

Competitive fishing events pre-fishing angler survey and delayed mortality study comprehensive summary.

John Tchir, Senior Area Fisheries Biologist, Alberta Sustainable Resource Development
Myles Brown, Area Fisheries Biologist, Alberta Sustainable Resource Development
Martin Brillling, Senior Area Fisheries Technician, Alberta Sustainable Resource Development

Tournament angling for walleyes is extremely popular among competitive anglers throughout North America. While this sport is growing there is concern among non-competitive anglers and other fisheries stakeholders that these tournaments may be having a negative effect on walleye stocks. Our two primary objectives were to 1) estimate the delayed mortality of tournament caught and weighed-in fish from 3 large-scale fishing tournaments on Lesser Slave Lake and 2) estimate mortality resulting from pre-fishing for large-scale tournament events.

Three tournaments were monitored on Lesser Slave Lake, and these included the Anglers Cup June 19 and 20, 2009, Prince Craft Marine June 27 and 28, 2009, and the Golden Walleye Classic September 5 and 6, 2009. All three of the tournaments were weight format with on-shore weigh-in stations.

Delayed mortality

At all three tournaments, walleyes were randomly selected from anglers at the weigh-in station. Fish were marked with a temporary clip-on dorsal fin tag and fin hole punched as a secondary mark. Data, including: depth of fishing, distance travelled in live well and total holding time in live well was recorded for each fish retained. Walleyes were transported in a live well with continuous fresh water circulation one or two at a time to holding pens (dimensions 4.27 m x 4.27 m x 3.05 - 4.72 m deep) not more than 2.0 km away from the weigh-in station.

Control fish were captured by angling and were transported to holding pens where they were marked using the same methods as the tournament fish. Hole punches were used to differentiate between control and tournament fish in the event that the clip-on tag was lost. We attempted to capture fish of similar size to the tournament minimum. However, in most cases catch rates of fish larger than 50 or 51 cm TL were too low given our limited manpower to achieve adequate sample sizes, so legal sized fish were retained ranging from 43 cm to greater than 51 cm.

Anglers were asked questions with respect to the fish they were weighing in. Data collected in this manner included the total time the fish was held in the live well, the numbers of walleyes culled prior to the weigh in, time travelled to the weigh in station from the fishing area, and the depth the fish was caught in.

The Golden Walleye Classic had the highest average time that walleyes were held in live wells prior to being weighed in (111.29 minutes), Figure 1. However, given the variability in livewell holding times between events there was no evidence that holding times in live wells differed (Tukey's HSD, $\alpha = 0.05$, $p > 0.05$) between tournaments.

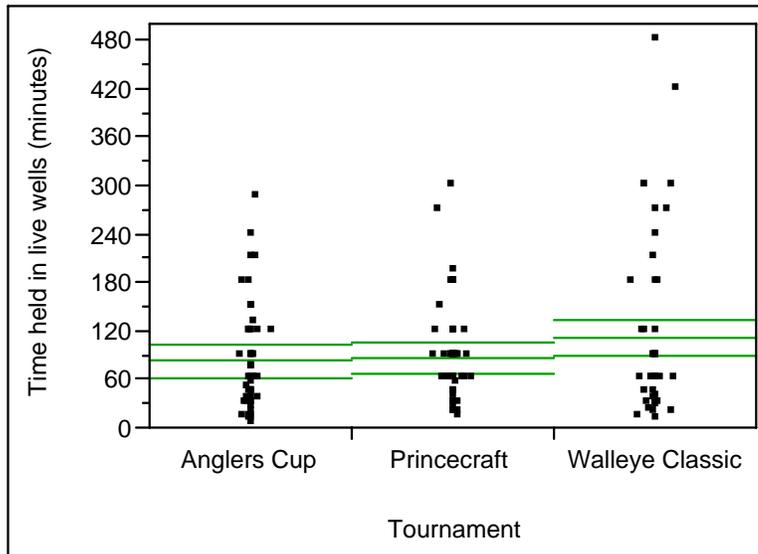


Figure 1. Time walleyes were held in live wells prior to being weighed in at three tournaments including the Anglers Cup and Prince Craft Marine tournaments that were held in June and the Golden Walleye Classic that was in September. All three tournaments were held on Lesser Slave Lake, Alberta. Middle Green lines show means and outer green lines show 95% confidence intervals.

One of the objectives of best management practices for tournament fishing in Alberta is to minimize culling. Unfortunately, culling or holding of fish for periods of time occurred at a high frequency. Figure 2 shows the numbers of walleyes culled between fish being weighed-in. Walleye culling did not differ significantly between tournaments (Tukey's HSD, $\alpha = 0.05$, $p > 0.05$).

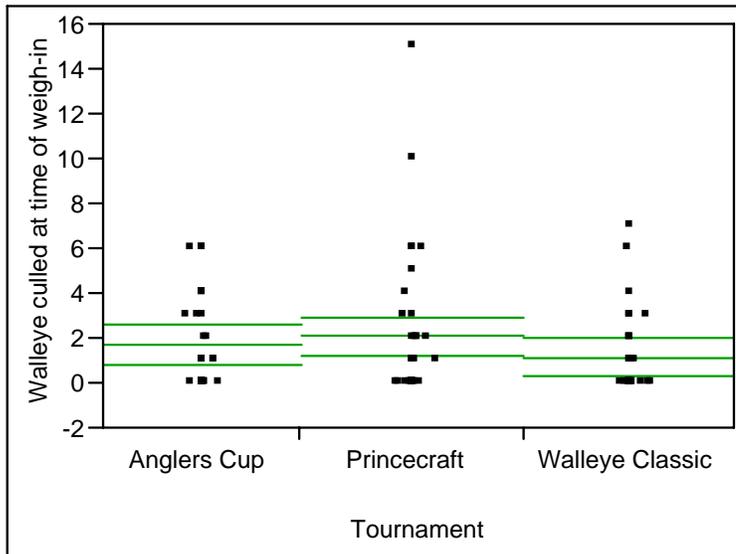


Figure 2. Reported numbers of walleyes culled (caught, held, later released and replaced with larger fish) during three tournaments including the Anglers Cup and Prince Craft Marine tournaments that were held in June and the Golden Walleye Classic that was in September. All three tournaments were held on Lesser Slave Lake, Alberta. Middle Green lines show means and outer green lines show 95% confidence intervals.

The time it takes to travel from the fishing area to the weigh in station may have an effect on walleye survival. Average travel times reported in the Anglers Cup were the highest of all three tournaments at 25.74 minutes and differed significantly (Tukey's HSD, $\alpha = 0.05$, $p < 0.05$) from the Golden Walleye Classic with an average reported time travelled of 17.31 minutes, figure 3.

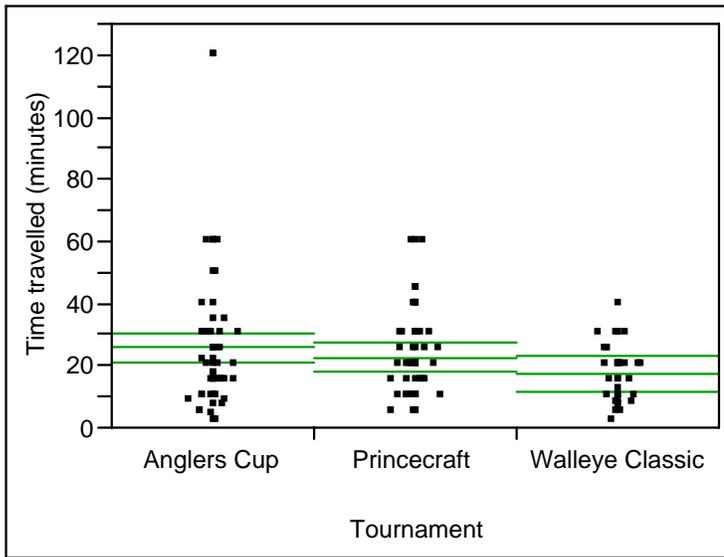


Figure 3. Times travelled to weigh-in walleyes from three tournaments including the Anglers Cup and Prince Craft Marine tournaments that were held in June and the Golden Walleye Classic that was in September. All three tournaments were held on Lesser Slave Lake, Alberta. Middle Green lines show means and outer green lines show 95% confidence intervals.

Depth fished is an important factor that affects mortality of released fish. From our observations it appears that the incidence of fizzing increases with depth of fishing which further reduces survivability. The Golden Walleye Classic had the highest average reported depth of fishing at 14.12 feet with 25% of reported depths being greater than 17 feet, figure 4. Depths fished during this tournament were significantly higher than depths reported from the Anglers Cup and Prince Craft Marine Tournaments (Tukey's HSD, $\alpha = 0.05$, $p < 0.05$).

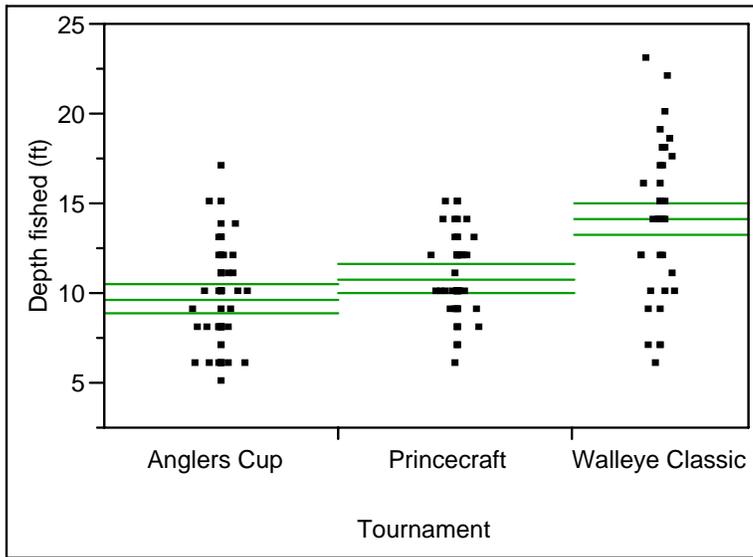


Figure 4. Depths fished reported by anglers from three tournaments including the Anglers Cup and Prince Craft Marine tournaments that were held in June and the Golden Walleye Classic that was in September. All three tournaments were held on Lesser Slave Lake, Alberta. Middle Green lines show means and outer green lines show 95% confidence intervals.

Of the three tournaments, the Golden Walleye Classic had the highest level of overall mortality at 19% while the Anglers Cup and Prince Craft Marine Tournaments had less than 2% delayed mortality of tournament fish held in net pens for 4 days. Compared to tournament caught walleyes control fish had 100% survival after being held a minimum of 4 days in holding pens. Survival of control fish indicates that there was no net pen induced mortality during the time that walleyes were held. Therefore, all mortalities resulted from effects of tournament fishing.

Pre-fishing Estimates

Tournament pre-fishing can increase angler pressure and subsequent fishing mortality on waterbodies and would be difficult to estimate without a focused survey.

Anglers were interviewed at random at weigh-in stations during the tournaments. Between 30 and 75% of total tournament participants were interviewed during each tournament. Anglers were asked a series of questions pertaining to: angling effort, percent of fish caught in water greater than 21 feet, fishing method, and numbers of fish harvested during pre-fishing.

Tournament anglers spent the most time pre-fishing for the Anglers Cup with an average of 3.16 days. This was significantly higher than the Prince Craft Marine tournament with an average of 2.12 days spent fishing, figure 5.

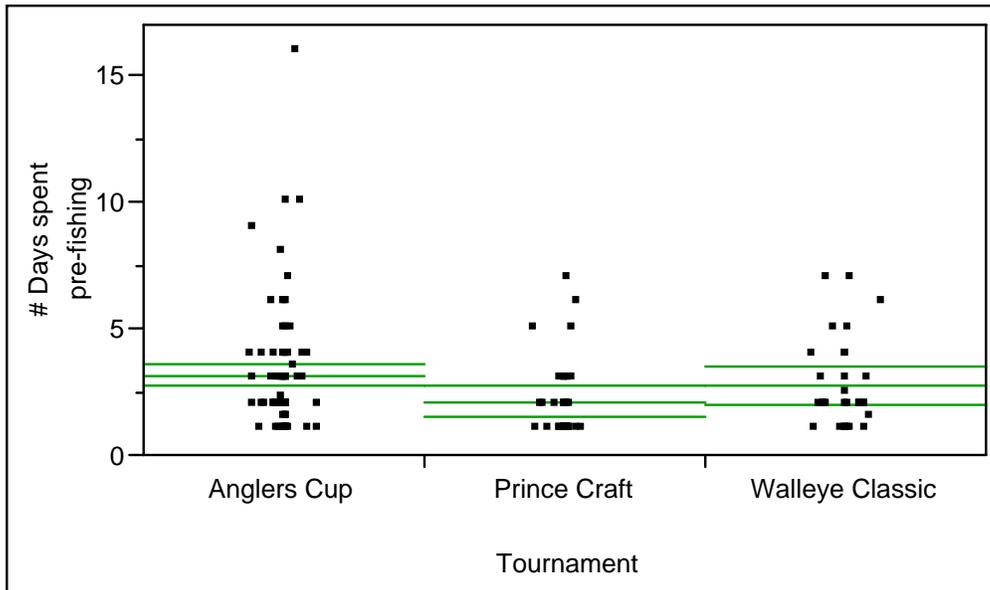


Figure 5. The number of days pre-fished for three tournaments including the Anglers Cup and Prince Craft Marine tournaments that were held in June and the Golden Walleye Classic that was in September. All three tournaments were held on Lesser Slave Lake, Alberta. Middle Green lines show means and outer green lines show 95% confidence intervals.

The number of hours spent per day of pre-fishing is an important variable to estimate overall added pressure and catch rate. The number of hours spent per day of pre-fishing did not vary significantly among tournaments see figure 6 below.

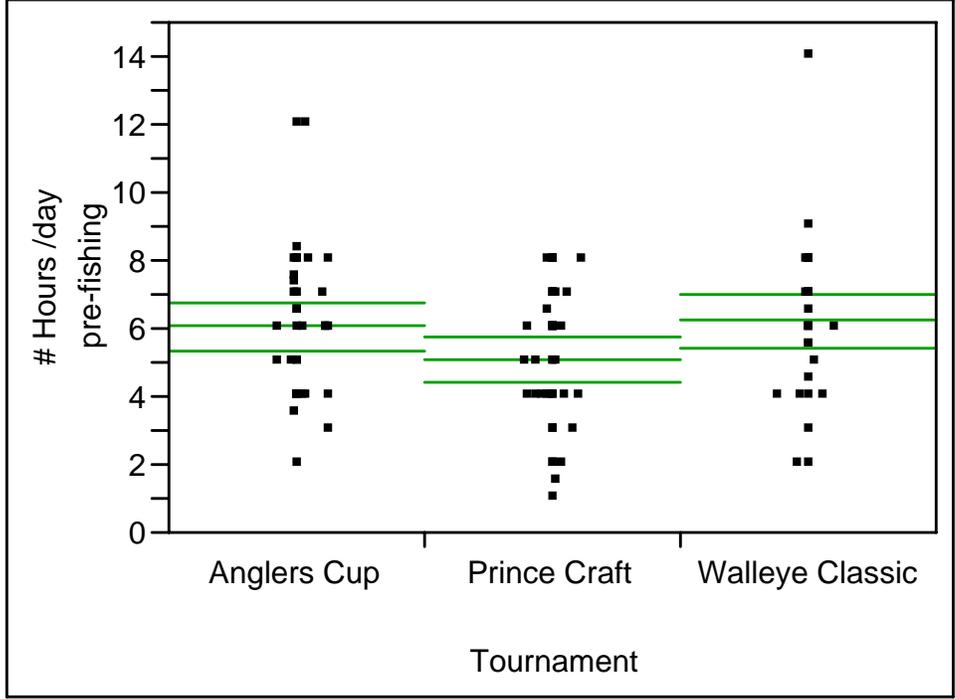


Figure 6. The number of hours per day spent pre-fishing reported by anglers from three tournaments including the Anglers Cup and Prince Craft Marine tournaments that were held in June and the Golden Walleye Classic that was in September. All three tournaments were held on Lesser Slave Lake, Alberta. Middle Green lines show means and outer green lines show 95% confidence intervals.

The mean walleyes caught per day of pre-fishing did not differ between the Anglers Cup and Prince Craft Marine (80.4 and 73.6 respectively). However, average walleyes caught during pre-fishing for the Golden Walleye Classic were significantly lower (33.4) as shown in figure 7 below.

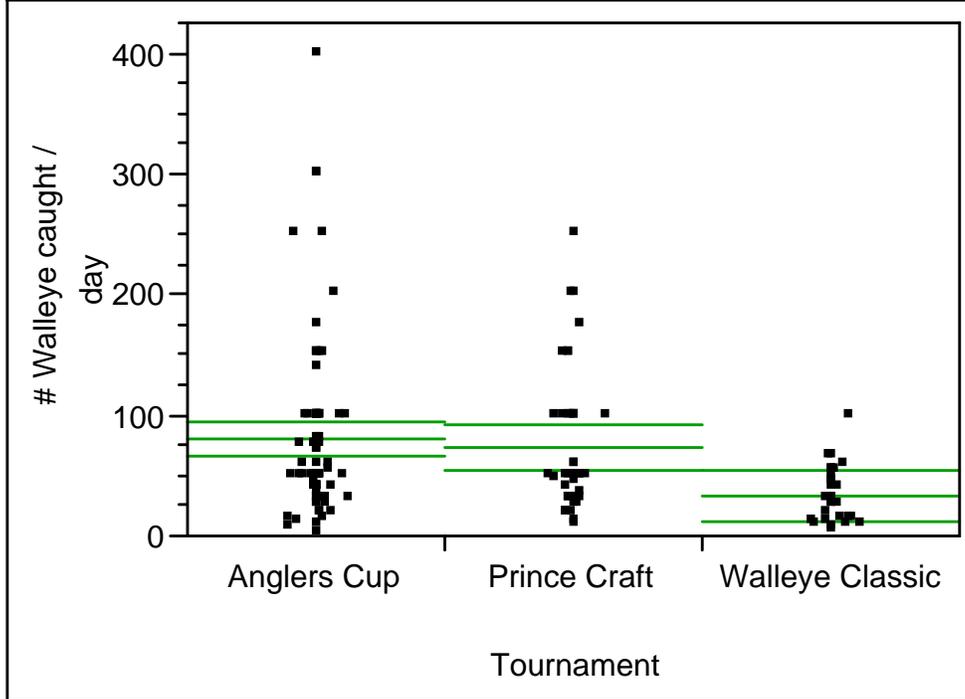


Figure 7. Number of walleyes caught per day of pre-fishing reported by anglers from three tournaments including the Anglers Cup and Prince Craft Marine tournaments that were held in June and the Golden Walleye Classic that was in September. All three tournaments were held on Lesser Slave Lake, Alberta. Middle Green lines show means and outer green lines show 95% confidence intervals.

Depth of fishing is an important factor in catch and release fishing mortality. Anglers reported fishing in significantly deeper waters during the Golden Walleye Classic and this also held true during the pre-fishing with an average of over 10% of fish caught during pre-fishing in greater than 21 feet, see figure 8 below.

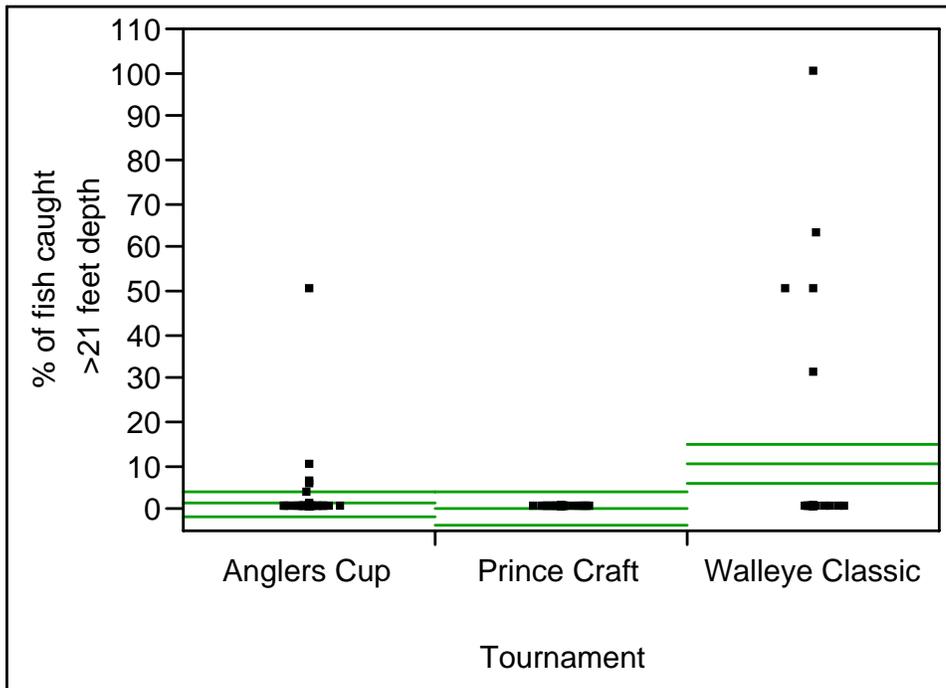


Figure 8. Percent of fish caught during pre-fishing in greater than 21 feet of water as reported by anglers from three tournaments including the Anglers Cup and Prince Craft Marine tournaments that were held in June and the Golden Walleye Classic that was in September. All three tournaments were held on Lesser Slave Lake, Alberta. Middle Green lines show means and outer green lines show 95% confidence intervals.

When anglers were asked how many walleye they harvested during pre-fishing their responses varied from zero to 16 fish and averaged 1.3 fish per angler over all three tournaments, as shown in figure 9 below.

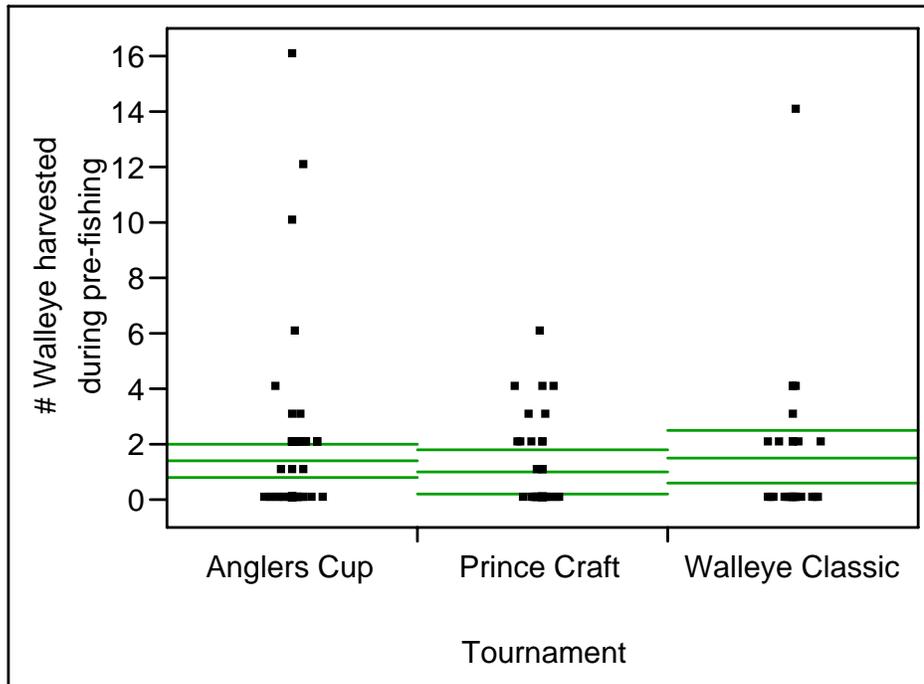


Figure 9. Number of walleyes harvested during pre-fishing as reported by anglers from three tournaments including the Anglers Cup and Prince Craft Marine tournaments that were held in June and the Golden Walleye Classic that was in September. All three tournaments were held on Lesser Slave Lake, Alberta. Middle Green lines show means and outer green lines show 95% confidence intervals.

Estimates of walleye caught, released and estimated mortality of those fish from the Anglers Cup, Prince Craft Marine and the Golden Walleye Classic are presented below in figure 10. We estimated 38,940 walleye were caught pre-fishing over the three tournaments.

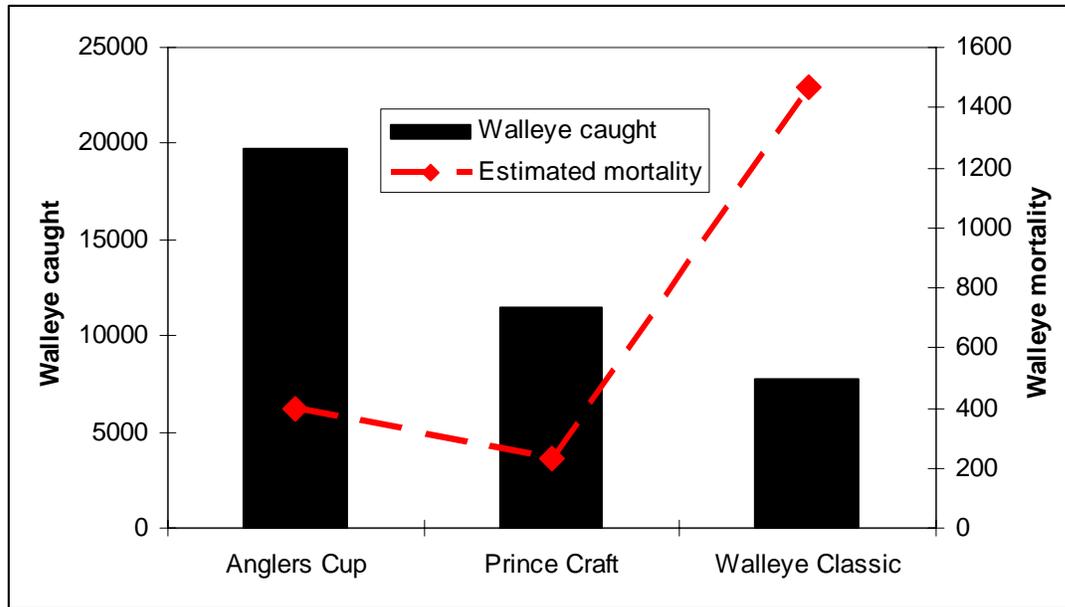


Figure 10. Estimated numbers of walleyes caught, released and subsequent mortality of these fish as a result of pre-fishing for three tournaments. These included: the Anglers Cup and Prince Craft Marine tournaments that were held in June and the Golden Walleye Classic that was held in September 2009. All three tournaments were held on Lesser Slave Lake, Alberta.

The pre-fishing surveys indicated that tournaments result in substantial additive angler pressure and high numbers of walleyes being caught and released as a result of tournament pre-fishing. We estimated that approximately 2094 walleyes died as a result of catch and release during pre-fishing. Mortalities were based on event specific rates observed during the delayed mortality studies. More than half of the pre-fishing mortalities were estimated to have resulted from pre-fishing for the Golden Walleye Classic. This does not include the numbers of walleyes that were harvested by tournament anglers while they were pre-fishing.

Discussion

While we have not yet accounted for mortality of walleyes resulting from culling and catch and release during the tournaments we have concluded that several improvements can be made to reduce mortality of walleyes resulting from tournament fishing and pre-fishing. The most important change would be to introduce maximum depth restrictions and zoning of tournaments. This alone would likely reduce mortalities to levels similar to what we have seen in June when tournament anglers were fishing in significantly shallower depths. Culling and holding time in live wells seemed to be excessive for all tournaments and should be reduced to minimize stress on fish. Although, not part of the analyses we observed high mortalities of tournament released fish in the marina at Bay Shore Resort where the Prince Craft Marine tournament was held. Non-competitive anglers lined the docks and caught and killed large numbers of tournament released fish.

The increased vulnerability of tournament caught walleyes to angling post weigh-in needs to be addressed. We strongly recommend disallowing tournaments to weigh and release fish in marinas where angling is permitted. Licensing of competitive fishing events in Alberta is relatively new and while there are several issues that require work, if tournaments from the last three years were compared to those held prior to licensing we are confident that fish mortalities have been greatly reduced.