Fishes Without Borders II- Introduction

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Anadromous life history and importance to consider the complexities of fish management in large mainstem river and ocean environments

Or…
It’s not rocket science
it is
way more complicated than that.

Columbia River Basin

The 4 H's

Wild Juvenile Abundance

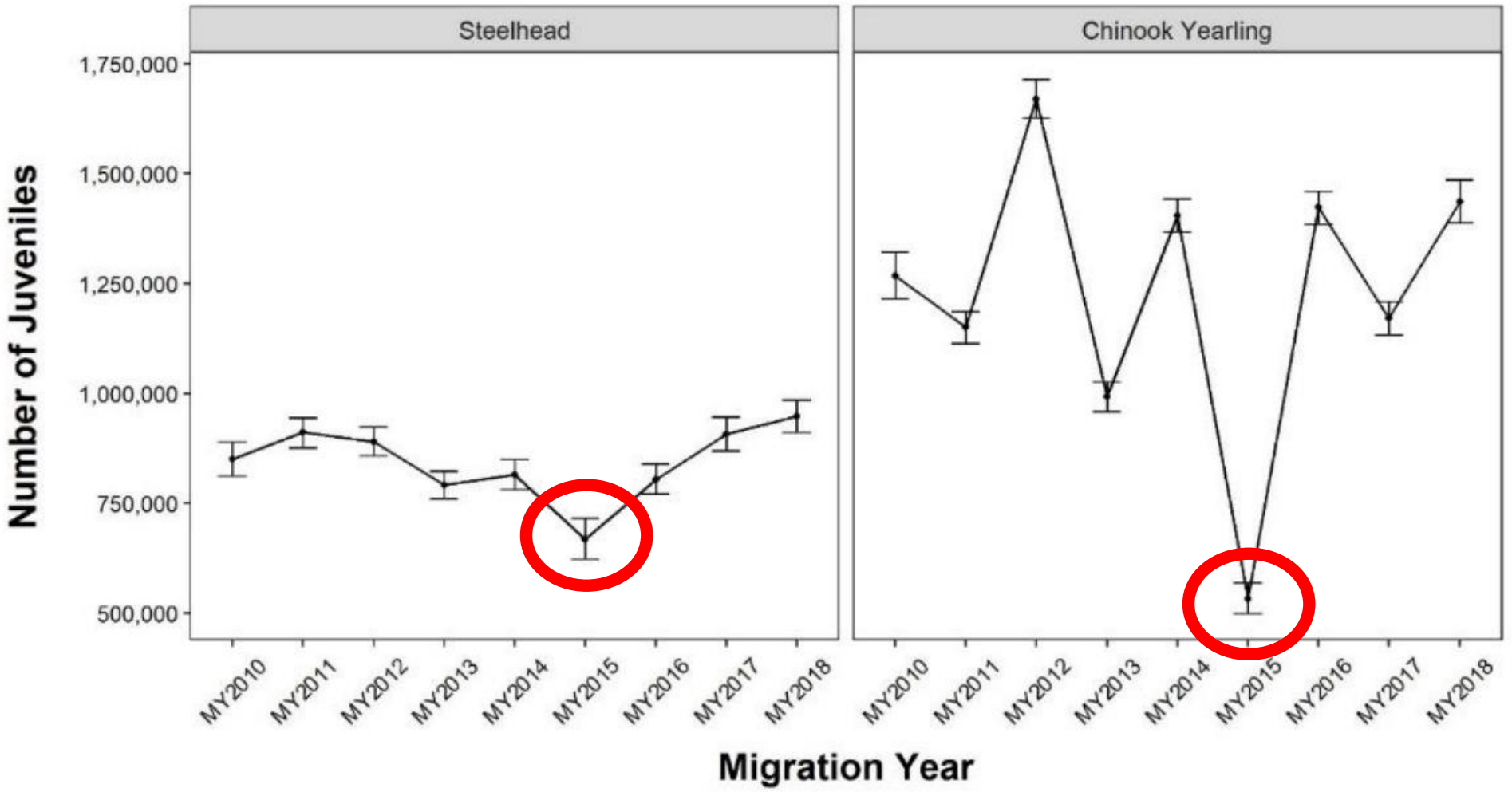
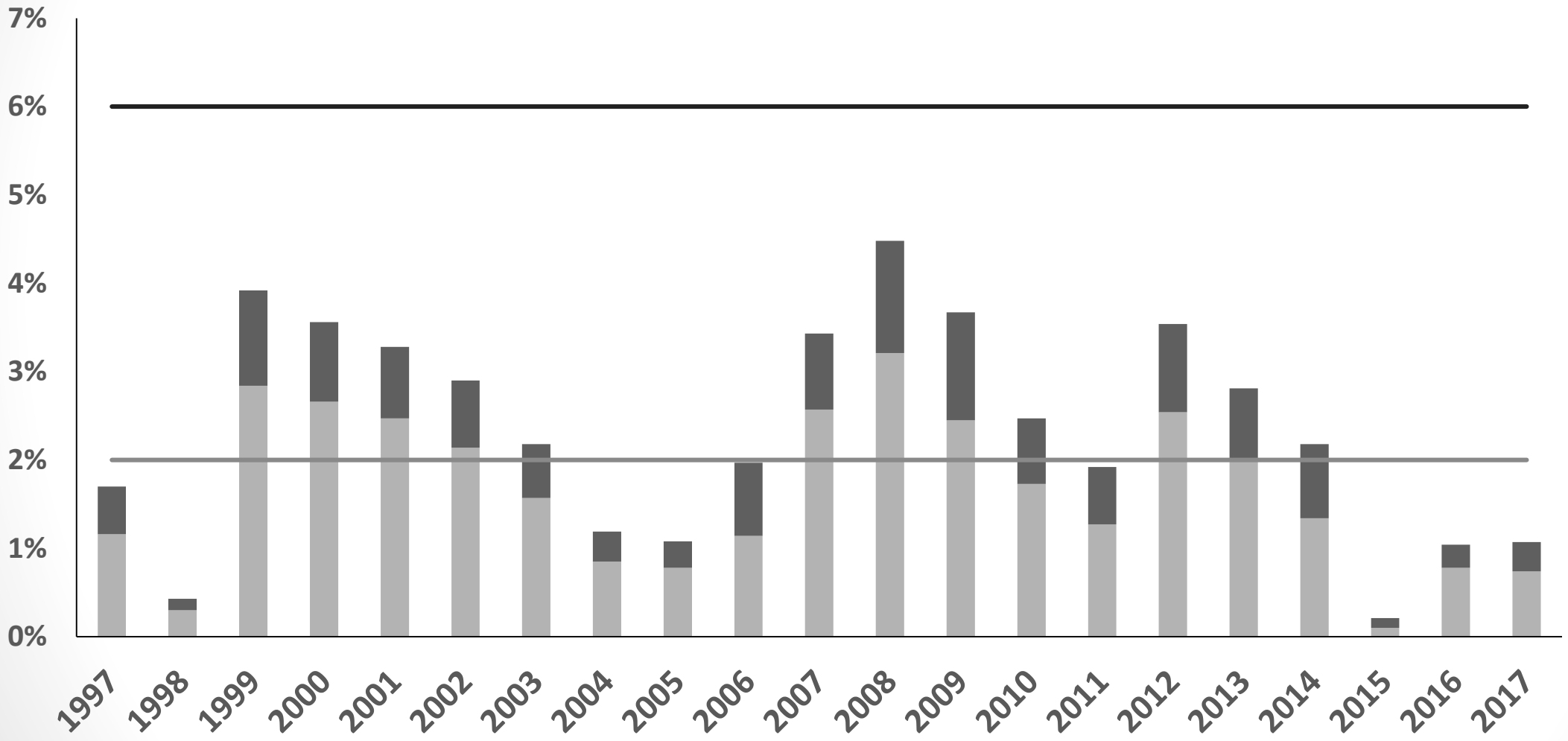
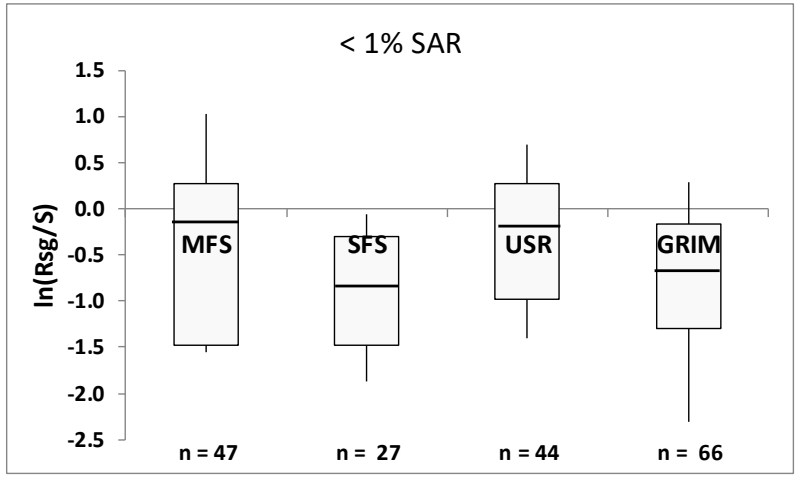


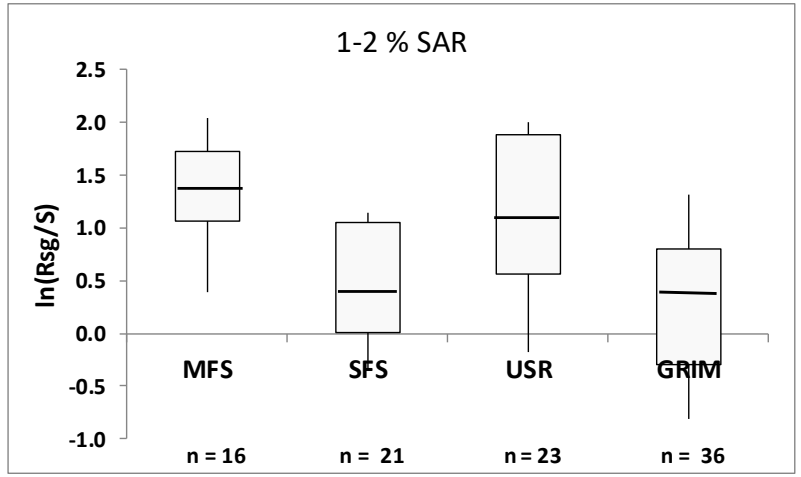
Figure 4. Wild steelhead and Chinook Salmon yearling juvenile emigrant estimates at Lower Granite Dam, migration years 2010-2018. Confidence intervals are at 90%.

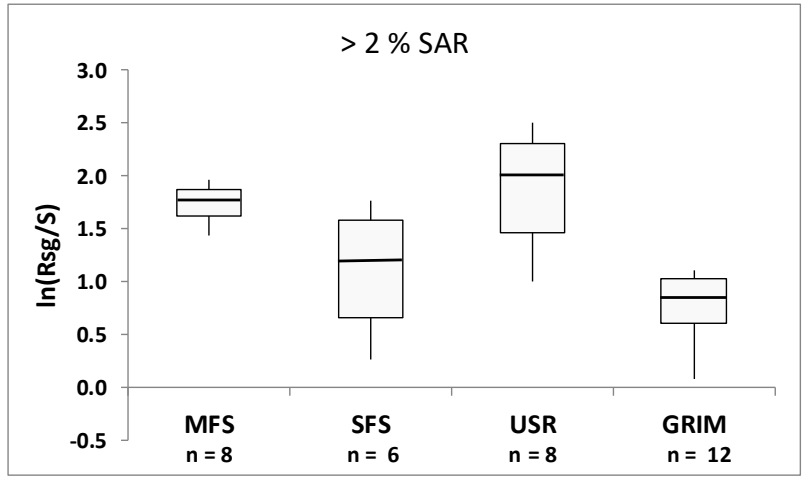
SAR- Smolt to Adult Return Rates



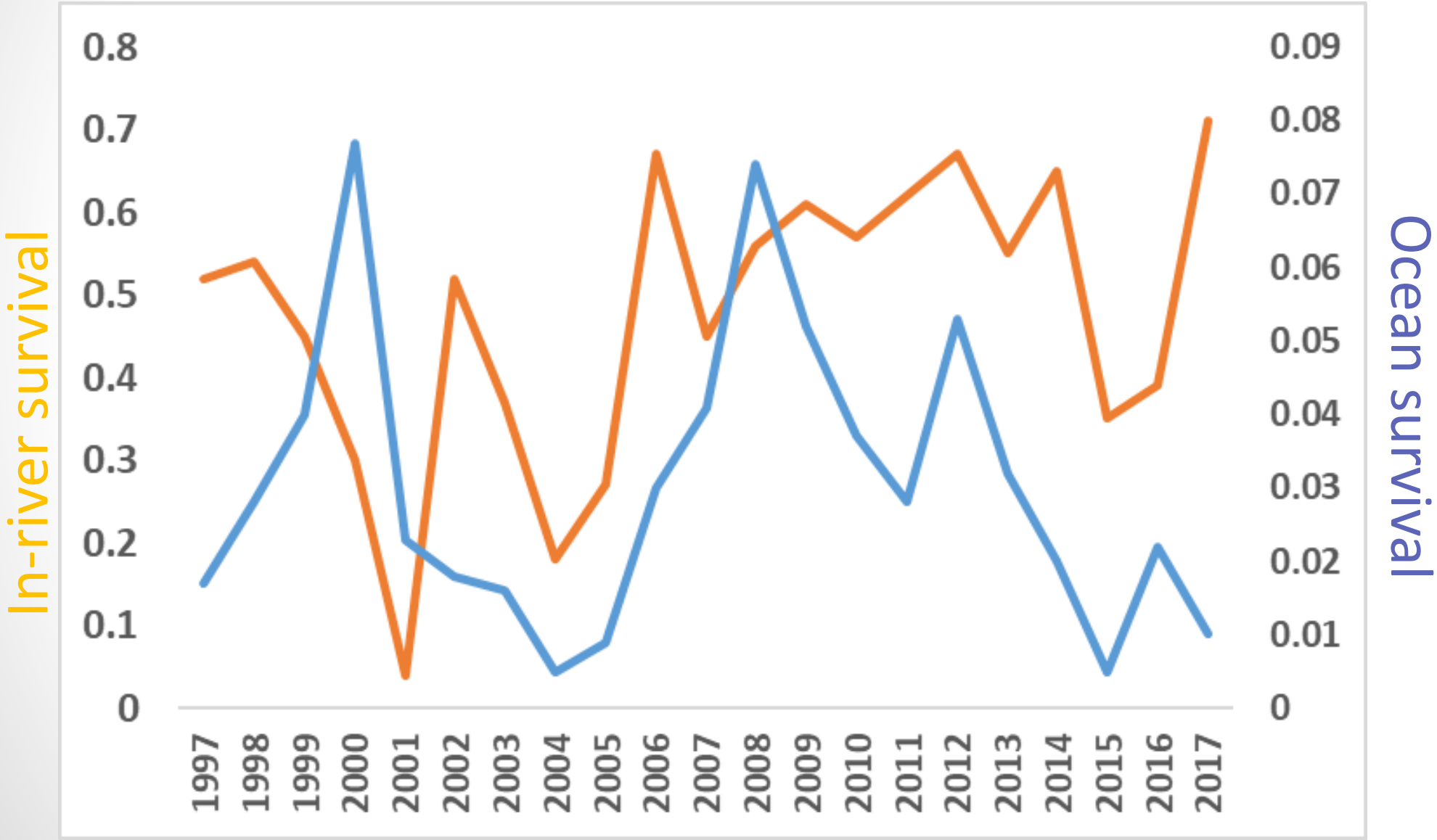
- **Populations with SAR<1% decline**
- **Populations with SAR >2% increase**







Wild Snake River Steelhead

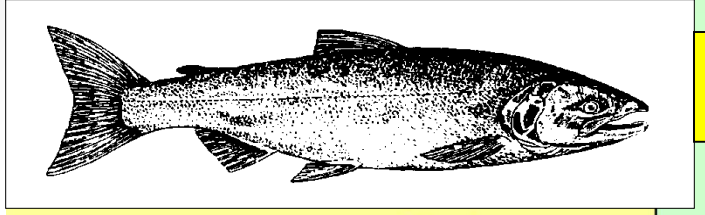


…both stocks experienced ***below-average freshwater and marine conditions in two of the three brood years defined in the rebuilding plans (2012-2014);*** in the years since, freshwater conditions have improved for Sacramento River Fall Chinook,

	Freshwater Conditions																		Marine Conditions				
	Adult Spawners				Incubation			Freshwater/Estuarine Residence							Hatchery Releases			Marine Residence				
Brood year	Spawners	Cchannel.F	Flows.F	Temp.F	Flows.W	Temp.W	FW.surv	Flows.S	Delta	SDFlow.S	Precip	Temp.S	Cchannel.S	Yolo	Releases	Net.pen	FW.timing	Mar.timing	SSTarc	NPH	NPGO	Predation
1983	-0.54	-0.48	2.96	0.82	1.92	2.68	NA	0.56	-0.47	0.91	2.10	0.05	0.06	0.60	-1.30	-0.58	0.61	-0.39	-0.31	0.99	0.95	0.11
1984	-0.20	-0.48	3.44	-0.32	2.31	1.50	NA	-0.60	-0.82	-0.94	0.24	-0.97	-0.82	-0.74	0.49	-0.81	0.58	1.35	0.35	-0.57	0.24	2.91
1985	0.50	-0.09	0.74	NA	0.88	0.89	NA	0.48	1.18	1.54	-0.74	0.33	-0.35	0.58	0.34	-1.16	1.02	1.52	-0.39	-0.13	-0.65	0.42
1986	0.55	1.07	-0.53	0.15	-0.76	-0.28	NA	-0.73	-0.73	-1.09	0.91	-0.57	-1.04	-0.74	-0.05	-1.06	0.53	-0.17	-0.28	0.19	0.34	2.91
1987	0.28	0.23	0.33	0.15	0.49	0.17	NA	-0.65	-0.86	-0.85	-1.33	0.11	-2.46	-0.74	-0.27	-0.98	-0.11	0.17	0.06	0.75	1.44	0.41
1988	0.45	-0.48	-0.86	1.58	-1.40	0.01	NA	-0.68	-0.50	-0.66	-0.83	-0.01	-2.19	-0.55	-1.88	-1.29	1.12	1.72	-0.06	-0.33	0.76	2.91
1989	-0.12	-0.48	-0.64	-1.75	-0.93	0.05	NA	-1.04	-0.89	-1.42	-0.14	0.05	-2.86	-0.74	-0.12	0.18	-1.39	-0.59	-0.04	0.64	0.26	-0.42
1990	-0.66	-0.48	0.79	1.58	-1.03	-0.58	NA	-1.06	-0.75	-1.06	-0.92	1.52	-2.39	-0.74	0.37	-0.14	-0.32	0.79	0.11	0.74	-0.36	-0.23
1991	-0.52	-0.48	-1.07	-0.32	-1.33	-1.76	NA	-0.84	-0.84	-0.40	-0.96	-0.97	-1.05	-0.74	0.82	-1.28	-0.34	-0.64	-0.49	-0.64	-1.35	0.40
1992	-1.07	-0.48	-1.04	-1.27	-0.96	-1.03	NA	0.57	0.23	0.96	-0.88	1.35	0.04	0.38	-1.34	-1.26	0.32	-0.37	-0.45	1.74	-1.20	0.27
1993	-0.28	-0.23	-1.47	-1.75	-1.74	-0.44	NA	-1.00	-0.80	-1.37	0.95	-0.12	-0.17	-0.74	-0.64	-1.06	1.25	-1.77	-0.36	0.96	-1.20	0.16
1994	-0.05	-0.48	0.20	-0.80	0.04	0.36	NA	1.74	2.71	1.43	-1.09	1.86	0.22	2.28	-0.25	-1.07	1.02	0.52	-0.18	0.05	-1.79	-0.40
1995	0.74	-0.20	-0.76	-0.32	-1.11	-1.33	NA	0.58	0.65	0.38	2.03	-0.18	0.53	1.02	0.41	-1.11	-3.52	-2.60	-0.66	1.00	-0.95	-0.68
1996	0.81	-0.48	0.25	0.15	-0.14	-1.19	NA	0.65	-0.48	1.33	0.59	-0.29	0.52	1.12	-1.15	-1.20	1.09	0.07	-0.52	0.94	-0.67	-0.17
1997	0.87	0.36	0.47	2.05	0.32	-0.60	NA	2.04	1.45	1.19	0.60	2.26	0.75	1.70	1.01	-0.58	0.20	0.61	-0.27	0.84	0.56	-0.38
1998	0.28	4.72	0.28	0.15	-0.43	0.09	NA	0.87	0.16	0.45	1.92	1.35	0.68	0.67	-0.84	-1.17	0.07	-0.39	0.90	-0.46	1.74	0.37
1999	1.17	-0.48	1.14	1.10	1.33	0.36	NA	0.53	0.27	0.88	-0.15	-0.12	-0.05	0.31	-1.07	-1.19	-0.01	-1.25	0.23	-1.04	2.25	-0.11
2000	1.21	1.60	0.57	0.15	0.73	-0.09	NA	-0.74	-0.62	-0.67	0.05	-0.40	-0.25	-0.74	-0.06	0.00	-0.19	-0.71	0.33	0.09	2.18	0.08
2001	1.69	-0.10	0.09	0.63	0.53	-0.30	NA	-0.26	-0.65	-0.09	-1.03	-0.46	0.58	-0.58	-0.90	-0.71	-0.24	-0.76	0.34	-0.37	1.30	-0.10
2002	1.99	-0.19	-0.60	-0.80	0.26	-0.07	NA	0.92	-0.29	0.74	-0.42	0.28	0.55	-0.29	1.12	0.57	-1.06	1.20	-0.34	0.00	1.17	-0.29
2003	1.36	-0.48	-0.34	0.63	0.22	0.17	-0.83	0.63	-0.18	0.95	0.30	-0.52	0.68	0.09	0.29	0.21	-0.11	-1.15	-0.40	0.13	0.24	-0.61
2004	0.48	-0.48	0.04	2.29	0.42	-0.49	-0.40	0.09	0.09	0.14	-0.28	0.90	0.63	-0.61	0.92	0.89	-1.44	-0.02	-0.64	0.12	-1.32	-1.31
2005	0.53	-0.48	0.17	0.63	-0.49	-0.39	-0.38	2.21	2.55	1.10	0.37	-0.86	0.70	2.44	1.32	0.75	-0.73	-0.56	0.17	0.49	-0.47	-1.26
2006	0.42	-0.48	0.39	0.15	0.78	0.62	-0.68	-0.82	-0.73	-1.14	1.32	-0.46	0.34	-0.74	1.23	0.99	0.02	-1.72	0.49	0.27	0.13	-0.95
2007	-0.88	-0.48	0.17	-0.04	0.54	-0.41	-0.06	-0.71	-0.77	-0.64	-1.07	-0.01	0.35	-0.74	1.32	1.20	0.30	1.01	0.78	-0.41	1.50	-0.81
2008	-1.37	-0.48	-0.34	-0.51	0.44	-1.01	-0.45	-0.83	-0.60	-0.49	-0.92	-0.35	0.28	-0.74	0.80	0.98	0.53	1.08	0.67	-0.98	0.43	-0.59
2009	-2.17	-0.10	-0.93	-0.51	-1.27	-0.23	1.13	-0.32	-0.46	-0.10	-0.61	1.75	0.39	-0.61	0.87	0.84	0.73	-0.10	0.18	-0.09	1.57	-0.51
2010	-0.55	-0.29	-0.64	-0.42	-1.00	0.44	1.21	0.57	1.22	0.72	-0.01	2.14	0.75	0.48	1.17	0.90	0.22	0.07	0.25	-0.45	1.06	-0.65
2011	-0.74	0.49	0.09	-0.04	0.27	1.14	-0.31	-0.87	-0.48	-1.13	0.76	0.33	0.67	-0.74	1.18	0.53	0.30	1.45	0.58	-0.88	1.56	-0.39
2012	0.21	-0.48	0.57	NA	2.11	0.49	-0.01	-0.54	-0.75	-0.27	-0.79	-1.20	0.66	-0.39	0.32	0.13	-2.83	-0.02	0.21	-0.33	0.66	0.02
2013	0.97	0.80	-0.20	-0.42	0.69	0.38	0.13	-1.22	-0.82	-1.26	-0.51	-1.48	0.48	-0.74	0.31	1.51	0.53	1.30	-0.81	-0.23	-0.28	0.49
2014	0.23	-0.29	-0.85	-1.37	-1.25	-2.82	-1.38	-0.78	-0.88	-0.03	-1.26	-1.14	0.52	-0.71	-0.21	0.68	0.48	-0.44	-1.32	0.32	-1.16	0.87
2015	-0.80	-0.39	-1.18	-0.61	-0.34	-0.58	0.26	-0.16	-0.12	0.58	-0.72	-0.97	0.44	-0.32	0.69	0.40	0.20	0.34	-1.12	0.09	-0.20	-0.51
2016	-1.15	-0.48	-1.37	-1.56	-0.84	0.86	2.82	2.21	1.80	1.47	0.14	-0.91	0.75	2.70	-0.92	-0.01	0.58	-0.47	-0.50	0.23	-0.49	NA
2017	-2.59	2.00	0.21	-0.51	0.25	0.86	-0.65	-1.01	-0.27	-1.10	1.92	-1.03	0.67	-0.61	-0.26	1.10	-0.14	-0.49	-0.62	-0.10	-2.01	NA
2018	-0.85	-0.48	0.23	0.25	0.61	0.98	-0.41	1.17	1.41	1.54	-0.66	-0.35	0.75	0.64	-0.78	0.90	0.68	0.79	-0.84	0.29	-2.09	NA
2019	-0.20	-0.19	-0.36	-0.51	-0.62	1.55	NA	-0.97	1.05	-1.59	1.08	-0.91	0.64	-0.74	-2.92	2.62	0.04	0.61	-0.39	0.33	-1.57	NA

CALIFORNIA CURRENT INTEGRATED ECOSYSTEM ASSESSMENT (CCIEA) CALIFORNIA CURRENT ECOSYSTEM STATUS REPORT, 2021

General migratory pattern of pacific salmon.



Chinook Management Processes

Alaska

North Pacific Fisheries Management Council

Alaska Board of Fisheries

Pacific Salmon Commission

Canadian Department of Fisheries and Oceans

Pacific Fisheries Management Council

U.S. v Washington Plans

U.S. v Oregon Plans

Columbia River Compact (WA, OR & Tribes)

Taku River

Southeast Alaska

Stikine River

CANADA

Nass River

Skeena River

British Columbia

Johnstone Strait

Vancouver Island

Georgia Strait

Puget Sound

UNITED STATES

Washington

Columbia River

Oregon

Slide courtesy of Guy Norman, WA, NPCC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