

# NATURAL VALUES: *Linking the Environment to the Economy*

## 8

## LAKES AND RIVERS

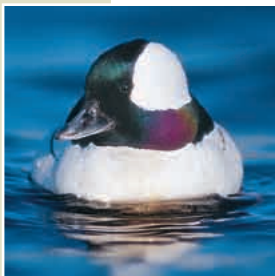
*Natural Values: Linking the Environment to the Economy* was developed by Ducks Unlimited Canada (DUC) to improve the environmental and economic understanding of natural systems. In Canada, policy, legislation and regulation efforts must accelerate to protect our important resources. To view other instalments in this series, visit [www.ducks.ca/consERVE/wetland\\_values/consERVE.html](http://www.ducks.ca/consERVE/wetland_values/consERVE.html)



CANADA'S LAKES AND RIVERS PLAY A VITAL ROLE in sustaining Canada's economy and the quality of life of Canadians. They provide us with a number of ecological goods and services including water sources for municipalities, irrigation and industrial processes; food; and recreation. Unfortunately, human activities are threatening the quality and quantity of water in our lakes and rivers. The quality of the water in our lakes and rivers is being degraded by regional overuse, increased sedimentation from soil erosion, pollution and the continued expansion of exotic invasive species. The degradation of riparian areas, the vegetated areas adjacent to lakes and rivers, also has negative implications for water quality in our lakes and rivers (see next fact sheet - *Riparian Areas*). Decreasing water levels in lakes and rivers are also a concern in many areas of Canada such as the Prairies, where total annual precipitation can be less than evaporation. Climate change may further alter the quantity and quality of water in our lakes and rivers.

At the end of the 20th century, the summer river flows in Alberta's major rivers were estimated to be only 60 per cent of the same rivers' flow at the beginning of the century. <sup>1</sup>

### Environmental Values



- Lakes and rivers are an **important source of freshwater**.
- Lakes and rivers help **replenish groundwater supplies**.
- Lakes and rivers provide **habitat for numerous species of plants and animals including species at risk**.
- Lakes **help control floods** by storing large amounts of water.
- Lakes and rivers are **essential components of the water cycle**.
- Lakes **moderate local climate** by absorbing heat in hot weather and releasing heat in cool weather.

## Economic Values

When lakes and rivers are degraded there is a financial cost incurred by society to replace the lost ecological goods and services through:

- 1 Increased water treatment costs
- 2 Increased illness and health care costs due to decreased water quality
- 3 Irrigation water shortage
- 4 Water hauling and the need to dig deeper wells
- 5 Increased costs for dredging sediment from waterways
- 6 Decreased property value from degraded aesthetic qualities
- 7 Decreased recreational opportunities
- 8 Decreased revenues from tourism activities associated with healthy lakes and rivers

*“We must now start viewing water both as a key to environmental health and as a commodity that has real value, and begin to manage it accordingly”*

– Environment Canada, 2003 <sup>2</sup>

### The Value of Canada's Lakes and Rivers

The value of freshwater to the Canadian economy is estimated to be between \$7.5 and \$23 billion annually, amounts that are equal to the gross figures for agriculture and other major economic sectors. <sup>3</sup>

In 2003, the Canadian commercial freshwater fishery produced revenue of \$83.7 million. <sup>4</sup>

Each year, approximately four million people participate in recreational fishing in Canada, producing an annual revenue of \$4.4 billion. <sup>5</sup>

Each year, several billion dollars are spent on treating and removing zebra mussels from the Great Lakes. <sup>6</sup>

The value of the ecological goods and services provided by the lakes and rivers of the Lower Fraser Valley in British Columbia have been estimated at \$8500/ha/year. <sup>7</sup>

The value of river-based recreation excluding fishing in the Grand River Watershed has been estimated at \$1.40/ha/year. <sup>7</sup>

### DUC Recommends That:

- **Canadians** educate themselves on the importance of lakes and rivers and the threats to these resources. Become active with an organization that conserves our lakes and rivers.
- **Educators** recognize and incorporate the environmental and economic values of lakes and rivers into their science, social studies, geography and economics curricula.
- **Non-governmental organizations** fund and deliver programs that conserve and protect lakes and rivers.
- **Governments** fund freshwater research and programming; develop policies and legislation to protect our lakes and rivers; provide incentives for those protect our lakes and rivers.

## What's Next? Fact Sheet 9: Riparian Areas

### Important Links

- [www.ducks.ca/conserve/wetland\\_values/conserve.html](http://www.ducks.ca/conserve/wetland_values/conserve.html)
- [www.ducks.ca/aboutduc/news/archives/2004/041115.html](http://www.ducks.ca/aboutduc/news/archives/2004/041115.html)

### Endnotes

- 1 Griffiths, M., Taylor, A. and D. Woynilowicz. 2006. *Troubled Waters, Troubling Trends: Technology and Policy Options to Reduce Water Use in Oil and Oil Sands Development in Alberta*. The Pembina Institute. 171 pp.
- 2 Environment Canada. 2003. Federal Water Policy. Accessed May 2006 at: [http://ncrweb.ncr.ec.gc.ca/water/en/info/pubs/fedpol/e\\_fedpol.htm](http://ncrweb.ncr.ec.gc.ca/water/en/info/pubs/fedpol/e_fedpol.htm).
- 3 Environment Canada. 2004. *Threats to Water Availability in Canada*. National Water Research Institute, Burlington, Ontario. NWRI Scientific Assessment Report Series No. 3 and ASCD Science Assessment Series No. 1. 128 pp.
- 4 Fisheries and Oceans Canada. 2005. Statistical Services. Accessed August 2005 at: [http://www.dfo-mpo.gc.ca/communic/statistics/commercial/landings/freshwater/2003\\_e.htm](http://www.dfo-mpo.gc.ca/communic/statistics/commercial/landings/freshwater/2003_e.htm).
- 5 Government of Canada. 2003. *Canada and Freshwater – Experience and Practices*. Accessed September 2005 at: <http://www.sdinfo.gc.ca/reports/en/monograph6/wateruse.cfm>.
- 6 International Joint Commission. 2002. *Eleventh Biennial Report on Great Lakes Water Quality*.
- 7 Olewiler, N. 2004. *The Value of Natural Capital in Settled Areas of Canada*. Published by Ducks Unlimited Canada and the Nature Conservancy of Canada. 36 pp.



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