

Thursday, May 3

## **Session H1: Adaptive Monitoring with Volunteers**

Room A105  
8:00 – 9:30 am

**0323**  
**H1-1**

### **Maryland Stream Waders Volunteer Monitoring Program: Eleven Years of Success!**

Daniel Boward, Sara Weglein and Michael Kashiwagi

*Maryland Dept. of Natural Resources, Annapolis, Md., USA*

Quiz – What has cold toes, loves creeks, and gives time and energy generously to help Maryland’s environment? A Maryland Stream Wader Volunteer, of course! Since 2000, the Maryland the Maryland Department of Natural Resources (DNR) has trained and recruited volunteers to sample benthic macroinvertebrates in freshwater streams as part of the Maryland Stream Waders Program. Goals of the Program are to 1) increase the density of sampling sites for use in stream quality assessments, 2) educate the local community about the relationship between land use and stream quality, 3) To provide quality assured information on stream quality to state, local, and federal agencies, environmental organizations, and others, and 4) improve stream stewardship ethics and encourage local action to improve watershed management. Many aspects of Stream Waders are seamless with those of the Maryland Biological Stream Survey – Maryland DNR’s professionally-run statewide stream sampling program – including field and laboratory methods, data analysis, and determination of stream quality using a Benthic Index of Biotic Integrity. About 1,240 volunteers have sampled 5,590 sites statewide to help fill in the gaps in areas not sampled by DNR professionals. This talk will provide an overview of the first 11 years of Stream Waders highlighting the Program’s successes, challenges and future.

**0475**  
**H1-2**

### **Colorado River Watch’s Success Over the Past Twenty-Two Years**

Julia Campus

*Colorado River Watch, Denver, Colo., USA*

Colorado River Watch is a state-wide volunteer water quality monitoring program, operated by the nonprofit Colorado Watershed Assembly in cooperation with Colorado Parks and Wildlife. Starting with just a dozen stations in 1989, the program has since expanded to over 700 stations. More than 70,000 children, teachers, biologists, and other volunteers have participated in River Watch since the program began. It is one of the largest statewide volunteer monitoring programs in the nation, and Colorado’s largest generator of water quality data. The success of River Watch lies in the data gap it fills, the wide use of the data, the quality of the data, and the program’s foundation in volunteer efforts.

In 1989, the Colorado Department of Public Health and Environment’s Water Quality Control Commission was charged with making decisions regarding pollution allowance based on only one data point, or no data at all. River Watch was formed to fill that data gap. Today, River Watch maintains over 300 active sites. The primary targeted decision maker for River Watch data is the Clean Water Act and associated processes. River Watch data are used in developing chemical and biological standards, use assessments, 303d listings and delistings, watershed planning and non-point source project monitoring.

Volunteers are trained using standard procedures from the EPA and Colorado Parks and Wildlife, and all samples are processed using strict quality assurance/quality control protocols. This ensures valid and credible results, which allows for widespread usage.

The need for valid data created demand for River Watch’s work, but the fact that River Watch is volunteer-based sets the organization apart. With volunteers, costs are lower, and citizens develop a vested interest in their watershed. Not only do the citizen scientists learn about the health of their rivers from participating in the processes and methods of water quality analysis, they also know that the data they collect is a key component in the formulation of water management plans on the local and statewide level.

It is due to these facts that Colorado River Watch has grown into such a large and successful organization over the past 22 years.

**0416**  
**H1-3**

### **Amphibian Monitoring with the Georgia Adopt-A-Stream Program**

Tara Muenz

*Environmental Protection Division, GA DNR, Atlanta, Ga., USA*

Georgia Adopt-A-Stream (GA AAS) is a statewide volunteer monitoring program that was created to increase public awareness of water resources issues. The program engages citizens in river cleanups and restoration projects, and through the monitoring of waterways for macroinvertebrates, bacteria, and chemical and physical parameters. A new component to the program has been the addition of amphibian monitoring, focusing on salamanders and treefrogs. This is a pilot program that hopes to foster an appreciation of amphibians, their conservation challenges, and moreover to become a source of information and data about their location and status to aid in conservation planning. The Southeastern US and especially the state of Georgia harbor a rich diversity of amphibians, with over 80 species statewide and 140 regionally living in a variety of freshwater habitats. In Georgia, amphibian monitoring activities by volunteers is in its infancy, and there remains to be a national protocol for monitoring other than the identification of anuran (frog and toad) calls. Protocols for the GA AAS amphibian program are passive captures, and were created for ease of use for volunteers. This includes the use of PVC tree pipe refugia to target treefrogs (Hylidae) and coverboards to attract streamside salamanders. Hands-on field based training workshops are provided for interested volunteers and include an amphibian monitoring manual, information about site selection, how to create equipment, animal identification, and data collection. Successes and challenges to establishing such a monitoring program will be discussed.

**0372**  
**H1-4**

### **State of the Malibu Creek Watershed: Results from 12 Years of Citizen Monitoring**

Katherine Pease<sup>1</sup>, Mark Gold<sup>1</sup>, Mark Abramson<sup>2</sup> and Kevin Jontz<sup>1</sup>

<sup>1</sup>*Heal the Bay, Santa Monica, Calif., USA,* <sup>2</sup>*Santa Monica Bay Restoration Commission, Los Angeles, Calif., USA*

Monitoring ecological systems is vital to informing conservation and restoration actions. Heal the Bay's Stream Team program has performed citizen monitoring in the Malibu Creek Watershed since 1998. Staff and trained volunteers conduct monthly water chemistry and annual bioassessment monitoring at 19 sites throughout the watershed. Stream Team has also mapped physical features and impairments, such as streambank erosion, dump sites, invasive species, and excess algal growth. This presentation will discuss the results of our twelve-year watershed health investigation through integrated analysis used to identify both site-specific impairments and large scale influences.

The Malibu Creek Watershed is located in southern California, on the northern coast of Santa Monica Bay, comprising more than a quarter of the land area that drains into the Bay. The watershed is home to several threatened and endangered plants and animals including the southern steelhead trout, California brown tidewater goby, red-legged frog, and other species. With its proximity to the dense urban area of Los Angeles, the watershed is important, both ecologically and for recreational purposes.

The Malibu Creek Watershed is affected by a variety of stressors, including water pollution associated with urban and agricultural runoff, failing septic systems, and wastewater treatment plant discharges; riparian and stream habitat degradation associated with development, streambank hardening, erosion and sedimentation; and biotic condition impairments. Numerous reaches within the watershed are designated as impaired for various pollutants on the Clean Water Act section 303(d) list of Impaired Waterbodies for California. Total Maximum Daily Loads have been developed in the watershed for coliform bacteria, nutrients, trash, and other pollutants.

Using the twelve-year Stream Team dataset, Heal the Bay staff developed a simple Stream Health Index with indicators for water pollution, habitat quality and biological integrity to provide a comprehensive watershed health assessment. The results show that evidence of degradation is widespread throughout the Malibu Creek Watershed, in some predictable patterns. These results can be used to inform targeted management and monitoring actions to help restore and protect this ecologically important area.