

HS Values Group: Steelhead Worksheet

1. **The current fish bearing network is defined by a gradient cutoff of 20%. Is this appropriate for Steelhead in the OWC study area?**
 - a. **If not, please suggest a more appropriate value:**
 - b. **Suggest other cutoffs appropriate to define the Steelhead fish bearing network?**

2. **Are the default HS curves provided in the Steelhead HS Curve Reference Sheet appropriate for the 4 selected outer coastal rivers?**

Channel Gradient Yes ___ No ___ Your confidence in this answer: High___ Medium ___ Low ___

Floodplain Width/ Channel Width Yes ___ No ___ Your confidence: High___ Medium ___ Low ___

Mean Annual Flow (CMS) Yes ___ No ___ Your confidence: High___ Medium ___ Low ___

Please indicate revisions you recommend on the Steelhead HS Curve Reference Sheet.

3. **What additional intrinsic parameters would *significantly* improve the Steelhead IP model?**

Lists of intrinsic variables are provided. Circle key variables and suggest information sources to build HS curves, if possible.

4. **How would you define the range of scores in the high, medium and low IP bins for Steelhead? Maximum suitability =1 and Lowest suitability = 0**

High=

Medium=

Low=

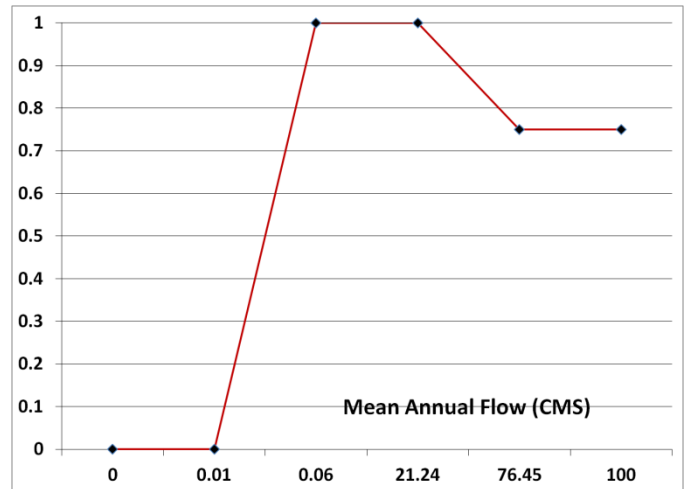
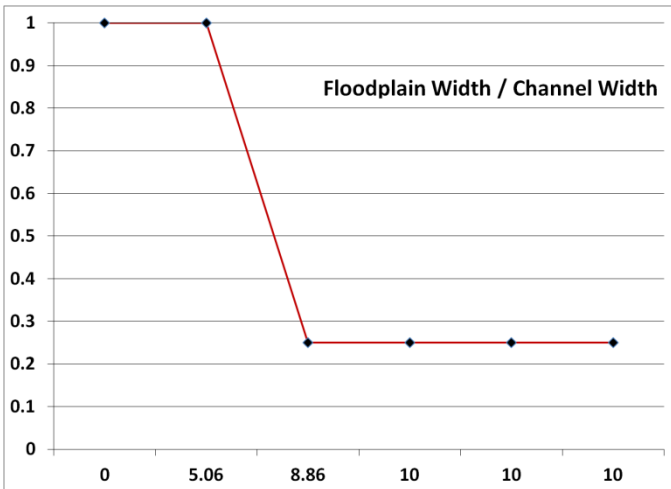
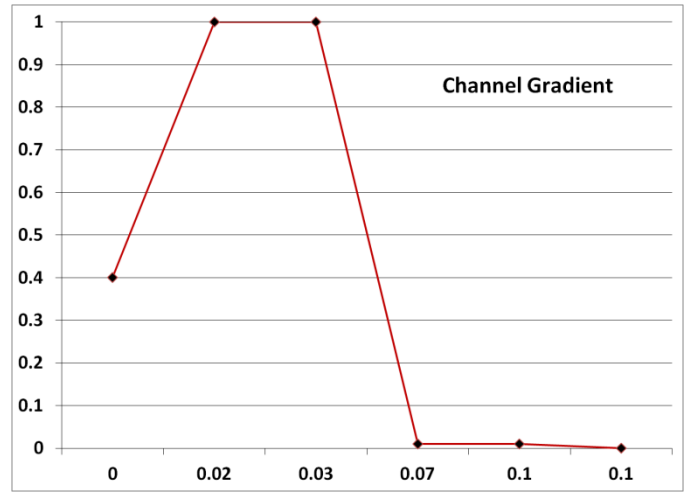
5. **Are separate sub-regional models within the OWC Study area needed for Steelhead?**

The current model uses hydrologic properties that are divided into regression regions according to Kresch, 1998 (see wall maps)

Your confidence in this answer: High ___ Medium ___ Low ___

Steelhead HS Curve Reference Sheet

Channel Gradient						
Suitability	0.4	1	1	0.01	0.01	0
Gradient	0	0.02	0.03	0.07	0.1	0.1
Weighting Scheme	1					
Floodplain Width / Channel Width						
Suitability	1	1	0.25	0.25	0.25	0.25
Constraint Index	0	5.06	8.86	10	10	10
Weighting Scheme	1					
Mean Annual Flow (CMS)						
Suitability	0	0	1	1	0.75	0.75
Flow	0	0.01	0.06	21.24	76.45	100
Weighting Scheme	1					



Lists of Intrinsic Variables

Table 2 from 2008 PNAMP. Examples of some hydrogeomorphic and climatic variables related to habitat quality that can be obtained from a modeled stream network and digital elevation models (DEM) (Sheer et al., in prep.).

Variable	Source
Channel gradient ^{1,2}	From DEM ^{3,4}
Mean annual flow ^{1,2}	Regression of gauge data to drainage area (DEM) and mean annual precipitation ³
Channel constraint ^{1,2}	Valley-width index (ratio of valley to channel width, with channel width based on regional regression to mean annual flow) correlated with field inventoried constraint categories. Valley width estimated from DEM ^{3,6}
Mean Summer (August) Low Air Temperature ¹	Parameter-elevation Regressions on Independent Slopes Model (PRISM) ¹
Valley-width transitions (e.g., from confined to unconfined channels) ⁵	From DEM ⁵
Tributary confluences ⁵	From DEM ⁵

¹ Agrawal et al. (2005) ; ² Burnett et al. (2003, 2007); ³ Clarke et al. (2008) ⁴ Davies et al. (2007) ⁵ Benda et al. (2004, 2007); ⁶ Hall et al. (2007).

Table B9 from 2008 PNAMP. Intrinsic variables suggested by workshop participants. (In addition to table 2 above.)

- Temperature (Agrawal et al., 2005; Cooney and Holzer, 2007)
- Erosion, sediment deposition potential (Benda et al., 2007; Cooney and Holzer, 2007)
- Downstream variation in valley confinement (Benda et al., 2007)
- Downstream variations in channel gradient (e.g., upstream of a fan or earthflow, Benda et al., 2007)
- Tributary confluences (Benda et al., 2007)
- Basin soils, geology (Cooney and Holzer, 2007)
- Patch size, abundance, separation distance between high IP zones (Benda et al., 2007)
- Climatic attributes, such as mean annual snow fall, or 100-year, 24-hour storm intensity
- Hydrologic attributes, such as 100-year peak discharge, mean annual low flow, skew of the flow duration curve
- Proportion of watershed in wetlands
- Elevation
- Downstream variation in confinement
- Tributary confluences
- Patches of habitat surrounding stream reach
- Distance from the ocean
- Measuring connectivity of high quality patches