

URBANFOREST CONNECTIONS

webinar series

Social Networks and Knowledge Systems for Urban Stewardship and Sustainability

Wednesday, January 14, 2015 | 1:00 – 2:00pm ET

TRANSCRIPT

Dana Coelho: Welcome to the U.S. Forest Service's Urban Forest Connections. I'm Dana Coelho, Urban & Community Forestry Program Manager for the Rocky Mountain Region of the U.S. Forest Service. I will be moderating the webinar today. Before we get started, our technology expert, Emilio, will share tips on how to use the Adobe Connect software to make your experience on today's webinar more valuable and enjoyable. Emilio?

Emilio Garza: Thank you. If you're having difficulty connecting, you can contact 800-422-3623, again 800-422-3623. Each of the boxes are called pods. I will provide you with a quick orientation of the different features and pods. At the top of the window you will see a feedback and status button. You can click this button to raise your hand if you're having difficulty or need help. You can also select from the other feedback options by clicking the area to the right of the raised hand. When you raise your hand for assistance I will start a one-on-one chat with you. This will open a new tab, which you will see at the bottom of the chat pod. Click on that tab and type to get help. Click on the *Everyone* tab to return to the group chat. In the group chat, we welcome any comments made on the topic today.

Live captioning from Caption Colorado is streaming in the lower corner. You can adjust the font size at the top and then click to the right to see more of the captioning. You can listen to the session through the computer, for example with a headset or headphones, or through the phone. Please only connect to audio one way, either phone or computer, to avoid an echo. Click *Connect my audio* and *Listen only*.

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If you are on a mobile device, it looks different. You can view each pod on its own by tapping on it, such as the slides, video, or chat. Tap the top one to return to the normal layout where you will see all the pods at once. Please note the captioning will not stream on mobile devices.

All participants are in listen only mode. The question-and-answer session after the presentation will be conducted via Adobe Connect only. This meeting is being recorded. If you have any disagreements with this, you may disconnect at any time. With that, I will turn the call back to Dana.

Dana Coelho: Thank you, Emilio. Information about the Urban Forest Connections webinar series can be found on our website, shown here. This page includes a place to contact us with questions about the series, suggestions for future topics, and feedback about how we are doing. You will also find a list of upcoming webinars and an archive where you can access recordings of past presentations.

Before we dive in to today's topic, we would first like to learn a little bit about who is participating in the webinar today. To do that, we'll post three questions on the screen and ask that you respond to each one fairly quickly. The first question is: Where do you work? I'll give you a couple of seconds to fill it out. We will give you a few seconds to fill this out.

We'll close the poll in three...two...one. Thank you. The next question is: What is your profession? We will give you a few moments to answer this question.

We will go ahead and close this poll in three...two...one. Our last question is: Where are you from? We will provide a few moments for you to fill out this poll.

We'll close it in three...two...one. Thank you so very much.

Now moving on to today's topic, and why you all called in here: *Social Networks and Knowledge Systems for Urban Stewardship and Sustainability*. Over the next hour, we will hear from two speakers, Tischa Muñoz-Erickson, a Research Social Scientist at the International Institute of Tropical Forestry, and Erika Svendsen, Research Social Scientist at the Northern Research Station. Following presentations, we will have some time for questions. If you have a question, you may type it into the Chat Pod at any time. I will be collecting those questions and moderating the discussion at the end of this webinar.

Our first speaker, Tischa Muñoz-Erickson, works in Río Piedras, Puerto Rico. She holds a Ph.D. in Sustainability from Arizona State University and an M.S. in Environmental Science and Policy from Northern Arizona University. Her research focuses on adaptive governance; science-policy interactions, knowledge networks, and collaborative natural resource management. Tischa manages the Institute's Urban

Field Station and the Urban Long Term Research Area (ULTRA) program in San Juan, Puerto Rico. She is a member of the National Science Foundation Research Collaborative Network in Urban Sustainability and serves as an Affiliate Faculty at Arizona State University and Northern Arizona University. With that, thank you, Tischa, and I will turn it over to you.

Tischa Muñoz-Erickson: Great. Thank you, Dana. Good morning, everyone, and thank you for joining the webinar. As many of you know, the business of managing urban forests and making cities more sustainable can be knowledge-intensive. We need new information and data, whether the scientific research or the data of businesses. Many times we have plenty of knowledge and data but what we really need is to put this knowledge into practice and action. That is what I'm going to talk about today. How can we become better at implementing what we know toward sustainable solutions? I will present the tool, the knowledge-action system analysis tool, that can help managers, practitioners, and scientists alike assess the landscape of knowledge coming into their own urban governance. So in other words, the who, the what, the where are the actors and networks producing the knowledge for sustainability. The motivation for this work is that by understanding how organizations are already producing, sharing, and using knowledge in cities, can we remove those barriers that sometimes limit our ability to put this knowledge to work.

As a quick overview of the talk today, I will briefly describe the land use governance context of San Juan, then discuss the research questions and rationale for developing this tool. I will describe the KASA tool and the methodological steps involved in implementation and then provide some illustrations of its use in San Juan in 2009.

San Juan is located in the northeastern coast of Puerto Rico. It has a population of about 390,000 and as the capital of Puerto Rico, is at the center of economic and political activity for the island. As a Caribbean coastal city, the city is vulnerable to various climate-related impacts, such as sea-level rise, hurricanes, and flooding. State and local decision-makers are paying more attention to this issue and the need to develop adaptation strategies. The municipality of San Juan, for instance, is interested in using green infrastructure as a potential strategy to reduce flood risk in the city. Knowledge is needed to develop these adaptation strategies, and the San Juan Urban Long Term Research program and the Forest Service Field Station at the International Institute of Tropical Forestry has been studying the relationship and potential of green urban infrastructure for sustainable water management. Implementing this knowledge, however, has been a challenge because to the essential complexity of governing land and green infrastructure in San Juan.

Traditionally, land use governance in San Juan was a responsibility of the state, such that municipal plans and zoning was done by state agencies, primarily the Puerto Rico Planning Board. This changed in the early 2000's when a shift toward decentralization was occurring across municipalities across the island to give greater power to local

agencies over planning and zoning. The municipality of San Juan became autonomous in 2009, so it is only recently that it has had control over land use and urban development. In addition, the city is not just in charge of urban land uses because the municipalities in Puerto Rico are kind of like counties in the U.S. It also oversees large areas of rural land in the southern mountainous portion of San Juan. Finally, as with many other cities, there's been an emergence of civic governance activity, where environmental and sustainability issues are becoming prevalent and participation in strategies for sustainability by NGOs, community groups, and other citizen groups. And Erika, the next speaker, will be able to talk more about those, in New York City, for instance. What we have now in San Juan, then, is a governance landscape that includes multiple actors working across multiple institutional levels with interests and knowledge that sometimes can be tested, especially when it concerns: How do we plan for a resilient city for the future?

Given this context, I began to question whether our ideas and assumptions for how to link knowledge and action in these different governance contexts actually work and where they are appropriate when it is no longer the city or state that is governing, but networks of multiple actors and institutions. And looking into the literature, I found that a key barrier to making progress is the pervasive idea that science and policy and practice are separate activity and that all we need to do is deliver the right science to the right people. But I think that, as many of you know, this linear model of one- or two-way interaction of science delivery and communication doesn't sometimes work so well. And why is that? Some possible reasons are that it does not take into consideration that increasing governance is more complex, as I said for the case of San Juan, and where multiple actors are taking action to network, and both knowledge and information has to circulate through these networks. Also is the realization that in a knowledge society, multiple ways of knowing or of producing knowledge, essentially different knowledge systems, are also having a role in governance. So it's not just science that is informing decision-making. We hear a lot about the influence of local knowledge or even traditional ecological knowledge, but there are other types of knowledge systems that are also crucial in planning green infrastructure, such as strategic knowledge, operational, and even business knowledge.

Then there is the assumption that actors are either knowledge producers or knowledge users. Sometimes there is [indiscernible] to separate who are the experts and who are not. Again, what we're observing is that actors sometimes play both roles, where knowledge producers are also users, and vice versa. For instance, a municipal manager may be a consumer of scientific knowledge, but she also collects observations, data, runs models, etc. within her own organization. And similarly, a scientist is not shielded from the broader context and institutional expectations for how a city should be planned and managed. So I use the term knowledge-action [indiscernible] as more interlinked or network relationship between knowledge, producers, and users; the different knowledge systems that come to bear on decisions; and decisions that shape practice in the city. And I'm concerned with how do we build these knowledge-action systems for urban sustainability? And even more so, how do

we understand how they are currently or how the existing knowledge systems actually work.

So the knowledge action systems analysis tool, or KASA, brings together analytical theories from social network analysis and governance approaches into an interdisciplinary methodology that stakeholders, decision-makers, and scientists can use as part of their toolkit in understanding, designing, and implementing better knowledge action systems. Multiple steps and methods can be used for implementing KASA. First, the use of surveys in social network analysis can be used to map the network to see how they are configured or structured in terms of how information and knowledge flows across organizations in the city. The next step involves identifying the central or more influential actors and the knowledge systems, so meaning the types of knowledge, information, the data, the practices and methods that they use for producing that knowledge, or the technologies they implement. Through more intensive interviews with these actors, as well as through some document analysis of some planning documents, etc., you can determine which ones are the more dominant or more marginal visions for the future of the city and how these actors create problems in addition to solutions. With Step 4, we analyze the level of convergence or divergence between these different visions of the city. And this is to identify if there are points of conflict or points of collaboration among these different organizations, and what roles the different ways of knowing are playing in these visions. And finally, with the use of interviews and participant observations, we can assess if there are specific boundaries being created that can pose a barrier to linking knowledge and action, or if there are [indiscernible] and collaboration. In other words, we can identify opportunities for knowledge co-production.

Next, I will give you illustrations of the type of data and information you can get with KASA for the first three steps primarily because of the limitations of time, but if you would like more information about the other steps, I direct you to that paper below in *Environmental Science and Policy*. So in 2009 I conducted a survey of 110 stakeholder organizations in San Juan. This included governments, non-governmental organizations, community groups, private businesses, and academic institutions. Those are either involved or affected by environmental and land use decisions and actions in the city. This figure shows what we call a network map. It shows 26 organizations of the 110 surveyed ones. Those are in black circles, and the lines between them represent how they are connected through knowledge or information flow – in other words, how information moves across organizations. Now please don't concern yourself with the acronyms of the organizations. If you're not from Puerto Rico, you won't know them. But I will guide you through the key points that are reflected through this map. First, these 26 out of 110 organizations came up as having some role in the production and sharing in San Juan. It seems that there is about a quarter of organizations are taking some role in knowledge. And not just governmental and research institutions come up in the network, but non-governmental organizations and civic organizations, as well. So, since I was only expecting a handful of government and research institutions to come up in the network, I was surprised with the quantity and diversity of this network. Even though this is actually a very small network, as

you'll see when Erika Svendsen presents, some networks are very much bigger, but for the city of San Juan and for those organizations having a role in knowledge, it was actually larger than I expected. Also, in terms of diversity, if you look at the central actors in the network – so those organizations that have more linkages to each other because they are a source of knowledge for the other organizations and, therefore, they have more influence or dominance on how information flows through the network – we see that the central actors are in part, some of them are the usual suspects, such as governmental organizations, here shown in blue, the three state agencies and the municipality of San Juan are shown here. And established research institutions, shown here in yellow, which are the University of Puerto Rico and the International Institute of Tropical Forestry. So we also find the nonprofit groups are contributing knowledge to the network, as well. These are shown here in green.

So what does this all mean? First, it means that the changes that I described before on how knowledge and action are linked in the context of new and networked forms of governance are indeed taking place in San Juan. Therefore, the linkage is not linear. In fact, we have multiple actors involving knowledge production circulation, not just your typical knowledge producers on one side and knowledge consumers on the other. Second, this network has positive implications for sustainability governing because it means that the potential is there for a diversity of actors and knowledge types to be involved in decision-making and action. And in theory this is [Indiscernible] and social learning, which are essential to forge new pathways for sustainability in the city. However, when we look closely at how central actors, those in the colors, interact with each other, we find various boundaries that can limit the potential.

And to explain this further, I would like you to imagine now that I'm going to be zoning in to those circles in colors. And now I'm just going to show you this in the next slide with only the linkages among them in red and all the other circles will disappear for the purpose of this point. You see here the same central actors I showed you before in a different color scheme, but you see that some of these central actors are not connected or sharing knowledge with each other, particularly if you look at the state government agencies in blue and local governments or other groups working locally in green and blue. So there is a gap of information flow between top and bottom organizations and what's most concerning is the gap between the two agencies in charge of urban planning in San Juan. Basically that's the Planning Board, the one marked PB, and the San Juan Territorial Ordinance Planning, the SJTOP. So the two main organizations in charge of land use planning are not linked to each other.

Also, when I researched the goals and visions that these organizations have for the city, I found that there are multiple visions and different ways that the problems and solutions for the city are being framed. And these dashed circles represent those different visions. While most of the actors envision a sustainable city, they emphasize different dimensions of sustainability. So some, especially state agencies in the top circles in blue, are emphasizing economic sustainability. I am going to show you now in the next slide, another way of looking at these different visions. Again, you have the different visions here, and the state agencies are mainly with the Economically

Sustainable City vision. But then if you look at the Ecologically Sustainable City, groups like scientific and environmental groups are emphasizing this more ecological dimension of sustainability. And the municipalities are emphasizing more short-term social concerns, immediate social concerns about the city. So neither of these visions promoted by the organizations provide an integrated vision of sustainability. These different visions can be explained in part by the procedures used to develop them, the last two rows of this table, and the knowledge systems used to create them. So in some cases, the procedure was more based on fully expert consultation that had relied on more bureaucratic technical planning, whereas in other visions, they were developed in more [indiscernible] that included civic participation and other types of knowledge systems, as well as scientific and managerial approaches. But having different visions is not necessarily a bad thing. In fact, they are all important to forge pathways to sustainability. However, when the time comes to deliberate which pathway to take and the type of transition actions that we need to do, including what types of knowledge action systems are necessary, these differences will need to be evaluated, deliberated, and managed across these different communities through leadership and intention in the city.

In conclusion then, the points I hope that I conveyed to you this morning are that first, we really need to move beyond linear models of how knowledge and action are linked in order to make progress for how this is actually working on the ground and working with that context. The KASA method is a tool that can help examine how these networks are working and how they are or are not shaping the decision-making and action, and therefore aid users in understanding what does the range of knowledge looks like. What do people know? Who has the relevant knowledge? How is this knowledge flowing? What are the opportunities and constraints necessary? And this is all necessary in order to foster innovation. And the hope is, and ultimately the objective of this tool, is to help improve the type of design and processes, such as science delivery strategies, or even collaborative knowledge production, projects, for allowing more, better knowledge co-production among different groups – scientists, government agencies, civic organizations, etc. – to together forge and move toward a vision of sustainability.

I would like to acknowledge a few institutions that have provided support and help with this research and if you have any questions after Erika is done, I am happy to address them. Thank you so much.

Dana Coelho: Thank you so much, Tischa. That was really great. And just a reminder for all of our participants, please feel free while our speakers are talking to use the chat pod to get your questions into the queue. Now, we will move on to our second speaker, Erika Svendsen.

Erika studies environmental stewardship as it relates to governance, social resilience and human well-being. Her work includes understanding the spatial, temporal, and

social aspects of stewardship. She is the team leader for the New York City Urban Field Station, a unique partnership between the U.S. Forest Service, the New York City Department of Recreation and Parks, and their many cooperators. The Urban Field Station is a space to conduct research, cultivate ideas, and foster collaboration among scientists and practitioners that is focused on urban ecological and social issues. Erika is a graduate of the Yale University School of Forestry and Environmental Studies and Columbia University's Graduate School of Architecture, Planning, and Preservation. Now, I will turn it over to you, Erika. Thanks.

Erika Svendsen: Thank you, Dana. And thank you, Tischa, that was great. I really enjoyed your presentation. Hi everyone. I am going to speak a bit about a project that we call affectionately STEW-MAP, but the title of my presentation is *Visualizing Environmental Stewardship for Urban Planning & Development*. As Dana mentioned, I'm with the Northern Research Station, based in New York City, and work with the New York City Field Station there. We were quite closely with land managers. And in many ways, the tool I am going to share with you was conceived with them in mind. We certainly had a research study plan, an agenda, and research questions. But in addition, we really wanted this to be useful to managers that we work with in the Parks Department and other land managers throughout the city each day.

That is a shot of our field station. Come visit us in New York City, Bayside, Queens. We have a residential facility, as well, which you can learn more about on the website. We are trying to cultivate a network of folks working, thinking, and learning about all of these things.

Now, just to give you some framing to where we are coming from. When we conceived the stewardship mapping and assessment project, we really wanted to understand and highlight the role of people or humans as agents of *positive* change, and creators of innovation. We often think of people as the technologies and machines that we create, but we also create incredible forms of social organizations and institutions and ways of being and ways of working together. You will see in the presentation how STEW-MAP is an attempt to visualize and highlight our role as creating new forms of governance and stewardship that can benefit the environment and ourselves.

When we talk about stewardship, we study and think about it across a range of site types – different types of site types, ranging from upland forests to wetland areas to community gardens on street corners and vacant lots to urban farms to green infrastructure installations, like green streets and bioswales. So we are looking across this range of site types and time frames. And when these urban designs and ideas emerged in the urban landscape and across different geographies, as well – the project I'll present, the tool I'll present, STEW-MAP, is going to a focus on New York City, but it's been adapted in other cities, like Chicago and Baltimore and Seattle, Los Angeles, and now in San Juan, as well, in partnership with Tischa and her colleagues. It's also been applied at the regional level, too. So, just a little bit more, why we study

stewardship groups across these site types. The community gardening movement in this country, in particular I draw here upon the one in New York City, really community gardens emerged in the 1970s from the urban fiscal crisis. So we saw people growing vegetables and creating these green oases on vacant lots in and around the city. They were temporary, not permanent places, somewhat ephemeral, if you will. But fast forward 30 years and there are nearly 1,000 community gardens in the city of New York, managed and stewarded by multiple generations in a complicated and wonderful mix of different governing regimes. And of course, it has become a social movement and a permanent part of the New York City landscape. So this is why we give so much value and want to learn more about these emerging site types and these new ways of being in and around the environment.

We also look at more formal processes of cultivating stewardship. So we'll look at campaigns, if you will. In New York City, we have something called the Million Trees NYC tree planting campaign. We studied and tried to look at this campaign as a way to recruit new membership and new stewards at the individual level into these initiatives. I just highlighted here what we've found is that for those who engage in first-time tree planting – and we track them over the course of two years – that that act, that simple act of planting a tree because it's so accessible, because it's so tangible, and because it's so inspiring in many ways the things you can do with your friends, your family, and so forth, it led, it gave people the confidence to engage in other acts of civic engagement. So strengthening our democratic practices, if you will. It sounds like it's a simple tree planting, but it actually is on a pathway to much more.

But I share that all in process to understanding why we want to map stewardship, why we want to understand stewardship in a much grander way. We want to understand it across all of these site types, as we have mentioned, across time and space, and in the case of the STEW-MAP project we cast the net very wide. So if you, in some way, shape, or form, as a group conserve, manage, monitor, advocate, or educate the public about the local environment, you are qualified to be in the STEW-MAP family. You are part of that group that we want to understand and learn more about. So that is how we define stewardship. And you can think about the STEW-MAP project primarily, simply as, we have wonderful maps – certainly more detailed than we could have ever done ten, fifteen years ago, of green space, urban or otherwise. And you can think of STEW-MAP as a social layer overlaying the green space that we can understand and visualize in a city or region. Who is managing? Who is taking care of that space? Now, we know that when someone owns the land, government or private sector, we know, those folks, what the responsibility of the Parks Department are in various cities. But this civic arena, these groups emerge every day and sometimes last for decades and decades. We know less about that. But they are performing an important service, an important role in managing the landscape in the city. So we think of STEW-MAP as this social layer or social space.

And I'll share with you what we did and some of the products. So essentially, STEW-MAP is a census. In New York City, one of the first formal STEW-MAP censuses we did, we initially had a sample size of about 5,800 groups and we took those groups

from all the different folks and organizations you see on the cover here of our census. They provided their membership lists with us. We sorted through them and saw the gaps and overlaps. And then we sent out an online and mail-in survey to these folks. We wanted to find out just basic organizational characteristics: staffing size, budget, mission statement, areas of interest. But we also wanted to know their stewardship turf, as we call it, their stewardship footprint. Where exactly do they manage, or whatever the definition – advocate for, educate, and so on – in the city? And what is their boundary area? We also wanted to know who they were connected to. Because we assumed in a city the size of New York with 8 million people, it's a complex regime of different connections and it doesn't really comport to this hierarchy of top-down planning and development, but that people are making connections in all different ways. So we wanted to develop a tool that could sort of capture that and learn from it.

So, in terms of organizational characteristics, this is the back of the envelope, what we learned. Essentially, New York City has a fair number of small groups – what we call the mom-and-pop groups – small groups that emerge, but could be in service to the city and to the landscape for decades. And at the other end of the spectrum, we have what we call million dollar groups, groups that are really, have all different types of financing and are working on a much greater scale, I guess, in capacity. We have a lot of groups that over the years have become more formalized. So what started as a group of friends on a block trying to clean up their neighborhood has in many cases led to a formal 501(c)(3) status, and maybe a staff person or two, and so on. They've really formalized their role, or professionalized their role as stewards.

We've also learned that the number of these types of stewardship organizations has increased from the 1970s and 80s and 90s until today. Today, and I'll show you another slide, we see a lot more coalition-building, alliances, this kind of thing – people working across different sectors together on a particular issue. And in New York, at least at the time of the STEW-MAP survey, which was in 2007, there was really a lot of land-based stewardship groups, folks working on public parks, community gardens, and street trees. And now, I dare say, we're gearing up to do this again and we might potentially find more water-based groups, and those other issues that have now come to the fore, concerns about the effects of climate change and of course, we had Hurricane Sandy in our region. We may see that in response to these events and issues, that new types of groups are forming.

So we tried to serve up the data in a number of different ways. We put most of our data, even before we wrote our first journal article, we put the data up on an open website called *Oasis*, so that you could see how the stewardship groups cluster together. This is New York City, from 30,000 feet so to speak. But you can also start to drill down and see where the gaps and overlaps are. This is a particular insert from an area in Manhattan. I'm going to click through a few slides. So we queried the stewardship database, as if someone's interested in, "Well, I would like to do some work on the west side of Central Park, Manhattan. Who else is doing things in common with me?" You may not know. We sometimes, whoever's on the next block, sometimes you don't know all your neighbors. So this is just a couple of slides to click through. So

these different polygons and colors represent different turfs, remember I talked about turfs. So they represent groups and where they are working or where they consider themselves the chief advocate or steward of a particular site. You can see that there are overlaps. And when we show this to community groups, sometimes they don't realize that they're all working in the same area. And sometimes that builds new alliances and partnerships. Sometimes it's just good to know.

So you can see again another version of that. This is a kind of stewardship intensity map of New York City and the areas in red are where we have the most intense clustering of stewardship groups. For me, what's most profound, there's many interesting things about this and we've written about it, but what is most profound is what I learned, that the places where we have the least green, the least amount of open space, is where we have the highest density of stewardship groups. And that reminds me that in many ways, if you will, nature is not so much about the abundance of nature but it's about how it exists within us. And even in places that have been highly developed, industrialized areas, you've got people moving into these communities or have been there maybe all along, and really still feel, and want, and need to have the abundance of nature around them. And will fight for that, will organize for that, and will spent a fair bit of their time of contributing to that, to a greater, greener vision.

I mentioned before how we saw the growth of stewardship groups in New York City clearly in post-1970s. But we've also seen how it's historically been there. Since the 19th century there have been civic environmental stewardship groups in New York City. But they've evolved through these different types of social movements and periods of development in the city, but also the country. And here we are today now, and oh, I should say, I should go through the 19th Century, the Progressive Era, the time of the technocrats and power brokers, we get to the 1950s and 60s, a lot of homeowners associations interested in tree planting. Then in the 60s, anything goes and we see an emergence of all different types of arts and culture groups interacting with the environment. And then it's Us vs. Them. We see in the immediate post-1970s a lot of tension, a lot of groups formed in opposition to government, in opposition to development. And then we're in this period where I don't think it's all wine and roses, but we see a lot more coalition groups and collaboration happening now. And this is the information we can glean from the STEW-MAP census. We can also serve up maps like this, and I joke sometimes to my friends in the Forest Service and say, "This isn't a map of coyotes or bears, this is actually a map of stewardship groups surrounding a particular urban park." So the green being the park space and the rings around it and then you can see those dots tagged to numbers and those numbers correlate to actual data that will tell you about that organization, about its spatial footprints, about its networks, and about its characteristic. So we try as best we can to visualize this in a number of different ways.

Finally, as Tischa was saying, we've done some stewardship network mapping. We've done it on a scale where this is sort of a useful image, but it's sort of like eye candy, as we say. It is a depiction of the stewardship network in New York City circa 2007 across

business, government, and NGOs, or civic stewardship groups. You can see on some of these next slides a little bit more clearly once we take it apart and how it can be useful to people. Look just at the civic to civic groups and how they're connected to each other. We see that there's this inner core, if you will, and even if you see the darker clusters there, those are nodes. But you can see this inner core of groups, and then you can see the [indiscernible] around and these are the groups, we can tag these to neighborhoods so we know particular neighborhoods in New York City that are the least connected. By the connection of one or two ties and clicks they're off the grid. They're not communicating and sharing information with the whole. So drilling down a little bit further, blowing up this image of the nodes in the network, we can start to identify strategically who are the gatekeepers, if you will. Well, I shouldn't say gatekeepers. Who are the brokers or the bridgers (actually, not gatekeepers at all), the brokers and bridgers in this group that are sharing information and materials? Tischa's work is so elegant because she really has a greater understanding in San Juan about the nature of these connections, what kind of knowledge people and groups are sharing. We in New York City at this scale just know that they are connected. We know that these are the most connected organizations. And if anyone was a doubter of this technique, it was me because I've worked in New York City for 20 years and I said, "Well, I can tell you right off the top of my head who these organizations are." And I was wrong. My list didn't comport with this list. A little bit, but not entirely. And it really was a great exercise for us all.

Since that time, we have gone back to those nodes in our stewardship network and we've conducted interviews. We've tried to learn a little bit more about what these groups are doing for these other stewardship groups and how they are serving as a broker. And in many ways, they're providing information, sometimes resources and grants, but they are also mediating conflict in communities and responding. I have a colleague, James Connolly, who is working on a paper now and looking at how the nodes responded after Hurricane Sandy, because many of them did. Many of them provided resources, information, food, and in response to that event. So you can see understanding the strategic nodes and network has a lot of application, not just for environmental stewardship, but for resilience, social resilience.

In conclusion, I think stewardship and stewardship mapping has multiple applications. In today's world, as we mentioned, the rise of land use coalitions and land trusts and alliances, doing a STEW-MAP census to add on to your green map and planning documents is probably a good idea. Also, in terms of building in participatory design and project development and engaging the civic center in your projects, STEW-MAP is also useful. We're learning more about how greening, urban greening or otherwise is useful as a recovery mechanism. When people are experiencing a disturbance like something we did with Hurricane Sandy, but of course any other examples from your personal experience, the simple act of planting a tree helps reknits communities together. We are seeing the STEW-MAP networks play a role in that. And lastly, we see that greening is also in many ways a mediating mechanism. Those nodes that we talked about, or that I talked about, they are mediating conflict between government and their communities. Sometimes it's about the environment and sometimes it's about

a whole host of other planning issues. And that is okay. And that's actually a good thing. That helps strengthen social trust and build community.

So, I want to thank, STEW-MAP has been up and running in a different cities and places, and these are some of the brave souls that have adopted it and taken it to their communities and also enriched what we have done in New York, certainly, along the way. We continue to learn and, as always, are interested in feedback and how this information could be more useful. Thank you.

Dana Coelho: Great. Thank you so much, Erika. Now, we will be able to use our last ten minutes on the webinar to address the questions that you have asked. Just a reminder to anyone else wants a post a question, use the chat pod on Adobe Connect. Also since we have to wrap up right at 2:00pm today, if you are interested in receiving a Certificate of Participation to submit for continuing education credits, please type your full name and email address into the group chat pod. We will be displaying the number to receive ISA CEUS at the end of the question section here.

So just to jump right in, how about a follow-up question that a participant posed to Erika. This is from Kent. Is your survey instrument available? Or how is it available to others?

Erika Svendsen: Oh, well, if you email me I can send it directly to you. We, at the same time, if you go and visit the Urban Field Station website, we have information about this STEW-MAP project there. It's been adopted, like I said, for other places, for Chicago and Baltimore. And we are now coming out with a General Technical Report from the Forest Service that shows all the different protocols, all the different ways that it has been used in other cities. But like I said, and that's not available at this moment, but if you email me or visit the website we'll be able to get you not just the New York City survey, but others as well.

Dana Coelho: Great, thanks. There are also a couple of questions both for Erika and for Tischa about power. The question that was posed by Martha during Tischa's presentation was about how did researchers assess the power of organizations. And Bob asked the question that I think might be related to Erika: Did you find any power law relationships in your network mapping?

Tischa Muñoz-Erickson: This is Tischa. I can start the first part of answering that question. In terms of power, and this relates also to some other questions that I've had related to the social network analysis in the San Juan case where there was quantitative and qualitative, so this will answer some of that, too. But the power analysis was done quantitatively. The social network analysis was using quantitative tools, specifically the UCINET social network software. And so with that software and

other social network analysis software, you are able to with the data that you get from your surveys, have basic characteristics of the network analyzed for you. So in order for me to establish which were the more powerful actors, specifically in terms of influence or dominance over information and knowledge flow, I looked at indicators, such as centrality measures. Erika spoke about in-degree centrality, or in between centrality. So those are some measures that you can use to assess what the level of dominance that an actor or node has over a network. In this case, because there were some actors that had more linkages to them and more centrality, that meant that more people came to them to ask for knowledge or information. And based on the literature and other studies, we know that then those are actors that could potentially have more influence over which information is circulating across the network and being used. At the same time, I used qualitative analysis by interviewing these actors further and understanding more where that power lies in terms of what type of sufficient context and relationship they have to the other groups.

Erika Svendsen: And I would just add in the New York City STEW-MAP project, we learned that power emerges, or political power emerges from two different places, and related places. One is the nodes, as we said. The number of people that connect to a particular group affords a group a certain amount of political power, agency in the system. But so does the physical turf, the actual stewardship turf. And that's sort of a geospatial, political power node, the actual physical place. Why? Well, because it is very tangible. In these times, people can actually point to and say, "We maintain this park. We brought this waterfront back. We built this pier. We created this garden," and so forth and so forth. It is very tangible. And once groups start expanding beyond a particular site and managing and caring about a network of sites, they actually start to grow in their political power. And it doesn't matter if the group's a million dollar group or a thousand dollar group. It's about their control and their agency and their interest and their long-lasting commitment to a place. And there's a respect for that, I think, in governance. So power emerges for us in the STEW-MAP process through the number of ties or the network notes, but also in the physical space.

Dana Coelho: Great, and I think we have time for just one more question. And this one may be interesting for both of you to comment on again. This came in from Ali toward the end. What were some of the common characteristics of your most connected organizations? And what might we learn from them?

Erika Svendsen: Do you want to go, Tischa, or should I?

Tischa Muñoz-Erickson: You go ahead and then I'll follow up.

Eriak Svendsen: Well, I know that you know more about your connections than I do, but I'll add that one of the more common characteristics of the key groups was that they were trusted, that they were an honest broker, if you will, or a trusted broker in the network. And that's a result of campaigns they must have waged in the past. Their

commitment to particular space, that they really say and do what they say. And that creates a kind of a social trust, which was absolutely the most common characteristic across. And then also that they were responsible for an actual physical space.

Tischa Muñoz-Erickson: Yeah, I would say that actually that's an excellent point because even with, in terms of the network, the acceptance of new information and new knowledge also had a lot to do with trust – who they trusted for that information, who they saw as credible and legitimate in creating the information. Because mostly what we found is that even groups or organizations that you would normally not associate as knowledge producers, they are collecting a lot of data. They are gathering observations and doing their own knowledge production for decision-making. So sometimes when people say, "Well, why aren't they accepting new information or using the scientific report?" it's because they already have their way of doing things. So, a key factor that organizations share is that when new information enters in and is used, it's mainly because of who they know in the network and not so much because of the actual content of the knowledge itself.

Dana Coelho: Thank you so much both of you and to everyone for your great questions. I know we weren't able to get through all of them, but both Tischa and Erika have offered to spend a little bit of time and put together some written responses. We will be able to share that in a little bit of time on our website.

Again, I'd like to thank our presenters for sharing their information and their time with us on this very hot topic. And thank all of you for participating.

If you're seeking ISA CEU credits today, please write down the code you see on the screen now and send it into ISA using their form. You can also download it here from the pod to the right of the screen or from our webpage. And again, you have about another minutes to submit your name and email if you're interested in receiving a Certificate of Participation to submit to another continuing education program.

And as always, if you have any questions, please feel free to e-mail us using the link to our website. And one final reminder, please join us next month on February 11 for the next Urban Forest Connections webinar. The topic will be *Phytoremediation of Soils through Urban Forestry*. We will hear from two U.S. Forest Service Northern Research Station scientists, Ron Zalesny and Rich Hallett. Thank you so much everybody and please enjoy the rest of your day.

[Event concluded]

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