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Civic Ecology: Linking Social and Ecological Approaches in Extension

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Abstract: Civic ecology refers to the philosophy and science of community forestry, community gardening, watershed enhancement, and other volunteer-driven restoration practices in cities and elsewhere. Such practices, although often viewed as initiatives to improve a degraded environment, also foster social attributes of resilient social-ecological systems, including volunteer engagement and social connectedness. Civic ecology education refers to the learning, as well as the social and ecosystem outcomes, that occur when young people and other novices engage alongside experienced adults in civic ecology practice. As Extension considers its role in civic ecology education, there will be opportunities for both participation and leadership.

The environmental philosopher Andrew Light describes an emerging civic environmentalism, in which urban residents engage in restoring nature in cities. Local groups enhancing the Bronx River watershed or the forest canopy in New Orleans provide examples of this movement. Unlike traditional environmentalism, which focuses on preserving pristine wilderness, civic environmentalism regards humans as an integral part of ecosystems (Light, 2003). A question for Extension is how we might better understand civic environmentalism, in order to help foster its positive ecological and social outcomes in cities and other human-dominated landscapes.

Whereas Light talks about an environmental movement, we propose the term "civic ecology" to reflect the linked social and ecological systems implications of participatory environmental restoration and management initiatives in cities and elsewhere. Civic ecology emerges from the actions of local residents wanting to make a difference in the social and natural environment of their community and is recognizable when both people and the environment benefit measurably and memorably from these actions.

Civic Ecology: Philosophy, Science, and Practice

Civic ecology is a philosophy, a science, and a practice. As a philosophy, it draws from the conservation ethic of Aldo Leopold, who recognized "(t)hat humans are part of the landscape, have always been so, and that, if managed, do not have to be viewed as destructive agents" (Flader & Callicott, 1991:302). We are particularly interested in how the Leopold conservation ethic is expressed by urban dwellers.

As a science, civic ecology reflects the work of the Resilience Alliance (2009) scholars, who examine the role of linked social and ecological factors, including social capital and biodiversity, in a system's ability to sustain itself in the face of change (Walker & Salt, 2006). Civic ecology also draws on notions of biophilia (Wilson, 1984) and research on the psychological benefits of spending time in nature (Kuo, Sullivan, Coley, & Brunson, 1998). We seek to expand this work to look not just at individual outcomes, but also to examine the role of humans engaging with nature in fostering community well-being and in restoring communities torn apart by natural disasters, ethnic conflict, and other perturbances (Tidball & Krasny, 2007).

Examples of civic ecology practices include community gardening, community forestry, watershed enhancement, and similar forms of small-scale, citizen-led restoration. In the 1970's, local residents, concerned about the decline of the social fabric and environment in NYC, converted vacant lots to public spaces where people still grow food, enjoy nature, socialize, and celebrate diverse cultures (Lawson, 2005). For over 25 years, volunteers have restored savannah habitats of the "Chicago Wilderness" (Stevens, 1995). Similarly, people plant trees in the aftermath of Hurricane Katrina (Tidball & Krasny, 2008) and re-envision the fenced-off Los Angeles River as a natural resource (Gottlieb, 2007). In rural areas, also, citizens take it upon themselves to restore streams and wetland habitat through voluntary associations such as Trout Unlimited and Ducks Unlimited.

A critical aspect of civic ecology practice is the social or adaptive learning that occurs through engaging in restoration. Social learning among groups restoring a watershed may result from an interplay among three elements: context formed by institutions and physical system, process formed by management practices, and outcomes that change the original context (Pahl-Wostl, Craps, DeWulf, Mostert, Tabara, & Taillieu, 2007). The story of volunteer efforts to restore degraded prairie and savannah habitats in Chicago provides a case study of how, through a series of informal planting and land management experiments (e.g., controlled burns to suppress invasive species), civic ecologists learned how to enhance the ecosystem services provided by urban open space (Stevens, 1995).

Civic Ecology Education

For civic ecology practices to endure, they must continue to integrate new participants, including young people. Civic ecology education refers to the learning and to the social and ecological outcomes that occur when youth and others become engaged in civic ecology practices.

Because civic ecology education involves integration of novice learners into communities of more experienced civic ecologists, socio-cultural theories that emphasize learning as participation in communities of practice are relevant (Wenger, McDermott, & Snyder, 2002). In the case of civic ecology, adult community foresters or watershed restorationists constitute the community of practice. Young people may first participate "peripherally" by observing how adults plant and care for trees. Eventually they become "full participants" by planting and caring for trees themselves (Rogoff, Mejia Arauz, Correa-Chavez, & Angellilo, 2003). In so doing, they not only learn about trees and the environment, but also demonstrate conservation behaviors.

Thus, socio-cultural learning theories focus on learning *as* participation. They suggest an alternative to education that views learning as preparation for authentic participation. For example, classroom environmental education may seek to change behaviors by teaching children about saving water, whereas civic ecology education would engage young people in conservation practices in local watersheds.

Ecological views of learning that focus on the interaction of students with their environment and on the resultant changes in both students and the environment (Barab & Roth, 2006) are particularly useful in thinking about learning as participation in a community of practice. For example, in the Garden Mosaics education program, youth work alongside adult community gardeners and in so doing learn about plants, planting practices, and the gardeners' diverse cultures. At the same time, they develop social connections with the adult gardeners, thus changing their immediate social system. They also enhance the local environment through creating new gardens (Krasny, Tidball, & Najarian, 2006). Learning thus can be viewed not only as an individual phenomenon, but also in relation to the larger social-ecological system (Tidball & Krasny, 2009).

Extension's Role

As Extension and youth development professionals working in rural communities, we have always valued learning by experience. Drawing on our agricultural and natural resources traditions, we also have an inherent understanding of the connectedness of social and ecological systems. Further, Extension has a history of participatory, "asset-based" approaches to its work in communities, for example, through setting up demonstration days to help spread farmers' innovative practices.

Civic ecology and civic ecology education suggest a number of ways in which Extension can apply these traditions of experiential learning, conservation, and participation to work in cities and elsewhere.

For example, many city mayors have recently launched tree-planting initiatives. In NYC, Cornell Cooperative Extension and Cornell University have joined forces with government and non-profit groups supporting Mayor Bloomberg's MillionTreesNYC and are conducting research on practices for engaging local residents in tree planting, as well as helping to plan the overall research agenda.

Similarly, community gardening is a growing movement nationwide, not only in cities but also in small towns. Through Garden Mosaics, Cornell works with 4-H and other organizations to engage young people in community gardening alongside adult gardeners and develops curriculum materials to support science learning within multi-cultural contexts (Krasny, Tidball, & Najarian, 2006; Krasny, Tidball, & Sriskandarajah, 2009; Krasny & Tidball, 2009). Recently we have expanded this work to the more rural military communities around Fort Drum, NY (Lang, 2009).

In another rural example, we recently launched the Civic Ecology Recreation project in cooperation with the Cornell Human Dimensions Research Unit, which will apply what we have learned about the individual, community, and ecosystem outcomes of civic ecology to ongoing work with hunters and anglers. Similar to urban community gardeners and community foresters, these rural recreationists see a connection between spending time in nature and the civic life of their community, for example, through hunting to reduce populations of overabundant species and through stream restoration. Ample opportunities exist for engaging 4-H youth in civic ecology practices in both rural and urban communities.

As Extension considers its role in civic ecology and civic ecology education, there will be opportunities for both participation and leadership. As a participant, for example in the MillionTreesNYC initiative, Extension is able to contribute research expertise, both in the social sciences related to participatory processes and in the biophysical sciences related to soils and tree health. As a leader, Extension has the opportunity to develop

new components, for example a 4-H youth aspect to a Trout Unlimited stream restoration or an urban community gardening program.

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