

NCSE WILDLIFE HABITAT POLICY RESEARCH PROGRAM
Project Overview
Research Project 2E

**Impacts of Bioenergy Production on the
Conservation of Wildlife Habitat**

Principal Investigator
Robert Fletcher
University of Florida

Government policies and growing alternative energy demand are expected to increase U.S. liquid biofuel (bioethanol and biodiesel) production dramatically over the next two decades.

Key Issue

Although much research has been done on potential impacts of biofuel-driven land-use change on issues such as greenhouse gas emissions and regional water quality, little attention has been given to effects on wildlife habitat and biodiversity.

Project Objective

The objective was to assemble and interpret data on the threat of biofuel production to wildlife habitat and outline promising policy responses.

Approach

The investigators analyzed risks from four biofuel feedstocks: corn, switchgrass, hybrid poplar and southern plantation pine.

They reviewed current policies and rationales for biofuel production and performed a meta-analysis of scientific studies that compare wildlife abundance and diversity for feedstock and non-feedstock habitats.

They developed a national feedstock production model for meeting a federal biofuel mandate of 36 billion gallons/year by 2022; inputs included climatic, environmental, social and economic data on crop suitability. They used scenarios that varied production efficiency and social trade-offs to estimate national land cover types at risk of conversion to corn, switchgrass and southern pine.

Biofuel-driven conversion risk estimates were developed for critical habitat areas in Florida, Georgia, Iowa, and North Dakota.

Key Findings

The policy review revealed that bioenergy has significant potential to mitigate climate change, enhance environmental quality and strengthen the economy. It will be important to use best management practices and performance standards and to integrate bioenergy with forest management

and conservation strategies. Adaptive management is needed that continually evaluates and compares outcomes of alternative strategies.

The meta-analysis indicated that corn, hybrid poplar, and plantation pine land covers have significantly lower wildlife abundance and diversity than land covers they may displace. Negative effects on species richness and some bird species were greater for corn than for pine and poplar. However, converting corn-based feedstocks to perennial grasslands could increase biodiversity.

Detailed state maps show relative risk of conversion to biofuel production for critical habitat areas not currently in public ownership. National and state analyses indicate significant risks for many habitats from the mandated 2022 biofuel production levels.

Deliverables

A final project report is available on the WHPRP web site at:
<<http://www.ncseonline.org/WHPRP/cms.cfm?id=2524>>.

State-level maps of relative risk to critical habitats are in the final report and are available at:
<<http://plaza.ufl.edu/robert.fletcher/biofuels.html>>.

Presentations include:

- a poster at the annual NCSE conference in Washington DC, December 2008 (available online at <http://plaza.ufl.edu/robert.fletcher/biofuels.html>)
- a seminar at Michigan State University, December 2008
- a seminar at the University of Florida, January 2009
- a presentation at the Agriculture, Food, and Human Values Society meeting in State College, Pennsylvania, May 2009
- a presentation to the Pine-to-Energy Coalition in Tifton, Georgia, August 2009.

Journal articles have been submitted to *Frontiers in Ecology and the Environment*, *Global Change Biology*, *Conservation Biology*, *Biomass and Bioenergy*, *Environmental Science and Policy* and *Global Change Biology Bioenergy*.

An extension document has been submitted to the University of Florida's Electronic Data Information Source.