Migration and Movement Patterns of Adult Sockeye Salmon in Lake Washington

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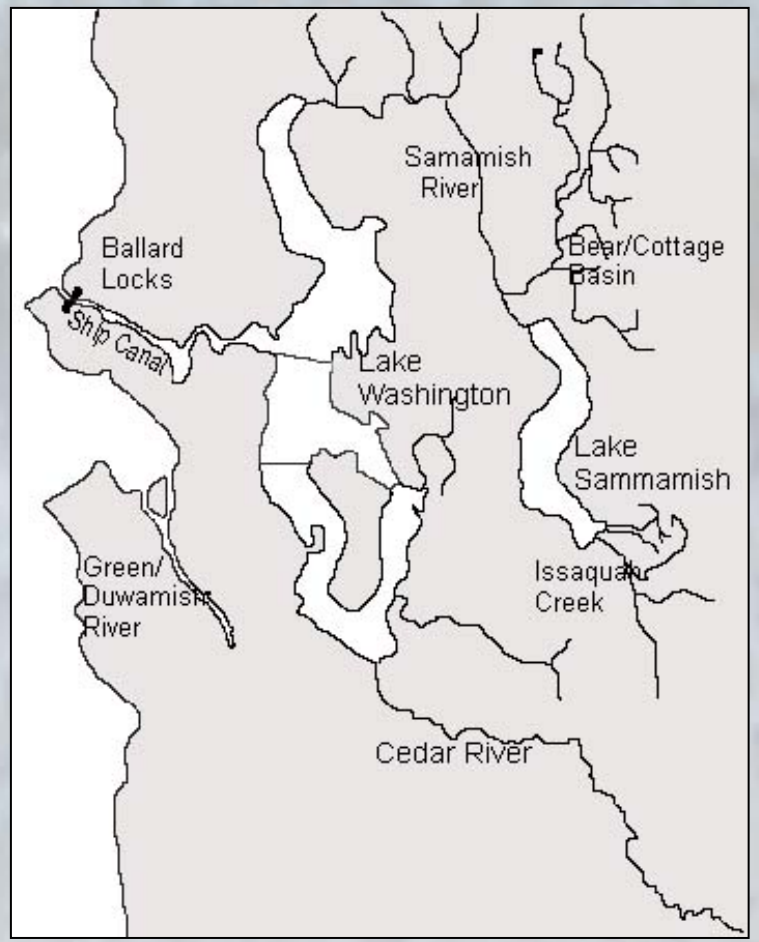
Lake Washington Sockeye

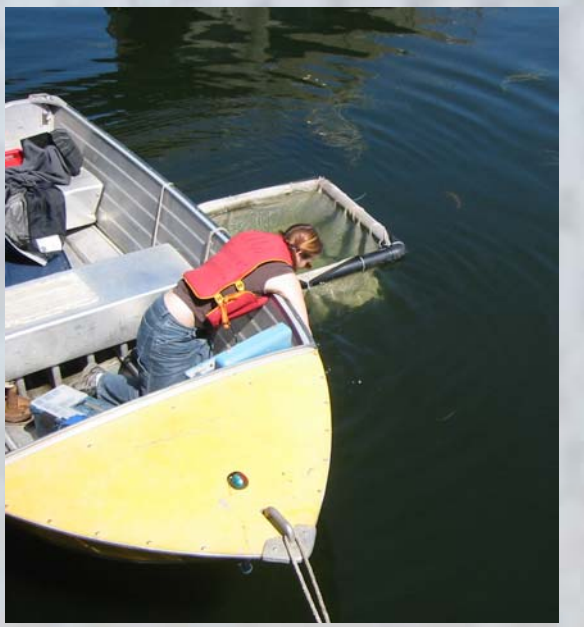
- All fish come in through the locks or fish ladder.
- Two main spawning populations.
- Hatchery on the Cedar.
- Recreational fishery opens when estimated 350,000 sockeye return.



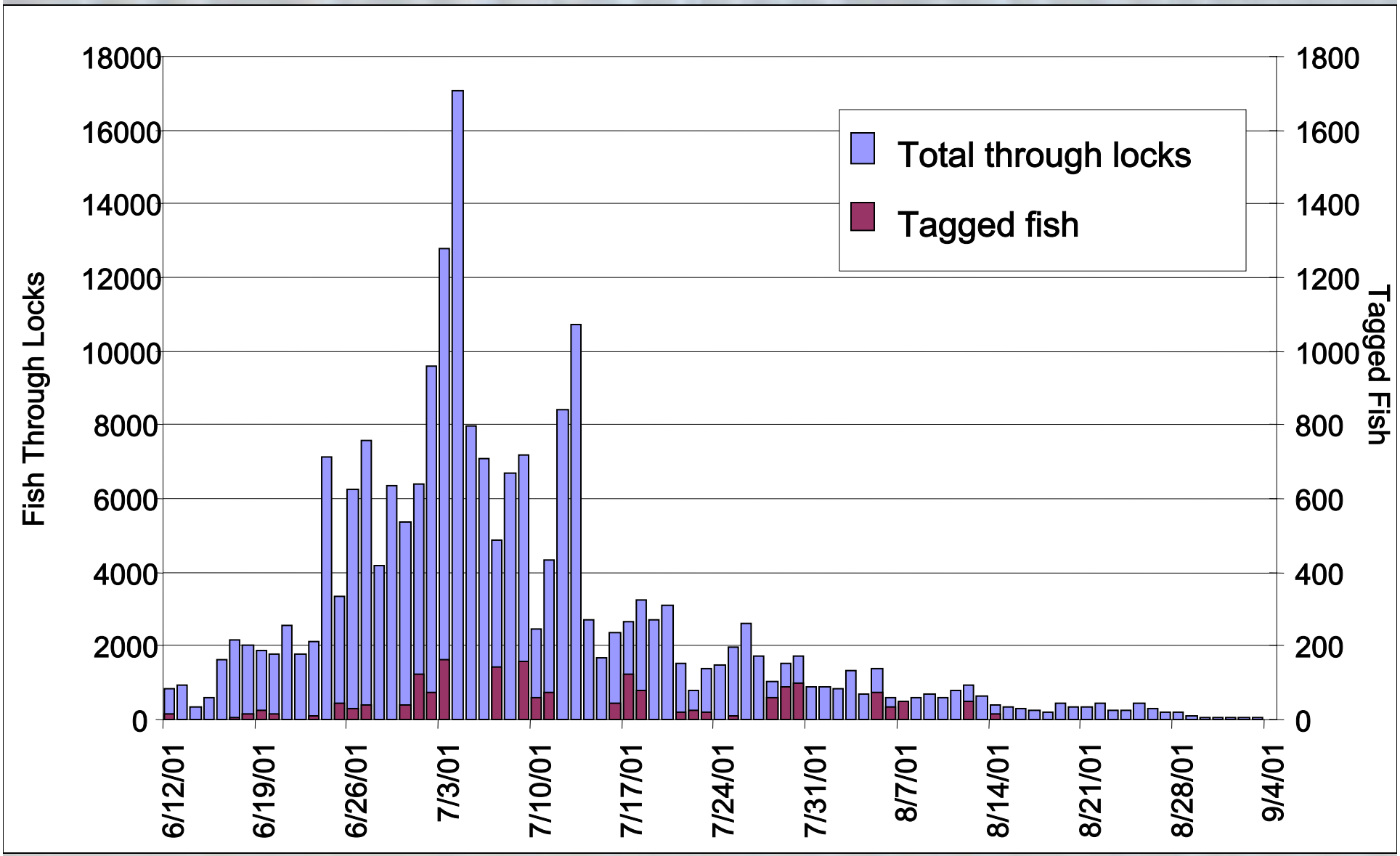
Objectives

- Who's coming in when? Size and sex.
- Are lake entry date and stream entry date or location correlated?
- Vertically, where are the fish?
- Horizontally, where are the fish?

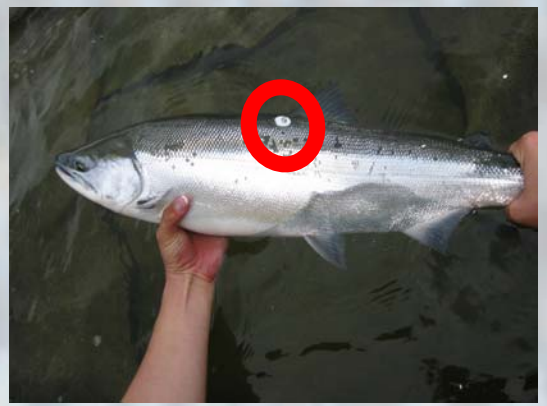
Tagging at the Locks



0.84% Entering Sockeye Tagged



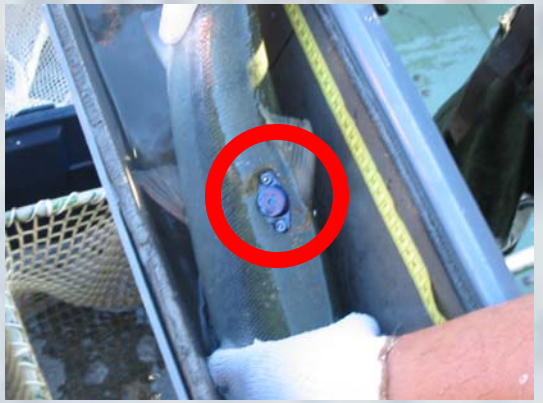
Tagging by the numbers



1553 disc tags released

215 recovered (14%)

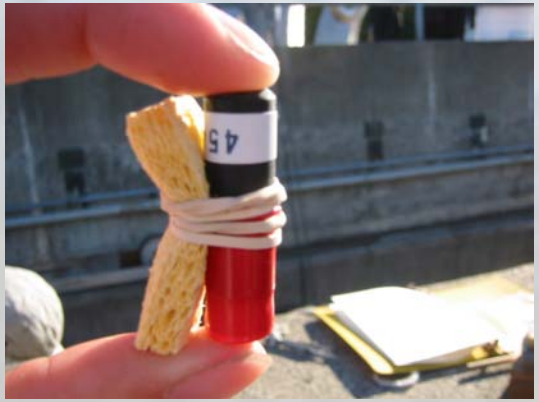
Correlating lake and stream entries



261 iButton Temperature Loggers

42 recovered (16%)

Depth profile

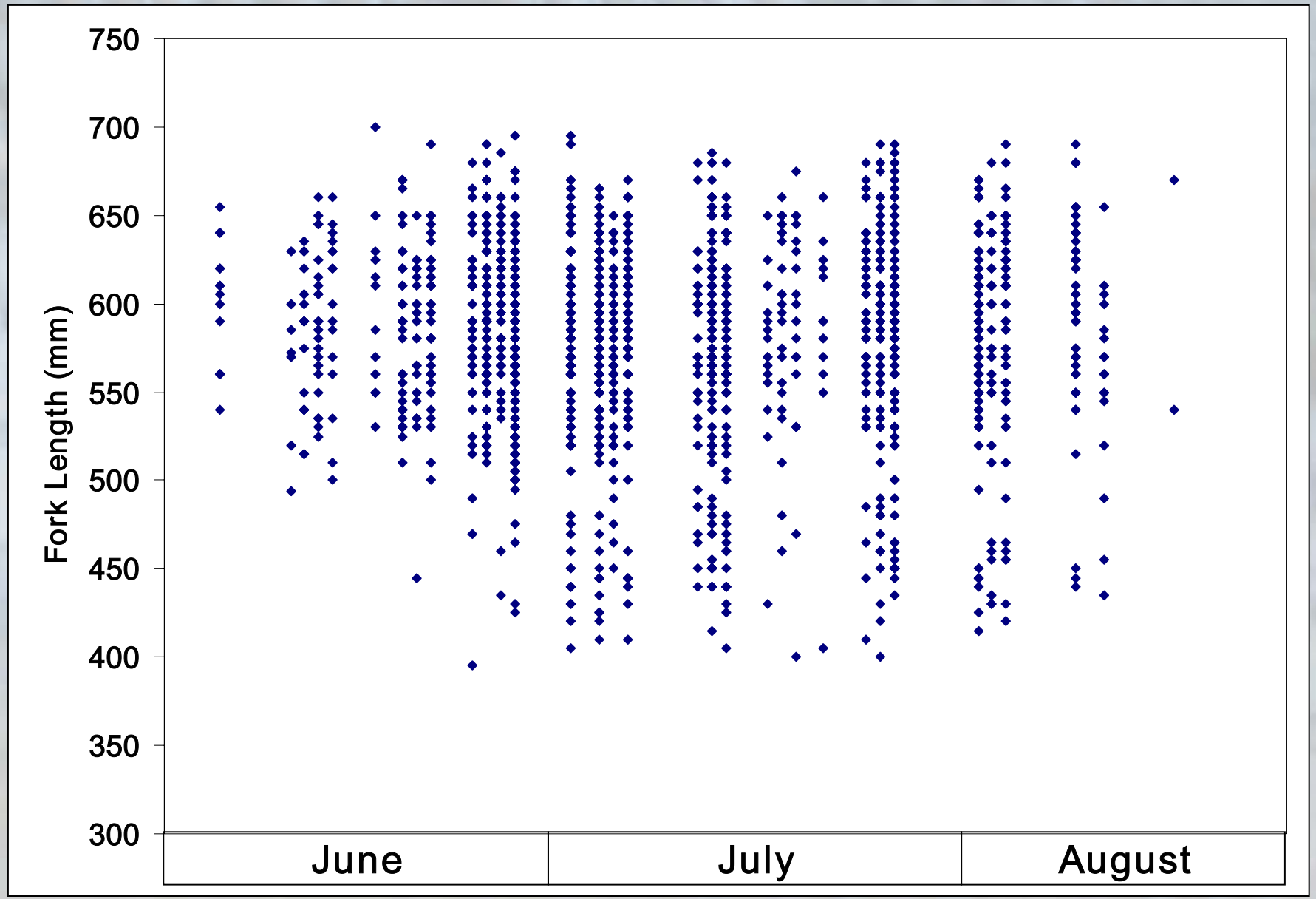


30 Acoustic Transmitters

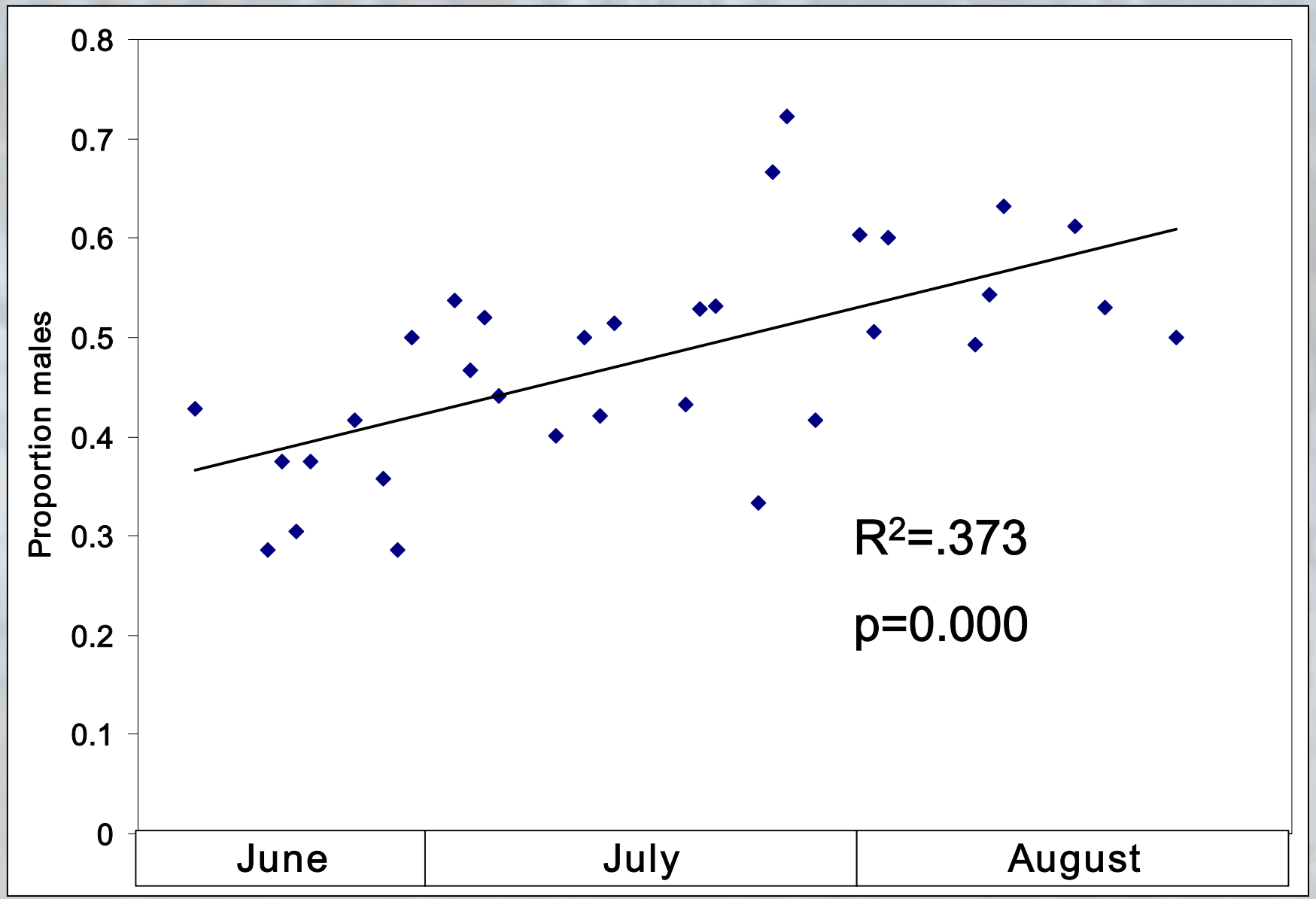
28 heard from again (93%)

Movement patterns

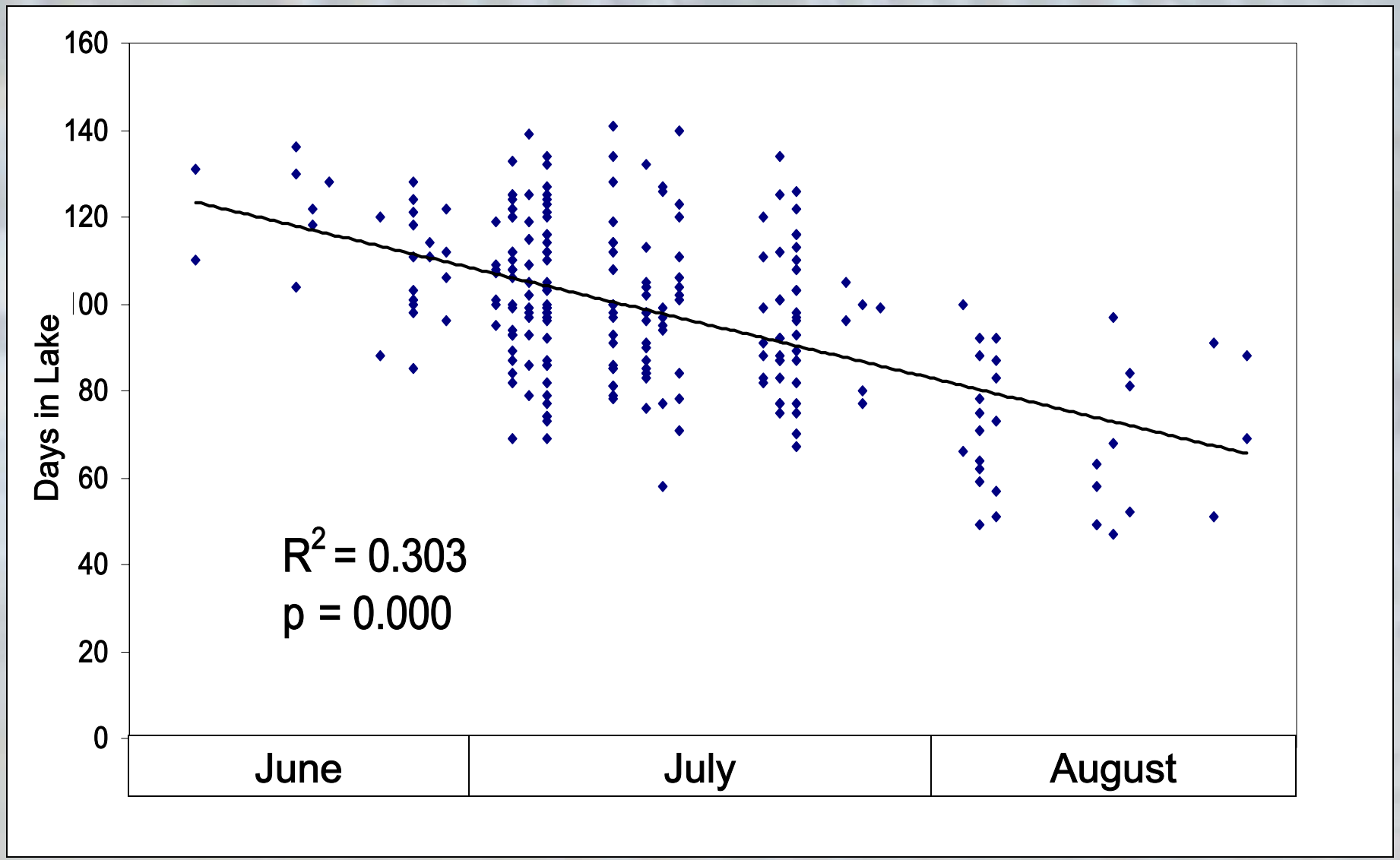
Length and Entry Date Uncorrelated



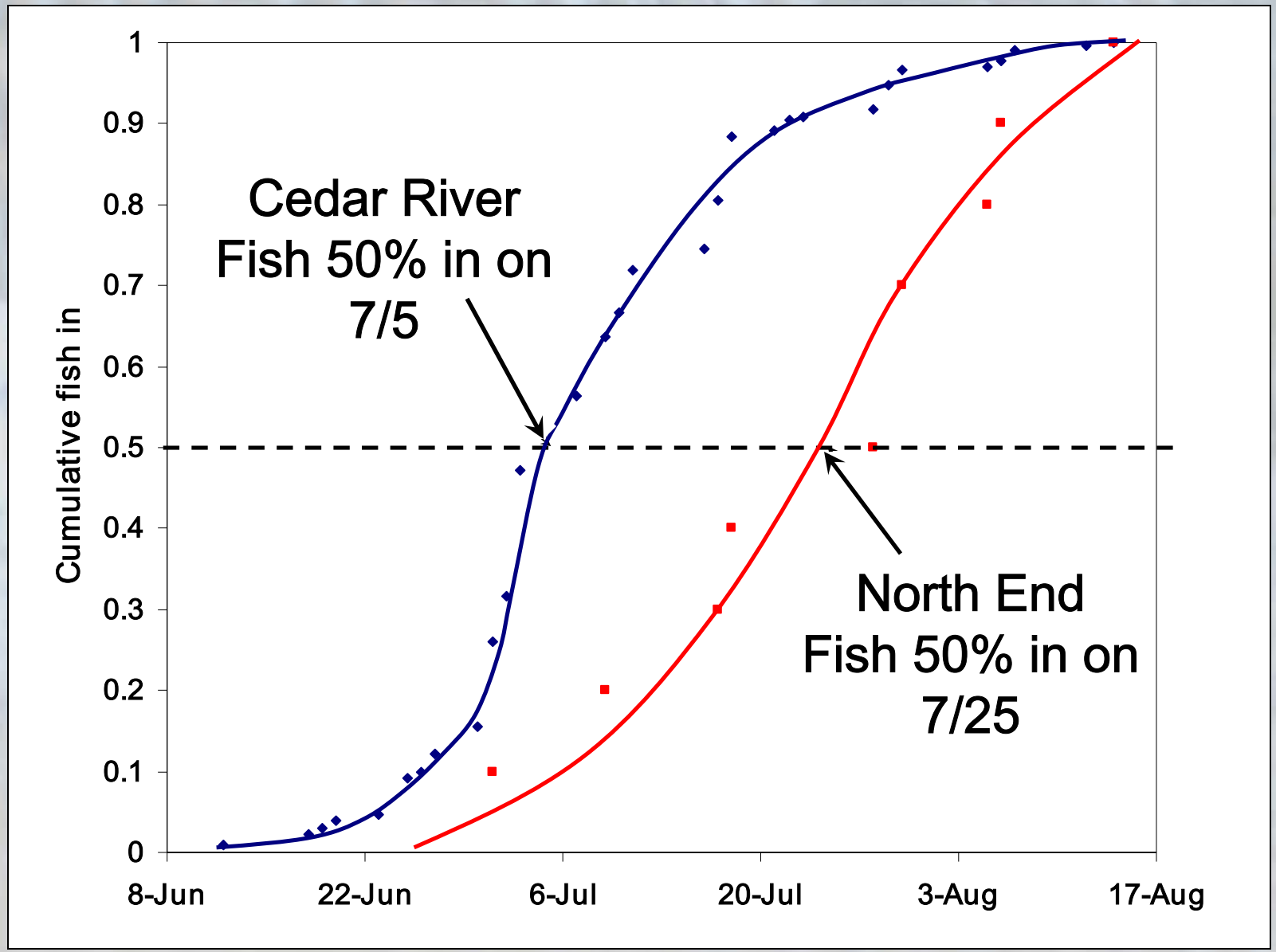
Males enter lake later



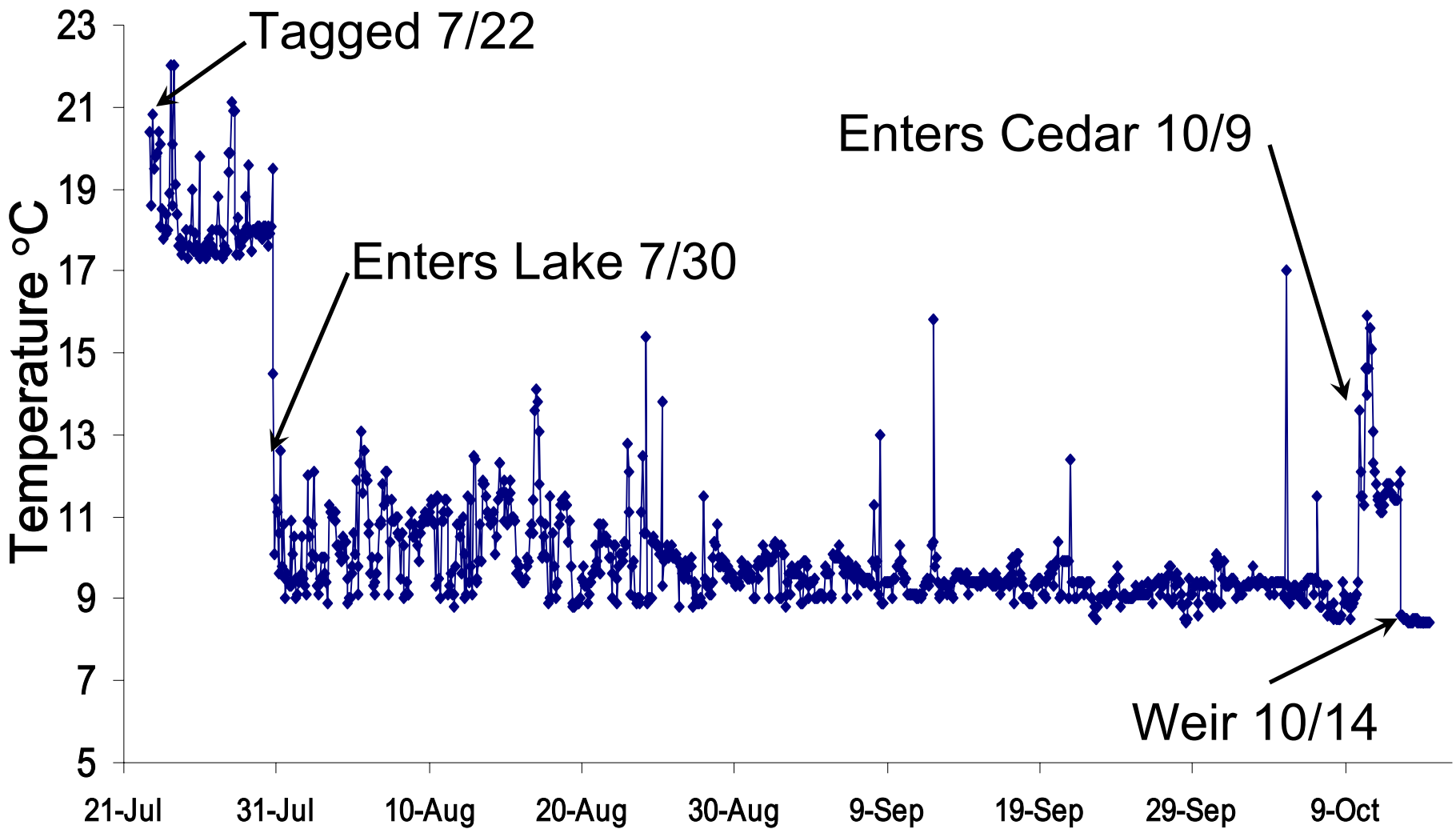
Fish Leave Lake at the Same Time



Cedar River fish enter lake earlier



Typical iButton Profile



Time in the Watershed

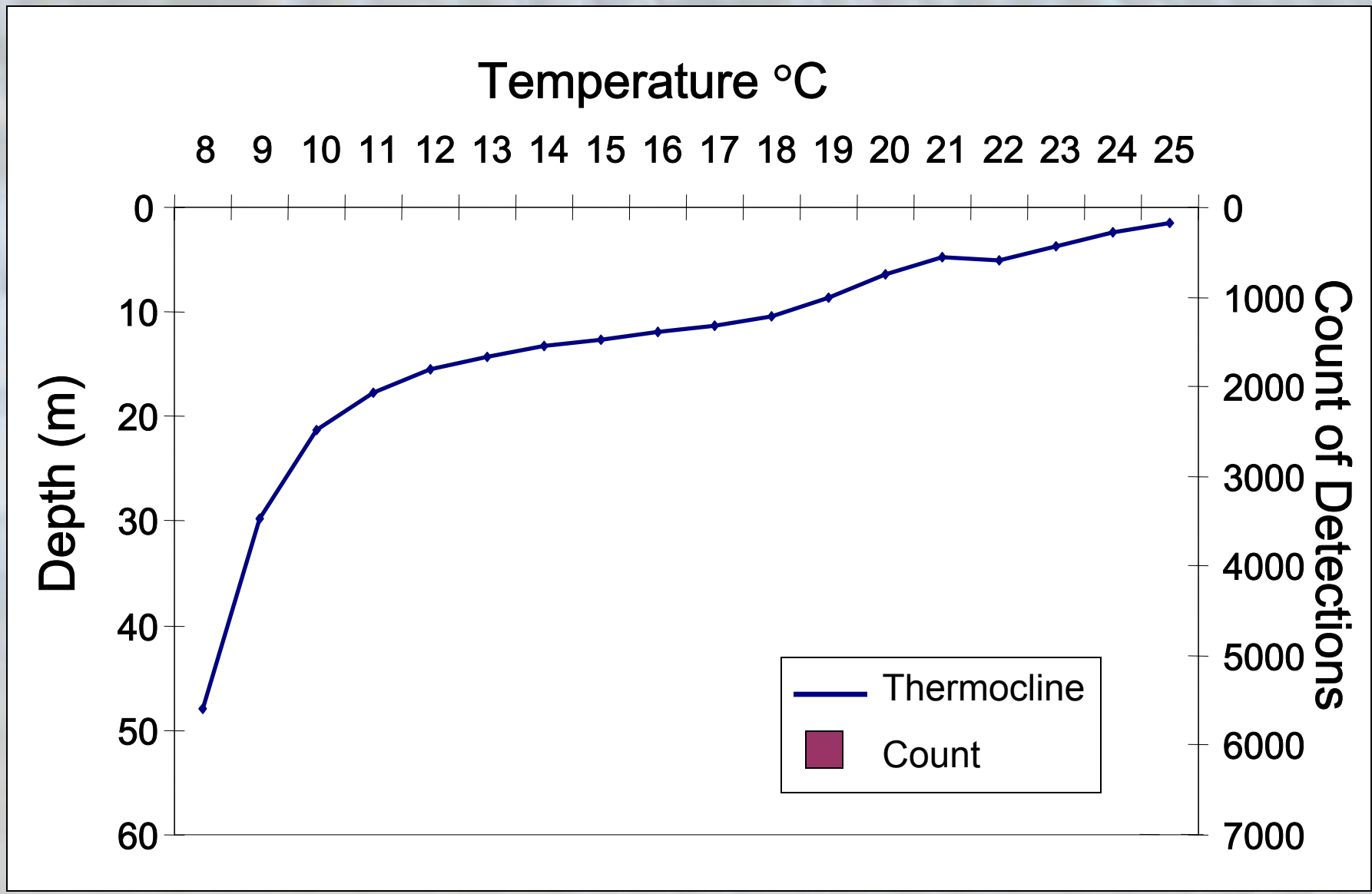
95% confidence intervals from iButtons

3 to 5 days in the Ship Canal

80 to 86 days in the Lake

7 to 25 days alive in the stream

Fish remained below the thermocline in August



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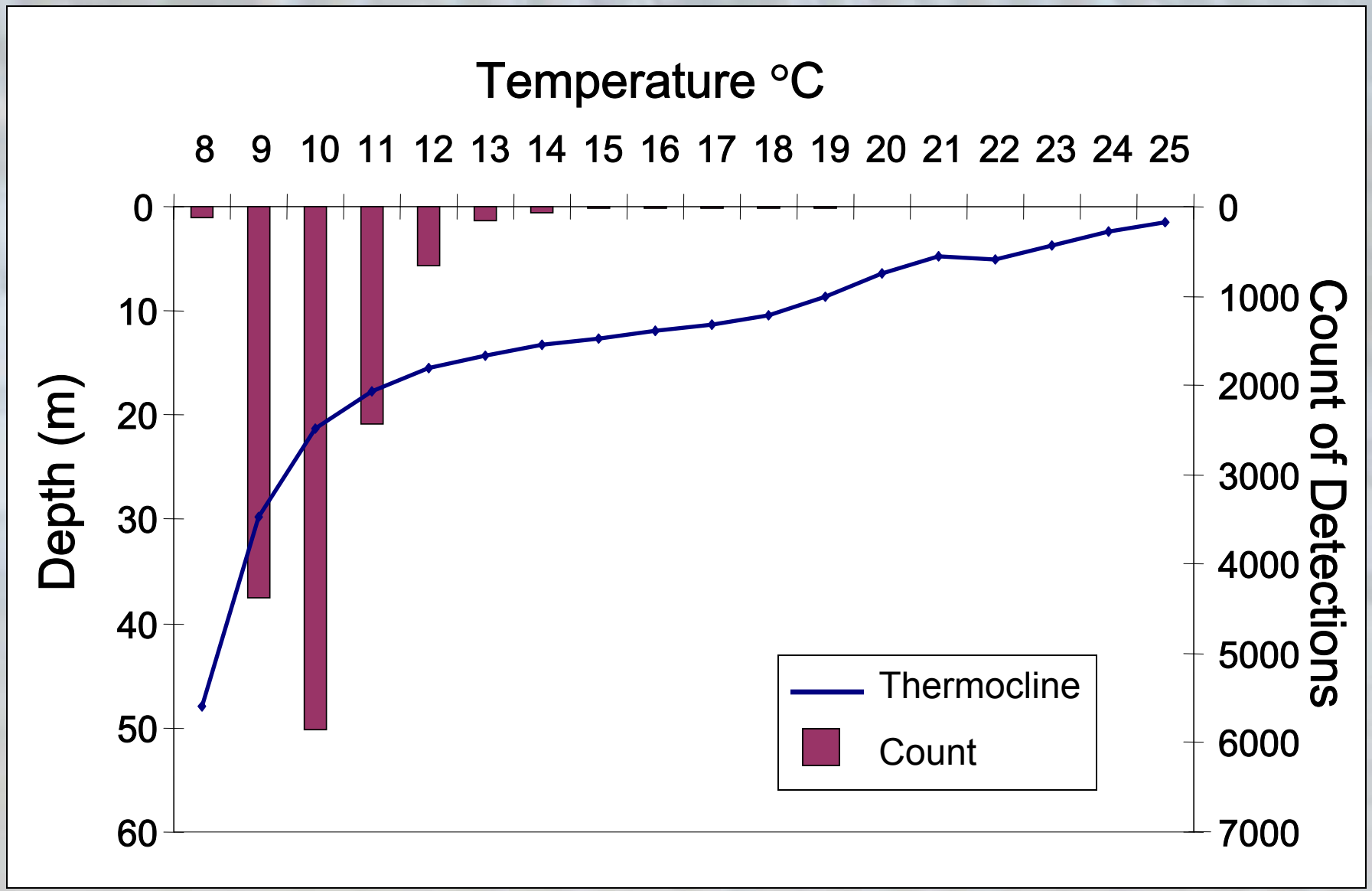

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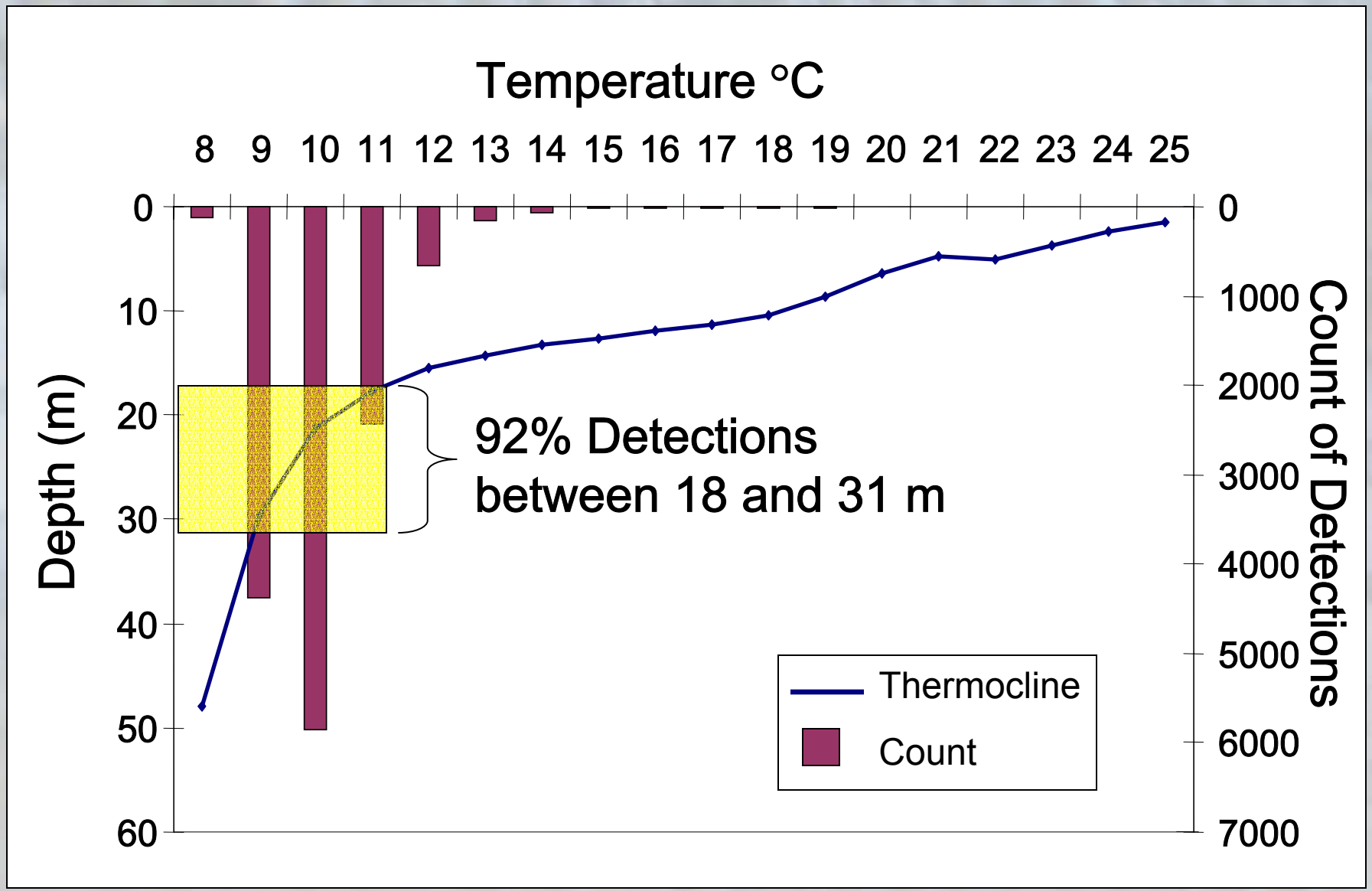
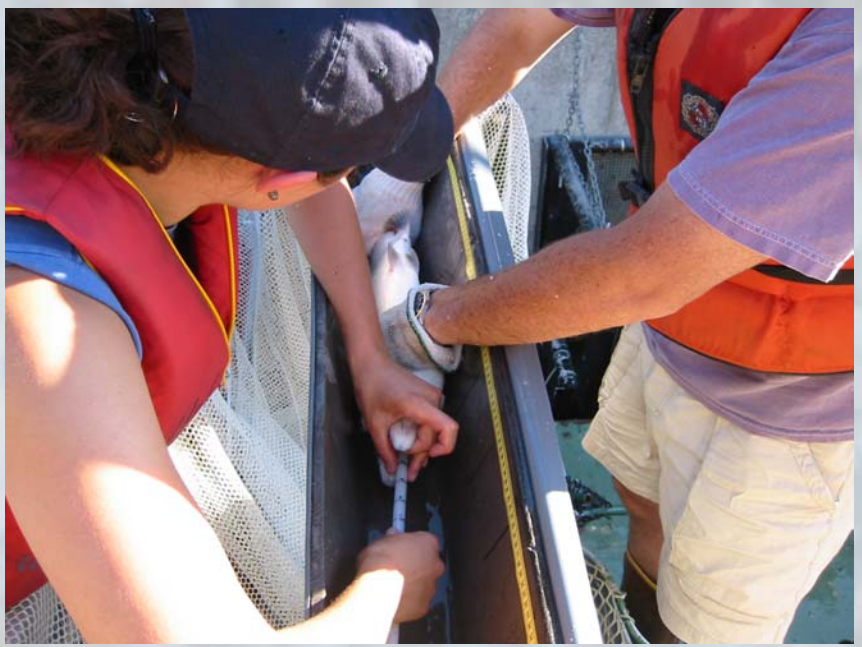


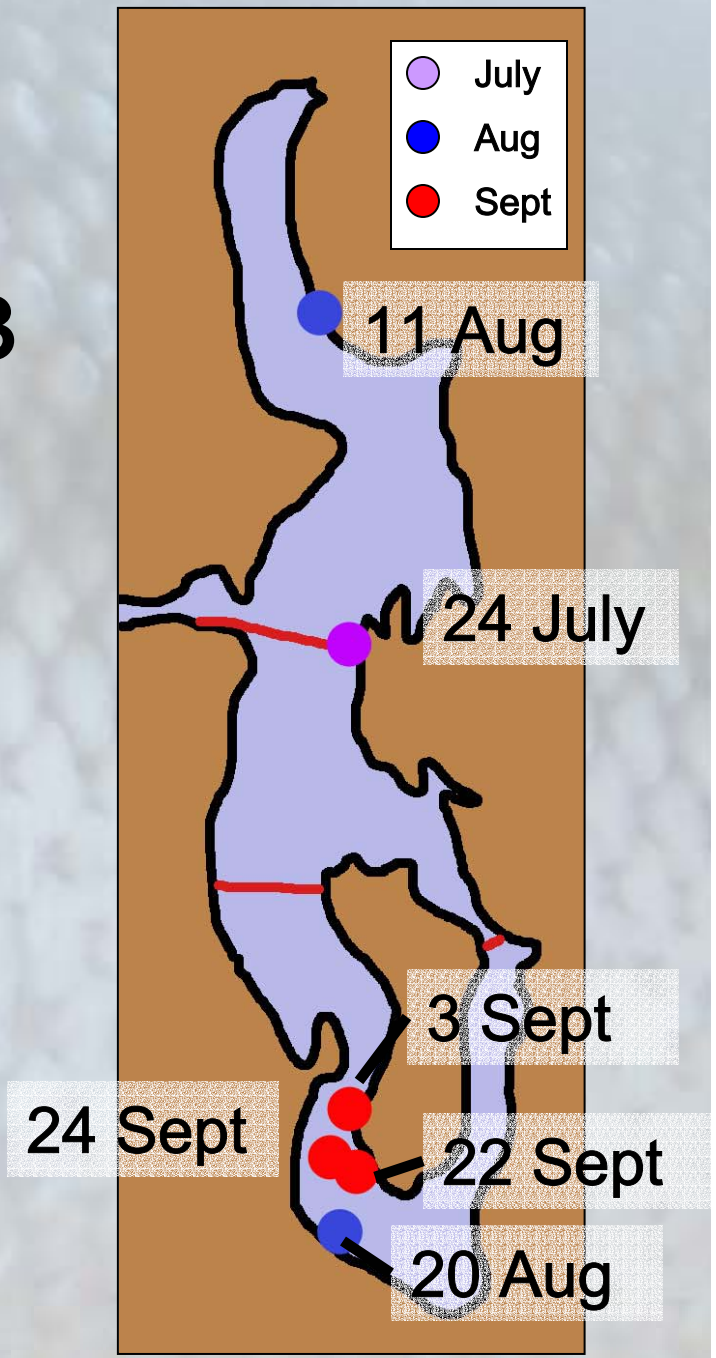
Tracking

- Transmitters range 500 m
- Mobile Tracking
- Stationary receivers on bridges

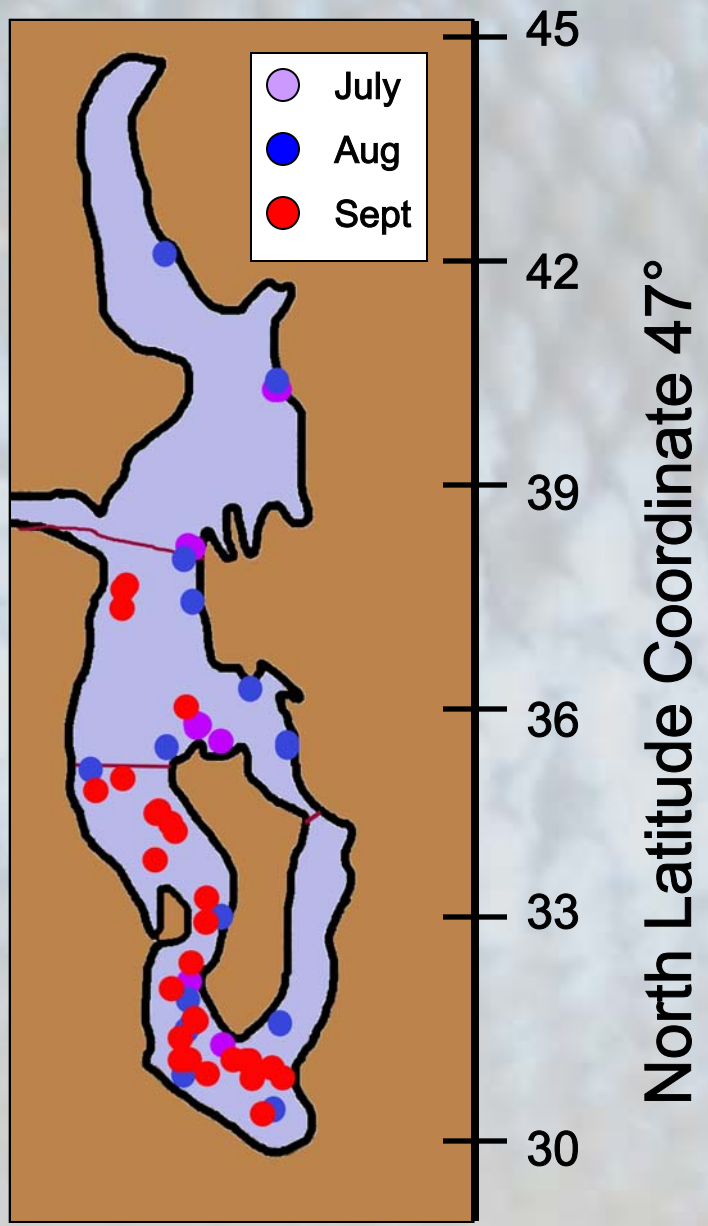
A typical fish

Female tagged on 7/21/03

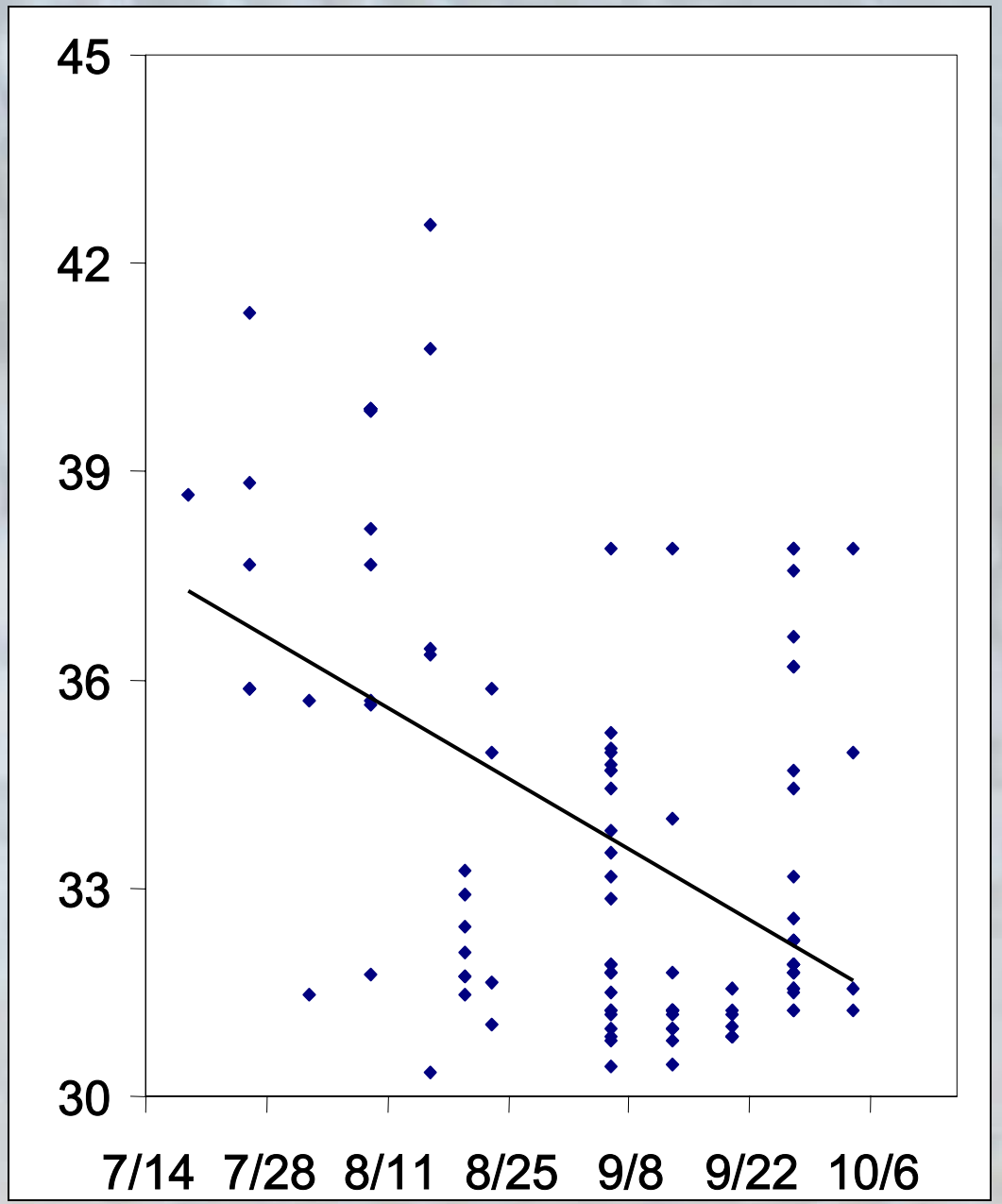




Fish Move South



North Latitude Coordinate 47°



Conclusions

- Cedar River fish enter lake earlier than north end fish.
- Fish remain below thermocline during residency in the lake.
- Fish aggregate at the south end of the lake.

Future work

- More disc tags
  - Retrieve more from the north end.
- More transmitters and receivers
  - Tag north end fish
  - Gain better understanding of movement patterns.

Acknowledgments

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