

Methodology for Quantifying Wetland Landscape Parameters for Highway Right of Way Decisions Utilizing GIS

Milind Divate

Dr. Kathleen Trauth, Thesis Supervisor

ABSTRACT

Wetland are a type of habitat which forms an interface between aquatic and terrestrial ecosystems. A growing problem in the state of Missouri and around the nation is the loss of the natural wetlands due to the expansion of communities. Specifically, the construction of new roadways impacted the wetlands of Missouri. Because of this loss of wetlands by many development activities species like the northern crayfish frog and the tiger salamander are declining in the state. Section 404 of the Clean Water Act (CWA) establishes a program to regulate the discharge of dredged or fills material into waters of the United States including wetlands. Because of its roadway activities Missouri Department of Transportation (MoDOT) must construct compensatory wetlands when natural wetlands are impacted and is trying to improve functionality of these wetlands with help of different research techniques. In addition, MoDOT must select rights-of-way of limiting wetland impacts can be one of the criteria. A geographic information system (GIS) is a useful tool in this research because of the spatial occurrence of the wetlands. Various landscape parameters such as road density, percentage of open water surrounding wetlands are quantified with the help of a GIS and a score is applied to each wetland on the basis of their importance as amphibian habitat. A methodology is discussed that begins to aggregate condition information to develop and score for natural and compensatory wetlands.