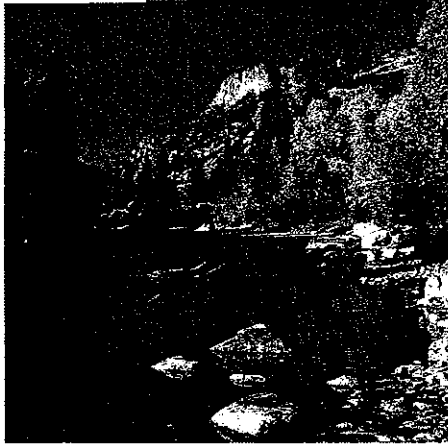


# Healthy Rivers, Healthy Economy



ENHANCING INSTREAM FLOWS WILL BENEFIT  
COLORADO'S ENVIRONMENT AND ECONOMY

**e**

**ENVIRONMENTAL DEFENSE**

finding the ways that work

# Healthy Rivers, Healthy Economy:

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COLORADO'S ENVIRONMENT AND ECONOMY

AUTHOR

**Martha G. Roberts**

**e**

**ENVIRONMENTAL DEFENSE**

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**Contact:**

Martha G. Roberts  
(303) 440-4901

*Cover photos (clockwise from top left):* Cache la Poudre River near Rustic, CO (Sebastien Windal/iStockphoto); fly-fishing on Arkansas River (Linda Mirro/iStockphoto); white water rafting on Arkansas River (Ben Blankenburg/iStockphoto); couple birdwatching (Jacom Stephens/iStockphoto).

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## Executive Summary

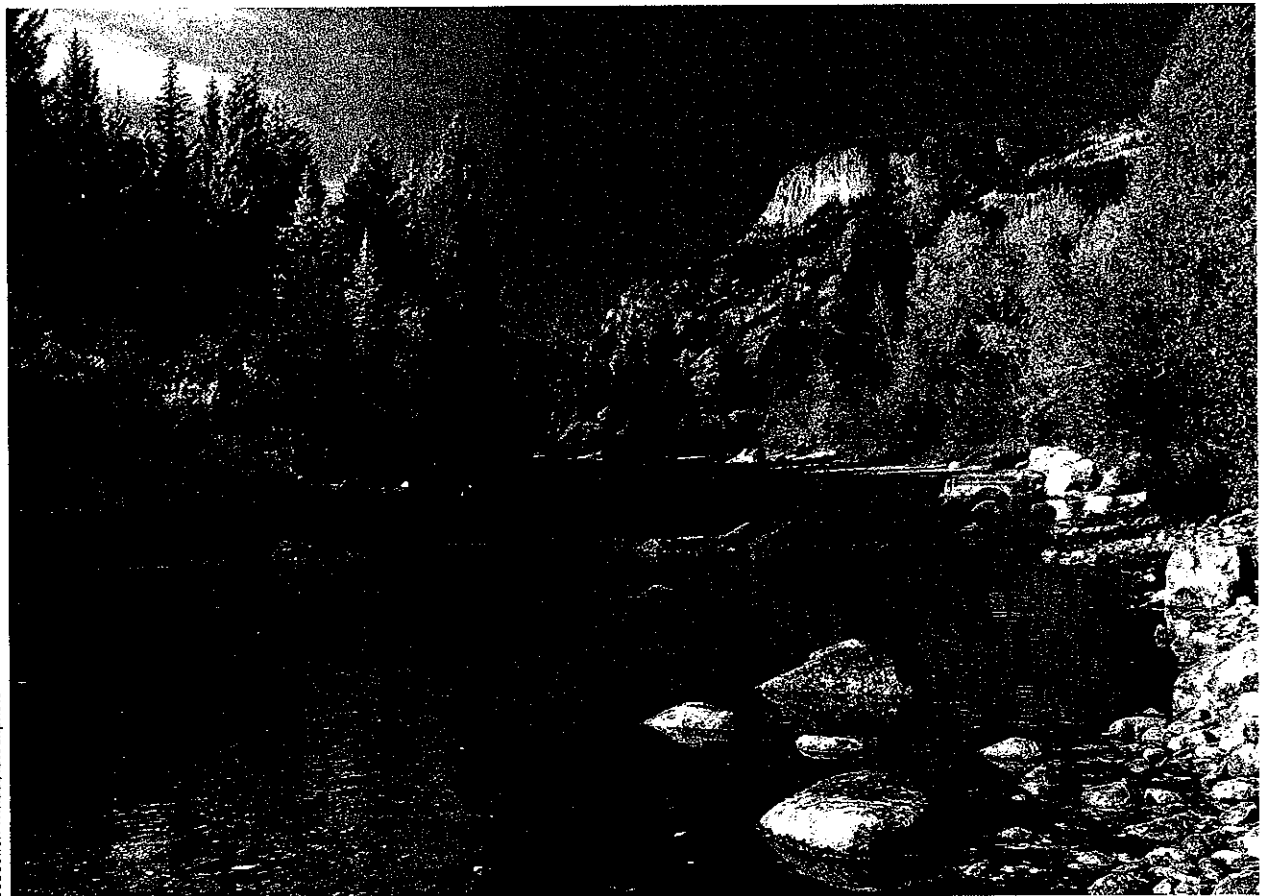
Overall, slightly increasing instream flows across Colorado would generate \$4.4 million dollars in income and 340 additional jobs.

It may seem surprising, but keeping more water in Colorado's rivers and streams adds dollars to the bank accounts of Coloradans. Benefits for healthy ecosystems are already clear, but recent research also confirms that keeping more water in Colorado rivers and streams directly benefits our state's economy as well.

New research shows that higher river flow levels, or "instream flows," generate significant value for Colorado citizens by supporting our state's important recreational economy. Prof. John Loomis of Colorado State University recently assessed how rafting and fishing expenditures in Colorado respond to variation in instream flow levels. He found that increased river flows lead to increased Colorado income. Overall, slightly increasing instream flows across Colorado would generate \$4.4 million dollars in income and 340 additional jobs from increased rafting and fishing expenditures alone. Colorado's other recreational industries that benefit from healthy river systems may also show a similar response, amplifying the benefits for the state's economic vitality.

Instream flows support Colorado's spectacular natural environment and directly increase economic activity in the state. Programs that support instream flow rights are a good value for Colorado citizens as well as for Colorado's environment.

The Cache la Poudre River near Rustic, CO.



Sebastien Winda/Stockphoto

# Instream flows: A valuable use of Colorado's precious water supplies

Most of the major rivers in the state are over appropriated, leaving little or no water for the wildlife and recreational industries they support.

Water is the lifeblood of Colorado's economy. It fuels two of the state's principal industries: agriculture and tourism. Colorado's rivers and streams also add immeasurably to our quality of life by nourishing our state's breathtaking natural environment.

But Colorado's water is an increasingly scarce resource. Most of the major rivers in the state are over appropriated, often leaving little or no water for the wildlife and recreational industries they support. Population growth along the Front Range and climate change both promise to increase the stress on Colorado's rivers and streams.

With that stress comes conflict. Today's water wars pit farmers against cities, West Slopers against Front Rangers, groundwater users against surface-water diverters. The com-

batants use a staggering array of resources to further their causes.

Consumptive users of water in Colorado enjoy the full panoply of legal and market resources to protect their rights. But what about those who seek to protect the streams themselves? They are limited for recourse to the "instream flow" program administered by the Colorado Water Conservation Board's Stream and Lakes Protection Section.

Instream flow rights provide a certain amount of water for a certain portion of a stream. They are different from other water rights because they can only be held, acquired or appropriated by the Colorado Water Conservation Board. As a result, the ability to protect water flows in Colorado's rivers and streams is limited by the resources available to, and the political will of, the Water Conservation Board.

Interest in expanding opportunities to protect river flows in Colorado is rapidly growing. One particularly promising idea that is gaining momentum at the Statehouse is creating financial incentives for donations of instream flow rights to the Water Conservation Board, similar to the incentives already available for landowners who donate easements on their property.

But barriers to increased support for instream flows still exist. Opponents of increased instream flows often justify continued limitations by asserting that, unlike agricultural, municipal and industrial uses of water, instream flows do not create any economic benefits. However, a close analysis of Colorado's economy demonstrates exactly the opposite: Higher instream flows add significantly to Colorado's economy by increasing recreational spending.

Wildlife watching is a popular recreational activity that contributes significantly to Colorado's economy.



Jacorn Stephens/Stockphoto

# Water-based recreation is a vital contributor to Colorado's economy

**Outdoor recreation is a key component of Colorado's economy, contributing more than \$10 billion annually. The outdoor recreation industry supports more than 107,000 jobs across Colorado.**

Outdoor recreation is a key component of Colorado's economy, contributing more than \$10 billion annually.<sup>1</sup> The outdoor recreation industry supports more than 107,000 jobs across Colorado, and serves as an engine of reliable job growth and economic development in both urban and rural regions of the state.<sup>2</sup> In addition, Colorado's recreational economy produces \$7.6 billion annually in retail sales and services statewide—representing 4% of the gross state product, and generating nearly \$500 million in annual state tax revenue.<sup>3</sup>

Sufficient river flows are critical for healthy natural ecosystems that are the foundation of Colorado's dynamic outdoor industry. Many of Colorado's most popular outdoor activities are dependent on instream flow resources, including fishing, waterfowl hunting and rafting. Higher instream flow levels lead to increased participation in many of these recreational sports.<sup>4</sup> Higher instream flows increase fish populations and catch rates and also improve the quality of river rafting experiences.<sup>5</sup> Healthy riparian ecosystems are also important for wildlife and Colorado's wildlife viewing industries.

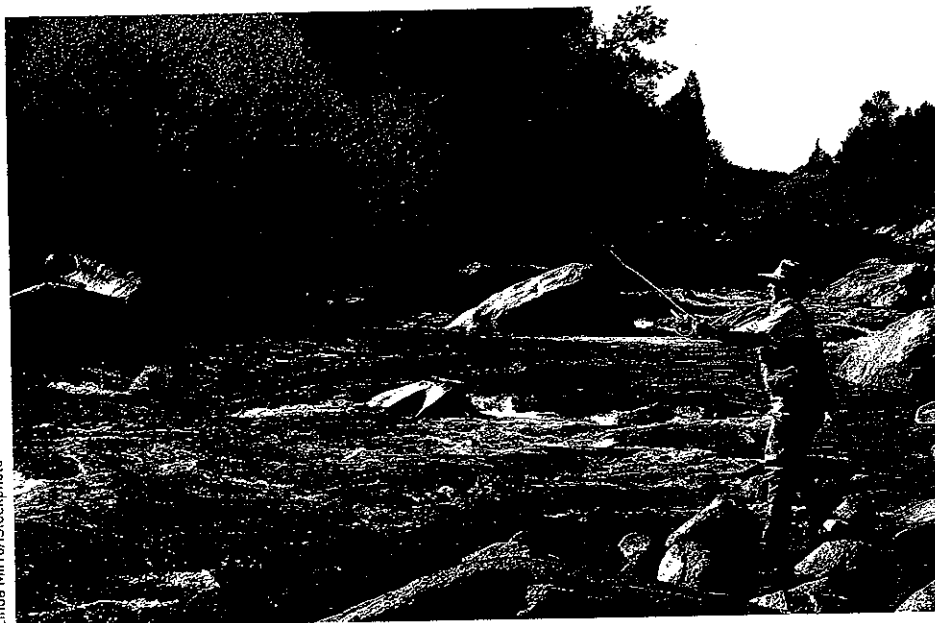
Each of these industries contributes significantly to the health of Colorado's economy. In 2002, Colorado citizens and visitors participated in more than 8 million days of fishing, adding \$820 million to the state economy and supporting almost 11,000 jobs.<sup>6</sup> Colorado also witnessed 670,000 days of small game hunting in 2002, primarily of waterfowl, that contributed \$154 million and more than 2,000 jobs to the state economy.

Wildlife watching activities contributed \$940 million and 13,000 jobs. In 2006, more than 500,000 user days of commercial river rafting added \$139 million to the state economy.<sup>7</sup> Many other important outdoor industries—kayaking, hiking, among many others—also depend on sufficient instream flows and contribute still further to Colorado's \$10 billion recreational industry.

Annual Revenue from Recreational Activities in Colorado

Activity	Revenue
Fishing	\$820 million
Small Game Hunting	\$154 million
Wildlife Watching	\$940 million
River Rafting	\$139 million

The fishing industry adds \$820 million to the state economy and supports nearly 11,000 jobs.



Linda Mirra/Stockphoto

## Recent research underscores the importance of instream flows for the outdoor industry

Recreational activities leave an equal amount and quality of water in the river for downstream uses. As a result, values of instream flow are additive.

New research demonstrates the direct relationship between increased instream flow levels and higher recreational spending. A recent study by Prof. John Loomis at Colorado State University evaluated how instream flow rates affect spending on rafting and fishing in Colorado.<sup>8</sup> The study found that slightly increasing water flow levels in Colorado rivers and streams would increase rafting expenditures by 6%, and fishing expenditures by 2%. This increase would generate \$4.4 million in income and an additional 340 jobs in Colorado from additional rafting and fishing expenditures alone.

In particular, Loomis found that increasing instream water flows on scenic rivers with relatively low flow levels had clear benefits. For example, one acre foot of additional instream flow in the Arkansas River was worth \$360 in additional state income from the Colorado rafting and fishing industries alone, and an additional acre foot of flow in the Poudre River was worth \$164 in additional rafting and fishing income.

Importantly, Loomis pointed out that these estimates capture only a portion of the value generated by instream flow. Recreational activities leave an equal amount and quality of water in the river for downstream uses. As a result, values of instream flow are *additive*: One acre foot of instream flow on the Arkansas generates \$360 in higher rafting and fishing related income, but the acre foot is still available to generate additional value downstream through uses for other recreation, wildlife habitat, scenic beauty or future consumptive use. On the other hand, consumptive water use can only generate value once. Values for instream flows are multiplied over a number of different uses and thousands of users who can each enjoy healthy rivers without diminishing the enjoyment of others.<sup>9</sup>

Increasing water flows in Colorado's rivers would not only make for a more thrilling rafting experience, but also benefit the state's economy.



Ben Blankenburg/Stockphoto



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## Conclusion: Increasing instream flows is a win-win for Colorado's environment and economy



Courtesy USGS

The federally-endangered Southwestern willow flycatcher is dependent on riparian areas in the San Luis Valley.

Existing research has demonstrated that instream flows provide a wide variety of ecosystem services, including dilution of wastewater, habitat for fish and other wildlife, and water purification, among many others. Instream flows also support populations of vulnerable species that might otherwise be listed as threatened or endangered under the Endangered Species Act, and support the recovery of already threatened or endangered species.

In addition to these environmental values, a growing body of studies demonstrates that using water supplies for instream flows creates direct benefits for Colorado's economy.

As Colorado faces the challenge of distributing its precious water supplies among an

increasing number of users, retaining water rights for instream flows is a clear win-win for our state's economy and environment. State policies that encourage the acquisition of instream flow rights for the Colorado Water Conservation Board will result in substantial economic benefits to Colorado citizens.

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## Notes

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- <sup>6</sup> Pickton and Sikorowski, 2004.
- <sup>7</sup> Colorado River Outfitters Association. 2006. Executive Summary: Commercial River Use in Colorado. Available at: [http://www.croa.org/pdf/2006\\_Commercial\\_Rafting\\_Use\\_Report.pdf](http://www.croa.org/pdf/2006_Commercial_Rafting_Use_Report.pdf).
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## **ENVIRONMENTAL DEFENSE**

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### **National Headquarters**

257 Park Avenue South  
New York, NY 10010  
212-505-2100

1875 Connecticut Avenue, NW  
Washington, DC 20009  
202-387-3500

3250 Wilshire Boulevard  
Los Angeles, CA 90010  
213-386-5501

1107 Ninth Street  
Sacramento, CA 95814  
916-492-7070

123 Mission Street, 28th Floor  
San Francisco, CA 94105  
415-293-6050

2334 North Broadway  
Boulder, CO 80304  
303-440-4901

18 Tremont Street  
Boston, MA 02108  
617-723-2996

4000 Westchase Boulevard  
Raleigh, NC 27607  
919-881-2601

44 East Avenue  
Austin, TX 78701  
512-478-5161

### **Project Offices**

1116 South Walton Boulevard  
Bentonville, AR 72712  
479-845-3816

East C-501, No.28 East Andingmen Street  
Beijing 100007 China  
+86 10 6409 7088