



**Cover photos:** Landsat 7 satellite image of western Lake Erie Basin and Detroit River corridor provided by USGS Landsat Project; Upper left: angler with walleye (*Sander vitreus*) by Jim Barta; Middle left: lake sturgeon (*Acipenser fulvescens*) by Glenn Ogilvie; Lower left: *Hexagenia* by Lynda Corkum; Center: lake whitefish (*Coregonus clupeaformis*) by James Boase/U.S. Fish and Wildlife Service; Lower right: juvenile peregrine falcon (*Falco peregrinus*) by Craig Koppie/U.S. Fish and Wildlife Service; Bottom left: bald eagle (*Haliaeetus leucocephalus*) by Steve Maslowski/U.S. Fish and Wildlife Service.



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## 4.0 LITERATURE CITED

- Dolan, D.M. 1993. Point source loadings of phosphorus to Lake Erie: 1986-1990. *Journal of Great Lakes Research* 19(2):212-223.
- Eedy, R., J. Hartig, C. Bristol, M. Coulter, T. Mabee, and J. Ciborowski (eds.). 2005. *State of the Strait: Monitoring for Sound Management*. Great Lakes Institute for Environmental Research, Occasional Publication No. 4. University of Windsor, Ontario, Canada.
- Environmental Entrepreneurs. 2005. Effects of global warming on the state of Michigan. April Issue Brief. [http://www.e2.org/ext/doc/e2\\_michigan.pdf](http://www.e2.org/ext/doc/e2_michigan.pdf)
- Hartig, J.H. 1983. Lake St. Clair: Since the "Mercury Crisis." *Water Spectrum* 15:18-25.
- Hartig, J.H., and T. Stafford. 2003. The public outcry over oil pollution of the Detroit River. In *Honoring Our Detroit River: Caring for Our Home*, ed. John H. Hartig, pp. 69-78. Bloomfield Hills, MI: Cranbrook Institute of Science.
- International Association for Great Lakes Research. 2002. Research and management priorities for aquatic invasive species in the Great Lakes. International Association for Great Lakes Research. <http://www.iaglr.org/scipolicy/ais/index.php>
- Kiff, L.F. 2000. The current status of North American vultures. In *Raptors at Risk*, eds. R.D. Chancellor, and B.U. Meyburg, pp. 175-189. World Working Group on Birds of Prey and Owls. Surrey, British Columbia, Canada: Hancock House.
- Lee, D.H., R. Moulton, and B.A. Hibner. 1996. *Climate change impacts on western Lake Erie, Detroit River, and Lake St. Clair water levels*. Great Lakes-St. Lawrence Basin Project Report. Environment Canada and NOAA, GLERL Contribution #985. Ann Arbor, MI.
- Lofgren, B.M., F.H. Quinn, A.H. Clites, R.A. Assel, A.J. Eberhardt, and C.L. Luukkonen. 2002. Evaluation of potential impacts on Great Lakes water resources based on climate scenarios of two GCMs. *Journal of Great Lakes Research* 28:537-554.
- Mortsch, L.D., and F.H. Quinn. 1996. Climate change scenarios for Great Lakes Basin ecosystem studies. *Limnology and Oceanography* 40:903-911.
- Pimentel, D., L. Lach, R. Zuniga, and D. Morrison. 2000. Environmental and economic costs of nonindigenous species in the United States. *BioScience* 50:53-65.
- Price, J. 2006. Global warming and songbirds in Michigan. American Bird Conservancy. <http://www.abcbirds.org/climatechange/Michigan.pdf>
- Ryding, S. 1992. *Environmental Management Handbook*. Boca Raton, FL: Lewis Publishers.

*Time*. 1965. Time for transfusion. August 20. <http://www.time.com/time/magazine/article/0,9171,841998-1,00.html>

Upper Great Lakes Connecting Channels Study. 1988. Volume II. U.S. Environmental Protection Agency, Environment Canada, Michigan Department of Natural Resources, Ontario Ministry of the Environment.

U.S. Congress-Office of Technology Assessment. 1993. Harmful nonindigenous species in the United States. OTA-F-565. Washington, DC: U.S. Government Printing Office.

U.S. Environmental Protection Agency and Environment Canada. 1995. Practical steps to implement an ecosystem approach in Great Lakes management. <http://www.ijc.org/php/publications/html/toc.html>

U.S. Environmental Protection Agency. 2006. Climate. <http://yosemite.epa.gov/oar/globalwarming.nsf/content/climate.html>