

Geomorphic and Habitat Assessment of a Wetland Creek at Big Lake, Alaska

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Meadow and Little Meadow Creek drain part of the 90 square mile Big Lake watershed and are home to wild runs of coho and sockeye salmon. This area is also the fastest developing in Alaska, with a 28% increase in population over the last 4 years and is a watershed of concern among state and federal agencies. The system is mainly groundwater driven with extensive wetlands, and peat is the dominate streambed material. To document current conditions before further development, this 2005 study assessed a number of geomorphic parameters and habitat quality indicators on a reach-by-reach basis along 12 miles of creek. Stream width, depth, entrenchment ratio, slope, material, and other geomorphic parameters were obtained. Examples of habitat quality indicators included riffle/pool presence and frequency, overhanging and in-stream vegetation, large woody debris, bed material type/spawning gravel, canopy cover and other indicators. Initial analysis shows that this system has limited spawning habitat, but very good rearing habitat and that spawning areas may be correlated to glacial terrain features. The channel is highly entrenched, and adjacent wetlands buffer surface runoff, with little variability in streamflow throughout the year. The direct connection to adjacent wetlands and potential sensitivity to hydrologic change are some of the aspects that can be used in watershed planning efforts and determining thresholds for land use. Future data collection will focus on stream gaging and water quality parameters.

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