Abstract:

Road networks are a ubiquitous part of the landscape and affect an array of ecological processes. Roads deliver sediment and pollutants to nearby waterways adversely affecting water quality and aquatic habitat. These hydrogeomorphic impairments can be mitigated through the implementation of best management practices (BMPs). The goal of this study was to assess the impacts of road runoff and drainage that flow into adjacent streams/rivers in the Winooski River watershed in the Lake Champlain basin with a focus on indentifying the metrics of these hydrologic impairments as they occurred across the landscape. The spatial extent of hydrologic and geomorphic features associated with the road-drainage system was surveyed in the field with a GPS receiver. BMPs were also surveyed and evaluated for effectiveness in reducing erosion. Combining GIS technology and data from field surveys, I found that erosion impairments occurred at an average of 21 features per kilometer of road. The estimated sediment from these impairments was about 12.8 cubic meters per kilometer or on average 22.16 tons per kilometer. This study will be useful in aiding the future protection of the water quality within the Winooski River watershed and the greater Lake Champlain Basin.