Harris, P., Sage, S., (2018), Community forestry and water resource protection in central New York, USA: adaptive management of an evolving and decentralized process. pp. 309-312. In Gastescu, P., Bretcan, P. (edit, 2018), *Water resources and wetlands*, 4th International Conference Water resources and wetlands, 5-9 September 2018, Tulcea (Romania), p.312

Available online at http://www.limnology.ro/wrw2018/proceedings.html

4th International Conference Water resources and wetlands, 5-9 September 2018, Tulcea (Romania)

COMMUNITY FORESTRY AND WATER RESOURCE PROTECTION IN CENTRAL NEW YORK, USA: ADAPTIVE MANAGEMENT OF AN EVOLVING AND DECENTRALIZED PROCESS

Paul M. HARRIS and Samuel H. SAGE

Atlantic States Legal Foundation, 658 West Onondaga Street, Syracuse, NY, USA 13204, 1-315-475-1170, aslf.org Emails: *pharris@aslf.org, samuel.sage@aslf.org*

Abstract

As environmental policy increasingly focuses on adaptive resilience planning, trees and forests as green infrastructure tools for water resource protection will continue to play an important role in both restoration and conservation of ecosystem services. This multi-stakeholder process with many "moving parts" functions across various scales and requires an adaptive management approach due to the uncertain nature of ecological and social systems. Atlantic States Legal Foundation (ASLF), an environmental NGO and "bridging organization" in Central New York State, USA, operates on different levels within this paradigm to promote, facilitate, and implement water resource protection using forestry and green infrastructure. This case study discusses the process and management implications of an evolving community forestry initiative within the context of: the urgent need for water resource protection, emerging and shifting roles in a decentralized system, and a diverse social and economic landscape.

Keywords: New York, forest, adaptive management

1.INTRODUCTION

On December 21, 2017, on the campus of the State University of New York College of Environmental Science and Forestry, Governor Andrew Cuomo of New York, USA announced the allocation of $65 million (USD) in state funds for the protection of New York freshwater resources (ESF, 2017). About 35 kilometers away and only a few months prior, Skaneateles Lake was seeing its first ever recorded harmful algal bloom (HAB). This lake happens to be the unfiltered source of drinking water for over 100,000 people, mostly in the City of Syracuse. Suspected nutrient runoff combined with unseasonably warm weather was considered the cause of the HAB.

Further north in the Town of Spafford, within the Skaneateles Lake watershed, an invasive insect called hemlock wooly adelgid (*A. tsugae*) was discovered in 2014 infecting trees on private property (Coin, 2014). Left untreated, hemlocks with wooly adelgid will eventually die. For Skaneateles Lake, this means a higher risk of turbid and polluted water running off from areas where hemlock once stood, as the landscape would be more vulnerable to erosion. The lesson from Skaneateles Lake is clear: trees help protect water quality.

The case of Skaneateles Lake in Central New York (CNY) is not isolated or unusual. HABs are being reported more frequently both in the US and across the world (Lopez et al., 2008; Green et al., 2015b). In NY, the governor's announcement mentioned above, as well as recent actions taken by communities, are evidence that source water protection and water quality issues are high on the agenda of decision-makers. The challenge, however, is achieving effective community support across multiple sectors and levels of government.

The importance of trees and forests has been recognized in recent initiatives. The Bonn Challenge, launched by the German government and the International Union for Conservation of Nature (IUCN) in 2011, calls for 150 million hectares of land to be reforested by 2020, and 350 million by 2030 (bonnchallenge.org). In April of 2017, the United Nations (UN) adopted the United Nations Strategic Plan for Forests, which calls for a 3% increase in worldwide forest area by 2030 (United Nations, 2017). On a more local scale, incorporating trees as a green infrastructure tool is effective for management of stormwater runoff (Berland et al., 2017). Teague and Kuehler (2016) have reviewed the empirical research on the efficacy of trees for stormwater mitigation, and make the case for increasing tree canopy in urban areas.

While the international conversation establishes plans and benchmarks, local community support is imperative for the success of any community forestry or restoration project (Evans et al. 2018). Promoting and implementing tree plantings as a form of water resource protection in CNY continues to be a significant part of the ASLF program. While many of the projects are installed to mitigate stormwater, an additional goal has

been to build the urban community forest on the neighborhood level with support from residents. Amenities such as gardens, orchards, and habitat have been included in the programming by ASLF.

From a broader (framework) perspective, an 'adaptive management' or 'adaptive governance' approach has been suggested as a better paradigm for dealing with the uncertainty in planning natural systems (Green et al., 2015b). A key actor in this work and other urban environmental initiatives requiring an adaptive governance approach is the 'bridging organization' (Green et al., 2015c). ASLF and other similar NGOs serve as bridging organizations within their respective communities. Green et al. (2015c) point out that Brown (1991) first mentions the concept of bridging organizations "as organizations that span the gaps among diverse constituencies to work on development problems". This role is crucial in systems that attempt to remain resilient against high degrees of uncertainty and the threat of sudden change.

As a small environmental NGO, ASLF has developed methods and an operational framework - strongly rooted in adaptive management theory - for promoting and facilitating forestry and other green infrastructure practices on a community level (Harris et al., 2016). The nature of this work in CNY is decentralized with a high degree of variance in scale, focus, funding, administration, and stakeholder participation. ASLF has and continues to play a versatile role in promoting and implementing community forestry and urban greening, thereby filling the role of bridging organization in many cases.

2.METHODS

2.1 The Case of Central New York

This section discusses various projects and initiatives in CNY related to community forestry and water resource protection, and provides examples of opportunities for bridging organizations. Presenting the case of CNY from the perspective of a bridging organization (ASLF) in action will hopefully elucidate some universal applicability for how an NGO can promote and facilitate these environmental protective measures elsewhere. Green et. al. (2015a) point out the "collaborative and nested" nature of an effective adaptive governance system, with information flowing "up, down, and across". This calls for versatility, as there may be multiple roles for the bridging organization in this system depending on scale of participation.

2.1 Taking the Lead: The Bridging Organization as Administrator

Arguably the most direct way to impart change is for a bridging organization to take the administrative lead in a project. In the case of ASLF, this has come in the form of being awarded competitive federal and state grants from programs usually targeted at municipalities.

The Great Lakes Restoration Initiative (GLRI) is a US federal interagency program whose goal is to protect and restore the water resources of the enormous Great Lakes watershed. ASLF was awarded direct GLRI funding from the USDA Forest Service in 2013 to plant trees on private non-profit property in the City of Syracuse, which is located in the Great Lakes watershed.

ASLF was also awarded funding from New York State through the Green Innovation Grant Program (GIGP) to install and maintain green infrastructure on vacant land in the City of Syracuse. In this case, ASLF has taken on its most extensive role to date as actual owner of the project properties. This has afforded the opportunity to plan for additional features, such as community tree plantings, in addition to the green infrastructure. ASLF is currently working with the community to plan for these amenities, which may include urban orchards.

Required capacity summary: Grant-writing, institutional stability and credentials, appropriate registrations with granting entities, working relationships with land owners and/or ability to outright own land, appropriate funds for insurance, maintenance, and programming.

2.2 Indirectly Directing: Working with Official Entities

While having been awarded grants for forestry and green infrastructure implementation, ASLF has also worked (and continues to work) with municipalities to implement similar projects. This particular approach may fill one of the largest gaps that exist between resources and need, as many municipalities lack the time, personnel, and knowledge to apply for and administer grants. By "switching hats", a bridging organization can supplement the capacity of a municipality by authoring the grant, and then serve as a

contractor to administer it. The municipality remains the lead applicant, and is able to leverage its own limited resources to enhance the project, while receiving the infrastructure benefits.

If an NGO engages in environmental litigation, as ASLF has in the past, part of the lawsuit settlement could include follow-up technical assistance. After its suit against Onondaga County in 1988 for violation of the Clean Water Act, ASLF has helped the County comply with requirements set forth in the Amended Consent Judgement (ACJ) (Idrisi et al. 2014). One of these requirements is to utilize green infrastructure to mitigate combined sewer overflows during storm events, and for this purpose Onondaga County created the 'Save the Rain' program as a brand for its compliance efforts involving stormwater capture (savetherain.us). Specifically, ASLF has been active in assisting with the design and outreach involved in converting vacant lots into rain gardens for stormwater capture.

ASLF has served as the main contractor for several GLRI projects administered by Onondaga and Oswego Counties in CNY. These have included the planting of trees on brownfield and degraded sites in both counties, as well as an initial forestry planning grant to augment Onondaga County's Save the Rain program in 2010.

Required capacity summary: Grant-writing, working relationships with municipal entities/decision-makers, administration

2.3 Advocating, Supporting, and Supplying

When a direct administrative role is unnecessary or unavailable, there are still many ways for a bridging NGO to contribute to community forestry or water resource protection initiatives. In these cases, offered services can also provide a source of revenue for an NGO.

Getting back to advocacy roots is a simple and effective way for an organization to contribute. This may take the form of attending stakeholder meetings, participating in workshops, or meeting with decision-makers in order to affect policy. In CNY, there are various forestry and water quality initiatives at different scales involving stakeholder workgroups, and ASLF participates in many of these meetings as a community advocate. Some of these include: Great Lakes Action Agenda (GLAA) - a state initiative to bring together stakeholders to implement projects that protect the Great Lakes watershed; Onondaga Lake Watershed Partnership (OLWP) - a local semi-informal stakeholder group meant to be a neutral forum for discussion of Onondaga Lake watershed issues; the Syracuse Urban Forestry Masterplan Steering Committee - an initiative and partnership between the City and a private foundation to fund outreach efforts to determine community goals for the future of the urban forest. Navigating these and other multi-scale initiatives, and developing partnerships along the way, is an important part of the versatility required of an effective bridging organization. Part of the ASLF 'advocacy and implementation' model for urban and community forestry is to supply, in certain cases, native woody plant stock for regional restoration projects (Harris et al., 2016). This is accomplished through the maintenance of an urban tree nursery. Various entities in CNY have taken on tree-planting projects, with funding frequently (but not always) coming from state sources. As of 2018, some of these entities include: Finger Lakes Land Trust, Nature Conservancy, Village of Union Springs, Town of Dewitt, Onondaga County Soil and Water Conservation District (OCSWCD), and others such as parks, municipalities, and NGOs. ASLF has sold or may be selling woody plant stock to several of these entities to support their restoration efforts. One particular concern regionally is the destruction of ash trees by the invasive emerald ash borer. As a preemptive measure, many ash trees are being removed by municipalities as part of a larger management effort against this threat. To replace the ecological services provided by the trees in Onondaga County, the OCSWCD is replanting with other native species, some of which ASLF has provided.

Required capacity summary: local knowledge of issues, outreach, community representation, tree nursery facility, working knowledge of maintaining woody plant stock.

3.0 Conclusion

The case of CNY demonstrates a variety of multi-scale initiatives - some top-down and others bottom-up - for community forest restoration and water resource protection. Funding and goals vary, with overlap between programs and resources not uncommon. Meanwhile, multiple local, state, national, and even international plans provide general strategic guidance. How does one navigate this shifting landscape? The bridging organization may be key. Government at multiple levels is realizing the importance of organizations like ASLF as an efficient and direct channel to their constituents. Besides planning and implementing community forestry, additional duties such as monitoring and outreach will play a role in engaging broad

support, with eventual progress towards cleaner water and higher resilience. CNY may provide a model - with the understanding that the process never truly ends - for water resource protection and community forestry initiatives elsewhere.

REFERENCES

Berland, A., Shiflett, S. A., Shuster, W. D., Garmestani, A. S., Goddard, H. C., Herrmann, D. L., and Hopton, M. E. (2017). The role of trees in urban stormwater management, Landscape and Urban Planning, 162, 167-177

Brown, L. D. (1991). Bridging organizations and sustainable development, Human Relations, 44, 807-831.

Coin, Glenn. (2014, July 14). Helmock trees' worst enemy, the wooly adelgid, found in Skaneateles Lake watershed. Retrieved from: http://www.syracuse.com/news/index.ssf/2014/07/hemlock_trees_worst_enemy_the_wooly_adelgid_insect_found_in_skaneateles_lake_wat.html. Accessed April 30, 2018.

Evans, Kristen, Guariguata, Manuel, M., and Brancalion, Pedro, H. S. (2018) Participatory monitoring to connect local and global priorities for forest restoration, Conservation Biology, 0, 1-10

Green, O. O., Garmestani, A. S., Albro, S., Ban, N. C., Berland, A., Berkman, C. E., Gardiner, M. M., Gunderson, L., Hopton, M. E., Schoon, M. L., and Shuster, W. D. (2015a). Adaptive governance to promote ecosystem services in urban green spaces, Urban Ecosystems, 19, 77-93

Green, O. O., Garmestani, A. S., Allen, C. R., Gunderson, L. H., Ruhl, J.B., Arnold, C. A., Graham, N. AJ, Cosens, B., Angeler, D. G., Chaffin, B. C., and Holling, CS. (2015b). Barriers and bridges to the integration of social-ecological resilience and law, Frontiers in Ecology and the Environment, 13, 332-337

Green, O. O., Schultz, L., Marmar, N., and Garmestani, A. S.. (2015c). The Role of Bridging Organizations in Enhancing Ecosystem Services and Facilitating Adaptive Management of Social-Ecological Systems. In C. R. Allen, A. S. Garmestani (Eds.), *Adaptive Management of Social-Ecological Systems.* (pp. 107-122).

Harris, P. M., Gao, H., and Sage, S. H. (2016) Advocating and Implementing Urban Forestry as a Method to Reduce Stormwater Pollution of Nearby Water Bodies, 264-69. In: Gatescu, P., Bretcan, P. (Eds.) *Conference Proceedings Water resources and wetlands, 8 -10 September 2016, Tulcea Romania*, 308p.

Idrisi, N., Sage S. H., and Gao, H. (2014), Managing the Onondaga Lake Watershed in New York, USA, through Science-based Policy: A Case Study, pp. 517-24. In: Gatescu, P., Marszelewski, W., Bretcan, P. (Eds.) *Conference Proceedings Water resources and wetlands, 11-13 September 2014, Tulcea Romania*, 583p.

Lopez, C.B., Jewett, E.B., Dortch, Q., Walton, B.T., Hudnell, H.K. (2008). Scientific Assessment of Freshwater Harmful Algal Blooms. Interagency Working Group on Harmful Algal Blooms, Hypoxia, and Human Health of the Joint Subcommittee on Ocean Science and Technology. Washington, DC.

SUNY-ESF. (2017, December 21). Governor Unveils Plan to Protect N.Y. Lakes from Harmful Algal Blooms. Retrieved from: http://www.esf.edu/communications/view.asp?newsID=7120. Accessed April 30, 2018.

Teague, A. and Kuehler, E. (2016). Give me the numbers: How trees and urban forest systems really affect stormwater runoff, Stormwater, 17, 8-17.

United Nations (2017). *United Nations Strategic Plan for Forests, 2017-2030*. Retrieved from: http://www.un.org/esa/forests/wp-content/uploads/2016/12/UNSPF_AdvUnedited.pdf. Accessed April 30, 2018.