55 Wrap-up