

Summary of Water Temperature Monitoring within the San Joaquin River Restoration Area 2013 Water Year (Mid-Year Update)

*Erica Meyers, California Department of Fish and Wildlife,
San Joaquin River Restoration Program, Fisheries Management Work Group*

Water temperature exerts substantial influence on the abundance, growth, and survival of fishes and is critical to the timing of life-history events (Fry 1971). High temperatures result in physiological stress and increased metabolic demand, which may result in slower growth, susceptibility to disease, and lower survival rates. The primary purpose of this monitoring study is to increase understanding of the relationship between restoration actions (e.g., changes in flow regime, riparian shading, or channel geometry) and stream temperature in the Restoration Area. Data collected is used to develop and improve computer models (e.g., HEC-5Q, Ecosystem Diagnosis and Treatment [EDT]) and conceptual models (e.g., SJRRP 2009) that guide management decisions and aid in fulfilling adaptive management objectives of the Program.

Methods

The California Department of Fish and Wildlife (CDFW, formerly the California Department of Fish and Game) began collecting water temperatures during the Fall 2009 Interim Flow Period. Sixty calibrated thermographs are installed throughout the Restoration Area and programmed to record temperature hourly to evaluate subsurface temperature conditions in migration pathways and potentially suitable holding, rearing, and spawning habitat. Temperature monitoring sites are shown in Table 1 and Figure 1.

CDFW downloads data from most thermographs monthly when river conditions and staff availability allow, and no less frequently than quarterly (i.e., once every three months) for most sites. This frequency allows identification and remedy of any problems, such as malfunctioning equipment or missing/vandalized thermographs. A few thermographs are only accessible under certain river conditions and are serviced less frequently.

Study methods, field procedures, and quality assurance protocols are discussed in detail in the study Standard Operating Procedures manual (CDFW 2013).

Data Availability and Reporting

Temperature data are provided in the attached CSV files for all sites with data currently available for the 2013 Water Year (WY 2013, October 2012-September 2013). Some data are occasionally lost due to vandalism, flood flows, or equipment malfunction; missing data are noted in Table 1. WY temperature data have undergone data integrity and quality assurance procedures (discussed in Section 5 of CDFW 2013), but should be considered preliminary and subject to revision until release of the final report is release for WY 2013, which is expected sometime in early 2014. Questions and data requests prior to release of that report can be directed to Erica Meyers at erica.meyers@wildlife.ca.gov.

Literature Cited

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Fry, F.E.J. 1971. The effects of environmental factors on the physiology of fish. Pages 1-98 in W.S. Hoar and D.J. Randall, editors. Fish Physiology. Academic Press, New York.

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