New approach helps teachers integrate conservation biology into high school ecology classes

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Framing familiar environmental issues in everyday language—whether the topic is a Gulf Coast oil spill or the spread of Lyme disease—may be the key to successfully engaging high school students with conservation biology research in their ecology classes. A study, presented in the latest issue of *Conservation Biology* by Yael Wyner, an assistant professor at the City College of New York, and Rob DeSalle, a curator in the Division of Invertebrate Zoology at the American Museum of Natural History (AMNH), advocates a pedagogical model where students learn about normal ecological processes (biodiversity and ecological integrity) by studying what goes wrong when human actions disturb those processes.

The authors of the study tested this "ecology-disrupted" framework using two case studies in the classrooms of more than 30 teachers in New York City public schools in 2008 and 2009. They found that students in all cases developed a better understanding of ecological concepts such as "abiotic and biotic factors" and "habitat," as well as a better understanding of how their daily life can affect the natural world.

"We hope our model will be used to encourage students to understand the complexity of ecological processes and the role of human behavior in disrupting ecosystems," said Wyner, the study's first author. "This may lead students to be more environmentally aware and perhaps be more environmentally responsible."

"Many conservation biology research studies can easily be rephrased as questions that link daily life to the particular environmental issues described in the studies," said DeSalle. "For example, a report on land use and climate change can be explored in the classroom as 'how does having a big backyard harm native wildlife?' "

In the two case studies used in the research, the authors used real data from published studies and *Science Bulletin* video presentations developed at the American Museum of Natural History. One study examined how highways bisecting the Sierra-Nevada Mountains are blocking the movements of bighorn sheep and leading to inbreeding, while the other study explored how salt added to roadways to melt snow was causing freshwater streams to become progressively saltier. The *Science Bulletins*, which are produced by the National Center for Science Literacy, Education, and Technology, a part of the Department of Education at AMNH, were screened to present students with other examples of people disrupting abiotic factors in unexpected ways.

The authors intend to modify and retest their teaching modules by introducing their "ecology-disrupted" case study model into the classrooms of 60 teachers for the 2010-2011 school year. After testing, the modules will be available for dissemination on the Museum's education website at amnh.org/education.

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