

**PHYSIOLOGICAL DISTURBANCES ARISING FROM THE  
DIFFERENT SECTIONS OF A LIVE-RELEASE ANGLING  
TOURNAMENT: INSIGHTS FROM A SIMULATED TOURNAMENT**

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**EXTENDED ABSTRACT ONLY – DO NOT CITE**

**Introduction**

Live-release tournaments for black bass (*Micropterus* spp.) have grown in popularity over the last several decades, and it is currently estimated that there are over 30 000 of these events annually across North America (Wilde 1998). Mortality of bass following live-release tournaments can be highly variable (Wilde 1998) despite the fact that mortality resulting from the catch and immediate release of bass is typically quite low (Muoneke and Childress 1994). As a result, fisheries managers have questioned the potential impacts of angling tournaments on bass populations (Wilde 1998).

Recent investigations have suggested that mortality following tournaments likely results from the cumulative effects of numerous sub-lethal stressors incurred by fish throughout the tournament day (Schramm et al. 1987; Kwak and Henry 1995). Due to the variability in mortality rates, it has also been suggested that reductions in mortality should be possible if those sub-lethal stressors could be identified. In an attempt to better understand the relative contribution of different sections of a tournament to physiological disturbance, this study replicated a live-release angling tournament for largemouth bass (*Micropterus salmoides*), and fish were sampled for blood, white muscle, and cardiac parameters following each of the tournament sections.

### **Methods**

Treatment groups in the study were designed to represent conditions observed at actual angling events in Southeastern Ontario. Briefly, the treatment groups were:

1. Control – fish were sampled while resting in blackened perspex boxes in the lab.
2. Exercise – fish were sampled following 1 minute of exercise to mimic angling.
3. Livewell – fish were exercised 1 minute, then confined for 6 hours in a livewell on a boat.
4. Weigh-in – fish were first subjected to exercise and livewell treatments. They were then confined in plastic transport bags for 5 min, then air exposed for 1 min.
5. Recovery – fish were subjected to exercise, livewell, and weigh-in treatments, then returned to blackened perspex boxes in the lab for 24 hours.

### **Results and Discussion**

Under the conditions simulated, the most physiologically challenging portions of a live-release angling tournament were the exercise (angling) and weigh-in treatments. During these sections, largemouth bass experienced significant changes in muscle energy stores, lactate, osmolarity, cortisol and cardiac parameters. In contrast, largemouth bass were able to recover from exercise during livewell confinement as evidenced by clearance of lactate and replenishment of energy reserves. Elevated plasma cortisol, plasma glucose and heart rate during livewell confinement suggest that this portion of a tournament likely causes a disturbance for fish. During the 24 hour recovery period, all of

the parameters monitored returned to resting levels and no mortality was observed.

Results from this study can be used to minimize disturbance and maximize survival at live-release angling tournaments. Notably, the weigh-in imposes a relatively large physiological disturbance on largemouth bass, and efforts should therefore be made to reduce disturbance at this stage. A companion study from our group has shown that air exposure during the weigh-in may be a critical factor in this regard.

### **References**

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