

WEB RESOURCES FOR STREAM RESTORATION



SITE MAPS

<http://earth.google.com> - Google Earth

Free, user-friendly program that provides global geographic information. Recent color aerial photography, of varying resolution, available for most areas. Data layers include boundaries, legislative districts, roads, commercial locations, parks and recreation areas, and geographic features. User can mark project locations, print site maps, and share project information with other Google Earth users.

<http://maps.google.com/maps> - Google Maps

Provides street maps and recent color aerial photographs.

<http://nationalmap.gov> - The National Map

Under USGS leadership “provides public access to high-quality, geospatial data and information from multiple partners to help support decisionmaking by resource managers and the public”.

<http://www.pennpilot.psu.edu> - PennPilot

“Online library of digitally scanned historical aerial photographs for the Commonwealth of Pennsylvania.” Easy to use interface where users can download and print aerial photographs dating back to 1931.

<http://www.rootsweb.com/~usgenweb/maps> - United States Digital Map Library

Historical maps useful for evaluating historical drainage patterns and transportation networks.

<http://websoilsurvey.nrcs.usda.gov/app> - USDA’s Web Soil Survey

Online viewing of soil survey maps and reports for user-defined areas.

<http://www.fws.gov/wetlands/data/index.html> - National Wetlands Inventory

Displays Wetlands Inventory data through U.S. Fish and Wildlife Service’s Wetlands Mapper. User can also download data for use in Google Earth or ArcGIS.

DATA FOR GOOGLE EARTH

<http://edna.usgs.gov/watersheds> - Watersheds through Elevation Derivatives for National Application (EDNA)

View United States watersheds and watershed characteristics in Google Earth or internet browser. Data layers include watershed boundaries, streams, elevation, land cover (1992 and 2001), and population.

<http://water.usgs.gov/waterwatch/?m=real&w=kml> - USGS Realtime Streamgage

View locations of active USGS streamgages in Google Earth by state or region. Each location marker states current streamflow, stage height, and flow percentile and provides a link to download all site data.

<http://water.usgs.gov/waterwatch/index.php?m=stategage&w=kml> - USGS Streamgage

View locations of historical and active USGS stream gages in Google Earth by state or region. Each location marker indicates dates of gage activity and provides a link to collected data.

<http://www.gelib.com/usgs-topographic-maps.html>

http://www.gearthblog.com/blog/archives/2006/03/best_topo_map_i.html

View USGS topographic maps in Google Earth.

<http://www.pasda.psu.edu> - Pennsylvania Spatial Data Access (PASDA)

Pennsylvania's official public access to geospatial information allows user to download data for use in GIS applications. Many layers can be viewed in Google Earth,

<http://www.pasda.psu.edu/uci/SearchResults.aspx?originator=&Keyword=&sessionID=525138496200821317486&searchType=mapservice&condition=OR&entry=PASDA>.



STREAM RESTORATION TOOLS

<http://water.usgs.gov/osw/streamstats> - USGS's StreamStats

"A web-based tool that allows users to obtain streamflow statistics, drainage-basin characteristics, and other information for user-selected sites on streams." Currently available for Pennsylvania and Delaware, with New York and New Jersey under implementation.

<http://www.dnr.state.oh.us/soilandwater/water/streammorphology/default/tabid/9188/Default.aspx> - Ohio Department of Natural Resources' STREAM Modules

Provides Excel spreadsheets available for download to aid in stream evaluation, assessment, and monitoring.

<http://wmc.ar.nrcs.usda.gov/technical/HHSWR/Geomorphic> - Regional Hydraulic Geometry Curves

Provides links to published regional curves by physiographic province.

<http://waterdata.usgs.gov/nwis> - USGS's National Water Information System (NWIS)

Supports the acquisition, processing, and long-term storage of water data. Provides stream data (flow and chemical analysis), groundwater levels, and real-time stream gage data.

http://www.wsi.nrcs.usda.gov/products/W2Q/H&H/H&H_home.html - NRCS' Hydraulics and Hydrology

Provides tools and technical references for modeling and understanding stream hydraulics and hydrology.

FLUVIAL GEOMORPHOLOGY AND STREAM RESTORATION HANDBOOKS AND REFERENCE SITES

<http://www.keystonestreamteam.org> - Pennsylvania Keystone Stream Team

Seeks to advance the concepts of natural channel design in Pennsylvania. Provides links to references, the "Natural Stream Channel Design Guidelines for Pennsylvania Waterways" (2007), and current happenings in the field.

http://www.bae.ncsu.edu/programs/extension/wgg/sri/stream_rest_guidebook/guidebook.html - Natural Channel Design Handbook

Prepared by North Carolina Stream Restoration Institute, covers fluvial processes, classification, assessment, design, and stabilization techniques.

http://www.mde.state.md.us/Programs/WaterPrograms/Wetlands_Waterways/documents_information/guide.asp - Maryland Waterway Construction Guidelines

Provides "recommended details for approaches frequently encountered in the waterway construction process". Guidelines cover temporary instream construction measures, slope protection and stabilization techniques, channel stabilization and rehabilitation techniques, and stream crossings.

<http://wdfw.wa.gov/hab/ahg/ahguides.htm> - Aquatic Habitat Guidelines: An Integrated Approach to Marine, Freshwaters, and Riparian Habitat Protection and Restoration

Prepared by Washington Department of Fish and Wildlife, guidelines include stream habitat restoration and streambank protection measures.

<http://www.vtwaterquality.org/rivers.htm> - Vermont's Geomorphic Assessment Protocols

Provides technical assistance on fluvial geomorphology, riparian corridors, and flood hazard management.

<http://www.dfg.ca.gov/fish/Resources/HabitatManual.asp> - California Salmonid Stream Habitat Restoration Manual

Discusses technical methods to inventory and restore stream habitat. Though directed at salmonid habitat restoration, it is applicable to the larger stream restoration community.

<http://www.epa.gov/warsss> - Watershed Assessment of River Stability & Sediment Supply (WARSSS)

A "technical procedure for water quality scientists to use in evaluating streams and rivers impaired by excess sediment".

<http://www.stream.fs.fed.us/publications/PDFs/RM245E.PDF> - Stream Channel Reference Sites: An Illustrated Guide to Field Technique, Harrelson et al

"A guide to establishing permanent reference sites for gathering data about the physical characteristics of streams and rivers." Includes procedures for selecting and mapping a site, identifying bankfull, surveying a stream's longitudinal profile and cross-section, measuring stream flow, and measuring bed material.



FLUVIAL GEOMORPHOLOGY AND STREAM RESTORATION HANDBOOKS AND REFERENCE SITES (CONT.)

<http://www.stream.fs.fed.us> - USDA Forest Service STREAM TEAM

“A national technical center chartered to improve knowledge of stream systems and watershed hydrology, develop operational tools and technology, provide training and technical support, and identify research needs for the purpose of coordinating development of needed technology to secure favorable conditions of water flows.” Includes publications, technology tools, and links to other sites of interest.

<http://www.ok.nrcs.usda.gov/technical/Manuals/efh.html>- USDA’s “Engineering Field Handbook”

“Provides guidance in the use of basic engineering principles, techniques, and procedures for the planning, design, installation, and maintenance of soil and water conservation practices.” Chapters include streambank protection (16), soil bioengineering (18), and wetland determination (19).

<http://www.wildlandhydrology.com/html/references.html> - Wildlands Hydrology

Provides links to numerous scholarly publications on stream assessment, classification, and restoration and fluvial geomorphology.

<http://www.stormwatercenter.net> - The Stormwater Manager’s Resource Center

A wealth of information on managing urban watersheds and stormwater from techniques to assessment protocols to model ordinances.

NATIVE PLANTS

http://na.fs.fed.us/pubs/silvics_manual/table_of_contents.shtm - “Silvics of North America”

Online publication describing habitat, climate, soils, associated forest species, life history, uses, and genetics of 200 hardwood and conifer trees in North America. Species listed by both common and scientific name.

<http://plants.usda.gov> - PLANTS Database

“Provides standardized information about the vascular plants, mosses, liverworts, hornworts, and lichens of the U.S. and its territories.” Includes photographs, distribution, and growth characteristics of native and invasive species.

<http://www.wildflower.org/plants> - Native Plants Database

Catalogue of over 6,500 plants native to the United States. User can search by state, habit, moisture and light requirements, and/or bloom time and color.

<http://vegspec.sc.egov.usda.gov/vegSpec/index.jsp> - USDA’s VegSpec

“Web-based decision support system that assists land managers in revegetation planning and design. Uses soil, plant, and climate data to select plant species that are (1) adapted to a specific site, (2) suitable for the selected practice (treatment), and (3) appropriate for the purposes and sub-purposes for which the planting is intended.”

<http://www.bhwp.org/psi/index.html> - Bowman’s Hill Wildflower Preserve’s Plant Stewardship Index Calculator

“Analytical tool for land conservationists, land managers, and property owners for conducting ecological assessments.” Provides measure for a site’s naturalness and how land management practices are affecting a site over time. Applicable for New Jersey and the Piedmont region of Pennsylvania.

<http://delawariverkeeper.org> – Delaware Riverkeeper Network

Fact sheets are available on a variety of topics including native plants and “green” lawns. “Annual Native Plant Sale” provides a catalogue of native ferns, grasses, and perennials along with light and moisture requirements, resistance to deer browse, bloom time, and distinguishing characteristics. A limited number of native shrubs and trees are included; however the focus is on herbaceous species.



INVASIVE SPECIES

<http://www.invasivespeciesinfo.gov> - USDA's National Invasive Species Information Center

Provides a myriad of resources for identifying and controlling invasive aquatic species, plants, animals, and microbes.

<http://www.dcnr.state.pa.us/forestry/invasivetutorial/index.htm> - Invasive Exotic Plant (IEP) Management Tutorial

A "one-stop-shop" for natural resource managers interested in organizing on-the-ground efforts to prevent, manage and control IEP's.

<http://www.invasive.org/eastern> - Invasive Plants of the Eastern United States

Provides "identification characteristics, distribution, and control options for 97 tree, shrub, vine, grass, fern, forb, and aquatic plant species that are invading the eastern United States".

ECOLOGY AND ENDANGERED SPECIES

<http://www.delawareestuary.org/NVCS> - National Vegetation Classification Systems of the Delaware Estuary

"Describes 35 ecological systems and 185 natural community types known to occur in the region."

<http://www.ser.org> - Society for Ecological Restoration

A comprehensive web portal on ecological restoration. Includes case studies, databases, scientific papers, resource and expertise directories as well as podcasts and webcasts on a wide range of topics related to ecological degradation, conservation and restoration.

<http://www.natureserve.org/explorer> - NatureServe Explorer

"Authoritative source for information on more than 70,000 plants, animals, and ecosystems of the United States and Canada. Includes particularly in-depth coverage for rare and endangered species."

<http://www.naturalheritage.state.pa.us> - Pennsylvania Natural Heritage Program

Provides information on species, plant communities, and geologic features of concern in the state of Pennsylvania. The PNDI Project Planning Environmental Review determines potential impacts on species of concern at a user-defined project site. PNDI review is required for state permitting.

<http://www.state.nj.us/dep/parksandforests/natural/heritage/countylist.html> - New Jersey Rare Species and Natural Community Lists

Provides lists of rare species and natural communities for New Jersey by county.

** This is not a comprehensive list of web resources pertinent to stream restoration. Many other useful sites exist, and new resources become available regularly.

✎ Prepared by Delaware Riverkeeper Network's Restoration Program; www.delawariverkeeper.org

The Delaware Riverkeeper is the voice of the River and its streams, championing their rights as living members of our community, and is leader for the Delaware Riverkeeper Network. The Delaware Riverkeeper and the Delaware Riverkeeper Network stand as vigilant protectors and defenders of the River, its tributaries and its watershed committed to restoring the natural balance where it has been lost and ensuring its preservation where it still stands.

DELAWARE RIVERKEEPER NETWORK

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