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Publication Date
2019

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UNIVERSITY OF CALIFORNIA,
IRVINE

Interactions between knowledge and practitioner communities: engagement to enhance

urban social-ecological resilience

DISSERTATION

submitted in partial satisfaction of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

in Urban and Environmental Policy and Planning

by

Bemmy Jennifer Maharramli

Dissertation Committee:
Professor Richard Matthew, Chair
Professor Cecelia Lynch
Professor Dave Feldman
Professor Scott Bollens
Associate Professor Doug Houston

2019

DEDICATION

To

my children, family and friends

in recognition of my deep gratitude

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ACKNOWLEDGMENTS

I would like to express great appreciation to my committee chair, Professor Richard Matthew. He has been an inspirational, thought-provoking, kind and supportive advisor throughout all stages of this intellectual journey. I would like to thank my committee members, Professor Cecelia Lynch, Professor Dave Feldman, Professor Scott Bollens and Associate Professor Doug Houston, whose work, guidance and mentorship have been invaluable to this research.

I thank the University of California, Irvine, School of Social Ecology for the Dean's Award for Community Engagement and the Urban Planning and Public Policy Dissertation Data Collection Fellowship, both of which supported this dissertation research.

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Matthew, R., Harron, C., Goodrich, K., **Maharramli, B**., & Nizkorodov, E. (Ed.) (2017). *The Social Ecology of the Anthropocene: Continuity and Change in Global Environmental Politics.* The WSPC Reference on Natural Resources and Environmental Policy in the Era of Global Change. Singapore: World Scientific Publishing.

Maharramli, B. (2017). Cities as a Transformative Nexus*.* In Matthew et al. (Eds.) *The Social Ecology of the Anthropocene: Continuity and Change in Global Environmental Politics.* The WSPC Reference on Natural Resources and Environmental Policy in the Era of Global Change. (pp. 345-365). Singapore: World Scientific Publishing.

Matthew, R., Harron, C., Goodrich, K., **Maharramli, B**., & Nizkorodov, E. (2017). Introduction. In Matthew et al. (Eds.) *The Social Ecology of the Anthropocene: Continuity and Change in Global Environmental Politics.* The WSPC Reference on Natural Resources and Environmental Policy in the Era of Global Change. (pp. xvii - xxv). Singapore: World Scientific Publishing.

Matthew, R., Harron, C., Goodrich, K., **Maharramli, B**., & Nizkorodov, E. (2017). Conclusion. In Matthew et al. (Eds.) *The Social Ecology of the Anthropocene: Continuity and Change in Global Environmental Politics.* The WSPC Reference on Natural Resources and Environmental Policy in the Era of Global Change. (pp. 483-492). Singapore: World Scientific Publishing.

ABSTRACT OF THE DISSERTATION

Interactions between Knowledge and Practitioner Communities – Engagement to Enhance

Urban Social-Ecological Resilience

By Bemmy Jennifer Maharramli

Doctor of Philosophy in Urban and Environmental Planning and Policy

University of California, Irvine, 2019

Professor Richard Matthew, Chair

My research focuses on the processes through which partners interact to integrate nature in cities in order to promote healthy communities and social-ecological systems. This scholarship is timely and important given the scale of environmental change humans living in cities are driving globally. Cities both contribute to and experience changes such as increased flooding and higher temperatures, with vulnerable populations bearing the brunt of these impacts, while also having less access to the benefits that nature can provide. Cities are also highly networked places with the potential to be leaders in piloting and leveraging solutions to the world's most pressing social-ecological challenges. Utilizing an interpretive methodology, I spent one year with a university center for urban resilience in Los Angeles, attending meetings and carrying out over 40 semi-structured interviews conducted with practitioner and knowledge community participants in the region. My dissertation explains how universities navigate their relationships with partners focusing on legitimacy, inclusion and the fluidity between the two concepts. Recommendations are provided on how to bridge legitimacy and inclusion to strategically benefit policy and planning partnership efforts. This dissertation also shows how partner narratives of urban nature are dynamic, shifting over time and diverse across space and groups. Recommendations

are provided on how narratives can be a tool to better understand partner perspectives, identify synergies and divergences among narratives, and develop more inclusive policy and planning processes. This dissertation also evaluates a university led urban environmental stewardship mapping and assessment project (LA STEW-MAP), including better understanding practitioner perspectives. Recommendations are provided on how the LA STEW-MAP process can be improved to operationalize a social-ecological systems approach and as a community engagement tool.

Interactions between knowledge and practitioner communities: engagement to enhance urban social-ecological resilience

My overall dissertation research question is: how can partner communities work together to address policy and planning challenges in integrating nature in cities to benefit human wellbeing and healthier social-ecological systems? As a subset of this broader research question, I focus on university and practitioner partners in communities, as it is this nexus where social innovation can occur. I chose to concentrate on urban areas as this is where partners are networked best and cities are a major driver of environmental change - affecting sustainability change in cities will have the most multiplier benefits in urban regions and beyond. My thesis is that there are gaps and opportunities for institutions of higher education in their role as a relevant partner to integrate nature in cities to innovatively and transformatively strengthen urban ecosystem health and social-ecological resilience of communities. Some of these gaps can be strengthened if universities better navigate their role in terms of legitimacy and inclusion, and the fluidity between these two concepts. There are also opportunities to better inform policy and planning processes and social innovation across scales through tools such as narratives and stewardship assessment and mapping, if an inclusive social-ecological systems approach is utilized.

I explore this research question across three intersecting empirical chapters:

1. How universities enact their role through the interacting lens of legitimacy and inclusion with partners;

2. Diverse and shifting narratives of urban nature among knowledge and practitioner community partners; and a

3. Nested case study of a university-led county-wide environmental stewardship mapping and assessment project (STEW-MAP).

Aggregately, this research is meant to inform universities and practitioners on how they can better work together to integrate nature in cities to benefit social innovation, or new ideas that work to meet unmet needs, and urban resilience and sustainability policy and planning processes (Mulgan et al. 2007). In particular, within urban areas, this research emphasized community-based collaboration at the neighborhood and ecosystem levels.

Planet Earth in Crisis

Planet Earth is in a state of environmental crisis as a result of direct and indirect human activities. Anthropogenic emissions are increasing climate risks and nature's contributions to people are deteriorating worldwide (IPCC 2018, IPBES 2019). Innumerable modifications to the natural world that we depend upon are rapidly happening around the world - massive species extinctions, large-scale land-use change and fragmentation, wide-scale environmental degradation, and climate change, which in turn is fueling a cascade of related events (rapid sea loss, sea level rise, hotter temperatures, more natural disasters, etc.) (IPBES, 2019). Increasingly, the planet is nearing a threshold, which if crossed would highly destabilize the global interconnected biogeochemical system across scales (Steffen et al. 2018). The more that people approach and breach planetary thresholds (climate, biodiversity, etc.), the less likely reductions in emissions will have the needed mitigation impact.

Rising Importance of Cities

We are living in what has been referred to as the first urban century (Steiner 2011, 2014). More than half of the global population today lives in urban areas. By 2050 this is expected to rise to two-thirds of the global population (UN Habitat 2012, United Nations 2018). Cities themselves are unprecedented in size, in terms of sheer expanse and the number of people living within them. In 1950 there were only two cities with populations of at least 10 million and today there are 21 mega-cities (United Nations, 2011). Moreover, the boundaries of cities have become more nebulous, sometimes referred to as urban agglomerations, with cities spanning vast metropolitan areas that include far-flung suburbs (United Nations, 2018). Examples of such cities include Tokyo, Mexico City, New York, Lagos, Mumbai and the Los Angeles region nearing that threshold at 18.7 million (and more if you include the entire Southern California region that the city is at the heart of) (World Population Review, 2019).

As opposed to cities being self-containing entities, they are largely dependent on access to resources and ecosystem services outside of their boundaries (Pincetl et al., 2012, Andersson et al. 2014, Seto et al. 2011, Ahern 2014, UN Habitat 2006). As such, urban populations are major drivers of deleterious natural resource use and environmental change. Urbanization, together with agriculture and forestry, are the major drivers of land-use change (IPBES, 2019). In addition, urban populations – what people do, how they get around, food they eat, water they use, and consumer choices – these all drive environmental change and degradation around the world.

On the other hand, cities can be facilitators of transformative, inspiring and creative sustainable, resilient systems. With the global shift from rural to urban, many groups have

heralded the promise for cities to serve as centers of renewal and regeneration (Steiner 2014, 2011). Cities are often ahead of the national level in taking action on environmental issues and developing innovative solutions. As Pincetl (2012) describes, it is in cities where the greatest opportunity for changes towards more sustainability can be found. Sassen (2010) describes how environmental damages can be reoriented and remade and thus become part of the solution. Therefore, cities are in a special position, due to global demographic trends and environmental change driven by them, to serve as networked centers for sustainability and resilience learning to incubate ideas that can be leveraged up-scale, across scale and down-scale (Maharramli, 2017). In addition, it is at the regional and local levels that adaptive planning and resilience efforts will primarily take place (California Statewide Summary, 2018).

Universities as Partners in Cities

Increasingly cities are working with a variety of non-government actors, or hybrid governance arrangements, to advance their sustainability goals (Connolly 2014, Romolini, Bixler & Grove 2016). There are synergies between climate change mitigation options, resilience, and sustainable development, using UN Sustainable Development Goals as a guide (IPCC, 2018). It is the local and regional levels that will be tasked primarily with developing climate change adaptation and mitigation solutions, as this is where land-use changes and development decisions are primarily made (California Fourth Climate Change Assessment, 2018). For example, in California there is state legislation, SB 379, that requires cities and counties to consider climate risk in their General Plan.

One particular actor that serves as a partner with cities on urban policies and planning is the university. Institutions of higher education are present in communities of all

shapes and sizes across the United States, and are seen as institutional leaders locally, regionally and globally. Recently in California, knowledge producers and local practitioners worked together to assess and develop solutions to address climate change, which in turn has induced efforts for more long-term collaboration (California Fourth Climate Change Assessment, 2018). Researchers put together a toolkit for helping local governments improve their adaptation capabilities (http://arccacalifornia.org/adapt-ca/), and similarly UC Berkeley assisted the state of California in developing the online climate tool, Cal-Adapt (https://cal-adapt.org). The collaboration between practitioners and researchers has been shown to have great potential for facilitating transformation on complex, urgent issues, but more remains to be understood about these knowledge co-creation processes (Galafassi et al. 2018). The university also has unique resources - knowledge capital, students and credibility - that can enable it to serve as a valuable partner with local government, NGOs and the private sector in rethinking the role of nature in cities for improved human wellbeing. In addition, universities are increasingly thinking of their relevance in terms of their engagement with local communities. How universities work with partners on sustainability and resilience issues, such as urban ecology, is an indicator of how universities are evolving as well as a place where lessons can be learned to inform universities how to be better partners in the future.

There has been a lot of recent effort in the areas of sustainability and community engagement in higher education. This dissertation research focuses on how the university is engaging partners in the wider community on urban nature efforts that benefit communities and ecosystems. Notably, what a university implements on campus in terms of sustainability and resilience efforts can inform, leverage and inspire innovation with the

wider community. In other words, there is an important nexus between university sustainability efforts on-campus and community engagement.

Dissertation Roadmap

In Chapter 1, I examine how universities practice legitimacy and inclusion, including the fluidity between the two concepts. This allowed me to explore how the university is perceived, portrayed and enacts its engaged role as a partner through the lens of legitimacy and inclusion, and the interaction between the two in the realm of urban ecology efforts. Based on these findings, I offer recommendations on how universities can improve partnership processes in the communities they work.

In Chapter 2, I examine knowledge and practitioner narratives of nature in cities. This includes dynamics perceptions of ecosystem services, ecosystem disservices and tensions in this regard among partners. This allowed me to explore perceptions of what nature means in cities, how these perceptions vary and shift, and how such narratives can shed light on opportunities for spurring social innovation and improving planning and policy processes for nature in cities to benefit human well-being.

In Chapter 3, I explore environmental stewardship through the examination of a university center's role in leading Los Angeles' (LA) STEW-MAP, a county-wide environmental stewardship assessment and mapping project. This nested case study allowed me to explore the process of the STEW-MAP tool as it is being implemented in LA and provide recommendations for improving its utility and potential among partners.

In the Conclusion Chapter, I provide an analytical synthesis of the findings. I highlight threads that cut across all chapters and explore synergies and tensions between

chapters. Some common threads across chapters were narratives and inclusion. In addition, I lay out a path for future research.

Below I review some of the literature that is the basis of this research: the Anthropocene, social-ecological systems and urban governance literature. The Anthropocene literature outlines how the new human-dominated epoch we are now living in encapsulates the planetary scale changes we have caused and implications of being in this new time period. The social-ecological system (SES) literature sheds light on the inseparable ties between human and environmental systems, as exemplified by cities, and how an SES approach is now needed more than ever. The urban governance literature responds to the growing recognition that our biggest challenges are not technical, rather they are the challenge of creating governance structures that are nimble, resilient and just in the Anthropocene. There are areas of literature that I go into more deeply in specific chapters. For example, in Chapter 1 I delve more deeply in higher education community engagement. In Chapter 2, I bring in more literature related to nature in cities, such as ecosystem services and green infrastructure, as well as narratives as research tool. In Chapter 3, I discuss literature pertaining to environmental stewardship and civic engagement. In the Methodology section below, I provide an overall framework on my research location and methodology, noting that there are some methodological details that I go into more detail and are unique to each chapter.

Anthropocene

Many experts hail that we are now living in a human-dominated geological epoch to replace the Holocene, the epoch we have been in the past 10-12,000 millennia (Crutzen, 2002). Steffen et al (2015) explain that the Holocene epoch is the only state of the planet

that we know with complete confidence that modern human societies can live in.

Rockstrom et al. explore how human activities are driving planetary change through their

work on planetary boundaries (Rockstrom et al. 2009, Steffen et al. 2015). Planetary

boundaries (PB) are defined as, "safe operating spaces for human societies to develop and

thrive" (p. 736), and include nine PBs (climate change, biosphere integrity, land-system

change, freshwater use, biogeochemical flows, ocean acidification, atmospheric aerosol

loading, stratospheric ozone depletion and novel entities). These researchers argue that the

more these boundaries are transgressed, the more we are at risk for leaving "Holocene-like

conditions" and entering an era of more unknown instability (Steffen et al. 2018).

The Anthropocene is described as a time period in which human activities are the

leading driver of global environmental change, with this change occurring at an

unprecedented scale and rate (Ellis et al. 2013, Berhout 2014, Steffen et al. 2011, Goodrich

& Nizkorodov, 2017). The Anthropocene is characterized by human production,

consumption, and land-use practices on a scale that disrupts biological, biogeochemical,

geomorphic and climatic processes (Ellis et al. 2013). Paul Crutzen and colleagues

introduced the concept of the Anthropocene to the academic community more than a

decade ago, building on the work of others, such as Antonio Stoppani (in 1873, using the

term "anthropozioic era) and Chardin and Vernadsky (in 1926, using the term noösphere,

referring to the "world of thought") (Crutzen 2002, Steffen et al. 2011).

In May 2019, the Anthropocene Working Group, formed as part of the Sub-commission on Quaternary Stratigraphy, voted to formally recognize the new Anthropocene epoch and is currently considering the geologic marker to signify the start of the Anthropocene.[1] Lewis and Maslin (2015) suggest a range of possible dates including the 1) origins of farming, 2) new-old world collision (also called the 1610 Orbis Spike), 3) industrialization and 4) nuclear weapon detonation, asserting the two best options are the Orbis spike and 1964 bomb spike. As they note, the decision to formally ratify a new epoch should be evidence-based because there are political ramifications of the data chosen, which will frame the narrative about our relationship and impact on the environment, and who (e.g. countries) led the drivers of change that caused this planetary-wide alteration.

For this research, the concept of the Anthropocene is useful as a short-hand and heuristic for describing the rate, scale and urgency of environmental changes that humans are driving and need for fairness and social justice considerations from impacts and proposed solutions. A policy and management model that recognizes the implicit complexity and trans-disciplinary nature of today's challenges are necessary. The concept of the Anthropocene resonates with most citizens, practitioners and scientists, reflecting the changes we are causing and experiencing on our planet. The following four interconnected features of the Anthropocene are useful in framing the need for my overarching research focus on the integration of ecosystems in cities to benefit healthy social-ecological systems.

1. Human beings are driving directly and indirectly large-scale environmental change on the planet.

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[1]https://www.nature.com/articles/d41586-019-01641-5.

2. These environmental changes are having and will have negative and cascading impacts on human well-being (security, livelihoods), particularly for the poor and vulnerable.

3. Most people now live in cities, with these complex systems driving environmental change, including natural ecosystems and resources near and far, and representing a strategic opportunity to mitigate and adapt to the environmental change human beings have caused.

4. Environmental changes that human activity is causing calls for transdisciplinary collaboration - across sectors and between academia, citizens and practitioners - to co-productively develop transformative, inclusive solutions.

Social-Ecological Systems

A social-ecological system (SES) is a system where people and nature are linked, where they both depend upon and influence each other (Cumming et al. 2013, Berkes & Folke 1998, Berkes et al. 2003). Given the complex and rapidly changing challenges cities face, there is an urgent need for a perspective that takes into account human-environment interactions, or a social-ecological systems perspective. In a SES, change is complex, occurring across multiple spatial and temporal scales and sectors (Folke 2011, Galaz et al. 2010). A SES approach embraces a systems perspective, including feedbacks, tipping points and non-linear dynamics (Steffen et al. 2018). Urban systems exemplify social-ecological systems given their complex and hyper relationship with social systems and ecological systems both near and far (Tzoulas et al. 2007, Pickett et al. 2013, Andersson et al. 2014).

A SES perspective can improve the integration of nature in urban settings by enabling institutions to develop policies and plans that optimize synergies and manage tradeoffs between social and ecological systems, emphasize the importance of trans-disciplinary collaboration, and strive to more inclusively and equitably distribute the benefits of healthy ecosystem services across urban settings to improve human wellbeing. Developing innovative and resilient urban social-ecological policies and plans in the Anthropocene remains a cross-cutting frontier and an exciting area for applied research.

One particular SES framework that can be useful in urban settings is that of Social Ecology. Social Ecology is a particular SES paradigm. Specifically, it is the study of communities from a broad, interdisciplinary perspective, including biological, economic, social, psychological, institutional and cultural (Stokols et al., 2013, Stokols 2017). Key principles of the Social Ecology Paradigm are: 1) multi-dimensional structure of human environments, considering both space and time; 2) multiple levels of analysis (e.g. contextual analyses) and methodologies; 3) use of key concepts from systems theory; and 4) transdisciplinary action-research orientation (Stokols et al. 2013, Stokols 1996). This paradigm has provided added value to the discourse on SES's in urban settings, in particular through its applicability in multiple areas such as public health, climate change, urban environments and others (Stokols et al., 2013). This paradigm also provides valuable insight through its emphasis on the contextuality of social-ecological phenomena. Research by Stokols et al. (2013) outlines how Social Ecology can contribute to the discourse on the resilience of social-ecological systems by focusing on dynamic transactional relationships between different systems through various forms of capital (social, human, natural, etc.). Other concepts that explicitly integrate a SES approach include biophilic cities, natural or

green infrastructure and civic ecology, noting that these concepts are discussed in more detail in other dissertation chapters.

One of the critiques of current governance structures is their rigidity and inability to adapt to rapidly changing environmental and social conditions characteristic of the Anthropocene. The SES perspective brings these changing conditions into focus and makes explicit the links, both synergies and trade-offs, between environmental and social systems (Folke, 2011). A focus on the social-ecological can reduce the tension between conservation and development, provide insight for "win-wins" and facilitate a new face to sustainability (Andersson et al., 2014). While there is much in the literature theoretically on SES, the empirical side is underdeveloped and there remains a gap in moving this approach towards meaningful, practical and consistent operationalization. This points to a need for more collaborative, transdisciplinary research on this topic, utilizing a host of research methods (qualitative, quantitative, interpretive and positivist).

The SES literature relates to my research because it captures the complex social and ecological interactions that occur across time and space, which are becoming increasingly more intricate, unpredictable, and urgent. The following four interconnected features of an SES approach are useful in framing the need for my overarching research focus and an explicit SES lens I take during the research process.

1. Focusing on action-oriented transdisciplinary partnerships (e.g. across departments and public, private, civil society and research sectors), pulling from the social ecology paradigm.

2. Explicitly trying to understand, identify, monitor and manage the synergies and tradeoffs between social (including equity, environmental justice) and natural

systems from the spatial and temporal perspective, including other sectors (e.g. public health).

3. Incorporate contextual analysis to take into account the unique social, environmental and cultural histories of a place (Steiner, 2014, Stokols et al. 2013, Stokols 1996).

4. SES approach as an umbrella framework, under which a multiplicity of other concepts can emerge, operate and innovate, e.g. green infrastructure, sustainability plans, biophilic cities, civic ecology education, social ecology paradigm, etc.

Urban Governance

Moving towards sustainability requires partnerships between government, NGOs, the private sector and the academy (Robinson, 2004). Practitioners as it relates to the urban environment vary widely, including but not limited to local government officials and employees, non-governmental organizations, community organizations, donor organizations and the private sector. Universities have developed a track record of interacting with their communities, such as through cooperative extension, knowledge networks and partnerships that faculty and students develop with NGOs, private sector entities, donors and government agencies (McDowell, 2003). However, universities confront their own challenges in seeking to be an active, reliable partner in cities in the 21st century, including challenges in balancing knowledge production and engagement, relevance, disciplinary silos and incentive structures that can be at odds with developing effective and sustainable management structures to facilitate partnership (McDowell, 2003, Grove et al. 2016).

Aligned with the claim we are now in the Anthropocene, there is a widening gap

between planetary change and adequate policy and institutional responses. This means that the challenges associated with addressing anthropogenic impacts are quickly growing beyond manageable levels, with potentially disastrous cascading social and ecological consequences (German Advisory Council on Global Change 2008; IPCC 2014; McElroy & Baker 2012). Zizek (2011), would go so far to assert that the catastrophes associated with ecological crises are becoming normalized, describing the "passage between impossibility to normalization" in terms of how state powers react to disasters like the melting ice caps – now they are treated as a part of "carrying on as usual", noting that what gets lost in this shift are all the implications and "traps the catastrophe hides" (p. 329).[2]

Traditional governance systems are moving too slowly to incorporate the value of nature in policy and planning processes, whereas subsidies with harmful effects on nature have persisted (IPBES, 2019). Previous and current strategies of dealing with environmental challenges, such as regulatory legislation, technological solutions, market-based approaches and even collaborative approaches in their current formation are no longer sufficient and may even amplify some problems while creating the false and symbolic assurance that things are being managed. Romolini et al. (2016) examine how governance, particularly as it relates to natural resource and environmental issues, can be operationally examined from a social-ecological systems perspective. One way of doing this is through urban stewardship networks. In this case, coordination in cities can be evaluated through the evaluation of environmental stewardship, who and how organizations are working together and the identification of stewardship gaps.

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[2] Zizek compellingly juxtaposes this example to what happened in Europe in the early 1990's. No one would have believed the siege in Sarajevo to be possible, and then people thought it was short-term, and then it became normalized (p. 329).

Many researchers assert that it is the social side of things that poses the chief obstacle to the cascading ecological crises human beings will likely face (Hansen & Pauleit 2014, Folke 2011, Galaz et al. 2011). Policy and management systems need to be adjusted to better deal with the interactions between institutions and ecosystems (Folke 2010, Ostrom 2009). Increasingly there are governance arrangements that facilitate a variety of partners working together in cities to advance sustainability and resilience goals (Connolly 2014, Romolini, Bixler and Grove 2016). Partners in cities can come together to collaboratively test and evaluate novel solutions and arrangements, which is especially valuable as cities are a microcosm of many global environmental challenges (Andersson et al. 2014, Grimm et al. 2008).

Forester's (1989) work on how to maneuver in the face of power is also a helpful guide in acknowledging the structural realities and limitations of the social environment we work in, and how to make gains in spite of that. Forester, Innes, Hoch and others suggest communicative and pragmatic forms of policymaking - acknowledging the influence of power and ideology and how this impacts agency. They move down the continuum from rationality to limited rationality and argue that with proper methods and processes, there is some degree of agency a policy maker can at times have depending on the situation.[3] Tools in Forester's (1999) toolbox to increase agency and foster more authentic participatory decision-making policy processes include strategic listening, storytelling and participatory rituals.

A notable governance framework is collaborative governance, which is defined as a "collective decision-making process that allows diverse sets of actors who share an interest

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[3] With scholars like Zizek, Harvey, Sanderock being on the other end of the continuum.

or stake in a policy or management issue to work together toward beneficial outcomes"
(Gerlak et al. 2016: p. 413). Similarly, Koontz (2004) refers to collaborative environmental
management as cooperation among various stakeholder groups, explaining how this can
take on an array of forms, including community-based management/initiatives,
collaborative conservation and co-management. Some of the factors that affect the success
of collaborative governance are how an issue is framed, resources available for
collaboration, group structure and decision-making. Some of the strengths of collaborative
governance are that it can be well suited for complex and diffuse environmental problems
(such as non-point source pollution – it has often been applied in watersheds); can improve
trust and relationships among groups by increasing transparency and participation; and
can contribute to policy learning and development of innovative policy responses. On the
other hand, some critiques of collaborative governance are that it is more symbolic; it may
increase the potential for "capture" by a local interest group; and given its association with
consensus decision-making, is vulnerable to "least common denominator" decisions
(Koontz 2004; Gerlak et al. 2016). While the potential strengths and weaknesses of
collaborative governance should continue to be researched, its core values of transparency,
participative decision-making and consideration of cross-disciplinary issues is highly
relevant given the nature of the environmental issues that cities are facing.

Quick and Feldman (2011) describe two types of collaboration - participation and
inclusion. Participation is described as, "efforts to increase public input in the content of
programs and policies" (p. 272). Inclusion is described as, "continuously creating a
community involved in co-producing processes, policies, and programs for defining and
addressing public issues". Within this definition the word "co-producing" is embedded,

with Ostrom (1996) explaining how this represents a synergy between what government and what citizens can do. Inclusion places special focus on connections, characterized by engaging multiple ways of knowing; coproduction of process and content of decision making; and temporal openness (p.281-282).

The concept of boundary organizations, whereby an entity works on the interface between two sectors or areas is also relevant to collaboration. An organization may work at the cusp between a research organization and a policy institution, aiming to translate science to policy for decision makers. Universities often serve as boundary organizations, whereby some universities serve as the connector between a university and its community on an issue(s), with a prime example being university extension services (Karlin et al. 2017, Feldman & Ingram 2009). In addition, the formerly predominantly used "loading dock model" whereby universities prepare information they perceive as useful, without consulting or engaging with potential users or partners to co-produce knowledge, has shown to be less ineffective (Feldman & Ingram, 2009). This is similar to the outreach versus engagement distinction that Bryne (1996) makes, framing outreach as a transfer of knowledge from the university to the community, and engagement as a two-way exchange.

Given the unique capacities of universities, they are in a position to serve as a valuable partner to lend their expertise, deliberative capacity and enthusiastic students to develop innovative solutions to the complex social-ecological challenges their communities are facing around the world, often simultaneously. Universities and institutions of higher education (IHEs) broadly are considering their role in addressing these challenges.[4] In

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[4] IHEs include the array of organizations, both two-year and four-year, public and private, that contribute to education and workforce training as a part of post-secondary education.

some ways this is similar to how universities' role was reshaped in the 19th century via the extension model through the Morrill Land Grant Act of 1862. Through this statute, the U.S. Congress created the country's novel system of the land grant colleges, which later became known as (cooperative) extension. The U.S. Government Accountability Office (GAO) describes U.S. Extension as:

> The Cooperative Extension Service is the largest education system of its kind in the world. It is active in rural, suburban, and urban communities and, in addition to agricultural and home economics programs, offers programs in social and economic problems and cultural, recreational, and leisure-time activities. The Extension Service was established in 1914 primarily to provide farmers with information from agricultural research and to encourage them to adopt improved farming methods. Recently, its programs have expanded to include instruction in arts and crafts, recreation, creative and performing arts, and mental and emotional health (https://www.gao.gov/products/CED-81-119).

This model established the land-grant colleges of agriculture, fundamentally changed how universities engage with communities (McDowell, 2003, Fisher, Fabricant & Simmons 2004). Through cooperative extension, universities began asking communities what is useful to better understand; increased access to universities through extension and collaboration with local farmers; and changed the kind of research they were doing to be more relevant to local communities. The land grant system was incredibly successful in terms of sparking agricultural and private sector innovation that some have argued allowed the United States to produce enough food to feed the world.[5] It has since been sought after and replicated with varying degrees around the world and beyond the agricultural sector. Other novel collaborative arrangements between universities and community partners have since developed, such as regional knowledge networks,

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[5] Much more could be written about this, the Green Revolution, including serious environmental and social repercussions, as well as the focus more on certain stakeholders as opposed to others, as well as the focus more on business innovation rather than social innovation.

formalized relationships with cities, service-learning programs and university community engagement centers and/or platforms. For example, the City of Vancouver has a formal Memorandum of Understanding (MOU) with the University of British Columbia to advise them on their city's Greenest City Action Plan[6]. Many universities have community engagement centers on campus that seek to create strategically aggregate engagement efforts across the university.

Urban governance is core to my research because it encapsulates the policy, planning, stewardship and evaluation processes that goes into managing urban social and ecological systems. The following four interconnected considerations of a 21st century urban governance approach also frame the need and lens of my overarching research focus (Matthew et al. 2017).

- Any policy response must take measures to reduce the widening gap of inequality, as the environmental policy arena has done an inadequate job of integrating justice and including the marginalized in their efforts.

- An effective policy response must take into account the, at times, non-linear timescale of a response. There can be gradual or rapid social-ecological outcomes, and a more sustainable policy response may require more time than a "business-as-usual" response or alternatively an urgent solution may be called upon.

- A policy response should address the importance of a multi-scalar approach across cities - from pocket parks in one community to large active transport and regional green networks that encompasses many communities. There

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[6] Vancouver's Greenest City Action Plan: https://vancouver.ca/green-vancouver/greenest-city-action-plan.aspx.

are tradeoffs and synergies that occur across the landscape in terms of land-use and the connectivity of ecosystem services.

- Governance approaches must balance and seek synergies through inclusive stakeholder engagement and by being adaptive and socially innovative in order to respond to the scale and urgency of some challenges in the 21st century.

Research Contribution

Overall, this research aims to contribute to the academic literature and practice pertaining to how partners work together to integrate nature in cities in light of the challenges and opportunities in the Anthropocene. I chose to focus on cities as this is where the environmental focus has shifted to in recent years and this is where the most gains stand to be made in terms of local to global impacts. I also chose to focus on the interactions between knowledge and practitioner partners as this nexus of partnership has the potential to be a rich source of social innovation and knowledge development to tackle challenges in the Anthropocene and develop much needed SES oriented solutions. While the knowledge and practitioner partners I study focus on nature in cities broadly, in practice this often means focusing on certain communities or area within a city. This implies that the scale of this research is most resonate at the community level in terms of practice, while also having important theoretical and operational implications for cities in terms of their policy and planning strategies that incentivize community strategies. In addition, successful and innovative solutions developed at the community level can be scaled up and shared with others.

In the first empirical chapter, I contribute to the body of work on university community engagement in terms of how the university can better navigate coordination on urban social-ecological issues through the interactive practices of legitimacy and inclusion, including shedding light on, critiquing and providing recommendations on how the university can be a better bridge to their communities. In the second empirical chapter, I contribute to academic work related to narratives of nature, specifically how dynamic narratives of urban nature can reveal tensions and opportunities in urban ecology efforts, as well as serve as a tool to facilitate more inclusive policy and planning processes across scales, from the community scale of concerns about wildlife in a neighborhood to the larger scale of re-imagining the role of nature in a city. In the third empirical chapter, this research contributes to urban environmental stewardship by examining a university's role in coordinating a LA county-wide environmental stewardship mapping and assessment process, called STEW-MAP, including evaluating the utility of this tool and offering recommendations to improve the STEW-MAP as an operational social-ecological process. These three main elements - 1) practices of legitimacy and inclusion by a university; 2) dynamic narratives of nature in cities; and 3) efforts to better understand where and how environmental stewardship is occurring and how - contribute to the body of work on urban social-ecological systems and how partners, especially universities and practitioners, can better coordinate to integrate nature in cities to benefit human well-being and address the grand challenges of our time.

In addition, this research will provide valuable and insightful information useful to the stakeholders in the urban area I am studying - namely the university center I studied as a part of a larger university and their partners working in the broader Los Angeles region.

Other cities and universities face similar challenges, and as such would benefit from insight generated from the study. And finally, this research, through its interpretive narrative approach to better understanding urban social-ecological systems, will unveil important and applied findings regarding interactions with urban nature that I can continue to build on in subsequent research in this region and other cities as well.

Methods

Research Location

People often describe Los Angeles (LA) as similar to cities found in the Global South, where the boundaries of cities are nebulous and there are areas of immense wealth and massive poverty (Judd, 2011). East Coast American and European cities that developed during the Industrial Age largely developed around the rail and alongside major rivers. In contrast, LA proactively developed around the automobile (Hall, 2002). In addition, the development of a city in such an arid environment required large-scale environmental change. LA has been a major force in re-shaping the environment in the region, including through large-scale hydrological development (system wide river channelization, damming of rivers, and movement of water from the mountains in the north to the cities in the south), coastal development, destruction of most urban wetlands, and the sprawl and outward development associated with a city that chose to develop around freeways. LA is characterized by a small city center and a series of small cities that have grown into and out of each other. Overtime these cities have morphed into one mega-metropolitan region extending all the way from Northern Los Angeles down to San Diego and the border with Mexico, with a population of 18 million, and the second largest population center in the United States (World Population Center, 2019).

LA faces many serious environmental challenges, including water scarcity, loss of habitat, biodiversity and ecosystem services, air pollution and multiplier impacts from climate change, such as extreme heat, wildfires, sea level rise and more (Union of Concerned Scientists 2012). The area is semi-arid and has been able to support its population owing to massive water infrastructure projects (Hundley, 2001). However, this reliance has come with consequences, including dependence on gray infrastructure as opposed to more sustainable ecosystem service delivery options such as natural infrastructure.

The city is also known for its lack of equity, with about 25% of the residents considered poor (Public Policy Institute of California). For example, there is a deep inequity with regard to who has access to parks and green space, with low-income and Latinos, African Americans and Asian-Pacific Islanders having lower levels of park access (Wolch, et al. 2005). It is the underserved who have the least access to ecosystem services and the benefits from urban nature and at the same time are most vulnerable to environmental injustice and natural disasters. Together these interconnected issues have many social-ecological impacts, such as insufficient access to green space, inefficient water use, urban heat island effect, greenhouse gas emissions due to high dependence on cars, and loss of natural ecosystems and agricultural land due to urban sprawl and fragmentation.

LA is trying to become more sustainable and change its environmental narrative, given the city is currently known for its sprawl, congestion and lack of green space. One such example of an attempted reset is Mayor Garcetti's launch in 2015 of the city's Sustainability pLAn, similar to New York City's plaNYC, with a range of environmental, economic and social targets by 2025. One of the major topic areas in the pLAn is "Urban

Ecosystems" (p. 87), which emphasizes creating more access to parks and open space, including a revitalized Los Angeles River Watershed.

Methodology

I was engaged as a participant observer at a university center, Loyola Marymount University (LMU) LA's Center for Urban Resilience (CURes: https://academics.lmu.edu/cures/). LMU LA is situated on top of a hill overlooking the Pacific Ocean on one side and on the other side a large swath of the city. It is also adjacent to the last remaining urban wetland in Los Angeles, the Ballona Wetlands. This interdisciplinary, cross-campus center focuses on urban ecology as a means of empowering communities and increasing urban resilience in Southern California. The mission of CURes is to "serve urban communities with a suite of research, education, restorative justice and urban planning programs designed to improve the quality of life for residents, especially for those in underserved neighborhoods" (CURes website). CURes' major areas of research are green infrastructure, society and the environment (social-ecological governance) and restorative justice. The university center granted access for me to be a participant observer during their staff meetings and engagement with partners.

I utilized a research approach that drew from 1) interpretive qualitative research practices and 2) the use of narrative from a social-ecological perspective. An interpretive narrative approach is particularly appropriate for this study as narrative can be a model for how people model their social-ecological environment (Lejano & Ingram 2013). In Chapter 2 of this dissertation research I delve into more detail on narratives as a methodological research tool, particularly in terms of social-ecological systems.

I conducted interviews, participant observation and analyzed written materials. For my interviews, I conducted over 40 semi-structured, conversational interviews with a variety of practitioners and knowledge community representatives. These practitioners included CURes staff, partners of CURes, some other IHEs in the LA region (including community colleges), and practitioner partners that were recommended by others during the interview process. I practiced sequential interviewing, whereby each case provided an improved understanding of the research question, enabling a thoughtful refinement and reevaluation to occur throughout the entire process until saturation was reached (Yin 1994, Small 2009, Suddaby 2009). The interviews were structured in a way to invite stories, such as through the use of open-ended questions (Chase 2003, Paschen & Ison 2012). The interview guide was designed to better understand participants' perceptions, engage stories regarding their work entailing urban nature, as well as how partners worked together on these endeavors, focusing more on the university as a partner. Conducting the interviews enabled me to investigate the research topic by learning how partners were working on urban nature and their experiences and perceptions of working with the university as a partner in this realm (e.g. existing relationships, challenges and needs).

For field observations, I conducted participant observation of CURes for over a year, from spring 2017 to late spring 2018. Participant observation occurred at staff meetings (in person and remotely), on and offsite partnership meetings, staff retreat and workshops. The participant observation enabled me to investigate the research topic by observing how the university center interacted with partners and discussed their partnership efforts among each other.

Regarding written materials, I examined relevant documents pertaining to a variety of participants throughout the entire research process, particularly those I engaged most deeply. Written materials included annual reports, strategy documents, websites, etc. The analysis of written materials allowed me to investigate the research topic in terms of how partners, particularly CURes, are articulating their work in the context of social-ecological issues and how they are interacting with partners in their work.

I sought a participatory research approach, engaging CURes particularly throughout the process, asking for feedback at different stages of the research as a way to facilitate co-production of knowledge and as a data analysis tool itself. Throughout the research process I attempted to maintain reflexivity. As Suddaby (2006) and others assert, researchers take note of their positions in the research process through self-reflection of their world views and assumptions at all stages (p. 640). For example, Warren (2001) explains that ethnographers in the field are, "embodied, clothes and gendered…picking up social meanings as they move into the world they have chosen, thereby, creating intersections with those other worlds they inhabit" (p. 208). As an example, I reflected on the fact that I am a university graduate student studying the role of universities. At the same time, I was a practitioner prior to returning to pursue my PhD, and this background helped me relate to and understand the work and position of practitioners I interacted with. Seeking reflexivity was accomplished through parenthetical reflections within field notes and memos written throughout the research process.

I transcribed the interviews through a secure, online transcription service, rev.com. I utilized the qualitative software program ATLAS.ti to store and manage the data. Once the data was uploaded to ATLAS.ti, data analysis methods included, coding, categorizing and

writing memos and others based on the data. The two major data analysis methods, in addition to coding and categorizing, were 1) narrative analysis and 2) use of heuristics. In addition to inviting narratives as described previously, I paid attention to narratives in the data, such as synergies, tensions, differences and shifts within and across participant narratives. I also utilized heuristics, which can be described as a tool or method for exploring the data to facilitate discovery (Abbot, 2004). This was helpful across chapters. For example, in Chapter One I used the concepts of legitimacy, inclusion and their interactions as a heuristic for exploring the data. Data analysis occurred iteratively with data collection in order to notice surprises, puzzles and patterns that emerged in the research process (Schwartz-Shea & Yanow 2012, Wilkinson 2014). Once broad themes began to emerge, I began to write more as an analytical tool, iteratively interacting back and forth between the data and literature, as well as sharing various drafts with participants for their feedback. From this analytical process, as described above, three overall research topics, or empirical chapters, began to emerge, as noted before and informed by the research process.

1. How a university interacts with its partners on urban social-ecological efforts, through the interacting lens of legitimacy and inclusion;

2. Practitioner and university partner dynamic narratives of nature's services and disservices and connections to environmental policy and planning processes; and

3. Examination of CURes' stewardship assessment and mapping project (LA STEW-MAP), including participant perceptions and the evaluation of gaps and opportunities.

Each of these three overarching chapters inform my overall question of how universities are interacting as partners on urban ecology issues. In addition, they overlap

and contribute to each other. These three empirical dissertation chapters are followed by a

Conclusion Chapter that provides a holistic analytical synthesis of the dissertation research,

examines these issues across chapters for synergies and tensions, and provides a road map

for future research.

Universities as a partner: bridging inclusion and legitimacy to improve urban social-ecological partnerships

Increasingly universities are contemplating how to be relevant in the 21st century given the complex social and ecological challenges communities the world over face, such as climate change, inequality, food and water insecurity, and much more. An integral part of a university's role is its mission to contribute to and engage in their communities through research and education to address their needs and a variety of challenges. How does this engagement happen and what does it look like in light of the challenges that communities are facing and are expected to face? How can the university work with community partners to develop needed trans-disciplinary and creative solutions in the area of urban environmental policy and sustainability in order to stay relevant in the 21st century?

Overall, I focus on how partners integrate nature in cities to benefit the urban landscape - including ecological connectivity, natural infrastructure and ecosystem services - as a part of the solution to many urban social-ecological challenges, such as urban resilience and environmental justice (e.g. access to green spaces by underserved groups). Given the increasing recognition of the critical role that cities can play in promoting urban resilience and sustainability, discussed in more detail in the Introduction Chapter of this dissertation, it is important to understand how to facilitate this role among partners, examine how innovations might be happening on the ground, and share lessons learned.

This chapter examines the university[7] as a partner in issues related to urban nature (e.g. biodiversity, resilience, sustainability, etc.) and how these partnerships are enacted

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[7] It should be noted that while the bulk of this research study focuses on the four-year university, I also sometimes invoke the more general term - Institutions of Higher Education (IHE) - that includes the array or

through the interactive lens of legitimacy and inclusion. In particular I examine a university center that focuses its community interactions on pressing 21st century challenges, in this case urban resilience across the complex social-ecological landscape of Los Angeles. Legitimacy and inclusion as concepts each represent different strengths and roles of institutions of higher education. The concept of legitimacy aligns with the role of the university as a knowledge producer. The concept of inclusion aligns with the role of the university as an educator to a diverse range of people with different socioeconomic, racial, ethnic, cultural and gendered backgrounds.

This chapter will show how some universities are enacting their role with partners more in terms of legitimacy than inclusion, and how there are opportunities to strategically leverage the fluidity, or porous boundary, between legitimacy and inclusion to improve the university's role as an urban social-ecological partner. I describe fluidity as the porous boundary between these two concepts, which I posit can in turn be strategically leveraged to benefit legitimacy, inclusion or both. Both of the concepts of legitimacy and inclusion have a rich overlay with other concepts, such as power, race, gender, and class. Juxtaposing them against each other can facilitate productive and insightful analyses.

One particular pathway to facilitate sustainability and resilience in cities is through environmental education, and in particular environmental education that strongly focuses on civic engagement. UNESCO (2005) calls for education to integrate sustainable development, and as a part of this asserts the need for education to take place within the community context, including in urban areas, to promote learning about linked social and

post-secondary education, from community colleges, to small private and public liberal arts college to large private and public research universities (Fisher, Fabricant & Simmons, 2004).

ecological processes. Ardoin (2006) advocates for environmental education to be place-based, meaning situated in the local biophysical and social place as a means to better understand real world social-ecological challenges and opportunities.

While there has been much research regarding the role of the university in terms of the land grant model, serving learning and community engagement broadly, there needs to be more research on how universities are partnering with communities and cities to tackle complex 21st century urban social-ecological challenges. Higher education community engagement is defined as a two-way partnership of exchange between the university and its partners, versus community outreach, which is a one-way transfer of knowledge or technology (Bryne, 1996).

Karlin et al. (2017) discuss the important role of the knowledge community in addressing complex challenges in the Anthropocene (with the Anthropocene discussed in more detail in the Introduction Chapter), particularly through the use of engaged scholarship. Similarly, a social-ecological systems (SES) lens is an appropriate approach to the complex and dynamic challenges in the Anthropocene (also building on discussions in the Introduction Chapter). One way that universities can facilitate their role in addressing complex community challenges is by serving as the connector or boundary organization between stakeholders/partners on an issue(s), such as through university extension services (Feldman and Ingram 2009). In addition, a key part of having a SES lens is to be trans-disciplinary, described as the, "co-production of knowledge by academic and non-academic partners who join together to create innovative solutions to societal problems" (Stokols, 2017 p.325). Therefore, this focus is not just on interactions between the knowledge and practitioner communities, but by definition how these groups are working

together in a trans-disciplinary way.

At the intersection of sustainability and community engagement there have developed organizations, associations and conferences to build on and promote these efforts. Examples include the Association for the Advancement of Sustainability in Higher Education, Campus Compact (focuses on campus community engagement), EPIC Network (facilitates partnerships between universities and nearby cities), Second Nature (a university-led climate change action initiative) and, in California, the California Higher Education Sustainability Conference. Some of these organizations are more focused on community engagement, while others on sustainability. Community engagement efforts focus on a multitude of areas, such as youth, health, housing and sustainability. Sustainability efforts often have an internal focus on campus; however, this also includes sharing their knowledge and advising partners on their efforts, innovations and what they have learned. In addition, many campus sustainability associations promote or include community engagement. This will only increase as university campuses consider how to address multi-scalar issues such as resilience, which encompasses interactions with partners and space beyond the university.

As discussed in the Introductory Chapter, the civic and community engagement mission of higher education in the U.S. has a long history, going back to the formation of land grant institutions and extension in the U.S. through the Morrill Act of 1862 and before. Since then how universities engage with communities has shifted and grown. Some of the major mechanisms for a university to engage with communities include engaged research, service learning, facilitating professional development opportunities (e.g. internships, field service, workshops), working with partners to incubate innovative new technologies,

promoting regional economic development, convening partners and some combination of the above. Increasingly some sort of campus center serves as a hub, coordinator and capacity builder for community engagement efforts, and there are best practices for such centers (Welch & Saltmarsh, 2013). Some of these best practices of engaged campuses include centralized reporting, institutional and campus-wide commitment to civic engagement, annual reports, adequate office space, sufficient resources, community representatives as part of an advisory board, community voice/input, and student leadership and decision making (Campus Compact website).

Dempsey (2010) notes that in response to the "ivory tower critique" that universities were out of touch with contemporary challenges, universities have begun expressing their relevance and commitment through service learning. Bringle and Hatcher (1996, p.222) define service learning as, "a (credit bearing) educational experience in organized service that meets identified community needs, while also reflecting on the service learning in such a way as to gain further understanding of course content, the discipline and enhanced civic responsibility". The emphasis on the contributions of students towards the civic mission of the university began in the 1980's and shifted to a focus on service learning. Service learning can narrow the distance between the community and the university while also benefiting and including the students (d'Arlach, Sanchez & Feuer, 2009).

Engaged research or scholarship encompasses a variety of similar approaches under a larger umbrella, including participatory research, participatory action research, community-based research and others. Engaged research varies widely in its form, often in terms of how much collaboration with partners occurs in relation to research purpose,

product and process (Stanton, 2017). A participatory approach towards research asserts that the researcher enters the research process as an active subject and sees the research subjects as a dynamic part of the research process (Guba and Lincoln 1994, Holstein and Gubrium 1995, Acker et al. 1991). Often this form of research asserts the value of the co-production of knowledge with partners and respects the multiplicity of knowledges and perspectives. Such an approach is aware of the power differential between the researchers and researched (objectification), is concerned with this, takes steps to avoid exploitation, and engages the research subject in the co-production of knowledge. A participatory approach is also aligned with the interpretive methodological and social-ecological systems (SES) approach (both discussed in the Introduction Chapter and highlighted again in this Methods section) used in this research. As such, the interpretive method used in this dissertation research has been described as "sustained empathic inquiry" (Yanow & Schwartz-Shea, 2014: p. 23) with an emancipatory goal (Acker et al. 1991). Again, many types of research utilize an engaged approach, at least for part of their purpose, product and/or process. One relevant example of participatory research that has emerged in the urban ecology field is citizen science. Increasingly citizens - young students and adults alike - are participating in science, public participation and collaboration in scientific research, which has gained significant attention in the literature recently (Tidball & Krasny 2010, Krasny & Bonney 2005, Minkler 2000).

Universities also facilitate engagement with the community through internships and service opportunities for their students. Internships or field study can often be required parts of undergraduate or graduate curricula. Many organizations and residential housing entities on campus regularly offer service opportunities to students as a means of

community engagement. With the former tending to be more regular collaborations and the latter more event-based, there is much variation along the spectrum. In addition, an important role for the university is instilling and creating deliberative spaces for their students to understand and practice democratic and civic engagement, including the history, meaning and context of such efforts (Saltmarsh, Hartley & Clayton, 2009, Carcasson 2017). Universities can educate students how to be engaged citizens, stewards of their communities and can create deliberative spaces for students to practice how to tackle complex global to local challenges.

There is also a wide variety of combinations and innovations in these mechanisms, varying in terms of purpose, product and process (Saltmarsh, Hartley & Clayton, 2009, Stanton 2007). For example, some classes have a hybrid purpose between service learning and professional development, whereby a community partner can serve as a client and the product of the class is to create a report or end product that meets the needs of the client in some way. These experiences are often presented in a final event (such as presentations, interactive poster sessions, etc.) that also facilitates networking with external partners as an added benefit. The process of the class is iterative, where a student or student group works closely with the client throughout, including in the field. Some engaged research can contribute to both a class and professional development for both students and partners. Classes can be designed to teach not just students, but community partners as well. With the confluence of technology in the classroom (along a continuum of web-enhanced to completely online) plus the research-backed recognition of the value of active learning, defined as student-centered, participatory learning, there are opportunities for innovation at the intersection of learning, research and engagement. As an example, Tidball and

Krasny (2010) put forth the compelling concept of Civic Ecology Education (CEE), which is described as urban environmental education that engages youth in the community in stewardship (Tidball & Krasny 2007, Krasny & Tidball 2009). This conceptual framework developed out of their fieldwork in urban community gardens, community forestry and like community-based stewardship/civic ecology practices.

However, the incentive structure of universities may be outdated and ill-equipped to encourage the university to contribute to 21st century societal challenges in a more meaningful and relevant way (Kellogg Commission, 2001). It is well established among those in and outside of academia that there are internal structural processes, such as internal power dynamics, funding processes, disciplinary silos, and mis-aligned strategic objectives within the university that make partnership processes challenging at best. As an oft-cited example, faculty are often not rewarded for engaging in community outreach or research that is meant to be useful to a community in a long-term, collaborative and iterative way. Student training and research cycles can make partnerships with universities unreliable (Feldman & Ingram, 2009). There can be funding challenges that universities themselves face, with subsequent competition with community partners, such as non-governmental organizations. In addition, there are a plethora of approaches to research (ontological and epistemological) that can make it challenging to align with community objectives and needs. Even if a university strives to be trans-disciplinary, translational, transcultural and engage in team science – the four T's of social-ecological research - it can be challenging to implement these in practice (Stokols, 2017). Finally, universities themselves may not trusted by their surrounding community as a partner. This could be because they are perceived as walled off from the community, have proven unreliable in

the past, and/or are perceived to have played a role in gentrification and displacement (Dempsey, 2010).

Universities often articulate their added value to other partners in the community in terms of their legitimacy as knowledge producers, researchers and educators. For universities, legitimacy is framed by conveying expertise via specialization, with scientific expertise often hierarchically placed above others, and there is often a presumption of neutrality (Saltmarsh, Hartley & Clayton 2009).

Deephouse and Suchman (2008) pull from Suchman's (1995, p.574) definition of legitimacy, which is the "general perception or assumption that the actions of an entity are desirable, proper or appropriate within some socially constructed system of norms, values and beliefs". They discuss how the concept has also been described in negative terms, recognized more when it is absent versus present, or when there is an absence of examination or questioning of how things work (Suddaby & Greenwood, 2005). Legitimacy can be seen as a dynamic process, with organizations often seen to be in the process of *gaining, maintaining or repairing/defending* legitimacy through associated logic constructs and narratives, which can change. Since the 1990's much work has been done on legitimacy as it relates to institutions, including types and dimensions, and sources of legitimacy. In addition, scholars (Suddaby et al. 2010 and others) point out the communicative element of legitimacy and de-legitimacy and the role of language in these processes.

As described in a previous chapter, Quick and Feldman (2011) describe two types of community engagement in terms of participation versus inclusion. Participation is described as, "efforts to increase public input in the content of programs and policies" (p. 272). Their definition of inclusion is useful in this dissertation as it focuses on community

processes, policies and programs, which they define as, "continuously creating a community involved in co-producing processes, policies, and programs for defining and addressing public issues". Within their definition the word "co-producing" is embedded, with Ostrom (1996) explaining how co-production represents a synergy between what government and what citizens can do. Inclusion places special focus on connections, characterized by engagement of multiple ways of knowing; coproduction of process and content of decision making; and temporal openness (p.281-282). In higher education, there have been recent efforts to integrate inclusion institutionally, with a focus on diversity, inclusion and equity within the campus community primarily (faculty, students). Inclusion is also closely tied to how the university interacts with its partners - in terms of processes, purposes and products - related to engaged research, service learning, internships and professional development opportunities, and community service efforts (these mechanisms described above) (Stanton, 2007).

This chapter will contribute to the literature by shedding light on, critiquing and providing recommendations on how the university can better enact and navigate its role as a community partner, particularly on issues related to urban nature as a means to improve urban sustainability and resilience. This research aims to contribute valuable and insightful information foremost to the stakeholders in the urban area I am studying - namely, CUREs, a university center, and their partners working in the broader Los Angeles region. Other cities and universities are facing similar challenges, and as such would benefit from the insight generated from this study.

Methods

As described in the Introduction Chapter, the data for this chapter is based on more than 40 interviews and participant observation in the field over the course of a year between the early spring of 2017 and late spring 2018. During my research on the university as a partner with the practitioner community, I encountered the concepts of both legitimacy and inclusion interwoven throughout my data. When I had the opportunity to present a paper at the 2018 Association for Environmental Studies and Sciences (AESS) conference, whose theme was legitimacy and inclusion that year, I was able to take that opportunity to analyze my data with those interacting lenses. Therefore, this conference paper became the basis for the first draft of a dissertation chapter of my research.

As described previously, I utilized a qualitative approach, drawing primarily from 1) interpretive qualitative research practices and 2) the use of narrative from a social-ecological perspective. For this chapter, I relied primarily upon data from participant observation and semi-structured, conversational interviews. I also utilized heuristics, which is a tool or method for exploring the data to facilitate discovery (Abbot, 2004). This was useful particularly in this chapter when I used the concepts of legitimacy, inclusion and their interactions as a heuristic for exploring the data.

The participant observation data drew from the extended field notes of the Center for Urban Resilience (CURes: https://academics.lmu.edu/cures/) at LMU LA, which granted me access for this dissertation research. As described previously, CURes is an interdisciplinary, cross-campus center that focuses on urban ecology as a means of empowering communities and improving urban resilience. The mission of CURes is to serve "urban communities with a suite of research, education, restorative justice and urban

planning programs designed to improve the quality of life for residents, especially for those in underserved neighborhoods" (CURes website). CURes' major strands of research encompass green infrastructure and society and the environment. I was a participant-observer in meetings, partner events and workshops with partners and staff. This role allowed me to observe how this research center enacts legitimacy and inclusion both externally with partners and internally among themselves.

For the semi-structured, conversational interviews, I spoke with practitioners and IHE representatives in the urban ecology realm, particularly those from four-year universities (public and private), community colleges, local government and NGOs in Los Angeles. In all I interviewed more than 40 participants. My interview guide allowed me to better understand how IHEs and partners alike enact and are perceived to practice legitimacy and inclusion. My interview questions sought data related to these concepts by listening to IHEs and practitioner representatives share what they perceive the role of IHEs to be in collaborating on urban nature related issues, as well as challenges and stories in this regard.

I sought a participatory research approach whereby I engaged partners throughout the process, particularly CURes. This chapter received feedback at several stages. First, it received feedback at the AESS Conference, noted above, when the first draft was presented as a paper. Second, I received feedback from CURes as a data analysis tool to obtain reaction on my interpretation of events.

For data analysis, I used ATLAS.ti as a tool to organize, code, and categorize the data as well as write analytical memos. Some of the codes that were prevalent in the data include credibility, university disconnect, students and research needs of partners. As

noted, I used the concepts of legitimacy and inclusion as a heuristic for data analysis. The data highlighted in this analysis were chosen because they inductively had relevance to the concepts of legitimacy, inclusion and the interactions between these two concepts. I analyzed relevant excerpts in the extended field notes and interview transcripts that conveyed meanings similar to these concepts, while taking into account the overall context. Sometimes participants did not use the words "legitimacy" or "inclusion" directly, and instead used similar words or concepts. For example, depending on the context of the conversation, I consider "credibility" or "neutral/neutrality" to be a similar concept or category as legitimacy. Additionally, when partners would discuss "underserved communities" or "community engagement", again depending on the larger context, I would analyze that data from an inclusion lens.

Findings

The data was analyzed in order to determine how participants discuss, perceive and enact the concepts of legitimacy and inclusion in the realm of urban ecology efforts. I analyzed the data pertaining to these concepts in three ways - legitimacy of the university as a community partner, inclusion practices of the university as a community partner, and the fluidity between legitimacy and inclusion.

Legitimacy of the University as a Community Partner

As defined earlier in the chapter, legitimacy can be described as the perception that the action of an entity, in this case universities as a partner, are what partners deem as needed or appropriate within our socially constructed system (Deephouse & Suchman, 2008). Some overarching categories of the role of legitimacy of the university as a community partner are described in Table 2.1.

One NGO participant described how the university's role is to "drive forward" research questions. A university participant thought the legitimacy of the university resided in its role to, "provide a kind of thick description and thick information about the quote, unquote reality out there and the trajectory that brought us to where we are today, and to bring [...] critical analysis about different pathways that come out of knowledge".

Table 2.1: Categories of Legitimacy

Legitimacy Categories	Examples from the Data
Inform debate and policy decisions	Provide the science, research, data, hand over for advocacy work
Neutral, objective role	Having credibility, detached, separateness, respect, integrity
Complement or challenge narratives	Back up what's going on or challenge existing narratives
Set research agenda	Drive forward research questions and knowledge pathways
Mediating role	In convening meetings, oversee controversial topics, creating space

Universities often articulated their added value as a community partner in terms of their legitimacy, particularly in producing knowledge and providing education. Sometimes the language of science itself seemed used to signal the legitimacy of a university partner. Words like "science", "research" and "data" were often used to connote or convey legitimacy. In external meetings with partners, CURes' Director, Dr. Eric Strauss (henceforth Eric) would say to practitioner partners that as a university they could measure data and write papers, framing this as a positive thing they might be able to contribute and role they could play. Or a CURes member would say to potential partners, "we can provide the science". In both cases their role in a potential partnership is being articulated in terms of scientific expertise, and the science seemed meant to frame the

legitimacy of their role. In internal meetings, they would also frame their role in similar ways. CURes staff would ask amongst themselves in a meeting, "what is the science here?".

CURes seemed deliberate in their articulation that they do not do advocacy, and instead their role was to provide the science to inform the debate and policy decisions. As a demonstration of this, they were a partner in the management of an adjacent urban wetland. CURes was leading a monitoring program of mosquitos in this urban ecosystem. There were public health concerns associated with the mosquitos and diseases such as Zika and West Nile Virus in the wetland, with city and NGO partners having different stances on recommended management approaches. During staff meetings, Eric would provide guidance to his colleagues on how to frame this controversial issue with the public, explaining how they should describe their work as, "studying mosquito ecosystem population dynamics". This scientific language seemed to clothe or sanitize some potentially misperceived aspects of their urban ecological work. Similarly, a participant from another academic institution explained that in order to maintain their "academic status, integrity and reputation" a university representative can offer their results and recommendations based on those results, but from there they should hand it over to someone else to do the policy and advocacy work.

In terms of the perceptions of practitioner partners, some partners sought out the university as a partner precisely because it is seen as a more "neutral, non- biased" entity, which in turn added to *their* (the practitioner's) own legitimacy. Partners from NGOs and local government entities would often describe their desire to work with a university partner because of their "credibility" or "neutrality". For example, one larger urban city department specifically asked CURes to help them study and manage public outreach

regarding the public's perceived concerns with urban coyotes. This particular city was receiving a lot of backlash from the public on their management of coyotes and the city wanted the university to help them by managing the public meetings and conducting research that could then inform and legitimize their management decisions. After one of the public meetings that CURes led, Eric discussed that before the public meeting, the city was concerned about how the meeting would go. "Imagine pitchforks", he described, continuing that the city was happy with how they managed the meeting. He described how he thinks it is a problem of people not being heard, and that after the meeting he had volunteers coming up to him. At a subsequent meeting they discussed what this work "does for them as a scientific center", noting they could have publications about the coyote behavior and social perceptions of coyotes in the region. Among university representatives, publications are deemed as having high legitimacy.

Similarly, some practitioner organizations would say they understand what is happening on the ground, but they need data and scientific research that universities can provide to back this up and be able to in turn obtain support from other partners. In other words, the university provided legitimacy for practitioner narratives. For example, the following excerpt from a practitioner partner shares this perspective.

…We can keep saying green streets and community health is great, but I need the university to do the...I need help to do that and most nonprofits don't have that staff. We really lean on them [universities] on so many different ways to help actually do the study that then we can walk in with. Then that gives you [the university] enormous credibility obviously. I think a lot of the time we go on hunches and a lot of the times the studies prove what we already knew just anecdotally, but you'd [the university] have to be able to prove it empirically.

In the excerpt above the practitioner participant discussed how they need the research that the university provides they can then use as a tool to convince other partners. In this case the wider context of our conversation pertained to effecting change with policymakers. On

the other hand, practitioner participants would explain that while university partners

conveyed legitimacy to their policy and advocacy goals, they [NGO partners] also are able

to provide the advocacy and policy role that universities often cannot. This synergy is

conveyed in the excerpt below.

A comment that we got was that we [the university] need you [the NGO] because we're not
able to the same kind of advocacy and engagement with government agencies that you can
do - because they can bring the research but they [the university] can't necessarily have the
[pause] faculty to navigate the advocacy and policy realm in the same way that a non-profit
organization can necessarily do.

Interesting tensions can arise when the research produced by a university for a

community partner leads to results that are not expected by that partner or goes against

their narrative. As an illustration of this, CURes spent over two years on a project studying

the user-ship of an urban park network for a local government partner. The partner had

anticipated different demographics in the park user-ship than what CURes' results were

conveying. This divergence in results prompted some tensions as the partner organization

questioned some of the university center's methods in the field. In effect they questioned

the legitimacy of their knowledge production process. In the end, this back and forth led to

long, in-depth and informative interactions through written feedback from the partner, a

working session to review the research and a public presentation of the research. These

unexpected results prompted a rethinking of the organization's overall outlook regarding

park user-ship, understanding of park accessibility, and management and fundraising

strategies. The following conversation illustrates this tension when the university's

research, or knowledge produced, goes against another partners' narrative.

[...] University just did a big study about how much water is supposed to be in that river and
so that just came out or is about to just come out [...] ultimately the study said there's way
too much water in the system for it to be a healthy habitat. That was a big university like

shocker. It was like, "What?" River advocates they get a little nervous with this - with studies that create a different thought process than the one they were on.

The above excerpt shows how advocates, in this case those for restoring the river, are apprehensive with results that reveal a different narrative than one they otherwise had. A university participant spoke about this tension more broadly in terms of environmental narratives, explaining, "I'm pretty sure it's true of environmental history [...], which is that, in quite a few cases, the knowledge that we produce in the university does not necessarily back up some of the most cherished myths of environmentalism." These tensions reveal the dynamic narratives between university partners and practitioner partners (discussed more in Chapter 2).

At the same time, both university and practitioners alike brought up the idea of some separation between the university partners and other partners in order to maintain the legitimacy of the university's role. This was often described with words such as "integrity" or "some separateness", with one participant explaining "And I think it's important that those things [the science from the policy/advocacy] do remain separate so that you can maintain your integrity." In other words, not engaging in the policy making is viewed as part of maintaining the legitimacy of the university.

This debate speaks to a broader epistemological divide underlying the debate. On the positivist side, the university researchers are meant to be detached observers of reality, and this is deemed as key to the validity of the research process. On the interpretive side, there is an argument that this is just a facade - university researchers can never really be detached observers, we all carry with us our embodied experiences, gender, identity, etc. and the act of being separate in and of itself is a demonstration of power. Instead the university should be reflexive of its role, seek to better understand multiple truths, and

participate as a more co-equal part of the research process itself. This debate also has implications for inclusion, which is discussed later on in this chapter.

Inclusion Practices by a University with their Partners

As noted earlier in the chapter, inclusion is described as, "continuously creating a community involved in co-producing processes, policies and programs for defining and addressing public issues" (Quick & Feldman, 2011 p.272). Some overarching categories of how universities are practicing inclusion are described in Table 2.2. Consistent with the growing literature on higher education community engagement, interview participants agreed that universities should be engaged in their community. The knowledge community participants I engaged with throughout my research were consistent in voicing their focus on including other partners, particularly underserved groups and communities. However, in practice there seemed to wide-ranging variation on what these practices looked like.

Table 2.2: Categories of Inclusion

Inclusion Categories	Examples from the Data
Align with larger institutional strategies	Gap in language of values/mission to practice, disconnect
Individual relationships and dynamics	Individual-driven, inconsistent, involve students
Social justice and underserved populations	More outreach than engagement, limited two-way relationship
Applied research	Not institutionally incentivized, epistemological divide, involve students

Overall, the IHEs I engaged with viewed being inclusive as core to their values, including concerning their students and how they interacted in the community. Eric

described how a focus on underserved communities is essential to their mission in the

excerpt below.[8]

Our mission is focused on underserved communities. When we make a research choice, when we make a consulting choice, when we deliver our services to schools, our educational services, our restorative practices services, we are … Our mission is to deliver whatever services we do into communities of need, so the schools we work with are high need.

Dr. Michele Romolini (henceforth Michele), the Managing Director of CURes, linked social

justice, as part of CURes' mission to being in a Jesuit institution. However, in my analysis of

the findings, CURes' work with under-served groups and communities often seemed to

view them more as beneficiaries of their activities, rather than co-productively involving

them as part of a process (per the Quick & Feldman, 2011 definition).

In addition, despite language and assertions aligned with inclusivity, partners often

felt a disconnect with the university. For example, some NGO partners would describe that

they feel like the university does not reach out to them, or if a university did reach out to

them, a follow-up may not happen. Some NGOs were also concerned about competing with

universities for funding. Also, often if a partnership did exist, it was narrow, such as having

students from the university serve as interns at their organization. Some practitioner and

university partners alike would describe that there were definitely some faculty or

instructors inclusively involved with the community, but this was on an individual basis,

based on their initiative, rather than supported, incentivized and aligned with a larger

university institutional strategy. Practitioners often described that they felt that

universities did not know their needs, particularly as it related to research questions. The

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[8] CURes mission: serve urban communities with a suite of research, education, restorative justice and urban planning programs designed to improve the quality of life for residents, especially for those in underserved neighborhoods (CURes website).

practitioner participant in the excerpt below describes the need for more of a "working

relationship".

And that's what I would just love to see, is again more of a working relationship where it's like, okay, nonprofit people, we understand that you don't have any time to do this kinda stuff, so how can we again, as experts in this field, come in and do this research and also again, give you a body of troops to put towards whatever your effort is?

In the excerpt above the practitioner participant also points out the time capacity

constraint of NGOs, and then asserts the role the university can play with regard to their

strength as experts and having access to students (the "troops") who can also help NGOs

through a variety of university-based mechanisms, such as internships, field study classes

and service.

In many cases, they're taking down a hundred-foot ficus tree that is not the right tree probably for that spot. But, the services that tree's providing are very significant. Chopping down a 40-year old ficus and replacing it with a liquid amber, or a crepe myrtle, which is gonna be a 15-foot tree. Now, that crepe myrtle isn't gonna cause any... will never uplift a sidewalk 'cause it's not even capable of doing that. But the services that it provides are so meager, and we're gonna be cutting down tens of thousands of our trees. What's the impact of that We're just doing it without really any kind of environmental analysis or whatever. [... Again, policies are driven by the science. The science [on the value of trees in open spaces] is shockingly nascent, from my point of view. One of the other things that we need to know from universities is we know that the climate zones are moving because of climate change. And so, the question is ... So, right now the City of L.A. is trying to bring in species of oak that are really Northern Mexico, maybe San Diego County. And it's like, "Well, are those really appropriate here? How do we know?"

This participant in the previous excerpt asserts they would like, but are not, receiving

collaborative support from a university in better understanding these complex issues

described above. Even if there was science out on elements of the issues described, there

would still be a disconnect as the practitioner partner is not aware of this science nor do

they feel like it applies to their local context in a way that is useful.

Another disconnect is when practitioners on the ground already have knowledge of

an issue or problem, but this is not sufficiently recognized or known by university partners.

This is explained in the excerpt below.

There's a disconnect, just because there's no science out in publication. Well, there's a lot that's already known. You actually have to sit down with the contractors, those that have been on the ground, and really take the time to understand what they know, what they don't know, their questions. And then you go back with the science and wrestle with those [...] So, if we're doing bird survey work, it's those that have been here 20, 30 years that just know these... This is not universities, but these are consultants coming out of the ground.

Some university partners recognized this disconnect or gap between language and

enactment on the ground, as shared by this excerpt below. University representatives

shared the challenges of trying to implement applied research across the campus in a

coordinated way

Well, the university says its role is service to the community and in fact, I'm not sure that's how it really operates. And we talk about this all the time and this is like the bane of our existence on so many levels because what we're trying to do [...] is not traditional of a university. This is a campus wide research initiative, but we are saying, "Oh, no, we actually want to apply this research and reach these goals external to the walls of the university." It sounds lovely, but it's like everyone still wants to function just like academics. That means you stay in your silo, you do your narrow project and you have no idea how to use that information to affect policy or change or anything. There is this disconnect and there's this bridge that very few people can straddle. There are some academics that are fantastic at this, but it's like a handful. Then you have the inherent nature of academia that does not reward people for doing that and or respect their work. [...] Suddenly, when you become more applied, there is a very traditional academic...I don't know, thing going on that is so slow to change that it's like the more applied you do, the less respect you receive.

The word "respect" is used almost as an indicator of legitimacy, signifying the perceived

trade-off of more applied or inclusive work with respect among colleagues. Both academic

and practitioner participants alike mentioned the incentive structure of the university

related to getting tenure and the pressure to publish not being conducive to inclusive

engagement with partners. This is described in the excerpt below by a university

representative.

You see this in the way that they review the faculty. The way that they're rewarded, the way that they get tenure, the way that all of this is still ancient. It's archaic. You don't get credit often for interdisciplinary work. You don't get credit for applied work, because it's not published in the top journal and you're not a single author. This is something that universities I think are struggling with and some have embraced it [interdisciplinary, applied work] and have... I would say the universities that have embraced it are like Arizona State is a really great example of a university that's embraced it. [...] And unfortunately, it seems like science is comfortable with that disconnect. That the rewards system is set up that you don't have to reach out.

However, others would also mention that universities are not a monolith, and some IHEs, like community colleges and certain state universities, such as the Cal-state system, have created institutional environments and infrastructure more inclusive of community partners and different forms of academic approaches, such as applied, interdisciplinary research and participatory, community-driven engagement.

Multiple participants voiced the value of community colleges as an important partner in their work. This is in turn prompted my seeking interviews with some of the community college partners in the region. The 2-year IHEs I spoke with in particular seemed to practice alignment between the community and their students.[9] These institutions strongly articulated the link between students from the community and meeting the needs of the community, primarily through workforce training and related experiences. The president of a community college in LA described, "That's my role, my role is to respond. It's almost more of an intimate relationship, you respond to the particular needs of a smaller region hence the name community college". Over the course of my interviews, I learned about a partnership between a local NGO and community college, whereby they were working together on an environmental project that was described

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[9] While the original focus of this dissertation research was not on 2-year institutions, I ended up interviewing two of them as they were important partners to either CURes or mentioned by closely associated partners, and as such they bubbled up as an important partner to interview via my sequential interview approach.

positively by the NGO and community college and seemed to inclusively involve both sides throughout the process for a public good. This partnership produced data that was the basis of research and policy advocacy and enabled students to obtain experience, professional skills and confidence.

Students themselves seemed to be a core mechanism for how universities worked with other partners. Both Michele and Eric at CURes would joke that community partners preferred interacting with the students rather than them, the scientists. They would talk about "harvesting students" from their classes to then become a part of their community engagement and research. At staff meetings of the research center I observed, they would routinely go down the list of all their community projects, discussing which students were involved and how that was going with each student(s). A CURes staff member described the importance of students in the following excerpt, making the assertion that involving the students is not just essential to CURes because they are the university, but also explaining that students are the future. Similarly, practitioner partners echoed the value of students being an important vehicle for partnership, "We actually get some help on various projects because we have a student helping us out. That's a really positive experience. Again, universities need to look at, what can we [NGOs] do for them, and not the other way around."

One unique platform for CURes' community engagement that was an inclusive practice pertained to a small urban park called Discovery Park. Eric described how this park was central to his role at the university, "Part of what I was appointed to when I came out here, [was to be] the executive director of the Discovery Park. So I was going to run the park, start the graduate program, run the Center for Urban Resilience and develop these

new courses". This park is managed by a consortium of local partners (NGOs, private sector entities and the university) and is located adjacent to and ecologically connected to the nearby Ballona Wetlands. Key features of the park include an emphasis on native plants, medicinal garden and an interactive display featuring the indigenous groups that used to inhabit the area. This park was often described by the university center as both an urban ecolab and a community space, with CURes bringing in teachers and student groups from underserved parts of Los Angeles to tour the park and nearby vulnerable wetland. While CURes events would be occurring, simultaneously other users could be seen utilizing the space, such as small children participating in sports or moms in a stroller exercise class with their infants. University students were also engaged in activities in Discovery Park as the research center faculty would often bring students to the park and the nearby urban ecosystem to study urban ecology as an integral part of their course and lab work.

At CURes' staff meetings, they would discuss how to leverage this park and nearby connected urban wetland as a living lab for their students, including working across disciplines, courses and schools in an applied, interdisciplinary way with other partners in the community. The university center and university both seemed aware the opportunity their role in this park represented and took steps to make their involvement known, such as through their logo on accessible materials (e.g. handouts) in the park, relevant signage and their participation in any events that took place there.

Fluidity between Legitimacy and Inclusion

In addition to considering legitimacy and inclusion in the data, I considered the fluidity between these two concepts. Many practitioners connected how they perceived the

appropriate or needed role of the university (legitimacy) to how they should be involved with them on co-productive processes concerning urban nature/ecology.

They need to understand the key needs and questions of local leaders and practitioners and how those can inform the science that gets done to help answer those questions. And from that also, that can ... I think they can they learn then new directions and fundamental research that needs to happen.

This excerpt conveys the need for the university to improve their understanding of the community needs. Such an authentic understanding should then drive research and fuel transformative social innovation.

One emergent pattern in the data that illustrates synergies between legitimacy and inclusion related to how the university can be a bridge to the community. CURes described their center as being a bridging entity, as Eric explained during a meeting with a local NGO. He explained how CURes is helping a large city in the region manage the coyotes, and how they [the city] wants them to manage their meetings and have rational outcomes. He said he saw CURes as "a bridge to the community - when they finish a grant, they are still in the community". Similarly, Michele of CURes also echoed this point, saying, "That's where CURes' most value is, is making that transition between scholarly work and the community, so that we can tell them [with empirical data] how things are working and why it's good to do this, that, or the other thing." This bridging role showcases the interaction between legitimacy and inclusion through engaged scholarship.

Students themselves can be a bridge between legitimacy and inclusion (d'Arlach et al, 2009). As shown previously in the chapter, students are one of the key mechanisms for how universities engage communities, such as through internships, service learning and participatory research. Another way of integrating a bridging role is by universities hiring practitioners. For example, during my time as a participant observer CURes hired the

former Executive Director of the Friends of Ballona Wetlands to serve as a Fellow at CURes. The fellow plays an integral role in working on K-12 urban eco-lab education efforts, leading tours in the nearby wetland and Discovery Park and generally providing guidance on community engagement efforts. Similarly, another university in the region also hired a practitioner leader from a well-known local NGO. Several participants referenced this practitioner leader that was hired at the university during interviews, and one of this person's main colleagues mentioning how this person is "fantastic in serving in that [bridge] role" and has "so much experience in translating research into policy". However, at the same time, practitioners working in the university space can also experience difficulties navigating the hierarchies of this terrain. This potential difficulty is captured in the following statement, "If you, for example, came from a nonprofit for 20 years and move into academia and even though you do some research, you're second rate because you didn't come here the way that you're supposed to come through academia." This gets back to the connection between respect and legitimacy mentioned earlier, with participants seeming to connect more respect to more legitimacy, and some inclusive practices risking losing some of that respect in the university environment. There were also practitioners who had PhDs working in NGOs who also saw themselves as playing a bridge role between organizations, with one such person explaining this to me in the excerpt below.

Really, to bridge the gap, there has to be more positions similar to my own [in a NGO], where you have a foot in both worlds. Where you learn and you've learned about science, but you learn about [the] kind of decisions and how things are made and done in the real world, to try to kind of strengthen how science and information betters our decision-making here, because otherwise, it's ignored.

In this excerpt, the participant articulates how NGOs, or positions within NGOs, can also serve a role in helping bridge and optimize synergies between science and policy, or

university partners and other partners. This person explained that the risk of not having these sorts of bridging roles and/or bridging organizations that perform that function is the lack of adequately informed policy and decision making.

Another area that conveyed a synergistic flow between legitimacy and inclusion is that of the convening role of the IHE. One practitioner participant explained, "The most basic, they have the resources to provide meeting spaces, places for people to gather, organizations to host events", also going on to say that having a space to convene can be a major impediment for other non-university participants trying to organize in the community. This convening role was mentioned many times by practitioner partners in particular that I spoke with. A CURes researcher discussed the importance of being a venue for ideas and bringing in leaders, as well as going and talking in the community. In the excerpt below, a practitioner participant describes how the convening itself can be a way of enacting the bridge role.

I also, just literally in LA, I find one of the best rules, at least of the universities that they're currently playing, as being conveners. They do a really great job. Like if you look at UCLA's IOES program, if you look at USC's landscape architecture program, if you look at... I mean, there's a million that I could rattle off. They're all very much hosting symposium, events, different meetings. And they're again, serving as that neutral entity almost that's convening a bunch of the practitioners with the academics, and trying to still have those more theoretical or philosophical conversations that then tip into the being applied. Okay, so how do we take this research that we're researching, and how do we actually apply it to the nonprofit realm, to the public realm?[...] I think that it's very important to continue that convening because I feel like oftentimes, academia is very separate from what people would call the real world, but I very much see that academia can help to be that bridge between the research and actually applying that research to the real world. And again, then providing a fleet of students to help be those bodies and minds that can actually implement the kind of things that people are studying and finding out in the ivory tower.

In the excerpt above the convening is described as the potential bridge between the research and the "real world", with students helping to facilitate this implementation with community partners. Participants would often frame the importance of convening as a

means to enable the discussion of challenges and new ideas, and from there be a platform

to take the ideas and begin applying them in partnership. Universities can also be

considered a safe and legitimate partner to deliberate innovation (Carcasson, 2017). A

university partner describes this role in the following excerpt.

And so, a big selling point when we're talking to communities actually is that, is that we can help them be a bit more ambitious, be a bit bolder, be a bit more creative, tap into the latest knowledge that's out there, because that's what we do at universities, and do it relatively risk free.

Therefore, not only does convening serve as an important bridge between legitimacy and

inclusion, it can also be an important catalyst for innovation, if kept up over time.

On the other hand, there are tensions between legitimacy and inclusion. Some of this

tension is rooted in the perception by university representatives and practitioner

participants alike that some degree of separation or detachment is integral to maintaining

the legitimacy of the university's role as a conveyor of expertise, including "respect" or

"integrity" of the university as an institution and/or individual as a scholar. Maintaining

this separation may in some cases diminish inclusion. Tension between legitimacy and

inclusion was apparent earlier in this chapter when participants discussed the separation

between academics and partners from the advocacy and policy processes with partners.

Conversely, being inclusive may be used to undermine the legitimacy of university

research, in terms of its role as a researcher, knowledge producer, and arbitrator of reality

and truth. This tension is partly rooted in epistemology, as discussed earlier, as well as

other larger political dynamics. Conversely, it could also be argued that what *is viewed* as

legitimate education and research needs to be more inclusive, or the legitimization of being

inclusive. As discussed earlier in this chapter, what is viewed as legitimate is a dynamic

narrative, and often for an institution it is about maintaining legitimacy in light of larger
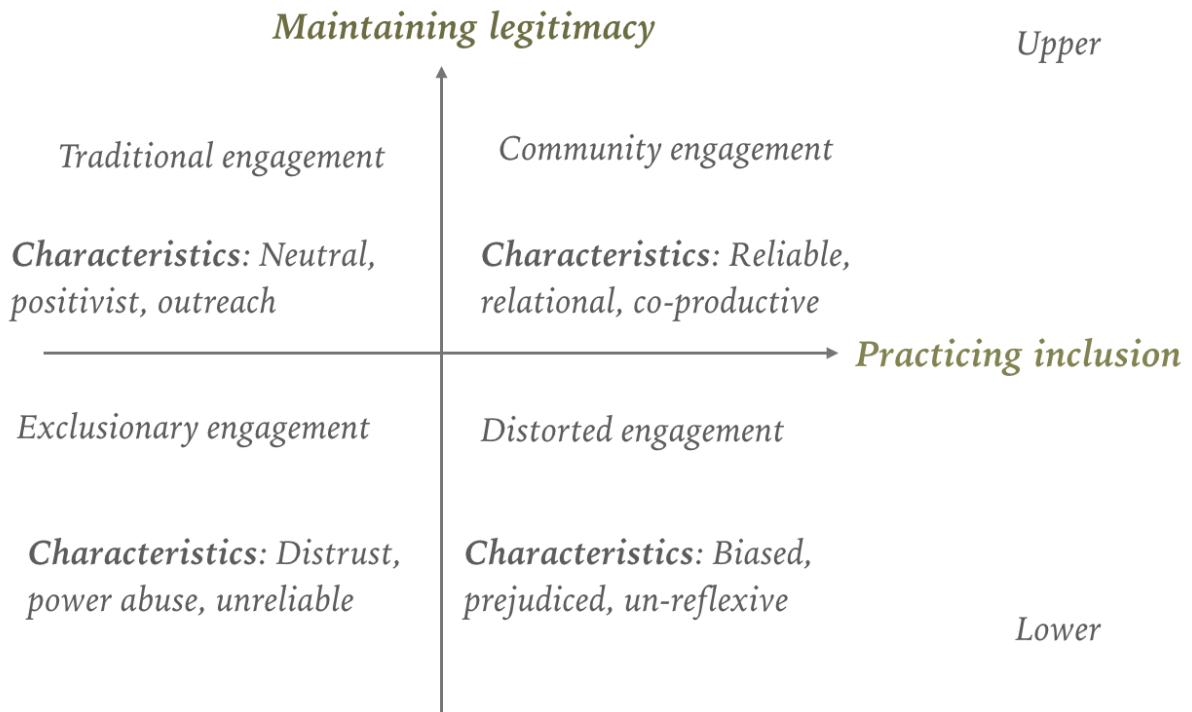
internal and external forces. The following excerpt conveys an academic perspective on this.

Yeah, that's challenging, but you know, first of all, I think that we are experiencing a bit of a sea change in research and I think it's happening from discipline to discipline. It's not happening all at once, but there's this greater focus on implementation science. There's this greater focus on knowledge to practice, and I think that we're realizing that we're too siloed. We're too... We have a reputation of being in ivory towers for a reason, and higher education generally, not our institution specifically. In fact, we're better in a lot of ways compared to the common perception, but I think people are now feeling more pressure to show that their work has meaning and is practical and can be implemented practically in some way.

This excerpt shows the dynamic nature of what is legitimate and how practices that are more applied and inclusive are, in some cases, becoming more legitimate in higher education.

As described earlier, legitimacy is a dynamic process and for institutions it is often about *maintaining* legitimacy. Inclusion requires intentional practice and typically reflects an epistemology. Figure 2.1a below captures some of the interactions between legitimacy and inclusion in terms of four major types of engagement: 1) traditional engagement, 2) community engagement, 3) exclusionary engagement and 4) distorted engagement. A university campus or center, and its partners, can contemplate how their engagement can be situated along this continuum of intersecting legitimacy and inclusion. While university partners may be situated in between quadrants, each quadrant reflects certain engagement characteristics. Normatively, it is ideal for a university to be along the continuum of the upper two quadrants, and the bottom two quadrants should be avoided.

Figure 2.1a: Map of Engagement via Legitimacy and Inclusion

Maintaining legitimacy

Upper

Traditional engagement

Community engagement

Characteristics: *Neutral, positivist, outreach*

Characteristics: *Reliable, relational, co-productive*

Practicing inclusion

Exclusionary engagement

Distorted engagement

Characteristics: *Distrust, power abuse, unreliable*

Characteristics: *Biased, prejudiced, un-reflexive*

Lower

Of the upper two quadrants, the normatively positive side of legitimacy covers that entire swath (or two quadrants), as depicted by the maroon circle, while inclusion covers only one quadrant, as depicted by the yellow circle (Figure 2.1b). This corresponds with my data in that legitimacy was found to be a stronger thread than inclusion. In other words, it is considered legitimate by many partners, both from the knowledge and practitioner communities, to engage in traditional engagement or community engagement. In fact, some associated the separateness and detached features of traditional engagement with more integrity. Also key here is that it shows there is more operational space for legitimacy than inclusion in how a university interacts with partners. There was data in this research that corresponded to the bottom left quadrant, or exclusionary engagement. This occurred in that partners would share how they felt university partners were unreliable, not connected to meeting real world needs, often in

part due to misaligned or outdated university incentive structures. In terms of distorted engagement, this may include groups (sometimes at the cost of excluding others, so these practices can occur at the boundary with exclusionary practices), but willfully, without reflection, and lacking sound, legitimate research and/or engagement practices.

Figure 2.1b: Evaluating Legitimacy and Inclusion
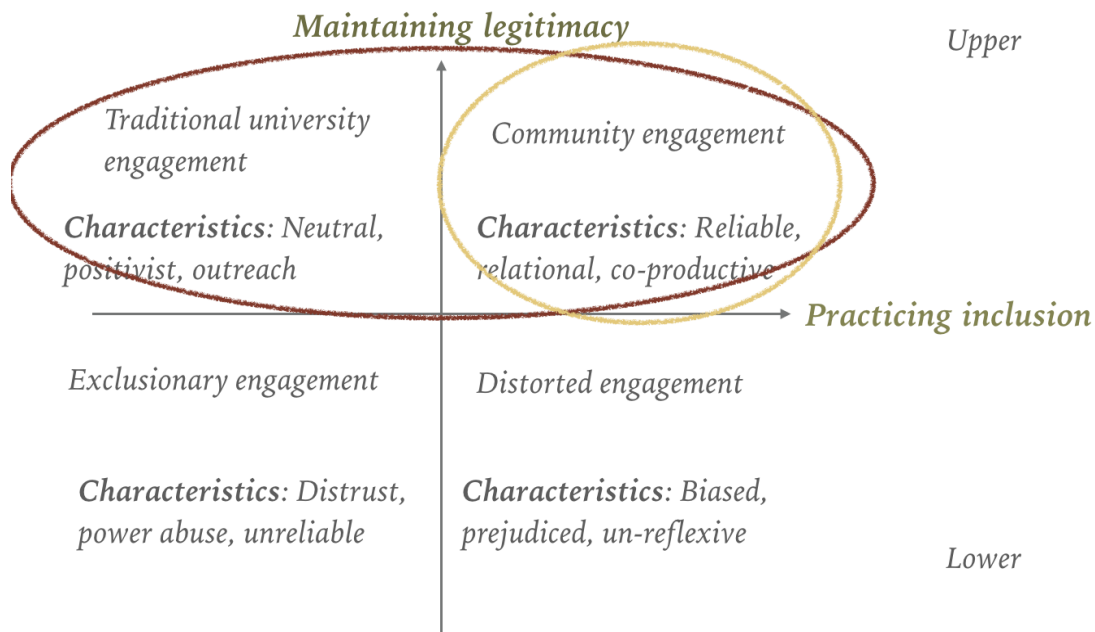
There are also social-ecological time and space interactions to consider. Many universities institutionally might map differently than campus centers or faculty at certain points in time. However, the former can positively or negatively impact the latter's success and ability to flourish while attempting to engage partners. CURes as a university center would likely map between the upper two quadrants, or nested between traditional university engagement and community engagement (Figure 2.1c). However, at different points in time their various projects might map at different locations along the quadrants, depending upon the context, situation and needs of their partner(s). This illustrates the fluidity between legitimacy and inclusion. CURes is not statically anchored at one point in

time between legitimacy and inclusion. They are dynamically shifting; however, it is unlikely that they are dynamically shifting with these concepts in mind. Although, strategically might it help them if they did think about their role through the lens of this interacting concepts? Would it help them as a partner in improving the purpose, processes and products of their partnerships? I argue that the process of mapping and considering interactions between legitimacy and inclusion, and how they can support each other, can help CURes and other IHEs consider where they are situated, where they want to be, and how might they shift when surprises occur as they inevitably will, and even more so in the Anthropocene. Some of the bridging practices described above - convening partners, students as important links to communities, and contemplating how to better incentivize community engagement might help universities deliberate strategic shifts between legitimacy and inclusion.

Figure 2.1c CURes - Fluidity between Legitimacy and Inclusion
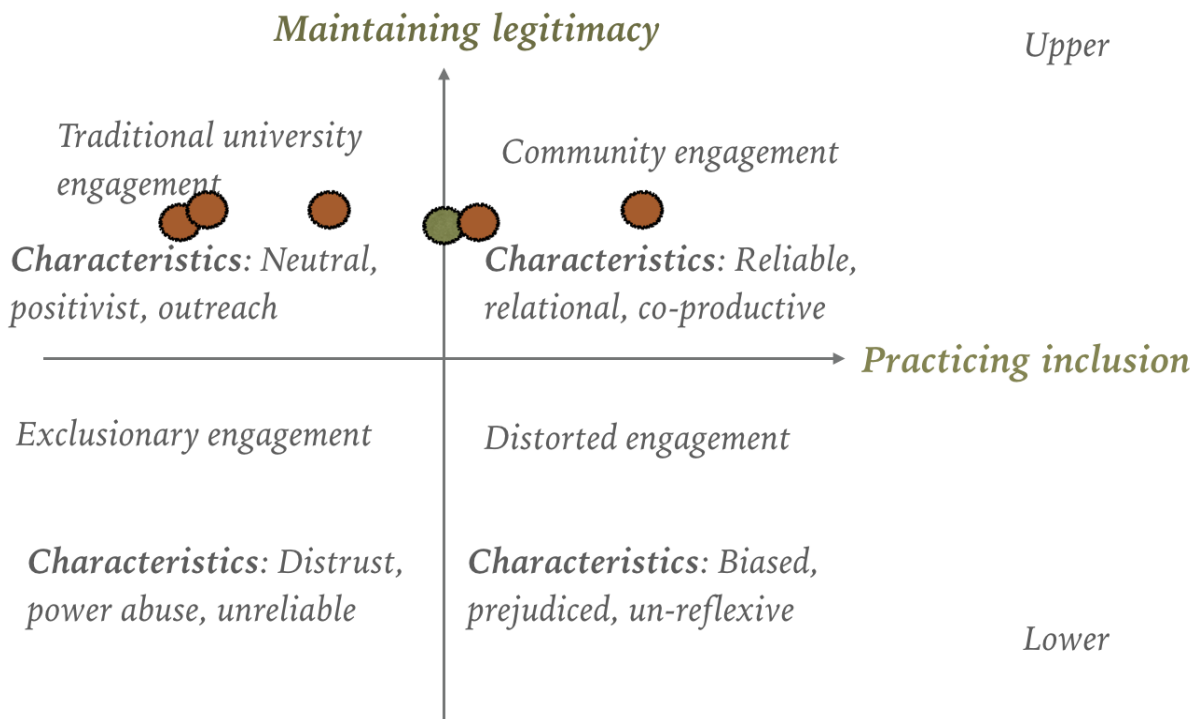
*CURes as a center: green circle
**CURes' projects: orange circles

Conclusion

The thesis for this chapter was that some universities are enacting their role with partners more in terms of legitimacy than inclusion and shows how there are opportunities to strategically leverage the fluidity, or porous boundary, between legitimacy and inclusion to improve the university's role as an urban social-ecological partner. This research found that while both legitimacy and inclusion were strong themes in my data, the enactment of legitimacy was stronger and more prevalent than inclusion in the data. Universities seem adept at both speaking to and practicing legitimacy in their roles as producers of knowledge and educators. In contrast, it seems to be easier for universities to speak or write (e.g. on a website) about inclusion than enact it. Inclusion is often framed as a value.

Inclusion is not always required to achieve legitimacy. In fact, inclusion in research can sometimes be seen even as a deterrent, in terms of the time it takes and challenges in operationalization. It can be viewed as less legitimate, less respected, or biased by some (in and outside of academia) than other forms of research, even having political risks in some places where an actor(s) may in turn attempt to undermine the legitimacy of an effort. Universities tend to be more inclusive with some partners, such as cities and more established or professionalized NGOs, than with other community groups. For CURes, and corroborated by other university participants as well, vulnerable community groups are often the beneficiary of stated outreach, but these groups are less inclusively involved in the co-production of processes (e.g. research), programs and policies (Quick & Feldman, 2012). This could be attributed in part to the time it takes to engage some groups, lack of trust, different types of knowledge, and sometimes simply because the university is less

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familiar with these groups (as opposed to a local NGO who may have greater access and familiarity of community advocacy groups).

Interactions with NGO partners and local government partners tend to ebb and flow between informal and formal relationships as partners develop relationships and opportunities present themselves. The ebb and flow of these relationships were often driven and based at the individual level, with certain faculty or staff taking the lead on maintaining these relationships when they were not being activated at an institutional or formal level. However, as noted by Suddaby et al. (2010), following Miller and Rose (2008) and Foucault, how actors act, or actor hood, is socially constructed, with individuals often being "properly tamed actors" (p. 1238). In other words, while it is reassuring to know that many faculty are interested in working with communities, they are still operating within and constrained by social constructs, such as an intense pressure to publish and what is viewed as being an appropriate scholar by their peers. Institutional change that considers these constraints might be more transformative and alter some of the social constructs that limit the good intentions and work of individual faculty and their relationships with community members.

This research was able to contribute to the literature related to legitimacy and literature related to inclusion, in both cases by focusing on the university as a social-ecological partner. While there is a wealth of literature on legitimacy (Deephouse & Suchman, 2008, 1995, Suddaby & Greenwood, 2005, and more) and inclusion (Quick & Feldman, 2011, Stanton, 2007, Ostrom, 1996, and more) independently of each other, there seems to be less work done on how these two concepts interact. By examining the synergies, tensions and fluidity between these concepts, this research was also able to

contribute more knowledge overall to the literature on higher education outreach and education. For example, the mapping diagram (Figures 2.1a,b & c) can help universities strategically think about the best way to manage the interactions between legitimacy and inclusion in light of their larger mission, needs of partners and changing situations. Similarly, the discussion on bridging practices between the two concepts will help university centers and faculty strategically meet these objectives.

This research contributes to the practice of IHEs engaging community partners through the lens of legitimacy, inclusion and the fluidity between these two concepts. Welch and Saltmarsh (2013) identify best practices of campus centers of community engagement. These best practices can facilitate the legitimacy of more inclusive practices with community partners. While Welch and Saltmarsh focus on cross-campus community engagement centers, this research examined a university center that focuses more specifically on urban resilience. However, many of these best practices are applicable to CURes. One such practice is that an engagement center not be housed in a particular school, and rather situated in a more centralized unit on campus. This is the case for CURes, which rather than being situated in either the Liberal Arts College or College of Science and Engineering, instead reports directly to the university's senior leadership, specifically the Vice Provost. This was intentional to encourage cross-disciplinary faculty collaboration and ownership across the university and signal senior level institutional support. While CURes has been effective at involving students in applied research efforts that benefit the community, there could be more efforts by the center to obtain community input and voice in the process of research efforts, not just the purpose and product (Stanton, 2007). Some

concrete ways of doing this include four major areas of guidance described below and in

Table 2.3.

Table 2.3: Recommendations for Improving how Universities Partner with Communities

Recommendations for Improving how Universities Partner with Communities	Practices
1. At the institutional level, legitimize inclusive practices	• Incentivize inclusive practices • Build capacity for inclusive practices • Align with values that promote inclusion
2. Identify practices that can bridge legitimacy and inclusion	• Students • Bridge hires • Convening as a multiplier mechanism
3. Research novel and innovative ways of being inclusive	• Explore and listen community needs and innovations • Network with others to learn
4. Given complex social-ecological challenges, reimagine the role of the university	• Community extension in the 21st century • Align with strategy, partners and policies

First, universities can do a better job of institutionally legitimizing inclusive

practices in their interactions with partners as a way to better address community needs,

such as discussed in this chapter. This is an expansive area to tackle and many universities

are attempting to do this already in part through their community engagement strategic

efforts and centers, noting that this effort goes beyond just efforts to work on urban

nature/ecology with community partners. Efforts to do this include building campus

capacity on what inclusion with partners looks like through cross campus community

engagement center(s), developing strategic community partnerships visions and best

practices, and sharing this guidance with faculty and researchers within IHEs. Such an

approach requires an awareness of the distinct standpoints on how to interact with

community partners based on research epistemology. It includes institutional changes

within IHEs to properly incentivize and legitimize inclusive practices. Stokols (2017) four T's of research in the 21st century (trans-disciplinary, team-based, translational and transcultural) is a useful guide in this process.

Second, steps can be taken to identify practices that can serve as a bridge between legitimacy and inclusion. For example, students themselves are often highly valued by community partners in their efforts and can serve as a bridge between an IHE and community organizations. Some positions within universities and NGOs can serve this bridging role. Similarly, the convening ability of IHE's is also an important bridging action between legitimacy and inclusion. The meetings that are convened can be the catalyst for continued convenings to facilitate future engaged research, policy efforts, and a means to involve and inspire students.

Third, given the university's unique role and capacity in producing knowledge and innovation, the university should research novel and innovative ways of practicing inclusion. This should be done collaboratively and informed continuously by the needs of community partners. Specifically, the university should learn from others and network on how to practice inclusion and navigate its role in the community in a way that is beneficial and contributes to social-ecological challenges. One such example is the EPIC Network, which is a university-community partnership program that works at a large scale to advance the needs of communities while also training the next generation workforce and leadership (EPIC Network). This program has received international and local recognition for its innovative approach as well as provides a platform for universities to learn from each other. Another example specific to CURes is examine the potential of expanding their restorative justice work, which is currently more focused on resilience building in school

communities, to their urban ecology partnerships. Discussed in more details in Chapter 2, restorative justice is a tool for developing inclusive, just solutions to complex challenges. The utilization of restorative justice in their urban ecology work would be an inclusive practice, and one worth investigating for its potential application and lessons learned to be shared with other cities and institutions.

Fourth, universities are increasingly reconsidering their role - because of increasing complex social-ecological challenges, including political polarization, rising costs of higher education, and debates on what constitutes truth(s). This moment represents an opportunity for universities to contemplate their legitimacy and inclusion of partners and institutionally align this with policies, management plans and partnership agreements to meaningfully promote civic and democratic engagement. Strategic opportunities to do this occur at multiple, interrelated levels - university wide strategy, policy, business and program development processes, as well as similar processes at the research center and extension scales.

These findings inform future research. An important area for future research would be to explore bridging opportunities to improve the legitimacy of inclusive practices of universities. Another important and timely research area would be to examine in a polarized society how a university navigates its role in terms of both legitimacy and inclusion among partners, including navigating the political risks (if any). Another research area would be to explore what "counts" as a university's community. This is a question that came up both during my interviews as well as constructive critique in the literature (Dempsey, 2010). Is the university community the spatial periphery around the university, is it where their students are from (this has implications as universities move to being

more online as well as commuter schools), or is it the university's larger metropolitan area, and/or the globe? Some universities have proactively taken a stance on this through place-based community engagement and place-based justice, thus making this a useful anchor for research on this topic (Yamamura & Koth, 2018). Another area in need of research is to examine more closely the diversity of IHEs. Community and vocational colleges came up repeatedly during my time in the field as an important partner. Given the close ties these institutions have to their communities, in terms of pairing workforce training with the needs of local and regional employers, the role two-year institutions play is both under-explored and may have promise in terms of urban social-ecological partnerships. Lastly, while I am focusing on the role of the university here as a partner, it is also important to examine more closely how other partners, such as private sector partners and local government partners, navigate their roles and coordination with partners on urban social-ecological issues and challenges.

The relevance of universities is increasingly being taken to task and re-evaluated. While the concepts explored in this chapter are both dynamic and subjective, legitimacy itself needs to be more inclusive (Deephouse & Suchman, 2008, Lowerson Conversation, 2018). The university needs to be a reliable and co-productive partner to develop the trusted and innovative solutions to the pressing and complex challenges our planet is facing. Some interdisciplinary fields, such as public health and environmental studies, are already moving towards an inclusive community engagement approach through their faculty and students. In some instances, funders are also contributing to driving the change, as seen in recent broader impact statements that are now required as part of the National Science Foundation proposal process, with this trend expanding to other funders, public

and private, and disciplines. These broader impact statements emphasize not only benefits to society, but connection to and with the community. How a university frames its legitimacy is connected to how a university practices inclusion with partners. Therefore, when universities undergo strategic planning and visioning processes, this is an important opportunity to consider legitimacy, inclusion and the fluidity between the two. The knowledge community, together with community leaders, practitioners, youth and ordinary families need to develop innovative solutions to the dire and interconnected challenges of climate change, human security and more. The bridges and fluidity between legitimacy and inclusion can help guide universities as they reevaluate how to strategically enact community engagement in these efforts.

Your ecosystem dis-service is my ecosystem service: narratives of nature in cities and opportunities for improving planning and policy processes

How nature is integrated in cities is based on stories of what nature is and should be in cities. Policies and planning practices are enactments of these narratives, and better understanding them allows for potential policy gaps and opportunities to be identified. However, these narratives and legitimacy of what nature can be in cities has changed over time. In Los Angeles, like many cities, this narrative has shifted. In order for a city such as LA to even exist in such a highly arid floodplain, the entire hydrological landscape had to be massively converted. The LA River had to be tamed, wetlands were drained, and water had to be pumped in from other places (described more in other chapters). Over time, groups and policy makers have begun to recognize the value that nature can provide cities, such as flood control, climate regulation, pollution absorption, recreational and cultural services. Nature can be a part of cities, not just something to marginalize, eliminate or rigidly control.

This chapter will contribute to the body of work in this space by examining partners' narratives of nature in Los Angeles. Specifically, this chapter examines practitioner and knowledge community narratives of nature for those working in the realm of urban ecology in Los Angeles, California. The thesis for this chapter is that urban nature narratives are dynamic, diverse and interlinked in conveying social-ecological issues, having the potential to serve as a policy and planning tool in order to increase awareness of partner perspectives, areas of contention and synergy, and opportunities for innovation. As part of this, this chapter will show how narratives of nature can highlight issues that warrant a different policy and planning approach, such as non-native species, aesthetics of
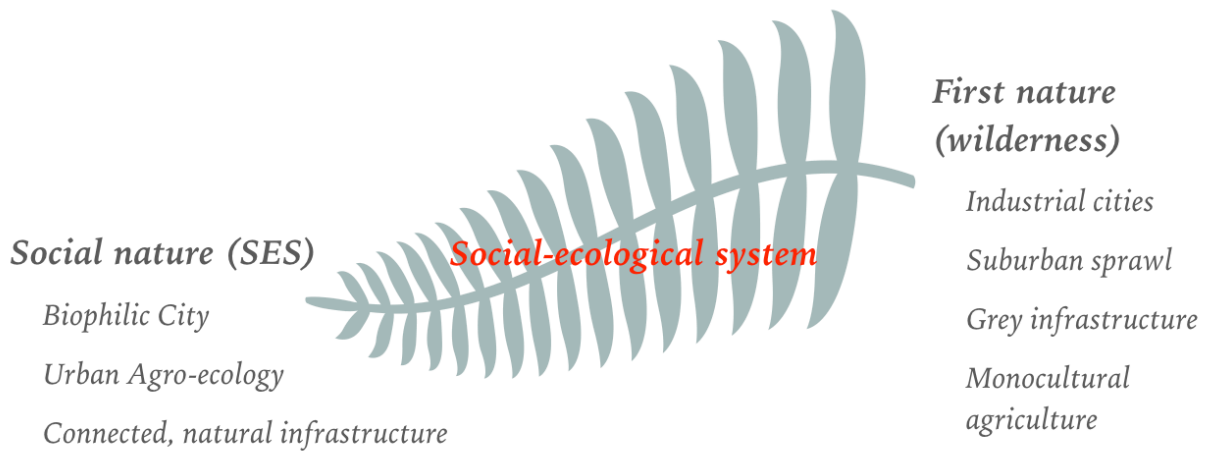
nature, ecosystem service trade-offs and controversial species (e.g. coyotes). Shifts and diversity within nature narratives may provide an opportunity for social innovation and policy and planning improvements.

Ecosystems, and the services and benefits they provide, can contribute to making cities better places, such as more resilient, sustainable and livable. In understanding the place of natural ecosystems in cities, there has been a dynamic narrative that began as "ecology *in* cities", then "ecology *of* cities" and increasingly "ecology *for* cities" (Grimm et al. 2000, Jansson 2013, Grove et a. 2016). "Ecology *in* cities" refers to ecological patterns and processes within cities, such as urban wildlife that can be present in cities. In contrast, "ecology *of* cities" refers to seeing the city and its surrounding regional landscape as one ecosystem, or social-ecological system, including equity and socioeconomic factors (ibid). However, a new narrative is emerging that examines how ecology, or ecosystems, can be *for* cities, not just in cities or as an urban social-ecological system, but also for the benefit of residents in cities (Grove et al. 2016).

Nature itself has an elusive definition, varying by culture and changing over time. American views of nature, largely shaped by European immigrants, have been characterized by notions of wilderness and separateness from human systems, with this separateness sometimes veering towards fear of nature and other times reverence towards nature (Purdy 2015, Cronon 1996). In fact, Cronon (1996) discusses how American notions of nature can be characterized as a combination of romanticism and frontierism. In contrast, other cultures, such as indigenous groups in North and South America, have tended to view nature as something they were connected to and part of. These perceptions carry over to notions of what is nature in communities, including cities.

For example, some people considering vast, "wilderness" areas to be "first nature" and the more tame, managed nature in cities to be "social nature" (Bellino & Adams, 2017). Cities are thus seen as separate from nature. Many have questioned what the label of wilderness means, as the large tracts of wilderness lands that Americans typically imagine as "nature" were often simply difficult and undesirable places to farm and establish settlements. In addition, many of these areas viewed as wilderness are still highly managed, supervised and stewarded by government agencies, contractors and non-profits, albeit in less obvious ways to most people living in cities. Figure 3.1 details some of these varying narratives of nature along a continuum, anchoring these perceptions in what is fundamentally a socially constructed SES. A social-ecological system (SES) approach, discussed at length in the Introduction Chapter, sees nature and human systems as linked - evolving with and depending upon each other. A SES view thus has an impact on narratives of and in turn ways of planning for and managing nature. In addition, in the Anthropocene, given the global environmental change human beings are driving, many now argue that all ecosystems, no matter how remote are impacted by and managed by people.

Figure 3.1: Narratives of Nature along a Continuum

First nature (wilderness)

Industrial cities

Suburban sprawl

Grey infrastructure

Monocultural agriculture

Social nature (SES)

Biophilic City

Urban Agro-ecology

Connected, natural infrastructure

Social-ecological system

A large body of research explores synergies between nature and human physical and mental well-being in cities (Kuo & Sullivan, 2004, Mayer et al. 2009, Bolund & Hunhammar 1999, Gomez-Baggethun and Barton 2013, Beatley & Newman 2013). Human-environment interactions have developed over thousands of years, with a dynamic interplay and co-evolution between the two. Given this close relationship, much research has shown that in cities people greatly benefit from having the natural environment in their everyday lives and surroundings, both physically and psychologically (Beatley & Newman 2013, E.O. Wilson 1998). E.O. Wilson (1998) coined the term "consilience", defined as the back and forth interactions between natural and human systems, producing a co-evolving synthesis in the process. People benefit from having nature present in their everyday lives and surroundings, both physically and psychologically (Beatley & Newman 2013, E.O. Wilson 1998 and more). The concept of biophilia describes the need within human beings to connect and spend time in nature as part of being healthy and happy. Building on this

idea is then the concept of biophilic cities (Beatley & Newman, 2013). A biophilic city is described as a city with four main characteristics: first, people have close and daily contact with nature; second, nature and natural elements are featured in urban design across the building-site-city-regional scales; third, participation and stewardship of the environment is fostered; and fourth, sustainability and resilience coincide as critical parts of the management process.

Cities exemplify social-ecological systems (SES). As discussed in the Introduction Chapter, Cities are highly managed ecosystems and these areas are significant drivers of ecosystem change and use within cities, nearby, and far away over time and space (Grimm et al. 2000, Grimm et al. 2008, Goddard et al. 2009, Pickett et al. 2001). Cities also have an enormous amount of human capital, and as such, have the potential through coordination among government, non-governmental and private sector partners, to develop sustainable, resilient and transformative solutions in the Anthropocene (this concept is discussed in more detail in the Introduction Chapter) (Sassen, 2010, 2005). A SES perspective is particularly useful and appropriate in the Anthropocene, as human beings are the major driver of large-scale environmental change.

For many people exposure to nature in cities constitutes the bulk of their interactions with nature and its associated benefits. Increasingly, the importance of incorporating the role of nature in cities is recognized (Ahern, 2014, Maharramli, 2017). Given the interrelated challenges urban areas face (climate change, natural disasters, water and food security, energy demands and public health and migration to cities as a result of all of these), the integration and reinvigoration of healthy ecosystem functions within and nearby cities will be an increasingly vital tool for partners to improve societal resilience,

wellbeing and innovation (IUCN, 2013). Healthy urban ecosystems have an important role in providing health and human security-related services, such as air purification, noise reduction, urban cooling, recreational, cultural and psychological values, runoff mitigation and more (Gomez-Baggethun & Barton 2013, Bolund & Hunhammar 1999). For example, natural infrastructure solutions have been cited as a priority in California's strategy to address climate change (California Fourth Climate Change Assessment, 2018).

Ecosystem services are defined as the "the benefits human populations derive, directly or indirectly, from ecosystem functions" (Costanza et al., 1997, p. 253, Costanza, 2014) in a SES. A classic typology of ecosystem service categories is the four following: provisioning, regulating, cultural and supporting ecosystem services (Millennium Ecosystems Assessment, 2005). A resurgence of attention on the value that ecosystems bring to human well-being has led to the development and refinement of concepts such as ecosystem services, natural capital, and green or natural infrastructure. There have been landmark studies such as the Millennium Ecosystems Assessment and The Economics of Ecosystems and Biodiversity.

The biodiversity of nature is an important underpinning and cross-cutting element of all ecosystem services (Mace, Norris & Fitter, 2011). Some of the key roles of biodiversity in a system include self-organizing ability, absorption of disturbance, reorganization of a system after disturbance, and provision of critical ecosystem function and redundancy (Folke, 2006). Cities themselves create "novel ecosystems", which should be acknowledged in terms of biodiversity and ecosystem services they can provide or undermine (Andersson et al. 2014, Pincetl 2012). These novel ecosystems are characterized by networks, often antiquated, of roads, sewers, waste treatment, water systems, energy provision, etc.

(Pincetl, 2010). Increasingly partners are considering how to mainstream nature in city planning processes, as reflected in the recently launched tool by ICLEI (Local Governments for Sustainability) called "Cities with Nature".[10]

Global trends show that the capacity of nature to contribute to human wellbeing is in decline (IPBES, 2019). Based on a review of over 2,000 studies, 14 of 18 categories indicating how nature contributes to people are in decline.

Just as there are ecosystem services, there are also ecosystem disservices in a SES. Ecosystem disservices (EDS) are defined as ecosystem-generated attributes, functions and/or processes that can cause perceived or actual negative impacts on human wellbeing (Vaz et al. 2017). Some examples of these perceived or actual EDS in cities can relate to aesthetics, nuisances, invasive species/pests, public health (e.g. allergies or mosquito borne diseases), waste, water-use and safety (Escobedo, Kroeger & Wagner 2011). In the environmental justice literature, EDS has also been referred to as dis-amenities (Schwarz et al., 2015). For example, relating to urban tree canopy, dis-amenities can include maintenance costs, increased water demand, allergies and perceived safety concerns. In addition, water ecology in cities has historically often entailed EDSs such as disease, contamination and waste before modern sanitation practices were put in place in many parts of the world (Feldman, 2017). These EDSs are still prevalent in many developing parts of the world today, especially urban slums, and will be inflamed by climate change, conflict, growing inequities and global urbanization trends.

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[10] CitiesWithNature tool and website: https://iclei.org/en/media/new-free-tool-helps-cities-mainstream-nature-into-urban-planning

How ecosystem services are "generated, distributed and articulated" in a landscape depend upon the management of the social-ecological system (Ernston 2013 p. 8, Kaczorowska et al. 2015). Partners collaborate, coordinate and interact formally and informally in efforts to propose, manage and evaluate policies focused on cultivating nature in urban spaces (Kaczorowska et al 2015). Ecosystem services are socially produced, with cities epitomizing their social production and management. For example, the ecosystem services of urban gardens are often shaped by cultural preferences, income, etc. (Weller Clarke & Darrel Jenerette, 2014). The distribution of ecosystem services often benefits some, but not all, of a human population in a SES (Beatley & Newman, 2013). Ernston (2013) relates the social production of ecosystem services to the inequitable distribution of such benefits and amenities. The generation and distribution of these disservices also depend upon how entities (residents, NGOs, city agencies, etc.) manage a SES. This management reflects environmental justice dimensions, such as access to amenities (e.g. parks) and exposure to hazards (e.g. air pollution). For example, Schwarz et al. (2015) show that there is a strong positive correlation between urban tree cover and median household income across U.S. cities. Lower income communities have less access to the ecosystem services (shade, cooling, pollution absorption, recreational activities, etc.) that urban tree canopy can provide. This relationship is even stronger in arid cities, such as LA, where trees require water in order to survive.[11] Restorative justice has been put forth as a tool to help communities, including in complex landscapes, such as watersheds, "do" justice in environmental planning and policy processes (Hill et al. 2019, Humphreys & Reiter

[11] In less arid areas, where there is more rainfall naturally, urban tree canopy may be less of a reflection of lack of access to an environmental amenity, or environmental injustice.

2014). Restorative justice is an intentional process that allows for everyone's voice to be heard and collaborative, inclusive solutions to be developed. Plurality of knowledges and perspectives are recognized, and ethics is considered in light of the relational-responsibility model.

A lack of meaningful engagement with communities has also led to "selective sustainability" as opposed to more inclusive, community-driven sustainability that durably leverages synergies between human wellbeing and urban ecosystems (Checker, 2011). Civic ecology, including civic ecology education, is one proposed means of creating more synergies between ecosystems and equity, based on the inclusive engagement of community partners (Tidball & Krasny, 2011, 2015). Civic ecology is based on four principles: first, people are embedded in social-ecological systems; second, civic involvement is an asset in and of itself; third, a wide range of educational tools are embraced; and fourth, people can have a positive impact on their environment, not just a negative one. Student groups and universities often play a role in small-scale environmental stewardship activities to restore their neighborhoods and in the process vulnerable groups can become more empowered (Krasny & Tidball, 2015).

As noted, urban landscapes are often spaces where nature has been marginalized, fragmented or changed in a large-scale manner. Urban ecosystems are frequently converted to grey infrastructure, or built infrastructure, which comes at the loss of ecosystem services to urban social-ecological systems, such as flood prevention, coastal protection, recreational value and climate regulation (Gomez-Baggethun & Barton, 2013). Green, or natural infrastructure, has been lauded as an alternative platform to deliver ecosystem services to residents in cities (Ahern, 2014, Costanza, 2014). Green

infrastructure is defined as a planned network of both natural and semi-natural areas with environmental elements designed and managed to provide multiple ecosystem services (Hansen & Pauleit 2014, European Commission 2013). In the U.S. context, green infrastructure is often framed more in terms of stormwater, with green infrastructural elements such as rain gardens and impervious surfaces, in addition to urban tree canopy.[12] Increasingly urban areas are designing, implementing and managing natural infrastructure near and in urban areas to provide ecosystem service benefits to residents. For example, green infrastructure has been used in New York City to provide millions of people clean water from the city's upper watershed by leveraging municipal water fees (Miller, Nielsen & Huang, 2017). In this case, the green infrastructure system was found to be more affordable than the grey infrastructure option. In Los Angeles, urban gardens have been touted as a form of natural infrastructure that can deliver a range of ecosystem services, including food provisioning, cultural services, increased water filtration and supporting pollinators (Weller Clarke & Darrel Jenerette, 2014).

This chapter will contribute to the literature by shedding light on the dynamic nature of urban nature narratives in cities, particular LA. Some of these narratives reflect an opportunity for partners to collaboratively and inclusively improve policy and planning processes that relate to or encompass the integration of nature in cities. This research aims to contribute valuable and insightful information foremost to the stakeholders in the urban area I am studying - namely a university center as part of a larger university and their partners working in the broader Los Angeles region. Other cities and universities are facing

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[12] I tend to use the term natural infrastructure so as not to be constrained by the sometimes more limitedly viewed scope of green infrastructure in the U.S. and its association with stormwater. However, sometimes these terms are used interchangeably by academics to reference the broader meaning of green or natural infrastructure.

similar challenges, and as such would benefit from the insight generated from this study.

Finally, it is hoped that this research, through its interpretive narrative approach to better

understanding urban social-ecological systems, will unveil important and applied findings

regarding understandings and interactions with urban nature that I can continue to build

on in subsequent research in this region and other cities as well.

Methods

I utilized an interpretive qualitative approach to understand and interpret

narratives of nature among partners, largely local government agencies, NGOs and IHEs

(Institutions of Higher Education) partners in Los Angeles. For this chapter I drew on data

relating to participants from practitioner and IHE communities, and their narratives of

urban nature, including how their perceptions of nature have changed over the course of

their careers and stories of their urban nature-related policy and planning efforts. I deeply

engaged with one university center, Loyola Marymount University's (LMU), Los Angeles'

(LA), Center for Urban Resilience (CURes) as a partner.[13] This university center focuses on

urban ecology as a means of empowering communities and improving urban resilience,

with major areas of research centering around green infrastructure and society and the

environment. Noted in other chapters, I conducted more than 40 semi-structured

conversational interviews with partners of CURes and other recommended partners using

a sequential sampling approach. Those I interviewed included CURes faculty and staff,

other IHEs (public 4-year and 2 year), local government representatives (e.g. mayor's

office, public works, conservancies) and urban ecology related NGOs.

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[13] CURes' website: https://academics.lmu.edu/cures/

As described in other chapters in this dissertation (Introduction and Chapter Three), Southern California and Los Angeles in particular, is an ideal study site for perceptions of nature given the extensive sprawl and development that has occurred in the region, fragmenting highly biologically rich ecosystems along the coasts and in the mountains. This has increased the likelihood of different narratives of what nature should be in these urban spaces, driven in part by more interactions between people and wildlife (e.g. coyotes), and vulnerability of some communities living in dangerously wildfire prone areas. In addition, the region faces serious challenges in terms of intense droughts, water scarcity and increasing social inequalities.

An interpretive narrative approach was appropriate for this study as narrative can be a model for social-ecological systems, or how people model their social-ecological environment (Lejano & Ingram, 2013). People often seek to understand each other through metaphors, stories, myths, scenarios and narratives (Galafassi et al., 2018). Narrative can be described as the ubiquitous way that humans interpret their experience, construct and communicate meaning, share concepts and organize memories (Bruner 1991, Chase 2003). They are also a way that people convey complex topics and allow imagination (Innes & Booher, 1999). Indeed, narrative is fundamentally a social, dynamic process whose acceptability, or legitimacy (discussed in Chapter 1 of this dissertation), is governed by societal processes. Narratives are dynamic as different versions are often contested, stories evolve, and even parts of a story or narrative are left unsaid or shared among certain groups. Similarly, narratives can be diverse and inclusive, such as plurivocal narratives, which are described as narratives that overlap yet are inclusive of divergences in perspective, characters and plot (Goldstein et al. 2012). Plurivocal narratives have

differences, can be nested, and are connected to other stories. Narratives exist at many scales and in innumerable forms, such as the narratives of individuals, families, organizations, ethnic groups, cultures, professions, disciplines, cities and nations. For example, Keller (2009) discusses the important role that science has played in environmental policy, turning this on its head by asserting that science itself is a narrative, as opposed to a rational objective truth that is "just out there". Examining how a narrative is told and retold, such as the plot line (e.g. type of genre, such as drama, comedy, tragedy, etc.) and characters, can enable better understanding of how narratives can, or cannot, affect change. This is shown in Polletta's (2009, 2013) informative research on plot lines and character development in battered women's stories, as well as Green and Brock's (2000) research on how "transportation" from a story can serve as a vehicle for narratives to affect beliefs. Narratives can also be a tool for resolving conflict, developing shared solutions and envisioning future scenarios, with restorative justice one such framework. Hill et al. (2019) share the utility of restorative justice in engaging stakeholders in environmental planning, specifically the Columbia River Basin.

Utilizing narratives as a research tool represents a large and growing literature, spanning multiple disciplines and issues. For example, this is reflected in Forester's (1999) and many others' call to *listen to stories* as a means of learning more about an issue, including environmental issues. In LA, UCLA's Laboratory for Environmental Narrative Strategies (LENS) collaborates with partners on storytelling as a means to investigate environmental conservation and equity (LENS website).[14] In similar research, Goldstein et al. (2012) show how narratives are core to efforts in LA to restore the city's connection to

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[14] LENS: https://www.ioes.ucla.edu/lens/

the LA River and address the wildfire crisis, and specifically the role of narratives as a means to define and collaboratively work towards resilience. The LA River exemplifies how a narrative can change and impacts that this change can have on governance - no longer is the river seen as a threatening force to control, but rather is now seen a connecting life-force across the scale of the city. Similarly, many scholars in the planning field have described how a key part of the field is narrative, as both process and outcome of what a city is and can be (Goldstein et al. 2012 p.1289, Forester 1999, Sandercock 1998). Also, narratives can be a useful tool for moving across and inter-connecting scales (time and space), such as narratives that reach across neighborhoods to cities and larger regions. I am particularly interested in how narratives are dynamic among different storytellers, or plurivocal, among different urban ecology partners, and how narratives themselves can be an inclusive tool for facilitating urban policies and strategies that integrate nature *in* cities *for* cities, to be more resilient, healthy and livable.

Methodologically, the approach of listening to and inviting stories is one I particularly drew upon during my interviews and when I was a participant observer (Chase 2003, Forester 1999). An effective way of collecting narratives is through "participant-listening". Often during interviews, participants would make a point by telling a story (Maynard-Moody & Musheno, 2014). In addition, narratives are a heuristic for analyzing how reality is described and to facilitate discovery with social science data (Abbott, 2004).

After first reading through all the data, I uploaded interview transcripts and extended field notes into the ATLAS.ti, a software program used to store and manage qualitative data. From ATLAS.ti, I generated codes, categories, and memos based on the data. Some examples of codes that were prevalent in the data include native and non-native

species, ecosystem services, biodiversity and trees. Data analysis occurred iteratively with data collection in order to pay close attention to surprises, puzzles and patterns that emerged in the field (Schwartz-Shea and Yanow 2012, Wilkinson 2014). Representative quotes from both knowledge and practitioner partners were analyzed from interview transcripts and participant observation extended field notes to explore nature narratives. I then juxtaposed these emerging codes against what I know, such as theoretical concepts in the literature and contextual information, in a back and forth way to develop possible explanations of narratives of nature in LA (Schwartz-Shea & Yanow, 2012). As codes and categories were generated, memos and analytical writing occurred for further evaluation. I also sought a participatory research approach, engaging CURes staff throughout the process, including seeking feedback at different stages of the research as a means to facilitate co-production of knowledge and as a data analysis tool itself.

Findings

In examining narratives of urban nature among knowledge and practitioner partners, the place and role of nature in cities was found to be dynamic, both over time and across participants. For many participants who were asked about their own evolving views of nature in cities, nature in the urban space is something they seemed to recognize, or literally *see*, over time. The following excerpt from a representative at a university center reveals this transformation, as well as how this relates to their own students.

…My one line that I always say [to students] is that I'm sorry, because this happened to me, but you're never gonna unlearn…you are going to walk out and look at the city and your neighborhood differently after this class because I look at all the trees now. I look at sidewalks. I think about storm drains and all of those types of things. I mean I teach it, so that is helpful, but it happened with one of those first classes for me.

The excerpt above shows how learning about nature in cities, in this case from the

perspective of both the teacher and student, is integral for people (students, citizens in

their community) to recognize how nature is integrated around them in urban spaces.

There is also the subtle weaving of the participant's story into the larger point that she is

making.

Similarly, a practitioner described their evolving perspective on urban nature through

schooling and over the course of their career in the excerpt below.

So to give you the short answer, yes, I started with just focusing on nature, and then I've come around in, I would say the last decade, to understand the concept of urban nature, and in my opinion the even more importance of urban nature than even just nature itself.[...] And so, that's then when I went back to school and got my two master's degrees. And it was then through that additional schooling that I really, really started to realize that so much of our problems, environmentally, are stemming from cities these days, and so really if we look at making the biggest impact, we really have to go into those cities and figure out how to make them more livable spaces. And more livable not just for us as people, but for again, the flora and fauna. And so I've totally come full circle. Nobody in my programs, none of my friends, not even my family ever thought that I would move to a place like Los Angeles. I didn't either. So I very much have surprised a lot of people, but I'm telling them that I feel as though I'm one of those...I'm hoping to be one of the first ecologists that, not first, but one of the first types of ecologists that are coming into these urban areas and helping to really define the field of urban ecology, so that then it's not seen as this weird thing for an ecologist to come into a city. And to work in a place like LA...

In that excerpt, the personal story of the practitioner is shared, along with how they

fundamentally link this to their role in working as an ecologist in "a place like Los Angeles".

What seems to be unsaid here is that LA is not the type of place many would imagine an

ecologist working in part because of the narrative of LA that is more disassociated with

nature. It also reflects, as discussed in the Introduction Chapter, the shift of the

environmental movement from focusing on rural or "wilderness" areas to urban nature.

One thread across participant narratives, in terms of how their views on urban nature

have evolved, is that people would make the point of first "seeing" nature in places other

than or outside cities, and later on see and recognize the value of nature in cities. Among participants, typically a formative story would be shared - based on an educational course or experience, travel, and/or an interaction with someone who impacted their views - that would facilitate this person then seeing nature in cities differently from that point on. As described above, their views changed after university courses. Similarly, a director of a large NGO in LA shared how her views of nature changed when she lived overseas as a volunteer. Other participants described their interactions with others and how they try to create formative experiences for youth through a combination of exposure and experiences with nature in cities and outside of cities.

In talking with and observing participants, contrasting narratives of what nature should be allowed in cities emerged. In an effort to best capture these contrasts and tensions, the findings and analysis below are organized in terms of perceptions of ecosystem services and dis-services. This is because the benefits/services that nature brings to people in cities is a reflection of the "ecology of cities" narrative. However, with this also comes managing any tradeoffs (or disservices or dis-amenities) that can occur.

Ecosystem Services

As described earlier in the chapter, ecosystem services are "the benefits human populations derive, directly or indirectly, from ecosystem functions" (Costanza et al., 1997, p. 253, Costanza, 2014) in a SES. Therefore, in this subsection, I analyzed specifically narratives that convey perceived benefits of some element of urban nature. Broadly, participants described urban nature as contributing to human well-being. Regulating services, such as shade specifically, were often cited among participants. In addition, the

social services that nature can provide in cities were often reflected upon, as explained by a university representative in the following excerpt.

I think a walk in the park makes you feel good, hiking up in the mountains within the city still makes you feel good. Being able to ride your bike around along the creek, it makes you feel good. It's really about enjoyment and having fun and of course now we know that doing those things truly does affect your brain and improves cognition and all sorts of things.

This participant above brings up the positive feelings people can experience when they engage in recreational activities outside, while also tying it with the research that has supported these benefits. Multiple participants had similar sentiments, expressing how it just "feels good" to be outside and people "enjoy" being outside. As one participant pointed out; however, people do not disaggregate this enjoyment in terms of discrete ecosystem services (such as climate regulation, pollution absorption, recreation, etc.).

Non-native species emerged as a strong thread among partners. Participants had varying perceptions of the role of non-natives, typically juxtaposed against native species. Among the academic participants there seemed to be some reflection regarding how their professional opinions on this were changing as well as recognition of a larger narrative shift on non-native species in urban settings. For some, it used to be that non-natives in cities were a negative, regardless. They were not considered nature, but more an "other" - an ecological threat in fact to the nature itself. This shift is described by a university participant in the excerpt below:

It's just an ongoing shift in my mind to say that...well, just to very seriously reevaluate the role, the importance, the good, the bad, and the ugly, of non-native species in cities, and that, because I always came into this with a very strict, normal, ecologist's perspective, if you're not native, you're bad, full stop [...]. Given that we plan everything in cities, let's plan wildlife. We plan everything else. Why don't we plan wildlife? We come up with a series of criteria, and certainly, first and foremost, if I can get natives here, I would, but if the choice is between nothing and certain non-natives, then I increasingly think that it's really our responsibility to identify the species that will do well in the city and will do poorly outside of the city, and work with those. That's a complete shift for me, a total shift. [...]. If we take it as a given that

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LA is never going to get rid of its palm trees if it can possibly avoid it, you can say there's a novel ecosystem that we've created that was never here, and we can sort of wait and see who shows up to use it, or we can use good, strong ecological science to say, "Let's think hard about what we'd like to be in those palm trees." That's a completely different shift for me. That's all about being here [LA], and in part, that's all about interacting with people who emphasized to me things like, in a city, if every, and I brought this up at that meeting, if everybody in the city likes parrots, but parrots shouldn't be here, what's the right thing to do?

[…]. See, now you're getting down into the weeds on the problem [this is in response to my question if parrots cause problems]. Is that the question that you ask with a non-native species? Do they cause problems? Or do you just say from an almost ethical, philosophical point of view, they just shouldn't be here? They're just bad?

In the narrative above there is a back and forth dynamic between the participant's reflection of his own shifting views regarding non-native species in cities and a discussion on policy, specifically planning for wildlife in cities. This planning, as the participant describes, includes moving beyond the native and non-native species dichotomy, and using a "series of criteria" and "strong ecological science" to think about what we want in a city, with palm trees and parrots as examples, and what species might do well in a city. He also describes how being in LA has influenced this shift in thinking, including his interactions with others. Altogether this excerpt illustrates the fluidity between one's dynamic narrative and perceptions of appropriate policy and planning strategies.

Practitioners and academics alike also pointed out that non-native species can provide ecosystem services. This is consistent with research that has shown the ecosystem service benefits that urban gardens, which often have non-native species, can provide (Weller Clarke & Darrel Jenerette, 2014). A participant explained that non-native species can contribute to overall ecosystem function. One such ecosystem service participants mentioned that can be delivered by non-native species includes shade provisioning, or climate regulation. It was argued that this is especially the case in underserved

neighborhoods, which in LA often have little shade or tree canopy - so if it is the "choice is

between nothing or some non-native species", for both social and ecological reasons, some

university partners are changing their views . Participants also described how non-native

species can provide critical habitat for native species, as illustrated by an account from a

participant of the monarch butterflies overwintering within non-native tree species (or in

another instance native bird species). Participants described how non-native species can

provide important cultural values to communities, with some ethnic communities

preferring certain kinds of vegetation in their neighborhoods and have varying perceptions

of what is attractive in a natural setting. One practitioner within local government

explained, "I think when you're thinking of the urban forest, I think that there's certainly a

place for non-native trees that provide different ecosystem services". In the excerpt below

a university participant shares her insight on the larger shift regarding the role of non-

native species in urban areas.

There are a lot of ecologists and biologists now who actually say, "Let's not obsess about the
origin of a particular species," especially in an urban context, but also more generally. I think
this is generally a new view in ecology and biology that says, "Where they come from is
actually not as crucial as understanding how they function now, and how they interact with
other species."

In the excerpt above what stands out is how the criteria of what nature should be in cities

has shifted. The narrative has shifted and rather than focusing on the native species versus

non-native species dichotomy, is suggesting focus on 1) how species function and 2) how

they interact with other species. A practitioner participant elaborated more on the use of

non-native species as a part of managing urban forests.

I think that my opinion very much is in favor of using non-native trees, obviously prioritizing
low water use trees, prioritizing large trees that are gonna give you the biggest benefit. I
think that's important. I think too with urban forests, you have different pest issues and
different issues with species doing well or not doing well as street trees, either in an open

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parkway or in confined cuts that are usually four by six feet. So, I think it's a balance of maximizing the species we want to use and the attributes we care about in trees, and just being realistic when trying to manage the urban forest. I think that it's important to use those. Obviously, we want to be dutiful about what we use. We want to avoid anything that's going to harbor any invasive insects or be a host for things that we don't want to spread, be high water use. But I think that in a city like Los Angeles, there's a place for using those non-natives wisely.

The excerpt above is aligned with discussions I had with other participants in that they are

considering more broadly the role and function of species in "a city like Los Angeles".

Participants seem to be describing an urban ecology that is characterized as more practical

and adaptable. The criteria of how a species functions and how it interacts with others is

also present in the above excerpt, such as when the participant discusses low water use

trees (even if they are non-native), large trees that will provide the biggest benefit [of

shade] and pests.

However, both university and practitioner participants drew a distinction between

the management of non-native species and native species in urban settings versus what

they considered non-urban settings. For example, one local government practitioner

clarified, "…just to kind of make one more point, my opinion changes drastically if we're

talking about a true urban wildland interface". The excerpt below from a university

participant also explains this distinction.

If it was in Yosemite National Park, I wouldn't ask the question, "Are they doing any harm?" I'd just say, "Get rid of them." Any ecologist would. You go to national parks, and they're yanking up invasive plants right, left and center. They've got armies of volunteers out there yanking up plants. Are they studying each plant and saying, "What harm does it do?" They're just saying, "It's not doing any good, and it shouldn't be here, so just get rid of the damn thing." In cities, I'm starting to walk away from that perspective, not up in the Santa Monica's, but here. That's my change.

The excerpt above reveals, first, a shift in how nature is viewed in cities by ecologists,

"they've walked away from" their old perspective. And second, it shows that in cities, in this

case LA, the type of nature permissible is viewed as differently than what would be permissible in the nearby Santa Monica Mountains. Urban settings and non-urban settings are seen as altogether different social-ecological systems, even though often the former relies upon and draws from the latter. Given the immense sprawl of many cities, the urban wildland interface is ambiguous and porous (Goldstein et al. 2012). There has been much work on managing the urban wildland interface, which is viewed as a vulnerable landscape, especially in terms of wildfires, ecological pests, and habitat destruction and fragmentation that vulnerable species rely upon. However, this distinction between the urban and non-urban settings warrants further inspection and has implications for managing ecosystems and their interactions across inter-connected scales.

The discussion of natives and non-natives was also often connected to the notion of biodiversity. The following excerpt from a university participant reveals the links between these two concepts.

One thing that comes up when you think about biodiversity is the basic question of what counts and what doesn't as biodiversity. In orthodox ecology, it's native species. Agricultural species usually don't count as part of biodiversity, although in many countries and large regions, of course, what kinds of animals that people have brought and the trees and plants that they grow are a huge part of the landscape. They can sometimes, it has in monoculture agriculture, be disruptive of biodiversity. But, in other more traditional forms of agroecology, as it's now called, can actually be conducive and actually helpful for biodiversity.

In the excerpt above the participant shows that the concept of biodiversity itself, like nature, is a narrative that is integrally linked to cultural views of nature, including native species. She disrupts the concept of biodiversity when she reflects on how in other parts of the world there seems to be a more fluid, inclusive view of what biodiversity means. Activities like agro-ecology can play an important role in facilitating biodiversity across a social-ecological landscape. Another participant pointed out that biodiversity in cities is

where all the "buzz" is around. As a reflection of shifting narratives, more than one

participant pointed out that non-native species in cities can actually support biodiversity.

For example, a participant at a city meeting focused on biodiversity pointed out that a tree

canopy may not be native, but it may support a lot of biodiversity. Another participant, a

practitioner within local government, clarified, "By biodiversity, I mean diversity. I don't

mean biodiversity within only what's native to this region." In other words, this participant

when out of their way to clarify that biodiversity, from their perspective, did not just entail

native species.

The cultural ecosystem services provided by non-native and native species alike

were often expounded on. Across academic and practitioner participants, there was

discussion on how culture can inform the biodiversity present in a community. Participants

described how culture can literally shape the urban nature cultivated in a landscape, such

as the types of trees present, plants grown in a garden, or birds beloved, like a flock of non-

natives parrots in a neighborhood. This thread is conveyed by a university participant in

the excerpt below.

[...] we do find patterns where certain communities really love certain species, so sometimes a cluster of one species in an area isn't necessarily by chance, because that group or that community just loves a certain tree because it has cultural or historic value to them or their ancestors.

This excerpt underlies the intense social-ecological system of an urban environment, and

how culture itself plays a defining role in how nature is integrated across a community.

Similarly, a university participant discussed the connections between perceptions of nature

and culture. This person asked during our conversation - "...how do these perceptions,

impacted by culture, tell us about how to do conservation?"

Another academic participant pointed out that the integration of nature in cities is fundamentally itself a narrative - a story that a city, community or neighborhood tells about how it views nature. This person explained, "when you say connectivity, what we're doing is we're telling stories about how we think species that we want to move through the city and don't want to move through the city, we're telling stories, we're just making up stories about how they do that." This participant makes the explicit link between our narratives and how we plan and allow for certain types of nature in our cities. It also captures and gets at the core of the potential utility of better understanding the connections between nature narratives and planning for more resilient, livable cities for people, flora, and fauna.

Ecosystem disservices

As described earlier in the chapter, an ecosystem disservice is an ecosystem-generated attribute, function and/or process that may cause perceived or actual negative impacts on human well-being (Vaz et al. 2017). Therefore, in this subsection, I analyzed specifically narratives that describe perceived negative attributes, functions or processes of some element related to urban nature.

A prevalent ecosystem disservice that emerged at the time of the data collection related to an ecological pest, the invasive shot borer beetle. This invasive beetle featured prominently in the discussions pertaining to non-native species in connection to urban trees. The shot borer beetle is an invasive species from Asia that at the time of field research was causing widespread damage to the urban tree canopy in Southern California to both native and non-native species alike. What made this situation all the more complicated to manage is that native tree species, particularly the California Sycamore, is especially vulnerable to this pest. While research on the pest was still being developed in

real-time, there were some practitioners who were interpreting the nascent and dynamic

science on the issue by advocating to *not* plant native tree species out of concern that these

tree species would contribute towards spreading the pest. This tension among partners

was evident when a practitioner from an NGO described how one of the local government

departments was planting non-natives in response to the shot borer beetle. The

practitioner goes on to explain how both native sycamores and avocados are host trees.

The following account conveys the various difficulties coordinating on this issue among

partners, as relayed by a practitioner participant.

If you were to plant a tree in here, maybe you wouldn't put a sycamore in here because of
the fact that it could be a host. So, you might not want to import a sycamore to this facility.
But that doesn't mean you shouldn't be planting sycamores in other places. Because, if we
stop planting our native species, in particular sycamores that are susceptible to that
particular pest, then we will lose that species natively. [...] Because, the fact of the matter is,
the pest is so prevalent now that, "Okay, you want to cut down every tree?" And, the fact of
the matter is, some trees will die and need to be taken out, and maybe we need to be
selectively looking at ... Like this one I was just describing, maybe it's so infested that it's
really... there's so much of the borer in there that we should just take that one out so we
relieve the pressure on some of the other- [...] But, there's 3,000 sycamores along the L.A.
River that we planted, or 2,000. It's a significant number. If you cut them all down, you're
going to change the whole ambiance of that environment in such a negative way based on
what science. So, if you go to the scientists at UC Riverside, they're not saying cut them down.
And, they're certainly not saying don't plant. They're saying it's still a research question. And
so, we should put more money into research in it. And, hopefully they'll find some way of
resolving this pest before we lose our urban forest to this pest, which is likely to come
through the avocado industry because they're at ... We have a way of putting a value on
avocado trees because they're connected to a market. So, those farmers know what the
economic value of those trees are to them, and to the people who they supply avocados to.
Where, with sycamores, how one values a sycamore tree along the L.A. River is less ... no
one's really studied it. It must have some value.

In the account above, frustration with the perceived misinterpretation of the science

coming out of the knowledge community by some practitioners is conveyed, as well as the

expressed need for more research to be done to address this urgent issue. In addition, the

practitioner points out how people approach solutions differently depending on the host

species (avocado trees vs. native sycamore trees), with avocado trees having a clear market value and the sycamore trees' value less clear.

Confusion and lack of coordination with local government can contribute towards perceived and actual lack of optimal management of urban ecosystem services, as well as tension among partners. This following excerpt from a university participant expresses this perspective.

They [local government] don't choose native trees. It's just like they're choosing trees based on one thing they want to achieve, like we want more shade here. Then they choose shade trees without thinking about how much water does that tree take. Is that a native tree? Is it an invasive tree? I'm pretty sure there's a list of trees they can't use, but I don't even know because it's sometimes ...There isn't. It's crazy how uncoordinated this is. The biodiversity is very affected.

In the excerpt above, there is frustration with local government entities and the lack of coordination overall among partners. Again, this notion of what criteria used to designate the appropriateness or legitimacy of some form of nature in the city is posed. In this case the participant's narrative is that other partners are focusing too much on *one* criteria - shade - and not considering in balance other criteria sufficiently, such as water, whether it is invasive, and/or native (with native species or non-native species being one among a more diverse range of criteria).

Another practitioner participant identified the challenge that Los Angeles does not even have enough native plants to meet the needs of greening efforts by partners in the city. This situation is conveyed in the story shared below.

In 2013, the U.S. Army Corps of Engineers came back into Los Angeles and started looking at the river again and saying, "Oops, sorry you guys, we kinda messed it up by concretizing it. We took away all of its ecological functionality. We're gonna do a decade-long assessment of how to bring back some of that ecology along 11 of the 51 miles," so they looked at the Glendale narrows portion. It took them a decade. They finally issued the draft report of the different alternatives. They provided, as the Army Corps does, not only one answer but a suite of different options or what they call alternatives, for different types and degrees of

restoration that could be happening along those 11 miles. And then they ultimately promoted one of those restoration alternatives to Congress to actually adopt. And so, they promoted Alternative 20, which was the most robust restoration plan, which had over 700 acres of restoration along those 11 miles. And I became very concerned that we did not have the appropriate amount of plant material being produced locally here to actually supply to these large scale, upcoming green infrastructure projects. How were we actually going to adequately restore the LA River if we weren't actually, had our ducks in a row producing the plant material that we needed here within Los Angeles? So, I worked with a lot of different people who had a stake in this, from people within the City of Los Angeles to different nonprofits that were working on similar issues, to different academics. To say, "Okay you guys, we've got this problem of not having enough plants produced locally. What can we do to solve it?" And so through a series of different conference calls and meetings and just a lot of brainstorming, I was finally able to craft the concept of [names her organization] creating a nonprofit that creates a network of native plant nurseries on underutilized land in and around Los Angeles to grow the plants needed for these upcoming projects, and also grow people through educational and vocational training opportunities.

In the story above the issue is framed not so much in terms of people choosing not to plant enough native species, but rather not even having enough stock to meet the needs of the coordinating partners and the larger scale plans in the city. The participant paints this picture by first explaining what happened to the LA River, and then narratively crossing timescales by bringing the listener up to date and explaining the current restoration efforts and gap in not having adequate local plant material. She frames the plants in terms of being "produced locally", and while this person is referring to native plants, she is also taking it a step further and having a social-ecological approach by linking this effort, the *production* of local plants, to growth of local educational and vocational training as well.

There were also conflicts between different ecosystem services. The university center I was observing is a key partner in helping to manage one of the last urban wetlands in Southern California. One area of tension between the NGO partners and local government partner concerned vector control as it relates to mosquitos. A local government partner wanted to ensure that overgrowth from vegetation around the banks of the wetland was highly restricted so as not to provide mosquito habitat. This led to

concerns by NGO partners of wetland degradation and loss of ecosystem service function

(e.g. flood control, water quality, habitat provisioning, etc.). In other words, the concern

was that the management of an ecosystem disservice in the wetland would have the

tradeoff of reducing or hampering other ecosystem services the wetland provides. The

university center, playing both a mediating and production of science role, was beginning a

research project that focused on monitoring water quality, mosquitos and bird biodiversity.

The goal was to develop a long-term social-ecological monitoring program to inform

management of this urban wetland. The extended field notes below, from a conversation at

a CURes staff meeting, conveys this situation and how this had resulted in challenges

among partners.

Someone says Margaret is under the thumb of vector control (VC), explaining the grids or squares, for monitoring. Someone else asks who is running the experimental protocol? VC is just doing it and they are demanding she [Margaret] do certain things in riparian control. She could revegetate the area after the residential developer dumped dirt after Phase Two. VC is breathing down her neck. There are huge numbers of mosquitos. The developer is dumping dirt everywhere along path. It is wreaking havoc on the habitat. Margaret was livid. What could she do? Thy are using passing trails for maintenance trucks. It is a perfect storm. They are wiping out vegetation. Now she has to revegetate, but under the watchful eye of VC. Any vegetation on the water's edge and they freak out. James asks what trail is this? Supposedly no one goes there, but people walk their dogs there. Susan mentions the Virginia Rail [bird], which she says was not nesting last year because of VC.

The excerpt above captures strong tensions between coordinating entities. Perceived

threats to the health of the wetland are captured in the conversation when they talk about

the developer "dumped/ing dirt" and how maintenance trucks are using the trails. An

ecologist contracted to manage the wetland, Margaret, needs to revegetate to mitigate the

damage done, but she is highly controlled by VC. On the other hand, CURes' members

acknowledge that there are "huge numbers of mosquitos". There exists this tension among

partners with divergent narratives on how to manage the wetland. There is also this

tension in managing the ecosystem dis-services of this urban wetland in a way that does not undercut desired ecosystem services, or vice versa, avoid managing the desired ecosystem services in such a way that they perpetuate the ecosystem disservices.

Another issue that arose in both the interview and participant observation data is associated with the aesthetics of nature. Some people perceived a certain "look" of urban nature attractive, thus representing an ecosystem service, and others perceived this same "look" as unattractive, so for them, an ecosystem dis-service. In other words, one person's ecosystem service was another person's ecosystem disservice. For example, as described previously, there are a group of partners (NGO, private sector, university, etc.) that manage the park connected to the urban wetland discussed above through a formal partnership. These partners meet quarterly, have voting members, a budget (with dues), and oversight of the park, etc. The university plays an important role in this park - located in close proximity to both the park and wetland. The university is a voting member and the director of CURes serves as the executive director of the park, thereby also having a management role (this role is also discussed in dissertation Chapter One). There were often debates among partners at these meetings about the "look" of the nature that visitors would experience in the park. For some partners, a more "wild looking" urban nature is considered unattractive. They would articulate this in terms of it being unattractive to the audience they are trying to reach, which could then undermine their attempt to educate people about the value of urban nature, particularly native species. For others, there is beauty in the more "wild looking" urban nature. There would be tension between partners on this issue. The following extended field notes from a partners' meeting I attended reveals these varying narratives and implications for management.

Margaret began discussing the medicinal garden in the park. She explained how the donor considered the garden "too wild looking". She thought the garden looked fine [said in a clipped way], although he [the donor] thought otherwise. However, as various people noted, it was important to take his input into account because he had donated this particular garden to the park in memory of his brother. The group discussed how the garden needed signage in order to explain how the plants were used by Native Americans. It was also mentioned that this donor had offered to pay for the new plants in the garden as well as signage. A drawing was shared with the group regarding what the do-over of this medicinal garden might look like. Margaret then went on to express the need for a discussion on how nature should look like, referring to the donor's "neat and tidy view" versus her view (which by implication seemed to be more wild). Another issue noted is that the donor seemed to advocate more for inclusion of desert plants versus what was actually used in the wetlands by the local Native American tribe. They talked about how they were able to talk the donor out of using desert plants (and instead wetland plants). Susan added at this point that there is so much history to this garden, implying the need to understand the garden's context. She shared how at one point there was a leaky path, so they put in a garden swale and it always "looks ratty" this time of year. Margaret adds here sarcastically that the plants were "daring to touch each other". Katrina then said that these plants are "natives but not nature", explaining how they needed to do more in the way of management and maintenance of the plants. Margaret countered that if they keep trimming the plants like a "Japanese garden", then they are not educating people on what nature really looks like. Someone then reminded everyone again at this point that this garden was donated in memory of the donor's brother, so they just need to manage this garden this way, not necessarily the whole park. Katrina then makes a gesture with her hands indicating a balance [this balance between managing nature in a more tidy vs. wild way].

This back and forth account reveals contrasting narratives - one narrative of urban nature that is "neat and tidy" and "natives, but not nature" in contrast to another that is "what nature really looks like" and "wild looking". This excerpt ties back to themes of social nature versus wilderness discussed earlier in the chapter. There are also varying perceptions of what is native is also present in the account above - with the discussion of regional desert plants versus wetland plants. While a plant could be regionally native, it may not have been a plant present in that area at the time the Native Americans were there, conveying the complex temporal and spatial dimensions that guide people's notions of native and non-native species. The environmental movement often frames ecological restoration or maintenance to what the land looked like before the Europeans were there,

which, unpacked has implications in terms of Native Americans being considered part of nature, in contrast to the Americans of European descent who considered themselves distinct from nature (Duncan & Duncan, 2001). Also, context is provided by a partner, who shares a story about the garden's history. There is an effort among partners to find compromise, by mentioning that they do not have to manage the entire park "that way", just the medicinal garden. Similarly, at another meeting among these partners, the executive director of the park (also the director of the university center I was observing) describes the challenge of aesthetic among native species in particular.

Eric says how when they host tours, and in trying to make drought tolerant gardens appealing, they have to have these gardens look the best all the time. Even if it is not a natural arc. They are hard to sell when they are in their quiet stage (these go dormant). As tools for engaging people in that ecology, it is easier if they keep the system moist. Even if it is certain areas. Time and time again people get excited about natives, but do not understand what it takes to keep them looking good vs. nursery ornamentals, which were invented for a reason. Why would I want this in my yard? It looks like [an area] after a burn. "It is an acquired taste," Margaret says.

In the account above the "look" of native vegetation is not considered aesthetically attractive all the time, or they are an "acquired taste", as described by one of the local NGO managing partners. The director of the park/university center explained the need to manage these native species in a way to optimize their aesthetic appeal to partners, which was a sentiment echoed later by a representative from another university. However, this may come at the cost of using more water than would otherwise be needed by drought tolerant species, which is a particularly important issue in LA given concerns of water scarcity. In an effort to advocate for native species, in part by trying to make them always look what is perceived to be aesthetically pleasing, the partners end up using more water than is required by these species. In this case, overuse of water might be perceived as an ecosystem disservice, or trade-off, in and of itself.

Similar to aesthetics, there are wildlife in urban areas that are controversial - appreciated by some and very much *not* appreciated, even feared, by others. This is illustrated in the case of urban coyotes. A local government department in the LA region asked CURes to assist them with public outreach and monitoring of their urban coyotes in order to help them develop a better management strategy. A part of this research effort also included collecting and analyzing coyote scat as well as utilizing camera traps.

The city was concerned about recent backlash by community residents towards coyotes in their neighborhoods. This city-CURes partnership effort included the university center facilitating community meetings on behalf of this department. Many residents attended a packed community meeting on coyotes out of their concern of the danger these animals (rep)presented (to their pets, to them, etc.). At this meeting, CURes director talked to the audience about both the ecosystem dis-services and ecosystem services of coyotes, as described in the extended field notes below.

Eric then says, in a warm voice walking around in front of the room, that the pros [of having coyotes around] are the ecosystem services they provide, such as controlling pest species. He describes how coyotes have been getting a bit bigger in size. They are beginning to replace wolves as predators. In terms of the cons, they can cause localized damage, such as impacting neighborhoods - pets and people feel scared.

The local government practitioners echoed similar comments later on in the same meeting. They also provided advice on how to reduce urban human-wildlife conflicts with coyotes, as conveyed in the extended field notes below.

Ed [from the city] then explains why coyotes help. They help balance an ecosystem. He describes attractants for coyotes, including leaving pet food out at night, vegetable gardens and intentional feeding. Coyotes can be habituated (a learned behavior) - they can learn which people or neighborhood is a source of food. Coyotes can be trained. Ed mentions a Coyote Management Plan. They need to learn how to make the plan better. [...] Solutions for coyote-conflicts are shared, including don't feed them; don't leave food bowls out at night. Mace can be used for coyote hazing. He shares a story of how his dog was accosted by other dogs and he almost had to use it on a cat [people laughed at this]. He talks about walking his

dog in this neighborhood. He says you can also use air horns and golf clubs. Ed describes wielding these and waving aggressively to mark your territory and chase them from the street, as well as throwing rocks. Coyote habituation is a learned behavior and can be passed onto family members and pups. He cautions not to ignore the coyote and run. Walk backwards. Don't run. Teach children to yell and wave their arms. In terms of relocation, he continues, they can pass disease this way. It is not allowed in California. The coyotes will probably move and won't stay where they are moved to. So instead they do lethal removal. Permission is needed for this. It is expensive and difficult. You can catch the wrong coyote and transient coyotes will fill in the ranges. Plus, this does not reduce the attractants. Instead we need to teach people to co-exist. The USDA has killed 100,000 coyotes and still the population has increased. He again mentions coyote hazing and emphasizes that we need to change our behavior and all work together.

In the excerpt above, the city practitioner interweaves personal stories in how to interact with coyotes as a way of teaching the audience. He also conveyed how either moving or killing the animals are not viable solutions (not allowed, costly and/or enables more transit coyotes to move in), and instead community members must consider their own behavioral change (e.g. not providing food to the animals). The university center's role in facilitating the meeting is discussed at a subsequent staff meeting. CURes' role was perceived to be a success by the city partner, and they were able to continue their partnership on this issue. Eric described how, "The city was very happy with how we managed the meeting. Imagine pitchforks [going into the meeting]". He goes on to say that he thinks it is the problem of [community members] not being heard. He described how they had volunteers coming up after the meeting.

Another perceived ecosystem disservice emerged that illustrated the temporal element of ecosystem services and disservices, with some urban natural element perceived as an ecosystem service at one point in time, then at another point in time considered an ecosystem disservice. This temporal fluidity is less abstractly illustrated by the planting of trees or the planning of a park in a community. Some people or organizations have expressed concerns that these elements - parks or trees - are contributing to the

gentrification of an area, or eco-gentrification specifically. One practitioner working for a

local NGO in Los Angeles shares this challenge in the account below.

And then you have the rent control, zoning, etcetera. […] We have river overlays right there, right by our offices, and it is literally causing displacement, and the community is upset about it, and it's having a knock-on effect too. The people are like, "Well, we don't want parks." […] It's so short [referring to what is happening on-the-ground versus the policy timeframe] that the policies that we have that we think are supposed to catch these people, aren't. So in the communities right by our offices here, ones where we planted zillions of trees, maybe we displaced a thousand residents in Low Marsh Park over the last couple of years, not into affordable housing, because there is no affordable housing. They are literally living in the parks that we built. […] L.A. does not know what to do about it, and it's bigger than ... it is an academic ... the academy needs to help us solve this problem. People ask me, I say it's way above my pay grade. But I'm here to represent people, communities that are really suffering from it on the one hand, but on the other hand my advice to them is that going out and picketing coffee houses and the things that you think are kind of the ... they're sort of symptoms of, they're really not the cause of it.

In the narrative above, the participant is sharing a story about how the communities they

were striving to benefit, by planting trees and building parks, are the very ones that over

time are being harmed by the provisioning of their organization's services. In other words,

the ecosystem services provided - recreation, urban tree canopy, etc. - has also emerged by

some, not all, as a perceived social ecosystem disservice. The greening element is one

element connected to a larger regional problem of affordable housing and social inequities,

but it is one that this NGO partner is grappling with and seeking answers in real time.

Emerging research on eco-gentrification has provided guidance on how to tackle this

complex social-ecological problem, including implementing smaller scale greening efforts

(e.g. smaller parks) and ensuring the inclusive collaboration with the community from the

onset and through community planning and development processes (Chestnut and Krasny,

2018).

Conclusion

The thesis for this chapter is how urban nature narratives are shifting, diverse and interlinked in conveying social-ecological issues, having the potential to serve as a policy and planning tool in order to increase awareness of partner perspectives, areas of contention and synergy, and opportunities for innovation. As described previously, narratives are how people model their social-ecological systems, or their interactions, past, present or future, with the environment (Lejano & Ingram, 2013). This chapter supports the utility of a narratives as a way to better understand shifts, synergies, and tensions between various partners' narratives of nature, as well as the need to take these narratives into account when considering policy and planning processes. Participant excerpts reveal that the ways we integrate nature in cities is a reflection of our own narratives of the role and place of nature - whether it be wildlife, plants and trees - in our lives and how this varies across communities. Narratives of nature can guide strategies for more inclusive policy and planning approaches. Shifts in narratives or diversity of narratives may provide opportunities for innovation and policy adaptation. Such an approach is useful for citizens concerned about certain urban wildlife, such as coyotes. The use of narratives might also be useful for other complex urban ecology issues such as eco-gentrification or how to manage ecosystem service trade-offs in urban ecosystems, such as an urban wetland. The consideration and use of narratives as a partner engagement tool might also be useful in inclusive planning for future green spaces (trail systems, parks and natural infrastructure).

This chapter contributes to the academic literature by illustrating some of the dynamism over space and time of urban nature narratives in terms of ecosystem services and ecosystem disservices, in this case the social-ecological environment of LA. In cities,

humans and non-humans interact, they are part of a larger social-ecological system, and urban ecosystems can play an important role in benefiting people. Many of the actions people have taken to make cities habitable in the past, like eradicating certain species and disrupting sediment flow, dramatically alter natural ecosystem service functions over time. Urban ecology can create a space to deliberate these complex relationships and develop innovative solutions that embrace ecosystems as part of an integrated response. In addition, urban ecology creatively reimagines inclusive and diverse narratives of what partners think of as natural by thinking about ecological function, species' interactions, what kinds of species we want in cities, and links to human well-being. Table 3.1 illustrates some of the narratives of ecosystem services and ecosystem disservices that emerged from the data, and how an urban social-ecological system is largely shaped by the cultural preferences and understandings of what is acceptable nature in a city.

Table 3.1: Narratives of Ecosystem Services and Disservices

Cultural impact on nature present in communities → SES

"When you say connectivity, what we're doing is we're telling stories about how we think species that we want to move through the city and don't want to move through the city, we're telling stories, we're just making up stories about how they do that"

Interview Participant

Ecosystem Services	Ecosystem Disservices
Shade value of the urban tree canopy	Ecological pests
Recreational enjoyment of nature in cities (cultural services)	Controversial species and fear (of disease - mosquitos or safety - coyotes)
Benefits non-native species can provide (habitat provisioning, food, shade)	Aesthetics of nature
Biodiversity of urban nature (trails, small parks, larger preserves, gardens, etc)	Eco-gentrification

As participants pointed out, the distinction of what is a native species versus non-native species is frequently murkier than people realize, reflecting more of a desire to go back to a different place and time, and often tied to restoration of land. It is often less clear what period of time an area is being restored *to*, or whether a species was present in that area specifically or more regionally. This narrative of nature is often closely associated with mythical and romantic views of nature, with some heroically seeking the recovery of lost nature (Duncan & Duncan 2001, Purdy 2015, Cronon 1996). Instead, it has been argued, different criteria should be considered when planning for nature in and for cities, such as ecosystem function, biodiversity, interactions with other species, ecosystem health, public health, water use, risk (e.g. from climate change, pests, etc.), cultural preferences and recreational value. The narratives analyzed in this chapter also illustrate that the interactions between ecosystem services and ecosystem disservices encapsulate perceived and actual complex social-ecological interactions over space and time, including feedback loops, synergies and trade-offs. Because many scientists contend that we are now living in the Anthropocene, where human activity is dramatically altering the environment, possibly irreversibly, changes are predicted to be even more dynamic - with non-linear surprises likely. Given that cities are "novel ecosystems", this provides an opportunity to re-imagine what an "ecology for cities" can mean and shifting the narrative in new and exciting ways (Andersson et al. 2014, Pincetl 2012, Grove et al. 2016). This outcome and process would be storytelling itself - how a city imagines its future, prioritizes, or integrates various issues over space and time, such as climate change, food security, water security, public health and the role of mainstreaming nature. These all reflect the possible utility of narratives in these policy and planning processes. Cities, including LA, are continually defining and

redefining their narratives and how they imagine themselves in the future. This is already happening in terms of the role of nature in LA at a variety of scales, such as the city's Sustainability pLAn, LA River Revitalization Master Plan, the Biodiversity Initiative, restoration plans for the Ballona Wetland, and efforts to manage the Santa Monica mountains and Baldwin Hills.

Stereotypes of what nature can thrive in cities is changing. In the Anthropocene, salmon are returning to industrial city centers and ecological pests are ravaging suburban forests. In addition, a growing majority of Americans - about 52% - live in suburban style developments in sprawling metropolitan areas, which is outside the traditional concentric rings narrative of how a city develops (Bucholtz & Kolko 2018, Goldstein et al. 2012). From a social-ecological systems perspective, it is important to move beyond these artificial demarcations and consider panarchy, or how systems adapt across scales, temporally and spatially, and are nested within each other (Holling 2002, Berkes, Colding & Folke, 2003). In essence, panarchy combines space/time interactions with that of adaptive cycles to enable better understanding of linkages between creating and conserving, with insight on how communities can cope, innovate and adapt in the Anthropocene. This standard differentiation between cities versus what is perceived to be outside the boundary of cities (suburbia, countrywide, wilderness, etc.) warrants challenge given expansive sprawl and porous boundaries.

This research shows how participants interviewed often described their own transition to valuing nature in the urban environment, with education often being a critical part of this process. Education, including service and experiential learning, can be part of helping students and future citizens shift towards *seeing* nature around them and

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becoming stewards of that nature (with stewardship discussed in more detail in Chapter 3). As described earlier, civic ecology education is a social-ecological framework for utilizing community environmental stewardship as a means to improve communities and build community resilience and assets (Tidball & Krasny, 2010). Universities have the opportunity to educate their students about the importance of nature to human wellbeing, and these students can then carry this on with them in their professional lives, in an environmental-related career pathway or not, and through their personal lives as engaged citizens. This was seen in the data, both from an instructor and student-transitioned-to-practitioner perspective, as when the instructor describes how you "can't unlearn this stuff" and when the practitioner describes how their university experience shaped their thinking. Universities can also collaborate with community partners to practice civic ecology, community-based science and citizen science. The data reveals that knowledge and practitioner partners are increasingly thinking about biodiversity in cities. Re-imagining biodiversity in cities can also be a strategy for engaging and educating young and older people alike through citizen science efforts, or public participation in scientific research, such as bio-blitzes and iNaturalist programs with partners (museums, universities, NGOs and local government).

This chapter identified certain narratives that are particularly plurivocal when it comes to urban nature narratives, such as non-native species, aesthetics of nature, ecosystem service trade-offs and urban wildlife. Some tension among coordinating partners is a healthy tension and narratives should be inclusive of nested plurivocal narratives. This inclusion will help transform tensions and enable disruptions to become

opportunities for experimentation and innovation as a means to increase social-ecological resilience (Folke, 2006).

As discussed earlier, narratives can be a tool for effecting beliefs (Polletta's 2009, 2013, Green & Brock 2000). In addition, as laid out throughout the chapter, narratives can be a valuable tool in the policy and planning process. For example, partners can be convened for collaborative storytelling as a platform to develop shared policy and planning strategies. Goldstein et al. (2012) demonstrate the value of collaborative/joint storytelling, or collaborative planning stories, in their work on urban resilience issues in helping partners develop a common purpose, knowledge, skills, and solutions, while also being inclusive of plurivocal stories. Similarly, Galafassi et al.'s (2018) use of system diagrams and future scenarios in social-ecological knowledge co-creation to foster common understandings could be an effective way for partners to imagine ecology for cities in the future.

Over the course of my time observing CURes I learned about an initiative of theirs focused on restorative justice (CURes website). During the course of my research I observed that 1) urban ecology partners were interested in applications of restorative justice to their own work; and 2) restorative justice contributed to CURes' community resilience work by focusing on the social side of resilience. Potential application of restorative justice combined with CURes' urban ecology for community resilience work include contested wildlife, eco-gentrification, and their more recent environmental stewardship mapping research along the LA River.

A CURes' Restorative Justice Community Urban Ecology (RJCUE) model would be an application of this chapter's research to practice, while also facilitating additional social-

ecological research. This model could build on existing environmental policy and planning

work that has integrated a restorative justice lens to engaging stakeholders (Hill et al.

2019, Humphreys & Reiter, 2014), and address the critique that the environmental

community has not done enough to integrate and consider justice in their work.

Restorative justice has been applied in many settings and scales - schools, neighborhoods,

and large transboundary watersheds. This application in cities, and communities within

cities, would be a novel, yet aligned application. It would also be a contribution to the body

of work on social-ecological governance as the restorative justice process would serve as

an operational link between social and ecological systems. Finally, a restorative justice

application to CURes' urban ecology partnerships would support their resilience-focused

mission and the underlying ethics-driven mission of their Jesuit university.

A RJCUE model would likely entail the development of a series of workshops. The

first workshop would share what restorative justice is (Humphreys & Reiter, 2014). From

there, follow-on workshop sessions would focus on reflections and listening sessions, core

of which would be the importance of openness and ensuring all voices were heard. This

would then lead to the latter part of the workshops, geared towards resolving potential

conflicts and developing shared solutions and plurivocal narratives. Already, CURes is

starting to work towards adapting such a model, with the center recently asked to lead a

Restorative Justice Community Conference for an organization that plays an important role

in managing an urban ecosystem in LA. CURes was brought on to lead this conference given

some conflict that was occurring among partners. The first workshop was a success, and

they have been asked to lead a follow-on conference to continue the restorative justice

process.

Over the course of the field research, knowledge gaps among partners became apparent that can inform future research, particularly in the context of LA and Southern California. For example, while previously considered blasphemy among many partners, it is worthwhile to examine in cities under what context and circumstances non-native species are providing ecosystem services and the types of ecosystem services that they are providing (e.g. habitat provisioning, or what I go into more detail in the Conclusion Chapter, an artificial reef sort of ecosystem service). How non-native species fit within the mosaic of native species, and even benefit some endangered and vulnerable species is something that the knowledge and practitioner communities can research more and consider the policy and management opportunities and implications. This includes better understanding the historical and cultural context of some species in the region (e.g. the iconic palm tree in Los Angeles and the beloved parrot in parts of the city). Many non-invasive non-native species are integrated across the urban landscape, such as in the urban tree canopy or gardens, so it is a matter of studying interactions that are already taking place with other species, considering synergies and tradeoffs with natural infrastructure, and emergent risks from climate change and natural disasters. In addition, more research is needed on how various communities and cultures perceive nature and biodiversity in their urban environment and how to link these perceptions to more effective and diverse sustainability strategies, such as citizen science and civic ecology (Krasny & Tidball, 2015). Cultural ecosystem services have been highlighted as an important function in cities through recreational, aesthetic, spiritual and cultural values, and can be the cornerstone of a strategy for building public awareness, stewardship and support (Daniel et al, 2012).

The role of investing in and ensuring access to urban nature in underserved communities is also a critical research area given the intersection of this issue with other complex urban issues, such as environmental (in)justice, affordable housing, homelessness, equity and poverty. How to mitigate the effects of eco-gentrification while integrating nature across the entire urban social-ecological landscape for more resilience and improved quality of life is an urgent applied research need in LA and other cities that coordinating partners should collaborate on (Chestnut & Krasny, 2018).

As noted previously, cities exemplify complex social-ecological system interactions. For example, climate change effects are already being felt in many cities, making the ecosystem services of remaining urban wetlands essential. A particularly important ecosystem service is flood control, as many cities will experience sea level rise and more intense and frequent storms. However, along with these climatic changes, a rise in zoonotic diseases is also predicted, particularly from mosquitoes, a species expected to benefit from the warming climate. Together, the knowledge and practitioner communities need to research and learn how to effectively optimize ecosystem-based adaptation approaches, including keeping communities and vulnerable populations safe from the spread of disease, while minimizing and managing trade-offs, such as ecosystem disservices. Best practices, in terms of human behavioral change and management practices, need to be explored to ensure that ecosystem services do not cancel each out unnecessarily.

Overall this research shows how perceptions of urban ecosystem services and ecosystem disservices can shift over time and vary by partner. Cities have the opportunity to experiment with the novel ecosystems that they are and integrate nature *for* cities to tackle complex issues in the Anthropocene. What one person considers an ecosystem

service can be an unpleasant or even threatening ecosystem disservice to someone else.

The chapter lays out a practical, yet creative urban ecology outlook that is not beholden to

dualistic narratives of what belongs and does not belong in a city. Narratives as a tool can

create the space to shed light on and inclusively understand these dynamic, diverse views.

They can also create a space to allow people to be heard and together develop shared

solutions. Universities can be critical partners in these endeavors, helping students

formatively *see* nature in cities and partnering to explore narratives and apply them in

policy and planning processes.

Urban environmental stewardship: an examination of the LA Stewardship Assessment and Mapping Project (STEW-MAP)

Sites where environmental stewardship takes place have been found to be places that contribute to human health and well-being (Connolly et al. 2013). In cities, environmental damages can be reoriented and remade, becoming part of the solution, not just part of the problem (Sassen 2010, Tidball and Krasny 2009, Pincetl 2012). Cities and states can be hubs where integrated natural and social governance stewardship structures are tested and evaluated among partners, even when less is being done at the national level (Andersson et al., 2014, Rabe, 2002). Many conditions in cities are symptomatic of global climate change (increasing temperatures and increasing frequency and intensity of natural disasters) and as such can serve as critical places to study and launch new ideas (Pickett et al., 2001).

For this chapter, I examined urban environmental stewardship through the nested case study of a university center led applied research effort on environmental stewardship in Los Angeles (LA) county. This research sought to contribute to a better understanding of urban environmental stewardship by analyzing a university's role in coordinating the LA county-wide Stewardship Mapping and Assessment Project (STEW-MAP). The thesis for this chapter is that the STEW-MAP process can be strengthened to better engage partners and to operationalize a SES approach by collaboratively identifying gaps, innovations and stewardship narratives across the urban landscape. This chapter will show how the LA STEW-MAP workshop participants envisioned utility of the STEW-MAP tool, ranging from identifying stewardship gaps to revealing new stewardship narratives. This chapter will also show that the LA STEW-MAP process can be improved to better operationalize

community engagement and as a way to practice a social-ecological systems approach. Community engagement should be an element that cuts across all phases of STEW-MAP, and this inclusive process can be used to better identify, understand and facilitate social-ecological synergies across sectors (e.g. public health and the environment and/or vocational training and the environment).

As the STEW-MAP Framework Guidance document (Svendsen et al. 2016) explains, this national research program is, "designed to answer the questions: who are the active environmental stewardship groups in my area and where, why, and how are they caring for the land" (p.1). STEW-MAP is meant to enable a shared stewardship approach, or one where partners are, "working together in an integrated way to make decisions and take actions on the land" for more resilient communities (USDA Forest Service Chief Vicki Christiansen). Broadly, there are four phases of the STEW-MAP process: 1) an inventory of organizations; 2) survey of the network; 3) conduct data analyses; and 4) disseminate the results. The STEW-MAP Program developed in New York City (NYC) when the city launched its Million Trees Campaign[15] and their Sustainability PlaNYC in 2007. Out of these endeavors, social-ecological questions emerged, such as where are the environmental stewardship groups, how many are there, and who is working together? The STEW-MAP program has since become part of the U.S. Forest Service National Research Program.

The tool has been applied in other U.S. cities, such as Baltimore, Chicago, Seattle, Philadelphia, Denver, Los Angeles, Honolulu, San Juan, and internationally in Paris, France

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[15]Million Trees Campaign was a successful initiative under the city's Sustainability Plan to plant a million trees in New York City: https://www.milliontreesnyc.org

and Valledupar, Colombia. STEW-MAP has continued to be a tool in cities by helping partners better understand social dynamics across a landscape (USFS, STEW-MAP). For example, in New York City (NYC), STEW-MAP played an important role in MillionTreesNYC in improving understanding of local actors and outreach with community groups in order to get trees planted and established across the city, as well as building on the MillionTreesNYC with the subsequent formation of NYC Parks Stewardship Team (ibid). It was also used as a teaching tool with students and as a way to increase the capacity of local community groups. NYC Mayor's Office has utilized STEW-MAP to evaluate connections between environmental stewardship and community resilience. NYC recently wrapped up its second STEW-MAP process, with an interactive mapping that shares data of stewardships groups alongside their open space data layers. In Chicago, a public facing STEW-MAP tool gives users the ability to find other stewardship groups working near them and/or working on similar issues.

In 2014 STEW-MAP was launched in Los Angeles County through Loyola Marymount University's Center for Urban Resilience (CURes), the university center I studied as part of this dissertation research. Dr. Michele Romolini (henceforth Michele) was recruited as a Postdoctoral Fellow with funding from the East Coast Forest Service.[16] In the summer of 2017, after carrying out an inventory of environmental stewardship organizations, distributing a survey, and conducting initial GIS (Geographic Information System) and network analysis, CURes began sharing their LA STEW-MAP preliminary results and working with city partners to discuss the utility of this tool for their work. This

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[16]Michele had previously led two STEW-MAP in two cities, Seattle and Baltimore as part of her doctoral dissertation, and her advisor had worked with the Executive Director of CURes for many years in developing an East Coast urban ecology lab.

dissertation chapter focuses on the process of LA STEW-MAP, particularly CURes' work with city partners to better understand their perspectives of the tool.

STEW-MAP grounds itself in the literature of social-ecological systems (SES) and stewardship and civic environmentalism (Svendsen et al. 2016). Environmental stewardship is defined broadly as, "conserving, managing, caring for, monitoring, advocating for, and educating the public about local environments" (Svendsen et al. 2016, p. 4). The STEW-MAP Framework Guidance document defines an environmental stewardship group as, "a civic organization or group that works to conserve, manage, monitor, advocate for, and/or educate the public about their local environments" (p.2). As part of the STEW-MAP process, surveys are used to collect geographic data pertaining to 1) where stewardship groups work (their "turfs") and 2) organizational and social network data regarding how groups interact. A key added value of STEW-MAP is the link it makes between social and green infrastructure by conveying information about how such environmental investments are supported, maintained, neglected, etc. by groups, thus marking it as one of the first times social infrastructure data was explicitly integrated into green infrastructure asset mapping (Svendsen et al, 2016). STEW-MAP also addresses the lack of comprehensive environmental civic stewardship data at the local level, allowing for the possibility of analysis of differences in organizational structure of entities engaging in environmental stewardship.

The STEW-MAP Framework Guidance document builds on a body of academic work contending that cities are social-ecological systems (SES), explaining that their team's thinking about SES came out of the field of social ecology, including long-term ecological research (LTER) sites (Svendsen et al, 2016). A part of this approach has included how

individuals and organizations (public, private and civic) "work in networks to create and manage the urban environment through acts of environmental stewardship" (Svendsen et al. 2016, p. 5). Stewardship itself is described as interconnecting social and ecological elements (Connolly et al. 2013). As noted by Romolini et al (2016), the STEW-MAP process can be a way to evaluate and facilitate social-ecological governance through urban stewardship networks. During the STEW-MAP process in a city, environmental stewardship groups are typically identified by first developing an inventory of such groups, after which all of these groups are sent the STEW-MAP survey. The survey then encourages respondents to share the STEW-MAP survey with other groups, which may or may not have been included in the original inventory. In addition, the survey has a screener question that seeks to ensure that respondents are environmental stewardship groups, based on the environmental stewardship definition described previously.

One form of civic environmentalism and stewardship that is aligned with STEW-MAP is that of civic ecology. Developed by Tidball and Krasny, they describe civic ecology as urban civic environmentalism that engages communities in stewardship (Tidball and Krasny 2007, Krasny & Tidball 2009, Tidball & Krasny 2010). This conceptual framework developed out of their extensive university-based fieldwork in urban community gardens, community forestry and community-based stewardship/civic ecology practices. It is based on four main principles. First, urban areas are viewed as linked social-ecological systems (SES), wherein these areas represent opportunities for people, young people especially, to learn from the "practical and diverse knowledge of urban stewards, and focus on restoration of urban social-ecological systems" (Tidball & Krasny, 2010: p. 5). Education and stewardship are nested within and linked to the social-ecological system. Second,

people can take action to improve their communities and ecosystems. Human activities are not always negative and can also be positive. Third, since communities are nested and linked to the larger social-ecological system, stewardship activities can be seen as part of engaging in local environmental policy processes (Krasny and Tidball 2009; Krasny et al 2009). Examples of this include youth and college students participating in planning and implementation of community gardens, pocket parks, and river and watershed cleanups. The stewardship activities of the students are viewed as a "civic asset" as it relates to community engagement and partnerships in local land-use management. Given these links between local stewardship, management and policy, a civic ecology framework has the potential to contribute to the "social ecological resilience of a community" (p. 5; Folke et al. 2011; Tidball and Krasny 2007; Krasny et al 2009). Finally, fourth, a key principle central to civic ecology is social learning for natural resources management, including local ecosystems. Tidball and Krasny (2010) build on ideas related to interactive and social learning, which depicts learning as, "an outcome of interaction with the social and biophysical environment" (p.3).

As discussed in the Introduction Chapter of this dissertation, LA pioneered the type of grand-scale environmental change that epitomizes Southern California by massively re-shaping the landscape, particularly the hydrological landscape for two major reasons - flood control and to meet the needs of a growing population (Harris, 2012). A steady supply of fresh water was needed, necessitating the draining of water sources (LA River, Owens Valley, etc.), a large-scale system of river channelization, dams, and the pumping of water from the mountains in the north and the Colorado River to the east to the cities in the south. The city was also largely shaped by the prevalence of the automobile. Hall (2002)

notes that the city's decision to forsake its public transit system was not an accident and reflected debate within the city leadership. The City's Planning Director in the early twentieth century, G. Gordon Whitnall advocated for, "Not another New York, but a new Los Angeles", and the city was described as "a federation of communities coordinated into a metropolis of sunlight and air" (Hall, 2002, p. 306).[17] It was with this ideological vision in mind that city leaders made a proactive decision to plan to accommodate this decentralization (Hall 2002). All of these changes had consequences for the growth of the region, natural resource use, and residents' relationship with their environment.

Environmental stewardship in LA against the historical context of this large-scale human induced environmental change is important to take into account. Over time stewardship groups in the LA region became concerned around the ecological and social consequences of the environmental changes described above. There was also growing recognition of the scarcity of green space and parks in LA, especially for minorities and underserved communities in the city (Wolch et al. 2005). LA still lags far behind other U.S. cities in the amount and accessibility of parks. LA falls 66 out of 100 cities in the United States, with accessibility to parks still being a challenge, particularly in flatter, less affluent parts of the city (versus areas near mountains and hills, which tend to be wealthier) (Chiland, 2018). Also, concerns about the degradation of coasts, bays/ocean and watersheds, and insufficient urban tree canopy informed and shaped the urban environmental stewardship in the region, including how groups have worked together and

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[17] G. Gordon Whitnall was the Los Angeles Planning Director from 1920-1930, and from 1932-1935 he was the coordinator of the "Committee on Government Simplification for Los Angeles County. He was also an instructor of planning at the University of Southern California. For more: http://rmc.library.cornell.edu/EAD/htmldocs/RMM02880.html.

prioritized environmental policies. People describe the LA River as being a forgotten river

once it was channelized, whereby before it was home to large concentrations of indigenous

peoples, vineyards and agriculture (vegetables, orchards), marshes, and overall flora and

fauna (Price, 2006, Harris, 2012, Gumprecht, 1997, Price 2008).

There have emerged stewardship stories within the LA environmental community

of how environmental stewardship organizations, led by groups such as Friends of the LA

River and others, have worked together to champion and reimagine this river, including as

a place to provide more parks, public art, green space, connect the city ecologically and

socially, and provide green infrastructure (Price, 2008). In 2010 the river was declared a

navigable water body and galvanized a coalition of urban environmental stewardship

partners (NGO, government and private sector partners) that work together, and is

celebrated as a priority in the city's Sustainability PLAn as well as the LA River

Revitalization Master Plan.

This research aims to contribute to the urban environmental stewardship literature

by analyzing the process of LA STEW-MAP. This is in contrast to previous STEW-MAP

research, which largely focused on the results of STEW-MAP in a particular city. Through

this explicit focus on process, this research sheds light on possible utilities and challenges

associated with this applied tool as well as recommendations for STEW-MAP in the context

of LA and possible insights for other cities as well.

Methods

As a part of this larger dissertation research, I conducted participant observation of

the Center for Urban Resilience (CURes). Since a portion of CURes' work that I focused on

extensively was their STEW-MAP work, this can also be considered a nested case study

(Yin, 2009). For STEW-MAP specifically, participant observation included, as mentioned, multiple planning meetings in advance of the community workshops - both in person and via phone, as well as participation in the actual workshops and meetings afterwards. The participant observation allowed me to observe conversations among staff members and partners about environmental stewardship in the cities, challenges and opportunities, and how this tool might be useful.

As noted previously, Loyola Marymount University's (LMU) Center for Urban Resilience (CURes) launched STEW-MAP in LA in 2014. This process was led by Postdoctoral Fellow, Dr. Michele Romolini (henceforth Michele), whose dissertation research was based on leading STEW-MAP efforts in both Seattle and Baltimore (Romolini, 2013). After her Postdoctoral Fellowship was complete, she transitioned to Managing Director for CURes and leads their research efforts related to social-ecological governance. When I was beginning my dissertation research, CURes was in the process of beginning preliminary analysis of the LA STEW-MAP results. As part of this they were developing a series of workshops for community partners to share the results of the LA STEW-MAP analysis and get feedback on how to make this a useful tool for environmental stewardship groups. CURes invited me to be a participant observer of this process whereby I participated in planning meetings for these workshops (in-person and via phone) as well as attending the workshops.

There were two workshops held, each three hours long and following the same format: welcome and overview, a presentation of the LA STEW-MAP results and possible applications, a guided discussion for participants to provide their insights on how the data could be most useful in their work, and concluding remarks and identification of next steps.

The workshops enabled me to, through my participant observation, have quasi-focus groups (two) in my research. I was also interested in the role of narrative in groups, or collective storytelling, such as how a focus group can shed light on how stories are agreed upon, contested and revised (Prins et al. 2013). The group discussions during the workshops gave me the opportunity to better understand the process of STEW-MAP and its utility to environmental stewardship partners. I also helped plan the workshops in advance, helping CURes think through, together with their main partner, the U.S. Forest Service, the main questions and conversation topics.

In total there were 220 organizational representatives invited to participate in the workshops. The representatives were STEW-MAP respondents. Part of the stated STEW-MAP process (as outlined in the survey invitation) is to share the results.[18] Invitations were sent via email and 33 invitees registered online for the workshop, with 26 organizational representatives participating in the end, representing city, county and federal agencies, local to national NGOs, and public and private universities. I recorded detailed notes and collected notes from a few others. These notes were reviewed by CURes staff to help describe workshop outcomes and guide next steps. I also examined relevant documents such as the STEW-MAP Framework Guidance (Svendsen et al, 2016), the LA STEW-MAP website (LA STEW-MAP, CURes), and the general STEW-MAP website (STEW-MAP, USDA Forest Service).

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[18] As described earlier, the STEW-MAP respondents were determined by 1) initial inventory developed by CURes; 2) screener question in the survey to confirm environmental stewardship work, based on the broad environmental stewardship definition; and 3) respondents were encouraged to share the survey with other environmental stewardship partners (who in turn had the screener question).

For my broader dissertation research, I conducted over 40 semi-structured, conversational interviews with a variety of practitioner and knowledge community representatives. Most of the practitioner representatives worked in the area of urban environmental stewardship in LA county and worked either in NGOs or a local government agency. Most of the IHE knowledge community representatives also worked in LA county, either at a public university, private university, or community college. In addition, given my interest in how partners interact with each other in urban ecology-related environmental stewardship efforts, I utilized the STEW-MAP framework guidance document as a broader resource for informing some of my semi-structured interview guide questions.

At the time of the LA STEW-MAP Workshops, I did not know which participants were from organizations that other respondents cited most frequently in the surveys as a regulator collaborator and/or someone they shared information with (henceforth referred to as top collaborator organizations). After some time in the field I was able to gain the trust of CURes, which included Michele sharing with me who were the preliminary LA STEW-MAP top collaborator organizations in confidence. I interviewed more than 50% of the top collaborator organizations, so was able to cover a wide swath of those organizations. For some of the larger top collaborator organizations, I ended up conducting multiple interviews with different members of their organization. These interviews allowed me to gain a better understanding, beyond the STEW-MAP workshops and participant observations of CURes, of urban environmental stewardship in LA.

The data - transcribed interviews, extended field notes and some written materials - were stored and managed in ATLAS.ti, a qualitative software program. This program was used to code and analyze the data, with some prevalent codes including workforce, use of

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STEW-MAP, and community college. In addition, writing was used as an iterative process to analyze the data, particularly comparing the findings in the workshops with those from semi-structured interviews with top collaborator organizations.

Findings

Based on participant observation and semi-structured interviews between 2017 and 2018 the analysis is presented in two ways. First, I analyzed data pertaining to the utility of STEW-MAP in the LA context. The data for this first part is largely informed by the summer 2017 STEW-MAP workshops, including planning the workshops, the workshops themselves and post-workshop reflections. Second, I analyzed the data in terms of how STEW-MAP can be a tool for facilitating a social-ecological systems (SES) approach. The data for this second part is based on the STEW-MAP workshops, in addition to including some of the semi-structured interviews and participant observed meetings with collaborators. Across both lens I discuss how the STEW-MAP process might be better utilized in the LA context.

Utility of LA STEW-MAP

Upon completing data collection and preliminary data analysis of LA STEW-MAP, CURes held a series of presentations and workshops in the spring and summer of 2017 about the preliminary results and sought feedback on how to make the tool useful for community partners. The purpose of the workshops was to present the STEW-MAP results to date, showing the population, activities, geographic locations, and network relationships of participating environmental stewardship organizations in LA County. The overall question that Michele, the CURes lead for this project, asked participants was, "Can you think of a time STEW-MAP would be useful in your work?". As a part of this, she asked two

sub-questions: "How is this data useful?" and "How do we get this data into practice?". The workshops were designed to be conversational. After a brief overview of STEW-MAP - broadly and in LA specifically - participants were asked to share their feedback, using the two questions above as a guidepost.

In the beginning portion of each workshop Michele would review the objectives of LA STEW-MAP, which were to conduct research to inform theory and practice; provide data to facilitate decision-making; and request feedback on which data is of interest and how it may be most useful. She reviewed key parts of the survey itself, including sections that pertained to organizational characteristics, stewardship locations and network relationships.

Michele would then describe the results of LA STEW-MAP. She explained that they had an initial inventory of 715 entities, after doing some data clean up (LA STEW-MAP). They then sent the survey out to these organizations and got 140 responses (a response rate of 20%). They were able to get an additional 430 groups, through the survey process of encouraging respondents to share the survey with their environmental stewardship partners. Therefore, the overall number of potential respondents expanded to 1,145. Michele described how of the organizations that responded, 57% were NGOs, 8% informal[19] and 35% public (local government), private and other, which were often umbrella groups.[20] She explained to workshop participants that the number of NGOs was lower than what she saw in other cities, but this could have been partly because LA STEW-MAP occurred at the county level. The "other" also tended to have no legal designation,

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[19] Not a 501.c.3
[20] National NGOs were included if there was a local chapter, e.g. The Nature Conservancy, Sierra Club, NRDC, Audubon Society.

such as consortia. While this was still preliminary data, it is worth exploring why LA county

has fewer NGOs than other cities. This could be a function of the partnership landscape in

LA and/or that the STEW-MAP survey process was not capturing some of the key partners

in the county, such as private sector partners, public-private partnerships, schools and

universities, and religious institutions.

Along with describing the results of LA STEW-MAP, Michele would review how

other cities had applied STEW-MAP over time. For example, Seattle STEW-MAP had

created a basic tool, hosted by a university, where they have a Google Map with a drop-

down box, the user can select an organization by name, and from there can view the

organization's turfs and their stewardship information. A more advanced tool was put

together in Chicago, where organizations are able to draw their own turfs, the user can

search by organization, and an organization can add or update their information. This tool

was developed and hosted by a non-governmental organization in Chicago. The most

advanced tool is being developed through NYC STEW-MAP. The user will be able to filter

organizations by size of turf, primary focus, stewardship focus, organizational type, and

can turn features on or off on the map.

For each workshop, CURes framed the utility of STEW-MAP by saying that "the tool

can be many things." Some of the potential uses of STEW-MAP described include

applications as a static directory, a report, network analysis, research tool for case studies,

interactive public database and online map that provides multiple ways of searching, and

a mapping tool that utilizes stewardship turfs. Table 4.1 describes some of the utilities of

STEW-MAP discussed throughout the workshops, with some of the applications

mentioned by both participants and CURes (signified with red text) including as a funding

tool, to inform stewardship narratives, and to conduct organizational network analysis
(Ego networks).

Table 4.1: Utility of LA STEW-MAP

Utility of STEW MAP	Described by CURes in Workshop	Expressed by Participants in Workshop
Directory	X	
Report	X	
Network Analysis	X	
Mapping tool (series of maps, stewardship turfs)	X	
Case study	X	
Interactive public database and maps	X	
GIS layer with other layers		X
Determine partners to work with		X
Determine stewardship gaps		X
Determine who to fund or be funded	X	X
Inform narratives of stewardship	X	X
Inform organizational networks (Ego-networks)	X	X

The second half of the workshop focused on discussions with participants on how
they thought STEW-MAP might be made useful for their work. Many participants described
the utility of STEW-MAP as a layer in concert with other tools, or overlays, such as
CalEnviroScreen 3.0 or the Trust for Public Land's Climate Smart Cities tool. LA STEW-MAP
could be made available as a simple layer for others to use in their work as needed. One
NGO participant (who I later learned is a representative from a top collaborator
organization) explained during the workshop how they do not have the ArcGIS mapping
software and that in their experience Google Earth crashes computers. They just needed to

have access to smaller layers they could import into Google Earth, or to have layers that everyone can use "just for that instant". People chatted back and forth about this, agreeing it would be nice to have a simple layer, a KML layer (for use in Google Earth). Another participant mentioned that they would like something more user friendly, "they don't need 800 buttons", they just want to know which organizations are where. This seemed to imply that the NYC tool, while appealing to university researchers, may not be user-friendly for other types of partners. Hill et al. (2019) caution how sometimes a tool that is meant to be useful to the community is overly complicated, and in the end has the unforeseen consequences of creating disengagement in a process. Someone also mentioned they would like to have the ability to view the LA STEW-MAP information as a map layer in relation to city council districts. Michele responded that this is easy, then conversing about this with other colleagues, they talked about posting this at the LMU library repository on the digital commons.

Participants also discussed how LA STEW-MAP could help local government entities determine which partners to work with in an area. Building on this, many agreed that STEW-MAP would be useful in helping partners determine where there are "stewardship gaps" in certain places. It was pointed out that the Lower LA River groups needs to be studied, and that using this data, they could identify related areas for examination, including determining missing groups for further investigation. Another participant mentioned Ballona Wetlands as an area that STEW-MAP could help assess more, explaining that, "we know who the loud groups are, but who are the silent majority? The people who don't have time to go to the meetings because they are working?".

Participants at the workshops discussed that another useful application of STEW-MAP is assisting funders determine who to fund, as well as to become more aware of how the same groups are "tapped over and over again". Inversely, the tool could also be used by fundees to justify in a grant proposal why a particular organization should be funded. Michele cited this as having occurred in the case of the Baltimore STEW-MAP, with one of the organizations touting themselves as a top collaborator in funding proposals.

Participants also saw the potential of STEW-MAP in terms of informing the story of urban stewardship and revealing new narratives. A partner described how, "LA has a richness of networks and collaborations, and STEW-MAP can help reveal this". This partner also described how, "STEW-MAP can show that people living in cities do care about environmental issues and are more connected than is the general narrative". Participants expressed interest in using STEW-MAP to produce a GIS story map, with Michele and her colleague at another research center in their university discussing how they might be able to do this. This utility of STEW-MAP as a way of better understanding narratives of environmental stewardship, including well known and lesser well-known narratives, is an angle that could also be linked with other methods, such as interviews and focus groups.

In my interviews, narratives related to environmental in stewardship in LA emerged. As mentioned before, the narrative of the LA River - being forgotten and later remembered as a symbol of trying to reconnect with nature in the city - has become an important one. This narrative conveys a story of stewardship leaders and collaboration among partners trying to integrate green space, parks and art alongside the river, including policy achievements along the way. Another formative narrative of environmental stewardship that would come up during the interviews is that of the mountain lion

struggling to exist in the confined and fragmented landscape of Griffith Park and related efforts by stewardship groups and partners to champion ecological connectivity through a corridor over the 101 freeway. Other environmental stewardship narratives were described by partners interviewed, including efforts to clean the bay and plant trees in the city. How STEW-MAP aligns and differs with these narratives, and uncovers new narratives is an important potential policy and research application of the tool. These narratives could be reviewed and iteratively and collaboratively analyzed throughout the STEW-MAP process.

Participants discussed and seemed interested in the possibility of STEW-MAP helping organizations reflect on how they define themselves and how they have changed. One participant from a top collaborator organization posed the question, "Is this the best stewardship version of ourselves?". This was also described by a fellow CURes researcher as a sort of "feedback loop" that provides a "peer review". Participants were interested in reflecting through the use of Ego Networks. An Ego Network is the network of one organization - their specific network, who they are sharing information with, and who they are receiving information from. Michele showed examples of Ego Networks during her presentation in the early part of the workshops, and conversation ensued during the discussion portion, particularly in the second workshop. She explained that this could be useful for many reasons, but she deferred to them (the people in the room) to tell her how. Participants expressed interest in having analysis of Ego Networks conducted for their organizations. Michele cautioned that offering to provide these for all STEW-MAP respondents would be potentially time intensive. Participants agreed perhaps some organizations could have Ego-Networks beta tested as part of a larger funding proposal.

During the workshops, participants expressed keen interest in knowing which organizations were top collaborator organizations. As noted, top collaborator organizations are organizations most frequently cited by others as one they regularly received/shared information with. Michele did not share this information during the workshops, expressing privacy of the respondents' information. However, this information - knowing which were the most influential organizations - represents a sort of power in and of itself. This information has since not yet been shared with participants. Not sharing this information could possibly have a disheartening effect on participants who thought this information would be shared with them and/or decrease momentum or enthusiasm in the tool. CURes researchers explained to me that the LA STEW-MAP data is still preliminary and going through review. This also reveals the lack of alignment between practitioner and academic timelines. STEW-MAP data could be useful to practitioners now, but for CURes there is pressure to allow more time for validation of the data and peer review of the larger research. In addition, since Michele was new to LA, she expressed concern of misrepresentation of groups and getting push back from partners who would know the context and partner terrain better. Perhaps there is a way to be more transparent with the data earlier on in the process, as participants might start to feel disheartened or discouraged from engagement if they perceive that the information is not being shared, at least on a timescale that is useful for them.

In looking at other cities that have publicly facing STEW-MAP tools, like NYC, the tool primarily focuses on providing an interface which depicts relationships, or networks,

among organizations.[21] However, NYC's tool does not indicate which organizations are the top collaborators, or organizations most frequently cited as regular collaborates and/or with which information is shared. In other words, all nodes appear the same size. A person viewing the tool online would be able to discern that certain organizations have more connections to others, but the full power of the network analysis is not readily visible.

Along this vein of sharing information between university and practitioner partners, I spoke with another university center that focuses on urban ecology in Southern California and that was not involved in STEW-MAP. They shared with me a story of how they make everything accessible to their community partners. This practice developed out of discontent from community partners because they desired interns on certain days, and they were not getting them those days. In order to address this problem, this university center decided to share the interns' schedule with everyone via a shared Google Drive Folder. This allowed partners to see that the university was not "holding out on them", but they simply did not have a student available that day. This simple practice of transparency played a big role in improving the trust the community partners had in the university center. In addition, this university center brought all partners together for a group exercise to develop shared objectives, which then informed agreed upon internship activities (which were in turn embedded in the internship schedule in the shared Google Folder). The process of aligning objectives happened by bringing all partners together, where everyone had the same voice, to agree on a shared Logic Model, or a visual depiction of shared

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[21] New York City's STEW-MAP tool: https://www.nrs.fs.fed.us/STEW-MAP/view/?appid=3b95234dc3b848da842352d968fced76

objectives, outcomes, and activities for the internship activities.[22] This gave all partners a

clear understanding of what they were working on together, even allowing some partners

to disengage if they recognized that objectives were not aligned and it was not a good use

of time and resources. In addition, this same university center shared with me how they

addressed the mix-match of timelines (described above) between preliminary data and

analysis and the submission of results to a peer review research publication process. They

immediately allowed their research data to be used by practitioners, even if it was

preliminary, while also encouraging partners to be part of publication processes.

CURes has taken some steps to share the STEW-MAP results by making available the

STEW-MAP turf data later and maintaining the public LA STEW-MAP website. However, it

is not clear if participants feel that this data has been useful for them in addressing their

needs. Perhaps sharing the preliminary data with STEW-MAP participants, such as through

a Google Maps or ArcGIS Online, could be an additional step in the STEW-MAP process. The

information shared would include only the publicly available information (e.g. where

groups work, environmental sectors the groups work on) that someone could obtain from a

website, and personal identifiers would be protected. This approach would allow for some

practitioners, who know the context of stewardship in the area and have been in the city

longer, an opportunity to provide feedback. In addition, CURes could build trust with

groups through this transparency, and could allow for more inclusive engagement. This

issue also speaks to the issue of engaging partners throughout the process. To this end, LA

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[22] A week in advance of the Logic Model exercise, all partners were given a one-page pre-reading with an explanation of the goal and activity. Partners were also asked to bring to the meeting their organization's mission and goals (2-year, 5-year and 10-year goals) along with the resources available to them (e.g. time, money, data, expertise). This pre-work made the Logic Model exercise smoother and easier for negotiations among groups to occur, in terms of how they could work together.

STEW-MAP could consider forming a Community Advisory Group (CAG), which would serve as an advisory group across all phases of the STEW-MAP process. Instituting a CAG would require additional resources to manage, including deliberating a process to decide how groups can be involved. However, such a group would also increase transparency, provide guidance, and inspire social-ecological and stewardship innovation.

At an even finer scale, Michele pointed out multiple times that one of her STEW-MAP research interests is to better understand the power of the individual in networks and shaping environmental stewardship. In one of our discussions outside of the workshops she says, "The embodied power too, right? The embodied influence of somebody who everybody knows has been working in the city for years. I mean, I can think of a dozen of them involved in Baltimore". During the workshop she explained how one person can be very active and studying this would be value-added to the project. Some reflection on this future research interest is elaborated on in the following excerpt:

...a lot of it I'm coming to realize is, and this is something that has always come up in my work, is that it is not necessarily the group a lot of times, it is actually the individuals. So, you will see this a lot in cities. You will see, oh, this guy Jake, who when I started was at Healthy Waters then went to Urban Trees, then went back to graduate school, and now is going to pop up somewhere else. Right, so if these really committed people, actually, it's not always the organization, sometimes it really is the individual. And I, sometimes, you know, I like doing interviews, I don't get to do them enough. I think that would be a really interesting study. The network of people's careers, right? And which organizations and how they work, and how that's changed.

The power of some of these finer-scale networks, at the individual and relationship levels, also was reflected in some in my interview data, whereby over the course of time, the same names would be repeatedly mentioned. When some participants would discuss how their own narratives of nature changed over time, they would sometimes mention someone who had played a role in informing their thinking. One participant discussed the

influence of the founder of their organization on the lives of others. He explained, "People

don't quite realize with Steve, the number of kids that he taught in high school that went on

to serious environmental careers is really very large." He went on to provide two examples

of such students. This same participant also discussed the impact the founder of their

organization, as well as the founder of another closely associated organization, has had on

environmental stewardship of the LA River. He describes this in the following excerpt:

Without Steve and that organization, you would not have happening what's happening on
the L.A. River now, in my opinion. […] Between Mike and Steve, the two of them, more than
any other individuals have put it on the map. So, what Mike did was he starting writing poetry
about it and just started doing the whole human... getting people to even know, including
Steve. So, my guess is that Steve got interested in the L.A. River because of Mike.

The excerpt above also captures the links between narratives at the individual scale and

larger environmental narratives in a city. There were also some university participants I

spoke to who would reference the work of another colleague who had played an important

role in shaping their thinking. For example, such a colleague is described in the following

excerpt:

I think being in the institute [an interdisciplinary institute on a university campus], where
there are people in it who are certainly biologists, conservation biologists, like myself, but
I've worked very closely with a couple of people from the humanities and social sciences […]
I've been on committees with her, I've worked on projects with her, I've given guest lectures
in her classes. Slowly but surely, what I've kind of come to is that we have such a bizarre,
completely constructed environment in cities that are built not for animals, they're built for
people, and they will always be built for people, and there are species that fit into that, and
there are species that don't fit into that.

The excerpt above shows how in the university setting, individuals from different

disciplines can influence each other. This can be facilitated when there are mechanisms to

encourage cross-disciplinary communication and collaboration.

There was feedback on challenges with STEW-MAP. For example, one participant

mentioned that the survey was tough to fill out and long, advising that maybe they could

have a shorter version in the future. Many participants discussed how the results of the survey would vary depending who filled out the survey in their organization. This would likely be more the case the larger the organization. The survey seems to be a more effective evaluation tool for smaller organizations. There may also have been confusion in filling out the survey itself by respondents, with some questions seeming vague or overly broad regarding what environmental stewardship groups work on (there is more discussion on this later in the chapter), as well as concerns about what is missing. For example, climate change was not explicitly identified as a possible organizational focal area in the STEW-MAP survey, although Michele noted that climate change was a common write-in answer for respondents during the workshops. There was also discussion that the results were just one snapshot in time. Michele agreed to this point and says that is why she is interested in both being able to repeat STEW-MAP processes as well as allowing the results to be updated online.

STEW-MAP: a tool for facilitating a SES approach to stewardship

An SES approach among environmental stewardship partners in LA is emerging on the ground. Many partners interviewed seemed to be seeing social-ecological connections in their urban ecology efforts and strategies. In contrast, a SES approach is not fully realized in LA STEW-MAP, even though the program situates itself with this literature and there has been academic work conducted asserting this (Romolini et al. 2016). As will be detailed below, this lack of realization is reflected in the process not adequately capturing partners, some weaknesses in the survey, and untapped potential from insufficient engagement of partners and SES oriented analysis.

As noted previously, the original New York City STEW-MAP was developed by a partnership between the U.S. Forest Service and university researchers at Columbia University (Svendsen et al., 2016). Together they worked with many municipal agencies and city-based environmental non-profits that recognized a gap and need to develop a database and map of environmental stewardship at the local level. This Forest Service university partnership model has since been followed in other cities, such as Seattle, Baltimore, Chicago, Philadelphia, LA, and others. The universities have often continued to play a role after STEW-MAP was conducted. A university would help design or house the STEW-MAP tool that stewardship groups could use. For example, Michele as a Ph.D. student conducted STEW-MAPs for two cities (Seattle and Baltimore), and in Seattle, the University of Washington went on to host the city's STEW-MAP tool.

However, while the university as a partner has been integral to the implementation of STEW-MAPs in cities, the STEW-MAP survey itself, including the one applied in LA, has largely not included IHEs explicitly. Publicly available STEW-MAP tools for the cities of Baltimore and New York City both indicate under organization type, "school or university". However, Baltimore's survey itself did not denote a space for IHE's, so any IHE respondents would need be identified in the data clean-up and analysis process. Similarly, NYC's survey was a bit ambiguous in terms of IHE's, referring broadly to "schools".[23] For the LA STEW-MAP, a university respondent would have been labeled as either public or private in the data clean up and analysis phase.

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[23] The general STEW-MAP survey, including the survey used in LA, does not include an explicit category for academia. The NYC survey has an option for a "school-affiliated community group", but it is not clear if this is for K-12 schools or can encompass IHE's. The Chicago survey has an option for public administration (including "university campuses"), but this leaves out private IHEs.

The lack of universities in the survey was brought up and discussed by participants independently in both LA STEW-MAP workshops. Specifically, a participant at each workshop asked whether academia was included, with conversation ensuing and Michele explaining that universities were not separated out specifically. Universities could have been a respondent and would have been coded as either a public or non-profit entity. For example, she explained, LMU would be a 501.c.3 and UCLA would be labeled as a public entity. I later learned that LA STEW-MAP had five respondents from IHEs. However, categorizing the universities at that larger scale - public or private, greatly reduces the utility of the information.

In addition, conducting a STEW-MAP is an intensive environmental stewardship activity itself. It can be considered a larger-scale environmental stewardship activity that is meant to inform the practice of social-ecological governance and decision-making. Conducting one STEW-MAP takes years to complete (about 2-3 years), requiring dedicated time, technical expertise, and funding resources (Svendsen et al. 2016). The effort of conducting a STEW-MAP is reflected in the commitment required to reach out to groups to do the surveys, follow-up with groups during data collection, clean, manage, and analyze the data, share results, conduct participant workshops, and co-produce a tool that is useful to partners. As such, the lengthy, involved process of STEW-MAP represents an opportunity to consider improvements and even innovation in collaboratively engaging partners to develop a shared vision for the purpose, process and product(s) of the tool (Stanton, 2007).

In terms of stewardship, the STEW-MAP framework guidance document mentions particular interest in, "the type of stewardship that is often voluntary and conducted for altruistic reasons" (Svendsen, et al. 2016, p. 5). While this is an important part of

stewardship and civic engagement (and the analysis thereof), focusing on people who can

volunteer their time and/or do so for altruistic reasons may not be inclusive and leaves out

a lot of people who cannot afford to do so. It may also miss opportunities for innovation in

environmental stewardship by examining other ways of engagement, such as school credit,

stipends, and certificate programs that people, especially students, often in reality need for

their time. It also does not take into account the context of place. In some places certain

organizations may be especially formative (e.g. foundations, conservancies, religious

groups or a public-private partnership). Being aware of this context is part of the

stewardship narrative of a place. A collaborative process in place during the inventory

phase should catch some of these contextual elements, and thus be reflected in the survey.

Elements of a collaborative process might include a Community Advisory Group (CAG) as

well as partnership exercise, such as a Logic Model, as described previously.

A social-ecological systems (SES) perspective of environmental stewardship is

needed to promote connections between stewardship and socioeconomic issues that many

stewardship groups are already envisioning on the ground. SES is also one of the main

literatures that STEW-MAP researchers have historically situated themselves. The data

indicated that environmental stewardship organizations are framing their work as broader

than the environment. They are seeking to connect their work to other issues and types of

practitioners working in different sectors, such as public health, at-risk youth, underserved

populations, and providing opportunities to those recently incarcerated. An interview

participant mentioned the important skills their organization tries to convey to the youth

they work with in the excerpt below.

The education we're trying to provide is a much deeper education. And, for young men and
women who are probably not going to go on to college, often don't have any kind of soft skills

in terms of how to obtain a job, show up on time, all of the things that one needs to do in order to be able to hold a job. So, [we] try to teach those skills.

As the excerpt shows, this environmental organization was trying to impart skills and

knowledge beyond those that are environmental related, and instead more geared towards

being useful to young people who may not go on to college and would benefit from

vocational and work-force development skills. Many of the partners on the ground saw the

intersection between these issues, saw these intersections as opportunities, and seemed to

already be taking steps to enact a SES approach. During one interview the participant

explained to me how they were starting to work with local health clinics to have them

encourage patients to take walks in the nearby parks as a part of their wellbeing routine.

The awareness of these social-ecological linkages are conveyed in the excerpt below from

another practitioner participant.

What I often say to businesspeople I talk to, "So, what we do at the core of our mission is really incubating human capital." We've done it from at-risk youth, which is one of the core components that we're attempting to do, all the way up through our executive directors.

Integrated across the organization described above is a focus on the social side of a social-

ecological system, in this case articulated via "human capital". One participant I spoke with

was branching out to start their own organization. The excerpt below reflects their trying

to capture all of these social-ecological synergies and complexities in the new organization.

And so through a series of different conference calls and meetings and just a lot of brainstorming, I was finally able to craft the concept [...], which is creating a nonprofit that creates a network of native plant nurseries on underutilized land in and around Los Angeles to grow the plants needed for these upcoming projects, and also grow people through educational and vocational training opportunities. [...] Yep, we're working with them on the seed effort. And then being able to look at again, these veterans and homeless housing facilities of how can we actually be equipping you guys with skills through this kind of programming, but that's gonna need to be retrofit. Another retrofit has to be for the public, so that when we start bringing people to these public park sites [...] We're doing that as well as then LAUSD is interested in pulling the concept of Grown in LA all the way back down into

elementary school, so it becomes this retaining mechanism that feeds students from elementary then into middle school.

A SES lens is interwoven throughout this excerpt. This is illustrated by the participant linking their work of ensuring enough native species stock in the city to veteran and homeless housing facilities as well as education and vocational training.

In a meeting between CURes' staff and a top collaborator organization, one thread that stood out was the organization's interest in connecting their work to workforce development for underserved and at-risk populations, including those recently incarcerated. The aim of this particular meeting was to discuss how CURes and this organization might formally work together.[24] The meeting consisted of senior leadership from this NGO, including the president and leaders from all the various arms of the organization, and CURes had their Executive Director, Eric, in attendance, Michele, and myself. This NGO was working on integrating tree canopy in urban neighborhoods and was keen to learn how to better involve at-risk youth and the underserved. They indicated heightened interest in CURes' work related to restorative justice, which is part of their work to advance urban health and resilience by creating inclusive spaces in order to build community, particularly in schools. Eric of CURes said that they were having success with their restorative justice work, in terms of partners wanting more of this sort of solution and that they were beginning efforts to evaluate its effectiveness. What stood out during the meeting was that an environmental stewardship organization was displaying great interest in how CURes might help advance their capacity at the intersection of other social

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[24] They had been in communication informally for months, keeping in touch via quarterly conference calls, and at that time had yet to formalize their relationship. Later this relationship was formalized through a sub-grant the NGO brought CURes in to work on, with the hope being this small effort could be leveraged to larger collaborative efforts together.

issues, in this case helping vulnerable youth get involved in their work as a means to build community resilience. It also reflected a pattern I was observing among environmental stewards, whereby they were seeking to connect environmental efforts to broader social efforts and goals. These practitioners were enacting a social-ecological systems approach by linking an environmental stewardship activity to issues such as workforce development, at-risk youth, those recently incarcerated, and public health.

As a part of my sequential interview process, I interviewed some community college partners as they were mentioned as partners by those I interviewed. Many NGO participants expressed the increasing importance of partnering with community colleges specifically. It seems that many of these partners saw the community college as a nexus between environmental stewardship and key social issues, such as education, working with vulnerable populations, vocational training, and workforce development. The excerpts below illustrate how some community colleges are increasingly partnering with urban nature-related NGOs. For example, one local organization was working with a community college to develop an urban ecology related certification program. The faculty representative from this community college went on to explain to me how the community college prepares their students for the workforce.

The chem tech program is sort of a directed program that makes you more or less employable within those two years by teaching you all the things related to chemistry that goes on in industry [...]. So they give you all the skill sets, all the things to be keeping track of, the lab procedures are sort of done in the mindset of this is what you, more or less we do if you're out there working.[...] So Work Tech in about eight years is gonna have its 100th anniversary. It was started in the main campus, actually it started at a different campus but this was a high school, polytechnic high school. And then it's always been majority trade school way back in its day, I guess it did kind of all the technicians for the aviation, engineering, got the electricians, plumbers, we have a culinary program, construction manufacturing, so we're about 75% CT - Career Technical and 25% is the transfer component in general education. At one point, some of our faculty say that we built the LA, because that's the workforce that came from Work Tech. So, we're sort of proud of that fact.

Most of our programs are terminal programs where they go out and go through the workforce, which is diesel automotive, again, have rail now.

In addition to workforce development, institutions of higher education provide an important space where students have an opportunity to learn about history, government, civic engagement, etc. A student's time at an IHE is often considered a formative opportunity to learn how to be an engaged citizen and active community member. The triangular synergies between workforce development, civic engagement, and environmental stewardship highlight the current and latent potential of IHEs in STEW-MAP and environmental stewardship broadly from an urban SES perspective. Core to the mission of IHEs of all stripes is workforce development and democratic engagement (Saltmarsh, Hartley & Clayton, 2009). Such active engagement is critical to environmental stewardship, including the voluntary and altruistic element described in the STEW-MAP framework guidance document. As one university representative discussed during an interview, this role of the university is a critical one.

They should be preparing students for jobs but also preparing them for conversations in voting. […] being educated given what sorts of things are going to matter to us in the future, which are a lot of biologically relevant questions. Climate change, invasive species, land use. I mean, right now fires in southern California. All these things have ecosystems... It would be better for everybody if people understood more of that.

This participant above is also articulating how IHEs can play an important role in facilitating a SES approach. At the time of the interview, wildfires were raging in Southern California, including the leader of an organization having to leave during the time I was interviewing one of her colleagues due to an evacuation. Another university participant shared with me their view on linkages between the university, workforce development, and citizen engagement in the excerpt below. This participant is able to bring these three

things together in a compelling way, while also highlighting the importance of the IHE's

role in facilitating these important SES synergies.

I think they should be good citizens, you know, so they should be making a contribution to the community by first of all preparing the next generation of workforce so that they're ready to deal with the issues that will be facing us in the future 'cause they're our next leaders, right? So making sure that they are prepared to ... you know, have good critical thinking, problem solving skills, and know what the issues are and can look at this, but also, at the same time, while they're in it, while they're here, what they are doing... I have a friend, actually my colleague right next door, says we shouldn't have any throwaway projects. Nobody should do stuff, none of their classwork should be stuff that doesn't matter, right? Like, everything we do should somehow help something, and I like that idea. Either help the student individually so that they are developing their skills to be better citizens, or the work directly impacts something, some, you know, beyond them, and so I think even while we're in the process of preparing students we need to also be contributing to the community in some way.

Universities of all shapes, sizes, and missions can support the integration of

workforce development and civic engagement as part of social-ecological stewardship in

multiple ways. IHEs can better align their curriculum and learning outcomes with the

needs of stewardship organizations in a city, including intersections with other disciplines

and the collaborative development of certificate programs, service-learning, engaged

research, and internship programs. Already, internships are a common way of linking IHEs

to NGOs and public agencies. IHEs and STEW-MAP are already linked because, as noted,

universities typically lead STEW-MAP efforts. IHEs, collaboratively with other partners, can

help facilitate an SES approach in environmental stewardship, with STEW-MAP as a guiding

tool.

While still in the preliminary data analysis stage, LA STEW-MAP has the potential to

be used more fully as a tool in local environmental stewardship, such as to triangulate

social-ecologically and to fully capture the rich texture of different partners (some non-

traditional) working together. For example, in the LA STEW-MAP survey, respondents are

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asked, "what does your group work on?" (organizational focus). What is potentially confusing about this as a participant is that the "environment" is one option among many other broad categories (art/culture, education, youth, employment/jobs, etc.). However, all groups responding to the survey are environmental stewardship groups working in the area of the "environment", as defined by the screener question and inventory that is done as part of the first phase.[25] Therefore having such broad categories, including "environment" may be confusing for the respondent and from a data analysis perspective, casts the net too wide or is not fine-scaled enough to be useful. For LA STEW-MAP, 75% of respondents chose "environment" as one of their focal areas. Is this because respondents assumed by definition all of their work was environmental given STEW-MAP's focus on environmental stewardship, or because those respondents do not focus on the environment? This distinction is unclear and important. The survey could be 1) revised to state that as a part of an organization's environmental work they should identify which streams of environmental work they focus on; and 2) the sub-categories presented as options could be clearer and less broad. This would also allow for better triangulation between the survey question related to what a group "works on" and the survey question related to "where" a group does their stewardship (options include watershed, community garden, green building and forest). Such triangulation would enable LA STEW-MAP to better assess environmental stewardship synergies, gaps and network analyses between these sub-areas. For example, a partner that I interviewed that was not flagged as a top

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[25] STEW-MAP can also be applied more widely than the environmental arena. For example, CURes conducted a smaller-scale STEW-MAP process in select neighborhoods in LA and in this case STEW-MAP was specifically taking a broader community development focus. However, generally the application of STEW-MAP in cities has been focused on environmental stewardship specifically.

collaborator by LA STEW-MAP. However, this organization was often described as an important partner in environmental stewardship among other partners I interviewed as it related to urban tree canopy. In discussing this incongruence later with CURes, it was explained to me that this could be because perhaps this organization (mentioned repeatedly by others) is instead a top collaborator in a sub-category within environmental stewardship, such as forest related work. As the survey is currently constructed; however, to assess if this is the case, analysis would need to occur through the "where" question, not the "work your group works on" question, as the latter is not fine scaled enough.

As of now, LA STEW-MAP conducts network analysis in terms of organizational interactions - who an organization regularly collaborates with, including providing/receiving funding and/or providing/receiving information. While many of the on-ground data collection (interviews, participant observation) yielded the theme that environmental stewardship groups were working on and valuing linkages with youth, workforce development, and public health, this finding does not stand out in the LA STEW-MAP results. Alignment with youth is consistent across interviews and the STEW-MAP results; however, the focus on employment/jobs is not as apparent in the STEW-MAP results. Perhaps this is because survey respondents saw that more to be captured under youth itself and/or capacity building. Becoming more aware of how groups are envisioning synergies (and tradeoffs) across different focus areas is key for informing organizational decisions, promoting innovation in the practice of environmental stewardship, better understanding the narratives of environmental stewardship, and improving the implementation and utility of STEW-MAP itself. As it stands, this potential to embody an SES approach by informing urban social-ecological strategies, collaboration and innovation

is not being fully explored in the LA STEW-MAP process. Improving the survey and embedding a cross-cutting community engagement component could help address this weakness. The analysis of interactions, both within the environmental arena and connections to other disciplinary sectors, could coincide with additional LA STEW-MAP research efforts (including more interviews, a second point-in-time data collection). A cross-cutting community engagement component would also inform some of these potential synergies and social-ecological stewardship threads to further explore.

Conclusion

This chapter showed participant perspectives of the utility of STEW-MAP in LA and how the process can be strengthened to better engage partners and operationalize a SES approach by collaboratively identifying gaps, innovations and stewardship narratives across the urban landscape. While STEW-MAP situates itself in the SES literature, more can be done to strengthen its potential utility in this regard. Practitioners are already seeing these social-ecological connections on the ground. STEW-MAP can help capture and leverage these stories in part by embedding, from the beginning, a stronger community engagement component in the process.

This chapter has several overarching contributions to the literature and to practice. This research contributes to the literature on environmental stewardship, social-ecological systems, and higher education community engagement. This research highlights how urban environmental stewardship can align with other social issues, with STEW-MAP as a tool in this endeavor. Similarly, STEW-MAP has the potential to be a useful tool in facilitating the operationalization of a SES approach. LA STEW-MAP could be strengthened in its role as a higher education community-based engagement tool that can inclusively involve a fuller

range of partners, such as community colleges, private sector entities, and more. STEW-MAP also has the potential to reveal new narratives and is complementary to other areas of CURes' work, such as restorative justice. As such, STEW-MAP analyses could inform where restorative justice approaches might be especially needed. CURes' partners have expressed keen interest in restorative justice and this tool could be part of CURes efforts to integrate justice more deeply in their urban ecology work (Hill et al. 2019, Humphreys & Reiter, 2014).

Participants of the LA STEW-MAP workshops readily saw multiple useful applications of STEW-MAP for their work. Participants were eager to have the STEW-MAP results as a simple overlap that could be combined with other tools, such as CalEnviroScreen. They saw the use of STEW-MAP in terms of funding proposals, both helping funders determine where stewardships gaps are and helping organizations justify why they should be funded. In addition, participants saw how the LA STEW-MAP results could be a tool to explore narratives of urban stewardship in LA in ways that were not previously realized.

Participants also pointed out challenges with LA STEW-MAP. Survey results would likely differ based on who with an organization filled out the survey, with this discrepancy perhaps larger with a bigger, more complex organization. Also, it was noted that STEW-MAP is just a snapshot of a moment in time, and that depending on how and in what form STEW-MAP is transposed to a public, interactive tool, it quickly becomes outdated. In addition, there are challenges - in LA and other cities - in how the universities implementing STEW-MAP approach engage participants in the process, including strategies for sharing results, even preliminary, in a way that is useful for practitioners.

In addition to described utilities and challenges, this research informs practice in

the area of environmental stewardship and with regards to LA STEW-MAP specifically.

Four overarching recommendations came out of this research (Table 4.2 describes

recommendations for LA STEW-MAP, broken down by phase). The first recommendation is

that community engagement be a more integrated part of the STEW-MAP process, purpose

and product(s). Some ways to implement this include forming a Community Advisory

Group in the very early stages of STEW-MAP to inform and ensure an inclusive range of

partners can participate and are captured in the survey. For example, institutions of higher

education should be incorporated into the STEW-MAP inventory process and survey. This

integration would be useful for respondents, as participants mentioned academia in both of

the workshops. This would also facilitate a fuller understanding of the role of IHEs and

others in promoting SES synergies in stewardship activities. Other community engagement

practices include Google folders for sharing data (with the exception of personal identifiers

that are not available on publicly available websites) and processes, such as Logic Models,

to develop shared objectives and outcomes among partners.

A second recommendation is to more fully utilize (LA) STEW-MAP as an inclusive

research tool to better understand environmental stewardship practices, including links,

gaps, and innovation across the different sectors (e.g. youth, public health, art/culture,

housing) and settings/turfs of environmental stewardship groups. In order to facilitate this,

the STEW-MAP survey could be improved to more clearly understand what environmental

stewardship groups are working *on*. A Community Advisory Group, as described earlier,

could inform this process. To complement the survey, interviews and focus groups could be

conducted with environmental stewardship groups. In addition, Ego Networks could be a

useful tool in this regard on an organizational scale, with workshop participants expressing interest in participating in beta tests to use as part of a larger funding proposal.

A third recommendation is that STEW-MAP reconsider its focus on voluntary and altruistic environmental and stewardship activities and instead holistically focus on a social-ecological-systems approach (which encompasses voluntary environmental stewardship). As STEW-MAP is currently described in the framework guidance document, the focus is primarily on environmental stewardship that is "voluntary and altruistic". This does not sufficiently take into account local context. As noted, this focus is also limiting and lacks inclusivity as many people cannot afford to participate in environmental stewardship on a purely voluntary basis. Many people require some form of compensation or school credit to participate. Innovation in urban environmental stewardship might come at the intersection of cross-disciplinary issues, such as workforce development, public health, and more. As described, many of the NGO interview participants discussed the need to link their environmental stewardship efforts to other issues, such as workforce development, particularly related to the underserved, youth and/or those recently incarcerated. LA STEW-MAP did not follow the approach of the STEW-MAP framework guidance document in this regard, of limiting the survey to voluntary organizations. However, the tool itself has more potential to be informed by local stakeholders and in turn structured to capture the rich texture and narratives of environmental stewardship that is occurring in a specific city or place.

A fourth recommendation is that STEW-MAP be used more explicitly as a tool in LA to identify stewardship gaps and then facilitate social-ecological partnerships to work together to address those gaps, as a basis of a funding proposal, conference, and/or city

partnership, etc. This practical use could be built into the STEW-MAP purpose, process, and

products (Stanton, 2007). In addition, a Community Advisory Group and more holistic SES

approach would be guided by the goal to identify needs, partnerships, and related

possibilities.

Table 4.2: LA STEW-MAP Recommendations

1. Inventory of Organizations	2. Survey the Network	3. Conduct Data Analysis	4. Disseminate the Results
STEW-MAP Community Advisory Group (CAG) inform purpose, process & products			
Form inclusive STEW-MAP Community Advisory Group	Revise survey to reflect CAG feedback & clearer stewardship focus areas	More analyses of environmental stewardship activities	Develop user-friendly public-facing tool that respondents can update & manage
Seek to underst& context & narratives of stewardship	Survey relevant partners previously not included	Analysis of alignment & convergences with stewardship narratives	Conduct STEW-MAP at several points in time
CAG to inform who to include in survey	Make the survey less time intensive and multiple respondents for larger organizations	Share preliminary data for feedback from participants	Encourage SES partnerships to address gaps & opportunities identified

There is a rich array of future research opportunities as it pertains to urban

environmental stewardship and STEW-MAP. More research could be done on how STEW-

MAP results are used, such as piloting partnerships in identified stewardship gaps. For

example, Michele mentioned how an organization in Baltimore leveraged its status as a top

collaborator to obtain funding. As discussed, there is a need to further discuss the role of

individuals in environmental stewardship networks. The impacts of the individual in

informing another person's views of urban nature emerged in my own research, such as

when people discussed how views of nature had been influenced by others in their network.

Participants in the workshops expressed interest in better understanding their own organizational networks, such as through Ego-Networks. Ego-Networks could be done with pilot organizations, such as a mixture of top collaborators, outliers, and some organizations that did not appear as a top collaborator in STEW-MAP results yet emerged as an influential environmental stewardship partner. More research should be done using STEW-MAP, in combination with interviews and focus groups, on the role of IHEs as a possible bridge organization between environmental stewardship and other SES issues. To facilitate this, Ego-Networks could also be conducted of IHEs, including community colleges, private universities, and/or public universities. A STEW-MAP of a university could be conducted to assess on-campus organizations, off-campus partnering organizations, their interactions, and partnership gaps and opportunities among them.

Since the workshops, Michele has shared her presentation slides, a publicly available data layer, and is currently finalizing the white paper. In addition, CURes staff actively participates in the quarterly meetings and network of the national STEW-MAP program, whereby researchers (primarily from universities as well as USDA Forest Service) working on STEW-MAPs around the world share and seek advice on their work, progress, challenges, etc.

At the end of data collection for this dissertation, the next iteration of STEW-MAP in LA was beginning to take place. CURes received funding to conduct a STEW-MAP of the LA River specifically, or LA River STEW-MAP. This funding was in part an outcome of the LA STEW-MAP workshops, in which participants expressed the need for a more in-depth

analysis of partners working along the LA River. This dissertation research informed the development of the LA River STEW-MAP. For example, educational institutions have been incorporated into the LA River survey, as well as some other minor revisions of the survey based on feedback from other stakeholders as well. This underlies the utility of STEW-MAP also as an iterative process as a result of feedback and engagement. The launch of the LA River STEW-MAP also allows for the application of the tool in an area that has been identified has a high priority by the mayor's office and in the city's Sustainability pLAn. This attention on the LA River has recently invigorated discussions among stakeholders and advocates concerning the impacts of this green development on lower income neighborhoods along the LA River, including eco-gentrification, access to nature, etc. (Christensen, 2018). The implementation of LA River STEW-MAP might enable CURes to shed more light on who is contributing to and informing these conversations.

STEW-MAP provides information on the networks and turfs of local partners working on environmental stewardship. Table 4.3 below describes some of the utility and ways STEW-MAP can improve. STEW-MAP can be applied at a range of scales as shown in this research, from the county of LA, to the LA River, to small neighborhoods. It can also be applied in tandem with other tools, such as other GIS layers (e.g. CalEnviroScreen) or with other research methods (e.g. interviews, focus groups, Ego-Networks and restorative justice). It can be expanded to not just focus on environmental stewardship, and also refined to focus on different types of community stewardship or other forms of community engagement in cities. This could be shaped by refining the stewardship or engagement definition that then informs the survey and targeted respondents.

Table 4.3: STEW-MAP Research Utility*

Utility Categories	Current STEW-MAP Utility	How STEW-MAP can Improve
Clarification & Description	Clarify & describe **where environmental stewardship is** taking place	Ensure inclusive & **up-to-date inventory of partners**, informed by partners
Critical Assessment	Can assess stewardship **gaps**	**Critically assess distribution** & **types of stewardship** & **SES relationships**
New Concepts or Theories	Inform **how stewardship occurs**	More fully **build on or develop innovative theories** of urban environmental stewardship
Fostering Dialogue between Partners	Basis for community partners to **dialogue**	**Inclusive engagement tool** to address the **needs** of community partners

*These utility categories adapted from Laplane et al. (2019)

A social-ecological systems approach to complex interactions between systems is critical in a time when human beings are the driver of global environmental change, with this change in turn having major impacts on human well-being, especially the most vulnerable. Through the iterative process that is STEW-MAP, this chapter illustrates the current and latent potential of this SES research tool.

Summary and Conclusions: the engaged university as a partner for cities to move to a more social-ecologically resilient pathway

My research area is how partners interact to integrate nature in cities to produce more resilient and healthy communities and ecosystems. For this dissertation research, I focused on the university as a social-ecological partner in such efforts. My research shows the gaps and opportunities for institutions of higher education in their role as a partner to integrate nature in cities to strengthen urban ecosystem health and social-ecological resilience of communities. Some of these gaps can be addressed if universities better navigate their role in terms of legitimacy and inclusion, and the fluidity between these two concepts. There are also opportunities to inform more socially innovative policy and planning processes across scales through tools such as narratives and STEW-MAP, if an inclusive social-ecological systems approach is utilized. All three of the empirical chapters result in research that sheds light on opportunities to improve co-production of innovative social-ecological strategies.

This research weaved together several premises. First, the integration of nature in cities is integral to developing more resilient urban areas and communities given the complex challenges we are facing in the 21st century. In short, this is the ecology *for* cities premise, as articulated by Grove et al. (2016), building on the work of others in describing how ecology can be *in* cities, *of* cities and finally *for* cities (Grimm et al. 2000, Jansson 2013). Second, while this research is interested broadly in collaboration and coordination among partners in efforts to integrate nature in cities for more resilient and livable communities, this research focused on the interactions between two types of partners - institutions of higher education (IHE) and practitioner partners (local government and

NGOs primarily). Third, this research focused on the two intertwining threads of higher education community engagement and higher education sustainability practices, particularly policies and management practices related to urban ecosystems and resilience in a time when communities are facing many complex and urgent social-ecological challenges.

For all three empirical chapters, I examined how a university center that focuses on urban resilience conducts its work, specifically the Center for Urban Resilience (CURes) of Loyola Marymount University, LA. I conducted the field work for this dissertation over the space of one year, spring 2017 to later spring 2018. Utilizing an interpretive methodological approach, I engaged as a participant observer of CURes, participating in an array of activities from staff meetings, workshops, on and offsite partnership meetings (in person and remotely), etc. I conducted semi-structured, conversational interviews with related IHE and practitioner partners throughout Southern California. Los Angeles was chosen as a site for the dissertation research, a city emblematic of large-scale environmental conversion, nature lost and attempts to reconnect with nature. This city and region face many social-ecological challenges characteristic of the Anthropocene - extensive sprawl and fragmentation, severe droughts, wildfires, water scarcity, threats from invasive pests, and inequitable access to the existing patches of urban ecosystems/nature in the area. The management of urban ecosystems, or blue and green natural infrastructure, can be a tool for helping cities become more resilient to change and disruptions.

The empirical chapters of this dissertation focused on three connected areas. Figure 5.1 describes some of these interactions across chapters. Chapter 1 examined how a

university center enacts its role as a partner in the community, specifically in terms of legitimacy, inclusion and the fluidity between the two. Chapter 2 explored dynamic narratives of nature in cities, which were shown to shift and be diverse across groups and space, with the potential to inform planning and policy processes. Chapter 3 was a nested case study of a CURes' project focused on urban environmental stewardship in LA through a research tool called STEW-MAP (Stewardship Mapping and Assessment Project), including practitioner perceptions and recommendations on how to improve the process of STEW-MAP for better utility. These empirical chapters are sandwiched between the Introduction, which provides an overview of the need for this dissertation research, key areas of literature, the methods employed, and this Conclusion Chapter. Analytical synthesis of the findings, including uniting themes and synergies and tensions between chapters is discussed in the next section. This is followed by a plan for future research.

Figure 5.1: Interactions Across Empirical Chapters
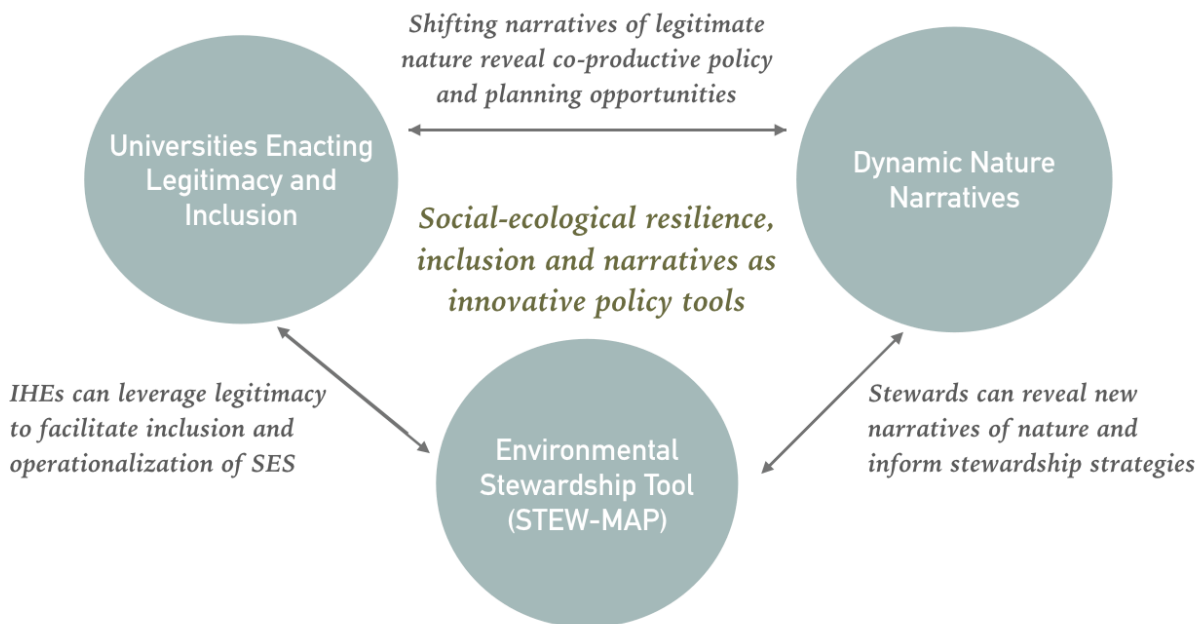
Narratives and inclusion for social-ecological resilience as a uniting thread

Social systems that allow for maintenance of ecosystem services are more resilient (Connelly et al, 2013). Resilience is a useful aspect of the SES approach because it enables urban ecology to be a tool for partners in integrating nature in cities to improve urban resilience in the face of increasing and urgent human-driven natural disasters and social-ecological change. Since the university center I engaged focuses on urban resilience, it also aligns with my overall research framework to consider social-ecological resilience in the context of my findings. Narratives can facilitate a process that generates a shared vision and inclusive strategies to improve urban resilience. Linking resilience to narratives has been done in previous urban ecology related work, as outlined by Goldstein et al. (2012).

Narratives are embedded in policies and plans, with policies and plans reflecting narratives themselves as well as being a tool in the policy and planning process (Forester, 1999, Chase, 2003, Sandercock, 1998). As mentioned previously, many scholars in the planning field have described how a key part of the field is narrative, as both process and outcome of what a city is and can be (Goldstein et al. 2012 p.1289, Forester 1999, Sandercock 1998). In Chapter 1, narratives of science were used to lend support to policy and advocacy efforts of practitioners, although when narratives do not align there can be tension among these partners. In Chapter 2, the utility of the ecosystem services and ecosystem disservices frame was useful as a way of considering what is allowed to be legitimate nature in cities, including identifying tensions and policy opportunities. In Chapter 3, LA STEW-MAP was viewed to be useful in exploring and revealing narratives of environmental stewardship, examining how environmental stewardship narratives vary, and are seen to have the potential to facilitate the co-production of narratives to support

SES policy and research efforts. More of these connections are illustrated in Table 5.1. As described earlier, plurivocal narratives, or narratives that overlap yet have differing perspectives, can play a role in promoting more inclusive policy and planning processes that improve urban resilience.

Table 5.1: Narratives across Empirical Chapters

| Interacting Narratives Across Chapters		
1. Universities Enacting Legitimacy & Inclusion	2. Dynamic Narratives of Nature in Cities	3. Environmental Stewardship: STEW-MAP as a Tool
Narratives of science supporting practitioner narratives [**SES connections**]	Narratives of urban nature benefits [**recreational services, climate regulation**]	Reveal new narratives [**emerging innovation, stewardship gaps**]
Narratives of science in contradiction with practitioner narratives [**park system study**]	Narratives of urban nature problems [**ecological pests, zoonotic disease**]	Platform to underst& different stewardship narratives [**control, integrate, separate**]
Narratives of controversy [**wetland monitoring, coyote project**]	Your ecosystem service is my dis-service [**non-natives, green space**]	Platform to co-produce new narratives [**restorative justice, non-natives**]

Social-ecological resilience can be a way of analyzing SESs (Berkes et al. 2003, Berkes & Folke, 1998, Folke, 2011, Stokols et al, 2013). From an SES perspective, the understanding of resilience shifts from being one of "engineering resilience", where the focus is on a system staying stable and returning to equilibrium (to a previous state) after a disruption, to that of "social-ecological resilience" (Folke, 2006). Social-ecological resilience is a system that accepts surprise and unpredictability, or disturbances, and embraces time/space interactions and interdependencies. From a SES resilience perspective,

disturbance is seen as integral to development, both gradual change and rapid transitions. The focus is on variability and diversity, rather than constancy. However, if a system is vulnerable, even a small disruption can ripple through a system and have major negative social and/or ecological consequences. If a system is resilient, these disturbances can be viewed as opportunities for innovation and a chance to move beyond adaptability to transformation onto new pathways, or social ecological systems. Characteristics of social-ecological resilience have implications for living in the proposed new epoch of the Anthropocene, given the increasing surprises and unpredictability occurring in social-ecological systems.

In the novel ecosystem that constitutes cities, many ecosystem disservices, as discussed in Chapter 2, can alternatively be reframed as ecosystem disruptions. These disruptions can be transformed to social innovation using strategies that have a SES resilience approach, with Figure 5.2 describing this. Concepts and strategies that include an explicit SES approach that can help systems and communities move toward social ecological resilience include the social ecology paradigm, biophilic cities, civic ecology, restorative justice, STEW-MAP and citizen science, noting that many of the concepts overlap and can be embedded in each other. As an example, managing coyotes could be considered a disruption in the urban area, where a local government is concerned with how to better manage urban coyotes, human interactions with these animals and public backlash. CURes is working with the local government to understand community perspectives and social-ecological interactions around this issue in order to develop better management strategies, including better understanding the ecosystem services these animals provide. Similarly, when partners realized there was a lack of native plant stock to

meet the re-greening ambitions of the city, they outlined a plan to develop an interdisciplinary non-profit geared towards creating a network of native nurseries on underutilized land in the city that would also meet the social need of providing educational and vocational training opportunities. This disruption was converted to an innovation based on principles aligned with social ecological resilience and a systems perspective. Other disruptions that could be converted to opportunities pertain to the use of non-native species, managing ecosystem service trade-offs, management of pests, eco-gentrification and more.

Figure 5.2: From Ecosystem Disservice to Social Innovation
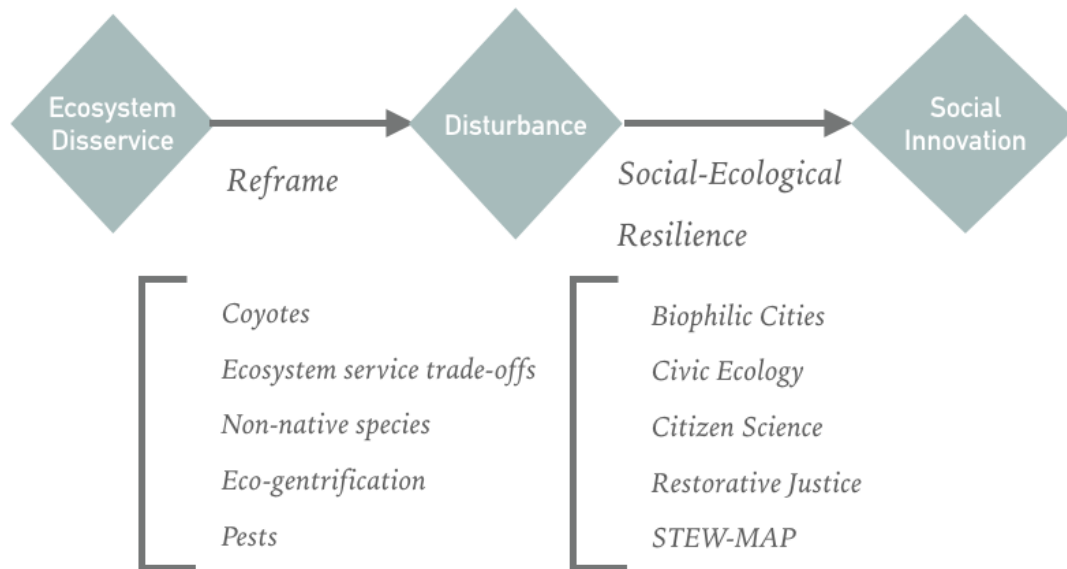
A cross-cutting theme across chapters that is bridge between social-ecological resilience and narratives is that of inclusion. Inclusion was central in Chapter 1 when it was juxtaposed against legitimacy and the fluidity between the two concepts were explored as a means of helping universities navigate their role as community partners. Inclusion was central in Chapter 2 in that inclusive perspectives of urban nature can enable more

nuanced, diverse, and creative visions of urban social-ecological systems, as well as the

argument that narratives themselves can be an important policy and planning tool in

developing inclusive engagement processes. Finally, inclusion was central in Chapter 3 as

one of the key recommendations for improving the LA STEW-MAP is to have a more

inclusive process, through a Community Advisory Group and more proactively activating
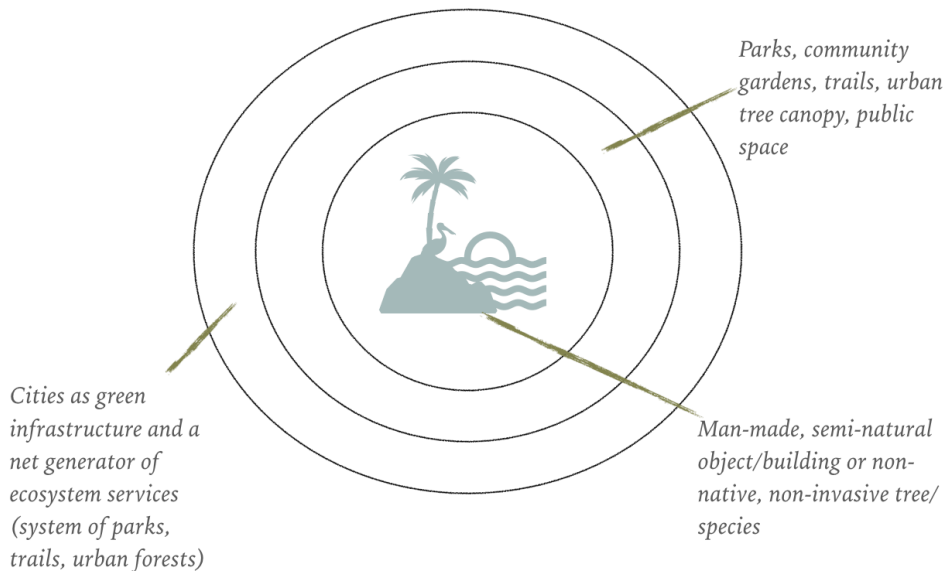
the SES abilities of the tool.

As described in other chapters, civic ecology is a SES-aligned framework for

engaging partners, including both knowledge and practitioner communities, as a means of

empowering communities and having people contribute positively to their environment

(Tidball & Krasny, 2015). Universities can play an important role as environmental steward

partners and in co-productively guiding the STEW-MAP process. Civic ecology could also be

a framework for constructively converting disruptions to opportunities for innovation in

environmental stewardship and provide social-ecological benefits. Environmental

stewardship, as discussed in Chapter 3, could have more of a SES approach by supporting

and connecting with other important community issues and sectors, such as public health

and/or workforce development. This would also contribute to improved social-ecological

resilience. Complementary to civic ecology, restorative justice can also be a tool that

partners can use to build social-ecological resilience by inclusively listening to the diverse,

included contested, narratives of others, and developing shared narratives to support

collaborative policy and planning strategies (Hill et al. 2019). As described in Chapters 2

and 3, through CURes' restorative justice initiative, they have the potential to develop an

urban ecology restorative justice model adapted for social-ecological community policy and

planning processes. This would also represent a novel application and innovation of the

restorative justice model. STEW-MAP can be a tool in helping to identify restorative justice opportunities and gaps.

The exploration of narratives can reveal potential innovation in the integration of nature in cities to benefit urban resilience. Cities themselves create "novel ecosystems", which should be acknowledged in terms of biodiversity and the ecosystem services they can provide or undermine (Andersson et al. 2014, Pincetl 2012). Elements of these novel ecosystems can contribute to an environmental stewardship that aims to not just minimize environmental damage from a city but aim higher. Participants discussed the novelty of urban ecosystems, in terms of the LA River, links to cultural preferences, and the integration of some non-native species (e.g. in gardens, urban tree canopy, etc.). Others discussed how we should plan for nature in our cities, considering how species function and interact. Some non-native species were described as providing what I describe as an "artificial reef" type of ecosystem service (ARES) for other species and people in the urban landscape. For example, non-native tree species were described by participants as providing important habitat for native species. In addition, some non-native species can provide shade in underserved neighborhoods that otherwise have none, or empowerment and food security in a neighborhood brought together by a community garden. By artificial reef ecosystem service, I draw a parallel with marine conservation, and how artificial reefs (e.g. sunken boats), or man-made objects in an ecosystem, can provide important habitat and over time become a place where a diverse range of species are present. This parallel can be extended to some structures, species and the urban built environment, with key characteristics including being non-invasive, providing important functions to others (native species and/or human communities) and having cultural value. The ARES concept

aligns with recognizing that cities themselves are novel ecosystems. It also aligns with the concept of natural or green infrastructure, which can include a combination of both natural and semi-natural elements across scales, form and entailing social-ecological connectivity, as detailed in Figure 5.3. Cities viewed as artificial reefs has potential policy and planning significance if they are managed to provide ecosystem services across scales through a network of natural infrastructure that, at appropriate times, include non-native species and/or semi-natural elements (e.g. community gardens, green roofs, parks, trail systems, backyards, urban tree canopy, etc.). Cities should aim to eventually become net producers of nature and the benefits and services they provide. This also aligns with the concept of the Anthropocene being a heuristic or game changer for urgently needed social innovation, using strategies such as bricolage and others (Olsson et al., 2017).

Figure 5.3: Cities as Novel Ecosystems across Scales

Parks, community gardens, trails, urban tree canopy, public space

Cities as green infrastructure and a net generator of ecosystem services (system of parks, trails, urban forests)

Man-made, semi-natural object/building or non-native, non-invasive tree/ species

Aspects of social innovation, or new ideas that work in meeting social goals (Mulgan et al. 2007), in the Anthropocene include considering social and ecological interactions (e.g. justice, disproportionate impacts on communities, species, etc.) across scales, recognizing the time urgency of some of the challenges we are facing, and finally that social innovation must go further than just minimizing our impact and think about how to creatively and positively contribute to nature. The idea is that people can be good force for nature, not just a negative one (Olsson, et al. 2017, Tidball and Krasny, 2015). As noted, cities have the opportunity to experiment with the novel ecosystems that they are and integrate nature *for* cities to tackle complex issues in the Anthropocene. Cities like LA may not be transformed to *exactly* what it looked like 200 years ago; however, maybe it becomes better in a different, more transformative way. For LA this could include distributing and creating access to nature across the city for people of all socioeconomic backgrounds, restoring ecosystem function of the river to the extent that the population is safe from floods *and* the ecosystem is contributing to flood control, water filtration, serving as a refuge to a wealth of biodiversity, and becoming a model of a social-ecological-systems approach for cities all over the world.

Synergies, Tensions & Trade-offs Across Chapters

The following sections of this chapter summarize the findings across the three empirical chapters. In particular I synthesize how these findings intersect with each other. This also help sheds light on opportunities for innovation, gaps and potential for improving how universities interact with other partners as a social-ecological partner. First, I explore the interactions between Chapters 1 and 2, or how university participants framed their roles in terms of legitimacy and inclusion and the intersection with dynamic narratives of

nature. Second, I explore the interactions between Chapters 2 and 3, or the diverse dynamics of urban nature narratives and connections with urban environmental stewardship. Third, I explore the interactions between Chapters 1 and 3, or the synergies and tensions between universities practicing legitimacy, inclusion and implications for urban environmental stewardship.

Chapters 1 and 2: University legitimacy, inclusion and implications for narratives of nature in cities

As shown in Chapter 1, the perceived legitimacy of the university - in terms of its knowledge and overall stature - is one often embraced by both universities and partner participants that I spoke with alike. Partners described how they often want to work with universities because of their legitimacy, often invoking words like "neutral" or "credible" that universities are perceived to bring to an issue. Similarly, universities seem aware of the perceived legitimacy they can bring to a partnership as they would often describe this as a reason for working with them on an issue, because of their "objectivity". As a thread in my data, legitimacy was a stronger thread than inclusion, as a reason for partnership or as a described role of the university. While community partners were often touted as a reason *for* some sort of engagement (teaching, research or otherwise), they were more often a beneficiary rather than an inclusive partner in the process. In other words, this could be described more as outreach and less as engagement (Bryne, 1998). As a means of bridging the concepts of legitimacy and inclusion, I discuss in Chapter 1 strategies for the legitimization of inclusive practices. In Chapter 2, narratives of nature in a city is closely tied with legitimacy and inclusion because the narratives of nature are often informed by what is viewed as legitimate or acceptable forms of nature in a city. Non-native species

emerged as a theme in urban nature narratives in terms of under what conditions might non-native species constitute a legitimate form of nature in cities. Similarly, other themes around legitimate forms of nature centered around controversial species, such as coyotes and aesthetics of nature across the landscape. As nature narratives shift, partners become more or less inclusive of what "nature" is legitimate in cities. This is significant because it shows that perceptions of nature are dynamic - over the course of a person's career and among different groups. These shifting narratives represent an opportunity for partners to come together to better understand others' narratives, convergences and divergences that can then inform policy and planning processes, including social innovation.

CUres' work with a city in Southern California facing public backlash from urban coyotes illustrates the interplay between legitimacy and dynamic nature narratives. This city sought out CURes in two respects: one, for CURes to help them manage public meetings. It was viewed that the legitimacy of the university leadership at the meetings would have a mediating influence with the public. Second, the scientific research CURes was doing on coyotes in this area would offer additional legitimacy as the city sought to revise their management plan based on the findings of CURes' research. Over the course of a public meeting led by CURes, residents seemed to become less hostile regarding the nuances of the issue and aware of possible behavioral change on their part. As Eric narrated at a subsequent staff meeting, he had volunteers coming up to him after the meeting, implying this was a stark change to how the meetings started. He also expressed that he felt that the residents wanted to be heard. The strategy CURes utilized in this instance is aligned with CURes' restorative justice work, the basis of which is making sure people feel heard, including how they have been harmed (e.g. loss of pets) and that they

feel part of a solution. This is significant because it illustrates that such an approach to

dynamic narratives has the potential to be more explicitly built upon and adapted to other

issues as an inclusive community tool to develop shared policy and planning strategies.

During an interview with a university partner, a participant explained to me the

value of legitimacy through science and data that a university partner can bring to an urban

nature issue. In other words, the university's role is to offer legitimacy to a nature

narrative. However, this was a bit conditional because the partners would assume the

scientific research and data involved would "back-up" or provide legitimacy" to their stance

on an issue. Tensions arise when the scientific research or data generated provides an

alternative narrative or conclusion not expected or even initially accepted. This occurred

when CURes conducted a park system user-ship study. This particularly park system is in

an urban area - with residents surrounding the park system primarily African American

and/or LatinX. However, CURes found that most of the users of this part system did not

reflect the local demographics. Many users were white and were coming in from the larger

region to use the park system. Initially there was pushback from the partner working with

CURes on this case study - with the partner questioning CURes' methods. However, after a

careful check of their protocol, CURes determined that their findings were on track. After

extensive meetings spent discussing the results, the partner accepted CURes' results and it

in fact helped them reshape their own narrative about who is using the urban parks, the

need to try to increase park user-ship by the most immediate residents, and utility of more

research on accessibility issues for people of color (in this case, primarily African American

and Latinx). Another university participant got at this issue in a different way, describing

how it was important for university partners to remain "objective" because sometimes the

narratives that would emerge from their work would differ from the more widely accepted

narratives in the environmental movement, and this itself can be an opportunity for

reflection, innovation and even shifting of strategies by practitioners. This participant

offered an example, explaining how those in the environmental movement assume that the

issue of lower income visitors to California beaches is because of problems of beach access,

when in fact research has shown the issue is more related to affordability of lodging in

nearby beach areas.

As shown in Chapter 2, narratives of urban nature are not set in stone. University

participants are grappling with their own shifts in thinking about what nature means in

cities, which can then have implications for their interactions with partners. Some of the

university participants I spoke with had changed their own views on what is nature in

cities, including the presence of non-native species. Some of what drove people to change

their views included classes they had taken, time spent together with people from other

disciplines, a formative travel experience, as well as moving to a "city like LA". Whereas

previously they had viewed all non-native species negatively in cities, they were now

beginning to think that in some cases non-native species could be acceptable, such as when

they provide important habitat to native species, when a neighborhood is underserved in

terms of ecosystem services, and/or when a non-native species provides important cultural

or food provisioning ecosystem services. There were also reflections on the part of

academics that the notion of non-native versus native is not so simple and easily

delineated. This is part of a larger narrative of what is legitimate and illegitimate in a space.

This discourse is not limited to urban nature, as reflected in similar discourses on human

immigrants and immigration policies, with ramifications for urban planning, human rights,

etc. By becoming more accepting of the nuance of non-native species, the university

participants were in effect becoming more inclusive of what they viewed as legitimate

urban ecological space in cities.

Chapters 2 and 3: Narratives of nature in cities and urban environmental

stewardship

The narratives of what is nature in an urban landscape informs environmental

stewardship. These two chapters were distinct in that Chapter 2 focused on dynamic

narratives of nature in cities among partners while Chapter 3 focused on a university-led

research project that examined environmental stewardship in the county of LA through a

mapping and assessment tool called STEW-MAP. There is complementary overlap as what

partners view as nature in cities in turn shapes the environmental stewardship that takes

place, whether that is environmental restoration (what groups are restoring a space to),

environmental education (the story embedded in a curriculum), and other land

management practices.

Narratives were a compelling synergy between the two chapters, with narratives

playing a different role in each chapter. Chapter 2 focuses on dynamic narratives of nature

in the region of LA, while Chapter 3 focused on urban environmental stewardship through

LA STEW-MAP. However, one of the strong threads that emerged from the data in Chapter

3 was the resonance participants found in STEW-MAP helping partners better understand

and reveal the narratives of environmental stewardship in LA. It can also reveal narratives

at different scales and their links, such as environmental narratives at the city scale, sub-

city scale (e.g. a river or wetland), organizational scale, and even individual scale as some

individuals have formative influence as they move through a network over the course of

their careers. A participant described how STEW-MAP can shed light on ways that environmental stewardship is happening in ways that were not previously understood. STEW-MAP can also inform narratives of what the city imagines itself to be and how this has changed over time. As described previously, narratives of nature in cities can shed light on what is legitimate nature in cities, which then informs environmental stewardship decisions and strategies, including around non-native species, urban biodiversity, pests, waterways, park system design, and wildlife that frighten people (coyotes, Zika, etc.), as well as broader social-ecological connections between cultures prevalent in neighborhoods and preferred plant and animal species. As partners interact with each other - through classes, meetings, events, etc. - narratives of nature may shift. For example, during one city meeting on biodiversity the complexity of non-native species was shared among participants when someone explained how some native bird or butterfly species rely on some non-native tree species for critical habitat.

In both chapters, CURes' restorative justice work was seen as a complementary initiative. In Chapter 2, restorative justice was identified by CURes as a way to utilize narratives to inclusively identify plurivocal narratives and develop collaborative policy and planning processes. In Chapter 3, STEW-MAP can be tool to explore where restorative justice might be a useful strategy for partners.

In Chapters 2 and 3, practitioner participants seemed proficient at seeing the social-ecological connections across disciplines, sectors or silos broadly. During interviews, practitioners would express connections between their environmental stewardship work and, for example, public health and/or workforce development (for youth, underserved and/or recently incarcerated), explaining they were not just doing environmental work,

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but that their work had these "deeper" connections (e.g. to education). It may be that since practitioners are on the front lines of environmental stewardship, they are able to see these social-ecological connections - the need for these connections and subsequent opportunities. For example, urban parks were described as a good way to improve public health by partnering with medical practitioners to encourage their patients to take walks or ensuring that urban tree planting projects contributed to vocational training.

There is a narrative among practitioners that universities are not seeking out partners and asking for their needs. One practitioner participant mentioned the urgent issue of eco-gentrification in the neighborhoods they were working along the LA River, and how this was an issue they felt universities needed to provide assistance. Universities should also seek to learn from innovative and SES connections that practitioners are trying to build on. There may be work that is going unnoticed that could play a role in innovating or operationalizing a SES approach, which is key to developing more resilient solutions in the Anthropocene. At one point, having come across an innovative partnership model between a local NGO and local government, I asked the practitioner at the NGO if they had done any work to document or write up their model. This person ruefully nodded and asked, "with what time?". Universities can play a role in helping these organizations become aware of, share, study and facilitate replication of innovative partnership models.

Chapters 1 and 3: University legitimacy, inclusion and urban environmental stewardship

Universities legitimizing inclusive practices of practitioner partners could lead to both more engagement and innovation of urban environmental stewardship. Many of the NGO and community college participants I spoke with discussed developing certification

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programs to help students and underserved youth gain professional expertise in areas related to urban nature (e.g. urban tree canopy and management). A recurring theme in the data was the importance of the community college as a partner to NGOs. This is in part because they are seen as embedded in the community and because they often serve underrepresented students. An NGO participant described their successful partnership with a community college (later reiterated by that same community college). Multiple practitioners conveyed that partnerships with community colleges was where the future was. I also observed multiple CURes' conversations around possible certificate programs around urban resilience. However, this was framed more as a business model and opportunity than an engagement or partnership endeavor. This may have been because CURes was exploratory in their discussions on a possible certificate program and this was viewed as one of the benefits from their perspective. However, the framing was different than that of the NGOs and community colleges I spoke with regarding the concept of developing certification programs.

In order to facilitate a richer analysis of the wide range of partners working on urban nature efforts, one recommendation in Chapter 3 is that a more explicit community engagement of component cut across all phases of STEW-MAP. The addition of a cross-cutting higher education community engagement component could be led by a Community Advisory Group. The basis for this recommendation was based on the challenge LA STEW-MAP experienced in how to share their preliminary results, and consideration of issues such as timing of sharing data, transparency and privacy. In addition, while universities were not explicitly included in the LA STEW-MAP survey, universities have played a key leadership role in environmental stewardship from the onset as well as in the

implementation in each city where STEW-MAP has been implemented. This inclusion is not be limited to institutions of higher education. Many partners can be fundamental to environmental stewardship in a city, such as public-private partnerships, donor organizations, and religious institutions, and may not be adequately captured via the STEW-MAP survey. A cross-cutting community engagement component could capture the context of partnerships, land-use and social-ecological history.

LA STEW-MAP can contribute to expanding knowledge related to environmental stewardship and social-ecological connections across the urban landscape. This can then further legitimize an SES approach in policy and planning processes. In LA county, STEW-MAP could become an SES platform for universities to apply their legitimacy through knowledge production by researching gaps and opportunities in environmental stewardship. Additional dimensions of STEW-MAP research could be interviews, focus groups, walking interviews, photovoice and the use of Ego-Networks. It is also an opportunity for IHEs to articulate a more engaged role as an interlocutor between workforce development, civic engagement and stewardship through courses, workshops, collaborative research, service learning and additional future innovations. As noted, diverse narratives revealed by STEW-MAP, including perceived environmental stewardship gaps, could also highlight possible opportunities for alignment with CURes' urban ecology restorative justice work.

Conclusion

My overall thesis was that institutions of higher education have gaps and opportunities in their role as a partner to cultivate nature in cities to strengthen the urban ecosystem health and social-ecological resilience of communities. Through my dissertation

research, it emerged that universities are more prevalent in their practice of enacting

legitimacy as experts and neutral convenors than inclusion as engaged partners in

community urban nature efforts. It was shown that the university partner is at best

unreliably inconsistent in being inclusive, particularly the four-year IHEs. This is less so the

case for the vocational and community colleges. The two-year IHE participants I spoke with

were more geared towards working inclusively with the underserved and preparing those

students for a more direct path to the workforce. While often beneficiaries are meant to be

underserved community members, the work is often more *for* as opposed to *with*, or

inclusive along the entire process from beginning to end. While enacting inclusion practices

and processes takes more work, time and commitment than "enacting legitimacy", inclusive

efforts, conversations and reciprocity could engender more learning and innovation

regarding the integration of nature in cities that benefits communities and ecosystems. This

would in turn legitimize novel and needed SES methods and approaches. CURes has the

potential to nurture innovation in their urban ecology resilience work, such as by linking

restorative justice to their urban ecology work in communities and by building a new

cross-cutting community engagement phase to the LA STEW-MAP process.

Based on this study of a university center's engagement concerning community

resilience and urban ecology, this research is able to contribute to both the literature and

practice in several interacting ways. First, this dissertation research provides insight on

how universities interact with partners from the perspectives of legitimacy, inclusion and

the fluidity between the two. This contributes to practice as universities and university

centers can utilize this knowledge to enact practices that strategically build bridges

between legitimacy and inclusion to better work with partners to benefit planning and policy processes.

Second, this dissertation research contributes to the understanding of urban ecology by examining partner narratives of nature in cities and how plurivocal shifts and divergences among narratives can shed light on policy and planning opportunities to better integrate nature in cities. Examples of such opportunities relate to the function of non-native species in urban areas, ecosystem service trade-offs, and diverse perspectives of what constitutes attractive or legitimate nature in urban landscapes. Narratives can also be used in practice by partners to better understand diverse narratives, and as an inclusive community engagement tool, such as through restorative justice, to develop shared visions and urgently needed solutions for more resilient cities.

Third, this dissertation research contributes to the body of work on urban civic engagement and environmental stewardship, particularly the process of STEW-MAP, practitioner perceptions of this tool's utility, and its potential to 1) strengthen community engagement and 2) operationalize a SES approach. I highlight steps STEW-MAP can take to integrate a community engagement component that cuts across all phases of the process and would contribute to operationalizing a SES approach to address stewardship gaps, foster better understanding of how stewardship works and facilitate inclusive social innovation.

As stated early on, my meta-question that I plan to continue to pursue and build upon is how partners integrate and cultivate nature in centers for healthier ecosystems and communities (Figure 5.4). This dissertation research also allowed me to develop additional

expertise related to the higher education community engagement, especially related to environmental and sustainability efforts.

Figure 5.4: Future Research

In order to alter the current trajectory of the planet so that people become a positive force, social innovation is urgently needed - this entails reducing or minimizing the impacts of people, and also enabling the creation of more nature (Olsson et al, 2017). The nexus between practitioners and the knowledge community could help harness this social innovation. As the term social innovation implies, this is innovation that works to address a social need, which are often complex, unpredictable and transdisciplinary in nature. University partners can play a bridge role in deliberating the urgency, cross-scale and social and ecological dimensions of many of society's greatest challenges. Therefore, I am interested in studying inclusive social innovation regarding nature-based solutions in urban and regional areas that benefits and creates synergies for both communities and ecosystems. As Olsson et al. (2017) describe, the potential link of social innovation in the

Anthropocene to policy and planning processes concerning urban nature and resilience is an important step in this regard. This could include how partners develop and implement innovative ideas in urban spaces and the notion of place-making when it comes to nature, infusion with art, active transportation networks, culture and community.

I am particularly interested in the connectivity of natural spaces across cities and regions, such as through active transportation networks, park networks and natural blue and green infrastructure. As part of this connectivity I also include diversity of scales and natural and semi-natural forms. I would like to study the policy and planning processes of how partners work together to connect natural and semi-natural entities across urban landscapes to provide ecosystem services to improve urban resilience and human well-being.

I intend to study in more depth specific partners and their interactions and role with others in efforts to integrate nature in cities. For example, conservancies or land trusts in the Southern California context are an important partner when it comes to urban nature. Given their status as an entity, public or private, that manage extensive amounts of lands, from more rural to highly urban areas, and that they work closely with many other partners (from schools to NGOs), this is an angle of urban ecology management that I would like to better understand. Other partners whose role in managing and shaping urban nature across the landscape I would like to also explore are for-profit entities and how they enact and are perceived to enact their role as partners (e.g. developers, landscape architecture companies, etc.).

From an IHE or university research perspective, already much research has been done on the community engagement of the more traditional 4-year institutions. However,

many participants mentioned the increasing relevance of community colleges as partners in the integration of nature in communities and cities. Therefore, one area of future research that I would like to explore more is the potential of community colleges as local partners in their communities in the stewardship of urban nature and connections to other social-ecological issues. In addition, one critique of university community engagement has been that more progress has been made on facilitating interactions of faculty and students with the communities, but on the other hand less progress has been made on community partnership aspects of community engagement (Welsh & Saltmarsh, 2013). This aspect of making community engagement more meaningful, and as my data found inclusive, with the community, particularly regarding social-ecological issues, is of research interest. Finally, another research area that emerged of interest from this research is the university extension model, specifically in the Southern California context and the role this institution plays, or does not, in the integration and management of nature in communities.

I will continue to conduct research on the body of knowledge regarding social-ecological systems, particularly resilience and narratives. In this dissertation, I focused more on examining nature narratives, how they are dynamic and potential implications for policy and management strategies. In the future, I would also like to build on this work and explore the utility of narratives in the co-production of knowledge to facilitate more effective planning strategies for nature in cities, building on the work of others (Goldstein et al. 2012, Galafassi et al. 2018). Restorative justice, as a tool to enact justice and listen to the narratives of others as a means to develop shared solutions, is a model I would also like to examine more in the urban SES context (Hill et al. 2019, Humphreys & Reiter, 2014). CURes' interest and beginning efforts to expand their restorative justice work beyond

schools (K-12, universities) to communities in the urban ecology resilience realm could be

an opportunity to build on the narrative work developed in this research in the near term.

References

Abbott, A. (2004). *Methods of Discovery: Heuristics for the Social Sciences.* W.W.   Norton and

Company. New York, New York.

Andersson, E., S. Barthel, S. Borgstrom, J. Colding, T. Elmqvist, C. Folke, & A. Gren. (2014).

Reconnecting Cities to the Biosphere: Stewardship of Green Infrastructure and Urban

Ecosystem Services. *Ambio*, 43, 445-453, doi: 10.1007/s13280-014-0506-y.

Anderson, G. & Herr, K. (1999). The new paradigm wars: Is there room for rigorous practitioner

knowledge in schools and universities. *Educational Researcher,* 28, 12-21.

Ahern, J., Cilliers, S., & Niemelä, J. (2014). The concept of ecosystem services in adaptive urban

planning and design: A framework for supporting innovation. *Landscape and Urban*

Planning, *125*, 254–259. doi:10.1016/j.landurbplan.2014.01.020.

Ahern, J. (1995). Greenways as a planning strategy. *Landscape and Urban Planning*, 33, 131-155.

BC Poverty Reduction Coalition. Accessed 2016. URL:

http://bcpovertyreduction.ca/2014/12/latest-poverty-stats-show-bc-still-has-one-of-the-

highest-poverty-rates-in-canada/.

Beatley, T. (2000). Preserving Biodiversity. *Journal of the American Planning Association*, 66(1), 5–

20, doi:10.1080/01944360008976080.

Beatley, T. & Newman, P. (2013). Biophilic cities are sustainable, resilient cities. *Sustainability*, 5,

3328-3345.

Bellino, M.E. & Adams, J.A. (2017). A critical urban environmental education pedagogy: relevant

urban environmental for and by youth. *The Journal of Environmental Education*, 48(4), 279-

284, doi: 10.1080/00958964.2017.1336976

Berkes, F. & Folke, C. (eds). (1998). *Linking Social and Ecological Systems. Management Practices*

    and Social Mechanisms for Building Resilience. Cambridge: Cambridge University Press.

Berkes F, Colding J, & Folke C (eds). (2003). *Navigating social-ecological systems: building resilience*

    for complexity and change. Cambridge University Press, Cambridge.

Berkhout, F. (2014). Anthropocene futures. *The Anthropocene Review, 1*(2), 154–159.

Bocking, S. (2005). The Nature of Cities: Perspectives in Canadian Urban Environmental History.

    Urban History Review, 34(1), 308.

Bringle, R.G. & Hatcher, J. A. (1996). Implementing service learning in higher education. *The*

    Journal of Higher Education, 67(2), 221-239.

Bruner, J. (1991). The narrative construction of reality. *Critical Inquiry,* 18, 1-21.

Bryne, J.V. (1996). Outreach, engagement, and the changing culture of the university. *Journal of*

    Public Service and Outreach, 3(2), 3-8.

Bucholtz, S. & Kolko, J. (2018). America really is a nation of suburbs. Citylab. Accessed April 2019.

    URL: https://www.citylab.com/life/2018/11/data-most-american-neighborhoods-

    suburban/575602/.

California's Fourth Climate Change Assessment. (2018). Statewide Summary Report. URL:

    http://www.climateassessment.ca.gov.

Campus Compact. Accessed April 2019. URL: https://compact.org/initiatives/advanced-service-

    learning-toolkit-for-academic-leaders/indicators-of-an-engaged-campus/.

Carcasson, M. (2017). Shaffer, T.J., Long, N.V., Manosevitch, I., & Thomas, M.S. (Ed.) Deliberative

    pedagogy as critical connective: building democratic mindsets and skill sets for addressing

    wicked problems. *Deliberative Pedagogy*. Michigan State University Press.

183

Carpiano, R.M. (2009). Come take a walk with me: The "Go-Along" interview as a novel method for studying the implications of place for health and well-being. *Health and Place,* 15(1), 263-272.

Center for Urban Resilience (CURes). Loyola Marymount University. URL: https://academics.lmu.edu/cures/research/societyandtheenvironment/stewmap/.

Chase, S.E. (2003). Taking Narrative Seriously: Consequences for Method and Theory in Interview Studies. *Turning Points in Qualitative Research: Tying Knots in a Handkerchief*, 273-298.

Checker, M. (2011). Wiped Out by the "Greenwave": Environmental Gentrification and the Paradoxical Politics of Urban Sustainability". *City and Society*, 23(2), 210-229.

Chestnut, D. & Krasny, M. (2018). Countering environmental gentrification through economic, cultural and political equity.: the 11th Street Bridge Park. Krasny, M. (Ed.). *Grassroots to Global: Broader Impacts of Civic Ecology.* Cornell University Press.

Chiland, E. (2018). LA gaining parks, but nearly half of residents don't have easy access. *Curbed LA*. Accessed April 2019. URL: https://la.curbed.com/2018/5/24/17386174/los-angeles-parks-score-2018.

Childers, D.L., S.T.A. Pickett, J.M. Grove, L. Ogden, & Whitmer, A. (2014). Advancing urban sustainability theory and action: Challenges and opportunities. *Landscape and Urban Planning*, doi: 10.1016/j.landurbplan.2014.01.022

Christensen, J. (2018). Can the LA River avoid green gentrification? *CityLab*. Access April 2019. URL: https://www.citylab.com/equity/2018/02/can-the-la-river-avoid-green-gentrification/553613/.

Connolly, J.J.T., E.S. Svendsen, D.R. Fisher, L.K. Campbell. (2014). Networked governance and the management of ecosystem services: the case of urban environmental stewardship in New York City. *Ecosystem Services.*,10, 187-194.

Connolly, J.J., Svendsen, E.S., Fisher, D.R., & Campbell, L.K. (2013). Organizing urban ecosystem services through environmental stewardship governance in New York City. *Landscape and Urban Planning*, 109, 76-84.

Costanza, R. de Groot, R., Sutton, P., van der Ploeg, S., Anderson, S.J., Kubiszewski, I., Farber, S., & Turner, R.K. (2014). Changes in the global value of ecosystem services. *Global Environment Change*, 26, 152-158.

Costanza, R., d'Arge, R., de Groot, R., Farber, S., Grasso, M., Hannon, B., … van den Belt, M. (1997). The value of the world's ecosystem services and natural capital. *Nature*, *387*(6630), 253–260, doi:10.1038/387253a0

Cronon, W. (1996). The trouble with wilderness: or, getting back to the wrong nature. *Environmental History*, 1(1), 7-28.

County of Los Angeles. URL: https://www.lacounty.gov/government/about-la-county. Accessed October 13, 2016.

Cumming, G. S., Olsson, P., Chapin, F. S., & Holling, C. S. (2012). Resilience, experimentation, and scale mismatches in social-ecological landscapes. *Landscape Ecology*, *28*(6), 1139–1150, doi:10.1007/s10980-012-9725-4.

d'Arlach, L., Sanchez, B. & Feuer, R. (2009). Voices from the community: A case for reciprocity in service-learning. *Michigan Journal of Community Service Learning*, 5-16.

Daniel, T.C. (2012). Contributions of cultural services to the ecosystem services agenda. *Proceedings of the National Academy of Sciences of the United States of America,* 109(23),

8812-8819.

Deephouse, D.L. & Suchman, M. (2008). *Legitimacy in organizational institutionalism. In Greenwood et al. (Eds).* The SAGE Handbook of Organizational Institutionalism. SAGE.

Dempsey, S. (2010). Critiquing community engagement. *Management Communication Quarterly*, 24(3), 359-390, doi: 10.1177/0893318909352247

Denhardt, R.B. & J. V. Denhardt. (2000). The New Public Service: Serving Rather than Steering. *Public Administration Review*. 60(6): 549-559.

Diverell, W. (2006). *Land of Sunshine: An Environmental History of Metropolitan Los Angeles.* University of Pittsburgh Press. Pittsburgh, PA.

Duncan, J.S. & Duncan, N.G. (2001). The Aestheticization of the Politics of Landscape Preservation. *Annals of the Association of American Geographers*, 91(2), 387-409, doi. 10.1111/0004-5608.00250.

Ellis, E., Fuller, D., Kaplan, J., & Lutters, W. (2013). Dating the Anthropocene: towards an empirical global history of human transformation of the terrestrial biosphere. *Elem. Sci. Anth. Elementa: Science of the Anthropocene, 1*, 000018.

Epic Network. URL: http://www.epicn.org.

Ernstson, H. (2013). The social production of ecosystem services: A framework for studying environmental justice and ecological complexity in urbanized landscapes. *Landscape and Urban Planning*, 109(1), 7–17, doi:10.1016/j.landurbplan.2012.10.005

Escobedo, F.J., Kroeger, T. & Wagner, J.E. (2011). Urban forests and pollution mitigation: analyzing ecosystem services and disservices. *Environmental Pollution*, 159, 2078-2087, doi: 10.1016/j.envol.2011.01.0110

Feldman, D.L. (2017). *The Water-Sustainable City: Science, Policy and Practice.* Edward Elgar. UK.

Feldman, D. & Ingram, H.M. (2009). Making Science Useful to Decision Makers: Climate Forecasts,

    Water Management, and Knowledge Networks. *American Meteorological Society*, doi:

    10.1175/2009WCAS1007.1

Fisher, R., Fabricant, M. & Simmons, L. (2004). Understanding contemporary university-

    community connections: Context, practice and challenges. *Journal of Community Practice*.

    12, 13-34, doi: 10.1300/J125v12n03_02

Folke, C., A. Jansson, Rockstrom, Olsson, J.P., Carpenter, S.R. Chapin III, F.S. Crepin, A.S. Daily, G.

    Danell, Ebbesson, K.J., Elmqvist, T., Galaz, V., Moberg, F., Nilsson, M. Osterbom, H., Ostrom,

    E., Persson, A., Peterson, G., Polasky, S., Steffen, W., Walker, B.,Westley, F. (2011).

    Reconnecting to the Biosphere. *Ambio*, doi: 10.1007/s13280-0110184-y

Folke, C. (2006). Resilience: The emergence of a perspective for social-ecological systems analyses.

    Global Environmental Change, 16, 253-267, doi: 10.1016/j.gloenvcha.2006.04.002

Forester, J. (1999). *The Deliberative Planner: Encouraging Participatory Planning Processes*. MIT

    Press. Cambridge, Massachusetts.

Fourth National Climate Assessment (NCA4). (2018). Vol II - Impacts, Risks, and Adaptation in the

    United States. United States Global Change Research Program. URL:

    https://www.globalchange.gov/nca4.

Galafassi, D., Daw, T.M., Thuresson, T. S., Rosendo, T., Chaigneau, S., Bandeira, Munyi, L.,

    Gabrielsson, I., & Brown, K. (2018). Stories in social-ecological co-creation. *Ecology and*

    Society, 23(1), 23. doi: https://doi.org/10.5751/ES_09932-23023

Galaz, V., Moberg, F., Olsson, E.-K., Paglia, E., & Parker, C. (2011). Institutional and political

    leadership dimensions of cascading ecological crises. *Public Administration.* 89(2), 361–

    380. doi:10.1111/j.1467-9299.2010.01883.x

Goddard, M., Dougill, A. J., & Benton, T. G. (2010). Scaling up from gardens: biodiversity

    conservation in urban environments. *Trends in Ecology & Evolution,* 25(2), 90–8.

    doi:10.1016/j.tree.2009.07.016

Goldstein, B.E., Wessells, A.T., Lejano, R. & Butler, W. (2012). Narrating Resilience: Transforming

    Urban Systems Through Collaborative Storytelling. *Urban Studies,* 52(7), 1285-1303.,doi:

    10.1177/0042098013505653

Goodrich, K. & Nizkorodov, G. (2017). The social ecology of the Anthropocene. Matthew et al. (Ed.).

    The Social Ecology of the Anthropocene. World Scientific Publishing. Imperial College Press.

Grimm, N. B., Grove, J. M., Pickett, S. T. A., & Redman, C. L. (2000). Integrated Approaches to Long-

    Term Studies of Urban Ecological Systems. *Bioscience*, 50(7), 571–584, doi:10.1641/0006-

    3568(2000)050[0571:IATLTO]2.0.CO;2

Grimm, N. B., Faeth, S. H., Golubiewski, N. E., Redman, C. L., Wu, J., Bai, X., & Briggs, J. M. (2008).

    Global change and the ecology of cities. *Science*, 319(5864), 756–60.

    doi:10.1126/science.1150195

Grove, J.M., Childers, D.L., Galvin, M., Hines, S., Munoz-Ericsson, T. & Svendsen, E.S. (2016). Linking

    science and decision making to promote an ecology for the city: practices and

    opportunities. *Ecosystem Health and Sustainability,* 2(9), doi: e01239.10.1002/ehs2.1230

Guba, E.G. & Lincoln, Y.S. (1994). Competing paradigms in qualitative research. In N.K. Denzin & Y.

    S. Lincoln (Eds.). *Handbook of qualitative research* (pp. 105-117). Thousand Oaks, CA: Sage.

Gumprecht, B. (1997). 51 miles of concrete: the exploitation and transformation of the Los Angeles River. *Southern California Quarterly*, 79(4): 431-486.

Hansen, R., & Pauleit, S. (2014). From multifunctionality to multiple ecosystem services? A conceptual framework for multifunctionality in green infrastructure planning for urban areas. *Ambio*, 43(4), 516–29, doi:10.1007/s13280-014-0510-2

Harris, S. (2012). Pigs will fly: protecting the Los Angeles River by declaring navigability. *Environmental Affairs*, 39: 185-212.

Hill, G., Kolmes, S., Humphreys, M., McLain, R., & Jones, E.T. (2019). Using decision support tools in multi-stakeholder environmental planning: restorative justice and subbasin planning in the Columbia River Basin. *Journal of Environmental Studies and Sciences*, doi: https://doi.org/10.1007/s13412-019-00548-x

Holling, C.S. (2001). Understanding the complexity of economic, ecological, and social systems. *Ecosystems*, 4: 390-405, doi: 10.1007/s10021-001-0101-5

Humphreys, M.L. & Reiter, M.A. (2014). Doing justice: the role of ethics in integrated ecosystem management and the implementation of the integrated assessment and ecosystem management protocol. *Interdisciplinary Environmental Review*, 15(⅔), 183-192.

Hundley Jr., N. (2001). *The Great Thirst: Californians and Water – A History. Revised Edition.* University of California Press. Berkeley and Los Angeles, California.

Innes, J.E. & Booher, D.E. (1999). Consensus building as role playing and bricolage: toward a theory of collaborative planning. *APA Journal*.

Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). (2019). Summary for policymakers of the global assessment report on biodiversity and ecosystem services. URL:

https://www.ipbes.net/system/tdf/spm_global_unedited_advance.pdf?file=1&type=node&id=35245.

Intergovernmental Panel on Climate Change (IPCC). (2018). Summary for Policymakers. In: Global warming of 1.5°C. An IPCC Special Report on the impacts. URL: https://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf.

Intergovernmental Panel on Climate Change (IPCC). (2014). *Climate Change 2013: the Physical Science Basis to the* 5*th Assessment Report.* Cambridge, UK: Cambridge University Press.

Jansson, Å. (2013). Reaching for a sustainable, resilient urban future using the lens of ecosystem services. *Ecological Economics*, *86*, 285–291, doi:10.1016/j.ecolecon.2012.06.013

Jones, P., G. Bunce, J. Evans, H. Gibbs, & J.R. Hein. (2008). Exploring Space and Place with Walking Interviews. *Journal of Research Practice*. 4(2): D2.

Judd, D. (2011). Theorizing the City. Judd, D.R. & Simpson, D. (Eds). *The City Revisited*. University of Minnesota Press.

Karlin, B., Kelman, C.C., Goodrich, K.A., & Lowerson Bredow, V. (2017). The Role of the University: Engaged Scholarship in the Anthropocene. Matthew et al. (Ed.). *The Social Ecology of the Anthropocene*. World Scientific Publishing. Imperial College Press.

Kaczorowska, A., K. Jaan-Henrik, K. Jakub, & H. Dagmar. (2015). Ecosystem services in land use planning: Integration challenges in complex urban settings – Case of Stockholm. *Ecosystem Services*, doi: 10.1016/j.ecoser.2015.04.006

Kellogg Commission. (2001). Returning to our roots: Executive summaries of the reports of the Kellogg Commission on the future of state and land-grant universities. URL: http://www.aplu.org/library/returning-to-our-roots-kellogg-commission-on-the-future-

of-state-and-land-grant-universities-executive-summaries-of-the-reports-of-the-kellogg-commission-on-the-future-of-state-and-land-grant-universities-2000/file.

King, G., R. Keohane & S. Verba. (1994). *Designing Social Inquiry*. Princeton.

Krasny, M.E. & K.G. Tidball. (2015). *Civic Ecology: Adaptation and Transformation from the Ground Up.* The MIT Press. Cambridge, Massachusetts.

Krasny, M.E. and K.G. Tidball. (2009). Community gardens as contexts for science, stewardship, and civic action learning. Cities and the Environment 2:8. Millennium Ecosystem Assessment, (2005). *Ecosystems and Human Well-being: Synthesis.* Island Press, Washington, DC.

Kusenbach, M. (2003). Street phenomenology: The go-along as ethnographic research tool. *Ethnography*, 4(3), 455-485.

Laboratory for Environmental Narrative Strategies (LENS). Accessed April 2019. URL: https://www.ioes.ucla.edu/lens/.

Laplane, L. Mantovani, P., Adolphs, R., Chang, H., Mantovani, A., McFall-Ngai, M., Rovelli, C., Sober, E. & Pradeu, T. (2019). Why science needs philosophy. *PNAS*, 116(10), 3948-3952, doi: 10.1073/pnas.1900357116

LA STEW-MAP. Center for Urban Resilience (CURes). Loyola Marymount University. URL:https://academics.lmu.edu/cures/research/societyandtheenvironment/stewmap/.

Lewis, S.L. & Maslin, M.A. (2015). Defining the Anthropocene. *Nature*, *519*, 171 – 180.

Louv, R. (2005). *Last Child in the Woods*. Workman Publishing. New York, New York.

Lubell, M., R. Feiock, & Handy, S. (2009) City Adoption of Environmentally Sustainable Policies in California's Central Valley. J*ournal of the American Planning Association*, 75:3, 293-308, doi: 10.1080/01944360902952295

Lynch, C. (2014). *Interpreting International Politics*. Routledge Series of Interpretive Methods. New York City, New York.

Mace, G.M., Norris, K., & Fitter, A.H. (2011). Biodiversity and ecosystem services: a multilayered relationship. *Trends in Ecology and Evolution*, 27(1),19-26, doi: 10.1016/j.tree.2011.08.006

Maharramli, B. (2017). Cities as a transformative nexus*.* In Matthew et al. (Eds.) *The Social Ecology of the Anthropocene: Continuity and Change in Global Environmental Politics.* The WSPC Reference on Natural Resources and Environmental Policy in the Era of Global Change. (pp. 345-365). Singapore: World Scientific Publishing.

Mayer, S.F., McPherson Frantz, C., Bruehlman-Senecal, E., & Dolliver, K. (2009). Why is nature beneficial. The role of connectedness to nature. *Environment and Behavior*, 41(5), 607-643, doi: 10.1177/0013916508319745

Maynard-Moody, S. & Musheno, M. (2014). Schwartz-Shea, P. and D. Yanow (Ed.). *Interpretive Research Design: Concepts and Processes.* Routledge Series on Interpretive Methods. New York, New York.

McDowell, G.R. (2003). Engaged Universities: Lessons from the LAnd-Grant Universities and Extension. *The Annals of the American Academy of Political and Social Science*, 585, 31-50.

Miller, R., Nielsen, E. & Huang, C-H. (2017). Ecosystem service valuation through wildfire risk mitigation: design, governance, and outcomes of the Flagstaff Watershed Protection Project (FWPP). *Forests*, 8(142), 1-18, doi: 10/3390/f8050142.

Mulgan, G., Tucker, S. Rushanara, A. & Sanders, B. (2007). Social Innovation: what it is, why it matters and how it can be accelerated. Oxford Center for Social Entrepreneurship. Skoll Centre for Social Entrepreneurship.

New York City STEW-MAP. URL: https://www.nrs.fs.fed.us/STEW-

    MAP/view/?appid=3b95234dc3b848da842352d968fced76.

Olsson, P. Moore, M-L., Westley, F.R., & McCarthy, D.D.P. (2017). The concept of the Anthropocene

    as a game-changer: a new context for social innovation and transformations to

    sustainability. *Ecology and Society*, 22(2), 31, doi:10.5751/ ES-09310-220231

Ostrom, E. (1996). Crossing the great divide: coproduction, synergy, and development. *World*

    Development, 24(6), 1073-1087.

Paschen, J,A. & Ison, R. (2012). Narrative research in climate change adaptation - Exploring a

    complementary paradigm for research and governance. *Research Policy*, 42, 1083-1092.

Pickett, S.T.A., C.G. Boone, B.P. McGrath, M.L. Cadenasso, D.L. Childers, L. A. Ogden, M. McHale, &

    Grove, J.M. (2013). Ecological science and transformation to the city. *Cities*, 32, S10-S2.

Pickett, S. T. A., Cadenasso, M. L., Grove, J. M., Nilon, C. H., Pouyat, R. V, Zipperer, W. C., & Costanza,

    R. (2001). Urban Ecological Systems: Linking Terrestrial Ecological, Physical, and

    Socioeconomic Components of Metropolitan Areas. *Annual Review of Ecological Systems,* 32:

    127-157.

Pincetl, S. (2012). Nature, urban development and sustainability – What new elements are needed

    for a more comprehensive understanding? *Cities*, *29*, S32–S37,

    doi:10.1016/j.cities.2012.06.009

Pincetl, S. (2010). From the sanitary city to the sustainable city: challenges to institutionalising

    biogenic (nature's services) infrastructure. *Local Environment*, 15(1), 43–58.

    doi:10.1080/13549830903406065

Post, M.A., Ward, E., Longo, N.V. & Saltmarsh, J. (2016). *Next Generation Engagement and the Future*

    of Higher Education. Stylus Publishing. Sterling, Virginia.

Portman, M.E. & Teff-Seker, Y. (2016). Community-level environmental projects as learning tools

    for planners: a case study of graduate planning benefits. *Environmental Education Research*,

    23(3), 415-435, doi:10.1080/13504622.2015.1136597

Portney, K.E. (2016). *Taking Sustainable Cities Seriously: What Cities Are Doing. Vig, N. & Kraft, M.*

    Ed. Environmental Policy: New Directions for the Twenty-First Century. Ninth Edition. Sage

    CQ Press. Thousand Oaks, California.

Price, J. (2006). Thirteen ways of seeing nature in L.A. Diverell, W. (Ed.). *Land of Sunshine: An*

    Environmental History of Metropolitan Los Angeles. University of Pittsburgh Press.

    Pittsburgh, PA.

Price, J. (2008). Remaking American environmentalism: On the banks of the LA River.

    Environmental History, 13(3), 536-555.

Prins, J., Stecklenberg, J., Klandermans, B., & Polletta, F. (2013). Telling the collective story?

    Moroccan-Dutch young adults' negotiation of a collective identity through storytelling.

    Qualitative Sociology, 36, 81-99.

Public Policy Institute of California. Access 2016. URL:

    http://www.ppic.org/main/publication_show.asp?i=261.

Purdy, J. (2015). *After nature: a politics for the Anthropocene.* Harvard University Press. Cambridge,

    Massachusetts.

Quick, K. S. & M. S. Feldman. (2011). Distinguishing Participation and Inclusion. *Journal of Planning*

    Education and Research, 31, 272-290.

Rabe, B. (2002). Statehouse and Greenhouse: The states are taking the lead on climate change. *The*

    Brookings Review, 20(2), 11-13.

Robinson, J. (2004). Squaring the circle? Some thoughts on the idea of sustainable development. *Ecological Economics*, 24, 369-384.

Rockstrom, J., Steffen, W., Noone, J., Perrson, K., Chapin, F.S., Lambin, E.,...Foley, J. (2009). Planetary Boundaries: Exploring the Safe Operating Space for Humanity. *Ecology and Society,* 14(2), 32.

Rodin, J. (2005). The 21st century urban university. *Journal of American Planning Association,* 71(3), 237-249.

Romolini, M. (2017). Los Angeles Stewardship Mapping and Assessment Project. Center for Urban Resilience (CURes). Loyola Marymount University.

Romolini, M. et al. (2016). Toward an understanding of citywide urban environmental governance: An examination of stewardship networks in Baltimore and Seattle. *Environmental Management*, 58, 254-267, doi: 10.1007/s00267-016-0704-4

Romolini, M., R.P. Bixler & J.M. Grove. (2016). A Social-Ecological Framework for Urban Stewardship Network Research to Promote Sustainable and Resilient Cities. *Sustainability*, 8(956), doi:10.3390/su8090956.

Roth, W. & J. D. Mehta. (2002). The Rashomon Effect: Combining Positivist & Interpretivist Approaches in the Analysis of Contested Events. *Sociological Research Methods and Research.*

Saltmarsh, J. Hartley, M., & Clayton, P. (2009). Democratic engagement white paper. *New England Resources Center for Higher Education*. Retrieved from: http://repository.upenn.edu/gse_pubs/274.

Sandercock, L. 1998. *Towards Cosmopolis: Planning for Multicultural Cities*. Chichester: John Wiley and Sons. 32-83.

Sandmann, L.R. & Jones, D.O. (2019). *Building the Field of Higher Education Engagement. Stylus Publishing.* Sterling, Virginia.

Sassen, S. (2010). Cities are at the center of our environmental future. *Revista de Ingenieria*, 72-83.

Sassen, S. (2005). The Global City: Introducing a Concept. *The Brown Journal of World Affairs*, XI(2), 27-43.

Schwartz, K., Fragkias, M., Boone, C.G., Zhou, W., McHale, M., Grove, J.M., O'Neil-Dunne, J., McFadden, J.P., Buckley, G.L., Childers, D., Ogden, L., Pincetl, S., Pataki, D., Whitmer, A., & Cadenasso, M.L. (2015). Trees grow on money: urban tree canopy cover and environmental justice. *PLoS ONE*, 10(4), doi: 10.1371/journal.pone.0122051

Schwartz-Shea, P. & D. Yanow. (2012). *Interpretive Research Design: Concepts and Processes.* Routledge Series on Interpretive Methods. New York, New York.

Small, M. 2009. How many cases do I need? On Science and the logic of case selection in field-based research. *Ethnography*, 10(1), 5-38.

Stanton, K.S. (2007). New times demand new scholarship - research universities and civic engagement: opportunities and challenges. *Campus Compact Conference Report.* University of California, Los Angeles.

Steffen, W., Rockstrom, J., Richardson, K. Lenton, T.M., Folke, C., Liverman, D., Summerhayes, C.P., Barnosky, A.D., Cornell, S.E., Crucifix, M, Donges, J.F., Fetzer, I., Lade, S.J., Scheffer, M., Winkelmann, R., & Schellnhuber, H.J. (2018). Trajectories of the earth system in the Anthropocene. *Proceedings of the National Academy of Sciences of the United States of America*, 115(33), 8252-8259, doi: 10.1073/pnas.1810141115

Steffen, W., Persson, A., Deutsch, L., Zalasiewicz, J., Williams, M., Richardson, K., ... Svedin, U. (2011). The Anthropocene: From Global Change to Planetary Stewardship. *Ambio*, *40*(7), 739–761.

Steffen, W., Richardson, K., Rockström, J., Cornell, S.E., Fetzer, I., Bennett, E.M.,... Sörlin, S. (2015). Planetary boundaries: Guiding human development on a changing planet. *Science, 347*(6223), 736-746.

Steiner, F. (2014). Frontiers in urban ecological design and planning research. *Landscape and Urban Planning*, 125, 304–311, doi:10.1016/j.landurbplan.2014.01.023

STEW-MAP (Stewardship Mapping and Assessment Project). U.S. Department of Agriculture Forest Service. URL: https://www.nrs.fs.fed.us/STEW-MAP/.

Stokols, D. (2017). *Social Ecology in the Digital Age: Solving Complex Problems in a Globalized World.* Academic Press. United Kingdom.

Stokols, D., Lejano, R. P., & Hipp, J. (2013). Enhancing the Resilience of Human – Environment Systems: a Social Ecological Perspective. *Ecology and Society*, 18(1), 7, doi: 10.5751/ES-05301-180107

Stokols, D. (1996). Translating Social Ecological Theory into Guidelines for Community Health Promotion. *American Journal of Health Promotion*, 10(4), 282-298.

Suddaby, R., Elsbach, K.D., Greenwood, R., Meyer, J.W., & Zilber, T.B. (2010). Organizations and their institutional environments - bringing meaning, values and culture back in: introduction to the special research forum. *The Academy of Management Journal*, 53(6), 1234-1240.

Suddaby, R. (2006). From the editors: what grounded theory is not. *Academy of Management Journal*, 49, 4, 633–642.

Suddaby, R. & Greenwood, R. (2005). Rhetorical Strategies of Legitimacy. *Administrative Science Quarterly*, 50, 35-67.

Sullivan, W.C., Kuo, F.E., & DePooter, S.F. (2004). The fruit of urban nature: vital neighborhood spaces. *Environment and Behavior*, 36(5), 678-799. doi: 10.1177/019384X04264945

Svendsen, E.S. et al. (2016). Stewardship mapping and assessment project: A framework for understanding community-based environmental stewardship. United States Department of Agriculture. United States Forest Service Northern Research Station.

Tallis, H. & Lubchenco, J. (2014). A call for inclusive conservation. *Nature*, 515: 27-28.

Tidball, K. & Krasny, M. (2015). *Civic Ecology*. MIT Press. Cambridge, MA.

Tidball, K.G. & Krasny, M.E. (2010). Urban Environmental Education from a Social-Ecological Perspective: Conceptual Framework for Civic Ecology Education. *Cities and the Environment,* 3(1), article 11.

Tidball, K.G. & Krasny, M.E. (2007). From risk to resilience: What role for community greening and civic ecology in cities? in: A. E. J. Wals (Ed.). *Social Learning Towards a more Sustainable World*. Wagengingen Academic Press. Wagengingen, The Netherlands.

Tzoulas, K., Korpela, K., Venn, S., Yli-Pelkonen, V., Kaźmierczak, A., Niemela, J., & James, P. (2007). Promoting ecosystem and human health in urban areas using Green Infrastructure: A literature review. *Landscape and Urban Planning*, *81*(3), 167–178. doi: 10.1016/j.landurbplan.2007.02.001

United Nations. (2018). The World in Cities Booklet. Access April 2019. URL: https://www.un.org/en/events/citiesday/assets/pdf/the_worlds_cities_in_2018_data_booklet.pdf.

UNDESA. (2014). United Nations World Urbanization Prospects. URL:

https://esa.un.org/unpd/wup/publications/files/wup2014-highlights.pdf.

Union of Concerned Scientists. (2012). Preparing for Climate Change Impacts in Los Angeles.

Retried from http://www.ucsusa.org/assets/documents/global_warming/preparing-for-

climate-change-impacts-in-los-angeles.pdf.

United States Forest Service. Shared Stewardship. URL: https://www.fs.fed.us/managing-

land/shared-stewardship.

United States Forest Service. STEW-MAP. URL: https://www.nrs.fs.fed.us/STEW-MAP/.

United States Government Accountability Office (GAO). URL:

https://www.gao.gov/products/CED-81-119.

Vaz, A.S. et al. (2017). Integrating ecosystem services and disservices: insights from plant

invasions. *Ecosystem Services*, 23, 94-107, doi: 10.1016/j.ecoser.2016.11.017

Warren, C. 2001. *Gender and Field Work Relations in Contemporary Field Research* (R. Emerson.

ed..., Waveland Press, 2nd Edition.

Welch, M. & Saltmarsh, J. (2013). Current practices and infrastructures for campus centers of

community engagement. *Journal of Higher Education Outreach and Engagement,* 17(4), 25-

56.

Weller-Clarke, L. & Darrel Jenerette, G. (2014). Biodiversity and direct ecosystem service

regulation in the community gardens of Los Angeles, CA. *Landscape Ecology*, 30, 637-653,

doi: 1007/s10980-014-0143-7

Wilkinson, C. (2014). On Not Just Finding What You (Thought You) Were Looking For: Reflections

on Fieldwork Data and Theory. Yanow, D. and P. Schwartz-Shea, eds. 2nd edition 2014.

Interpretation and Method: Empirical Methods and the Interpretive Turn. Armonk, NY, and

London: M.E. Sharpe.

Wilson, E. O. (1998). *Consilience: The unity of knowledge.* New York: Alfred A. Knopf.

Wolch, J., J.P. Wilson, & J. Fehrenbach. (2005). Parks and Park Funding in Los Angeles: An Equity-

Mapping Analysis. *Urban Geography*, 26(1), 4-35.

World Population Review. Accessed April 2019. URL: http://worldpopulationreview.com/us-

cities/los-angeles-population/.

Wyborn, C. & R.P. Bixler. (2013). Collaboration and nested environmental governance: Scale

dependency, scale framing and cross-scale interactions in collaborative conservation.

Journal of Environmental Management, 123, 58-67.

Yamamura, E. & Koth, K. (2018). *Place-based Community Engagement in Higher Education.* Stylus

Publishing. Sterling, Virginia.

Yin, R.K. (1994). Case Study Research: Design and Methods 2nd edition. Sage.

Yin, R. (200). *Case Study Research: Design and Methods*. Fourth Edition. Sage. United. States.