Telemetry Study Summary Framework

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Study Timing:

- Study Duration (years): 3 years, 2019-2021
- Release Dates (range): Late-March through mid-April, annually

Study site(s):

- Collection site(s): Coleman National Fish Hatchery
- Release location(s): Battle Creek (Coleman NFH) and Sacramento River at Scotty's Landing (RM 196)

Fish

- Species-race: fall Chinook Salmon
- Life stage: pre-smolt and smolt
- Source: Coleman NFH

Size (median & range):

- Weight (if applicable): 6.5 g (5.0-8.1)
- Length: 84 mm (78-91)

Transmitter Information

- Type/model: ATS SS300
- Weight (gm): 0.30 g
- PRI/life of tag: 5s/ 71 days

Implant procedure

- Surgical placement of acoustic tag in peritoneal cavity of juvenile salmon. Incision closed using 2 sutures.

Telemetry Receivers:

- Receivers Maintained (type/model, number, & geographical extent): EATSM receivers only
- Receiver Deployment (e.g., year-round, study-based/seasonal – specific dates): Seasonal: Mid-March through late May (approximately 70+ days after the final fish is tagged)
- Coordination with other studies/receivers needed? (Y/N, geographical extent): Sacramento River and Bay-Delta Region
- Frequency of data download required: No additional requirements outside of normal download schedule

Survival estimate (per species or objective)

- Type (project, etc.): Analysis details pending
- Value & SE:
- Sample size/replicate: 300/release group/year
- # replicates: 0
- Analytical model: updated version of the multi-state mark-recapture model to to estimate reach-specific survival (S), detection probabilities (P), and route use probabilities (Ψ) in out-migration reaches

Hypothesis test and results (if applicable)

- H_o: There is no difference in fishery contribution, returns to Battle Creek, stray rates or juvenile in-stream survival between release sites/methods
- H_a: There are differences in fishery contribution, returns to Battle Creek, stray rates or juvenile in-stream survival between release sites/methods
- Conclusion: Pending. Data may be used to inform future hatchery release practices.

Characteristics of estimate

- Effects reflected (direct, total, etc): Evaluate instream survival of juvenile FCS throughout the freshwater emigration corridor using real-time data from acoustic tags
- Absolute or relative: Relative survival between release sites/methods

Environmental/operating conditions (if applicable)

- Relevant discharge indices: Battle Creek and Sacramento River through emigration corridor
- Temperature: Battle Creek and Sacramento River through emigration corridor
- TDG: N/A
- Treatment(s): Flow, turbidity, temperature in Battle Creek and Sacramento River through emigration corridor

Unique study characteristics: The primary goal of this study is to evaluate the fishery contribution, escapement to Battle Creek and stray rates of paired releases of juvenile FCS from Coleman NFH released into acclimation pens in the Sacramento River and released directly from the hatchery into Battle Creek. The study will assess if the proposed off-site release strategy is aligned with the Service's goals for Coleman NFH, which are to promote increased survival of salmon to support ocean and freshwater fisheries while encouraging a high rate of fidelity to Coleman NFH to ensure a source of hatchery broodstock and reduce the potential for negative impacts that can result when hatchery fish stray to natural spawning areas. A secondary study goal is to evaluate instream survival of juvenile FCS throughout the freshwater emigration corridor using data from acoustic tags. This study was developed in partnership with Golden Gate Salmon Association (GGSA), NorCal Guides & Sportsmen's Association, Pacific Coast Federation of Fishermen's Association and US Bureau of Reclamation. The UC Davis Biotelemetry Team performed acoustic tagging surgeries in the first year of the study.