

BOGUMILA BACKIEL – UNIVERSITY OF MASSACHUSETTS, AMHERST

STATEMENT OF PURPOSE:

Sediment in river systems is decreasing in alarming rates world wide. Sediment provides habitat for riparian plants and animals and is the material for the creation of floodplains and wetlands. Human development through channelization, impervious surfaces and dams, have depleted the amount of sediment in rivers. Sediment regimes can be seen to the human eye through geomorphic features like sandbars. An automated object based segmentation model in ESRI ArcGIS Pro was created using USDA NAIP aerial images for the entire Connecticut River and its major tributaries, to map sandbars. Large scale automated mapping of fluvial geomorphology in both general river ecosystems and the Connecticut River, is necessary to understand the dynamics and conserve sandbars. Land managers and policy makers can make better informed conservation decisions when presented with visualizations showing locations of sediment on watershed scales. Mapping of sedimentsheds can help scientists determine the processes that form sandbars and the factors that are depleting sediment. This model can be applied to other river systems in the region.

DESCRIPTION OF DATA SETS:

Aerial image from USDA Farm Service Agency, The National Agriculture Imagery Program (NAIP). Sandbar spatial model and river channel created using USDA NAIP. New England boundary shapefile from the Commonwealth of Massachusetts. Location of dams from the Army Corp of Engineers. Digital elevation model (DEM) from USGS The National Map. Watersheds delineated using DEM. Impervious surface dataset from the Designing sustainable landscapes project. University of Massachusetts, Amherst. URL: www.umass.edu/landeco/research/dsl/dsl.html