

# Suitability of tagged Coleman late-fall Chinook as surrogates for juvenile spring run emigrants

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# Background

- 1995 Spring Run Protection Plan
  - One release per month in November, December, and January
  - Reared to similar size and released into the upper Sacramento River at Battle Creek
- 1999-2004 Interim Spring Run Biological Opinions
  - Incidental take level equals 1% of the total release for each group
- EWA Actions for Spring Chinook
  - EWA assets used specifically for spring run in 2003

# Surrogate Loss at the Delta Fish Facilities 2001-2004

Water Year	Nov. Release % Loss	Dec. Release % Loss	Jan. Release % Loss	Production Release % Loss
2001	0.11	0.27	0.36	0.39
2002	0.22	<b>0.90</b>	<b>0.73</b>	0.77
2003	0.28	<b>1.21</b>	<b>1.35</b>	3.29
2004	0.38	*	<b>1.36</b>	2.96

# 2003 EWA Actions for spring run Chinook

			Coleman Hatchery Late-Fall Chinook							
			Non-Clipped Older Juvenile Chinook		December Surrogate Release		January Surrogate Release		January Production Release	
ACTION	DATE	EWA Cost (taf)	Actual Loss	Base Loss*	Actual Loss	Base Loss	Actual Loss	Base Loss	Actual Loss	Base Loss
FISH ACTION 1	12/27/2002 - 01/02/2003	41.4	470	770	27.8	41.2	*	*	*	*
FISH ACTION 2	1/15/2003 - 1/20/2003	59.5	52	165	13.8	43.3	*	*	2918.5	9232
FISH ACTION 3	1/25/2003 - 1/28/2003	20.4	182	282	12.5	19.4	181.6	282.4	1529.4	2370
<b>TOTAL LOSS</b>			<b>704</b>	<b>1217</b>	<b>54.1</b>	<b>104.0</b>	<b>181.6</b>	<b>282.4</b>	<b>4447.9</b>	<b>11602.0</b>
<b>TOTAL SAVED</b>			<b>513</b>		<b>50</b>		<b>101</b>		<b>7154</b>	

\*Base loss is calculated by multiplying the actual loss density (loss/exports (taf)) by the projected exports under the base case scenario.



## Older juvenile spring run recoveries in the Mill and Deer creeks rotary screw traps

Water Year	Mill Creek	Deer Creek
1996	0	9
1997	10	120
1998	1	0
1999	34	338
2000	49	117
2001	556	723
2002	1135	697
2003	200	57
2004	38	16

# Percentage of older juvenile Chinook emigrating from Mill and Deer creeks by month

	Mill Creek			Deer Creek		
Year	Nov	Dec	Jan	Nov	Dec	Jan
1996	0	0	0	11	45	22
1997	90	10	0	86	14	0
1998	100	0	0	0	0	0
1999	0	6	94	29	53	18
2000	37	10	16	77	2	12
2001	22	8	48	41	31	23
2002	76	12	1	66	29	1
2003	89	2	0	83	3	7
2004	32	59	3	13	78	4
<b>Avg</b>	<b>56</b>	<b>14</b>	<b>20</b>	<b>51</b>	<b>32</b>	<b>11</b>

# Coleman late-fall Chinook releases

- November
  - Corresponds with ~51% of the juveniles leaving the tributaries
  - Lowest average survival (1995-2004) = 0.215
  - Recovery period of
    - Upstream ~22 days
    - Downstream ~44 days
  - Timing matches in wet years

# Coleman late-fall Chinook releases

- December Release
  - Corresponds with ~23% of the juveniles leaving the tributaries
  - Average survival (1995-2004) = 0.414
  - Similar recovery period to Nov. release
    - Upstream ~21 days
    - Downstream ~35 days
  - Timing matches in wet years

# Coleman late-fall Chinook releases

- January Release
  - Corresponds with ~16% of the older juveniles leaving the tributaries
  - Highest average survival (1995-2004) = 0.492
  - Shortest recovery period
    - Upstream ~15 days
    - Downstream ~25 days
  - Recovery timing similar to Production release
  - Timing matches in dry years

# Summary

- The timing of the November and December release groups match the older juvenile Chinook recoveries best in wet years.
- The timing of the January release group matches the older juvenile Chinook recoveries best in dry years, as does the Production release.
- The January release group has the highest survival.

# Recommendations and Conclusions

- Drop the January release. The Production release provides the same information and could replace the January release in dry years.
- Increase the size of the November and December releases using the fish from the January release.
- Based on our current data, it is not clear whether the Coleman late fall Chinook are suitable surrogates. However, we can now identify spring run based on genetic markers. Once available, this data will help us determine if the Coleman late-fall Chinook are suitable.