Scientists find the first evidence of genetically modified plants in the wild

EurekAlert

Research is continually emerging on the impacts of invasive species, pollution and environmental disasters on ecosystems and communities. Ecological scientists will discuss widespread environmental changes?from the recent discovery of genetically modified plants in the wild to the implications of mercury found in bottlenose dolphin skin, and even exploring society's reactive mode toward environmental disasters in the U.S.?at the Ecological Society of America's 95th Annual Meeting in Pittsburgh from August 1-6, 2010. Below is a sampling of some of the research to be presented on a wide array of environmental issues:

Genetically modified canola plants in the wild

Scientists currently performing field research in North Dakota have discovered the first evidence of established populations of genetically modified plants in the wild. Meredith G. Schafer from the University of Arkansas and colleagues from North Dakota State University, California State University, Fresno and the U.S. Environmental Protection Agency established transects of land along 5,400 km of interstate, state and county roads in North Dakota from which they collected, photographed and tested 406 canola plants.

The results?which were recorded in early July and are set to be presented at ESA's Annual Meeting in Pittsburgh?provide strong evidence that transgenic plants have established populations outside of agricultural fields in the U.S. Of the 406 plants collected, 347 (86%) tested positive for CP4 EPSPS protein (confers tolerance to glyphosate herbicide) or PAT protein (confers tolerance to glufosinate herbicide).

"There were also two instances of multiple transgenes in single individuals," said one of the study's coauthors Cynthia Sagers, University of Arkansas. "Varieties with multiple transgenic traits have not yet been released commercially, so this finding suggests that feral populations are reproducing and have become established outside of cultivation. These observations have important implications for the ecology and management of native and weedy species, as well as for the management of biotech products in the U.S."

The poster session "Evidence for the establishment and persistence of genetically modified canola populations in the U.S.," led by Meredith G. Schafer from the University of Arkansas, will be held Friday, August 6, 2010.

Other sessions on invasive species include:

The contributed oral session "Bioeconomic approach to risk assessment for invasive animals in trade in the United States" led by Reuben P. Keller, University of Chicago;

the poster session "Hurricane Katrina and the potential replacement of one ecosystem engineer by another on two Mississippi barrier islands" by Christine A. Bertz and J. Stephen Brewer, University of Mississippi; and the poster session "Early detection of invasive plant species: linking management needs with invasive species science" led by Daniel A. Sarr, Klamath Network-National Park Service.

Detecting mercury in bottlenose dolphins

Since 1997, researchers have been collecting skin biopsies from the Sarasota Bay, Florida bottlenose dolphin population as part of an ongoing health monitoring program. Debra L. Miller from the University of Georgia and colleagues performed the first histopathological examination of the biopsies to determine the possible adverse effects and mechanisms of tissue distribution of mercury in the bottlenose dolphin population.

In their upcoming presentation at ESA's Annual Meeting, the scientists will report, among other findings, that mercury concentrations increased in dolphin biopsy samples as the dolphins aged. Results also suggest greater binding of mercury in the skin during the winter season and a possible link between mercury concentration and keratin production. Miller will discuss implications for the conservation of dolphins and other animals and for future knowledge on mercury and human health.

The contributed oral session "Investigating mercury in bottlenose dolphin skin: what we have learned and where we go from here" by Debra L. Miller, University of Georgia, will be held Wednesday, August 4, 2010 at 8:20 am.

Other sessions on pollution and toxicity include:

The poster session "The effects of salt on anti-predator escape behaviors and size in green frog tadpoles (*Rana clamitans*)" led by George A. Samra, Pennsylvania State University; the organized oral session "Ozone pollution compromises plant defense responses to insect herbivory" led by Joshua R. Herr, Pennsylvania State University; and the contributed oral session "Mechanisms of cadmium toxicity and tolerance in Populus" led by Brahma Reddy Induri, West Virginia University.

Environmental disasters in the U.S.

During the Opening Plenary Panel at ESA's Annual Meeting, a panel of experts will discuss several case studies from prominent environmental disasters, including the discovery of Asian carp in the Great Lakes and the Deepwater Horizon Oil Rig accident, and will address the ways in which society assesses risk and reacts to, instead of prevents, grave outcomes.

Robert Twilley from Louisiana State University, an expert in wetlands on the coast of the Gulf of Mexico, will highlight how wetland degradation exacerbated the impact of hurricanes in the region and will discuss the recent oil disaster in the Gulf. David Lodge from the University of Notre Dame, an invasive species expert, will showcase past invasions and discuss the risk of similar disasters in the future, such

as the spread of Asian Carp to the Great Lakes.

David Dzombak from Carnegie Mellon University, an expert in water quality engineering and contaminated site remediation, will discuss contaminated sediment and public health in New Orleans following the flooding from Hurricane Katrina. Baruch Fischhoff, an expert in risk analysis and decision science from Carnegie Mellon University, will address the communication of risk between experts and non-experts, particularly in areas such as human health, climate change and the environment.

The Opening Plenary Panel "Environmental disasters in the US: exploring our reactive mode" will be held Sunday, August 1, 2010 from 5:15-6:30 pm.

Other sessions on environmental disasters include:

The symposium "Ecological responses to abrupt climate changes: looking back to see ahead" co-organized by Stephen T. Jackson, University of Wyoming; the contributed oral session "Ocean acidification disrupts the innate ability of fish to detect predator olfactory cues" led by Danielle L. Dixson, James Cook University; and the poster session "How global extinctions impact local biodiversity" led by Shan Huang, University of Georgia.

SOURCE [1]

Links:
[1] http://www.eurekalert.org/pub_releases/2010-08/esoa-sft072110.php