Background

Beavers are ecosystem engineers because they modify the geomorphology of river valleys by building dams. Panther Brook, NY, is a small mountain stream that hosts 6 meadows created by beaver dams.

Objectives

- Determine what geomorphic parameters govern suitable suitable beaver habitat
- Understand values of these parameters
- Useful for future beaver reintroduction in the Adirondacks

Methods

- Survey of Panther Brook: Hand level, stadia rod
- Pebble sizes (300 pebbles at each station)
- Channel width and depth
- Calculations of hydraulic parameters: Total shear stress equation, \( \tau = \rho g d S \)
  Stream power (bank-full), \( \Omega = \rho g Q S \)
  (drainage area used as proxy for discharge)

Gradient

- The channel gradient in the meadows (0.001 m/m to 0.025 m/m) is lower than in non-beaver influenced boulder-reaches (0.02-0.166)

Sediment Size

- Median sediment sizes in meadows range from 0.05 cm to 0.9 cm and amongst themselves have an average value of 0.5 cm
- This is lower than the sediment size in boulder-reaches, since the median at each survey station there ranges from 0.6 cm-3.8 cm

Conclusions

- Total bank-full stream power measures energy dissipated against the sides of the channel, and determines if erosion or sediment aggradation occurs.
- Meadows have an average stream power of 102.9 W/m. Steep boulder-reaches have high stream power, with an average of 471.2 W/m.

References


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