FISH, WILDLIFE & BIOENERGY

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Perspectives from the Association of Fish & Wildlife Agencies on Integrating Fish & Wildlife Conservation with Bioenergy Production

Invasive species *Arundo donax* and Tamarisk along the Rio Grande in Texas.

THE RISKS

Fish and wildlife species require year-round food, cover, water, and space. Every species has different needs. Some need large blocks of grassland, some need young or mature forests, whereas others depend on wetlands or streams. The more a type of land use – like bioenergy crops – can mimic a native habitat, the less negative and more favorable the impact on fish and wildlife populations.

The biggest factor behind fish and wildlife declines is habitat loss. Some habitats – such as longleaf pine savannas in the Southeastern US and tallgrass prairie in the Midwest – have declined by 98% or more. The greatest habitat losses are in the Southeast, Northeast, Midwest, and California – which are also areas with high biomass potential.

Working with state fish and wildlife agencies in these and other areas and giving consideration to species of greatest conservation need when developing bioenergy projects can lead to win-win solutions. State fish and wildlife agencies and other conservation partners can help reduce habitat risks – outlined below – that can be associated with bioenergy development.

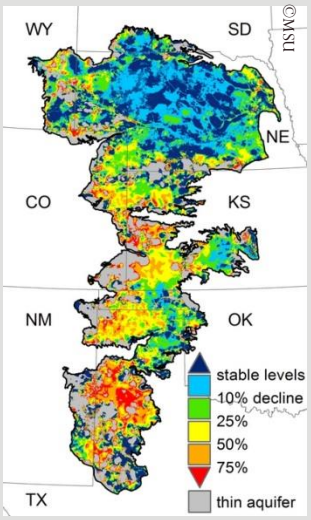
LAND CONVERSION

About 51% of the land area of the U.S. is in agricultural production. Energy crops add a new dimension, given many energy crops have potential to be grown on lands poorly suited for food production, but that currently provide fish and wildlife habitat. Fish and wildlife are impacted by direct habitat conversion when native habitats are replaced with energy crops.

Fish and wildlife are also affected by indirect conversion when bioenergy crops are planted on existing cropland, triggering an expansion of traditional agriculture into native habitats. For example, a US DOE report found that meeting domestic liquid energy goals may require redirecting 79 million acres of cropland/pasture to energy crops – an area the size of Iowa and Missouri combined. Biomass for energy purposes would be additive to traditional agricultural needs, potentially increasing native habitat conversion.

Founded in 1902, the Association of Fish & Wildlife Agencies represents North America's fish and wildlife agencies to advance science-based management and conservation of species and their habitats for the public's long-term benefit and use.
www.fishwildlife.org @fishwildlife

ASSOCIATION of FISH & WILDLIFE AGENCIES



Water Use

The Ogallala Aquifer is one of the world's largest aquifers and supplies about 30% of all groundwater used for irrigation in the US. The Ogallala and many other aquifers are being depleted, and irrigated bioenergy crops could exacerbate water quantity problems.

Habitat Conversion

The conversion of native prairie to cropland can have significant negative impacts on grassland wildlife. For example, as part of an ongoing trend in South Dakota, nearly 30,000 acres of grassland were converted in 2012. In 2013, SD pheasant numbers were down 64 percent. Bioenergy development could exacerbate conversion trends.

AGGRESSIVE PLANTS

Invasive species cause an estimated $120 billion in losses and damages per year in the US. Invasive plants – which can include genetically enhanced natives – degrade habitats. Invasive species are a contributing factor in over 400 threatened or endangered species listings in the US. Prevention is the most effective tool – control or eradication is difficult or impossible once invasive species become established outside the fields in which they are intended to be grown.

Characteristics of invasive species can be similar to those of many energy crops, including rapid growth, high-yield, deep roots, high seed production or above/ below-ground runners, disease/pest resistant, and adaptability to a variety of soils and climates. If energy crops escape, they could become invasive. Developing a containment plant with resource professionals can reduce risks.

REDUCED DIVERSITY

Energy crop production often maximizes yield with dense, single-species plantings. In agricultural landscapes, wildlife species decline when native habitat is replaced by single-species crops.

Replacing some monoculture crops with a monoculture bioenergy crop could be positive for wildlife if the trade mimics the native habitat (e.g., corn converted to native grass in prairie landscapes), but can be negative if the bioenergy crop is not compatible with the native habitat (e.g., corn to short-rotation willow in a prairie landscape).

MANAGEMENT IMPACTS

In general, wildlife species do best in the spring/summer if nesting is undisturbed, insects are present for food, and diverse plants provide food and cover. Wildlife also need cover tall enough to escape predators and harsh weather.

Slight changes in management can make a big difference for wildlife. Harvesting bioenergy crops after the nesting season, limiting pesticide and herbicide use, leaving crop stubble, and planting field borders can help reduce impacts.

WATER QUANTITY & QUALITY

In many parts of the US, competing uses of water are placing pressure on this critical natural resource. For example, 81% of US fish communities are declining due to water quantity or quality issues. Bioenergy crops that use less water, fertilizer, and pesticides than the crops they replace can benefit aquatic ecosystems.

Learn more at:
bit.ly/FishWildlifeBioenergy

References:

Bill McGuire. 2012. Assessment of the Bioenergy Provisions in the 2008 Farm Bill. Association of Fish and Wildlife Agencies, Washington, D.C., pgs 17-23.

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