

Napa River Watershed Sediment TMDL Implementation and Habitat Enhancement

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The Napa River drains an area of approximately 426 mi² and extends 55 miles before discharging into San Pablo Bay near the mouth of the Sacramento-San Joaquin estuary, descending from an elevation of 4,344 ft in the Mayacamas Mountains to sea level. Historically, the lower reaches of the Napa River supported a diverse number of habitats including tidal marshes, freshwater marsh wetlands, oak woodland, riparian forests, and grasslands that provided habitat for a myriad of plant and animal species. Based on evidence of widespread erosion and concerns regarding adverse impacts to fisheries habitat, the San Francisco Bay Water Quality Control Board listed the Napa River and its tributaries as impaired by sediment. The Napa River Watershed Sediment TMDL and Habitat Enhancement Plan found that channel incision harms physical habitat structure of the river by reducing the quantity of gravel bars, riffles, side channels, and sloughs, which threatens Chinook salmon, steelhead and other fish and aquatic wildlife species. Since then a diverse group of stakeholders including Napa County, local non-profits, the local community and regulatory agencies have collaborated to develop watershed management and river restoration actions to protect and restore aquatic ecosystem functions and beneficial uses in the Napa River watershed. This poster provides an overview of promising projects and programs that are working to meet the objectives of the Napa River Watershed Sediment TMDL.

Keywords: TMDL Implementation, Napa River, Watershed, Watershed Management

Poster Topic: Napa River Watershed Restoration

Napa River Flood Protection Project: Rare Plant and Project Habitat Monitoring

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Beginning in 2000 the U.S. Army Corps of Engineers and the Napa County Flood Control and Water Conservation District began construction of the Napa River/Napa Creek Flood Protection Project. The primary goals of the Project included providing 100 year flood protection for the City of Napa along 6.9 miles of the Napa River and restoration of large areas of riparian and wetland habitat within the Project area. Long-term monitoring (over a 40-year period) associated with the Project includes systematically and quantitatively measuring changes in vegetation, geomorphology and hydraulics over a 40-year period. This poster focuses on recent habitat monitoring results associated with the Project including focused rare plant surveys for Mason's Lilaepsis (*Lilaepsis masonii*) and site wide vegetation/habitat establishment monitoring within a 1000+ acre area of the Project known as the South Wetlands Opportunity Area. In summary, results from the focused Mason's Lilaepsis surveys indicate a very robust metapopulation on the Napa River that has doubled over a 10 year period while site wide performance standards and habitat creation goals have been met, or will be achieved, over the long-term monitoring period for the Project.

Keywords: Napa River Flood Protection Project, Lilaepsis (*Lilaepsis masonii*), Habitat Monitoring

Poster Topic: Napa River Watershed Restoration

Napa River Oakville to Oak Knoll Restoration Project

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The Oakville to Oak Knoll Restoration Project is being developed to restore 9 miles of the Napa River that suffer from channel incision with bank collapse, erosion of channel bedforms (riffles, bars, pools) important to salmonids, and a reduced riparian corridor due to the lack of a functional floodplain. Initiated in 2007 by the California Land Stewardship Institute, this private-public partnership with Napa County is working to achieve voluntary participation among all 34 riverside landowners. The project is nearing the 30% design stage, with anticipated construction to begin in 2014/2015. Over the past year extensive biological, geotechnical, cultural, and geomorphic studies have been completed; a Basis of Design has been developed; 28 restoration projects have been designed; a landowner advisory committee (LAC) has been formed; 5 acres of *Arundo donax* have been treated. Key structural restoration elements of the project include channel widening, floodplain restoration, and addition of large wood and boulder features that will support habitat forming geomorphic processes. Secondary components of the project include biotechnical stabilization, vegetation management, and site revegetation. A long term channel monitoring and maintenance program is being developed by the Napa County Flood Control and Water Conservation District in collaboration with river front landowners. Costs and benefits of the project are being borne equally by landowners, the local Napa community, and state and federal grant programs.

Keywords: River Restoration, Watershed Management, Habitat Restoration

Poster Topic: Napa River Watershed Restoration

Napa River Rutherford Reach Restoration Project

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The Napa River Rutherford Reach Restoration Project is restoring 4.5 miles of the Napa River between Zinfandel Lane and the Oakville Bridge in the middle Napa River watershed. Initiated in 2002, this private-public partnership has achieved voluntary participation by 100% of the 28 riverside landowners. Project implementation is 60% complete, with anticipated completion by 2015. Since construction began in 2009, 3.25 acres of invasive *Arundo donax* have been eradicated; 2.5 miles of agricultural berms have been setback into adjacent vineyards, expanding the riparian corridor and slowing erosive stream flows; 21 acres of native riparian habitat have been restored; 12 acres of slow water habitat for young Chinook salmon and threatened steelhead trout; 55 instream structures have been installed to enhance aquatic habitat; eroding bank length has been reduced by half; and the rate of fine sediment delivery to the channel has been reduced by an estimated 10,154 metric tons/year for 20 years. A long term channel monitoring and maintenance program has been established with the Napa County Flood Control and Water Conservation District financed with dedicated funding from river front landowners. Costs and benefits of the project are being borne equally by landowners, the local Napa community, and state and federal grant programs.

Keywords: River Restoration, Habitat Restoration, Watershed Management

Poster Topic: Napa River Watershed Restoration

Swainson's Hawk (*Buteo swainsoni*) Expands its Breeding Territory in the Napa Valley

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Swainson's Hawk (*Buteo swainsoni*) is listed as threatened under the California Endangered Species Act. In California, Swainson's Hawks primarily nest in the Central Valley. This species recently colonized Napa County and established a breeding site in the southern portion of the Napa Valley in an area with habitat conditions similar to breeding sites in the Central Valley. On July 1, 2013, a Swainson's Hawk nest was found in the Oakville region of the Napa Valley during a pre-construction nesting bird survey for the Napa River Restoration Project. This site is approximately 16 miles north of the previously documented nest site and in an area dominated by dense vineyard development. Swainson's Hawk was "not expected" to occur in this portion of the Napa Valley because vineyards provide marginal foraging habitat for this species. Following discovery of the nest, a 0.25 mile no-work buffer was established around the nest site, and the nest was monitored daily by wildlife biologists. A juvenile Swainson's Hawk successfully fledged from the nest around July 15, 2013. This nest site represents an expansion of the Swainson's Hawk's current breeding range in the Napa Valley.

Keywords: Swainson's Hawk, Napa, Nest

Poster Topic: Napa River Watershed Restoration

Zinfandel Lane Bridge Fish Habitat Improvement Project

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In October of 2011 the County of Napa completed construction of the Zinfandel Lane Bridge Fish Habitat Improvement Project, remediating a historic fish barrier that severely impeded access to approximately 50% of the available spawning and rearing habitat for fall run Chinook salmon and steelhead trout in the Napa River watershed. Working in partnership with the Napa County Resource Conservation District, a final design that provided suitable hydraulic conditions for passage of both adult and juvenile salmonids while also maintaining geomorphic stability of the river channel was developed. The project also includes pre- and post-construction topographic channel surveys and fisheries monitoring including annual adult salmonid spawner and snorkel surveys in the areas upstream and downstream of the project. Topographic surveys to date indicate a minor level of channel incision took place post-project but that the channel has remained relatively stable and no significant bank erosion has been documented; results from fisheries surveys are pending. This project was funded by generous grants from the California State Coastal Conservancy, The Peter A. and Vernice H. Gasser Foundation, and the US Army Corps of Engineers, as well as the citizens of Napa County through Measure A Watershed Improvement Funds.

Keywords: Fish Passage Barrier, River Restoration, Watershed Management

Poster Topic: Napa River Watershed Restoration

Napa River Steelhead and Salmon Monitoring Program: Collecting Fish Population Data for a Vital Bay Area Watershed

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The Napa County Resource Conservation District (RCD) has operated a rotary screw trap in the mainstem Napa River for five years to collect information on steelhead trout (*Oncorhynchus mykiss*) and Chinook salmon (*O. tshawytscha*). This program represents the first outmigrant trapping effort ever undertaken for the Napa River watershed and is intended to help answer the following questions: 1. What is the average size of Napa River steelhead smolts? 2. What is the timing of steelhead and salmon outmigration? 3. What is the composition of the freshwater fish community? 4. Are population trends for steelhead and salmon apparent in the Napa River watershed?

Steelhead smolt sizes and catch rates have been relatively consistent during the past five years with an average fork length of 189mm (std. dev. ± 24 mm); this large average size would be expected to produce high ocean survival rates. In contrast, Chinook salmon abundance has fluctuated greatly during the same period suggesting that the population is relatively small and may be more susceptible to environmental variability from one year to the next.

Steelhead outmigration from the Napa River appears to peak in April in most years with increased activity during storms. Chinook salmon smolts were collected most regularly toward the end of each sampling season with a peak around early May.

A total of 31 fish species have been collected to date: 14 natives and 17 non-natives. The most abundant native species were Chinook salmon, California roach (*Hesperoleucus symmetricus*), and steelhead/rainbow trout. The most abundant non-native fish species were largemouth bass, bluegill, and golden shiner. Native fish species comprised over 98% of the total catch from 2009-2013.

The Napa RCD and its partners plan to continue monitoring to develop salmonid population indices and track ecological responses to habitat restoration. Annual reports are available at www.naparcd.org.

Keywords: Salmon, Napa River

Poster Topic: Napa River Watershed Restoration

Napa River Sediment TMDL Implementation Tracking and Accounting System

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It starts with a question: What's the status of our fisheries? Are we in compliance with our TMDL? Are public funds making a difference? The answers require intentional and informative data. Napa County, with the help of several partnering agencies and organizations, is developing a Napa River Sediment Total Maximum Daily Load (TMDL) Implementation Tracking and Accounting System (ITAS). The ITAS is being designed to account for required and recommended implementation actions prescribed in the Napa River Sediment Reduction and Habitat Enhancement Plan (TMDL). The objectives of the ITAS are to: 1) identify progress towards achieving TMDL goals and compliance; 2) prioritize implementation actions; 3) inform management strategies; and 4) communicate results to stakeholders, regulatory agencies, funders, and policy makers. The ITAS will be a web-based system to assist the County and other responsible reporting entities in tracking their progress and implementation actions that reduce sediment loading of waterways, improve aquatic and riparian habitat quality, and meet the objectives of the TMDL. The system will track performance measures that demonstrate compliance and relative effectiveness of watershed actions intended to control or reduce sediment delivery to the river system and improve overall stream/river function.

Keywords: TMDL Implementation, Napa River Watershed

Poster Topic: Napa River Watershed Restoration

Assessment Results and Treatment Recommendations of Road-Related Sediment Sources in the Napa River Watershed

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This poster summarizes results from road assessments in the Napa River watershed that quantified sediment volumes that roads produce and identified how roads impact erosional processes. Future erosion volumes were derived using the same methodology that the San Francisco Bay Regional Water Quality Control Board used in its sediment TMDL report which identified the Napa River watershed as being impaired by sedimentation (Napolitano et. al. 2009). Treatments proposed to reduce road-related sediment production were consistent with CA Dept. Fish and Wildlife 'Salmonid Habitat Restoration Manual' and Mendocino RCD's 'Forest and Ranch Roads Handbook.'

Road systems are perhaps the most significant and most easily controlled sources of sediment production and delivery to stream channels (Napolitano et. al. 2009). Regional Water Board estimates that, on average, 50 cubic yards of sediment are produced per mile of road, per year in the Napa River watershed (Napolitano et. al. 2009). Negative effects from excess sediment inputs into streams include, 1) increased water temperatures, 2) lowered dissolved oxygen, 3) increased flooding potential and 4) the loss of adequate salmonid spawning habitat.

Unlike many watershed improvement and restoration activities, erosion prevention and "storm-proofing" of road systems can have immediate benefits to the streams and aquatic habitat. Storm-proofing roads helps to ensure that the biological productivity of the watershed's streams is not impacted by future anthropogenic erosion and that future storm runoff can cleanse the streams of accumulated coarse and fine sediment, rather than depositing additional sediment from managed areas.

Keywords: Road-Related Sediment Sources, Sedimentation, Erosion, Water Quality, TMDL

Poster Topic: Napa River Watershed Restoration

Fish Friendly Farming Environmental Certification Program: A Partnership of Agriculture and the Environment

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Many farmers in northern California are seeking to both comply with a bewildering array of regulations governing their operations and land management and to best manage their land over the long-term. The Fish Friendly Farming Program is a voluntary environmental certification program which provides farmers and ranchers with the tools and resources to comply with water quality and endangered species regulations and to demonstrate their commitment to long-term environmental stewardship of the land. This site-based program offers 3rd party certification from three regulatory agencies: NOAA-National Marine Fisheries Service, Regional Water Quality Control Board, and the County Agricultural Commissioners' office. The California Land Stewardship Institute (CLSI), a non-profit organization based in Napa, operates the FFF program in Napa, Sonoma and Solano Counties. Certification is reviewed every 5-7 years, and certified sites document the implementation of Beneficial Management Practices (BMP) through annual photo-monitoring and record-keeping. Fish Friendly Farming offers an incentive-based method for creating and sustaining environmental quality and habitat on private land with a focus on education and assistance to land managers. For many sites, the FFF Program provides validation of land management practices already in use; for others, BMPs are given implementation timelines appropriate to their degree of complexity. The Regional Water Quality Control Board has recognized the FFF program as providing compliance with the fine sediment TMDLs. By using a rigorous science-based approach, the FFF Program assures that changes to management practices are well thought out and will have the desired results, and that larger efforts such as stream restoration projects undergo thorough analysis prior to implementation. Approximately 120,000 acres are enrolled in the program statewide with over 65,000 acres in northern SF bay watersheds. The program's popularity with growers demonstrates that the collaborative approach is an effective tool for regulatory compliance and habitat restoration.

Keywords: Agriculture, Water Quality, Voluntary, Environmental Certification, Stewardship, Beneficial Management, Sediment

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