

ScienceWatch Home
Interviews

Featured Interviews

Author Commentaries

Institutional Interviews

Journal Interviews

Podcasts

Analyses

Featured Analyses

What's Hot In...

Special Topics

Data & Rankings

Sci-Bytes

Fast Breaking Papers

New Hot Papers

Emerging Research Fronts

Fast Moving Fronts

Research Front Maps

Current Classics

Top Topics

Rising Stars

New Entrants

Country Profiles

About Science Watch

Methodology

Archives

Contact Us

RSS Feeds

Interviews

Analyses

Data & Rankings

2008 : July 2008 - New Hot Papers : Anton M. Scheuhammer

NEW HOT PAPERS - 2008
July 2008


Anton M. Scheuhammer talks with *ScienceWatch.com* and answers a few questions about this month's New Hot Paper in the field of Environment/Ecology. The author has also sent along images of their work.


Article Title: Effects of environmental methylmercury on the health of wild birds, mammals, and fish

Authors: Scheuhammer, AM;Meyer, MW;Sandheinrich, MB;Murray, MW

Journal: AMBIO

Volume: 36

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Page: 12-18

Year: FEB 2007

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(addresses have been truncated)

SW: Why do you think your paper is highly cited?

This paper is one of a series of synthesis papers published in the same journal issue, summarizing the findings of a number of expert panels, and presented at the 8th International Conference on Mercury as a Global Pollutant (Madison, Wisconsin, 2006). The paper offers a succinct review of the current state of science regarding the health effects in fish and wildlife of low-level exposure to a high-priority environmental contaminant (methylmercury).

SW: Does it describe a new discovery, methodology, or synthesis of knowledge?

The paper is a synthesis of knowledge regarding the toxic effects of environmental mercury in fish and wildlife (wild birds and mammals), at current levels of environmental exposure.

SW: Would you summarize the significance of your paper in layman's terms?

A number of review articles discussing the toxic effects of mercury in fish and wildlife have been written previously, but important recent research on the subtle effects of methylmercury on brain chemistry, hormones, and reproductive success, and the implications for population-level effects in certain at-risk species, such as the common loon, have not been previously reviewed.

These newer studies demonstrate that current levels of



Loon chick about to have a blood and feather sample taken for mercury analysis, before release back into the wild.

environmental methylmercury exposure are sufficient to cause significant biological impairments, both in individuals and in whole populations, in some ecosystems.

SW: How did you become involved in this research, and were there any problems along the way?

My co-authors and I have been studying the effects of mercury in fish and wildlife for many years. An invitation by the organizers of the 8th International Conference on Mercury as a Global Pollutant, to contribute to an expert panel assessing the health effects of methylmercury, presented an opportunity to work together to examine and synthesize recent research findings into an integrated document that, hopefully, will be of use to both scientists and policymakers.

SW: Where do you see your research leading in the

future?

Although the industrial use of mercury in North America has declined markedly since the 1980s, global consumption of coal for energy production (a major source of atmospheric mercury emissions) is predicted to increase throughout the 21st century. Studies to assess the impacts of these increasing emissions will be needed.

As future regulatory and other controls to limit industrial mercury emissions come into effect, we will need to determine if, and how quickly, these actions have the desired effects of decreasing mercury concentrations and toxicity in fish and wildlife.

Additional studies will be required to address differences in species sensitivity to methylmercury, to clarify ecotoxicological effects on whole populations and communities, and to understand the interactive effects of mercury with other co-occurring environmental contaminants.

SW: Do you foresee any social or political implications for your research?

This and the other synthesis papers on mercury, published together, are intended to be policy-relevant documents. Although direct policy recommendations are not made in these papers, the detailed scientific reviews are directly pertinent to policy discussions on the environmental management of mercury, an issue of global concern.

A major conclusion of our paper is that significant reproductive and other health impairments in some fish and wildlife species are probable at currently realistic environmental concentrations of mercury—a finding that has clear policy implications.

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Keywords: environmental methylmercury, brain chemistry, hormones, reproductive success, wild birds, mammals, at-risk species, common loon, significant biological impairments, reproductive and other health impairments, ecosystems, ecotoxicological effects, environmental concentrations mercury.



[back to top](#)

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