

COS fall-run

Year	Potential Eggs	Prespawm Egg Mortality	Eggs Laid	Entrants	Mortality	Residuals	Production	
1923	56115000		20000	56095000	6625284	42810120	0	19910164
1924	56115000		366387	55748613	6625284	43288116	0	19085781
1925	56115000		70467	56044533	6625284	43774380	0	18895437
1926	56115000		30000	56085000	6625284	43654927	0	19055357
1927	56115000		54840	56060160	6625284	44340095	0	18345349
1928	56115000		20000	56095000	6625284	43748983	0	18971301
1929	56115000		25000	56090000	6625284	43049242	0	19666042
1930	56115000		80960	56034040	6625284	43706460	0	18952864
1931	56115000		135940	55979060	6625284	42792703	0	19811641
1932	56115000		46217961	9897039	6625284	11102239	0	5420084
1933	56115000		7982020	48132980	6625284	39912884	0	14845380
1934	56115000		52321925	3793075	6625284	6433331	0	3985028
1935	56115000		54349890	1765110	6625284	4959683	0	3430711
1936	56115000		167250	55947750	6625284	42820078	0	19752956
1937	56115000		35000	56080000	6625284	43091554	0	19613730
1938	56115000		30000	56085000	6625284	45032590	0	17677694
1939	56115000		20000	56095000	6625284	43015640	0	19704644
1940	56115000		108020	56006980	6625284	43828603	0	18803661
1941	56115000		25000	56090000	6625284	44116997	0	18598287
1942	56115000		20000	56095000	6625284	43428484	0	19291800
1943	56115000		20000	56095000	6625284	43665793	0	19054491
1944	56115000		20000	56095000	6625284	42492045	0	20228239
1945	56115000		143830	55971170	6625284	42751969	0	19844485
1946	56115000		30000	56085000	6625284	45540513	0	17169771
1947	56115000		25000	56090000	6625284	43659016	0	19056268
1948	56115000		35280	56079720	6625284	43241698	0	19463306
1949	56115000		30000	56085000	6625284	43839598	0	18870686
1950	56115000		30000	56085000	6625284	43178539	0	19531745
1951	56115000		87230	56027770	6625284	43355034	0	19298020
1952	56115000		25000	56090000	6625284	44270463	0	18444821
1953	56115000		20000	56095000	6625284	43456131	0	19264153
1954	56115000		20000	56095000	6625284	43757694	0	18962590
1955	56115000		25000	56090000	6625284	42546211	0	20169073
1956	56115000		645000	55470000	6625284	46352708	0	15742576
1957	56115000		20000	56095000	6625284	43735790	0	18984494
1958	56115000		25000	56090000	6625284	46678993	0	16036291
1959	56115000		20000	56095000	6625284	43378499	0	19341785
1960	56115000		86940	56028060	6625284	43061402	0	19591942
1961	56115000		30000	56085000	6625284	43596278	0	19114006
1962	56115000		30000	56085000	6625284	43874698	0	18835586
1963	56115000		30000	56085000	6625284	44194927	0	18515357
1964	56115000		20000	56095000	6625284	42844303	0	19875981
1965	56115000		32200	56082800	6625284	43946809	0	18761275
1966	56115000		20000	56095000	6625284	44066355	0	18653929

1967	56115000	30000	56085000	6625284	43749734	0	18960550
1968	56115000	20000	56095000	6625284	43469106	0	19251178
1969	56115000	30000	56085000	6625284	44080628	0	18629656
1970	56115000	20000	56095000	6625284	58375389	0	4344895
1971	56115000	20000	56095000	6625284	44074421	0	18645863
1972	56115000	20000	56095000	6625284	43513418	0	19206866
1973	56115000	35000	56080000	6625284	43623791	0	19081493
1974	56115000	25000	56090000	6625284	47609796	0	15105488
1975	56115000	20000	56095000	6625284	43864462	0	18855822
1976	56115000	20000	56095000	6625284	43450868	0	19269416
1977	56115000	329331	55785669	6625284	42416449	0	19994504
1978	56115000	56110688	4312	6625284	3519108	0	3110488
1979	56115000	30000	56085000	6625284	43005010	0	19705274
1980	56115000	278420	55836580	6625284	43263333	0	19198531
1981	56115000	25000	56090000	6625284	43460372	0	19254912
1982	56115000	78760	56036240	6625284	45712245	0	16949279
1983	56115000	25000	56090000	6625284	48170155	0	14545129
1984	56115000	25000	56090000	6625284	45969561	0	16745723
1985	56115000	20000	56095000	6625284	42834639	0	19885645
1986	56115000	35280	56079720	6625284	48078847	0	14626157
1987	56115000	30000	56085000	6625284	43700523	0	19009761
1988	56115000	48040	56066960	6625284	43174539	0	19517705
1989	56115000	122860	55992140	6625284	43086068	0	19531356
1990	56115000	477428	55637572	6625284	42224689	0	20038167
1991	56115000	78320	56036680	6625284	43012189	0	19649775
1992	56115000	1545451	54569549	6625284	42807866	0	18386967
1993	56115000	4212004	51902996	6625284	46087441	0	12440839
1994	56115000	20000	56095000	6625284	42836742	0	19883542
1995	56115000	231970	55883030	6625284	46162034	0	16346280
1996	56115000	20000	56095000	6625284	43721745	0	18998539
1997	56115000	20000	56095000	6625284	44230400	0	18489884
1998	56115000	20000	56095000	6625284	50088714	0	12631570
1999	56115000	20000	56095000	6625284	43813254	0	18907030
2000	56115000	20000	56095000	6625284	43715032	0	19005252
2001	56115000	25000	56090000	6625284	43523634	0	19191650
2002	56115000	205476	55909524	6625284	43410383	0	19124425
Average		2848065	53266935	6625284	42227865	0	17664355

## PA Fall-run

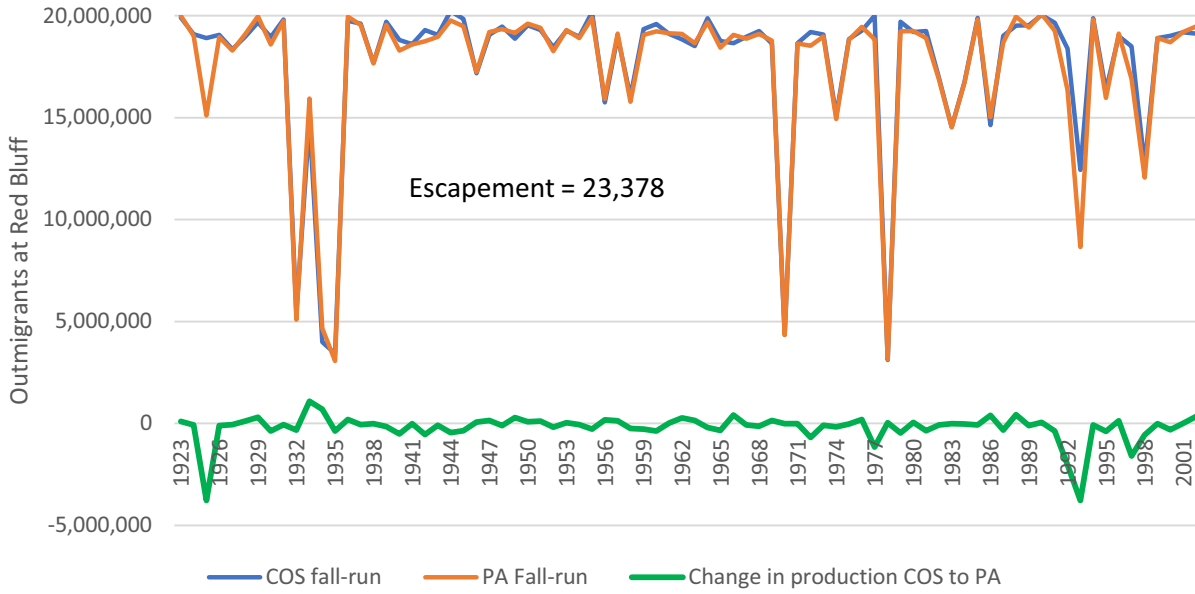
Survivors	Year	Potential Egg	Prespaw <sub>n</sub> Egg	Eggs Laid	Entrants	Mortality
19910164	1923	56,115,000	47,402	56,067,598	6,625,284	42,684,737
19085781	1924	56,115,000	89,920	56,025,080	6,625,284	43,643,141
18895437	1925	56,115,000	10,594,595	45,520,405	6,625,284	37,036,159
19055357	1926	56,115,000	30,000	56,085,000	6,625,284	43,765,282
18345349	1927	56,115,000	43,580	56,071,420	6,625,284	44,405,869
18971301	1928	56,115,000	30,000	56,085,000	6,625,284	43,625,787
19666042	1929	56,115,000	30,000	56,085,000	6,625,284	42,736,388
18952864	1930	56,115,000	44,740	56,070,260	6,625,284	44,113,256
19811641	1931	56,115,000	46,660	56,068,340	6,625,284	42,943,004
5420084	1932	56,115,000	49,190,667	6,924,333	6,625,284	8,458,383
14845380	1933	56,115,000	3,386,898	52,728,102	6,625,284	43,417,167
3985028	1934	56,115,000	48,005,297	8,109,703	6,625,284	10,063,789
3430711	1935	56,115,000	56,099,816	15,184	6,625,284	3,583,258
19752956	1936	56,115,000	49,740	56,065,260	6,625,284	42,741,579
19613730	1937	56,115,000	30,000	56,085,000	6,625,284	43,161,297
17677694	1938	56,115,000	30,000	56,085,000	6,625,284	45,048,691
19704644	1939	56,115,000	25,000	56,090,000	6,625,284	43,167,394
18803661	1940	56,115,000	630,677	55,484,323	6,625,284	43,824,839
18598287	1941	56,115,000	30,000	56,085,000	6,625,284	44,119,655
19291800	1942	56,115,000	20,000	56,095,000	6,625,284	43,976,193
19054491	1943	56,115,000	25,000	56,090,000	6,625,284	43,753,958
20228239	1944	56,115,000	30,000	56,085,000	6,625,284	42,938,588
19844485	1945	56,115,000	106,515	56,008,485	6,625,284	43,145,040
17169771	1946	56,115,000	30,000	56,085,000	6,625,284	45,478,438
19056268	1947	56,115,000	30,000	56,085,000	6,625,284	43,512,218
19463306	1948	56,115,000	32,200	56,082,800	6,625,284	43,359,623
18870686	1949	56,115,000	30,000	56,085,000	6,625,284	43,561,441
19531745	1950	56,115,000	30,000	56,085,000	6,625,284	43,096,433
19298020	1951	56,115,000	65,180	56,049,820	6,625,284	43,271,332
18444821	1952	56,115,000	37,130	56,077,870	6,625,284	44,443,750
19264153	1953	56,115,000	20,000	56,095,000	6,625,284	43,428,192
18962590	1954	56,115,000	30,000	56,085,000	6,625,284	43,809,177
20169073	1955	56,115,000	35,280	56,079,720	6,625,284	42,807,985
15742576	1956	56,115,000	168,950	55,946,050	6,625,284	46,650,827
18984494	1957	56,115,000	25,000	56,090,000	6,625,284	43,597,814
16036291	1958	56,115,000	70,020	56,044,980	6,625,284	46,888,103
19341785	1959	56,115,000	20,000	56,095,000	6,625,284	43,664,112
19591942	1960	56,115,000	30,000	56,085,000	6,625,284	43,485,639
19114006	1961	56,115,000	30,000	56,085,000	6,625,284	43,572,280
18835586	1962	56,115,000	30,000	56,085,000	6,625,284	43,609,620
18515357	1963	56,115,000	30,000	56,085,000	6,625,284	44,053,879
19875981	1964	56,115,000	97,160	56,017,840	6,625,284	42,967,017
18761275	1965	56,115,000	30,000	56,085,000	6,625,284	44,284,738
18653929	1966	56,115,000	30,000	56,085,000	6,625,284	43,652,911

18960550	1967	56,115,000	30,000	56,085,000	6,625,284	43,832,293
19251178	1968	56,115,000	20,000	56,095,000	6,625,284	43,609,040
18629656	1969	56,115,000	25,000	56,090,000	6,625,284	43,942,189
4344895	1970	56,115,000	25,000	56,090,000	6,625,284	58,382,879
18645863	1971	56,115,000	25,000	56,090,000	6,625,284	44,078,011
19206866	1972	56,115,000	53,492	56,061,508	6,625,284	44,161,490
19081493	1973	56,115,000	30,000	56,085,000	6,625,284	43,725,452
15105488	1974	56,115,000	35,000	56,080,000	6,625,284	47,771,648
18855822	1975	56,115,000	25,000	56,090,000	6,625,284	43,884,208
19269416	1976	56,115,000	25,000	56,090,000	6,625,284	43,258,933
19994504	1977	56,115,000	242,197	55,872,803	6,625,284	43,664,539
3110488	1978	56,115,000	56,101,944	13,056	6,625,284	3,493,642
19705274	1979	56,115,000	107,866	56,007,134	6,625,284	43,396,401
19198531	1980	56,115,000	141,590	55,973,410	6,625,284	43,343,947
19254912	1981	56,115,000	30,000	56,085,000	6,625,284	43,811,720
16949279	1982	56,115,000	113,730	56,001,270	6,625,284	45,754,495
14545129	1983	56,115,000	25,000	56,090,000	6,625,284	48,187,668
16745723	1984	56,115,000	25,000	56,090,000	6,625,284	46,002,001
19885645	1985	56,115,000	25,000	56,090,000	6,625,284	42,904,887
14626157	1986	56,115,000	119,640	55,995,360	6,625,284	47,593,843
19009761	1987	56,115,000	653,943	55,461,057	6,625,284	43,402,780
19517705	1988	56,115,000	30,000	56,085,000	6,625,284	42,760,982
19531356	1989	56,115,000	82,230	56,032,770	6,625,284	43,232,486
20038167	1990	56,115,000	951,010	55,163,990	6,625,284	41,706,972
19649775	1991	56,115,000	116,560	55,998,440	6,625,284	43,352,944
18386967	1992	56,115,000	3,174,727	52,940,273	6,625,284	43,216,192
12440839	1993	56,115,000	22,057,382	34,057,618	6,625,284	32,024,075
19883542	1994	56,115,000	30,000	56,085,000	6,625,284	42,898,083
16346280	1995	56,115,000	348,481	55,766,519	6,625,284	46,428,776
18998539	1996	56,115,000	20,000	56,095,000	6,625,284	43,593,242
18489884	1997	56,115,000	79,360	56,035,640	6,625,284	45,773,561
12631570	1998	56,115,000	30,000	56,085,000	6,625,284	50,646,357
18907030	1999	56,115,000	20,000	56,095,000	6,625,284	43,819,026
19005252	2000	56,115,000	25,000	56,090,000	6,625,284	44,015,100
19191650	2001	56,115,000	187,677	55,927,323	6,625,284	43,352,434
19124425	2002	56,115,000	204,180	55,910,820	6,625,284	43,073,912
17664355		Average	3,184,418	52,930,582	6,625,284	42,095,565

Residuals	Production	Survivors	Change in production COS % change	
0	20,008,145	20,008,145	97,981	0.5
0	19,007,223	19,007,223	-78,558	-0.4
0	15,109,530	15,109,530	-3,785,907	-20.0
0	18,945,002	18,945,002	-110,355	-0.6
0	18,290,835	18,290,835	-54,514	-0.3
0	19,084,497	19,084,497	113,196	0.6
0	19,973,896	19,973,896	307,854	1.6
0	18,582,288	18,582,288	-370,576	-2.0
0	19,750,620	19,750,620	-61,021	-0.3
0	5,091,234	5,091,234	-328,850	-6.1
0	15,936,219	15,936,219	1,090,839	7.3
0	4,671,198	4,671,198	686,170	17.2
0	3,057,210	3,057,210	-373,501	-10.9
0	19,948,965	19,948,965	196,009	1.0
0	19,548,987	19,548,987	-64,743	-0.3
0	17,661,593	17,661,593	-16,101	-0.1
0	19,547,890	19,547,890	-156,754	-0.8
0	18,284,768	18,284,768	-518,893	-2.8
0	18,590,629	18,590,629	-7,658	0.0
0	18,744,091	18,744,091	-547,709	-2.8
0	18,961,326	18,961,326	-93,165	-0.5
0	19,771,696	19,771,696	-456,543	-2.3
0	19,488,729	19,488,729	-355,756	-1.8
0	17,231,846	17,231,846	62,075	0.4
0	19,198,066	19,198,066	141,798	0.7
0	19,348,461	19,348,461	-114,845	-0.6
0	19,148,843	19,148,843	278,157	1.5
0	19,613,851	19,613,851	82,106	0.4
0	19,403,772	19,403,772	105,752	0.5
0	18,259,404	18,259,404	-185,417	-1.0
0	19,292,092	19,292,092	27,939	0.1
0	18,901,107	18,901,107	-61,483	-0.3
0	19,897,019	19,897,019	-272,054	-1.3
0	15,920,507	15,920,507	177,931	1.1
0	19,117,470	19,117,470	132,976	0.7
0	15,782,161	15,782,161	-254,130	-1.6
0	19,056,172	19,056,172	-285,613	-1.5
0	19,224,645	19,224,645	-367,297	-1.9
0	19,138,004	19,138,004	23,998	0.1
0	19,100,664	19,100,664	265,078	1.4
0	18,656,405	18,656,405	141,048	0.8
0	19,676,107	19,676,107	-199,874	-1.0
0	18,425,546	18,425,546	-335,729	-1.8
0	19,057,373	19,057,373	403,444	2.2

0	18,877,991	18,877,991	-82,559	-0.4
0	19,111,244	19,111,244	-139,934	-0.7
0	18,773,095	18,773,095	143,439	0.8
0	4,332,405	4,332,405	-12,490	-0.3
0	18,637,273	18,637,273	-8,590	0.0
0	18,525,302	18,525,302	-681,564	-3.5
0	18,984,832	18,984,832	-96,661	-0.5
0	14,933,636	14,933,636	-171,852	-1.1
0	18,831,076	18,831,076	-24,746	-0.1
0	19,456,351	19,456,351	186,935	1.0
0	18,833,548	18,833,548	-1,160,956	-5.8
0	3,144,698	3,144,698	34,210	1.1
0	19,236,017	19,236,017	-469,257	-2.4
0	19,254,747	19,254,747	56,216	0.3
0	18,898,564	18,898,564	-356,348	-1.9
0	16,872,059	16,872,059	-77,220	-0.5
0	14,527,616	14,527,616	-17,513	-0.1
0	16,713,283	16,713,283	-32,440	-0.2
0	19,810,397	19,810,397	-75,248	-0.4
0	15,026,801	15,026,801	400,644	2.7
0	18,683,561	18,683,561	-326,200	-1.7
0	19,949,302	19,949,302	431,597	2.2
0	19,425,568	19,425,568	-105,788	-0.5
0	20,082,302	20,082,302	44,135	0.2
0	19,270,780	19,270,780	-378,995	-1.9
0	16,349,365	16,349,365	-2,037,602	-11.1
0	8,658,827	8,658,827	-3,782,012	-30.4
0	19,812,201	19,812,201	-71,341	-0.4
0	15,963,027	15,963,027	-383,253	-2.3
0	19,127,042	19,127,042	128,503	0.7
0	16,887,363	16,887,363	-1,602,521	-8.7
0	12,063,927	12,063,927	-567,643	-4.5
0	18,901,258	18,901,258	-5,772	0.0
0	18,700,184	18,700,184	-305,068	-1.6
0	19,200,173	19,200,173	8,523	0.0
0	19,462,192	19,462,192	337,767	1.8
0	17,460,301	17,460,301	-204,054	-1.2

### Sacramento River fall Chinook







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*% change*

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Mean	-1.18907
Standard Error	0.575091
Median	-0.34444
Mode	#N/A
Standard Deviation	5.143769
Sample Variance	26.45836
Kurtosis	16.35453
Skewness	-2.57407
Range	47.61868
Minimum	-30.4
Maximum	17.2187
Sum	-95.1258
Count	80
Largest(2)	7.348003
Smallest(2)	-20.0361
Confidence Level(95.0%)	1.14469

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COS late fall

Year	Potential E	Prespaw	f Eggs Laid	Entrants	Mortality	Residuals	Production	Survivors
1	13325000	0	13325000	0	10224222	0	3100778	3100778
2	13325000	0	13325000	0	10157041	0	3167959	3167959
3	13325000	0	13325000	0	10224344	0	3100656	3100656
4	13325000	0	13325000	0	10323140	0	3001860	3001860
5	13325000	0	13325000	0	10657413	0	2667587	2667587
6	13325000	0	13325000	0	10595306	0	2729694	2729694
7	13325000	0	13325000	0	10166045	0	3158955	3158955
8	13325000	0	13325000	0	10212682	0	3112318	3112318
9	13325000	0	13325000	0	10870939	0	2454061	2454061
10	13325000	0	13325000	0	10589844	0	2735156	2735156
11	13325000	0	13325000	0	11065742	0	2259258	2259258
12	13325000	0	13325000	0	11459472	0	1865528	1865528
13	13325000	0	13325000	0	10485470	0	2839530	2839530
14	13325000	0	13325000	0	10296676	0	3028324	3028324
15	13325000	0	13325000	0	10196690	0	3128310	3128310
16	13325000	0	13325000	0	10669433	0	2655567	2655567
17	13325000	0	13325000	0	10307882	0	3017118	3017118
18	13325000	0	13325000	0	10469192	0	2855808	2855808
19	13325000	0	13325000	0	10381899	0	2943101	2943101
20	13325000	0	13325000	0	10512659	0	2812341	2812341
21	13325000	0	13325000	0	10383739	0	2941261	2941261
22	13325000	0	13325000	0	10112044	0	3212956	3212956
23	13325000	0	13325000	0	10336578	0	2988422	2988422
24	13325000	0	13325000	0	10588647	0	2736353	2736353
25	13325000	0	13325000	0	10282696	0	3042304	3042304
26	13325000	0	13325000	0	10394710	0	2930290	2930290
27	13325000	0	13325000	0	10318785	0	3006215	3006215
28	13325000	0	13325000	0	10254101	0	3070899	3070899
29	13325000	0	13325000	0	10599339	0	2725661	2725661
30	13325000	0	13325000	0	10353707	0	2971293	2971293
31	13325000	0	13325000	0	10400648	0	2924352	2924352
32	13325000	0	13325000	0	10618318	0	2706682	2706682
33	13325000	0	13325000	0	10332678	0	2992322	2992322
34	13325000	0	13325000	0	10451212	0	2873788	2873788
35	13325000	0	13325000	0	10137405	0	3187595	3187595
36	13325000	0	13325000	0	10750762	0	2574238	2574238
37	13325000	0	13325000	0	10169250	0	3155750	3155750
38	13325000	0	13325000	0	10267499	0	3057501	3057501
39	13325000	0	13325000	0	10387518	0	2937482	2937482
40	13325000	0	13325000	0	10363523	0	2961477	2961477
41	13325000	0	13325000	0	10363065	0	2961935	2961935
42	13325000	0	13325000	0	10325070	0	2999930	2999930
43	13325000	0	13325000	0	10539355	0	2785645	2785645
44	13325000	0	13325000	0	10641097	0	2683903	2683903

45	13325000	0	13325000	0	10333939	0	2991061	2991061
46	13325000	0	13325000	0	10326193	0	2998807	2998807
47	13325000	0	13325000	0	10402631	0	2922369	2922369
48	13325000	0	13325000	0	10651477	0	2673523	2673523
49	13325000	0	13325000	0	10442111	0	2882889	2882889
50	13325000	0	13325000	0	10494558	0	2830442	2830442
51	13325000	0	13325000	0	10536989	0	2788011	2788011
52	13325000	0	13325000	0	10754562	0	2570438	2570438
53	13325000	0	13325000	0	10489431	0	2835569	2835569
54	13325000	0	13325000	0	10051344	0	3273656	3273656
55	13325000	0	13325000	0	11650902	0	1674098	1674098
56	13325000	0	13325000	0	10485592	0	2839408	2839408
57	13325000	0	13325000	0	10214919	0	3110081	3110081
58	13325000	0	13325000	0	10388144	0	2936856	2936856
59	13325000	0	13325000	0	10385316	0	2939684	2939684
60	13325000	0	13325000	0	10657032	0	2667968	2667968
61	13325000	0	13325000	0	10902578	0	2422422	2422422
62	13325000	0	13325000	0	10428247	0	2896753	2896753
63	13325000	0	13325000	0	10411863	0	2913137	2913137
64	13325000	0	13325000	0	10612778	0	2712222	2712222
65	13325000	0	13325000	0	10256491	0	3068509	3068509
66	13325000	0	13325000	0	10271163	0	3053837	3053837
67	13325000	0	13325000	0	10232885	0	3092115	3092115
68	13325000	0	13325000	0	10312323	0	3012677	3012677
69	13325000	0	13325000	0	10281545	0	3043455	3043455
70	13325000	0	13325000	0	10227810	0	3097190	3097190
71	13325000	0	13325000	0	10577622	0	2747378	2747378
72	13325000	0	13325000	0	10209411	0	3115589	3115589
73	13325000	0	13325000	0	11011052	0	2313948	2313948
74	13325000	0	13325000	0	10381493	0	2943507	2943507
75	13325000	0	13325000	0	10731255	0	2593745	2593745
76	13325000	0	13325000	0	10979515	0	2345485	2345485
77	13325000	0	13325000	0	10442326	0	2882674	2882674
78	13325000	0	13325000	0	10435043	0	2889957	2889957
79	13325000	0	13325000	0	10191495	0	3133505	3133505
80	13325000	0	13325000	0	10473213	0	2851787	2851787
	Average	0	13325000	0	10460914	0	2864086	2864086

## PA late fall-run

Year	Potential E;	Prespawn f	Eggs Laid	Entrants	Mortality	Residuals
1923	13325000	0	13325000	0	10112876	0
1924	13325000	0	13325000	0	10217046	0
1925	13325000	0	13325000	0	10265718	0
1926	13325000	0	13325000	0	10202517	0
1927	13325000	0	13325000	0	10669931	0
1928	13325000	0	13325000	0	10425863	0
1929	13325000	0	13325000	0	10171762	0
1930	13325000	0	13325000	0	10136506	0
1931	13325000	0	13325000	0	10917827	0
1932	13325000	0	13325000	0	10728394	0
1933	13325000	0	13325000	0	10869033	0
1934	13325000	0	13325000	0	11696064	0
1935	13325000	0	13325000	0	10522390	0
1936	13325000	0	13325000	0	10177833	0
1937	13325000	0	13325000	0	10127923	0
1938	13325000	0	13325000	0	10656610	0
1939	13325000	0	13325000	0	10386069	0
1940	13325000	0	13325000	0	10528401	0
1941	13325000	0	13325000	0	10412784	0
1942	13325000	0	13325000	0	10549016	0
1943	13325000	0	13325000	0	10558657	0
1944	13325000	0	13325000	0	10122409	0
1945	13325000	0	13325000	0	10361805	0
1946	13325000	0	13325000	0	10606510	0
1947	13325000	0	13325000	0	10312741	0
1948	13325000	0	13325000	0	10258873	0
1949	13325000	0	13325000	0	10345521	0
1950	13325000	0	13325000	0	10222393	0
1951	13325000	0	13325000	0	10623172	0
1952	13325000	0	13325000	0	10407163	0
1953	13325000	0	13325000	0	10476896	0
1954	13325000	0	13325000	0	10466139	0
1955	13325000	0	13325000	0	10380453	0
1956	13325000	0	13325000	0	10466299	0
1957	13325000	0	13325000	0	10338065	0
1958	13325000	0	13325000	0	10759567	0
1959	13325000	0	13325000	0	10318825	0
1960	13325000	0	13325000	0	10131188	0
1961	13325000	0	13325000	0	10279819	0
1962	13325000	0	13325000	0	10413436	0
1963	13325000	0	13325000	0	10359678	0
1964	13325000	0	13325000	0	10215594	0
1965	13325000	0	13325000	0	10547565	0
1966	13325000	0	13325000	0	10583467	0

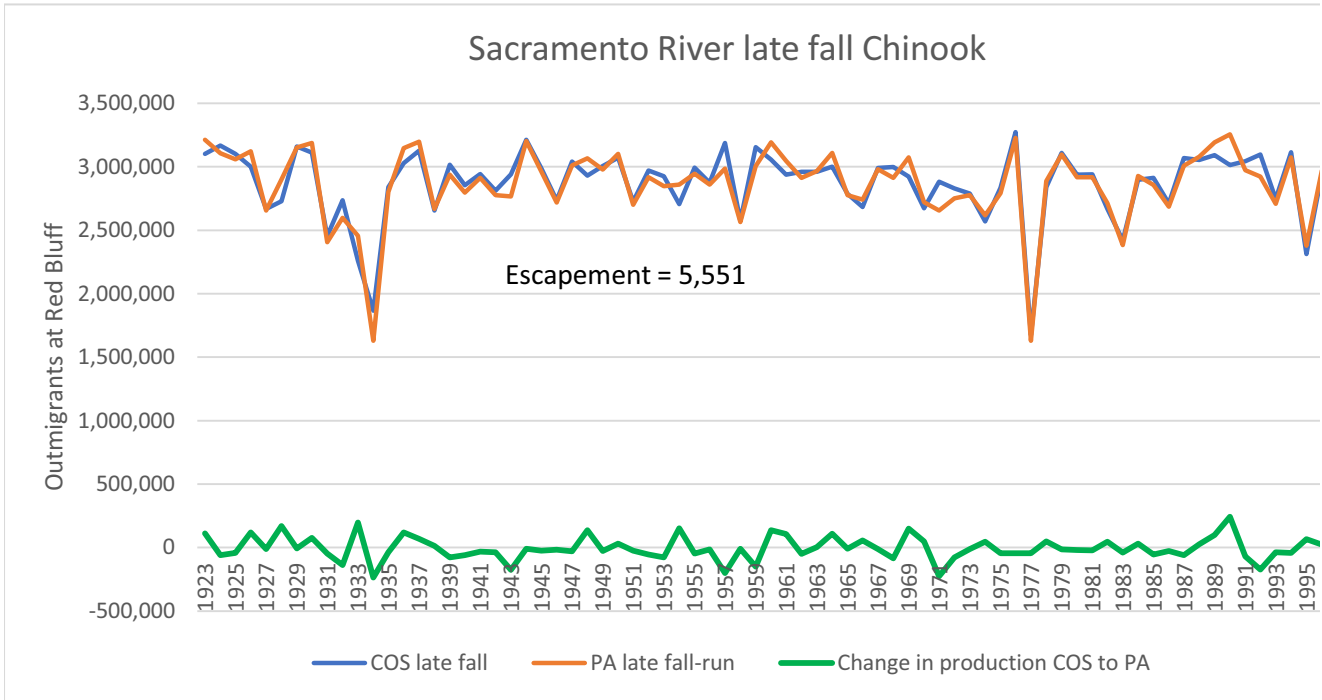
1967	13325000	0	13325000	0	10344378	0
1968	13325000	0	13325000	0	10410985	0
1969	13325000	0	13325000	0	10251910	0
1970	13325000	0	13325000	0	10603840	0
1971	13325000	0	13325000	0	10669020	0
1972	13325000	0	13325000	0	10572961	0
1973	13325000	0	13325000	0	10549050	0
1974	13325000	0	13325000	0	10708263	0
1975	13325000	0	13325000	0	10532908	0
1976	13325000	0	13325000	0	10096939	0
1977	13325000	0	13325000	0	11695239	0
1978	13325000	0	13325000	0	10437221	0
1979	13325000	0	13325000	0	10228901	0
1980	13325000	0	13325000	0	10406097	0
1981	13325000	0	13325000	0	10405973	0
1982	13325000	0	13325000	0	10611459	0
1983	13325000	0	13325000	0	10940955	0
1984	13325000	0	13325000	0	10397251	0
1985	13325000	0	13325000	0	10467028	0
1986	13325000	0	13325000	0	10638486	0
1987	13325000	0	13325000	0	10316987	0
1988	13325000	0	13325000	0	10244694	0
1989	13325000	0	13325000	0	10132400	0
1990	13325000	0	13325000	0	10069107	0
1991	13325000	0	13325000	0	10352340	0
1992	13325000	0	13325000	0	10401887	0
1993	13325000	0	13325000	0	10615278	0
1994	13325000	0	13325000	0	10251750	0
1995	13325000	0	13325000	0	10945511	0
1996	13325000	0	13325000	0	10357976	0
1997	13325000	0	13325000	0	10526996	0
1998	13325000	0	13325000	0	11034680	0
1999	13325000	0	13325000	0	10469620	0
2000	13325000	0	13325000	0	10537841	0
2001	13325000	0	13325000	0	10249357	0
2002	13325000	0	13325000	0	10374876	0
	Average	0	13325000	0	10464762	0

## Production Survivors

## Change in production COS % change

3212124	3212124	111,346	3.6
3107954	3107954	-60,005	-1.9
3059282	3059282	-41,374	-1.3
3122483	3122483	120,623	4.0
2655069	2655069	-12,518	-0.5
2899137	2899137	169,443	6.2
3153238	3153238	-5,717	-0.2
3188494	3188494	76,176	2.4
2407173	2407173	-46,888	-1.9
2596606	2596606	-138,550	-5.1
2455967	2455967	196,709	8.7
1628936	1628936	-236,592	-12.7
2802610	2802610	-36,920	-1.3
3147167	3147167	118,843	3.9
3197077	3197077	68,767	2.2
2668390	2668390	12,823	0.5
2938931	2938931	-78,187	-2.6
2796599	2796599	-59,209	-2.1
2912216	2912216	-30,885	-1.0
2775984	2775984	-36,357	-1.3
2766343	2766343	-174,918	-5.9
3202591	3202591	-10,365	-0.3
2963195	2963195	-25,227	-0.8
2718490	2718490	-17,863	-0.7
3012259	3012259	-30,045	-1.0
3066127	3066127	135,837	4.6
2979479	2979479	-26,736	-0.9
3102607	3102607	31,708	1.0
2701828	2701828	-23,833	-0.9
2917837	2917837	-53,456	-1.8
2848104	2848104	-76,248	-2.6
2858861	2858861	152,179	5.6
2944547	2944547	-47,775	-1.6
2858701	2858701	-15,087	-0.5
2986935	2986935	-200,660	-6.3
2565433	2565433	-8,805	-0.3
3006175	3006175	-149,575	-4.7
3193812	3193812	136,311	4.5
3045181	3045181	107,699	3.7
2911564	2911564	-49,913	-1.7
2965322	2965322	3,387	0.1
3109406	3109406	109,476	3.6
2777435	2777435	-8,210	-0.3
2741533	2741533	57,630	2.1

2980622	2980622	-10,439	-0.3
2914015	2914015	-84,792	-2.8
3073090	3073090	150,721	5.2
2721160	2721160	47,637	1.8
2655980	2655980	-226,909	-7.9
2752039	2752039	-78,403	-2.8
2775950	2775950	-12,061	-0.4
2616737	2616737	46,299	1.8
2792092	2792092	-43,477	-1.5
3228061	3228061	-45,595	-1.4
1629761	1629761	-44,337	-2.6
2887779	2887779	48,371	1.7
3096099	3096099	-13,982	-0.4
2918903	2918903	-17,953	-0.6
2919027	2919027	-20,657	-0.7
2713541	2713541	45,573	1.7
2384045	2384045	-38,377	-1.6
2927749	2927749	30,996	1.1
2857972	2857972	-55,165	-1.9
2686514	2686514	-25,708	-0.9
3008013	3008013	-60,496	-2.0
3080306	3080306	26,469	0.9
3192600	3192600	100,485	3.2
3255893	3255893	243,216	8.1
2972660	2972660	-70,795	-2.3
2923113	2923113	-174,077	-5.6
2709722	2709722	-37,656	-1.4
3073250	3073250	-42,339	-1.4
2379489	2379489	65,541	2.8
2967024	2967024	23,517	0.8
2798004	2798004	204,259	7.9
2290320	2290320	-55,165	-2.4
2855380	2855380	-27,294	-0.9
2787159	2787159	-102,798	-3.6
3075643	3075643	-57,862	-1.8
2950124	2950124	98,337	3.4
2860238	2860238	-3,848	-0.1



<i>% change</i>		<i>% change</i>	
Mean	-0.15428	Mean	-0.15428
Standard Error	0.390793	Standard Error	0.390793
Median	-0.67775	Median	-0.67775
Mode	#N/A	Mode	#N/A
Standard Deviation	3.495357	Standard Deviation	3.495357
Sample Variance	12.21752	Sample Variance	12.21752
Kurtosis	1.851418	Kurtosis	1.851418
Skewness	-0.11101	Skewness	-0.11101
Range	21.3891	Range	21.3891
Minimum	-12.6823	Minimum	-12.6823
Maximum	8.706797	Maximum	8.706797
Sum	-12.3422	Sum	-12.3422
Count	80	Count	80
Largest(1)	8.706797	Largest(2)	8.073086
Smallest(1)	-12.6823	Smallest(2)	-7.87089
Confidence Level(95.0%)	0.777854	Confidence Level(95.0%)	0.777854







<i>% change</i>	
Mean	-0.15428
Standard Error	0.390793
Median	-0.67775
Mode	#N/A
Standard Deviation	3.495357
Sample Variance	12.21752
Kurtosis	1.851418
Skewness	-0.11101
Range	21.3891
Minimum	-12.6823
Maximum	8.706797
Sum	-12.3422
Count	80
Largest(2)	8.073086
Smallest(2)	-7.87089
Confidence Level(95.0%)	0.777854

COS spring-run

Year	Potential E	Prespawm	Eggs Laid	Entrants	Mortality	Residuals	Productior	Survivors
1923	1210000	154	1209846	0	733963	0	475883	475883
1924	1210000	802	1209198	0	747844	0	461354	461354
1925	1210000	569	1209431	0	913090	0	296341	296341
1926	1210000	0	1210000	0	740574	0	469426	469426
1927	1210000	182	1209818	0	756041	0	453777	453777
1928	1210000	0	1210000	0	745426	0	464574	464574
1929	1210000	0	1210000	0	731815	0	478185	478185
1930	1210000	1131	1208869	0	799585	0	409284	409284
1931	1210000	833	1209167	0	751093	0	458074	458074
1932	1210000	309907	900093	0	899234	0	859	859
1933	1210000	8158	1201842	0	1197469	0	4373	4373
1934	1210000	392513	817487	0	817466	0	21	21
1935	1210000	437102	772898	0	772897	0	1	1
1936	1210000	768	1209232	0	763648	0	445584	445584
1937	1210000	0	1210000	0	756071	0	453929	453929
1938	1210000	48	1209952	0	755668	0	454284	454284
1939	1210000	124	1209876	0	732434	0	477442	477442
1940	1210000	0	1210000	0	758607	0	451393	451393
1941	1210000	0	1210000	0	746411	0	463589	463589
1942	1210000	0	1210000	0	743484	0	466516	466516
1943	1210000	0	1210000	0	748781	0	461219	461219
1944	1210000	0	1210000	0	733502	0	476498	476498
1945	1210000	215	1209785	0	762272	0	447513	447513
1946	1210000	0	1210000	0	763020	0	446980	446980
1947	1210000	0	1210000	0	745681	0	464319	464319
1948	1210000	48	1209952	0	764698	0	445254	445254
1949	1210000	106	1209894	0	752391	0	457503	457503
1950	1210000	0	1210000	0	747811	0	462189	462189
1951	1210000	147	1209853	0	758706	0	451147	451147
1952	1210000	0	1210000	0	759122	0	450878	450878
1953	1210000	0	1210000	0	746003	0	463997	463997
1954	1210000	0	1210000	0	745698	0	464302	464302
1955	1210000	0	1210000	0	750765	0	459235	459235
1956	1210000	1429	1208571	0	781577	0	426994	426994
1957	1210000	0	1210000	0	742780	0	467220	467220
1958	1210000	20	1209980	0	745976	0	464004	464004
1959	1210000	0	1210000	0	726769	0	483231	483231
1960	1210000	180	1209820	0	734440	0	475380	475380
1961	1210000	134	1209866	0	751725	0	458141	458141
1962	1210000	0	1210000	0	750201	0	459799	459799
1963	1210000	0	1210000	0	746014	0	463986	463986
1964	1210000	20	1209980	0	738559	0	471421	471421
1965	1210000	10	1209990	0	765019	0	444971	444971
1966	1210000	0	1210000	0	758969	0	451031	451031

1967	1210000	0	1210000	0	754442	0	455558	455558
1968	1210000	48	1209952	0	739405	0	470547	470547
1969	1210000	48	1209952	0	761998	0	447954	447954
1970	1210000	0	1210000	0	762580	0	447420	447420
1971	1210000	0	1210000	0	748862	0	461138	461138
1972	1210000	0	1210000	0	751121	0	458879	458879
1973	1210000	0	1210000	0	751220	0	458780	458780
1974	1210000	20	1209980	0	764008	0	445972	445972
1975	1210000	0	1210000	0	741865	0	468135	468135
1976	1210000	0	1210000	0	734509	0	475491	475491
1977	1210000	1909	1208091	0	750476	0	457615	457615
1978	1210000	798096	411904	0	411904	0	0	0
1979	1210000	0	1210000	0	738083	0	471917	471917
1980	1210000	955	1209045	0	763160	0	445885	445885
1981	1210000	0	1210000	0	753599	0	456401	456401
1982	1210000	342	1209658	0	764536	0	445122	445122
1983	1210000	6045	1203955	0	751236	0	452719	452719
1984	1210000	0	1210000	0	743561	0	466439	466439
1985	1210000	0	1210000	0	751586	0	458414	458414
1986	1210000	24	1209976	0	748434	0	461542	461542
1987	1210000	20	1209980	0	730043	0	479937	479937
1988	1210000	896	1209104	0	748960	0	460144	460144
1989	1210000	1004	1208996	0	755639	0	453357	453357
1990	1210000	1206	1208794	0	760265	0	448529	448529
1991	1210000	1538	1208462	0	747647	0	460815	460815
1992	1210000	6132	1203868	0	802080	0	401788	401788
1993	1210000	3912	1206088	0	1180256	0	25832	25832
1994	1210000	338	1209662	0	733894	0	475768	475768
1995	1210000	343	1209657	0	771173	0	438484	438484
1996	1210000	1078	1208922	0	727948	0	480974	480974
1997	1210000	484	1209516	0	745807	0	463709	463709
1998	1210000	102	1209898	0	763032	0	446866	446866
1999	1210000	0	1210000	0	735489	0	474511	474511
2000	1210000	0	1210000	0	728429	0	481571	481571
2001	1210000	106	1209894	0	727078	0	482816	482816
2002	1210000	1716	1208284	0	765983	0	442301	442301
	Average	24762	1185238	0	762420	0	422818	422818

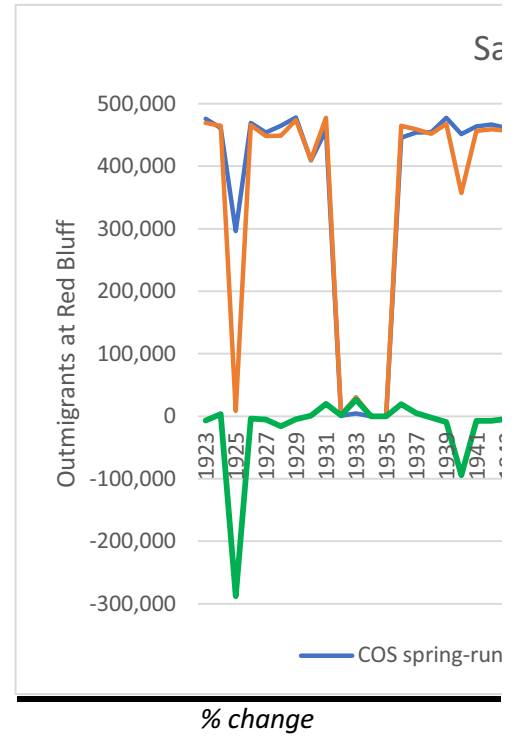
## PA spring-run

Year	Potential E	Prespawm	Eggs Laid	Entrants	Mortality	Residuals	Productior	Survivors
1923	1210000	134	1209866	0	740557	0	469309	469309
1924	1210000	266	1209734	0	745003	0	464731	464731
1925	1210000	17424	1192576	0	1184057	0	8519	8519
1926	1210000	0	1210000	0	744132	0	465868	465868
1927	1210000	78	1209922	0	761590	0	448332	448332
1928	1210000	0	1210000	0	761222	0	448778	448778
1929	1210000	0	1210000	0	736318	0	473682	473682
1930	1210000	20	1209980	0	799752	0	410228	410228
1931	1210000	53	1209947	0	732280	0	477667	477667
1932	1210000	530553	679447	0	677284	0	2163	2163
1933	1210000	1990	1208010	0	1177329	0	30681	30681
1934	1210000	174734	1035266	0	1035265	0	1	1
1935	1210000	767033	442967	0	442967	0	0	0
1936	1210000	456	1209544	0	744710	0	464834	464834
1937	1210000	0	1210000	0	750973	0	459027	459027
1938	1210000	48	1209952	0	757981	0	451971	451971
1939	1210000	124	1209876	0	741967	0	467909	467909
1940	1210000	262	1209738	0	852693	0	357045	357045
1941	1210000	0	1210000	0	753585	0	456415	456415
1942	1210000	0	1210000	0	750983	0	459017	459017
1943	1210000	0	1210000	0	752892	0	457108	457108
1944	1210000	0	1210000	0	739464	0	470536	470536
1945	1210000	78	1209922	0	756422	0	453500	453500
1946	1210000	0	1210000	0	765227	0	444773	444773
1947	1210000	0	1210000	0	751323	0	458677	458677
1948	1210000	20	1209980	0	740640	0	469340	469340
1949	1210000	134	1209866	0	753011	0	456855	456855
1950	1210000	0	1210000	0	745084	0	464916	464916
1951	1210000	114	1209886	0	756803	0	453083	453083
1952	1210000	0	1210000	0	777371	0	432629	432629
1953	1210000	0	1210000	0	748890	0	461110	461110
1954	1210000	0	1210000	0	752622	0	457378	457378
1955	1210000	24	1209976	0	760748	0	449228	449228
1956	1210000	558	1209442	0	770006	0	439436	439436
1957	1210000	0	1210000	0	748701	0	461299	461299
1958	1210000	78	1209922	0	755674	0	454248	454248
1959	1210000	0	1210000	0	739137	0	470863	470863
1960	1210000	0	1210000	0	762351	0	447649	447649
1961	1210000	0	1210000	0	752549	0	457451	457451
1962	1210000	0	1210000	0	750687	0	459313	459313
1963	1210000	0	1210000	0	743973	0	466027	466027
1964	1210000	121	1209879	0	749884	0	459995	459995
1965	1210000	0	1210000	0	765848	0	444152	444152
1966	1210000	0	1210000	0	765843	0	444157	444157

1967	1210000	0	1210000	0	759920	0	450080	450080
1968	1210000	48	1209952	0	743820	0	466132	466132
1969	1210000	0	1210000	0	754963	0	455037	455037
1970	1210000	0	1210000	0	767150	0	442850	442850
1971	1210000	0	1210000	0	760952	0	449048	449048
1972	1210000	0	1210000	0	760253	0	449747	449747
1973	1210000	0	1210000	0	760374	0	449626	449626
1974	1210000	20	1209980	0	773417	0	436563	436563
1975	1210000	0	1210000	0	748714	0	461286	461286
1976	1210000	0	1210000	0	739699	0	470301	470301
1977	1210000	807	1209193	0	747471	0	461722	461722
1978	1210000	911744	298256	0	298256	0	0	0
1979	1210000	173	1209827	0	753968	0	455859	455859
1980	1210000	299	1209701	0	753290	0	456411	456411
1981	1210000	0	1210000	0	762064	0	447936	447936
1982	1210000	182	1209818	0	769487	0	440331	440331
1983	1210000	6230	1203770	0	756725	0	447045	447045
1984	1210000	0	1210000	0	745021	0	464979	464979
1985	1210000	0	1210000	0	745294	0	464706	464706
1986	1210000	130	1209870	0	760326	0	449544	449544
1987	1210000	2625	1207375	0	758874	0	448501	448501
1988	1210000	0	1210000	0	737355	0	472645	472645
1989	1210000	434	1209566	0	746556	0	463010	463010
1990	1210000	1612	1208388	0	784964	0	423424	423424
1991	1210000	588	1209412	0	782817	0	426595	426595
1992	1210000	7324	1202676	0	921707	0	280969	280969
1993	1210000	31875	1178125	0	1178070	0	55	55
1994	1210000	304	1209696	0	738186	0	471510	471510
1995	1210000	319	1209681	0	769849	0	439832	439832
1996	1210000	1116	1208884	0	739182	0	469702	469702
1997	1210000	658	1209342	0	752608	0	456734	456734
1998	1210000	0	1210000	0	748366	0	461634	461634
1999	1210000	0	1210000	0	738224	0	471776	471776
2000	1210000	0	1210000	0	732615	0	477385	477385
2001	1210000	362	1209638	0	747820	0	461818	461818
2002	1210000	798	1209202	0	762385	0	446817	446817
	Average	30774	1179226	0	766207	0	413019	413019

Change in production COS % change

-6,574	-1.4
3,377	0.7
-287,822	-97.1
-3,558	-0.8
-5,445	-1.2
-15,796	-3.4
-4,503	-0.9
944	0.2
19,593	4.3
1,304	151.8
26,308	601.6
-20	-95.2
-1	-100.0
19,250	4.3
5,098	1.1
-2,313	-0.5
-9,533	-2.0
-94,348	-20.9
-7,174	-1.5
-7,499	-1.6
-4,111	-0.9
-5,962	-1.3
5,987	1.3
-2,207	-0.5
-5,642	-1.2
24,086	5.4
-648	-0.1
2,727	0.6
1,936	0.4
-18,249	-4.0
-2,887	-0.6
-6,924	-1.5
-10,007	-2.2
12,442	2.9
-5,921	-1.3
-9,756	-2.1
-12,368	-2.6
-27,731	-5.8
-690	-0.2
-486	-0.1
2,041	0.4
-11,426	-2.4
-819	-0.2
-6,874	-1.5

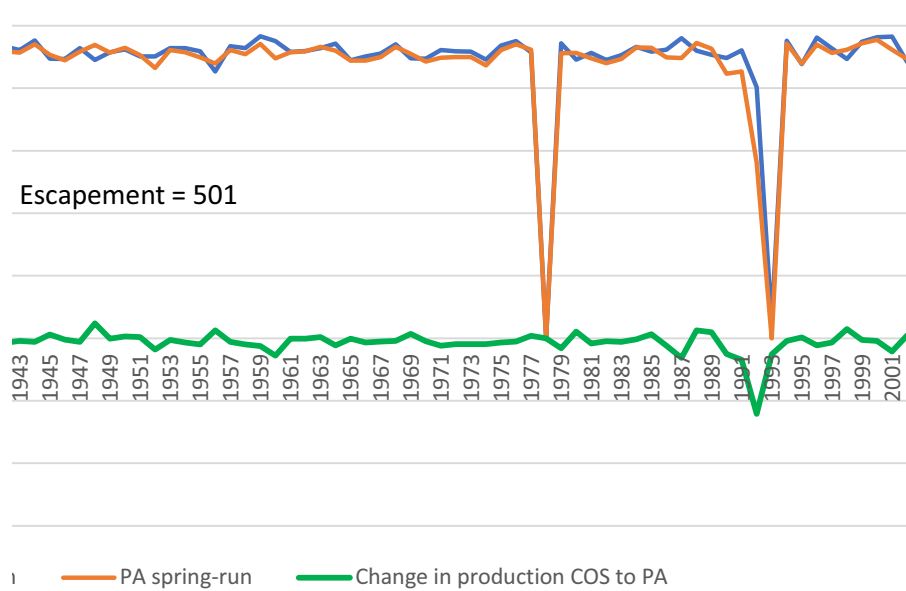


Mean	3.136346
Standard Error	8.19476
Median	-1.08392
Mode	#N/A
Standard Deviation	73.29616
Sample Variance	5372.328
Kurtosis	58.01361
Skewness	7.036708
Range	701.6007
Minimum	-100
Maximum	601.6007
Sum	250.9077
Count	80
Largest(1)	601.6007
Smallest(1)	-100
Confidence Level(95.0%)	16.31126

-5,478	-1.2
-4,415	-0.9
7,083	1.6
-4,570	-1.0
-12,090	-2.6
-9,132	-2.0
-9,154	-2.0
-9,409	-2.1
-6,849	-1.5
-5,190	-1.1
4,107	0.9
0	0.0
-16,058	-3.4
10,526	2.4
-8,465	-1.9
-4,791	-1.1
-5,674	-1.3
-1,460	-0.3
6,292	1.4
-11,998	-2.6
-31,436	-6.6
12,501	2.7
9,653	2.1
-25,105	-5.6
-34,220	-7.4
-120,819	-30.1
-25,777	-99.8
-4,258	-0.9
1,348	0.3
-11,272	-2.3
-6,975	-1.5
14,768	3.3
-2,735	-0.6
-4,186	-0.9
-20,998	-4.3
4,516	1.0
-9,799	-2.3



sacramento River spring Chinook



% change

- Mean
- Standard Error
- Median
- Mode
- Standard Deviation
- Sample Variance
- Kurtosis
- Skewness
- Range
- Minimum
- Maximum
- Sum
- Count
- Largest(2)
- Smallest(2)
- Confidence Level(95.0%)

% change

Mean	3.136346
Standard E	8.19476
Median	-1.08392
Mode	#N/A
Standard C	73.29616
Sample Va	5372.328
Kurtosis	58.01361
Skewness	7.036708
Range	701.6007
Minimum	-100
Maximum	601.6007
Sum	250.9077
Count	80
Largest(2)	151.8044
Smallest(2)	-99.7871
Confidence	16.31126



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3.136346  
8.19476  
-1.08392  
#N/A  
73.29616  
5372.328  
58.01361  
7.036708  
701.6007  
-100  
601.6007  
250.9077  
80  
151.8044  
-99.7871  
16.31126

Scenario 1 winter-run

Year	Potential E	Prespaw	Eggs Laid	Entrants	Mortality	Residuals	Production	Survivors
1923	5913000	9000	5904000	0	3699958	0	2204042	2204042
1924	5913000	9000	5904000	0	3853758	0	2050242	2050242
1925	5913000	9000	5904000	0	3763138	0	2140862	2140862
1926	5913000	12000	5901000	0	3862285	0	2038715	2038715
1927	5913000	9000	5904000	0	3875258	0	2028742	2028742
1928	5913000	60000	5853000	0	3849121	0	2003879	2003879
1929	5913000	9000	5904000	0	3721677	0	2182323	2182323
1930	5913000	9000	5904000	0	3734640	0	2169360	2169360
1931	5913000	9000	5904000	0	3888110	0	2015890	2015890
1932	5913000	9000	5904000	0	5697767	0	206233	206233
1933	5913000	9000	5904000	0	4573531	0	1330469	1330469
1934	5913000	9000	5904000	0	5729204	0	174796	174796
1935	5913000	9015	5903985	0	5763017	0	140968	140968
1936	5913000	9000	5904000	0	3954175	0	1949825	1949825
1937	5913000	9000	5904000	0	4058874	0	1845126	1845126
1938	5913000	9000	5904000	0	3915091	0	1988909	1988909
1939	5913000	60000	5853000	0	3965160	0	1887840	1887840
1940	5913000	9000	5904000	0	3805517	0	2098483	2098483
1941	5913000	66000	5847000	0	3884774	23948	1938278	1962226
1942	5913000	69000	5844000	0	3851859	0	1992141	1992141
1943	5913000	54000	5859000	0	3833631	0	2025369	2025369
1944	5913000	9000	5904000	0	3792049	8403	2103548	2111951
1945	5913000	9000	5904000	0	3859493	0	2044507	2044507
1946	5913000	9000	5904000	0	3958682	22139	1923179	1945318
1947	5913000	9000	5904000	0	3790892	0	2113108	2113108
1948	5913000	9000	5904000	0	3867746	0	2036254	2036254
1949	5913000	9000	5904000	0	3867159	0	2036841	2036841
1950	5913000	9000	5904000	0	4002813	5469	1895718	1901187
1951	5913000	9000	5904000	0	3940169	0	1963831	1963831
1952	5913000	69000	5844000	0	3897639	2013	1944348	1946361
1953	5913000	69000	5844000	0	3812951	0	2031049	2031049
1954	5913000	9000	5904000	0	3699625	0	2204375	2204375
1955	5913000	69000	5844000	0	3827264	0	2016736	2016736
1956	5913000	12000	5901000	0	3996822	0	1904178	1904178
1957	5913000	69000	5844000	0	3911173	2724	1930103	1932827
1958	5913000	9000	5904000	0	3778705	6824	2118471	2125295
1959	5913000	60000	5853000	0	3801992	0	2051008	2051008
1960	5913000	60000	5853000	0	4036774	0	1816226	1816226
1961	5913000	9000	5904000	0	3809946	0	2094054	2094054
1962	5913000	6000	5907000	0	4039451	0	1867549	1867549
1963	5913000	69000	5844000	0	4088213	0	1755787	1755787
1964	5913000	60000	5853000	0	3753275	0	2099725	2099725
1965	5913000	9000	5904000	0	3874086	0	2029914	2029914
1966	5913000	9000	5904000	0	3824341	1	2079658	2079659

1967	5913000	9000	5904000	0	3883207	0	2020793	2020793
1968	5913000	3000	5910000	0	3969826	0	1940174	1940174
1969	5913000	57000	5856000	0	3979720	0	1876280	1876280
1970	5913000	69000	5844000	0	3887626	0	1956374	1956374
1971	5913000	63000	5850000	0	3769342	18102	2062556	2080658
1972	5913000	9000	5904000	0	3712496	0	2191504	2191504
1973	5913000	9000	5904000	0	3974151	0	1929849	1929849
1974	5913000	60000	5853000	0	4167376	1	1685623	1685624
1975	5913000	6000	5907000	0	3765063	0	2141937	2141937
1976	5913000	9000	5904000	0	3771744	0	2132256	2132256
1977	5913000	15000	5898000	0	3923883	0	1974117	1974117
1978	5913000	7569	5905431	0	5885616	0	19815	19815
1979	5913000	60000	5853000	0	4024858	0	1828142	1828142
1980	5913000	9012	5903988	0	3987930	0	1916058	1916058
1981	5913000	60000	5853000	0	3908400	0	1944600	1944600
1982	5913000	9000	5904000	0	3994439	0	1909561	1909561
1983	5913000	69414	5843586	0	3838370	0	2005216	2005216
1984	5913000	60000	5853000	0	3790714	0	2062286	2062286
1985	5913000	15000	5898000	0	3722105	0	2175895	2175895
1986	5913000	9000	5904000	0	3810841	0	2093159	2093159
1987	5913000	60000	5853000	0	3879417	0	1973583	1973583
1988	5913000	9000	5904000	0	3823544	0	2080456	2080456
1989	5913000	6000	5907000	0	3855211	0	2051789	2051789
1990	5913000	9000	5904000	0	4050618	0	1853382	1853382
1991	5913000	9000	5904000	0	3821791	0	2082209	2082209
1992	5913000	9000	5904000	0	3860515	0	2043485	2043485
1993	5913000	9000	5904000	0	4102675	0	1801325	1801325
1994	5913000	9000	5904000	0	3790184	0	2113816	2113816
1995	5913000	9000	5904000	0	3874396	0	2029604	2029604
1996	5913000	12064	5900936	0	3761669	0	2139267	2139267
1997	5913000	60000	5853000	0	3712857	0	2140143	2140143
1998	5913000	9000	5904000	0	3694653	0	2209347	2209347
1999	5913000	60000	5853000	0	3707015	0	2145985	2145985
2000	5913000	63000	5850000	0	3813796	0	2036204	2036204
2001	5913000	66000	5847000	0	3704425	0	2142575	2142575
2002	5913000	9000	5904000	0	3808783	0	2095217	2095217
	Average	26651	5886349	0	3969263	1120	1915966	1917086

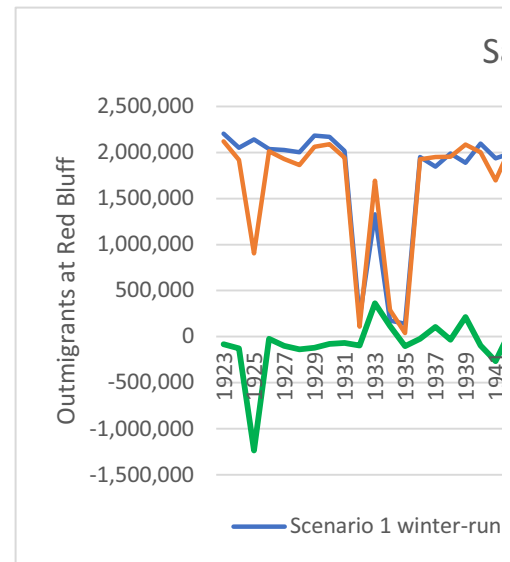
## Scenario 2 winter-run

Year	Potential E	Prespaw	Eggs Laid	Entrants	Mortality	Residuals	Productior	Survivors
1923	5913000	9000	5904000	0	3780902	0	2123098	2123098
1924	5913000	9000	5904000	0	3983126	0	1920874	1920874
1925	5913000	9000	5904000	0	5000200	0	903800	903800
1926	5913000	9000	5904000	0	3889400	0	2014600	2014600
1927	5913000	9000	5904000	0	3973885	0	1930115	1930115
1928	5913000	60000	5853000	0	3987800	0	1865200	1865200
1929	5913000	9000	5904000	0	3842049	0	2061951	2061951
1930	5913000	9000	5904000	0	3813208	0	2090792	2090792
1931	5913000	9000	5904000	0	3958498	0	1945502	1945502
1932	5913000	9000	5904000	0	5795626	0	108374	108374
1933	5913000	9000	5904000	0	4211192	0	1692808	1692808
1934	5913000	9000	5904000	0	5613298	0	290702	290702
1935	5913000	9422	5903578	0	5866027	0	37551	37551
1936	5913000	9000	5904000	0	3978800	0	1925200	1925200
1937	5913000	9000	5904000	0	3952334	1	1951665	1951666
1938	5913000	9000	5904000	0	3948534	0	1955466	1955466
1939	5913000	60000	5853000	0	3753504	13476	2086020	2099496
1940	5913000	9000	5904000	0	3901761	0	2002239	2002239
1941	5913000	69000	5844000	0	4147799	0	1696201	1696201
1942	5913000	69000	5844000	0	3775811	0	2068189	2068189
1943	5913000	54000	5859000	0	3818805	9391	2030804	2040195
1944	5913000	9000	5904000	0	4029194	0	1874806	1874806
1945	5913000	9000	5904000	0	3960620	0	1943380	1943380
1946	5913000	12000	5901000	0	4027651	21374	1851975	1873349
1947	5913000	9000	5904000	0	3953251	0	1950749	1950749
1948	5913000	9000	5904000	0	3880639	0	2023361	2023361
1949	5913000	12000	5901000	0	3980772	0	1920228	1920228
1950	5913000	9000	5904000	0	3956441	0	1947559	1947559
1951	5913000	9000	5904000	0	3943523	0	1960477	1960477
1952	5913000	69000	5844000	0	4245215	0	1598785	1598785
1953	5913000	69000	5844000	0	3808167	0	2035833	2035833
1954	5913000	9000	5904000	0	3830779	8652	2064569	2073221
1955	5913000	69000	5844000	0	4160624	0	1683376	1683376
1956	5913000	12000	5901000	0	4037762	0	1863238	1863238
1957	5913000	69000	5844000	0	3865915	1	1978084	1978085
1958	5913000	39000	5874000	0	4188433	0	1685567	1685567
1959	5913000	60000	5853000	0	3714539	0	2138461	2138461
1960	5913000	66000	5847000	0	3782046	0	2064954	2064954
1961	5913000	9000	5904000	0	3846485	0	2057515	2057515
1962	5913000	9000	5904000	0	3993598	0	1910402	1910402
1963	5913000	69000	5844000	0	4022744	0	1821256	1821256
1964	5913000	54000	5859000	0	4034032	0	1824968	1824968
1965	5913000	9000	5904000	0	3902145	0	2001855	2001855
1966	5913000	9000	5904000	0	4017785	34431	1851784	1886215

1967	5913000	12000	5901000	0	3851976	0	2049024	2049024
1968	5913000	3000	5910000	0	3761109	0	2148891	2148891
1969	5913000	69000	5844000	0	4025670	0	1818330	1818330
1970	5913000	69000	5844000	0	3779737	2	2064261	2064263
1971	5913000	63000	5850000	0	4116422	0	1733578	1733578
1972	5913000	9000	5904000	0	3922471	0	1981529	1981529
1973	5913000	9000	5904000	0	3960213	0	1943787	1943787
1974	5913000	60000	5853000	0	4433957	0	1419043	1419043
1975	5913000	6000	5907000	0	3765287	0	2141713	2141713
1976	5913000	9000	5904000	0	3733841	0	2170159	2170159
1977	5913000	15000	5898000	0	3894656	0	2003344	2003344
1978	5913000	18332	5894668	0	5893173	0	1495	1495
1979	5913000	60000	5853000	0	4444606	0	1408394	1408394
1980	5913000	9000	5904000	0	3979130	2546	1922324	1924870
1981	5913000	60000	5853000	0	4134490	1117	1717393	1718510
1982	5913000	9000	5904000	0	4056815	37431	1809754	1847185
1983	5913000	69432	5843568	0	3795331	1	2048236	2048237
1984	5913000	60000	5853000	0	3794486	0	2058514	2058514
1985	5913000	15000	5898000	0	3964556	0	1933444	1933444
1986	5913000	9000	5904000	0	3899484	0	2004516	2004516
1987	5913000	60000	5853000	0	4408424	0	1444576	1444576
1988	5913000	9000	5904000	0	3829853	0	2074147	2074147
1989	5913000	9000	5904000	0	3849300	0	2054700	2054700
1990	5913000	12000	5901000	0	4098687	0	1802313	1802313
1991	5913000	9000	5904000	0	3800523	0	2103477	2103477
1992	5913000	9000	5904000	0	3937779	0	1966221	1966221
1993	5913000	9000	5904000	0	5193481	0	710519	710519
1994	5913000	9000	5904000	0	3881730	0	2022270	2022270
1995	5913000	9000	5904000	0	3917674	0	1986326	1986326
1996	5913000	9064	5903936	0	3739175	0	2164761	2164761
1997	5913000	60000	5853000	0	4082539	0	1770461	1770461
1998	5913000	9000	5904000	0	3878905	0	2025095	2025095
1999	5913000	60000	5853000	0	3730437	0	2122563	2122563
2000	5913000	63000	5850000	0	3931477	0	1918523	1918523
2001	5913000	60000	5853000	0	4020198	0	1832802	1832802
2002	5913000	9000	5904000	0	3850609	0	2053391	2053391
Average		27428	5885572	0	4069164	1605	1814803	1816408

Change in production COS % change

-80,944	-3.7
-129,368	-6.3
-1,237,062	-57.8
-24,115	-1.2
-98,627	-4.9
-138,679	-6.9
-120,372	-5.5
-78,568	-3.6
-70,388	-3.5
-97,859	-47.5
362,339	27.2
115,906	66.3
-103,417	-73.4
-24,625	-1.3
106,540	5.8
-33,443	-1.7
211,656	11.2
-96,244	-4.6
-266,025	-13.7
76,048	3.8
14,826	0.7
-237,145	-11.3
-101,127	-4.9
-71,969	-3.7
-162,359	-7.7
-12,893	-0.6
-116,613	-5.7
46,372	2.4
-3,354	-0.2
-347,576	-17.9
4,784	0.2
-131,154	-5.9
-333,360	-16.5
-40,940	-2.2
45,258	2.3
-439,728	-20.8
87,453	4.3
248,728	13.7
-36,539	-1.7
42,853	2.3
65,469	3.7
-274,757	-13.1
-28,059	-1.4
-193,444	-9.3



*% change*

Mean	-6.60595
Standard Error	2.186547
Median	-3.17753
Mode	#N/A
Standard Deviation	19.55707
Sample Variance	382.479
Kurtosis	8.340491
Skewness	-1.47368
Range	158.7645
Minimum	-92.4552
Maximum	66.3093
Sum	-528.476
Count	80
Largest(1)	66.3093
Smallest(1)	-92.4552
Confidence Level(95.0%)	4.352213



28,231	1.4
208,717	10.8
-57,950	-3.1
107,889	5.5
-347,080	-16.8
-209,975	-9.6
13,938	0.7
-266,581	-15.8
-224	0.0
37,903	1.8
29,227	1.5
-18,320	-92.5
-419,748	-23.0
8,812	0.5
-226,090	-11.6
-62,376	-3.3
43,021	2.1
-3,772	-0.2
-242,451	-11.1
-88,643	-4.2
-529,007	-26.8
-6,309	-0.3
2,911	0.1
-51,069	-2.8
21,268	1.0
-77,264	-3.8
-1,090,806	-60.6
-91,546	-4.3
-43,278	-2.1
25,494	1.2
-369,682	-17.3
-184,252	-8.3
-23,422	-1.1
-117,681	-5.8
-309,773	-14.5
-41,826	-2.0
-100,678	-5.3

# acramento River winter Chinook

