Telemetry Study Summary Framework

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<table>
<tr><td colspan="2">Point of Contact:
Name: Matt Johnson E-mail: Matt.Johnson@wildlife.ca.gov Phone: (530) 527-9490</td></tr>
<tr><td>Study Timing:
Study Duration: 3 years
Release Dates: 4/15-6/15; 10/1-12/15</td><td>Study site(s):
Collection site: Deer Creek 39.5950.75N, 121.5803.38 W
Release location: at screw trap</td></tr>
<tr><td colspan="2">Fish</td></tr>
<tr><td>Species-race: Central Valley steelhead
Life stage: smolt
Source: wild</td><td>Size (median & range):
Average Weight: 108 g.
Average Length: 217 mm</td></tr>
<tr><td>Transmitter Information
Type/model: ATS SS300/SS400
Weight (gm): .30
PRI/life of tag: 5 sec PRI</td><td>Implant procedure
Surgical placement of acoustic tag in peritoneal cavity of juvenile salmon. Incision closed using two sutures.</td></tr>
<tr><td colspan="2">Telemetry Receivers:
Receivers Maintained: 4 Technologic receivers in Deer Creek maintained by CDFW. Additional receivers deployed in Sacramento River/Delta/SF Bay by USGS and UCSC
Receiver Deployment: Deployed in Deer once tagging begins (fall and spring periods) and remain in place for 30+ days after last fish is tagged
Coordination with other studies/receivers needed? Yes. Coordination with deployment of receivers in Sacramento River/Delta/Bay
Frequency of data download required: 2X year for Deer Creek receivers</td></tr>
<tr><td colspan="2">Survival estimate (per species or objective)
Type (project, etc.): NOAA-UCSC 1A
Value & SE: .30 (+/-10%)
Sample size/replicate: up to 100 fish in fall and spring tagging period
replicates: NA Fish tagged as available based on RST captures
Analytical model: River and STAR models. These models analyses will be completed by NMFS at the end of the year</td></tr>
<tr><td colspan="2">Hypothesis test and results (if applicable)
H_o: NA
H_a: NA
Conclusion: Observational</td></tr>
<tr><td colspan="2">Characteristics of estimate
Effects reflected (direct, total, etc.): Evaluate survival in Deer Creek, the Sacramento River, Delta and San Francisco Bay across multiple years. Associate movement and survival</td></tr>
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rates with flow and water temperature in each region to evaluate their influence on smolt survival.

- Absolute or relative: Absolute survival

Environmental/operating conditions (if applicable)

- Relevant discharge indices: Deer Creek flow 1,500 cfs or less
- Temperature: <22
- TDG: NA
- Treatment(s): Flow, turbidity, temperature

Unique study characteristics: The high numbers of steelhead smolts captured by rotary screw trap in lower Deer Creek (Tehama County) makes this study ideal for acoustic tagging purposes. The average smolt size is large enough that concerns for acoustic tag shedding are low, and the high numbers of fish captured allows for large sample sizes to be tagged and released seasonally (fall period and spring period. This study is unique in that it gives managers a snapshot into survival and movement rates of natural-origin Central Valley steelhead smolts.