Monitoring Monday - Let's look at monitoring wetlands.

Join us each Monday as the Clean Water Team shares resources on water quality monitoring. This Monday is about wetlands.

World Wetlands Day is celebrated each year on February 2nd. It is an opportunity to engage all stakeholders at all levels – to strengthen and multiply action for wetlands.

https://www.worldwetlandsday.org/

Wetlands have both aquatic and terrestrial characteristics. Wetlands form along the shallow margins of lakes, estuaries, and rivers, and in areas with high groundwater or shallow surface water, such as springs, wet meadows, ponds, and freshwater and tidal marshes. They often go through wet and dry cycles, and therefore support a unique array of life specially adapted to these conditions. Wetlands provide important habitat for birds, fish, and other wildlife. They support local food webs, contribute to flood protection, groundwater recharge, shoreline protection, and water filtration: all important ecosystem services.

California has lost more than 90% of its historical wetlands and today, many remaining wetlands are threatened. Wetlands continue to be drained for agriculture, filled for development, or disturbed by modifications to the watershed such as dams or water diversions. Climate change poses a significant threat, as many wetlands today are dependent on artificial water delivery systems or high groundwater levels and may be impacted by changing climatic conditions. Further, wetlands along the coast face flooding from potential sea level rise.

Because of their value and vulnerability, wetlands are protected by a series of special laws and permitting requirements.

https://mywaterquality.ca.gov/eco_health/wetlands/index.html

Wetland restoration and protection is important to maintain critical wildlife habitat, help meet state and tribal watershed goals and contribute to economic well-being. To achieve these goals, many states have invested in programs that help implement, support, or coordinate local restoration efforts.

States and tribes enjoy numerous benefits of restoration and protection due to the many functions that natural wetland systems perform. The unique natural characteristics of wetlands make them an integral part of our natural infrastructure.

www.epa.gov/wetlands/basic-information-about-wetland-restoration-and-protection

The California Wetland Monitoring Workgroup's mission is to improve the monitoring and assessment of wetland and riparian resources by developing a comprehensive stream, wetland, and riparian area monitoring plan for California and through increasing coordination and cooperation among local, state, and federal agencies, tribes, and non-governmental organizations. The workgroup reviews technical and policy aspects of wetland monitoring tool development, implementation and use of data to improve wetland management in California.

The Wetland and Riparian Area Monitoring Plan (WRAMP) is a plan for comprehensive monitoring and assessment of aquatic resources using a watershed or landscape context. WRAMP, like U.S.EPA's three-tier monitoring and assessment framework, includes three levels of assessment and analysis, and provides the *framework* for making these three levels of assessment work together in the analysis of the overall condition and viability of aquatic resources within a watershed. Although WRAMP has been applied to support a watershed approach to wetland and stream protection in California, the framework can be adjusted to generally support ecosystem and habitat planning, assessment, monitoring, and reporting.

- Level 1 assessments consist of map-based inventories of aquatic resources, including: rivers, streams, and riparian areas, plus related projects that have a direct effect on the distribution and abundance of aquatic resources. Level 1 maps may serve as the basis for landscape and watershed profiles and be used as a framework for Level 2 and 3 assessments.
- Level 2 assessments are rapid, field-based assessments that provide data on overall aquatic resource condition. In California, the California Rapid Assessment Method is the baseline for level 2 data collection. Other level 2 assessments exist and may also be used when needed.
- Level 3 assessments are usually site-specific measures of specific resources. Plant species composition, nesting bird surveys, spawning success, and groundwater recharge rates are examples of level 3 data types. Types of level 3 assessments will vary from site to site.

The WRAMP toolset continues to grow with ongoing guidance from the user community. It's unlikely that anyone will use all three levels all the time. Project planners should apply the parts that fit best for the project, using the guidance provided by CWMW.

https://mywaterquality.ca.gov/monitoring_council/wetland_workgroup/wramp/

The development of **California's Rapid Assessment Method (CRAM)** was a big step to help manage California's diverse and rare wetland resources. Developed through a variety of different sources, including Wetland Program Development Grants (WPDG), CRAM is a tool with a broad value for other state wetland managers. The standardized and scientifically validated approach to assessing wetland condition and stressors is used to incorporate condition data into decision-making. CRAM data is also used to protect existing wetlands or alongside detailed biological monitoring data to assess the success of wetland mitigation and restoration efforts.

CRAM combines metrics of landscape and buffer condition, hydrology, biotic structure and physical structure into a single score that reflects wetland condition and stressors affecting the wetland. Hydrology metrics, for example, include water source, hydroperiod and hydrologic connectivity. Physical habitat metrics include physical richness and topographic complexity. Validated with detailed biological

monitoring, the Riverine and Estuarine protocols are methods based on bird, macroinvertebrate and plant community data.

www.waterboards.ca.gov/water_issues/programs/watershed/

CRAM is a cost-effective and scientifically defensible rapid assessment method for monitoring the conditions of wetlands throughout California. It is designed for assessing ambient conditions within watersheds, regions, and throughout the State. It can also be used to assess the performance of compensatory mitigation projects and restoration projects.

www.cramwetlands.org/

Training will provide the skills necessary to consistently conduct accurate assessments of wetlands using CRAM and will provide guidance on the use of CRAM for ambient and project assessment and monitoring. The session involves both classroom and field instruction, with an emphasis on the field component. To successfully complete the course, participants will be required to pass a written and a field-based proficiency examination.

www.cramwetlands.org/training

View online training videos for several CRAM wetland modules. Please note these videos are not intended as a stand-alone CRAM training. They have been developed to help refresh practitioners after having taken a break from doing CRAM assessments; to assist new trainees before or after a training; or to inform practitioners that have completed a 5-day training about how other wetland modules work.

Resources, Documents & Videos: www.cramwetlands.org/documents#online+training+videos

Additional Resources:

Are our Wetlands healthy? (A My Water Quality Portal)
https://mywaterquality.ca.gov/eco_health/wetlands/index.html

Fremontia: Special Issue on California Wetlands (Journal of the California Native Plant Society)
https://www.cnps.org/wp-content/uploads/2019/11/Fremontia_V46_N2_Wetlands_LR.pdf

Volunteer Monitoring Can Protect Wetlands
www.epa.gov/wetlands/volunteer-monitoring-can-protect-wetlands

Volunteer Wetland Monitoring: An Introduction and Resource Guide
http://nepis.epa.gov/EPA/html/DLwait.htm?url=/Exe/ZyPDF.cgi/2000535D.PDF?Dockey=2000535D.PDF
Also downloadable from these web-links:
Oregon Explorer, Google Books

Wetlands Walk Manual
https://nepis.epa.gov/Exe/ZyPDF.cgi/91016NLM.PDF?Dockey=91016NLM.PDF
Additional worksheets
https://nepis.epa.gov/Exe/ZyPDF.cgi/P1007O6K.PDF?Dockey=P1007O6K.PDF

The Wetlands Handbook - Editor(s):Edward Maltby BSc, PhD,, Tom Barker BSc, PhD,
Download PDF from ResearchGate

Uses of Wetland Monitoring and Assessment: Considerations for State and Tribal Programs
https://www.aswm.org/pdf_lib/uses_of_wetland_monitoring_and_assessment_0615.pdf

An Introduction and User's Guide to Wetland Restoration, Creation, and Enhancement
www.csu.edu/cerc/documents/AnIntroductionandUsersGuidetoWetlandsRestoration.pdf

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Many providers of wetland training courses can be found. Here is a short list of what can be found online.

The Association of State Wetland Managers

- Online Trainings https://www.aswm.org/webinars-trainings/aswm-s-online-trainings#
- Webinars & Trainings https://www.aswm.org/webinars-trainings
- Increasing Access to Wetland Training Project https://www.aswm.org/webinars-trainings/increasing-access-to-wetland-training-project

The **National Wetland Team** develops training modules, provides technical leadership, and instructs training courses in a variety of wetland related issues through the **NRCS National Employee Development Center** (NEDC) http://www.nedc.nrcs.usda.gov and other units of government. These courses are intended for government audiences; however, enrollment is based upon the criteria of the government unit offering the training.
www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/technical/?&cid=stelprdb1045957

Society of Wetland Scientists Professional Certification Program Professional Short Courses
https://www.wetlandcert.org/shortcourse_providers.html

The **Wetland Training Institute**, Inc. (WTI) provides wetland training courses on wetland delineation, soils and hydrology, wetland construction and restoration, plant identification, mitigation banking concepts, wetland policy and permitting, and other riparian resource issues.
https://wetlandtraining.com/

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