**Introduction**

Time and air exposure are under scrutiny for having potential sub-lethal and lethal impacts on individual fish resulting from catch-and-release angling. We used an existing angler caught brood program to track individually marked fish and evaluate the potential impacts resulting from angler fight time and air exposure.

**Objectives**

- Compare survival rates of angler caught brood and conventional hatchery trap (swim-in) brood
- Evaluate impacts of fight time and air exposure on success of hatchery progeny ponding (i.e., fry / green eggs)

**Methods**

**Fishery Data Collection**

- Timed Fight Duration
- Timed Angler Air Exposure
- Timed Tube Air Exposure
- Fish Individually Marked

**Hatchery Data Collection**

- Pre-spawn survival
- Ponding success

**Statistics**

- Data analyzed using Mixed Effects Logistic Regression Models

**Results**

- Prespawn survival of angler caught brood and conventional hatchery swim-in brood were 96% and 95% respectively
- Average fight duration was 165 seconds
- Fight duration did not statistically reduce progeny ponding success
- Average angler air exposure was 22.6 seconds and tube air exposure was 26.3 seconds
- Air exposure did not statistically reduce progeny ponding success

**Fight Duration**

![Graph showing fight duration probability](chart)

Figure 1. Odds of ponding success increased by slightly more than 1 time for females (top) and decreased by 0.998 times for males (bottom) as the fight time of each parent increased by one second.

**Air Exposure**

![Graph showing air exposure probability](chart)

Figure 2. Odds of ponding success increased by 1.014 for both females (top) and males (bottom) with each additional second of air exposure.

**Discussion**

- No increased prespawn mortality or significant reduction in progeny ponding associated with fight time and air exposure
- Results corroborate other work showing no reproductive impairment due to air or fight time
- Air exposures in this study were very similar to the general angling public (Lamansky and Meyer 2016, Chiaramonte et al. 2017)
- Average angler air exposure in this study was higher than the published 10 second maximum air exposure recommendation by Cook et al. (2015)
- Caution should be taken in applying these results to wild stocks

- Proper care and handling during catch-and-release is an important best management practice and the observed angling practices in this brood collection program are not limiting hatchery progeny production

**Literature Cited**

