

# Biodiversity loss linked to economic inequality worldwide

May 16 2007

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An interdisciplinary team of McGill researchers has uncovered a connection between growing economic inequality and an increase in the number of plant and animal species that are threatened with extinction.

"Our study suggests that if we can learn to share economic resources more fairly with fellow members of our own species, it may help us to share ecological resources more fairly with other species," said Dr. Greg Mikkelson, assistant professor in the McGill School of Environment and Department of Philosophy. The study appears in the May 16 issue of PLoS ONE, the online, peer-reviewed, open-access journal of the Public Library of Science.

Mikkelson and his colleagues related indicators of income inequality and biodiversity loss on two different scales: among 45 countries worldwide and among 45 states within the United States. They controlled for differences such as area and climate, human population size, and per capita consumption. The same general trend is evident in both scales: societies with more unequal distributions of income experience greater losses of biodiversity.

"While there is often a trade-off between economic growth and environmental quality," says Mikkelson, "this study suggests that there is a synergy between a different kind of economic development – namely, toward a more equitable distribution of wealth and the conservation of biological diversity." For example, if the US were to achieve levels of income equality comparable to those of Sweden, the pattern reported in

their paper implies that 44% fewer plant and vertebrate species in the US would be in danger of extinction.

"In the past, people thought that human population size was the main driver of biodiversity loss, then people showed that the size of the economy provided a better explanation," said co-author Dr. Garry Peterson, an assistant professor in the School of Environment and Department of Geography, and a Canada Research Chair (CRC) in social-ecological modeling. "This study shows that the structure of the economy is also important."

While previous research has linked income inequality and public health, the link between socioeconomic factors and the decline of environmental health and biodiversity has not been as well studied.

"With biodiversity loss, if we don't link the science to the social causes, we will never solve the problem," says co-author Dr. Andrew Gonzalez, an associate professor in the Department of Biology and School of Environment, and a Canada Research Chair in biodiversity. Because the connection between economic inequality and threatened species is strong at both country and state levels of analysis, the researchers are hopeful that the underlying mechanisms can be identified.

"We already understand the impact run-away logging has on forests," says Gonzalez. "When loggers in Mexico cut down trees to make way for cattle ranches, the impact on forests is partly driven by Mexico's highly uneven distribution of wealth."

Source: Public Library of Science

April 2024 from

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