Energy Resources Center (MC 156)
1309 South Halsted
Chicago, Illinois 60607-7022
www.erc.uic.edu

Monarch Habitat Mapping and Land Use Analysis at University of Illinois-Chicago

Principal Investigators: Steffen Mueller PhD and Iris Caldwell, P.E.

The Energy Resources Center (ERC) is an interdisciplinary public service, research, and special projects organization at the University of Illinois-Chicago. The ERC provides technical assistance, sophisticated modeling capabilities, educational outreach, and program implementation across the public and private sectors on a broad range of issues related to energy and the environment.

The ERC originally became involved with monarch habitat restoration initiatives through our expertise in and extensive study of agricultural land use change. Through our research, we have compiled a large database of GIS data on land use, carbon sequestration, and crop productivity. In particular, studies we have performed on marginal agricultural land can help inform geospatial analysis of potential monarch habitat in working landscapes, such as pastures and cropland. Figure 1 below illustrates a 100-mile buffer along Interstate 35 that has been proposed for targeted habitat restoration. The underlying shading represents total approximate area of cropland that is classified as "marginal" per county. We are continuing to develop mapping tools that can be used to designate high priority areas for habitat restoration.

Additionally, the ERC has engaged with a number of organizations and government agencies to gather information on habitat potential within other working landscapes, such as roadside and utility rights-of-way. The ERC has constructed land supply curves by state (as in Figure 2 below) to assess the theoretical land supply from several working landscapes as a function of increasing land use reallocation costs. Given the important role that roadside and utility rights-of-way can play in providing linear habitat throughout key states along the monarch flyway, the ERC is interested in helping to develop a Midwest Rights-of-Way as Habitat Working Group with stakeholders from the transportation, utility, and agricultural sectors. The group could help align efforts and provide invaluable resources to organizations within these sectors interested in supporting monarch habitat. The ERC is well-positioned to help facilitate information-sharing, collaboration, and outreach among these and other interested parties.

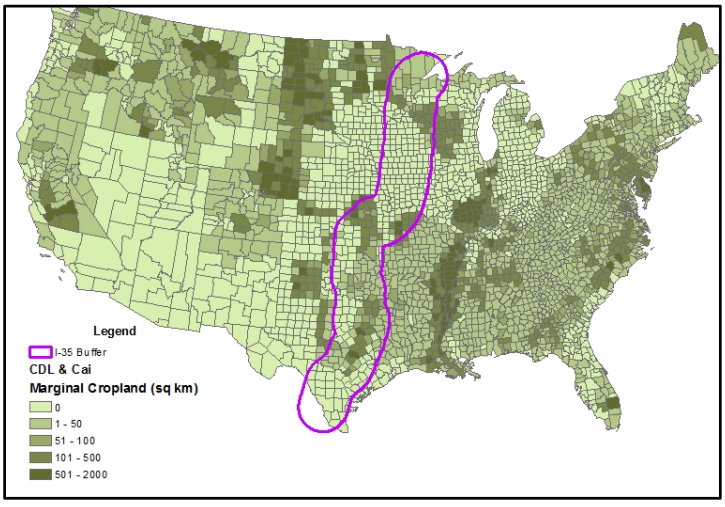

Figure 1. Interstate 35 Buffer Overlaying Marginal Cropland by County.

(Sources: US Census Bureau, TIGER database; USDA National Agricultural Statistics Service, Cropland Data Layer; Cai et al. (2011); communications with USGS Powell Center)

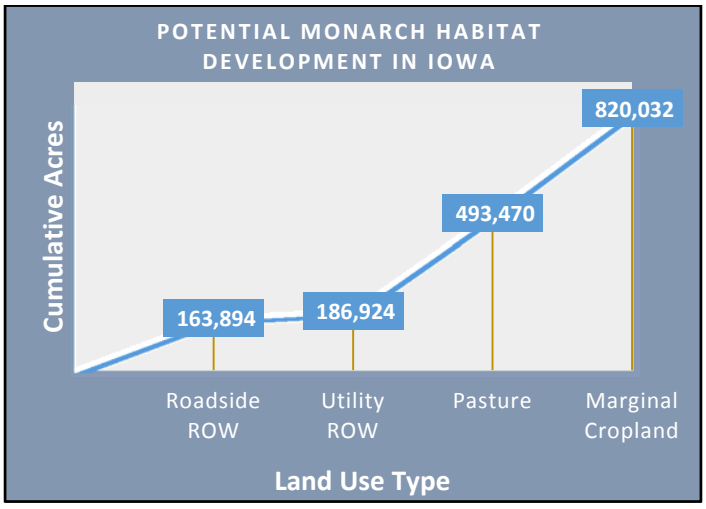

Figure 2. Land Supply Curve for Working Landscapes in Iowa.

(*Sources: Iowa Department of Transportation; Iowa Utilities Board; USDA National Agricultural Statistics Service, Cropland Data Layer; Cai et al. (2011)*)