

## Telemetry Study Summary Framework

### Point of Contact:

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<b>Study objective:</b> Survival, route selection through the Delta, and movement rates of spring-run Chinook Salmon from the Restoration Area to the Ocean	
<b>Study Timing:</b> <ul style="list-style-type: none"> <li>Study Duration: 3+ years</li> <li>Release Dates (range): 3/01-3/25; downstream release timed to movement of upstream release group</li> </ul>	<b>Study site(s):</b> <ul style="list-style-type: none"> <li>Collection site(s): SCARF broodstock offspring</li> <li>Release location(s): With SJRRP Production fish in the Restoration Area, Durham Ferry, and (new as of 2020) Franks Tract in the Delta</li> </ul>
<b>Fish</b>	
<ul style="list-style-type: none"> <li>Species-race: spring-run Chinook salmon</li> <li>Life stage: smolt</li> <li>Source: hatchery</li> </ul>	Size (median & range): <ul style="list-style-type: none"> <li>Weight 5.2 grams (4.1-10.7g)</li> <li>Fork Length: 78mm (56-98mm)</li> </ul>
<b>Transmitter Information</b> <ul style="list-style-type: none"> <li>Type/model: ATS SS400 single battery</li> <li>Weight (gm): .217</li> <li>PRI/life of tag: 5 sec PRI</li> </ul>	<b>Implant procedure</b> <ul style="list-style-type: none"> <li>Surgical placement of acoustic tag in peritoneal cavity of juvenile salmon. Incision closed using one sutures.</li> </ul>
<b>Telemetry Receivers:</b> <ul style="list-style-type: none"> <li>Receivers Maintained: ~60 Teknologic (and some ATS) receivers in the Restoration Area, Lower San Joaquin River, and Delta. Additional receivers deployed in Sacramento River/Delta/SF Bay by USGS and UCSC</li> <li>Receiver Deployment: Deployed prior to tagging (early-mid Feb.) and remain in place through the service life of the (Teknologic) receivers ~ mid-June</li> <li>Coordination with other studies/receivers needed? (Y): Frequency of data download required: Coordinated Acoustic Telemetry receivers.</li> </ul>	
<b>Survival estimate</b> (per species or objective) <ul style="list-style-type: none"> <li>Type (project, etc.): UCD-DSP</li> <li>Value &amp; SE: 0.02-0.05 (SE = 0.01)</li> <li>Sample size/replicate: 350, with a supplemental Delta release of 350, Franks Tract release of 100</li> <li># replicates: 1</li> <li>Analytical model: multinomial multi-state mark recapture <i>sensu</i> Buchanan et al. (2013, 2018)</li> </ul>	
<b>Hypothesis test and results</b> (if applicable) <ul style="list-style-type: none"> <li>H.: NA</li> <li>H.: NA</li> <li>Conclusion: Observational. Potentially useful in near term synthesis project.</li> </ul>	
<b>Characteristics of estimate</b> <ul style="list-style-type: none"> <li>Effects reflected (direct, total, etc): Evaluate survival in the Restoration Area, San Joaquin River, Delta and Estuary across multiple years. Associate movement and survival rates with flow, water disease and infection (paired UCD physiology study), temperature, pH, chlorophyll, nitrates, and other environmental characteristics (paired UCD FLAMe study) in each region to evaluate their</li> </ul>	

<p>influence on smolt survival. Evaluate RT distribution through river, Delta, and presence/absence in South Delta</p> <ul style="list-style-type: none"> <li>• Absolute or relative: absolute survival</li> </ul>
<p><b>Environmental/operating conditions</b> (if applicable)</p> <ul style="list-style-type: none"> <li>•</li> </ul>
<p><b>Unique study characteristics:</b></p> <p>Relatively large sample size, generally understudied ESU, unique setting (Restoration Area and above major SJR tributaries), unique population reintroduced spring-run Chinook Salmon. Additional UCD studies including physiology, FLAMe, and multidimensional tracking and hydro-modeling at the HOR junction offer additional study components to investigate the drivers of movement, route selection, and survival of these fish.</p>