Values and Challenges in Urban Ecology

Fourteen "vestiges of greater natural landscapes" punctuate the metropolitan area of Washington, D.C. These so-called remnant parks in the National Capital Region protect significant natural resources, which are threatened daily by the aftermath of human development. The booklet, *Values and Challenges in Urban Ecology*, epitomizes these parks: small in scale, lovely to behold, and brimming with information forewarning the effects of urban growth. Under the guidance of the Urban Ecology Research Learning Alliance—the research leaning center for the National Capital Region—students from the Department of Art at Shepherd University, West Virginia, designed this graphically pleasing publication (see photo). Researchers and resource managers from parks, universities, environmental companies, and the U.S. Geological Survey contributed material, which staff at the Center for Urban Ecology edited. The seven science stories highlighted in this booklet range from the endangered habitat of tiny, subterranean, shrimp-like amphipods to the all-too-pervasive impervious surfaces that accompany urbanization. The topics of four of these stories have been reported in past issues of *Natural Resource Year in Review*: Wells and Ingram (2004), Gorsira (2005), Noojibail (2005), and

Orr (2006). However, all of the studies reported in this booklet are fresh and engaging, and many propose future research based on the presented findings.

This publication inspires thoughts of scientific and outreach possibilities. Consider some examples. First, not only is obtaining genetic information crucial for management of brook trout in Catoctin Mountain Park, Maryland (e.g., expanding the range of existing populations or restoring brook trout after an environmental disaster), studying DNA variation has revealed a series of phylogeographic breaks that correspond to major drainages and may indicate local (or regional) adaptive significance and diverging evolutionary pathways. A present-day example of evolution at work in the National Capital Region, these trout are like Darwin's finches. Second, historical data used to restore the wetland area of Stuart's Hill in Manassas National Battlefield Park, Virginia, hearken back to Civil War history. The same maps that helped restore wetlands in 2004 helped clear Major General Fitz John Porter's name during his retrial in 1878. Researchers also used aerial photos from the 1930s and a developer's survey from 1988 during restoration. Third, an investigator used data compiled in 2004 from satellite images, which show impervious surfaces, as a proxy for estimating the health of watersheds in parts of Maryland, Virginia, West Virginia, and the District of Columbia. The hypothesis is the greater the percentage of impervious surface area, the poorer the watershed condition. Data from water-quality monitoring in 2006 will quantify this relationship. Fourth, the story about odonates described in the booklet makes readers remember the meaning of "odonate"—dragonflies and damselflies. A single researcher meticulously conducted an intensive inventory of odonates throughout the Potomac River corridor. Though Richard Orr (Versar, Inc., Columbia, Maryland) had the assistance of 23 volunteers, the identification of 101 species—45 of which have conservation importance due to rarity—and the discovery of the Potomac snaketail (a new species of *Ophiogomphus*) is impressive, to say the least.

As reported in this publication, "Understanding the complex working of urban ecosystems relies on multidisciplinary approaches." The Center for Urban Ecology, for which this booklet was produced, houses a team of scientists that addresses park and regional needs through programs including air resources, ecology, exotic plants, geology and soils, horticultural landscapes, inventory and monitoring, pest management, rare species, vegetation, water resources, and wildlife. The Chesapeake Watershed Cooperative Ecosystem Studies Unit, also part of the center, facilitates collaboration among the center's team, outside researchers, and other governmental entities. As part of this team, the Urban Ecology Research Learning Alliance supports these research efforts and communicates their results; *Values and Challenges in Urban Ecology* is a notable example.

Copies of *Values and Challenges in Urban Ecology* may be obtained through Giselle Mora-Bourgeois, the science education coordinator at the Center for Urban Ecology. She can be reached at 202-342-1443 ext. 220 or giselle_mora-bourgeois@nps.gov.

References

Gorsira, B. 2005. Wetland and historic landscape restoration at Manassas National Battlefield Park. Page 62 *in* J. Selleck, editor. Natural Resource Year in Review—2004. D-1609 (April 2005). National Park Service, Denver, Colorado, and Washington, D.C. Available at http://www2.nature.nps.gov/YearinReview/yir2004/04_D.html (accessed 10 January 2007).

Mora-Bourgeois, G., editor. 2006. Values and challenges in urban ecology. D-67 (May 2006). National Park Service, Urban Ecology Research Learning Alliance, Washington, D.C.

Noojibail, G., and B. Conway. 2005. Evaluating ecological services and replacement costs of the urban forest in our nation's capital. Pages 84–85 *in* J. Selleck, editor. Natural Resource Year in Review—2004. D-1609 (April 2005). National Park Service, Denver, Colorado, and Washington, D.C. Available at http://www2.nature.nps.gov/YearinReview/yir2004/06_E.html (accessed 10 January 2007).

Orr, R. 2006. Volunteers collect dragonfly cast skins for survey along Potomac River. Pages 109–110 *in* J. Selleck, editor. Natural Resource Year in Review—2005. D-1755 (April 2006). National Park Service, Denver, Colorado, and Washington, D.C. Available at http://www2.nature.nps.gov/YearInReview/06_G.html (accessed 10 January 2007).

Wells, E. F., and D. Ingram. 2004. Restoring federally endangered harperella along waterways in the National Capital Region. Pages 89–90 *in* J. Selleck, editor. Natural Resource Year in Review—2003. D-1533 (March 2004). National Park Service, Denver, Colorado, and Washington, D.C. Available at http://www2.nature.nps.gov/YearinReview/yir2003/07_I.html (accessed 10 January 2007).

—Katie KellerLynn