BASIC DATA FOR DEVELOPING REGIONAL Q_S AND Q_{OPT} RELATIONSHIPS

$Q_{MBF3(0)} = 6.1235\ Q_{AVE}\ (DA^{-0.4837})$ Original Regression for SWRCB Q_{OPT}
$Q_{MBF3(1)} = 7.0615\ Q_{AVE}\ (DA^{-0.4837})$ Adjusted 1 StndError for SWRCB Q_{OPT}
$Q_{MBF3(2)} = 8.1433\ Q_{AVE}\ (DA^{-0.4837})$ Adjusted 2 StndErrors for SWRCB Q_{OPT}
$Q_{MBF3(3)} = 9.3907\ Q_{AVE}\ (DA^{-0.4837})$ Adjusted 3 StndErrors for SWRCB Q_{OPT}

Davenport Creek

Mad River Watershed, Humboldt County
DA = 1.07 mi^2
Q_{AVE} = 3.42 cfs
Q_{FEB} = 4.82 cfs
Spawning Q_{OPT} = 9 cfs (from habitat-mapped composite rating curve)
Spawning Q_{OPT}/Q_{AVE} = 2.63
Q_{ACTIVE} = 12 to 14 cfs (from X-section stage changes and field notes)
Spawning Q_S = 21 cfs (from spawning habitat rating curve w/o right tail)
Spawning $Q_{MBF3(0)}$ = 20.3 cfs Original Regression for SWRCB Q_{OPT}
Spawning $Q_{MBF3(1)}$ = 23.4 cfs Adjusted 1 StndError for SWRCB Q_{OPT}
Spawning $Q_{MBF3(2)}$ = 27.0 cfs Adjusted 2 StndErrors for SWRCB Q_{OPT}
Spawning $Q_{MBF3(3)}$ = 31.1 cfs Adjusted 3 StndErrors for SWRCB Q_{OPT}
Spawning $Q_{REGIONAL\_S}$ = 21.1 cfs (Regional $Q_S = 6.3\ Q_{AVE}\ (DA^{-0.3})$)
Spawning $Q_{REGIONAL\_OPT}$ = 11.4 cfs (Regional $Q_{OPT} = 3.4\ Q_{AVE}\ (DA^{-0.3})$)
$0.05Q_{BF}$ = 4 cfs SWRCB diversion rate

Sullivan Gulch

Mad River Watershed, Humboldt County
DA = 2.35 mi^2
Q_{AVE} = 7.52 cfs
Q_{FEB} = 9.40 cfs
Spawning Q_{OPT} = 20 to 24 cfs (fieldnotes on spawning Chinook salmon and stage of active channel)
Spawning Q_{OPT}/Q_{AVE} = 2.93
Q_{ACTIVE} = 24 cfs to 26 cfs (X-section stages and field notes)
Spawning Q_S = 32 cfs to 34 cfs (fieldnotes on spawning Chinook salmon)
Spawning $Q_{MBF3(0)}$ = 30.5 cfs Original Regression for SWRCB Q_{OPT}
Spawning $Q_{MBF3(1)}$ = 35.1 cfs Adjusted 1 StndError for SWRCB Q_{OPT}
Spawning $Q_{MBF3(2)}$ = 40.5 cfs Adjusted 2 StndErrors for SWRCB Q_{OPT}
Spawning $Q_{MBF3(3)}$ = 46.9 cfs Adjusted 3 StndErrors for SWRCB Q_{OPT}
Spawning $Q_{REGIONAL\_S}$ = 36.7 cfs (Regional $Q_S = 6.3\ Q_{AVE}\ (DA^{-0.3})$)
Spawning $Q_{REGIONAL\_OPT}$ = 19.8 cfs (Regional $Q_{OPT} = 3.4\ Q_{AVE}\ (DA^{-0.3})$)
$0.05Q_{BF}$ = 9.4 cfs SWRCB diversion rate

Rock Creek

South Fork Eel River Watershed, Mendocino County
DA = 3.0 mi^2
Q_{AVE} = 11.2 cfs
Q_{FEB} = 15.0 cfs
Spawning Q_{OPT} = 24 to 26 cfs (from Figure 25 M&T 2000)
Q_{ACTIVE} = 32.0 cfs (Trush Ph.D. Dissertation)
Spawning Q_{OPT}/Q_{AVE} = 2.23
Spawning Q_S = 40 cfs (from Figure 25 M&T 2000 using 95%)
Spawning $Q_{MBF3(0)}$ = 40.3 cfs Original Regression for SWRCB Q_{OPT}
Spawning $Q_{MBF3(1)}$ = 46.5 cfs Adjusted 1 StndError for SWRCB Q_{OPT}
Spawning $Q_{MBF3(2)}$ = 53.6 cfs Adjusted 2 StndErrors for SWRCB Q_{OPT}
Spawning $Q_{MBF3(3)}$ = 61.8 cfs Adjusted 3 StndErrors for SWRCB Q_{OPT}
Spawning $Q_{REGIONAL\_S}$ = 50.7 cfs (Regional $Q_S = 6.3\ Q_{AVE}\ (DA^{-0.3})$)
Spawning $Q_{REGIONAL\_OPT}$ = 27.4 cfs (Regional $Q_{OPT} = 3.4\ Q_{AVE}\ (DA^{-0.3})$)
$0.05Q_{BF}$ = 12.9 cfs SWRCB diversion rate

Elder Creek

South Fork Eel River Watershed, Mendocino County
DA = 6.5 mi^2@ USGS Gage No.11475560
Q_{AVE} = 24.2 cfs
Q_{FEB} = 32.0 cfs
Spawning Q_{OPT} = 45 cfs to 50 cfs (Figure 24 M&T 2000)
Spawning Q_{OPT}/Q_{AVE} = 1.98
Q_{ACTIVE} = 67.0 cfs (Trush Ph.D. Dissertation)
Spawning Q_S = 85 to 90 cfs (Figure 24 M&T 2000 using 95%)
Spawning $Q_{MBF(0)}$ = 60.0 cfs Original Regression for SWRCB Q_{OPT}
Spawning $Q_{MBF(1)}$ = 69.1 cfs Adjusted 1 StndError for SWRCB Q_{OPT}
Spawning $Q_{MBF(2)}$ = 80.0 cfs Adjusted 2 StndErrors for SWRCB Q_{OPT}
Spawning $Q_{MBF(3)}$ = 91.9 cfs Adjusted # StndErrors for SWRCB Q_{OPT}
Spawning $Q_{REGIONAL\_S}$ = 87.0 cfs (Regional $Q_S = 6.3\ Q_{AVE}\ (DA^{-0.3})$)
Spawning $Q_{REGIONAL\_OPT}$ = 46.9 cfs (Regional $Q_{OPT} = 3.4\ Q_{AVE}\ (DA^{-0.3})$)
$0.05Q_{BF}$ = 28 cfs SWRCB diversion rate

Big Sulphur Creek

Russian River Watershed, Sonoma County
Harding Lawson Associates PHABSIM Study (1990) @ Dead Deer Study Site (uppermost study site nr USGS gage)
DA = 13.1 mi^2 at USGS Gage No. 11463170
Q_{AVE} = 40.6 cfs
Spawning Q_{OPT} = 70 cfs for steelhead (Harding Lawson Figure 4.5-1)
Spawning Q_{OPT}/Q_{AVE} = 1.72 Harding Lawson PHABSIM
Spawning Q_S > 140 cfs (Harding Lawson Figure 4.5-1)
Spawning $Q_{MBF(0)}$ = 71.6 cfs Original Regression for SWRCB Q_{OPT}
Spawning $Q_{MBF(1)}$ = 82.6 cfs Adjusted 1 StndError for SWRCB Q_{OPT}
Spawning $Q_{MBF(2)}$ = 95.3 cfs Adjusted 2 StndErrors for SWRCB Q_{OPT}
Spawning $Q_{MBF(3)}$ = 110 cfs Adjusted 3 StndErrors for SWRCB Q_{OPT}
Spawning $Q_{REGIONAL\_S}$ = 118 cfs (Regional $Q_S = 6.3\ Q_{AVE}\ (DA^{-0.3})$)
Spawning $Q_{REGIONAL\_OPT}$ = 63.8 cfs (Regional $Q_{OPT} = 3.4\ Q_{AVE}\ (DA^{-0.3})$)
$0.05Q_{BF}$ = 49 cfs SWRCB diversion rate
Sanford, R.A. and C.P. Seppeler. 1990. Big Sulphur Creek Steelhead Trout Study, The Geysers, California. Prepared for: Unocal Geothermal Division. Harding Lawson Associates, Novato, California. May 1990. 122 p. + appendices.

Scott Creek

Coastal Stream, Santa Cruz County
DA = 25.1 mi^2 @ USGS Gage No.11161900
Q_{AVE} = 30.1 cfs
Spawning Habitat Q_{OPT} = 40 cfs for coho salmon (CDFG Figure 10)
Spawning Habitat Q_{OPT} > 50 cfs for steelhead (CDFG Figure 12)
Q_{OPT}/Q_{AVE} = 1.33 CDFG PHABSIM
$Q_{MBF3(0)}$ = 38.8 cfs Original Regression for SWRCB Q_{OPT}
$Q_{MBF3(1)}$ = 44.7 cfs Adjusted 1 StndError for SWRCB Q_{OPT}
$Q_{MBF3(2)}$ = 51.6 cfs Adjusted 2 StndErrors for SWRCB Q_{OPT}
$Q_{MBF3(3)}$ = 59.5 cfs Adjusted 3 StndErrors for SWRCB Q_{OPT}
$Q_{REGIONAL\_QS}$ = 72.1 cfs (Regional $Q_S = 6.3\ Q_{AVE}\ (DA^{-0.3})$)
$Q_{REGIONAL\_OPT}$ = 38.9 cfs (Regional $Q_{OPT} = 3.4\ Q_{AVE}\ (DA^{-0.3})$)
$0.05Q_{BF}$ = ?? cfs SWRCB diversion rate (haven't done flood frequencies in Santa Cruz)

Snider, B., Urquhart, K.A.F., and D. Marston. 1995. The relationship between instream flow and coho salmon and steelhead habitat availability in Scott Creek, Santa Cruz County, California. Environmental Services Division, Stream Flow and Habitat Evaluation Program, California Department of Fish and Game. April 1995. 48 p.