# Modeled annual loss at export facilities

| Species | Yeartype (Sacramento "40-30-30" Index under ELT Q5 hydrology) | Predicted loss under PA | Predicted loss under COS | Difference in predicted loss (PA-COS) | % change |
|---|---|---|---|---|---|
| Spring-run | Wet | 270,759 | 125,972 | 144,788 | 115 |
| | Above Normal | 199,562 | 75,124 | 124,438 | 166 |
| | Below Normal | 43,781 | 20,859 | 22,922 | 110 |
| | Dry | 88,278 | 48,347 | 39,931 | 83 |
| | Critical | 42,325 | 23,917 | 18,408 | 77 |
| Steelhead | Wet | 29,858 | 24,319 | 5,539 | 23 |
| | Above Normal | 52,971 | 45,799 | 7,172 | 16 |
| | Below Normal | 39,414 | 32,831 | 6,583 | 20 |
| | Dry | 44,334 | 34,267 | 10,067 | 29 |
| | Critical | 25,617 | 18,481 | 7,136 | 39 |

# Modeled monthly loss at export facilities

**CV spring-run Chinook salmon**

| Month | Predicted loss under PA | Predicted loss under COS | PA-COS | % change |
|---|---|---|---|---|
| October | 45 | 31 | 14 | 48 |
| November | 0 | 0 | 0 | -- |
| December | 0 | 0 | 0 | -- |
| January | 0 | 0 | 0 | -- |
| February | 919 | 879 | 39 | 4 |
| March | 25,787 | 27,504 | -1,717 | -6 |
| April | 168,313 | 64,198 | 104,115 | 162 |
| May | 74,038 | 31,710 | 42,328 | 133 |
| June | 1,657 | 1,650 | 7 | 0 |
| July | 0 | 0 | 0 | -- |
| August | 0 | 0 | 0 | -- |
| September | 0 | 0 | 0 | -- |

**CCV steelhead**

| Month | Predicted loss under PA | Predicted loss under COS | PA-COS | % change |
|---|---|---|---|---|
| October | 260 | 175 | 85 | 48 |
| November | 60 | 52 | 8 | 17 |
| December | 147 | 167 | -21 | -12 |
| January | 5,927 | 5,558 | 369 | 7 |
| February | 6,992 | 6,696 | 296 | 4 |
| March | 6,731 | 7,197 | -466 | -6 |
| April | 5,586 | 2,108 | 3,478 | 165 |
| May | 3,109 | 1,326 | 1,783 | 134 |
| June | 982 | 975 | 7 | 1 |
| July | 36 | 37 | 0 | -1 |
| August | 12 | 12 | 0 | -1 |
| September | 17 | 17 | 0 | 2 |

# Caveats for modeled loss at export facilities

- Modeling uses length-at-date (LAD) criteria, so much of projected spring-run loss may represent loss of unmarked hatchery fall-run. However, the pattern – approximate doubling of spring-run loss -- is still expected, since LAD used for both COS and PA results.
- Steelhead doesn't show as dramatic a change in the annual numbers because most steelhead loss occurs Jan-March, but the approximate doubling is still observed for steelhead in April and May
- San Joaquin basin-origin steelhead migrate almost entirely in April and May, so most of the Southern Sierra Nevada Diversity Group is expected to experience an approximate doubling in loss at the export facilities.

# Integration and Synthesis: Spring-run

| Step | Apply the Available Evidence to Determine if… | True/False | Action |
|---|---|---|---|
| A | The proposed action is not likely to produce stressors that have direct or indirect adverse effects on the environment | True | End |
| | | False | Go to B |
| B | Listed individuals are not likely to be exposed to one or more of those stressors or one or more of the direct or indirect consequences of the proposed action | True | NLAA |
| | | False | Go to C |
| C | Listed individuals are not likely to respond upon being exposed to one or more of the stressors produced by the proposed action | True | NLAA |
| | | False | Go to D |
| D | Any responses are not likely to constitute "take" or reduce the fitness of the individuals that have been exposed | True | NLAA |
| | | False | Go to E |
| E | Any reductions in individual fitness are not likely to reduce the viability of the populations those individuals represent | True | NLJ |
| | | False | Go to F |
| F | Any reductions in the viability of the exposed populations are not likely to reduce the viability of the species | True | NLJ |
| | | False | LJ |

## Key Findings

- 2 out of 3 wild populations at high risk, declining trend
- DCC Gates open more frequently (Dec-Jan), increasing entrainment into South Delta
- Modeled Old and Middle River flows (OMR flows) will be approximately 3,500 to 4,000 cfs more negative during April and May in wetter water year types with the elimination of the I:E ratio.
- OMR flows are modeled to not be positive at any time (monthly average/ exceedance plots).
- PA components are expected to appreciably reduce the abundance and diversity VSP parameters for spring-run populations (and habitat quality).

| Water Yeartype | Predicted loss under PA | Predicted loss under COS | PA-COS | % change |
|---|---|---|---|---|
| Wet | 270,759 | 125,972 | 144,788 | 115 |
| Above Normal | 199,562 | 75,124 | 124,438 | 166 |
| Below Normal | 43,781 | 20,859 | 22,922 | 110 |
| Dry | 88,278 | 48,347 | 39,931 | 83 |
| Critical | 42,325 | 23,917 | 18,408 | 77 |

# Integration and Synthesis: Steelhead

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| D | Any responses are not likely to constitute "take" or reduce the fitness of the individuals that have been exposed | True | NLAA |
| | | False | Go to E |
| E | Any reductions in individual fitness are not likely to reduce the viability of the populations those individuals represent | True | NLJ |
| | | False | Go to F |
| F | Any reductions in the viability of the exposed populations are not likely to reduce the viability of the species | True | NLJ |
| | | False | LJ |

## Key Findings

- DPS at moderate risk of extinction
- DCC Gates open more frequently (Dec-Jan), increasing entrainment into South Delta
- Modeled Old and Middle River flows (OMR flows) will be approximately 3,500 to 4,000 cfs more negative during April and May in wetter water year types with the elimination of the I:E ratio.
- OMR flows are modeled to not be positive at any time (monthly average/ exceedance plots).
- OMR flows and steelhead density triggers are not protective of the Southern Sierra Diversity Group
- PA components are expected to appreciably reduce the abundance VSP parameter for steelhead populations of the Sacramento River and San Joaquin River basin

# Integration and Synthesis: Steelhead

| Step | Apply the Available Evidence to Determine if… | True/False | Action |
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| D | Any responses are not likely to constitute "take" or reduce the fitness of the individuals that have been exposed | True | NLAA |
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## Key Findings

| Water Yeartype | Predicted loss under PA | Predicted loss under COS | PA-COS | % change |
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