



## River Characteristic: Gradient – Moderate

### Description

Gradient is the general slope, or the change in vertical elevation per unit of horizontal distance, of the water surface in a flowing stream. Moderate gradient is defined as having a change in the vertical elevation of the water surface of a flowing stream ranging from 4.0-9.9 feet per mile.

### General Condition of Feature

No data available.

### Associated Species of Greatest Conservation Need

#### INSECTS

- splendid clubtail (*Gomphus lineatifrons*)
- rapids clubtail (*Gomphus quadricolor*)
- stygian shadowdragon (*Neurocordulia yamaskanensis*)

#### FISH

- reidside dace (*Clinostomus elongatus*)
- brassy minnow (*Hybognathus hankinsoni*)

#### FISH cont.

- bigmouth shiner (*Notropis dorsalis*)
- slimy sculpin (*Cottus cognatus*)

#### REPTILES

- wood turtle (*Glyptemys insculpta*)

#### MAMMALS

- water shrew (*Sorex palustris*)

### Associated Threats

#### MODIFICATION OF NATURAL PROCESSES

- Altered hydrologic regimes:

#### HABITAT CONVERSION

- Dams: Beaver activity; Man-made dams

### Conservation Actions Needed (Threats addressed)

#### LAND, WATER & SPECIES MANAGEMENT

- Maintain and rehabilitate river to original flow paths and hydrologic functions, i.e., seasonal flooding, connect meanders, throughflow, wetlands (altered hydrologic regimes)
- Manage beaver activity for a variety of natural resource uses (dams)
- Work with road commissions and forest management agencies to fix perched and other problem culverts (altered hydrologic regimes)

#### LAW & POLICY

- Assess dam siting to ensure minimal affects (dams)
- Encourage sound water withdrawal practices that take into account species needs (altered hydrologic regimes)
- Limit water withdrawals in flow limited and groundwater fed systems (altered hydrologic regimes)
- Manage or modify lake-level controls and water releases of dams to mimic natural river conditions (altered hydrologic regimes, dams)
- Protect and rehabilitate groundwater recharge by requiring that all development-related runoff be captured by infiltration basins (altered hydrologic regimes)
- Remove dams to rehabilitate natural hydrology (altered hydrologic regimes, dams)

### Research and Survey Needs

- Determine unknown life history requirements for SGCN associated with moderate gradient
- Ensure that existing dams operate as run-of-the-river
- Inventory dams and determine those that are no longer necessary
- Model hydrologic flow of moderate gradient areas

### Monitoring

- Riparian modifications
- Road crossings
- Sediment loading