

Chapter 12

Information Sources

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Introduction

The main information sources for the UVR consist of several web sites with general information and bibliographies. RMRS has publications on its Air, Water, Aquatic Environments (AWAE) Program Flagstaff web site. Another RMRS and University of Arizona website on semi-arid and arid watersheds contains a large, searchable bibliography of supporting information from the Beaver Creek watersheds, in the Middle Verde River area. The Verde Watershed Association has a website on the river and normally supports a bibliography of publications. Northern Arizona University also supports several websites on the Verde River as does The Nature Conservancy.

Rocky Mountain Research Station Web Site

RMRS' Verde River web site is: <http://www.rmrs.nau.edu/awa/verde/>.

The Southwest Watershed Team of the AWAE Program has been involved in research on the UVR since 1993. The Team's predecessor, Research Work Unit RMRS-4302, Watersheds and Riparian Ecosystems of Forests and Woodlands in the Semi-Arid West, researched fish populations, riparian vegetation, channel geomorphology, invasive aquatic and plant species, and stream flows. This work resulted in over 62 publications (see the Verde River bibliography), and one of the most comprehensive riparian databases in any of the National Forests in the Southwest. RMRS has invested over \$8 million since 1993 in developing comprehensive information about hydrology and ecology of UVR. Part of the Station's database is an extensive photo collection of on-going work and legacy photography.

Working with its cooperators in the UVR Adaptive Management Partnership (UVRAMP), the Team has been able to provide up-to-date science to help guide the Prescott National Forest's land management decisions. This has been very valuable to the Forest in terms of foregone appeals and litigation. Prescott National Forest staff estimated that the savings to the Forest have been over \$5 million. UVRAMP consisted of the Prescott National Forest, RMRS, and several grazing permittees from allotments along the river. The partnership was open to any organization or agency interested in furthering the understanding of the Verde River ecosystem. UVRAMP was disbanded in 2011.

The objective of the AWAE Team's research has been the understanding of the physical, chemical, and biological influences affecting the native fauna and flora of this important river ecosystem. Current projects include the ongoing seven-site fish monitoring, aquatic non-native predator removal, and invasive plant control and removal.

Verde River Bibliography

The Verde River Bibliography consists of the publications produced by the AWAE Southwest Watershed Team. Publications originating from other entities such as USDI Geological Survey and State of Arizona Universities are being assembled and will form the second part of the bibliography at a later date. Copies of all the publications can be obtained electronically off of the Flagstaff AWAE web site or in hard copy by calling (928) 556-2001, by faxing (928) 556-2130, or by sending regular mail to:

Science Team Leader
Southwest Watersheds Research
Rocky Mountain Research Station
2500 South Pine Knoll Drive
Flagstaff, AZ 86001

Publications and up-to-date information on the status of the UVR Program can also be obtained by calling (208) 373-4351, faxing (208) 373-4391, or by sending regular mail to:

Program Manager
Air, Water, and Aquatic Environments Research Program
Rocky Mountain Research Station
Aquatic Sciences Laboratory
322 East Front Street, Suite 401
Boise, ID 83702

Verde River Bibliography

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Johnson, T.D.; Kolb, T.E.; Medina, A.L. 2009. Do riparian plant community characteristics differ between *Tamarix* (L.) invaded and non-invaded sites on the Upper Verde River, Arizona? Biological Invasions: DOI 10.1007/s10530-009-9658-2.

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Rinne, J.N.; Miller D. 2007. Riparian habitat restoration and native Southwestern USA fish assemblages: A Tale of two Rivers. In: Nielson, J. (ed.) 5th World Fisheries Congress, May 2-7, 2004. Vancouver, B.C.

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Rocky Mountain Research Station and University of Arizona Web Site

The Southwest Watershed Team supports a web site that was developed in cooperation with the University of Arizona, Office of Arid Lands Studies, titled “Semiarid and Arid Watershed Management.” It is available at: <http://www.rmrs.nau.edu/awa/watershed/>.

The web site contains 302 bibliographic entries of the 800+ article bibliography that deal with the Verde River. Descriptions of vegetation of the Verde River ecosystems and other features on past watershed management research by RMRS are also available. Actual watershed data from the Beaver Creek Experimental Watersheds, within the Middle Verde River reach, can be downloaded.

Verde Watershed Association

The Verde River Watershed Association web site contains information on the UVR and hosts a bibliography of UVR publications. It is available at: <http://www.vwa.org/>.

UVR Watershed Issues Web Site

The UVR Watershed Issues web site is available at: <http://upperverdewaterissues.org/>.

The purpose of the organization and web site is to analyze and present objective information about water resources and water resource issues in the UVR watershed. Several reports of interest are available for download.

UVR Issues Reports

- Meyer, W.; Wolfe, E.W. 2007. How we know that ground water in the Big Chino Valley flows into the Verde River. 2 p.
- Meyer, W.; Wolfe, E.W. 2007. Why Big Chino pumping threatens the Verde. 2 p.
- Meyer, W.; Wolfe, E.W. 2006. A plan to mitigate the effect of Prescott’s proposed pumpage from Big Chino Valley on the flow of the Upper Verde River—What needs to be considered. 4 p.
- Wolfe, E.W.; Meyer, W. 2006. Water-resource issues in the Upper Verde Watershed. 5 p.
- Meyer, W.; Wolfe, E.W. 2006. Executive summary of review of the reports C.V./C.F. Ranch Acquisition, Hydrology Report (2004) and Big Chino Ranch Hydrology Study (2005); (both prepared by Southwest Ground-water Consultants, Inc.). 16 p.
- Meyer, W.; Wolfe, E.W. 2006. Review of the reports C.V./C.F. Ranch Acquisition, Hydrology Report (2004) and Big Chino Ranch Hydrology Study (2005); (both prepared by Southwest Ground-water Consultants, Inc.). 59 p.
- Meyer, W.; Wolfe, E.W. 2004. The potential impact on the Verde River of pumping 10,850 acre-feet per year at the CV Ranch, Big Chino Valley. 44 p.
- Meyer, W.; Wolfe, E.W. 2004. Water commitments in the Prescott Active Management Area and implications for the upper Verde and upper Agua Fria Rivers. 11 p.

UVR Watershed Project Bibliography

This bibliography was compiled by Jim Byrkit who was assisted by Bruce Hooper. It is available at: <http://www.vwa.org/documents/verdebib.pdf>.

Of the 1,369 entries in the bibliography, a few that are pertinent to this report follow:

- Baldys, S., III. 1990. Trend analysis of selected water-quality constituents in the Verde River Basin, Central Arizona. U.S. Geological Survey, Water-Resources Investigations Report 90-4128. U.S. Geological Survey, in cooperation with the Arizona Department of Environmental Quality.
- Brock, J.H. 1987. Potential effects of partial water withdrawals from the Verde River on riparian vegetation (section I), and structure of riparian habitats at selected sites along the Verde and East Verde Rivers of central Arizona (section II).” Final Report prepared for U.S. Bureau of Reclamation, Natural Resources Management. Tempe, AZ: Arizona State University.
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- Powell, L.C. 1980. Where water flows: The rivers of Arizona. Flagstaff, AZ: Northland Press: 37-43.

Arizona Geological Survey

The Arizona Geological Survey serves as a primary source of geologic information in the state to enhance public understanding of Arizona’s geological character and resources. It provides technical advice and assistance to Federal, state, and local government agencies. Publications are available at: <http://azgs.az.gov/publications.shtml>.

Some pertinent publications are:

- Hahman, W.R., Jr.; Campbell, A. 1980. Preliminary geothermal assessment of the Verde Valley, Arizona, with a section on hydrology. OFR-80-12, scale 1:250,000, 9 sheets. Text and sheets. 21 p.
- Pearthree, P.A. 1993. Geologic and geomorphic setting of the Verde River from Sullivan Lake to Horseshoe Reservoir. OFR-93-4, scale 1:24,000, 5 sheets. Text and sheets. 25 p.

- House, P.K.; Pearthree, P.A. 1993. Surficial geology of the northern Verde Valley, Yavapai County, Arizona. OFR-93-16, scale 1:24,000, 4 sheets, [1-Clarkdale; 2-Page Springs; 3-Cottonwood; 4-Cornville]. 20 p.
- House, P.K.; Hirschboeck, K.K. 1995. Hydroclimatological and paleohydrological context of extreme winter flooding in Arizona, 1993. OFR-95-12. 44 p.
- House, P.K.; Pearthree, P.A.; Fuller, J.E. 1995. Hydrological and paleohydrological assessment of the 1993 floods on the Verde River, Central Arizona. OFR-95-20. 38 p.
- Pearthree, P.A. 1996. Historical geomorphology of the Verde River. OFR-96-13. 26 p.
- Klawson, J.E. 1998. Paleoflood hydrology and historic flood analysis in the Upper Verde River Basin, central Arizona, OFR-98-5, 93 p.

U.S. Geological Survey

Web-Based Information

USDI Geological Survey has several publications about the UVR available at: <http://pubs.er.usgs.gov/>.

A few pertinent publications are:

- Anderson, M.T.; Woolsey, L.H., Jr. 2005. Water availability for the western United States—Key scientific challenges: U.S. Geological Survey Circular 1261. 85 p.
- Langenheim, V.E.; DeWitt, E.; Wirt, L. 2005. Preliminary geophysical framework of the Upper and Middle Verde River watershed, Yavapai County, Arizona: U.S. Geological Survey Open-File Report 2005-1154. 43 p.
- Langenheim, V.E.; Hoffmann, J.P.; Blasch, K.W.; Dewitt, E.; Wirt, L. 2002. Preliminary report on geophysical data in Yavapai County, Arizona: U.S. Geological Survey Open-File Report 02-352. 29 p.
- Wirt, L. 2005. Hydrologic review of the Drake cement plant project: U.S. Geological Survey Open-File Report 2004-1439. 25 p.
- Wirt, L.; Dewitt, E.; Langenheim, V.E. (eds.). 2005. Geologic framework of aquifer units and ground-water flowpaths, Verde River headwaters, north-central Arizona: U.S. Geological Survey Open-File Report 2004-1411.
- Wirt, L.; Hjalmanson, H.W. 2000. Sources of springs supplying base flow to the Verde River headwaters, Yavapai County, Arizona: U.S. Geological Survey Open-File Report 99-0378. 50 p.

Paulden Gauge

USDI Geological Survey operates the river gauging station at Paulden, Arizona. Its real time and record information can be accessed at: http://waterdata.usgs.gov/az/nwis/uv/?site_no=09503700.

The Nature Conservancy

Since purchasing property in the UVR headwaters, The Nature Conservancy has become much more active in sharing information on the UVR and in supporting conservation activities on the River. Information on The Nature Conservancy activities on the UVR is available at: http://azconservation.org/downloads/data/ecological_implications_of_verde_river_flows/.

Northern Arizona University

Northern Arizona University has been an active participant in UVR research and advocacy through the Ecological Monitoring and Assessment Program and the Watershed Research and Education Program of the Merriam-Powell Center for Environmental Research. Information on these programs can be found at: [http://emaprogram.com/Verde River.asp](http://emaprogram.com/VerdeRiver.asp) and <http://mpcer.nau.edu/>.

Summary and Conclusions

Information on the hydrology, geology, ecology, and management of the UVR can be obtained from a number of web sites that are introduced in this chapter. The Southwest Watershed Science Team, AWAE Program, RMRS web site will contain reciprocal links to all of these sites to provide easy access to UVR information.