Table 1. AHA model results for the upper Wenatchee River natural production phases

Upper Wenatchee River			Natural Production Implementation			Natural Production Support (I)			Natural Production Support (F)			Long-term (PFC)		
Hab		[EDT] Prod. | Capacity	1.41		504	1.41		504	1.61		550	1.90		600
		Min NOR Escape | %Kelt	1			1			1			1		
		Smolt Prod. | Capacity	123		44,000	123		44,000	141		48,035	166		52,402
Hydro	SAR [Mar. |Total]	Vary? (Y/N)	0.030	0.011	y	0.030	0.011	y	0.030	0.011	y	0.025	0.011	y
	Passage Surv	[Juv.|Adult]	0.45		0.85	0.45		0.85	0.45		0.85	0.54		0.85
		Adj. Prod. | Adj. Capacity	1.40		503	1.40		503	1.61		549	1.90		601
Harv	Harv -Mixed Stock		0.100		0.100	0.100		0.100	0.100		0.100	0.100		0.100
	Harv- Mainstem	[NORs|HORs]			0.050			0.050			0.050	0.100		0.050
	Harv -Terminal											0.050		
	Total Exploitation Rate		0.100		0.15	0.10		0.15	0.10		0.15	0.23		0.15
			pNOB		pHOS	pNOB		pHOS	pNOB		pHOS	pNOB		pHOS
pNOB-Goal		pHOS-Goal	10%		90%	35%		70%	80%		60%			
pNOB-Realized		pHOS-Realized	11%		76%	35%		70%	80%		46%			
		[Int /Seg /None]	Local	Import	Int	Local	Import	Int	Local	Import	Int	Local	Import	Int
Local	Imported	Smolt Release	121		100,000	85		70,000	42		35,000			
Exported Brood		% Marked			100%			100%						
% to Hatchery		% to Nat. Spawn.	35%		65%	35%		65%	10%		90%			
Recruits/Spwnr		Fitness? [Y / N]	3.6		y	3.6		y	3.6		y	4.0		y

Table 2. AHA model results for the Chiwawa River natural production phases

Chiwawa River		Natural Production Implementation			Natural Production Support (I)			Natural Production Support (F)			Long-term (PFC)		
Hab	[EDT] Prod. | Capacity	1.52		1,435	1.52		1,435	1.75		1,435	2.10		1,435
	Min NOR Escape | %Kelt	1			1			1			1		
	Smolt Prod. | Capacity	133		125,341	133		125,341	153		125,341	183		125,328
Hydr	SAR [Mar. |Total] Vary? (Y/N)	0.030	0.011	y	0.030	0.011	y	0.030	0.011	y	0.025	0.011	y
	Passage Surv [Juv. | Adult]	0.45		0.85	0.45		0.85	0.45		0.85	0.54		0.85
	Adj. Prod. | Adj. Capacity	1.52		1,431	1.52		1,431	1.75		1,431	2.10		1,437
Harv	Harv -Mixed Stock	0.100		0.100	0.100		0.100	0.100		0.100	0.100		0.100
	Harv-Mainstem [NORs|HORs]			0.050			0.050			0.050	0.100		0.050
	Harv -Terminal										0.050		
	Total Exploitation Rate	0.100		0.15	0.10		0.15	0.10		0.15	0.23		0.15
		pNOB		pHOS	pNOB		pHOS	pNOB		pHOS	pNOB		pHOS
pNOB-Goal	pHOS-Goal	10%		90%	35%		70%	80%		60%			
pNOB-Realized	pHOS-Realized	11%		81%	35%		77%	80%		60%			
	[Int /Seg /None]	Local	Import	Int	Local	Import	Int	Local	Import	Int	Local	Import	Int
Local Imported	Smolt Release	532		440,000	372		308,000	186		154,000			
Exported Brood	% Marked			100%			100%						
% to Hatchery	% to Nat. Spawn.	35%		65%	35%		65%	10%		90%			
Recruits/Spwnr	Fitness? [Y / N]	3.6		y	3.6		y	3.6		y	4.0		y

Table 3. AHA model results for the White River natural production phases

White River			Natural Production Implementation			Natural Production Support (I)			Natural Production Support (F)			Long-term (PFC)		
Hab		[EDT] Prod. | Capacity	1.63		717	1.63		717	1.75		717	2.20		1,077
		Min NOR Escape | %Kelt	1			1			1			1		
		Smolt Prod. | Capacity	135		59,730	135		59,730	146		59,730	183		89,750
Hydro	SAR [Mar.|Total]	Vary? (Y/N)	0.032	0.012	y	0.032	0.012	y	0.031	0.012	y	0.026	0.012	y
	Passage Surv	[Juv. | Adult]	0.45		0.85	0.45		0.85	0.45		0.85	0.54		0.85
		Adj. Prod. | Adj. Capacity	1.63		721	1.63		721	1.75		719	2.20		1,078
Harv	Harv -Mixed Stock		0.100		0.100	0.100		0.100	0.100		0.100	0.100		0.100
	Harv-Mainstem	[NORs|HORs]			0.050 0.050			0.050			0.050	0.100		0.050
	Harv -Terminal											0.050		0.050
	Total Exploitation Rate		0.100		0.15	0.10		0.15	0.10		0.15	0.23		0.19
			pNOB		pHOS	pNOB		pHOS	pNOB		pHOS	pNOB		pHOS
pNOB-Goal		pHOS-Goal	10%		90%	35%		75%	80%		60%			
pNOB-Realized		pHOS-Realized	11%		78%	35%		73%	80%		57%			
		[Int /Seg /None]	Local	Import	Int	Local	Import	Int	Local	Import	Int	Local	Import	Int
Local	Imported	Smolt Release	254		210,000	178		147,000	89		73,500			-
Exported Brood		% Marked			100%			100%						
% to Hatchery		% to Nat. Spawn.	35%		65%	35%		65%	10%		90%			
Recruits/Spwnr		Fitness? [Y / N]	3.6		y	3.6		y	3.6		y	4.0		y

Table 4. AHA model results for Nason Creek natural production phases

Nason Creek		Natural Production Implementation			Natural Production Support (I)			Natural Production Support (F)			Long-term (PFC)		
Hab	[EDT] Prod. | Capacity	1.13		709	1.13		709	1.50		709	2.10		900
	Min NOR Escape | %Kelt	1			1			1			1		
	Smolt Prod. | Capacity	94		59,067	94		59,067	125		59,067	175		75,000
Hydro	SAR [Mar.|Total] Vary? (Y/N)	0.031	0.012	y	0.031	0.012	y	0.031	0.012	y	0.026	0.012	y
	Passage Surv [Juv. | Adult]	0.45		0.85	0.45		0.85	0.45		0.85	0.54		0.85
	Adj. Prod. | Adj. Capacity	1.13		706	1.13		706	1.50		707	2.10		901
Harv	Harv -Mixed Stock	0.100		0.100	0.100		0.100	0.100		0.100	0.100		0.100
	Harv-Mainstem [NORs|HORs]			0.05 0.05			0.050			0.050	0.100		0.050
	Harv -Terminal										0.050		0.050
	Total Exploitation Rate	0.100		0.15	0.10		0.15	0.10		0.15	0.23		0.19
		pNOB		pHOS	pNOB		pHOS	pNOB		pHOS	pNOB		pHOS
pNOB-Goal	pHOS-Goal	10%		90%	35%		75%	80%		60%			
pNOB-Realized	pHOS-Realized	11%		84%	35%		83%	80%		64%			
	[Int /Seg /None]	Local	Import	Int	Local	Import	Int	Local	Import	Int	Local	Import	Int
Local	Imported Smolt Release	254		210,000	178		147,000	89		73,500			-
Exported Brood	% Marked			100%			100%						
% to Hatchery	% to Nat. Spawn.	35%		65%	35%		65%	10%		90%			
Recruits/Spwnr	Fitness? [Y / N]	3.6		y	3.6		y	3.6		y	4.0		y

Table 5. AHA model results for Little Wenatchee River natural production phases

Little Wenatchee River		Natural Production Implementation			Natural Production Support (I)			Natural Production Support (F)			Long-term (PFC)		
Hab	[EDT] Prod. | Capacity	1.50		447	1.50		447	1.65		447	2.10		633
	Min NOR Escape | %Kelt	1			1			1			1		
	Smolt Prod. | Capacity	119		35,459	119		35,459	131		35,459	167		50,238
Hydro	SAR [Mar.|Total] Vary? (Y/N)	0.032	0.012	y	0.032	0.012	y	0.033	0.013	y	0.028	0.013	y
	Passage Surv [Juv. | Adult]	0.45		0.85	0.45		0.85	0.45		0.85	0.54		0.85
	Adj. Prod. | Adj. Capacity	1.44		428	1.44		428	1.65		447	2.10		633
Harv	Harv -Mixed Stock	0.100		0.100	0.100		0.100	0.100		0.100	0.100		
	Harv-Mainstem [NORs|HORs]			0.05 0.05			0.050			0.050	0.100		
	Harv -Terminal										0.050		
	Total Exploitation Rate	0.100		0.15	0.10		0.15	0.10		0.15	0.23		
		pNOB		pHOS	pNOB		pHOS	pNOB		pHOS	pNOB		pHOS
pNOB-Goal	pHOS-Goal	10%		90%	35%		75%	80%		60%			
pNOB-Realized	pHOS-Realized	11%		80%	35%		75%	80%		56%			
	[Int /Seg /None]	Local	Import	Int	Local	Import	Int	Local	Import	Int	Local	Import	Int
Local	Imported Smolt Release	145		120,000	102		84,000	51		42,000			-
Exported Brood	% Marked			100%			100%						
% to Hatchery	% to Nat. Spawn.	35%		65%	35%		65%	10%		90%			
Recruits/Spwnr	Fitness? [Y / N]	3.6		y	3.6		y	3.6		y	4.0		y

Table 6. AHA model results for the Mid-and Upper Methow River natural production phases

Mid and Upper Methow		Natural Production Implementation			Natural Production Support (I)			Natural Production Support (F)			Long-term (PFC)		
Hab	[EDT] Prod. | Capacity	1.19		1,836	1.19		1,836	1.35		1,836	1.69		2,000
	Min NOR Escape | %Kelt	1			1			1			1		
	Smolt Prod. | Capacity	105		161,302	105		161,302	119		161,302	149		175,747
Hydro	SAR [Mar. |Total] Vary? (Y/N)	0.030	0.011	y	0.030	0.011	y	0.030	0.011	y	0.025	0.011	y
	Passage Surv [Juv. | Adult]	0.45		0.85	0.45		0.85	0.45		0.85	0.54		0.85
	Adj. Prod. | Adj. Capacity	1.19		1,830	1.19		1,830	1.35		1,830	1.69		1,999
Harv	Harv -Mixed Stock	0.100		0.100	0.100		0.100	0.100		0.100	0.100		
	Harv-Mainstem [NORs|HORs]			0.050			0.050			0.050	0.100		
	Harv -Terminal										0.050		
	Total Exploitation Rate	0.100		0.15	0.10		0.15	0.10		0.15	0.23		
		pNOB		pHOS	pNOB		pHOS	pNOB		pHOS	pNOB		pHOS
pNOB-Goal	pHOS-Goal	10%		90%	35%		80%	80%		25%			
pNOB-Realized	pHOS-Realized	11%		81%	35%		77%	80%		57%			
	[Int /Seg /None]	Local	Import	Int	Local	Import	Int	Local	Import	Int	Local	Import	Int
Local	Imported Smolt Release	423		350,000	296		245,000	148		122,500			
Exported Brood	% Marked			100%			100%			100%			
% to Hatchery	% to Nat. Spawn.	35%		65%	35%		65%	10%		90%			
Recruits/Spwnr	Fitness? [Y / N]	3.6		y	3.6		y	3.6		y	4.0		y

Table 7. AHA model results for the Chewuch River natural production phases

Chewuch River Coho			Natural Production Implementation			Natural Production Support (I)			Natural Production Support (F)			Long-term (PFC)		
Hab		[EDT] Prod. | Capacity	1.10		1,415	1.10		1,415	1.45		1,415	1.79		1,500
		Min NOR Escape | %Kelt	1			1			1			1		
		Smolt Prod. | Capacity	99		127,269	99		127,269	130		127,269	161		134,892
Hydro	SAR [Mar. |Total]	Vary? (Y/N)	0.029	0.011	y	0.029	0.011	y	0.029	0.011	y	0.024	0.011	y
	Passage Surv	[Juv.|Adult]	0.45		0.85	0.45		0.85	0.45		0.85	0.54		0.85
		Adj. Prod. | Adj. Capacity	1.10		1,414	1.10		1,414	1.45		1,414	1.79		1,504
Harv	Harv -Mixed Stock		0.100		0.100	0.100		0.100	0.100		0.100	0.100		
	Harv-Mainstem	[NORs|HORs]			0.05 0.05			0.050			0.050	0.010		
	Harv -Terminal											0.050		
	Total Exploitation Rate		0.100		0.15	0.10		0.15	0.10		0.15	0.15		
			pNOB		pHOS	pNOB		pHOS	pNOB		pHOS	pNOB		pHOS
pNOB-Goal		pHOS-Goal	10%		90%	35%		80%	80%		60%			
pNOB-Realized		pHOS-Realized	11%		83%	35%		82%	80%		59%			
		[Int /Seg /None]	Local	Import	Int	Local	Import	Int	Local	Import	Int	Local	Import	Int
Local	Imported	Smolt Release	393		325,000	275		227,500	138		113,750			-
Exported Brood		% Marked			100%			100%						
% to Hatchery		% to Nat. Spawn.	35%		65%	35%		65%	13%		87%			
Recruits/Spwnr		Fitness? [Y / N]	3.6		y	3.6		y	3.6		y	4.0		y

Table 8. AHA model results for the Twisp River natural production phases

Twisp River Coho			Natural Production Implementation			Natural Production Support (I)			Natural Production Support (F)			Long-term (PFC)		
Hab		[EDT] Prod. | Capacity	1.32		926	1.32		926	1.45		926	1.64		1,200
		Min NOR Escape | %Kelt	1			1			1			1		
		Smolt Prod. | Capacity	140		98,509	140		98,509	154		98,509	174		127,660
Hydro	SAR [Mar.| Total]	Vary? (Y/N)	0.025	0.009	y	0.025	0.009	y	0.025	0.009	y	0.021	0.009	y
	Passage Surv	[Juv. | Adult]	0.45		0.85	0.45		0.85	0.45		0.85	0.54		0.85
		Adj. Prod. | Adj. Capacity	1.32		925	1.32		925	1.45		925	1.64		1,201
Harv	Harv -Mixed Stock		0.100		0.100	0.100		0.100	0.100		0.100	0.100		
	Harv- Mainstem	[NORs|HORs]			0.05 0.05			0.050			0.050	0.100		
	Harv -Terminal											0.050		
	Total Exploitation Rate		0.100		0.15	0.10		0.15	0.10		0.15	0.23		
			pNOB		pHOS	pNOB		pHOS	pNOB		pHOS	pNOB		pHOS
pNOB-Goal		pHOS-Goal	10%		90%	35%		75%	80%		60%			
pNOB-Realized		pHOS-Realized	11%		82%	35%		80%	80%		66%			
		[Int /Seg /None]	Local	Import	Int	Local	Import	Int	Local	Import	Int	Local	Import	Int
Local	Imported	Smolt Release	332		275,000	233		192,500	116		96,250			-
Exported Brood		% Marked			100%			100%						
% to Hatchery		% to Nat. Spawn.	35%		65%	35%		65%	13%		87%			
Recruits/Spwnr		Fitness? [Y / N]	3.6		y	3.6		y	3.6		y	4.0		y

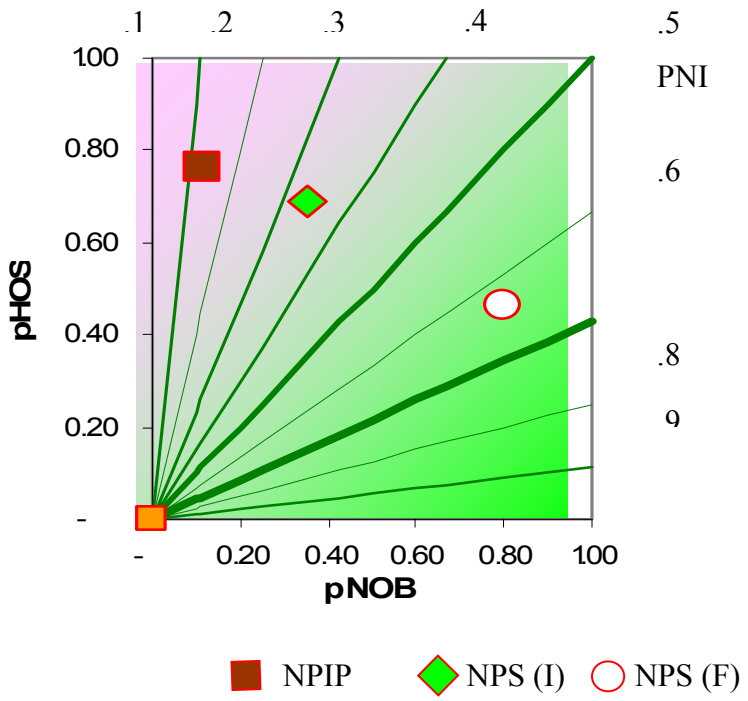

Figure 1. Proportion Natural Influence (PNI) Predicted for the Upper Wenatchee River Natural Production Phases

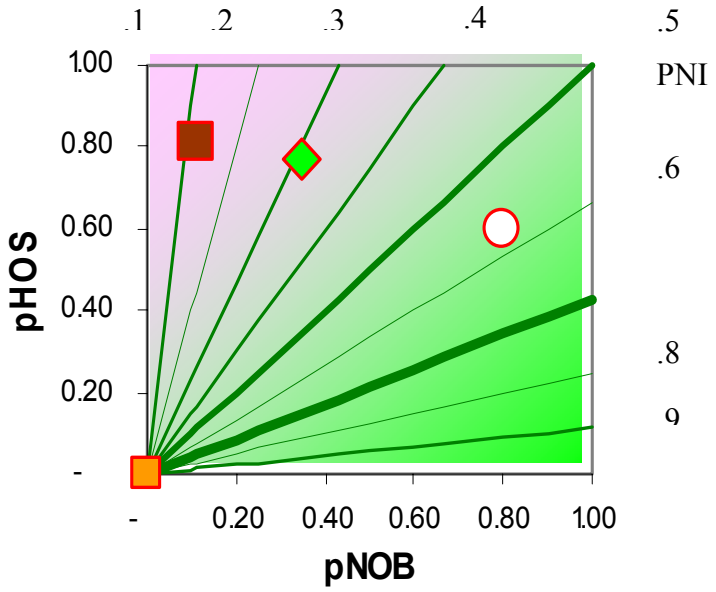

Figure 2. Proportion Natural Influence (PNI) Predicted for Chiwawa River Natural Production Phases

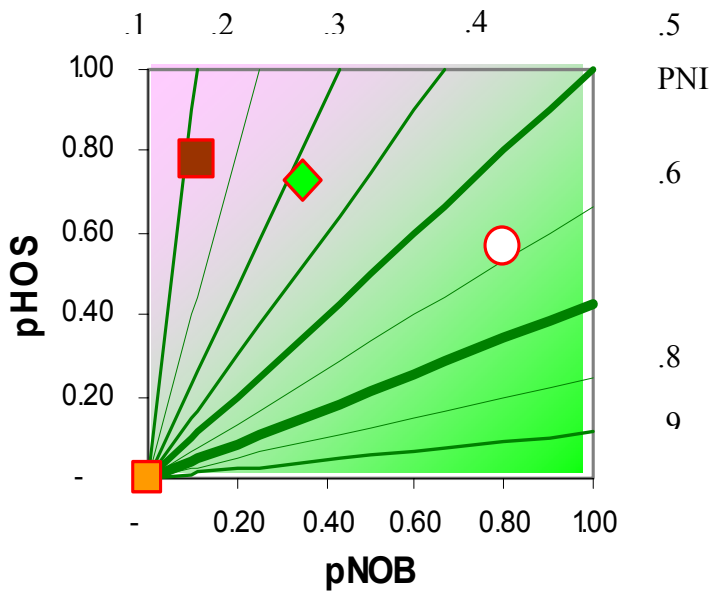

Figure 3. Proportion Natural Influence (PNI) Predicted for White River Natural Production Phases

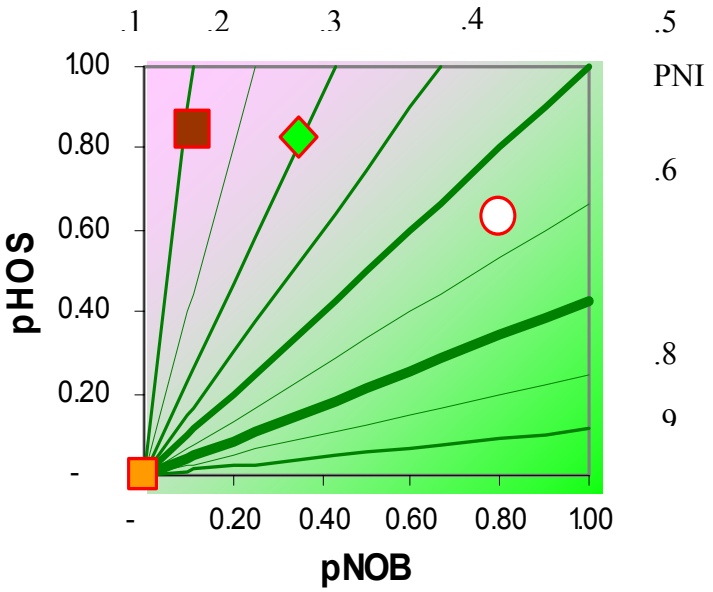

Figure 4. Proportion Natural Influence (PNI) Predicted for Nason Creek Natural Production Phases

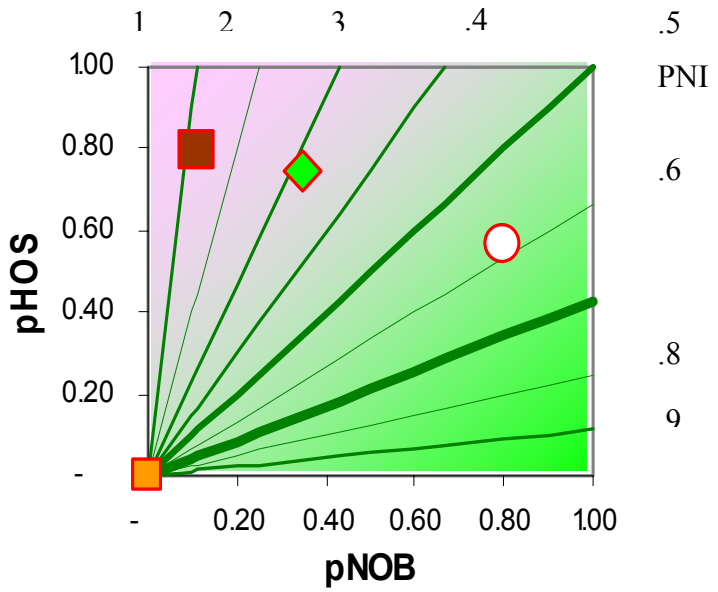

Figure 5. Proportion Natural Influence (PNI) Predicted for Little Wenatchee River Natural Production Phases

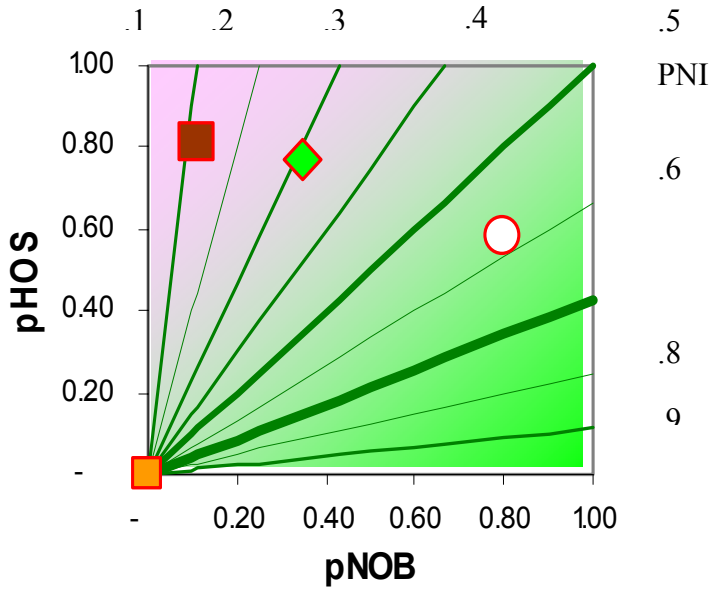

Figure 6. Proportion Natural Influence (PNI) Predicted for the mid-and upper Methow River Natural Production Phases

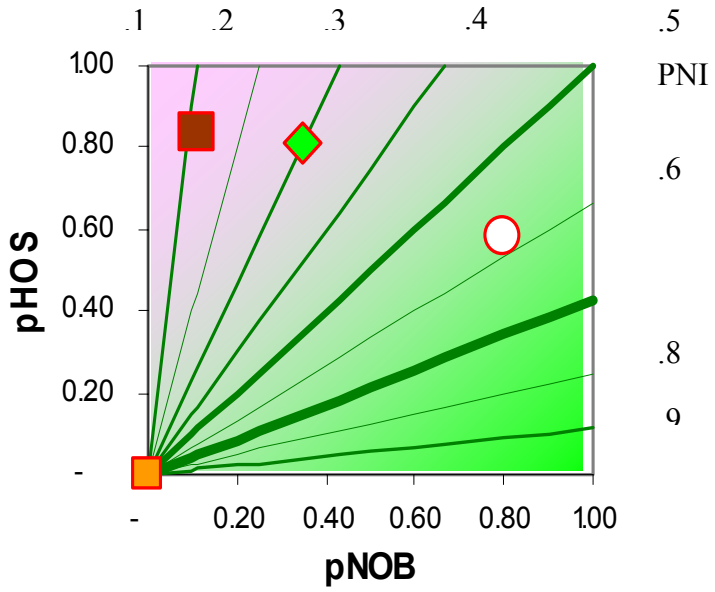

Figure 7. Proportion Natural Influence (PNI) predicted for Chewuch River Natural Production Phases

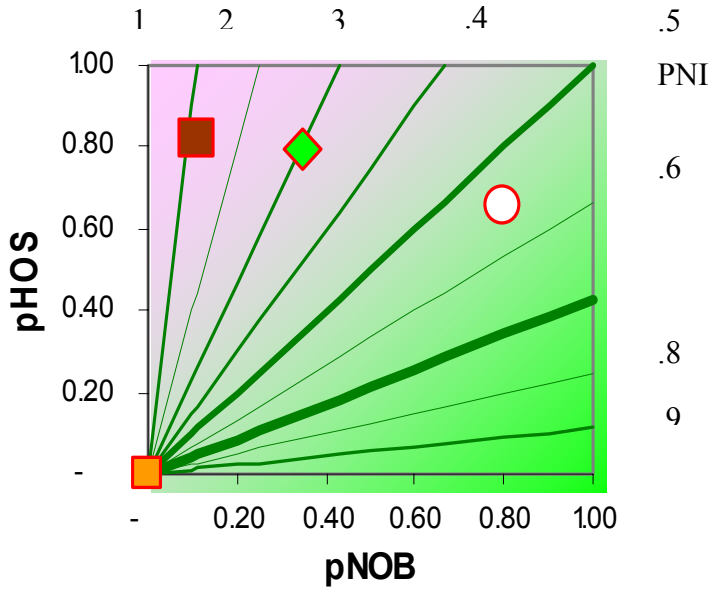

Figure 8. Proportion Natural Influence (PNI) predicted for Chewuch River Natural Production Phases

Table 9. Documentation of AHA model input values

Management Intent	Initiate natural producing in key habitat areas. NOR Escapement >600	Begin development of locally adapted fully integrated stock. NOR escapement >700	Realization of locally adapted fully integrated stock. NOR escarpment > 900	Self-sustaining naturally reproducing population. NOR escapement > 1500. Terminal and mainstem harvest in most years
Management Strategy	Release basin specific broodstock in areas predicted by EDT to be most productive for coho salmon. Begin local adaptation process.	Begin conversion to integrated hatchery program to move towards PNI>0.5 (i.e. pNOB > pHOS). Protect and restore habitat.	Full conversion to integrated hatchery program. Realization of PNI>0.5 (i.e. pNOB > pHOS). Protect and restore habitat.	Habitat protection and restoration. Harvest according to matrix schedule. Periodic hatchery supplementation as needed to prevent extirpation and achieve harvest goals (per matrix), subject to condition that PNI>.5 (pNOB>pHOS).

		Natural Production Implementation	**Natural Production Support (I)**	**Natural Production Support (F)**	**Fully Restored Population**
Habitat Data	Data Source(s)	EDT	EDT	EDT	EDT
	Quality Rating	**2**	**2**	**2**	**2**
	Administrator	Casey Baldwin	Casey Baldwin	Casey Baldwin	Casey Baldwin
Hydro Data	Data Source(s)	Survival values taken from 2004 FCRPS Biological Opinion. Values include D and transportation. Mid-Columbia values for non-FCRPS projects calculated from reported McNary value. Downstream survival values have current, intermediate and long-term values for the Current, Short-Term and Long-Term values as default.	Survival values taken from 2004 FCRPS Biological Opinion. Values include D and transportation. Mid-Columbia values for non-FCRPS projects calculated from reported McNary value. Downstream survival values have current, intermediate and long-term values for the Current, Short-Term and Long-Term values as default.	Survival values taken from 2004 FCRPS Biological Opinion. Values include D and transportation. Mid-Columbia values for non-FCRPS projects calculated from reported McNary value. Downstream survival values have current, intermediate and long-term values for the Current, Short-Term and Long-Term values as default.	Survival values taken from 2004 FCRPS Biological Opinion. Values include D and transportation. Mid-Columbia values for non-FCRPS projects calculated from reported McNary value. Downstream survival values have current, intermediate and long-term values for the Current, Short-Term and Long-Term values as default.
	Quality Rating	**3**	**3**	**3**	**3**
Harvest Data	Data Source(s)	Mixed Harv:	Mixed Harv:	Mixed Harv:	Mixed Harv:
	Quality Rating	**3**	**3**	**3**	**3**
Hatchery Data	Data Source(s)	Data was obtained from BPA Project # 1996-040-00 years 2000 through 2005. The following values were used: Fecundity - 2700, prespawn survival - 0.1. Egg to smolt survival - 75. Smolt-to-Adult survival 0.40%	Data was obtained from BPA Project # 1996-040-00 years 2000 through 2005. The following values were used: Fecundity - 2700, prespawn survival - 0.1. Egg to smolt survival - 75. Smolt-to-Adult survival 0.40%	Data was obtained from BPA Project # 1996-040-00 years 2000 through 2005. The following values were used: Fecundity - 2700, prespawn survival - 0.1. Egg to smolt survival - 75. Smolt-to-Adult survival 0.40%	Data was obtained from BPA Project # 1996-040-00 years 2000 through 2005. The following values were used: Fecundity - 2700, prespawn survival - 0.1. Egg to smolt survival - 75. Smolt-to-Adult survival 0.40%
	Quality Rating	**3**	**3**	**3**	**3**
	Administrator	Keely Murdoch	Keely Murdoch	Keely Murdoch	Keely Murdoch
	Notes	Capacity is the median value between EDT and Zillges (1977)	Capacity is the median value between EDT and Zillges (1977)	Capacity is the median value between EDT and Zillges (1977)	Productivity Value assumes habitat improvement projects have been implemented