Tracy Research Technical Report Abstract

***Volume 5***
Hiebert, S., E. Holroyd III, and R. Wydoski, 1997. *Field Testing and Evaluation of a Video Image Counting System for Fish Eggs in the Sacramento River During May 1994.* July 1997. Tracy Fish Collection Facility Studies, Volume 5. U. S. Bureau of Reclamation, Mid-Pacific Region and Denver Technical Service Center. 19 pp.

Since 1970, significant declines in striped bass have occurred in the Sacramento/San Joaquin River Delta. A possible factor contributing to this decline is that floating eggs and planktonic larvae are exposed to many water diversions where these early life stage fish could become entrained and lost to the system. A real-time monitoring system that could determine densities of these passing organisms would be valuable in alerting water managers to enact protective measures to reduce entrainment while these fish are present; then, when the organisms are passed, normal operations could continue. A special video-based identification and counting system—designed for the paper pulp industry—was tested for application in monitoring striped bass eggs. A system of concentrating the sampled Sacramento River water and presenting it to the Pulp Particle Measuring System (PPMS) was used to evaluate the ability to detect and count eggs, and to determine if estimates are comparable to traditional ichthyoplankton netting techniques. Large pulses of fish eggs passing through the sampler over the 30-day test were detected simultaneously by all three methods of sampling. Further refinement of data by correlations showed weak correlations. Recommendations for improving this technique to increase the confidence in counts and identification include:

* Programming the counter identification system to make it specifically look for eggs rather than use the programs for determining paper pulp particle shape;
* Upgrading to a faster computer with the previous recommended programming onboard could keep the sampling continuous;
* Constructing an underwater concentrator out of wedgewire; and

Providing dark background illumination on the imaged eggs to define the eggshells could greatly improve recognition capabilities.

This technology may have great potential in real-time in situ and laboratory sorting of fish eggs.