



Chinook Salmon Transfers by WDF

A long history of genotypic mixing raises questions about
current policy



Introduction

- Chinook salmon populations are crashing
- Causes include habitat loss, obstructions to movement (dams, culverts), predation by marine mammals and birds, and misguided management practices
 - Policy of extensive cuts in hatchery output to protect ESA-listed “wild” fish from competition
 - “Over-success” of Marine Mammal Protection Act has increased salmons’ predators to highest numbers
 - Habitat cannot be fully remediated for decades, if ever
- Serious ecological and economic consequences
 - SRKW crisis
 - Tribal treaty rights
 - Recreational fishery and dependent businesses
 - Commercial salmon fishery
- WDF archives cast doubt on the existence of some/all ESA-listed “wild” salmon populations



Background

Current fishery management practice hinges on the idea of preserving genotypically pure “wild” chinook stocks, **but**

- For more than 100 years, the state of Washington indiscriminately distributed hatchery chinook across river basins
- WDF archives record plantings of over 4 billion salmon* between 1953 and 1987, many of which went out of basin
- All Puget Sound (and most other major) rivers received fish from other basins in high numbers, resulting in extensive genetic mixing

**Including WDF, tribal, cooperative, and federal activity*

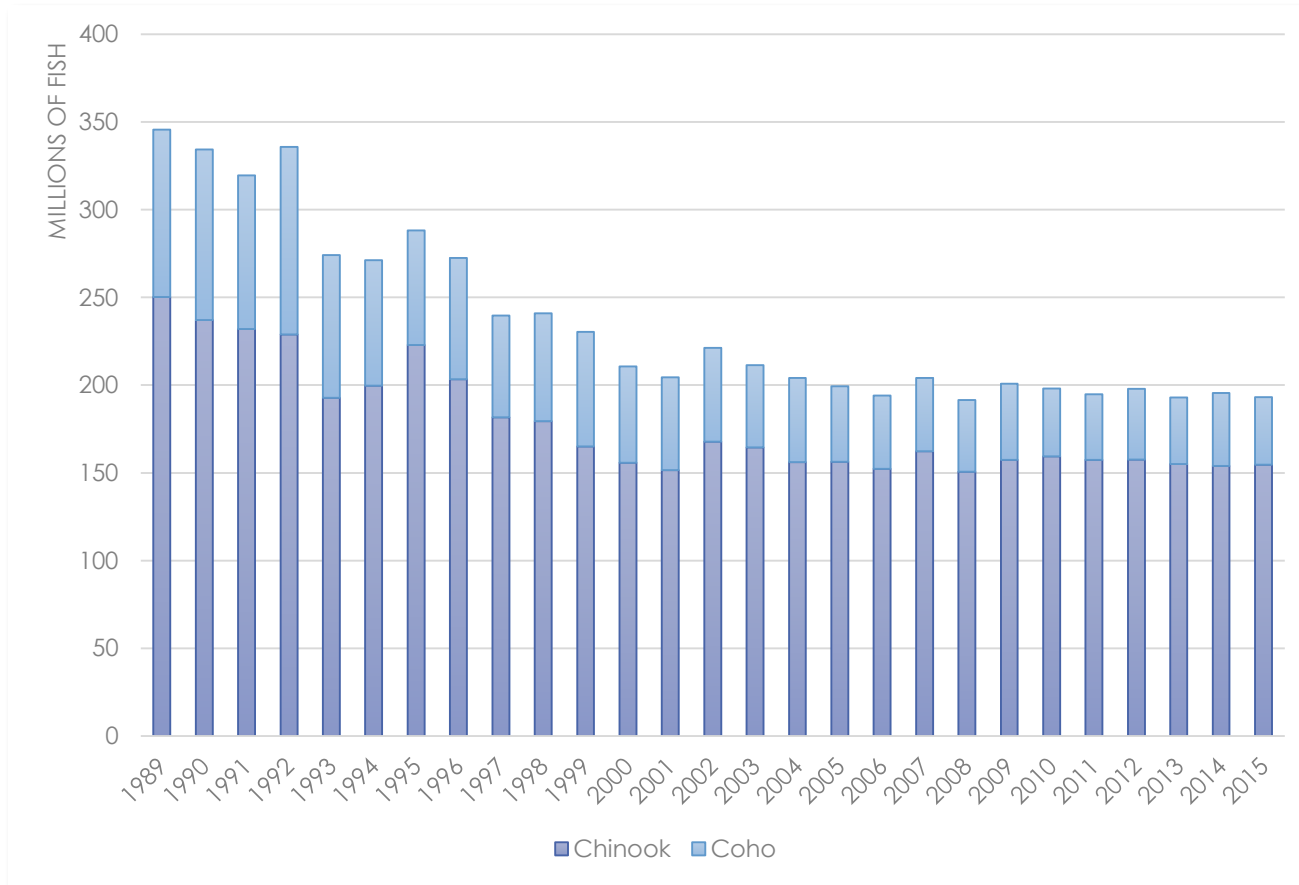
Background (cont'd)

- Hard-copy data received by PSA from Dungeness Hatchery files
- Documents plantings of chinook (and other species) from 1953-1987
- Some gaps in data from 1970s
- Does not include:
 - Activity from 1895-1952 or after 1987
 - Undocumented “Johnny Appleseeding” by WDF throughout history
 - Natural straying
- NOP & EJ chapters of PSA have analyzed WDF activity from 1980-87, more to come



WA Hatchery Production Cuts

44% decline since 1989



	Chinook	Coho	Total
1989	250,204,717	95,471,096	345,675,813
2015	154,731,789	38,412,635	193,144,424
Change	(95,472,928)	(57,058,461)	(152,531,389)

Loss of 150 million fish annually:

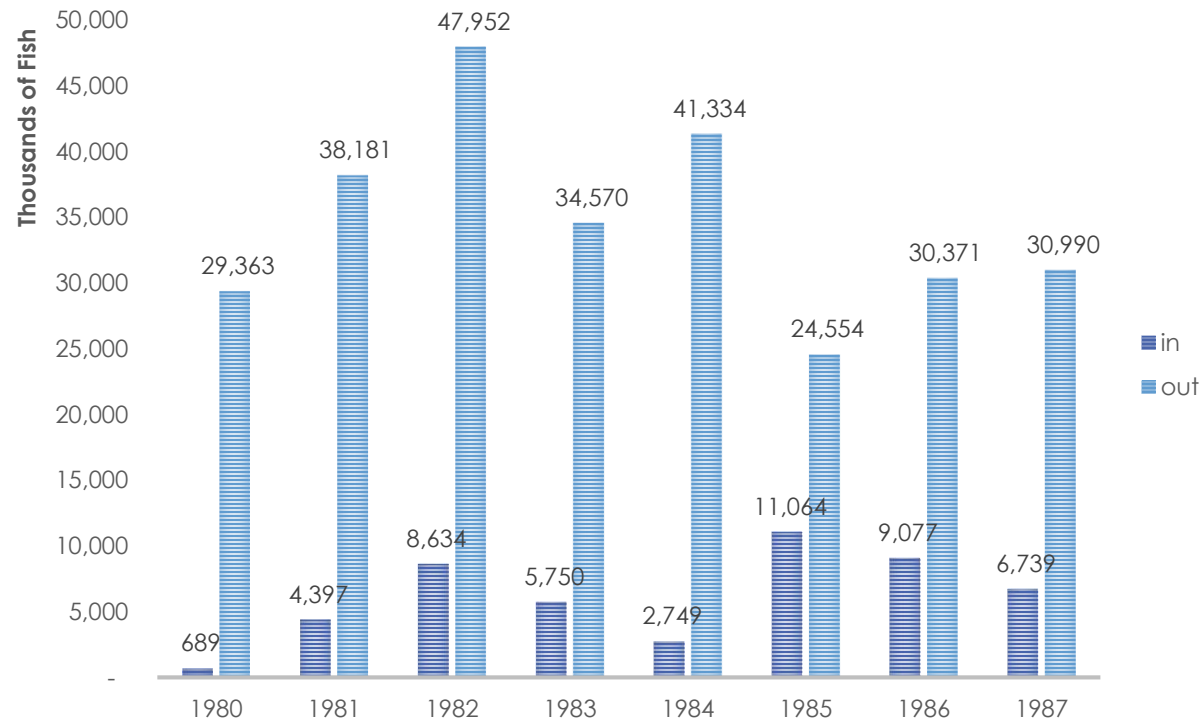
- Management policy – protect “wild” fish
- Funding cuts

8-Year Snapshot

Transfers between WDF facilities 1980-87



IN- VS. OUT-OF-BASIN TRANSFERS FALL, SPRING, AND SUMMER CHINOOK



- **277 million fish** were transferred out-of-basin (more than the 1987 US population)
- 85% of all transfers were out-of-basin
- Of 40 facilities, 36 (90%) received fish from other basins
- Of 27 river basins, only 1 (Snake River) did not receive fish from other basins



Impacted Rivers

Number of out-of-basin fish received 1980-87, WDF only

Puget Sound

Chambers Creek	3,776,792
Coulter Creek	4,363,586
Deschutes River	39,830,243
Green River	3,789,100
McAllister Creek	9,611,533
Minter Creek	11,425,015
Nisqually River	9,324,318
Nooksack River	61,079,318
Puyallup River	1,276,800
Samish River	602,777
Skagit River	8,971,152
Skokomish River	25,125,655
Skykomish River	1,256,659

Columbia

Columbia River	4,120,729
Cowlitz River	902,400
Elochoman River	6,567,385
Grays River	29,272,110
Kalama River	3,635,134
Klickitat River	15,660,165
Lewis River	3,858,219
Washougal River	11,440,523

Coastal

Humptulips River	1,924,233
Naselle	10,813,359
Nemah	2,397,400
Satsop River	3,692,712
Sol Duc River	163,694

- All Puget Sound rivers are impacted
- Does not include:
 - Tribal, federal, cooperative
 - Pre-1980, post-1987



Example: Green River

40 MM fish were transplanted to different basins

	1980	1981	1982	1983	1984	1985	1986	1987	Grand Total
Chambers Creek		306,923	286,005					636,200	1,229,128
Coulter Creek	658,215	200,718	465,585						1,324,518
Deschutes River	78,042	2,217,508	46,089	1,302,975	109,000			2,995,000	6,748,614
McAllister Creek			1,646,130		1,294,400			601,600	3,542,130
Minter Creek	2,497,252	1,491,290	540					49,600	4,038,682
N/A	115,418	73,095	52,753						241,266
Nisqually River			1,002,718					1,868,200	2,870,918
Nooksack River		3,987,600	4,129,191		15,200	693,600	1,576,600	1,958,770	12,360,961
Puyallup River				786,800				490,000	1,276,800
Samish River	296,088	306,689							602,777
Skagit River	1,592,137	1,048,828	640,287						3,281,252
Skokomish River	1,015,808	408,275	49,000						1,473,083
Skykomish River	28,404	465,200						649,305	1,142,909
Grand Total	6,281,364	10,506,126	8,318,298	2,089,775	1,418,600	693,600	1,576,600	9,248,675	40,133,038



Conclusions

- 100+ years of stock movement between river basins have resulted in extensive genetic mixing
- Can be argued that no genetically pure ESA-listed fish exist in any practical sense
- Current HSRG policy has not shown the desired improvement in natural origin returns
- Over-hauling of hatchery production using an in-basin integrated program could provide for a more timely response to the present crisis and can benefit all parties, natural origin production, and the SRKW
- Must seek relief under ESA

Appendix

Chinook transfers - WDF to Lummi Tribe '80-'87



Year	Run	Green River	Skookum Creek	Samish River	Lummi Bay	Total
1980	Fall	250,000				250,000
	Spring					-
1981	Fall	691,000				691,000
	Spring		47,600			47,600
1982	Fall	3,538,261				3,538,261
	Spring					-
1983	Fall			3,813,500		3,813,500
	Spring					-
1984	Fall			2,540,370		2,540,370
	Spring					-
1985	Fall			1,772,787		1,772,787
	Spring					-
1986	Fall			2,297,320	94,000	2,391,320
	Spring		114,000			114,000
1987	Fall			3,167,196		3,167,196
	Spring					-
Total	Fall	4,479,261	-	13,591,173	94,000	18,164,434
	Spring	-	161,600	-	-	161,600
Grand Total		4,479,261	161,600	13,591,173	94,000	18,326,034

Appendix

North Puget Sound District, Summary 1952-1973



	Chinook	Coho	Total
Anderson Creek		344,492	344,492
Bertrand Creek		228,930	228,930
Boulder Creek		53,232	53,232
California Creek		141,744	141,744
Canyon Creek		217,066	217,066
Chuckanut Creek	50,538	199,443	249,981
Colony Creek		30,000	30,000
Cornell Creek		95,914	95,914
Dakota Creek		349,807	349,807
Deer Creek		42,860	42,860
Fishtrap Creek		243,241	243,241
Glacier Creek		62,753	62,753
Hutchinson Creek	5,341,746	897,031	6,238,777
Kendall Creek	32,382,084	10,911,921	43,294,005
Kendall Lake	3,504,925	635,473	4,140,398
Lummi SW Pond		60,256	60,256

	Chinook	Coho	Total
Maple Creek		659,648	659,648
Nooksack River	188,220		188,220
Nooksack River M F	794,200	1,294,879	2,089,079
Nooksack River N F		475,055	475,055
Nooksack River S F	2,817,430	4,567,385	7,384,815
Potter Creek		214,572	214,572
Racehorse Creek		65,021	65,021
Red River SLU		50,000	50,000
Samish River	17,730,620	6,855,040	24,585,660
Skookum Creek	540,000	887,994	1,427,994
Slater Creek		120,100	120,100
Squalicum Creek		178,888	178,888
Ten Mile Creek		105,485	105,485
Terrel Creek		93,561	93,561
Thompson Creek		166,020	166,020
Wiser Creek		7,584	7,584

Chinook	Coho	Total
63,349,763	30,255,395	93,605,158