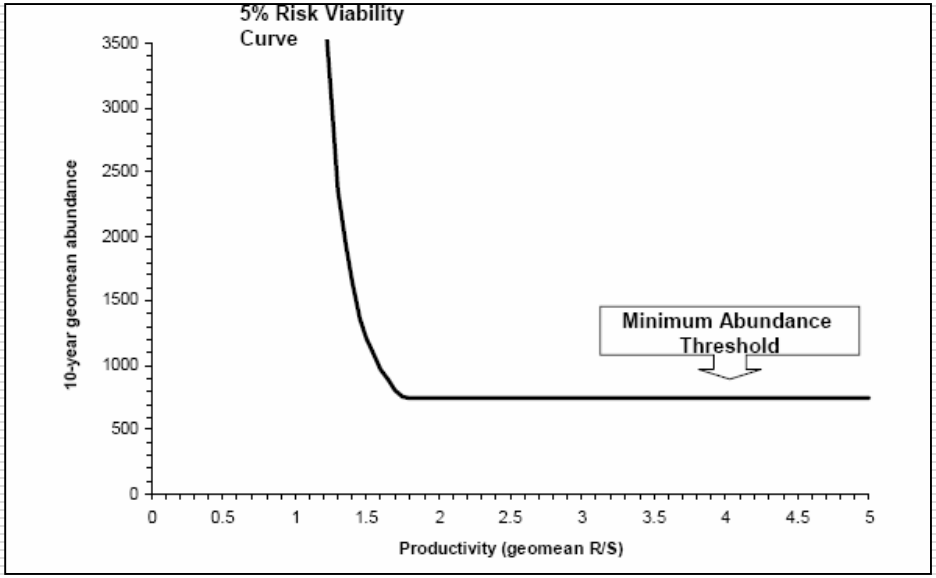
Columbia River Hatchery Scientific Review Group

Science Team Update

May 2008

Background - Foundation of HSRG Review

- Conservation goals for key natural populations must be met while, at the same time, maintaining and maximizing harvest



Background - Keys to Conservation

- Develop local broodstocks (even if not native)
- Control risks to natural populations caused by the unintended presence of hatchery-origin adults on spawning grounds
- Develop properly integrated hatchery programs or - - maintain effective, segregated hatchery programs
- Place the resources in the hands of the managers to complete facility and monitoring reforms

Background - Importance of Habitat

- Benefits associated with Hatchery Reform increase as habitat reforms are made

Progress to Date

- The HSRG has completed reviews of populations and hatchery programs for anadromous salmonids in the following regions:
  - Lower Columbia River
  - Columbia River Gorge
  - Willamette Basin
  - Columbia Plateau
  - Columbia Cascade

Future Schedule

- The HSRG field schedule to complete reviews is as follows:
  - Mountain Snake (June 2008)
  - Blue Mountain (July 2008)

- Draft Final products expected by October, 2008

HSRG Science Team Reviews

- Population and program reviews begin with field visits to hatcheries as well as to important locations within watersheds

HSRG Science Team Reviews

- Reviews focus on developing effective broodstock management scenarios, adult escapement plans, and harvest opportunities

All H Analyzer (AHA)

Version 7.2.4

July 31, 2007

Activate Scenario Documentation ------->

Subregion/Subbasin	Species/Race
Elochoman	Fall Chinook

Biological Significance:

	Current	No Hatchery	Best Seg	Best Int	~User Def (HSRG Rec)
Biological Significance:	LOW	LOW PNI: 0.08	LOW PNI: 1.00	LOW PNI: -	LOW PNI: 0.56	LOW PNI:
Population Management Intent:	Harvest	None	Harvest	Harvest	Harvest
Harvest&Hatchery Strategy:	Integrated	No hatchery program	Segregated hatchery	Integrated	Integrated
Population Recovery Designation	Primary	Primary	Primary	Primary	Primary

Elochoman Fall Chinook			Current		No Hatchery		Best Seg		Best Int		~User Def (HSRG Rec)	
Hab	Productivity (Adult)	Ad. Capacity	3.03	1,706	3.03	1,706	3.03	1,706	3.03	1,706	3.03	1,706
	Min NOR Escape	% Kelt	1		1		1		1		1	
	Smolt Productivity	Sm. Capacity	432.9	243,714	432.86	243,714	432.86	243,714	432.86	243,714	432.86	243
Hydro	Ocean Surv / Baseline SAR	Vary? (Y/N)	0.007 0.007	Y	0.007 0.007	Y	0.007 0.007	Y	0.007 0.007	Y	0.007 0.007	Y
	Juv Passage Surv.	Adult Passage	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Adjusted Productivity	Adj. Capacity	3.03	1,706	3.03	1,706	3.03	1,706	3.03	1,706	3.03	1,706
Harv	*Active parameter documentation to see assumptions for selective and non-selective fisheries.*	Harv - Marine	NORs	HORs	0.419	0.419	0.419	0.419	0.280	0.360	0.280	0.360	0.280	0.360
		Harv - L. Mainstem	NORs	HORs	0.123	0.123	0.123	0.123	0.040	0.200	0.040	0.200	0.040	0.200
		Harv - U. Mainstem	NORs	HORs										
		Harv - Terminal	NORs	HORs	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
		Total Exploitation Rate	NORs	HORs	0.501	0.501	0.501	0.501	0.323	0.498	0.323	0.498	0.323	0.498
Hatch					pNOB	pHOS	pNOB	pHOS	pNOB	pHOS	100	pHOS	pNOB	pHOS
	Broodstock Composition		pNOB-Goal	pHOS-Goal	6%						20%		20%	
			pNOB-Realized	pHOS-Realized	6%	68%				32%	20%	16%	20%	3%
	Purpose	Type	Cons/Harv/Both	Int/Seg/Step/None	Harv	Int	None	None	None	None	Harv	Int	Cons	Int
	Broodstock by Source		Local	Imported / Smolt Release	1100	2,072,070		-		-	255	480,344	100	188
	Brood Exported (from HOR Surplus)		Export Goal/Realized	Strays		231				198		17		15
	Destination for HOR Returns		% to Hatchery	% to Nat. Spawn.	88%	12%		100%		100%	95%	5%	90%	10%
	Productivity of Hatchery Fish		Recruits/Spawner	Fitness? [Y / N]	7.0	y	7.0	y	7.0	y	7.0	y	7.0	y

Open AHA Dataset:

E:\Col River HSRG\AHA 7.1.9 files 043907\lastest AHA 080807\Elochoman Fall Chinook_ROLLUP_073007.aha

OPEN SAVE

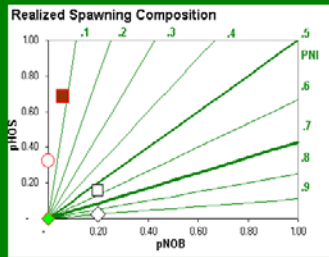
Parameter Documentation

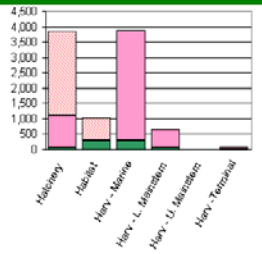
Select alternatives (yes/no) for parameter documentation (current condition should always be documented)

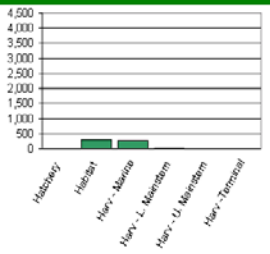
	Yes	No
Current	○	■
Alt 2	○	●
Alt 3	○	●
Alt 4	○	●
Alt 5	○	●

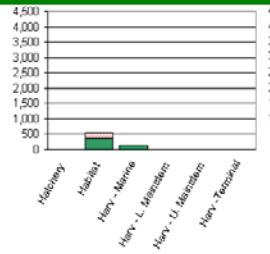
Parameter Documentation Inactive for All Alternatives

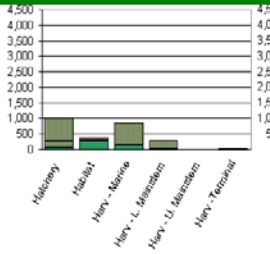
Realized Spawning Composition









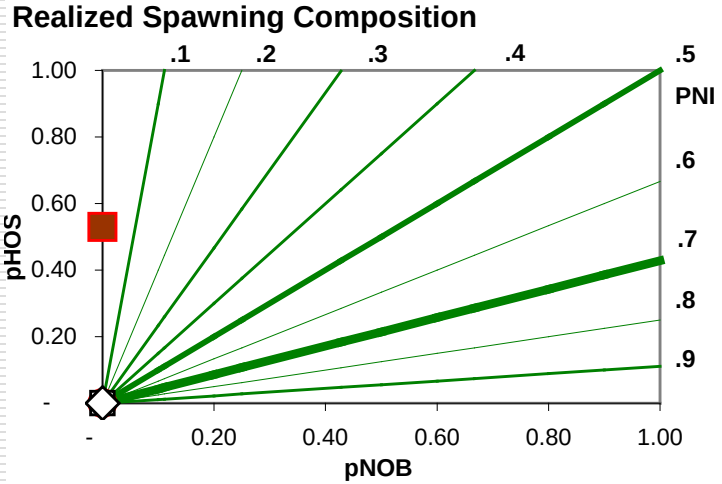


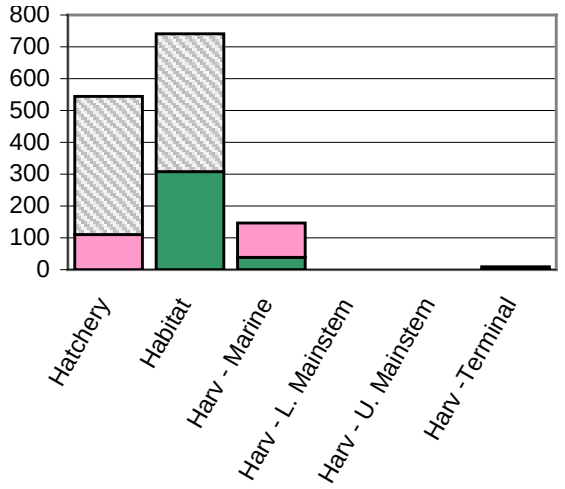
	Current	No Hatchery	Best Seg	Best Int	~User Def (HSRG Rec)
Relative Hatchery Optimum ->	80	80	80	80	80
Weir Factor ->					90%
Relative Reproductive Success (HOS) ->	80%	80%	80%	80%	80%
Initial Fitness Factor (A)	0.81	0.81	0.81	0.81	0.81
Fitness Factor after 100 generations (B)	0.50	1.00	0.50	0.63	0.97
Average Fitness Factor (100 Generations)	0.50	0.99	0.50	0.74	0.96
Generations until average fitness is reached	16	30	19	41	37
Minimum Hatchery Program (as % of BS Goal): Internal	514			49	4
"Fitness Floor" -> 0.5 External	231	-	198	17	
Calculated Hatchery SAR ->	0.37%	0.37%	0.37%	0.37%	0.37%
Calculated Natural SAR ->	0.7%	0.7%	0.7%	0.7%	0.7%

	Current Max	Current Min	Current Ave	No Hatchery Max	No Hatchery Min	No Hatchery Ave	Best Seg Max	Best Seg Min	Best Seg Ave	Best Int Max	Best Int Min	Best Int Ave	~User Def (HSRG Rec) Max	~User Def (HSRG Rec) Min	~User Def (HSRG Rec) Ave
NOR Escapement	1,179	75	275	930	103	303	1,186	128	334	942	59	289	2,040	223	
HoS Total Escapement	2,276	395	745	-	-	-	603	105	197	204	35	66	59	10	
HoS Effective Escapement	1,482	330	596	-	-	-	482	84	158	137	29	53	42	9	
Total Natural Escapement (NoS & All HoS)	3,455	494	1,020	930	103	303	1,789	243	531	1,142	106	355	2,099	236	
Total Harvest	14,383	2,454	4,643	932	103	304	565	61	159	3,476	625	1,154	2,169	341	
Hatchery Broodstock	1,100	1,100	1,100	-	-	-	-	-	-	255	255	255	100	100	
Surplus at Hatchery	10,495	968	2,742	-	-	-	-	-	-	2,696	300	746	1,105	126	
Total Runsize	28,729	4,902	9,274	1,862	206	607	1,751	188	493	7,463	1,334	2,493	5,426	916	

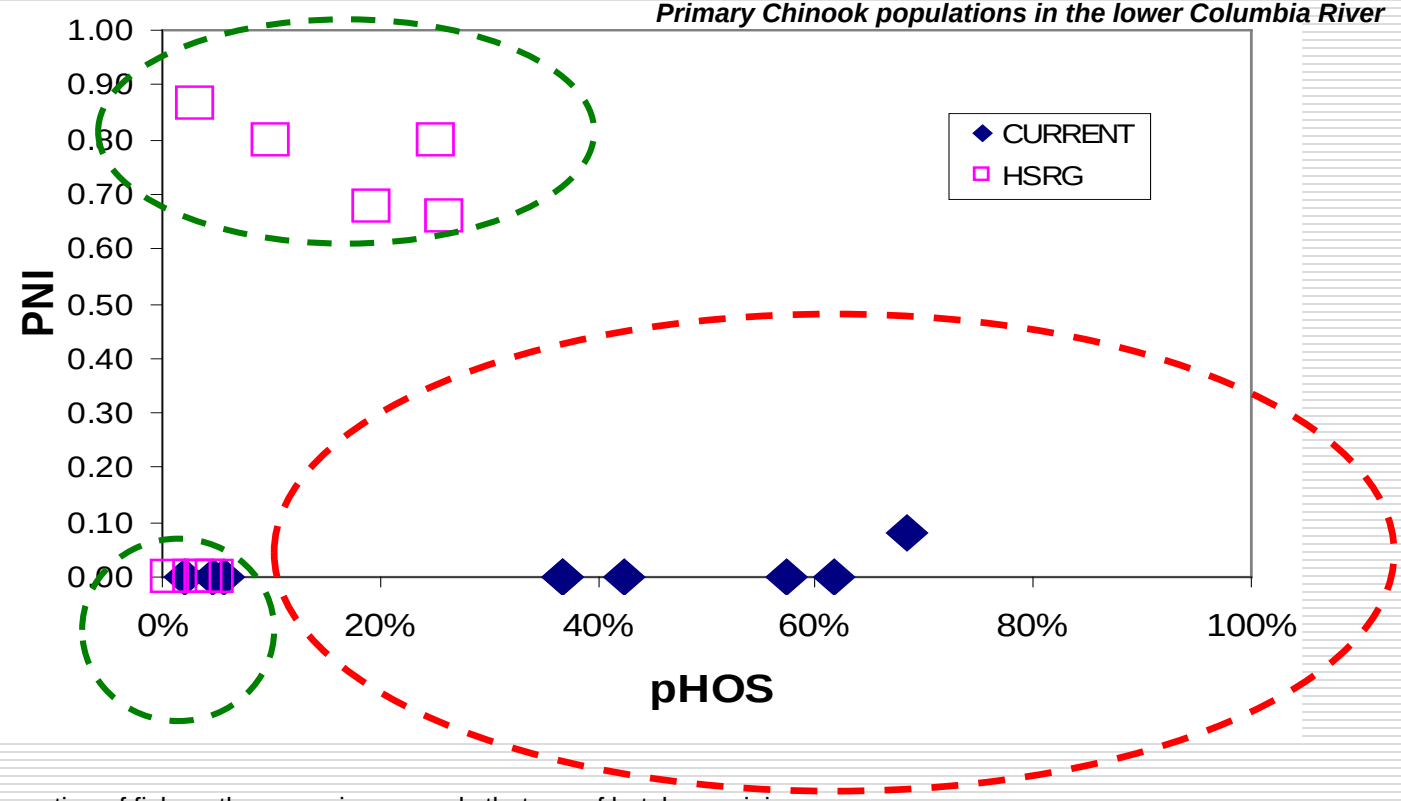
HSRG Observations

- Currently, the majority of important populations of salmon and steelhead do not meet the conservation expectations identified by managers



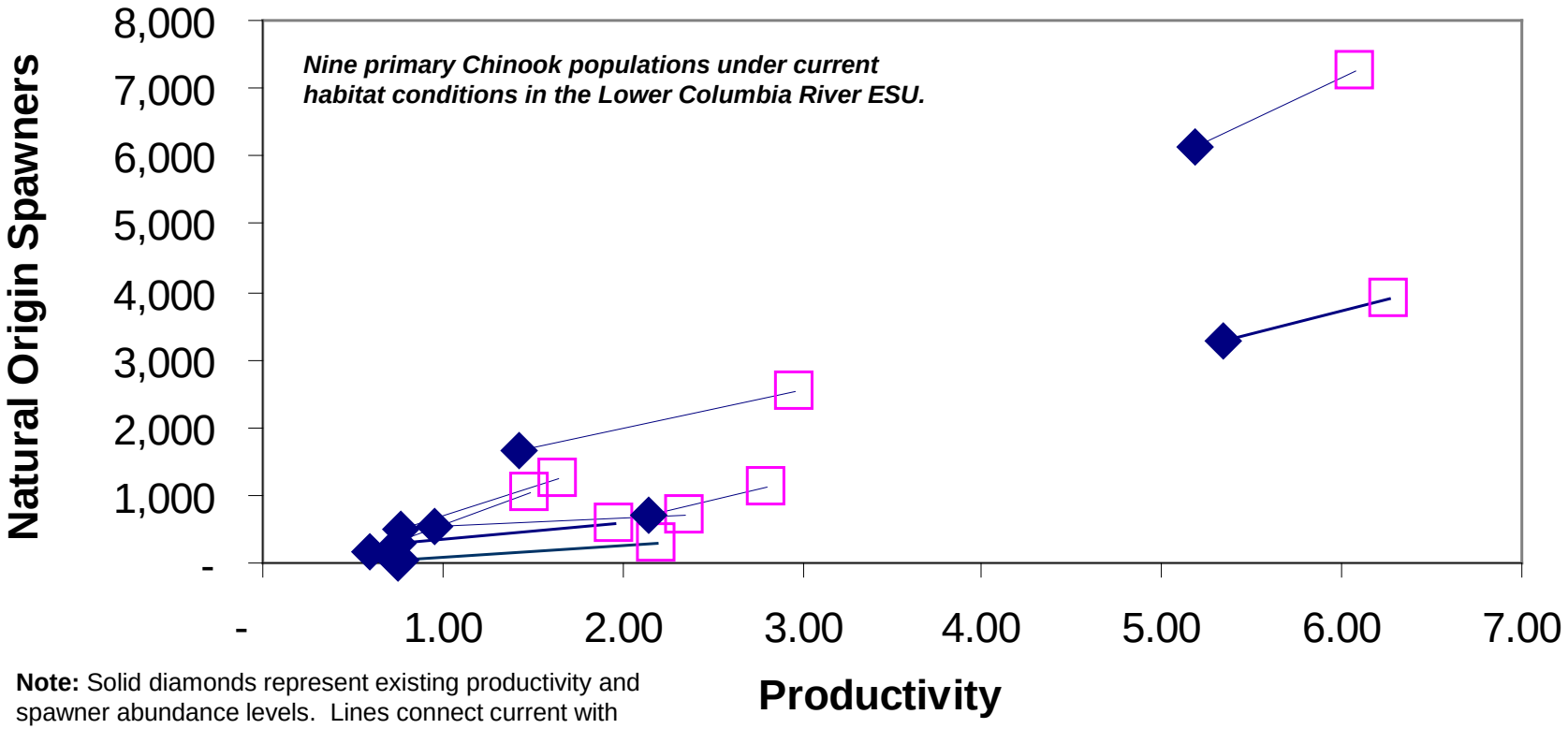


Proportionate Natural Index vs. Proportion of Hatchery Origin Fish



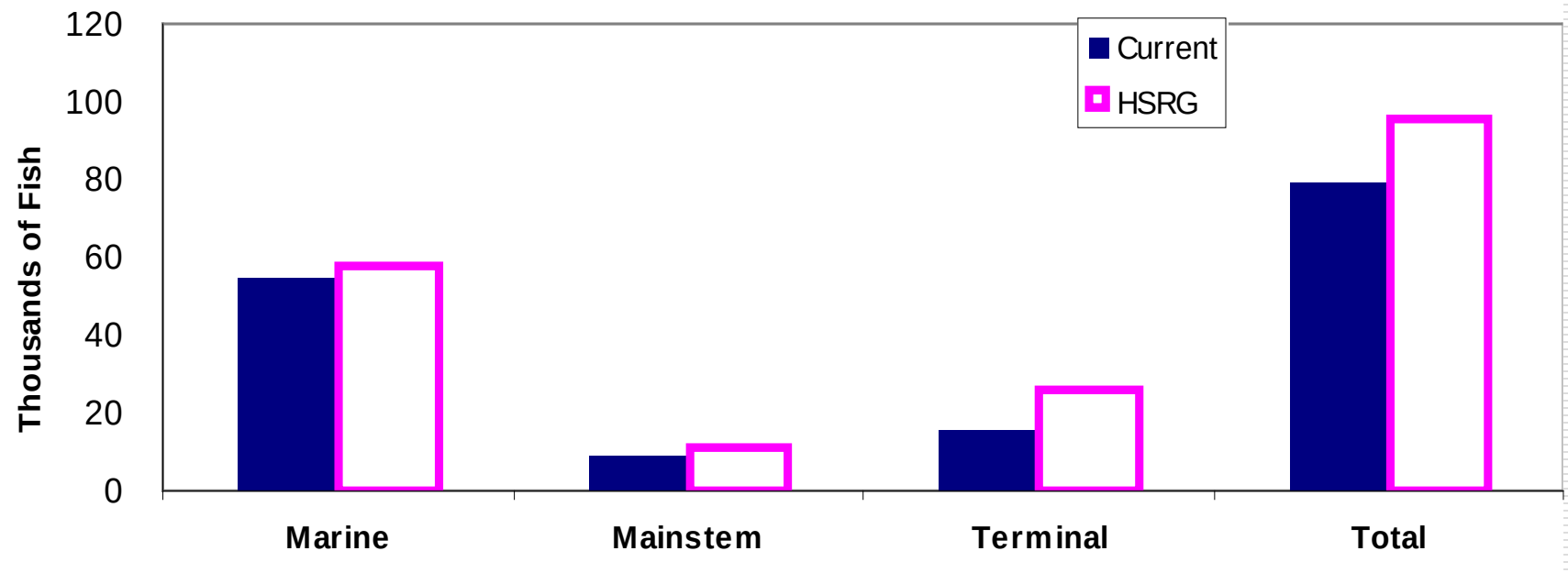
pHOS = Proportion of fish on the spawning grounds that are of hatchery origin
PNI = Proportionate natural influence index

Examples of Increased Abundance and Productivity of Natural Pops.



Note: Solid diamonds represent existing productivity and spawner abundance levels. Lines connect current with proposed improvements achieved under HSRG scenarios.

Estimated Harvest Under Current and HSRG Management Scenarios



HSRG Findings

- HSRG has developed scenarios for salmon and steelhead populations and hatchery programs in the lower river that meet the conservation expectations identified by managers

- Scenarios predict increases in population productivity, natural-origin spawner abundance, and harvest of hatchery-origin fish

Web Site Address

- http://hatcheryreform.us