

Subyearling Chinook Survival in Lower Granite Dam to McNary Dam reach in 2006 compared to years 1998 to 2005

Preliminary Analysis

FPC

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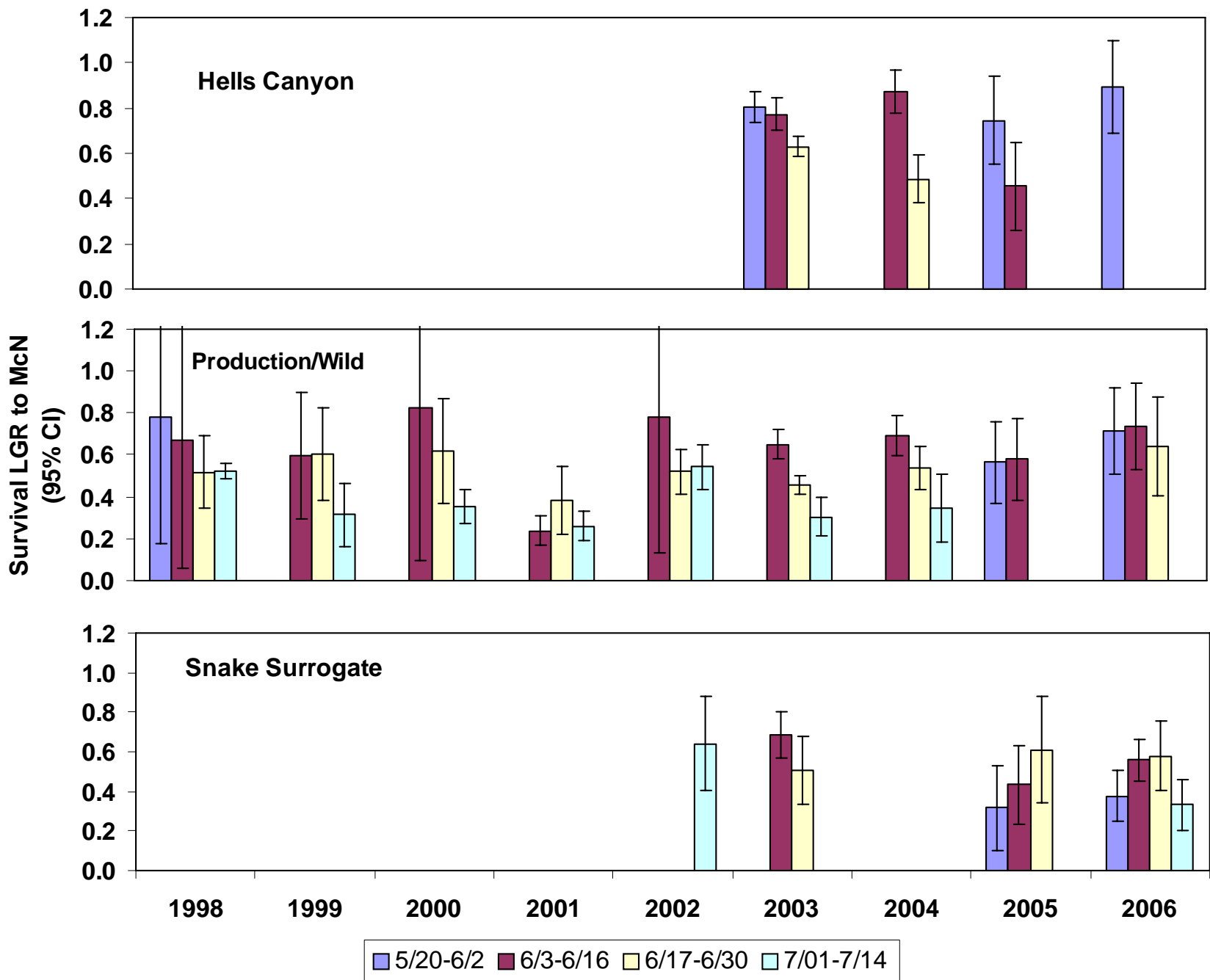
- Show 2006 survival estimates in relation to other recent years
- Compare Survival and Travel Time in the reach LGR to McNary in relation to environmental variables (Spill, WTT, Flow, Temp)
- Discuss appropriateness of CJS in reach survival estimation for subyearling chinook salmon in the Snake River

Survival Estimation methods

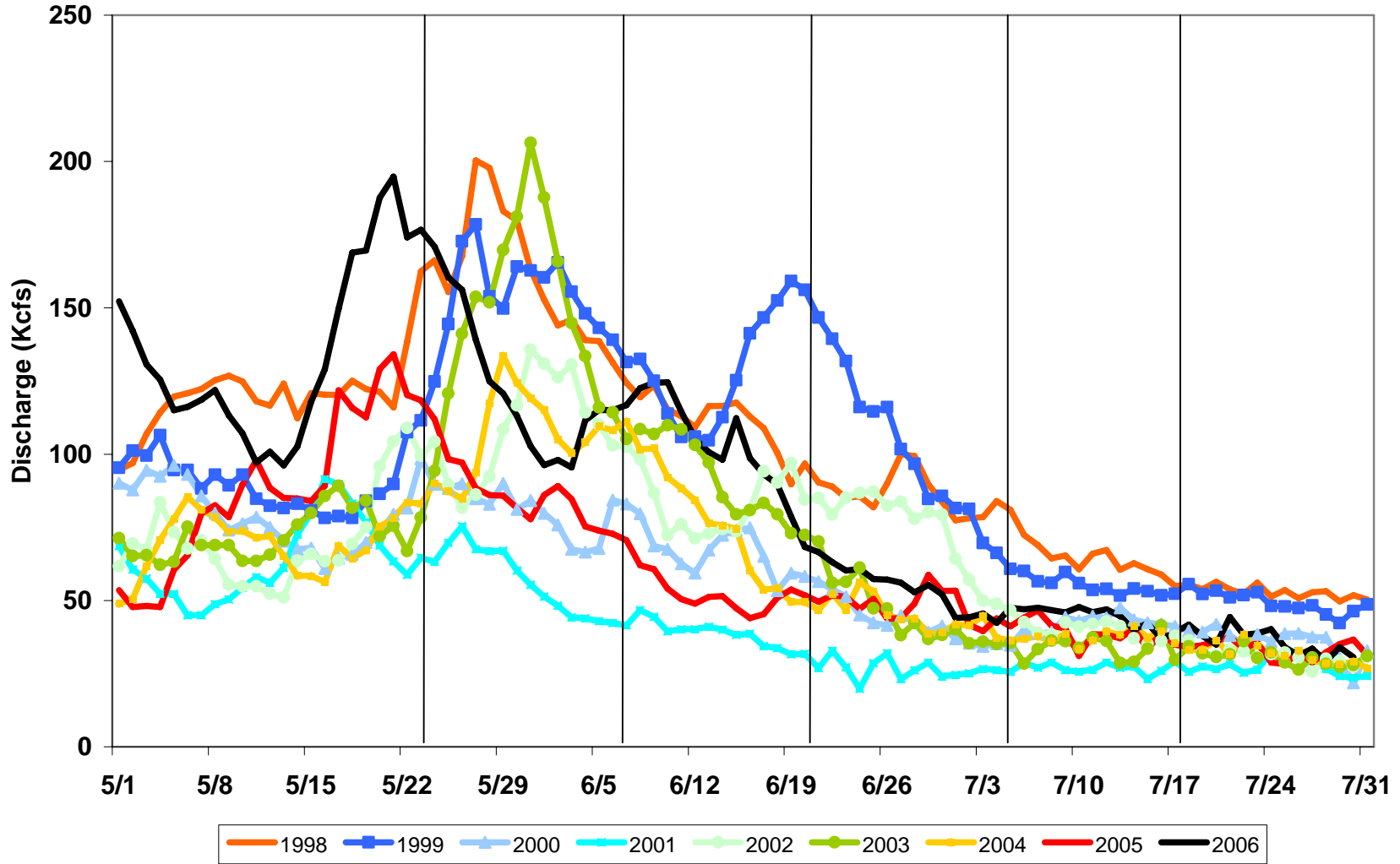
- Estimate Survival for various PIT-tagged subyearling chinook detected at LGR during four time periods
 - 5/20 to 6/2
 - 6/3 to 6/16
 - 6/17 to 6/30
 - 7/1 to 7/14
- Estimate Travel Time from LGR to McN and assign environmental variables (Avg Spill, Flow, WTT, Temp) based on passage timing through the reach for each group
- Remove 'holdover' detects from capture histories to remove potential source of bias in reach survival estimates

PIT-tag release groups used in analysis

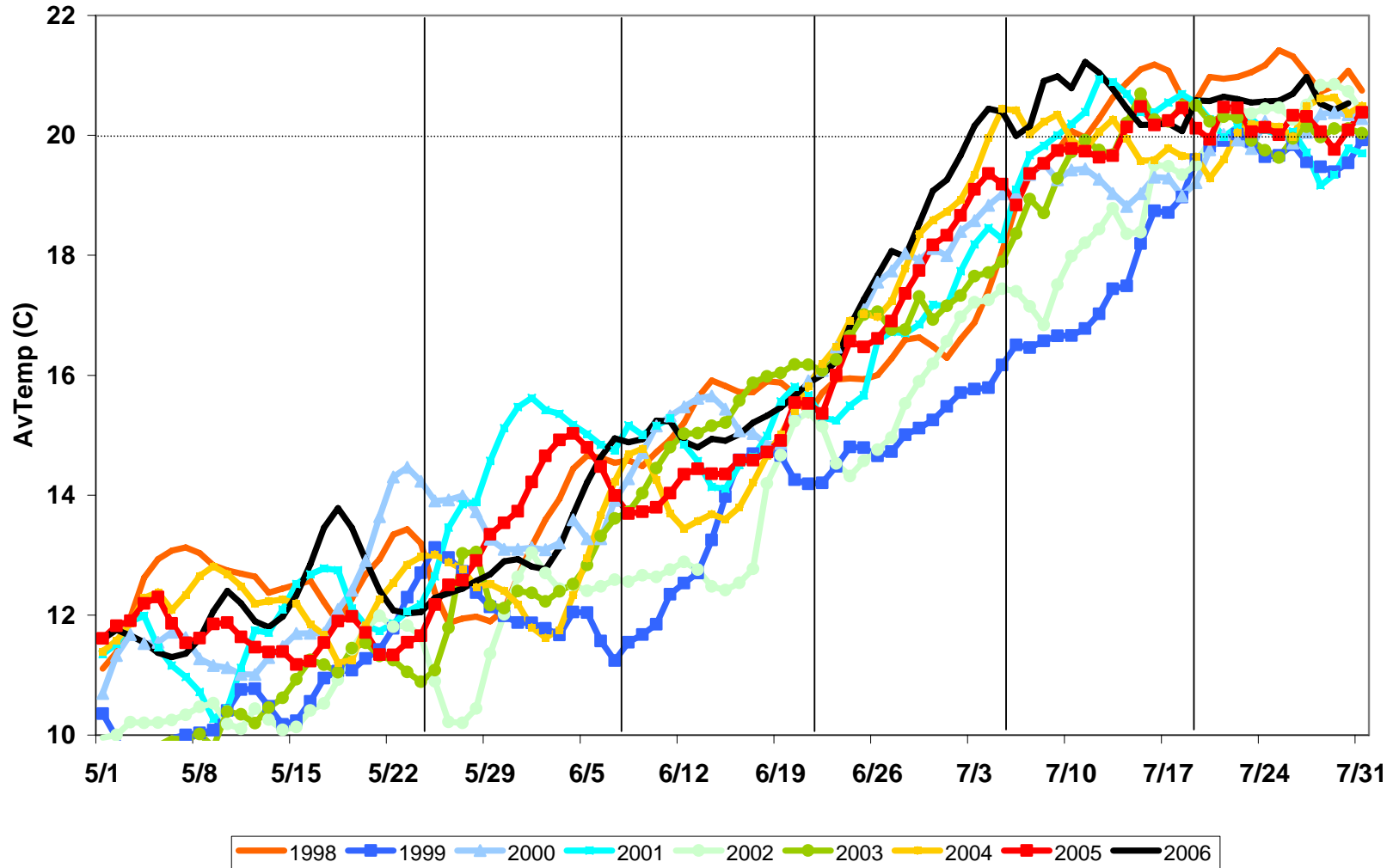
- **Production/Wild-(acclimation, hatchery and wild releases) includes release sites PLAP, CJRAP, BCCAP, NPTH, CEFLAF, Couse Creek and Snake River wild releases (WPC 15W)**
- Not included--late season releases from BCCAP (Clearwater Surrogates), Clearwater wild marks, nor early season yearling fall chinook releases from acclimation facilities
- Analyzed and subsequently removed from multi-year analysis -- Hells Canyon Dam-PIT-tags released with Oxbow Hatchery release, Snake Surrogate – DMM SNAKE3 and SNAKE4



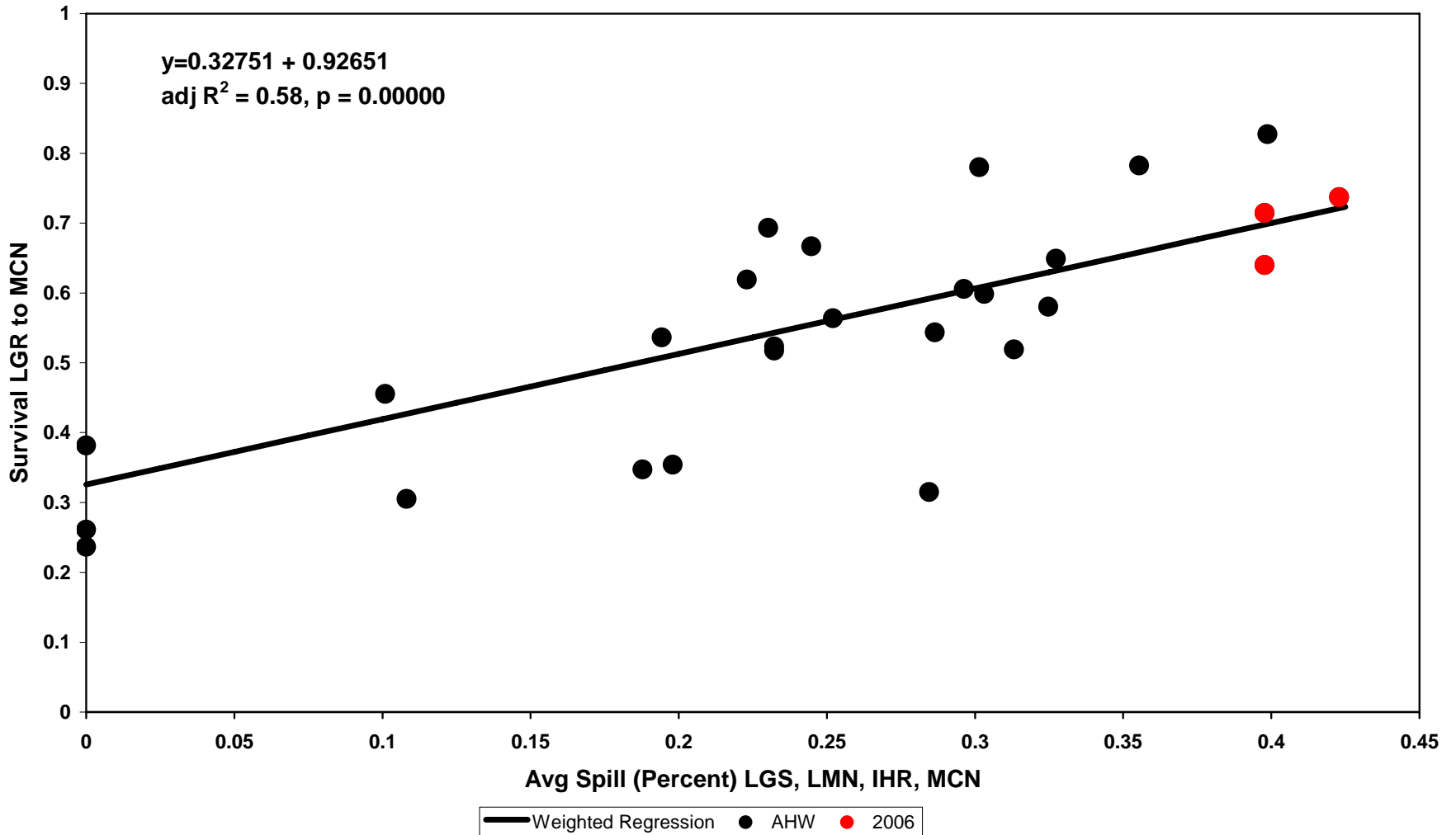
Avg Discharge LGS 1998 to 2006



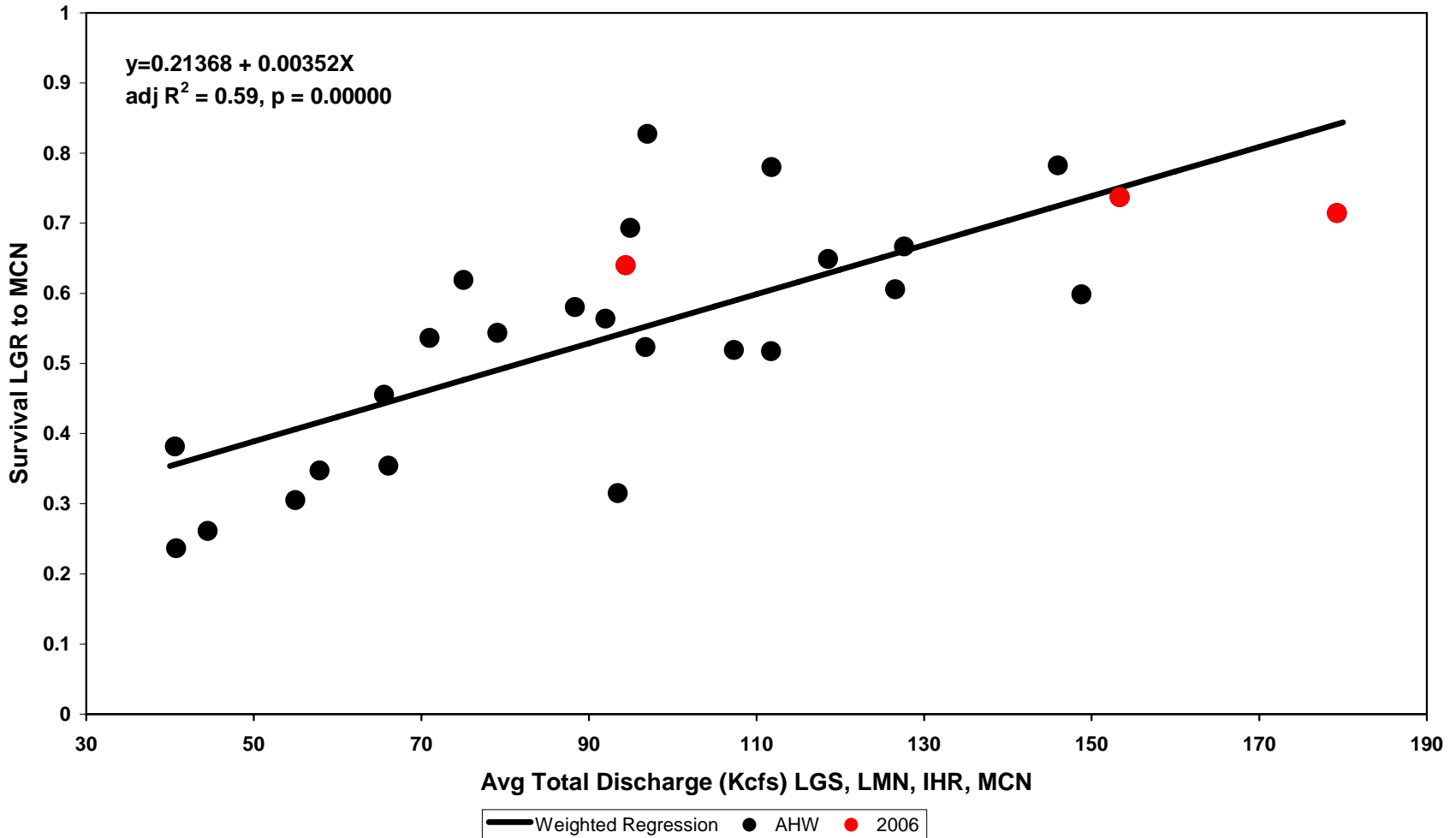
Avg Temp Little Goose 1998 to 2006



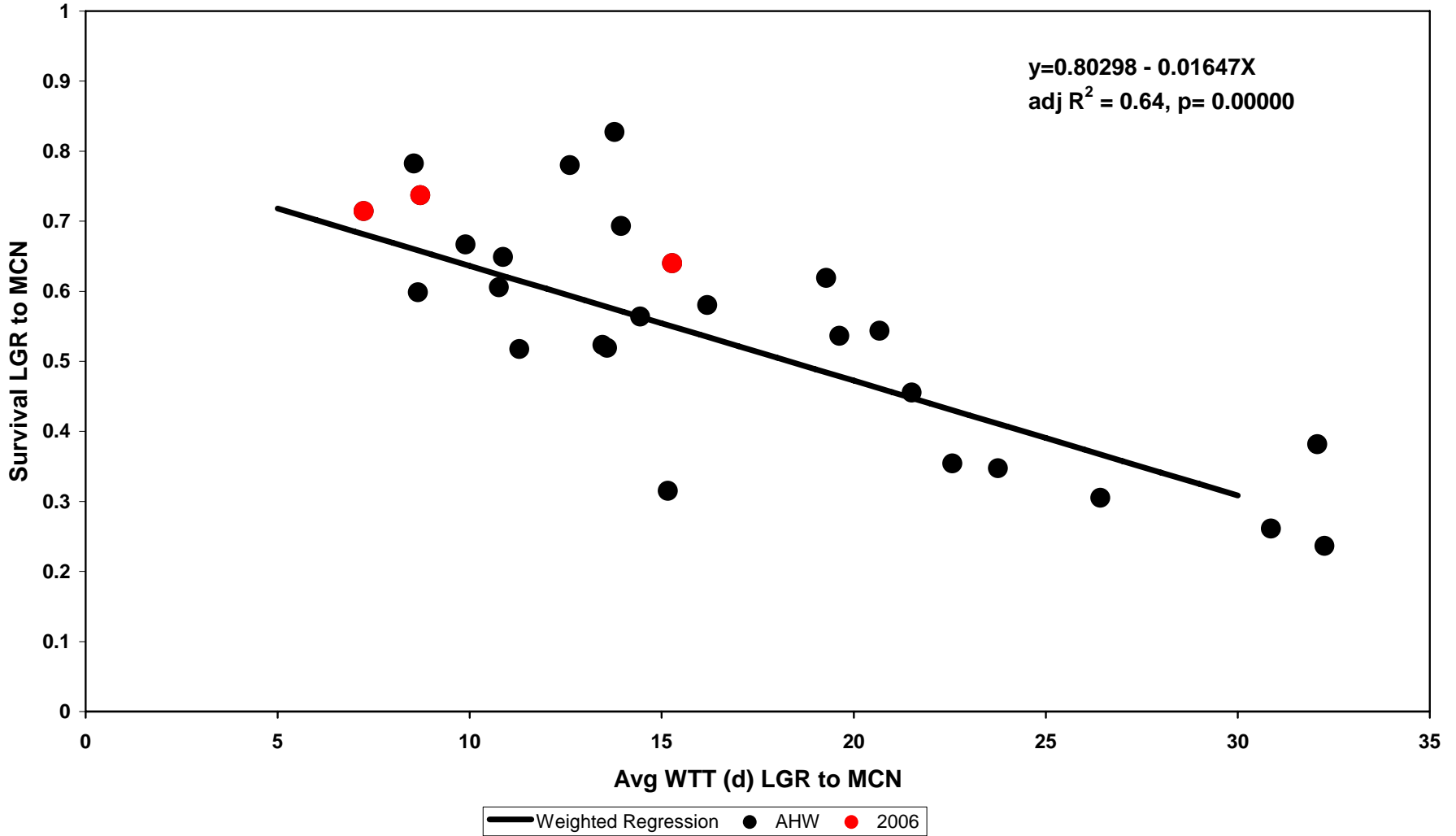
Survival versus Avg Spill



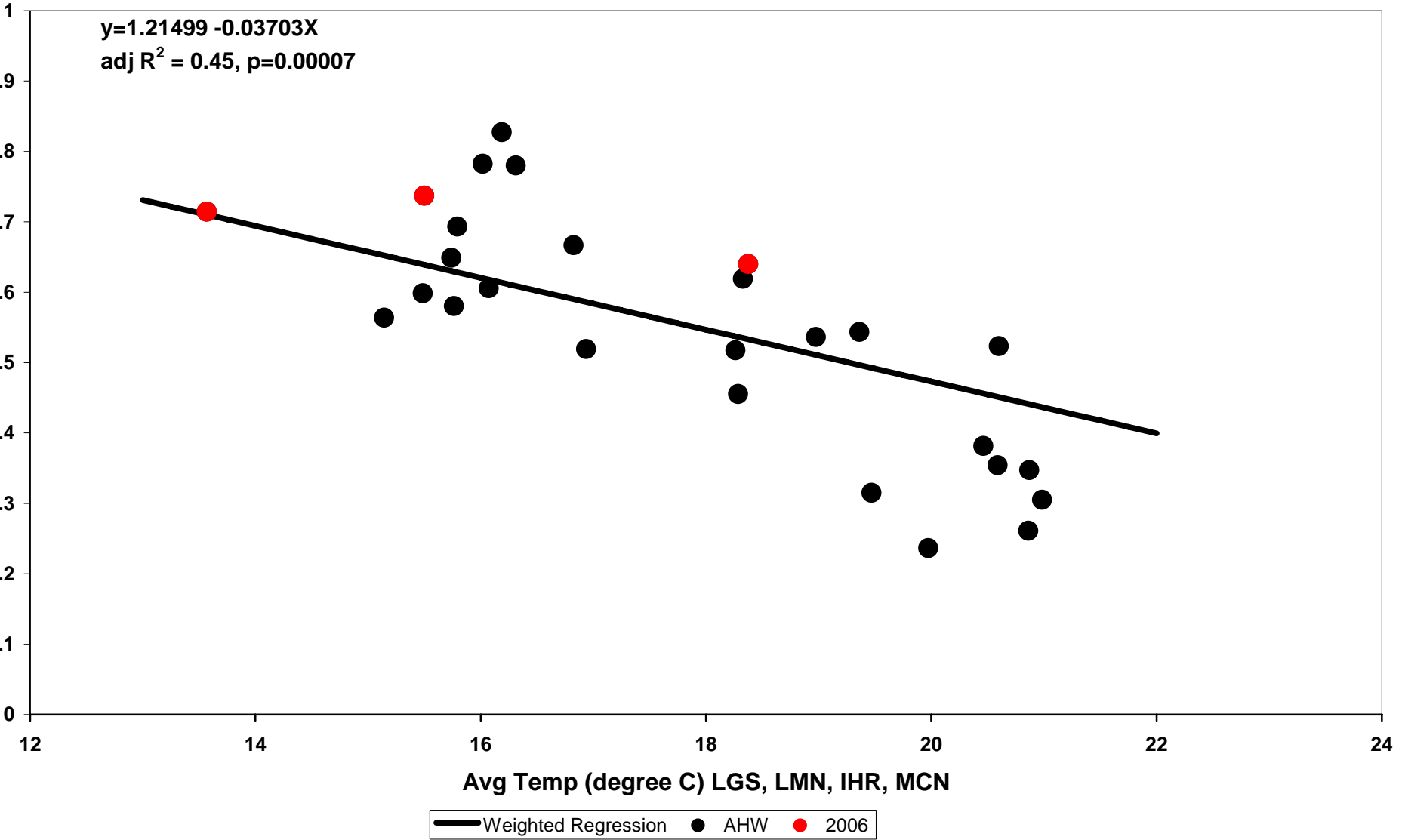
Survival versus Avg Total Discharge



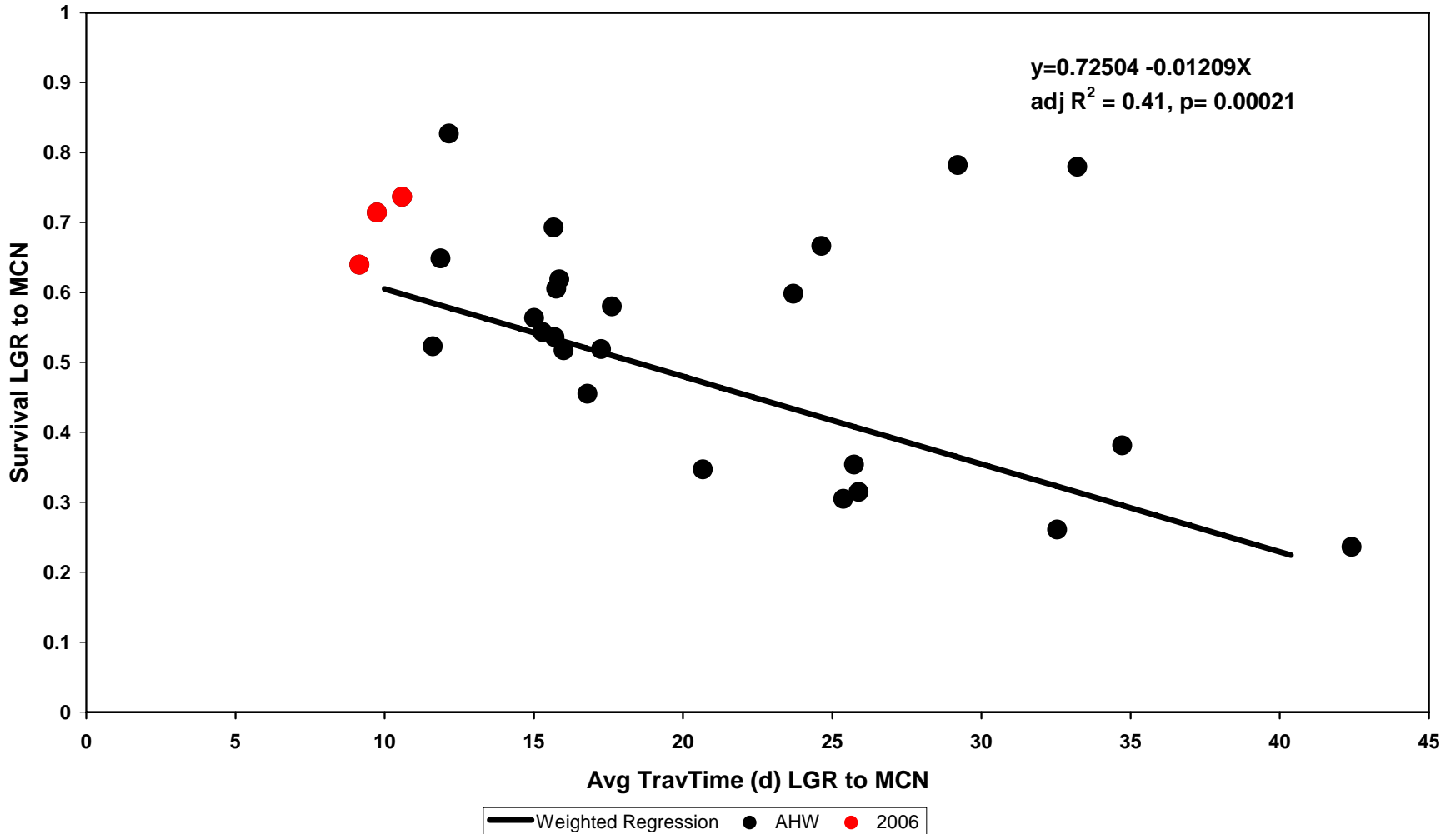
Survival versus WTT



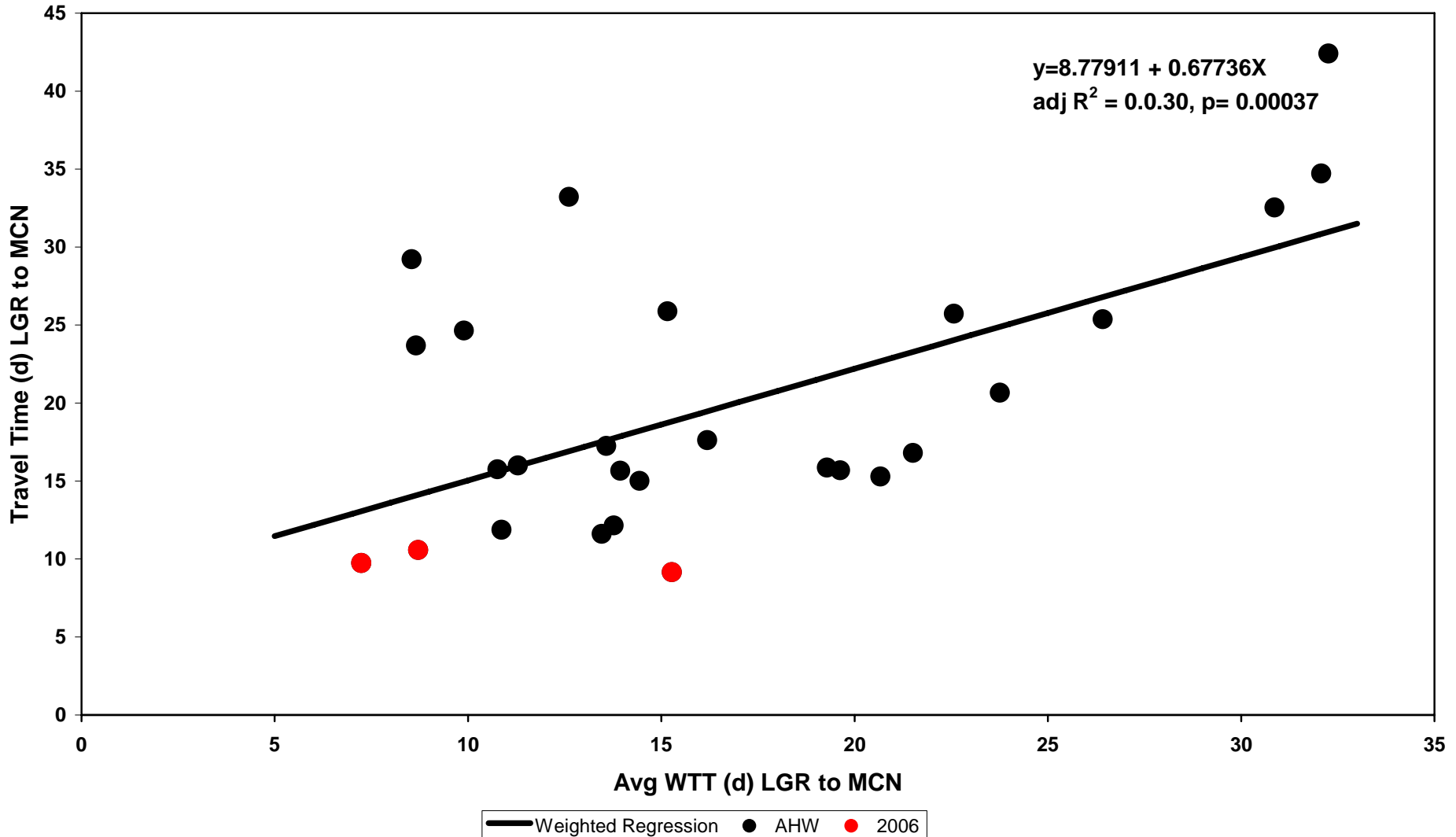
Survival versus Avg Temp C



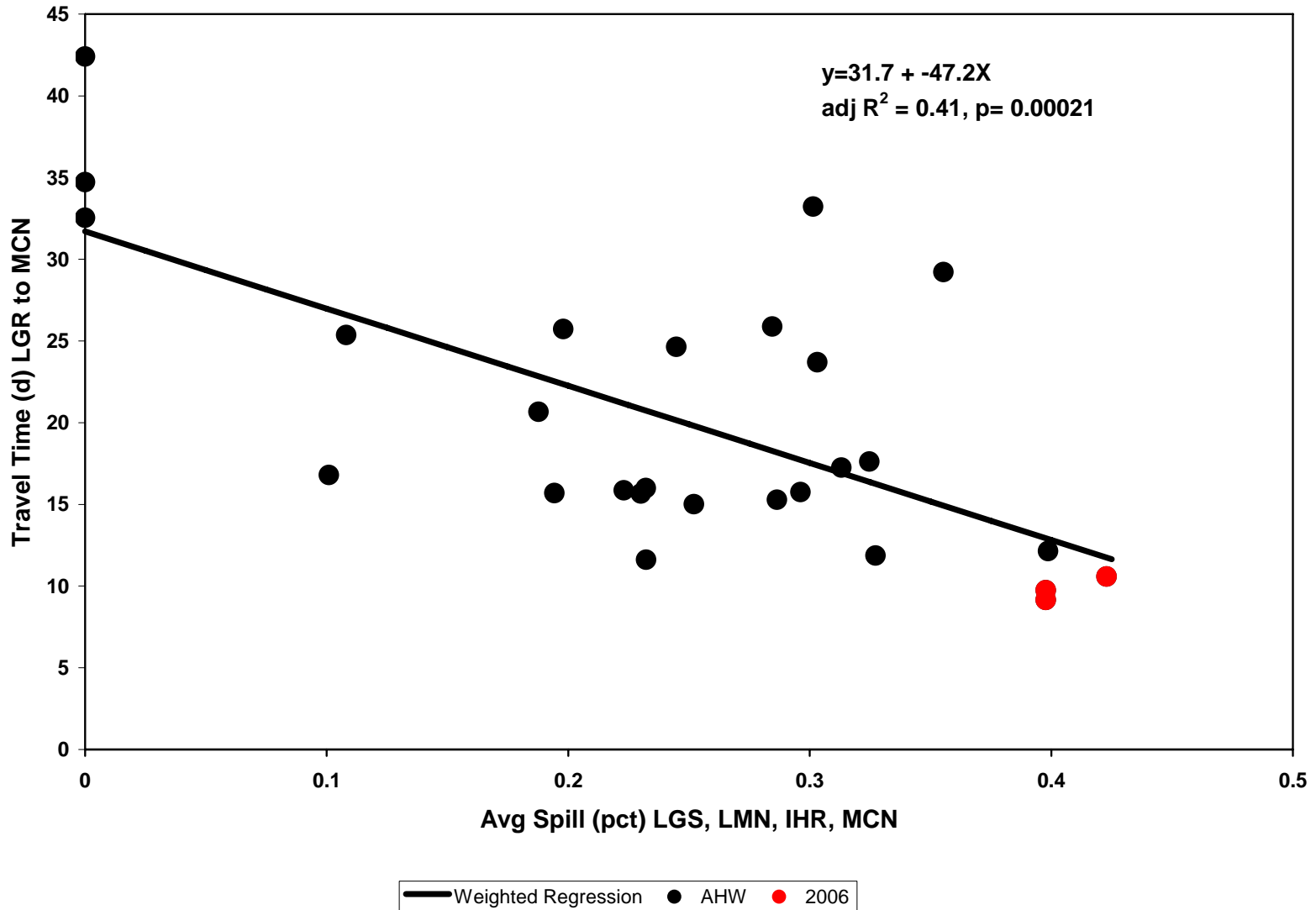
Survival versus Travel Time



Travel Time versus WTT



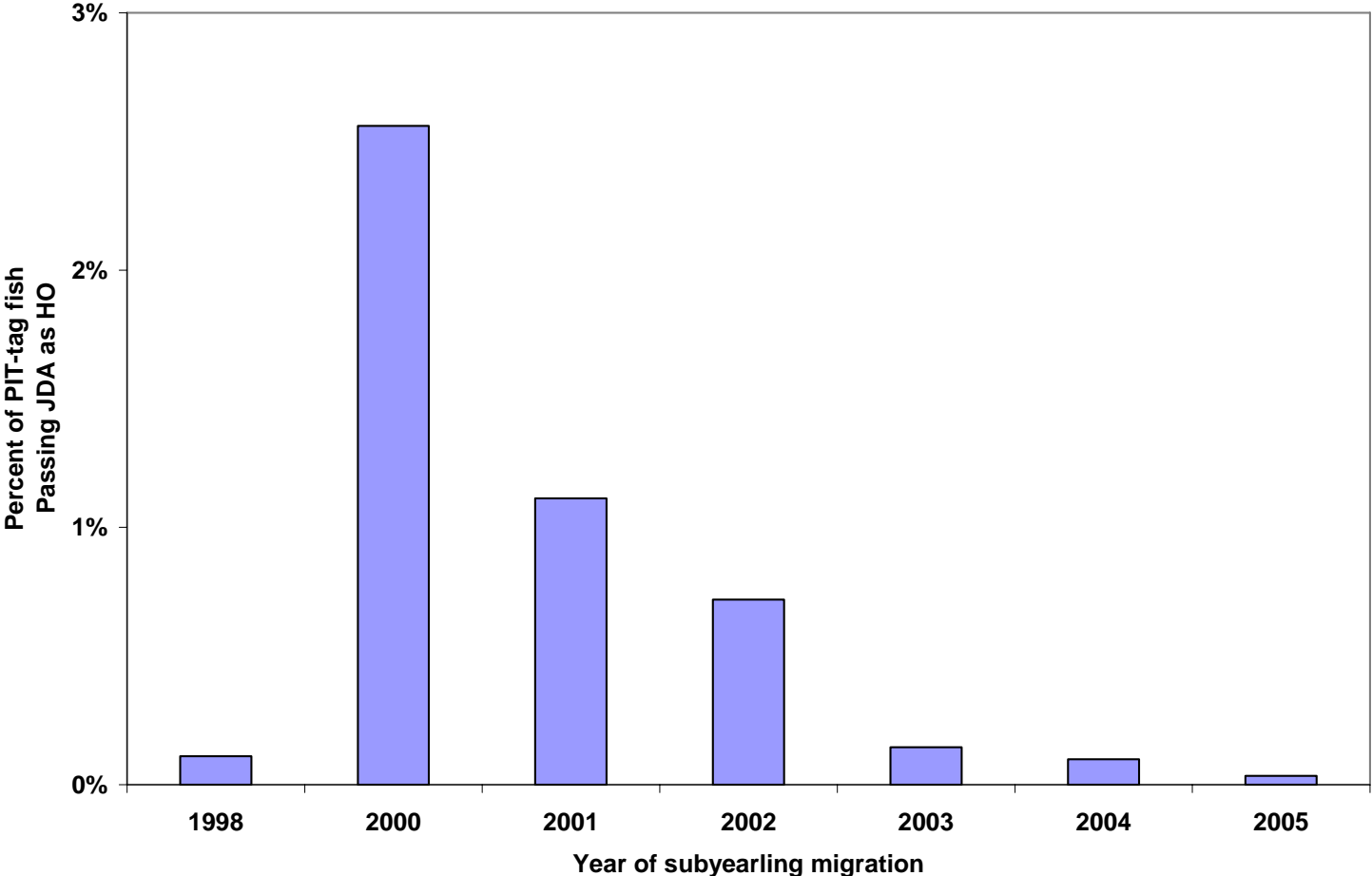
Travel Time versus spill



Is CJS appropriate for estimating Subyearling Chinook survival?

- Two basic model assumptions are violated when holdover fish are modeled with subyearlings
 - Equal probability of detection
 - And equal survival for group
- FPC analysis addresses these potential sources of bias by limiting scope of analysis
 - Survival groups represent active migrants since they are detected at LGR and...
 - Limit time period of estimation to minimize holdover proportions in group (last date at LGR 7/15)
 - Remove small proportion of holdover detections from detection history prior to estimating group survival

Proportion of Holdover Fish in FPC survival Groups



Conclusions

- Survival in 2006 was relatively high based on comparison with other recent years
- Survival and travel time showed significant relationship to all environmental parameters
- We identified production/wild group of tags as most appropriate for multiyear analysis
- CJS is appropriate model given the limited affect of holdover fish on the survival estimates used in this analysis