

# Extending the Locavore Movement to Wild Fish and Game: Questions and Implications

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**ABSTRACT** The locavore movement presents an opportunity to educate citizens about the nutritional and culinary benefits associated with consumption of wild fish and game, as well as demonstrate the benefits and value of hunting and fishing activities. An integrated research and extension program focused on procuring, preparing, and eating wild fish and game provides further opportunities to understand how actions such as participation in hunting, fishing, and other related outdoor recreation contribute to society and to the rest of the environment. Further, learning that can occur from an extension program that is nested in a stewardship or resource management practice, such as “locavore hunting and fishing,” interacts with a larger social–ecological system. Such a program can address numerous civic and public well-being concerns facing society, including an increasing lack of nature contact, a growing health crisis due to diet and inactivity, a decline in hunting and fishing (which create the revenue streams for habitat and wildlife management), and diminishing availability of high-quality, local foods due to economic concerns.

In 2007, the New Oxford American Dictionary selected “locavore” as the “Word of the Year” (Sorrentino, 2008). The emergence of this word and its sudden increase in popularity and usage referencing a local food movement correspond with the emergence of a social movement of the same name, the “locavore movement” (Coit, 2008; Starr, 2010; DeLind, 2011; Ikerd, 2011). This movement is said to encourage “...consumers to buy from farmers’ markets or even to grow or pick their own food, arguing that fresh, local products are more nutritious and taste better. Locavores also shun supermarket offerings as an environmentally friendly measure, because shipping food over long distances often requires more fuel for transportation” (Appelwick, 2007).

Despite locavores’ conscientious pursuit of healthy, local food, it is rare to find hunting and fishing, two activities steeped in ancient local food traditions, directly linked to the locavore movement. However, according to Chuck Terhark of *Twin Cities METRO* magazine “...it’s only a matter of time before the first-time gardener, ecstatic over the bounty of food available in her own backyard, will begin to eye the pesky squirrels and rabbits in her realm with renewed interest. She—for the gardener is most often female, although male numbers are shooting up—will consider, for perhaps the first time in her life, hunting” (Terhark, 2009). According to Ben Zimmer, editor for American dictionaries at Oxford University Press, “The word ‘locavore’ shows how food-lovers can enjoy what they

eat while still appreciating the impact they have on the environment...it’s significant in that it *brings together eating and ecology in a new way*” (Appelwick, 2007, emphasis added). This link between eating and ecology presents opportunities for research and extension.

Here we will briefly describe the background of land-based movements such as the locavore movement, and discuss how such movements can be associated with civic ecology. Then we will describe a civic ecology extension program in New York, and show how linkages between eating and ecology can yield research and extension opportunities linking hunting and fishing with the locavore movement (Fig. 1). Such a program may foster “actions of local residents wanting to make a difference in the social and natural environment of their community” where “both people and the environment benefit measurably and memorably” (Krasny and Tidball, 2010).

## Background

The locavore movement has roots in the earlier land-based and organic foods movements of the 1960s counterculture. The locavore movement may be considered a part of a larger contemporary alternative food movement that includes notions such as “civic agriculture” (Lyson, 2004) and represents alternative food markets that maintain themselves through civic engagement (DuPuis and Gillon, 2009). Civic agriculture is said to widen the scope of agriculture-related concerns, moving away from a strictly mechanistic focus on production and capital efficiency, and toward a more holistic reintegration of people and place (DeLind, 2002).

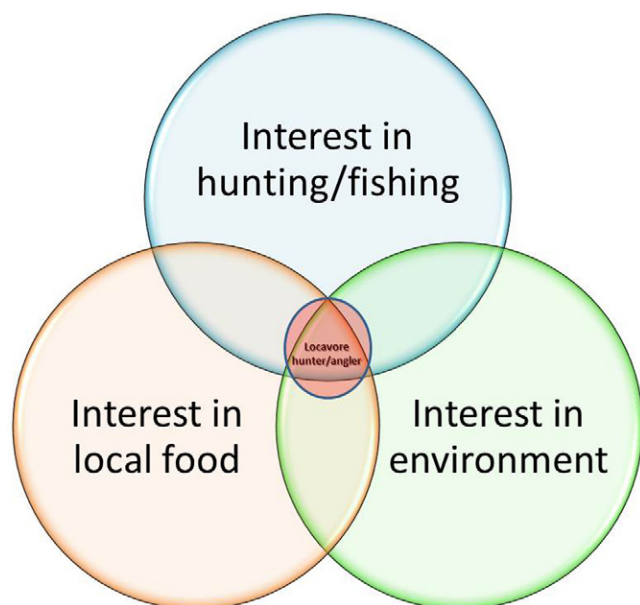
Distinct from food movements per se, yet sharing some similar characteristics, “landcare” is another land-based sustainability movement of interest. This international movement of citizens, landowners, and professional land managers, including conservation biologists, are working together to care for the land in a way that produces a broad range of improved economic, social, and environmental conditions, referred to as the triple bottom line (Robertson, 2008). As such, landcare contributes to the science and

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**Fig. 1. Diagram depicting overlap of motivations toward hunting and fishing and the locavore movement.**

practice of conservation biology, linking biodiversity goals to positive economic and community development objectives (Woodhill, 2002), including food security.

Neither the landcare movement nor the locavore movement currently address the role of wild fish and game as food, or the management of fish and game stocks as food in their visions for greater sustainability in land use. This point was borne out by a recent *New York Times* op-ed piece that decried the fact that “the literature of localism neglects the management and harvest of wildlife” and encouraged the hunting community to “push a new public image based on deeper traditions: we are stewards of the land, hunting on ground that we know and love, collecting indigenous, environmentally sustainable food for ourselves and our families” (Rinella, 2007).

### **Civic Ecology and the Locavore Movement**

How can we understand the locavore movement and its claims that it might bring “eating and ecology together in new ways,” as mentioned above? After all, “attention to food reveals our bodies as complex assemblages inexorably implicated in other assemblages—not only the molecular assemblages that organize nutrition and ecology, but industrial assemblages of production and distribution, economic assemblages of labor and exchange, and cultural assemblages of cuisine and class” (Probyn, 2000; Lavin, 2009). One way is to think about participation in the locavore movement specifically through hunting, fishing, and gathering, an example of “civic ecology” that reflects this important systems-within-systems paradigm.

Civic ecology (Tidball and Krasny, 2007; Krasny and Tidball, 2012) is a philosophy, a science, and a practice (Krasny and Tidball, 2010). As a philosophy civic ecology rests upon 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 and Callicott, 1991, p. 302). As a science, civic ecology reflects the growing body of work from the Resilience Alliance (2010) and the

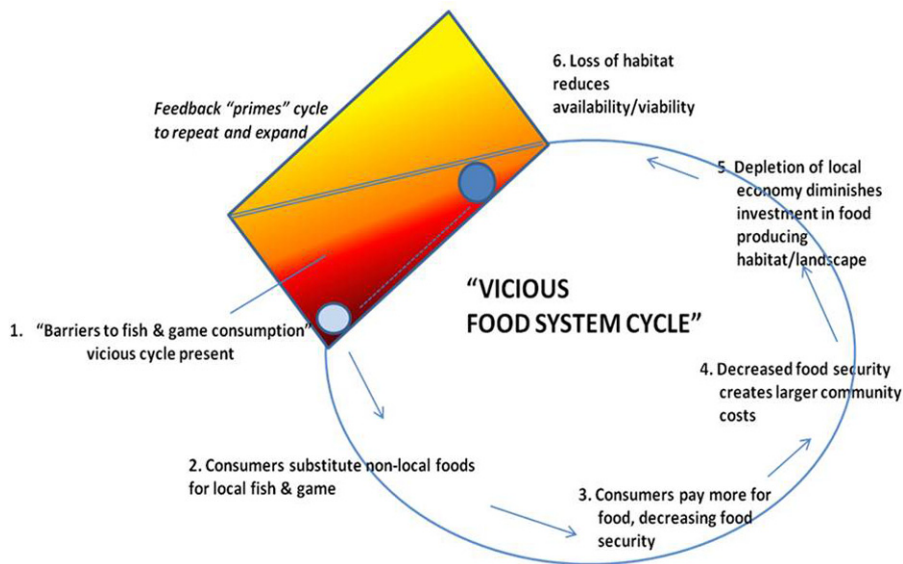
Stockholm Resilience Center (2010) scholars, who study the role of linked social and ecological factors, including social capital and biodiversity, in a system’s ability to sustain itself in the face of surprise or change (Walker and Salt, 2006). Civic ecology also draws on biophilia theory (Wilson, 1984, 1993) and on psychological research showing human benefits of interaction with nature (Kuo et al., 1998). We seek to expand this work to look not just at individual human outcomes, but also to examine the role of humans engaging with nature in fostering community well-being and enhancing habitats and landscapes that provide ecosystem services. Examples of civic ecology practices include community gardening, community reforestation, watershed enhancement, and similar forms of small-scale, citizen-led restoration and nature interaction (Krasny and Tidball, 2010), and as is presented here, civic-minded hunting and angling as represented by the locavore hunter or angler.

Civic ecology thinking requires that, rather than starting with an assumption that humans act primarily to degrade more “natural” ecosystems, we start with assumptions about social-ecological systems that are in jeopardy or already somewhat compromised. Recent work on urban environmental stewardship in the United States (Svendsen and Campbell, 2008; Tidball et al., 2010) and Europe (Barthel et al., 2005; Ernstron et al., 2008; Wals and van der Waal, 2013) examines the actions taken by humans at a local scale to enhance ecosystem services. Here we expand this thinking and apply it to fundamental provisioning, such as represented by alternative food systems like the locavore movement (Fig. 2).

People’s participation in hunting, fishing, and other related outdoor recreation simultaneously procure food while *learning* about and *doing* adaptive management of other species and landscapes. Can this participation be viewed as a system of interactions among learners and their social and bio-physical environment that is beneficial to both society and to the rest of the environment?

We think that learning can occur within an extension program associated with a stewardship or resource management practice, such as “locavore hunting and fishing,” which is in turn nested in and interacts with a larger social-ecological system (c.f., Wimberley, 2009). We see the potential of such ecological interactions to address numerous civic concerns facing society, including a lack of nature contact (Louv, 2005) and loss of ecological identity (Tidball and Stedman, 2013), a growing health crisis due to diet and inactivity (Rowe et al., 2011), a decline in outdoor recreation participation, especially hunting and fishing, which create the revenue streams for habitat and wildlife management (Heberlein, 1991), and diminishing availability of high quality foods due to economic concerns (Seligman et al., 2010). Such civic-ecological interactions within and across systems take the form of various types of drivers, feedbacks, and outcomes related to ecosystem services, human health and well-being, and policy.

For example, a locavore white-tailed deer hunter is simultaneously: (1) participating in alternative food markets (influencing policy and exemplifying environmental stewardship behaviors); (2) achieving greater health benefits, both physically in terms of exercise (see for example Association of Fish and Wildlife Agencies, 2010) and nutritionally should s/he



**Fig. 2. Theorized vicious food system cycle invigorated by barriers to local wild fish and game consumption.**

harvest an animal and consume it (Tidball et al., 2014); (3) increasing nature contact, which leads to greater well-being (Association of Fish and Wildlife Agencies, 2010), greater stewardship (McMullin et al., 2007), and arguably greater community resilience (McMullin et al., 2007); and, importantly (4) actively participating in the management of the ecosystem, especially where white-tailed deer numbers are exceedingly high, presenting multiple public health, public safety, and ecological threats (DeNicola et al., 2000). This example is not limited to hunting white-tailed deer. One can think of many similar examples such as Canada geese, yellow perch, snow geese, non-native species such as brown trout in protected native trout waters, and so on. A recent book goes so far as to popularize the notion of targeting invasive species as a food strategy (see Landers, 2012). However, there are some species that are at risk of being over harvested or live in polluted waterways making them unsafe to consume. Hunters and anglers should refer to their local environment and conservation laws about what species are legal to hunt, when, where, how, and how many, and consider in these cases catch-and-release practices or voluntary self-limiting bag limits.

### The Seneca Wild Harvest Table Program

Though it may not seem easy to get locavores interested in hunting, or conversely, to get hunters interested in the locavore movement, especially given historical tensions among the hunting culture regarding perceptions and implications of the 1960s counter-culture roots of the locavore movement, and other social and demographic factors (Heberlein, 1991), in New York, these concerns are creatively being addressed through a Cornell Cooperative Extension (CCE) project called The Wild Harvest Table (<http://wildharvesttable.com>), which began in the Seneca County Cornell Cooperative Extension Association (Fig. 3).

Seneca County is nestled in the Finger Lakes between Seneca and Cayuga Lakes in upstate New York. The mixed hardwood and agricultural landscapes in proximity to such large and clean lakes and their tributaries makes for a unique and bountiful fish and wildlife situation. Situated in the Atlantic Flyway, Seneca County boasts impressive numbers of migratory waterfowl, including many species of ducks, Canada geese, and snow geese. The county is predominately agricultural, which provides for a healthy white-tailed deer population and small mammals, and increasingly, larger



**Fig. 3. Representation of the homepage of the Wild Harvest Table website.**



predators such as coyote and black bear. The boundary for black bear hunting was extended to include portions of Seneca County in 2008. Seneca County has approximately 21,250 acres (8,600 hectares) open to public hunting.

In addition to excellent hunting opportunities, Seneca County offers high quality fishing possibilities, including brown trout, rainbow trout, lake trout, Atlantic salmon, bass, catfish and bullhead, walleye, perch, northern pike, chain pickerel, and pan fish. Ice fishing extends the fishing season throughout most the year.

We recognized that wild fish and game are relatively abundant in Seneca County, New York, and play a role in the diets of some local sportsmen and their families, but fish and game are often overlooked as a local food resource and component of a nutritious diet (Tidball and Tidball, 2009). Recognizing this information gap, Seneca County CCE, in consultation with Cornell's Department of Natural Resources, piloted an educational web resource for seasonal fish and game recipes, nutrition information, regulations, and health and consumption research and guidelines. The idea was to begin the process of investigating linkages between fish and game consumption and food security for low-income residents in Seneca County and barriers to game consumption.

In recognition and celebration of the culinary bounty that Seneca County's fish and game resources represent, Moira Tidball initiated a web resource in January of 2009 that offers timely recipes and information based on fish and game that is currently or soon to be in season. Articles and recipes are archived by title and indexed by subject such as: game/fish species, menu category (e.g., soup, appetizer, main course), and nutrition benefit (e.g., low fat, good source of iron, etc.). Comments are allowed and questions are answered weekly. The website contains links to other cooperative extension, state, federal, and related websites in order to maximize potential extension and outreach opportunities. In the 9 months following its launch, the website received 1458 unique visitors, of which 211 persons returned to use the website multiple times (data from Google Analytics).

## Research and Extension Questions and Opportunities

In 2008, members of the Department of Natural Resources at Cornell began exploring the question of how outdoor recreation could be increased through inclusion of activities not traditionally associated with recreation, and could be understood to contribute to community resilience (c.f., USDA funded Federal Formula Funds project "Managing Natural Resource Recreation for Resilient People, Communities, and Ecosystems"). Around the same time, Moira Tidball was hired as the human ecology resource educator in Seneca County Cornell Cooperative Extension. Together the authors created the Seneca County Wild Harvest Table extension web-based resource. In the process of creating this program, a number of important extension and research questions emerged.

This web-based outreach tool has objectives of: (1) educating citizens of New York about the benefits and value of hunting and fishing activities, as well as (2) educating the citizens of New York about the nutritional benefits and culinary tips for preparing wild-caught fish and game.

We are pursuing integrated research questions from at least three fields, including natural resources, community

nutrition, and food science, asking what is the relationship between food preferences regarding wild fish and game, and hunter and angler recruitment and retention, including both female and urban sportspersons? What is the importance of wild fish and game consumption to food security in New York State? We hope to identify and address technical limitations that exist for consumption of wild fish and game, such as the lack of nutritional analysis about many wild fish and game species.

Initial research and extension results of this work include: (1) a website that links hunting and fishing with nutrition and culinary traditions and is updated regularly, building from the successful Seneca County CCE model, (2) nutritional information for wild fish and game species that can be accessed by hunters and anglers and added to USDA and FDA food analysis databases (Tidball et al., in press) (e.g., brook trout was added to the USDA National Nutrient Database for Standard Reference in 2013 through our work, and more species will be added in 2014), (3) publications that update outmoded or out-of-print fish and game processing and preparation materials, while leveraging current interest in local, sustainable activities and foods, and (4) the introduction to and promotion of hunting and fishing through hands-on workshops.

Additional very initial suggestions can be made from the data collected and analyzed thus far, but must be accompanied with strong caveats regarding the preliminary and inconclusive nature of the data and analysis. To address the emerging questions stimulated by the launch of the web-based outreach tool, focus groups are being convened. Thus far, 146 participants have engaged, ranging from youth to seniors, equally split between male and female, mostly white (which follows Seneca County demographics). Anecdotal evidence suggests that the number of people interested in hunting and local game consumption is increasing slightly. Through initial interpretation of interview data and program focus group evaluations, as well as monitoring use of the website, we are detecting a possible trend toward a growing interest in consumption of game meat and wild fish and/or interest in hunting and fishing among locavores, consistent with what appears to be occurring as related by the popular press. Also, regarding food insecure members of the population, initial interview data from a small sample set ( $n = 10$ ) in Seneca County indicates venison is a significant protein source for limited income persons living in a rural community with access to the meat either via hunting or through venison donation programs.

A number of additional research questions are emerging as a result of this work. For example, how might this work contribute to the long-term objectives of: (1) the study and better understanding of family and community food decision-making related to the acquisition, transformation/preparation, service, consumption, and disposal of wild fish and game to improve the scientific understanding of changing family food and eating practices (Gillespie and Johnson-Askew, 2009); (2) the study of the social and ecological contexts (including natural, social, cultural, and human capital) in which decisions are made about consumptions of wild game and fish and the interactions of these contexts with family decisions about consumption of game and fish; and (3) the study of linkages between game-meat consumption and attitudes toward hunting and fishing (Ljung et al., 2012).

## Conclusions

The locavore movement presents an opportunity to educate citizens about the benefits and value of hunting and fishing activities, as well as the nutritional and culinary benefits and values of wild fish and game. An integrated research and extension program focused on procuring and eating wild fish and game—such as that conducted in Seneca County, New York—provides research opportunities to better understand how participation in hunting, fishing, and other related outdoor recreation contribute in significantly beneficial ways to both society and to the rest of the environment. Through further research and greater adoption of similar civic-ecological interactions within and across systems, including extension and education efforts that extend the locavore movement to wild fish and game, perhaps, we can observe and document ways of bringing eating and ecology together in new and important ways.

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