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The Role of Citizen Scientists in Water Resources Research and Knowledge Transfer

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THE ROLE OF CITIZEN SCIENTISTS IN WATER RESOURCES RESEARCH AND KNOWLEDGE TRANSFER

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Field-intensive scientific research often is constrained by limited human resources. Observing or sampling at frequent intervals over large geographic areas usually is cost-prohibitive. Some creative researchers team with K-12 science teachers to gather data, through programs like GLOBE. Others are tapping the nation's rapidly growing pool of relatively young, healthy, and well-educated retirees. Programs range from Master Gardeners (nationwide) to Master Watershed Stewards (Arizona) and Master Well Owners (Pennsylvania). They also include the
naton-wide Audubon Society annual bird census and an animal migration (road kill) reporting network for rural highways.

Each of these programs is unique, but they share certain characteristics. Citizen scientists are recruited, educated as to the scientific issues being addressed, and trained to make observations
and/or take samples. Data reporting mechanisms and quality assurance measures are established. Volunteers receive positive feedback through: opportunities to meet professional researchers; seeing their data entered into research databases and graphically visualized; and
receiving regular updates on the progress of the research and its implications for society.

Most of these tasks can be enhanced through carefully designed, well-executed Web-based tools and applications. Such efforts also benefit from increasingly ubiquitous high-bandwidth internet connections and low-cost data gathering tools, ranging from digital rain gauges to cell phones with cameras.

SAHRA currently is engaged in multiple research and knowledge transfer efforts involving citizen scientists. These include students taking river samples and measuring soil moisture, and networks of rain loggers recruited to monitor precipitation in rural watersheds and across urban areas. Beneficiaries include researchers, drought monitors, rangeland managers, flood risk evaluators, and weather forecasters. We also are working to create a mutually beneficial information sharing system with Arizona's 80,000 domestic well owners. Technical assistance and discounts on water quality tests will be tied to systems that automatically notify well owners of new information on water quality, depth to groundwater, and well drilling in their immediate area. Successful strategies and lessons learned in tapping citizen scientists to further research and knowledge transfer programs will be discussed.

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