

LA RIVER STEW-MAP:

The Los Angeles River Stewardship Mapping & Assessment Project



RESEARCH REPORT

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1 EXECUTIVE SUMMARY

The Stewardship Mapping and Assessment Project (STEW-MAP) was applied in the Los Angeles River Watershed 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? STEW-MAP defines a “stewardship group” as a civic organization or group that works to conserve, manage, monitor, transform, educate on and/or advocate for the environment.

Leveraging national expertise and previous regional investment in Los Angeles County STEW-MAP, the Los Angeles (LA) River STEW-MAP provides detailed information on the geographical footprint and collaborative relationships of organizations working in the Los Angeles River watershed. LA River STEW-MAP researchers developed an inventory of 535 environmental stewardship organizations working in the LA River Watershed; and collected survey data from 107 of those organizations. Some highlights of the resulting data analysis included:

- **The majority of groups (57%) were 501(c)3 nonprofits**, with less than ten percent representing other legal designations. The next largest group was city/local government, chosen by just nine percent of respondents.
- **The government was identified as providing funding to over two-thirds of responding stewardship organizations**; and the network results showed that government agencies were often identified by respondents as groups that they go to for collaboration, knowledge, and funding related to environmental projects. This may reflect the historical development, land ownership, and current political climate of the LA River—all of which are largely led by agencies at all levels of government.
- **Responding groups tended to be younger and smaller**, and heavily reliant on volunteer labor. Most groups had been founded since the 1990s, with nearly a quarter of groups founded in just the past ten years. The median number of staff reported by the responding organizations was 9 full-time and 3 part-time. Notably, the average hours respondents reported from occasional volunteers was 152 hours/month, the equivalent of almost a month of full-time work.
- **Education is a focus of stewardship organizations.** Education-related responses were prominent throughout the results. LA River stewardship groups are playing a key role in educating their communities about the watershed and broader environmental issues.
- **Stewardship groups support local environments AND communities.** “Community” was prevalent in mission statement analysis, “community improvement and capacity building” was among the most chosen focus areas, and “community organizing” was identified by nearly half of respondents as a service they provide.
- **LA River STEW-MAP results reflected the watershed approach of the study**, with “stream/river/canal,” “stormwater management,” and “watershed/sewershed” representing three of the top five most chosen stewardship site types, and water quality/water conservation among the top three most chosen focus areas.

However, when asked to consider the influence of eight water-related plans and programs on their work, **LA River Watershed plans were not influential** to the average responding organization. This dilution of influence of any one plan or program may be attributed to the large number of ongoing planning efforts within the watershed. It also may highlight a need for even greater engagement with stewardship groups in watershed plan implementation.

- The **highest geographic concentration of stewardship was found in downtown Los Angeles** around the LA River. Other areas of high stewardship concentration were the northeastern area of the watershed, within the Angeles National Forest.
- **Groups identified over 1200 collaborative, knowledge, or funding relationships** related to environmental stewardship. Since respondents were able to write in their responses, this provided the opportunity to add new groups not included in the initial inventory of stewardship organizations.
- The **“hubs” of activity in the stewardship network were mostly 501(c)3 nonprofit groups, and government agencies** from the local to the federal level.

These results are reported in detail in this report. The project also produced two publicly available online mapping tools where users can further explore the geographic and social network data.

The summary statistics, initial maps and network analyses provided here offer an extensive look at stewardship across the LA River Watershed. There is great potential across the data types for more intensive examination. Future analyses may include spatial, social network, or other explorations of this rich dataset to better understand environmental stewardship in the Watershed. The results and mapping tools have numerous possibilities for application in practice. Examples from previous STEW-MAPs include using the spatial data to help guide prioritization of urban forestry efforts to meet sustainability goals; and searching the STEW-MAP database in a particular area to help mobilize a community network in response to a specific issue. These are two of many examples compiled by the national STEW-MAP Community of Practice, which the LA River Watershed organizations may participate in and use as a resource.

It is important to note that the LA River STEW-MAP survey only reached about 20% of the initial list of organizations. Thus, follow-up work could include on the ground outreach to increase the response rate. LA River STEW-MAP has the potential to be a dynamic, regularly updated database and map that provides a current view of stewardship across the watershed rather than a snapshot in time. The LA River Urban Waters Federal Partnership may be a good place to discuss possibilities for further development and ongoing maintenance of the database and mapping tool.

2 INTRODUCTION

The Stewardship Mapping and Assessment Project (STEW-MAP) is a research tool developed by the USDA Forest Service's Northern Research Station that 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? (Svendsen et al. 2016). STEW-MAP defines a “stewardship group” as a civic organization or group that works to conserve, manage, monitor, transform, educate on and/or advocate for the environment (USDA Forest Service n.d.). STEW-MAP researchers study a city or region’s environmental stewardship regime through a combination of methods including an organizational survey to identify organizational characteristics, mapping the geographic area of influence, and depicting the social networks with other civic, private, and governmental organizations. The project thus adds a social layer of information to biophysical information on green and blue infrastructure in metropolitan areas, providing the opportunity for a social-ecological systems view. The results inform research as well as the development of publicly available maps and databases that can help support community development.

Leveraging national expertise and previous regional investment in Los Angeles County STEW-MAP, the Los Angeles (LA) River STEW-MAP provides detailed information on the geographical footprint and collaborative relationships of organizations working in the Los Angeles River watershed. Led by the Loyola Marymount University Center for Urban Resilience (LMU CUREs), LA River STEW-MAP is the first to be supported and guided by the USDA Forest Service’s three main units: State and Private Forestry, Research and Development (Pacific Southwest Research Station), and the National Forest System (Angeles National Forest); in collaboration with the LA River Urban Waters Federal Partnership. By focusing on the LA River Watershed, this project aimed to capture and raise awareness of the many collaborative stewardship activities and relationships that are occurring to advance LA River revitalization. In doing so, LA River STEW-MAP seeks to provide accurate information about interagency projects promoting urban ecological restoration, highlight existing stewardship gaps and overlaps to increase organizational capacity, and strengthen public engagement with environmental work through data, reports, online tools, and public outreach.

3 BACKGROUND

Local governments and environmental organizations face resource limitations, and knowledge and technical constraints; hampering their capacity to address environmental issues and forcing a search for new approaches (Wolf et al. 2013). Achieving urban sustainability thus involves a complex mix of public, private, and civil society roles (Barthel et al. 2005, Newell et al. 2012). Indeed, there is growing appreciation that “it takes a network” for cities to become more sustainable and resilient (Pickett et al. 2016). In recognition of these challenges, in recent years there has been increased discussion on opportunities and solutions (Folke et al. 2016).

There have been calls by both researchers and practitioners to elevate the importance of actors, formal and informal, who act as stewards of local environments (Balvanera et al. 2017, Johnson et al. 2020). The concept of stewardship is thus receiving

more interest in a range of disciplines (Barthel et al. 2005, Andersson et al. 2014, Mathevet et al. 2018). More specifically, place-based stewardship has emerged as an important concept in research around social-ecological systems and resilience (Cockburn et al. 2018); as it can assist efforts to maintain or recover ecosystem health (Frumkin 2003). Svendsen and Campbell (2008) posit that it is important to explore the nature and nuances of locally-based, urban environmental stewardship groups. Although stewardship groups do not normally own the sites they work on, they take an increasingly greater responsibility for stewardship practices across a wide range of land use types including street and riparian corridors, vacant lots, public parks and gardens, rivers, and public housing sites (Fisher et al. 2012). These organizations are both formal and informal groups, operating at a range of scales, from a community garden to a neighborhood, to a city, a watershed, and even over multiple regions (Svendsen and Campbell 2008, Westphal et al. 2014, Romolini et al. 2016a).

Environmental stewardship activities are carried out by social components of increasing complexity which can be examined at each level, including individual, group, organizational, and network (Romolini et al. 2016b; Koliba et al. 2017). Analyzing networks is an effective way to understand social systems (Provan and Kenis 2008) as they are stable, have important linkages (O'Toole 1997), and account for a range of stakeholder groups (Koliba 2006). Networks use strong identity ties to form tight clusters, while still being broad enough for adaptation (Baldassarri and Diani 2007). Researching social networks creates understanding as to how public, private, and voluntary groups are involved in social issues (Brinkerhoff and Brinkerhoff 2011), as well as their individual characteristics and boundary specifications (Kilduff and Brass 2010).

STEW-MAP was developed by the USDA Forest Service as a particular approach to examining the characteristics and activities, spatial territories, and networks of environmental stewardship organizations in a given geographic area (Svendsen et al. 2016). Environmental stewardship groups tend to be younger, smaller organizations with few paid employees and limited budgets (Fisher et al. 2015). Many of these groups do not fit traditional environmental organization types (Kempton et al. 2001), thereby necessitating a comprehensive study of stewardship groups in an area. STEW-MAP is an established framework for analyzing environmental stewardship (Svendsen et al. 2016), producing data and data-driven tools that may facilitate innovative solutions to urban environmental sustainability issues. The STEW-MAP process has been implemented in more than 15 cities and regions both nationally and internationally (USDA Forest Service n.d.). In Los Angeles, STEW-MAP was conducted in Los Angeles County in 2014 (LMU CUREs n.d.). In 2017, public workshops were held on the results and utility of the project. Participants in the workshops represented public agencies, nonprofit groups, and public and private universities. In addition to identifying some of the ways STEW-MAP could be useful in their work, most were interested in the research taking a narrower focus on the LA River Watershed. This stakeholder interest came as the LA River Watershed was undergoing a number of planning and policy-related actions across jurisdictional scales and boundaries (c.f. City of Los Angeles 2007, Los Angeles County 2021, US ACE 2015) that promised to shape the future of environmental stewardship in the watershed.

Along with these policies comes a need for partnership on stewardship activities. Research has shown an increase in the reliance of public agencies on nonprofit

organizations for the service and delivery of public goods (Koliba et al. 2017). For example, in LA it was found that nonprofits tended to play a larger role in park planning than other groups (Pincetl 2003). STEW-MAP is a way to engage these groups to better understand the organizational and geographic scope of stewardship activities, as well as the structure of the stewardship network and their roles within it. This may facilitate increased collaboration towards their common goals, which can further efforts toward “shared stewardship” (US Forest Service n.d.). STEW-MAP also identifies which areas do not have an active stewardship presence. This information can help agencies, funders, and others who are working to address LA’s inequitable distribution of green spaces across neighborhoods (Wolch et al. 2005) and demographic groups (Byrne 2012). Utilizing these data to inform enactment of sustainability policies with local level groups may reduce implementation issues related to gentrification (Wolch et al. 2014) and related risks (Yang and Zou 2014). It may also enable stakeholders to prioritize their conservation goals through increased connectivity and shared environmental data (Mills et al. 2014).

Therefore, the goal of the Los Angeles River Stewardship Mapping and Assessment Project (LA River STEW-MAP) is to better understand the activities, partnerships, and geographical extent of stewardship in the LA River Watershed. This project is an example of practitioners themselves driving the call for place-based research to support their stewardship efforts, which is a need that has been identified in the literature (Cockburn et al. 2018). Determining how STEW-MAP can be best applied to facilitate efficient, effective, equitable stewardship efforts in the LA River Watershed is a desired outcome of this work.

4 METHODS

4.1 Site Description

The LA River Watershed (Figure 1) covers 870 square miles from the Santa Susana Mountains and San Gabriel Mountains in the west, to the Santa Monica Mountains and Simi Hills to the east. The watershed is shaped by the Los Angeles River which runs 51 miles from the Angeles National Forest to the Pacific coast (US EPA n.d.). The LA River itself runs through over 43 communities, the Angeles National Forest, multiple state and urban parks, and is a recreational destination for the ~9 million people living in the watershed (LACDPW n.d.). Demographically, there are many underserved and disadvantaged communities within the watershed that have socio-economic indicators significantly higher than California (CA) averages. For example, in the City of Compton 29% of residents are African American (CA average = 7%), 28% are in poverty (CA average = 12%), and 18% lack health insurance (CA average = 12%; US Census 2021).

As a result of urbanization and channelization of the LA River and its tributaries, nearly all historical wetlands in the watershed no longer exist (Ethington et al. 2020). Public initiatives to address these challenges include the City of Los Angeles’ 2007 Los Angeles River Revitalization Master Plan (City of Los Angeles 2007), Los Angeles County’s 2020 LA River Master Plan (Los Angeles County 2020), and the US Army Corps of Engineers’ 2015 Los Angeles River Ecosystem Restoration Plan (US ACE 2015). The LA River Urban Water Federal Partnership (UWFP), a partner to the LA River STEW-MAP,

has worked to facilitate revitalization by connecting 46 partners—federal agencies, cities, LA County, the State of California, and local organizations—to conduct collaborative projects within the watershed. The aims of LA River UWFP include restoring the river to its natural state, promoting recreational activities, attracting students and youth for educational opportunities, and pursuing clean-up efforts both down and upstream (US EPA 2014).



Figure 1. STEW-MAP study site: the LA River Watershed. Map Credit: Council for Watershed Health. Used with permission.

4.2 Survey Approach

The LA River STEW-MAP brought together partners from Loyola Marymount University's Center for Urban Resilience; the USDA Forest Service's Angeles National Forest, Region 5 State and Private Forestry, and Pacific Southwest Research Station; and

the Los Angeles River Urban Waters Federal Partnership. Up to two representatives from each of these organizations formed a working group that reviewed and adapted the national Office of Management and Budget approved STEW-MAP survey (Svendsen et al. 2016) to ensure relevance to local geography and stewardship conditions. Survey topics included descriptive characteristics on the groups' organizational structure, geographic data on stewarded sites, and social networks between partner groups that exchange information or secure funding. The final survey was approved by the Loyola Marymount University Institutional Review Board and is provided in Appendix 2. The working group also helped to identify key partners in the watershed, and to develop outreach plans for the launch of the survey.

Researchers utilized several data sources to develop an inventory of environmental stewardship organizations working in the LA River Watershed, which served as the survey population. First, the LA County 2014 STEW-MAP database was queried for relevant organizations (LMU CUREs n.d.). Next, researchers identified 26 key stewardship groups that were known to be highly networked with other stewardship groups within the watershed. These groups were approached with a request for their lists of organizational partners in the geographic area of interest; of which twelve provided their contact lists. The data sources were combined and processed to remove duplicates, and internet research was conducted to quality check each organization (e.g., whether the group is still operating, current contact information). Finally, each available organizational website was reviewed to uncover any additional stewardship partners, and those new groups were added to the overall list. This snowball-sampling approach yielded an inventory of 535 stewardship groups that are connected to the LA River Watershed environmental stewardship community.

The data collection period spanned six months (Figure 2). The survey invitation was sent to the inventoried organizations via email on June 17, 2019; and the survey remained open until October 31, 2019. Email reminders were sent during the second, third, and final weeks of October. Additional targeted follow-up was conducted in November and December 2019 with individual organizations that had returned partial responses. The survey and all communications were provided in both English and Spanish.

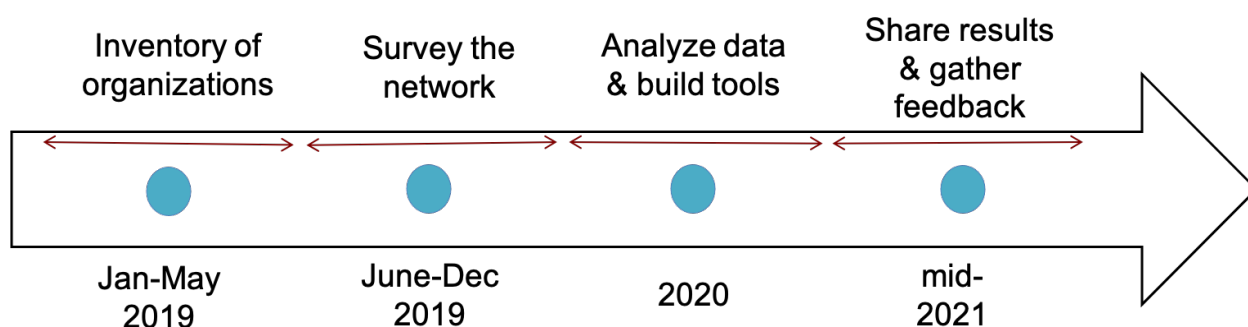


Figure 2. Timeline of the LA River STEW-MAP.

4.3 Data Processing & Analyses

During the organization inventory process, unique numbers were assigned to each respondent to facilitate multiple types of analysis, including statistical, spatial, and social network. These unique identifiers were retained throughout the data cleaning and analysis processes. Survey responses were downloaded into Microsoft Excel and then checked for quality and completion. Those groups that answered only the first few questions were removed. Data processing for STEW-MAP is extensive for each type of analysis: organizational characteristics, geographic turfs, and social networks.

Survey responses for the **organizational characteristics** were prepared for analysis using Microsoft Excel 365. Select all questions were coded into 1/0 (yes/no) prior to subsequent analysis. Several groups left their mission statement and/or year founded blank. When possible, these responses were filled in using the websites provided by the organizations. For questions that required the selection of only one choice, each option was assigned a number. For the question on percentage of budget from different sources, not all responses added up to 100%. This question was cleaned in two steps: 1) the percentage of each selected funding source was calculated; and 2) this percentage was added or subtracted to each of the original percentages for a new total. Responses where an even distribution of missing or extra percentages was not possible (e.g., a total of 98% from five sources) were left unchanged.

Responses to the **geographic turf** question were provided as text responses which were then digitized into polygons using ArcGIS Pro. Geographic boundaries representing stewardship areas were considered turfs. All mapping within the Los Angeles region was performed in the UTM 11N map projection. Turf descriptions were digitized with the help of reference datasets which were downloaded from publicly available government and non-government sources. Deciphering the geographic turf question into a mapped polygon required geographic familiarity of the study area to know the specific location and extent of the turf. Collaboration within the LA STEW-MAP team occurred regularly. Turfs were reviewed and finalized in ArcGIS Pro Version 2.7.3, reprojected into WGS 84, and then uploaded to ArcGIS Online in September 2021 to share as a publicly available stewardship map. Static maps included in this report and presentations were created in ArcGIS Pro Version 2.7.3.

The **social network** questions prompted respondents to write-in the names of other groups that they go to for stewardship-related collaboration, knowledge, or material support. Responses were imported into a separate Excel sheet and formatted so that each relationship was given its own row. Names of identified organizations were standardized and matched with their unique identifier from the initial inventory. Identified organizations that were not on the initial inventory were considered “alters” and given a new, unique number. Entries that were too general (e.g., “all church groups”), described individuals instead of groups, or were unable to be matched to an organization were removed. The cleaned dataset was then uploaded into the software Gephi (version 0.9.2) for network analysis.

5 RESULTS

The survey received 214 initial responses. After removing duplicates, blank responses, and surveys with only the first few questions answered, there were 107 responses (20% response rate) that were complete enough to include in the mapping and/or social networking tools, and there were 96 responses complete enough to conduct statistical analyses. The response rate was consistent with the 20% response to the 2014 LA County STEW-MAP (LMU CUREs n.d.), and within the range produced by previous STEW-MAP efforts. For example, the 2017 New York City STEW-MAP had an 11% response rate (Landau et al. 2019), and the 2014 Philadelphia STEW-MAP had a 29% response rate (Fisher et al. 2015).

5.1 Organizational Characteristics

Characteristics of organizations include stewardship activities engaged in, legal designation, area(s) of focus, site(s) worked on, and funding source(s). These characteristics help describe the diverse set of organizations that are engaged in stewardship of the LA River Watershed. The data also provide insights into the different strategies and approaches used by the organizations to fulfill their missions of stewardship.

This section explored the different characteristics that describe LA River stewardship groups. Most questions were one of two types—select all or select one (Appendix 2). In many instances, a select all question was followed by another question that asked the respondent to select just one option. This format was used to first generate information on all applicable options, and then narrow down to the organization's primary focus.

5.1.1 Function

Stewardship is defined through six functions in the STEW-MAP survey: *advocate*, *conserve*, *educate*, *manage*, *monitor*, and *transform*. *Participate* was also added to capture organizations that are active collaborators and supporters of stewardship activities; but may not conduct traditional on-the-ground stewardship. Responding groups were asked two questions around this definition. For the first question, groups were asked to check all that applied: Does your group/organization do any of the following in the LA River Watershed? and the second question asked: Of these functions, what is your primary stewardship activity? Overall, most groups were engaged in multiple aspects of stewardship work; on average they are engaged in four of the seven functions. Eighty-nine percent of the groups reported that they carried out more than one of the functions, and 14 percent undertook all functions.

Participation (87%) and *education* (82%) were the 2 most common stewardship functions of the respondents (Figure 3), and *advocate* (64%) was also selected by more than half of the groups. In reference to the primary stewardship activity, results showed a fairly even distribution of responses, with no function selected by more than a fourth of the respondents. *Educate* was the most common function, selected by 25% of the groups, and the only one above 20% (Figure 3). Four of the other functions (*advocate*, *participate*, *transform*, *manage*) were selected by over 10% of groups. It is notable that the top three

choices for primary function involve indirect action with the environment. This supports the idea that most stewardship groups may not fit into traditional notions of environmental organizations.

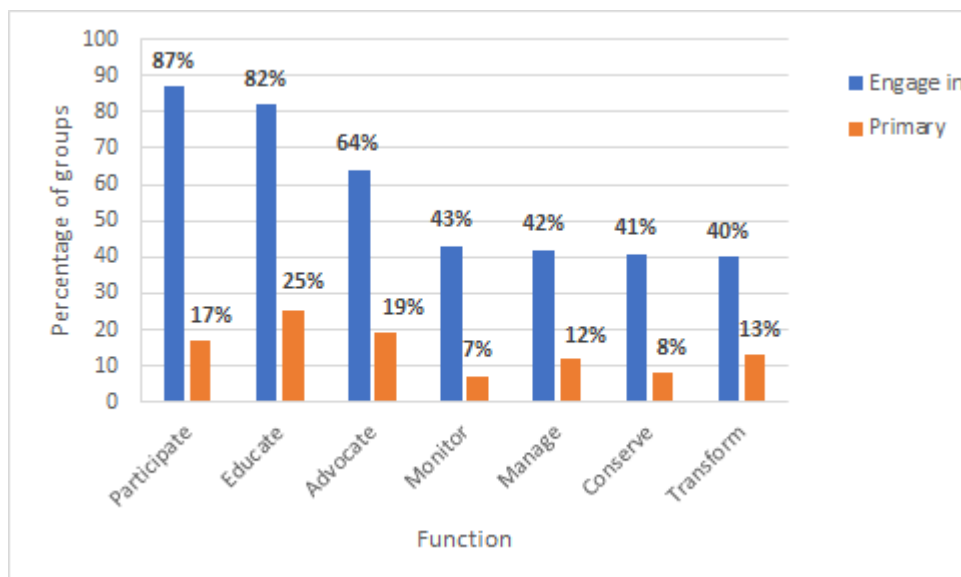


Figure 3. Functions and primary function of LA River Watershed stewardship groups.

5.1.2 Legal Designation

Groups were asked What is your group/organization's legal designation? A clear majority (57%, Figure 4) of groups are designated a *501(c)3 nonprofit* (e.g., Friends of the Los Angeles River, Glassell Park Improvement Association). No other type was above 10%, with *city/local government* (e.g., Resource Conservation District of the Santa Monica Mountains) the second most common at 9%. “Other” types included joint power authority (Watershed Conservation Authority), grassroots organization sponsored by a 501(c)3 (Sacred Places Institute), community group (Industrial District Green), and a 501(c)6 (a nonprofit business association, e.g., the Los Angeles County Business Federation). These results show that stewardship of the LA River is primarily done by nonprofit groups, with assistance from other types.

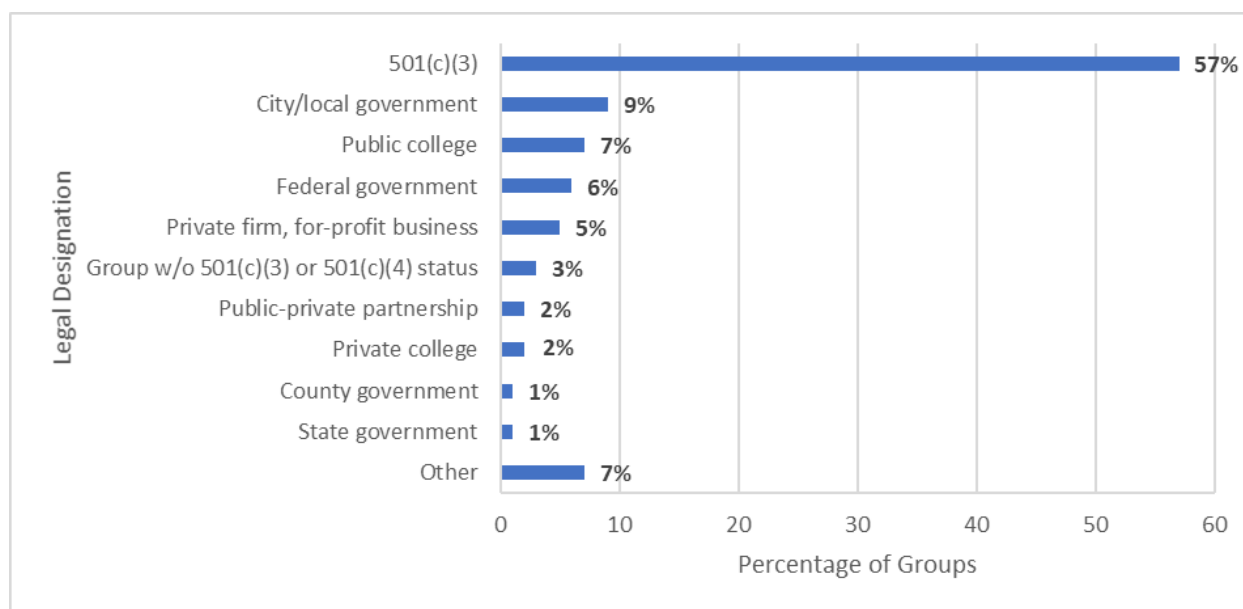


Figure 4. Legal designation of LA River Watershed stewardship groups.

5.1.3 Stewardship Site Type

The next three questions aimed to better understand the types of places where stewardship work is taking place. The first question asked: In the last year, what sites has your group's stewardship work focused on (choose all that apply)? *Parks* and *streams/rivers/canals* were the two most common site types, at 48% each (Figure 5). Four other site types (*stormwater management*, *watershed/sewershed*, *public right-of-way*, and *bike path/greenway/rail trail*) were worked on by at least 30% of the groups. The high frequency of water-based sites is logical given the focus of the study was on the LA River Watershed. "Other" site types included: churches, groundwater, low-income communities, and native habitat. Notably, not all groups worked outside. These groups, such as a university and an aquarium, worked indoors on "sites" such as climate, public education & scientific guidance, and research (e.g., greenway/parks/equity, weather forecasting and modeling).

The follow-up question read: Of the above, which is the primary site type on which you work? The two most common primary site types were the same as above, *parks* (13%) and *streams/rivers/canals* (12%, Figure 6). Nine site types (dog run, green building, flower box, playground, recreation center, reservoir, rooftop, street tree, and waste system) were not the primary site for any group. The third question on this subject was: Who is the owner of the primary property or properties on which your group has done stewardship work within the past year? The two most common owners were almost equally selected: *public and private lands* (22%), and *city/local government* (21%, Figure 7). Given the types of sites worked on, and the location of the LA River Watershed, the ownership is logical. The *federal government* was third (11%), followed by *county government*, *state government*, and *nonprofit* (at 8% each). "Other" owners were not specified.

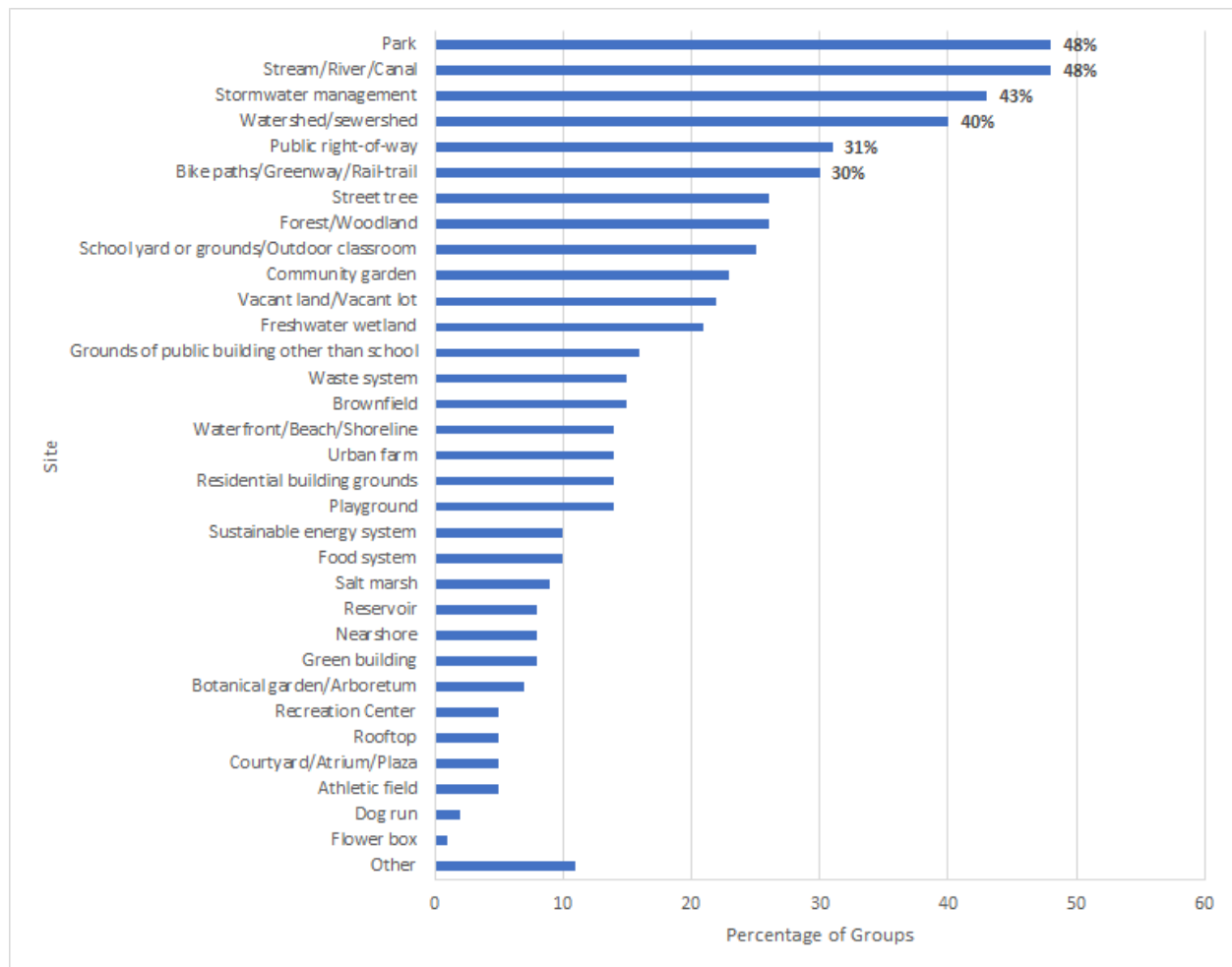


Figure 5. Type of sites worked on by LA River Watershed stewardship groups.

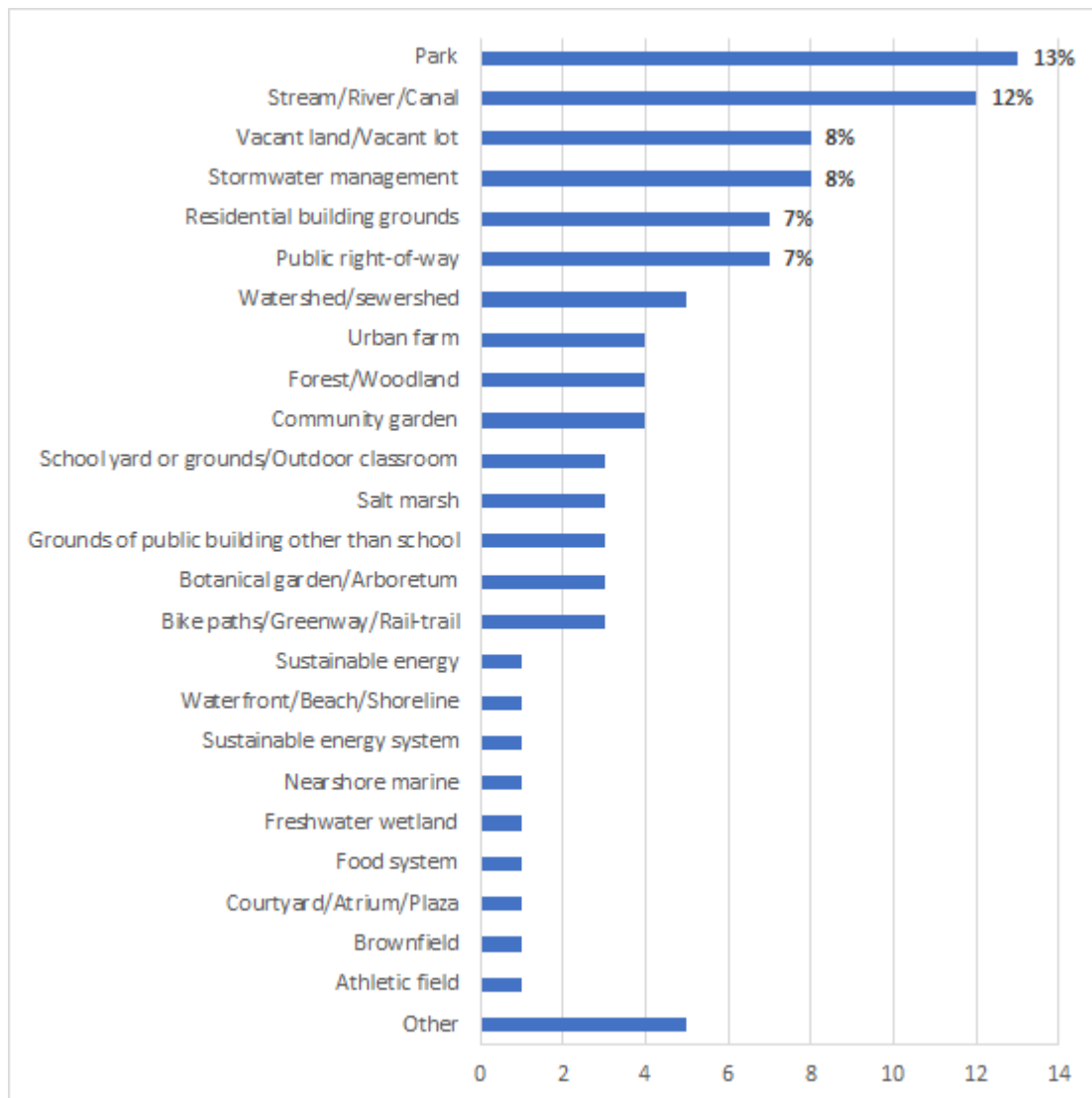


Figure 6. Primary site type worked on by LA River Watershed stewardship groups.

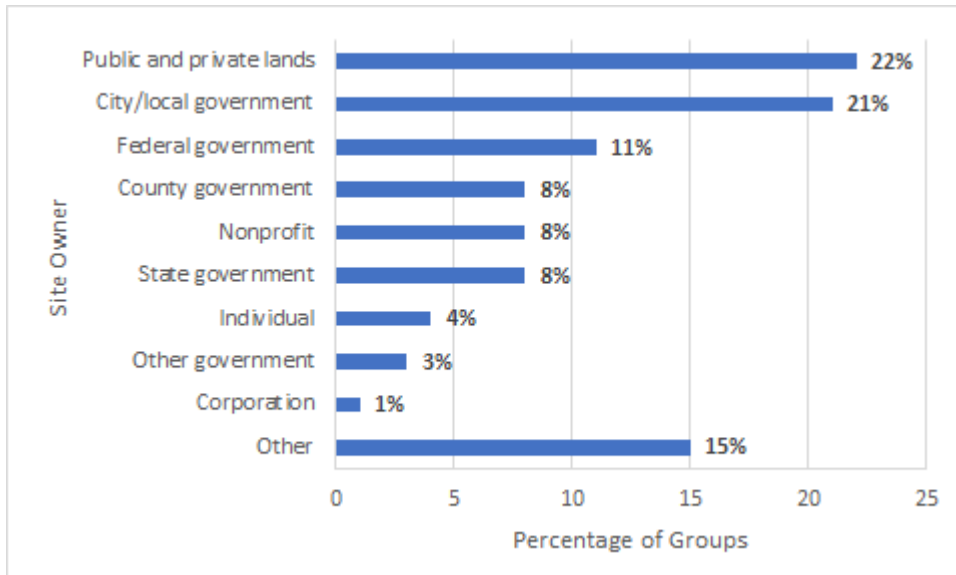


Figure 7. Owner of the primary site worked on by LA River Watershed stewardship groups.

5.1.4 Focus

The next two questions were around the focuses and primary focus of the groups: 1) What does your group work on? (check all that apply); and 2) If you had to choose just one activity, what would you say is your group's primary focus? As could be expected, *the environment* was the most common focus at 77%. Consistent with answers to previous questions, *education* (56%), and *water quality/water conservation* (55%) were the other areas of focus above 50% (Figure 8). *Climate change/climate change adaptation* (49%), *community improvement and capacity building* (47%), and *urban forestry/tree planting* (40%) were all at 40% or above. "Other" areas of focus included: acquisition of open space for watershed protection, applied science/ecology, environmental policy research, green infrastructure/landscape scale conservation, natural resource management for public benefit, and water resources. For the primary focus, the top three were the same: *the environment* (26%), *education* (13%), and *water quality/water conservation* (11%, Figure 9); and the only primary areas of focus above 10%.

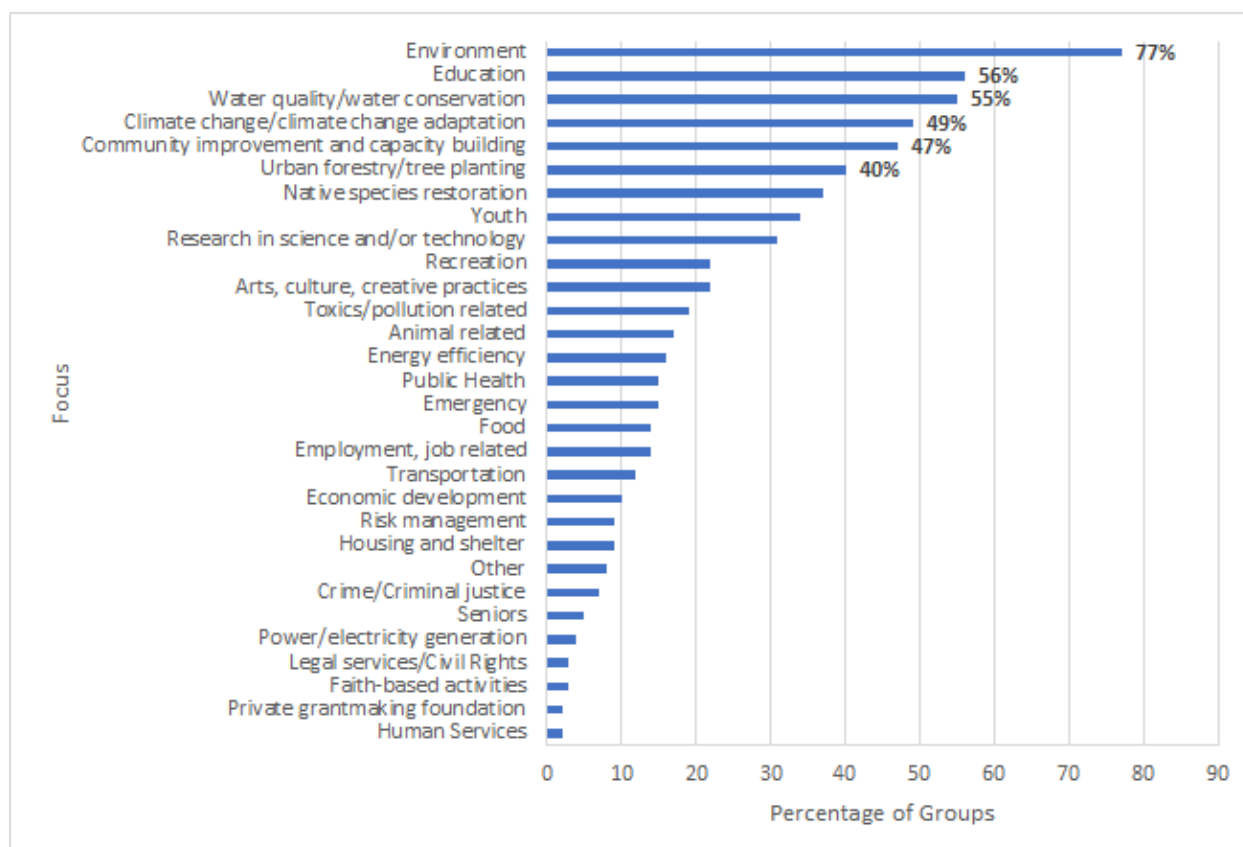


Figure 8. Focus areas of LA River Watershed stewardship groups.

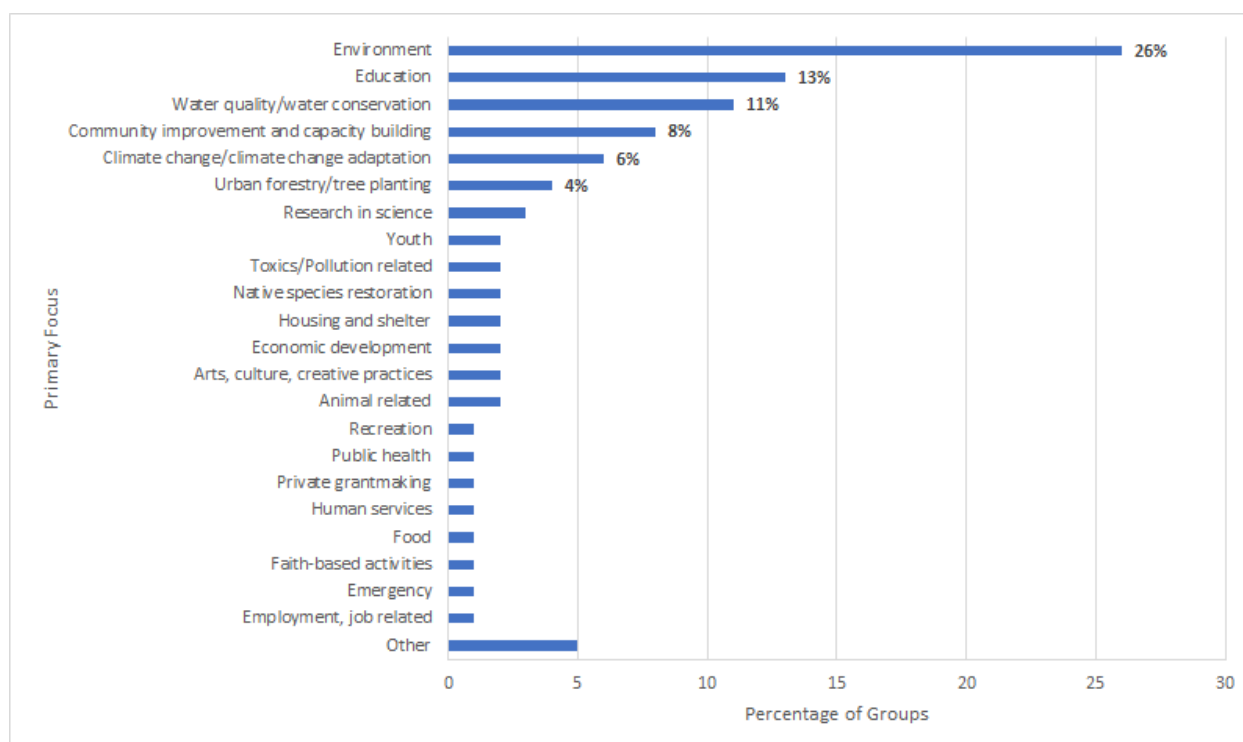


Figure 9. Primary focus areas of LA River Watershed stewardship groups.

Groups were also asked about their mission: Describe the mission of your group. If you have a formal mission statement, please use that, otherwise use your own words to describe your group's goals. A word cloud was then created to show the most common words used in the mission statements, and their relative frequencies (Figure 10). Community was an important part of the mission for many groups: *community* was the word most frequently used (22 times); followed by *communities* (15 times). Reflecting the location of the stewardship work, *Angeles* was also often mentioned (14 times). *Education* (13), *people* (13), *natural* (12), *protect* (12), and *water* (11) all appeared in more than 10 mission statements. Finally, *urban* and *life* each appeared in 10 mission statements.



Groups were also asked about the amount of stewardship work they performed: Considering all the programs, activities, and services your group works on, what percentage of your group's effort has been for environmental stewardship during the past year? Stewardship was a large component of the work for most groups. Thirty-nine percent, the largest percentage, reported that 80-100% of their group's effort was on environmental stewardship (Figure 11). Another 13% of groups reported stewardship effort as 60-79% of their work. However, 37% of the groups spent *less than 40%* of their effort on environmental stewardship, showing that for many groups this was only part of their purpose.

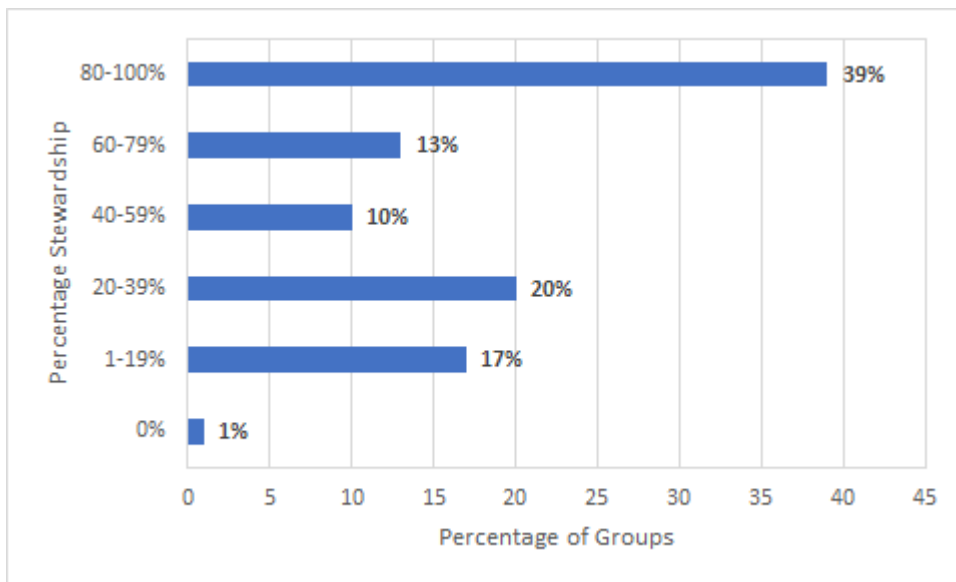


Figure 11. Percentage stewardship work of LA River Watershed stewardship groups.

5.1.6 Age of Organizations

This question asked: What year was your group/organization founded? The largest percentages of groups were founded in the last twenty years: 46% between 1900 and 1999, and 44% in the 2000s (Figure 12). Only five percent of the groups were over 100 years old (founded in the 1800s). Overall, the last three decades show a large increase in the number of stewardship groups founded; suggesting a greater need for and interest in stewardship work on the LA River Watershed, as well as the increase in environmental and social justice work.

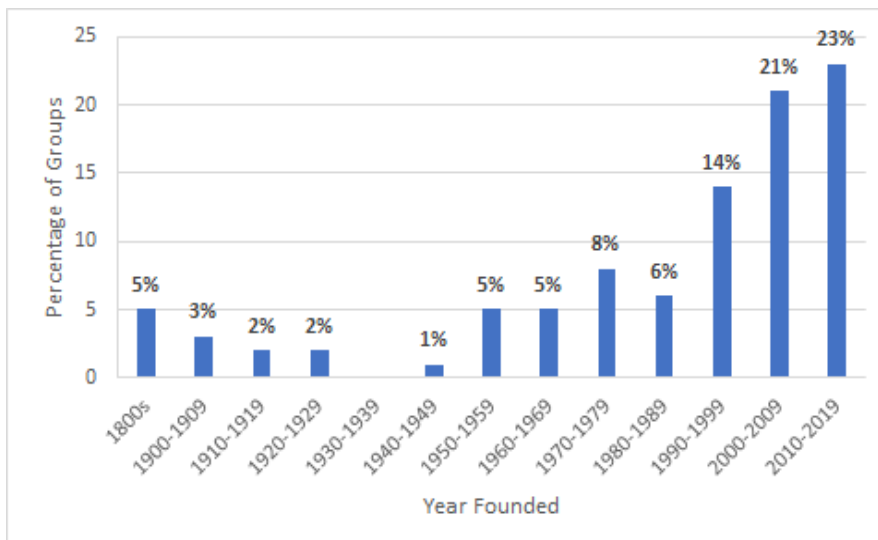


Figure 12. Year LA River Watershed stewardship groups were founded.

5.1.7 Staffing

As one aspect of their professionalization, responding groups were asked about their staffing: Approximately how many of the following does your group/organization have? There was a wide range in the number of full-time and part-time staff, and members of each organization (Table 1), reflecting the diverse types of groups working in the LA River Watershed. Membership was particularly variable: one organization (National Parks Conservation Organization) had 1 million members; although this was an outlier as the second highest membership was 100,000. To get a better sense of the average this organization was removed, and the calculation repeated, resulting in a revised mean of 8,475. The number of volunteers was similarly variable. However, not all organizations had salaried full-time or part-time staff, members, or regular volunteers; instead, they depended on volunteers who come out occasionally and/or for special events. Therefore, respondents were also asked: For those volunteers who come out occasionally, can you estimate the total number of hours they contribute per month? The hours from occasional volunteers were estimated at 1-1,500 hours/month, with a mean of 152 hours/month (or the equivalent of almost a month of full-time work).

Table 1. Number of staff, members, and volunteers of LA River Watershed stewardship groups.

	FULL-TIME STAFF	PART-TIME STAFF	MEMBERS	VOLUNTEERS
Median	9	3	38	25
Mean	125	16	23,429	358
Standard Deviation	573	56	160,000	1720
Minimum	0	0	0	0
Maximum	4000	400	1,000,000	10,000

5.1.8 Services Provided

This section asked organizations about the different services undertaken: What types of services does your group provide? *Educational curricula/training* was the most common service provided; by 68% of the organizations (Figure 13). This was reflective of education as the primary function for the largest number of groups. *Community organizing* was the second most common service (46%), reinforcing this aspect of the groups' stewardship work. Rounding out the top three was *data/information/scientific research* (44%), which was most common to colleges, universities and other research institutions.

Eighteen percent of groups responded “other”, which included: Hands-on activities, informal science education, scholarships, public tour of the river, student events, public programming/habitat restoration projects and collaborations, park acquisition/development/restoration/operations and maintenance/fire and ranger services, environmental consulting/habitat restoration/water & wildlife monitoring, faith-based conservation activities, advocacy, park development, innovation and problem solving, meeting facilitation, community services, project management & planning support, human services/advocacy).

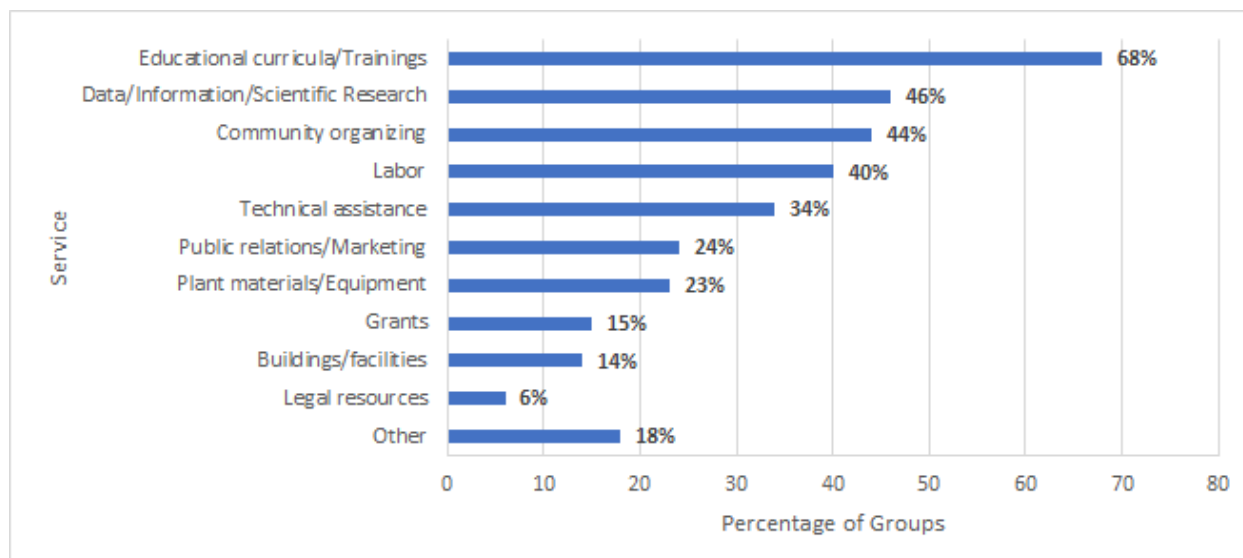


Figure 13. Services provided by LA River Watershed stewardship groups.

5.1.9 Organizational Budgets

Groups were asked about their budget as another aspect of their professionalization: What is your group’s estimated annual budget for the current year? Forty-nine percent of groups preferred not to provide their budget, and another five percent reported they had no budget. For the 47 percent that provided an amount, budgets covered a very large range: \$9,000 - \$80 million, with a mean of \$5.2 million. Only one group had a budget of less than \$10,000, but 19 groups (40%) had budgets over \$1 million. This result shows that much of the stewardship work is performed by well-funded groups, such as chapters of national organizations, and universities.

A follow-up question was then asked to gain a better understanding of where the groups received funding from: What proportion of your budget comes from the following sources? Seventy percent of organizations received some funding from *the government* (Figure 14), making it the most common source. *Foundations* (57%) and *individual giving* (44%) were also common sources of funding.

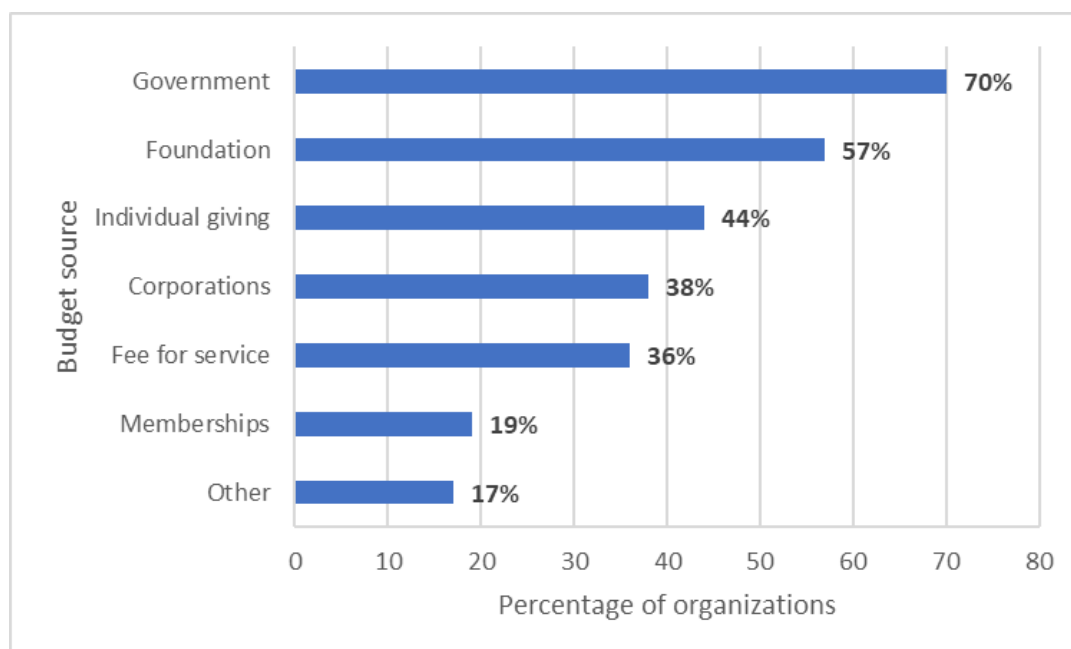


Figure 14. Percentage of LA River Watershed stewardship groups receiving funding from different sources.

5.1.10 Plan Influence

The final questions in the organizational characteristics section concerned the influence of eight plans and programs relevant to the LA River Watershed: Please tell us how influential the following plans and programs have been on your group's work. The influence of a plan was rated on a scale of 0 - 5 (not at all influential - highly influential), and 6 (N/A). Figure 15 displays the mean influence of each plan, with "N/A" responses excluded. None of the means were significantly different than 3 (= neutral), nor were any means significantly different between plans. This result is somewhat surprising, as many of these plans are quite recent and well-known to stewardship groups. The lack of influence of any one particular plan on a majority of groups may be attributed to the size of the LA River Watershed, and that it covers many jurisdictions.

Groups were also provided the opportunity to write-in additional plans or programs that were influential or highly influential in their work. A total of 40 plans and programs were written in; but two or more respondents indicated the following as influential: California Water Action Plan, City of LA Biodiversity Plan, Common Ground: From the Mountains to the Sea, LA County Sustainability Plan, Lower LA River Revitalization, Safe Clean Water Program, and State Water Board LA River Flows Study.

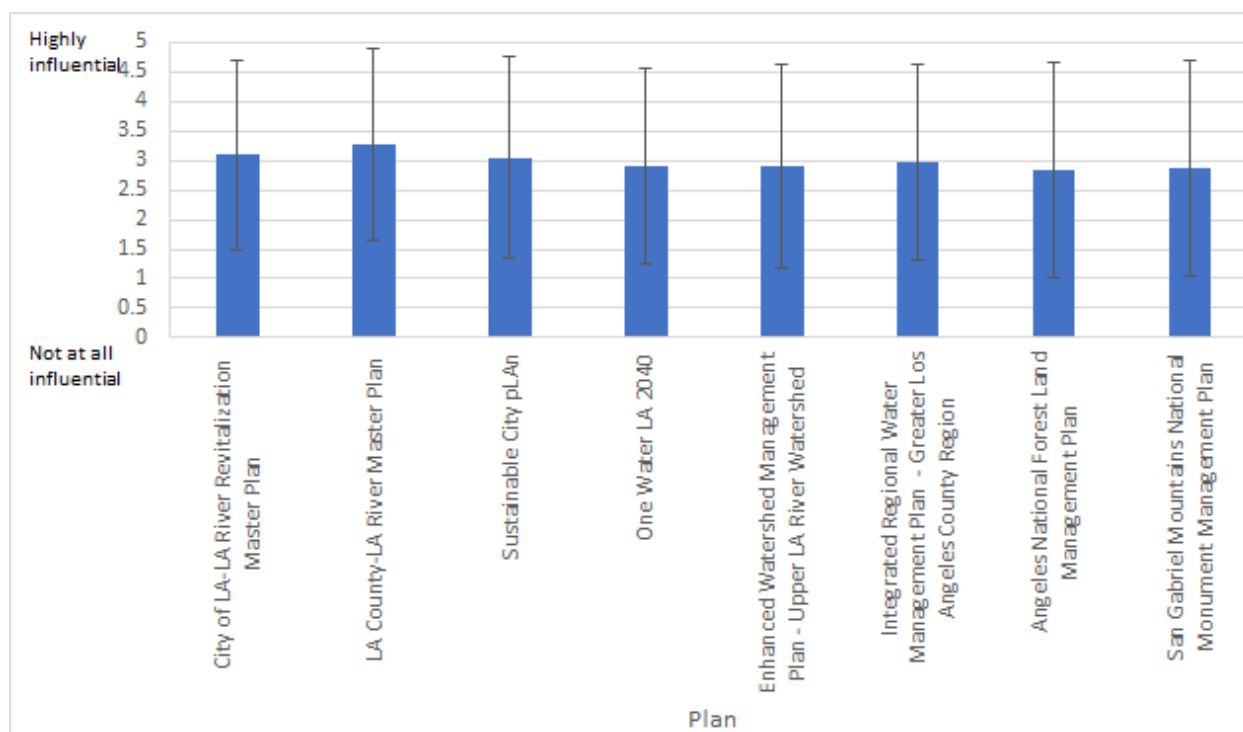


Figure 15. Mean influence of eight plans on LA River Watershed stewardship groups. Bars indicate standard deviations.

5.2 Stewardship Geography

5.2.1 Geographic Information Analysis

The survey asked groups to identify two separate geographic aspects of their work: the location of their offices, and the spatial extent of their stewardship activities. Of the responding organizations, 104 provided office location information that was geocoded and mapped (Figure 16). Notably, many of the office locations are outside of the LA River Watershed boundaries.

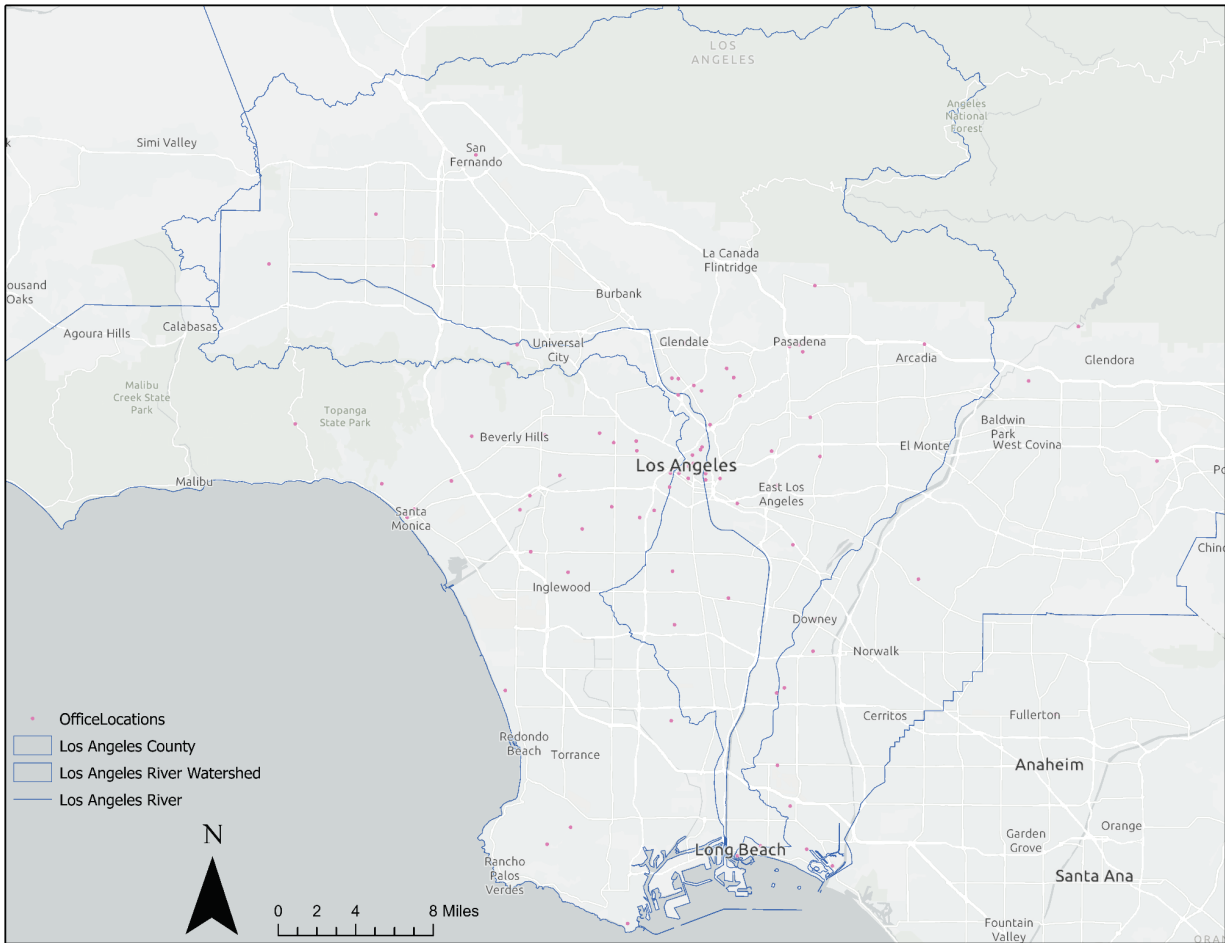


Figure 16. The distribution of the office locations of organizational respondents to the LA River STEW-MAP survey.

The turf of an organization is the area in which they carry out their stewardship work. This can be anywhere from a city park to a national forest of thousands of acres. In some cases, the group does not work on a physical site, but conducts stewardship work indoors in offices or laboratories. There were 87 respondents that provided written details of the geographic boundaries of their stewardship activities, which were translated into spatial turfs.

This part of the survey asked groups: Please describe in detail the boundaries of where your group has done stewardship work within the past year (you can list multiple locations). Turfs were mapped according to the methods described earlier in this report (Section 3.3). For clarity in the map, groups' spatial turfs were designated as small, medium, or large (Figure 17). As shown in Figure 18, the density of stewardship turfs was highest within the LA River Watershed boundaries, though many groups worked countywide and in the Southern California region, and a few worked nationwide. Within the LA River Watershed, the highest concentration of stewardship was found around the LA River in downtown Los Angeles. Other areas of high stewardship concentration were in the northeastern area of the watershed, overlapping with the Angeles National Forest.

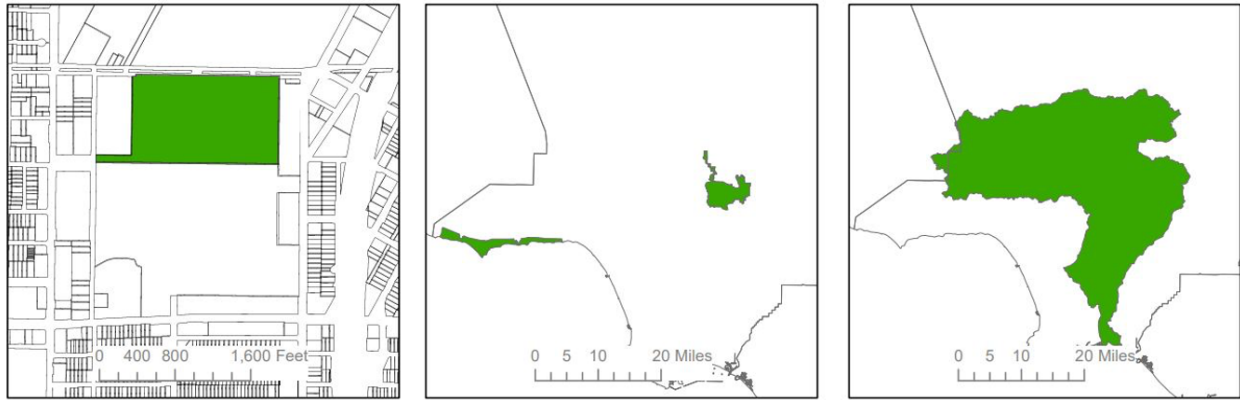


Figure 17. Examples of a small (left, California Science Center), medium (center, Greywater Action), and large (right, the Urban Waters Federal Partnership) stewardship turf for LA River STEW-MAP.

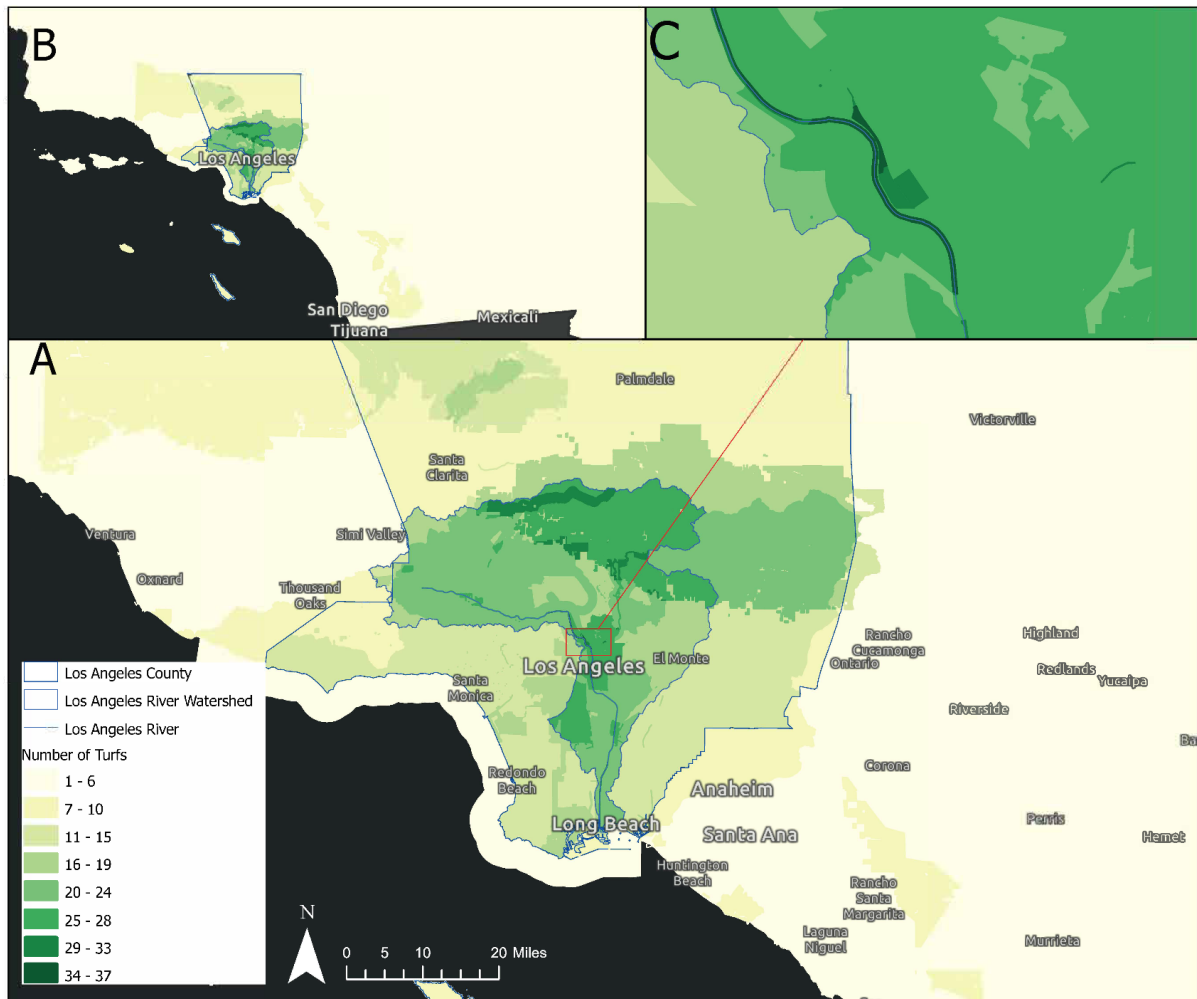


Figure 18. Distribution of stewardship turfs described by LA River Watershed stewardship organizations: (A) the extent of stewardship in the watershed and LA County, (B) the density of turfs found throughout Southern California, (C) the segment of the LA River and the area known as the “Bowtie Parcel” that had the highest concentrations of stewardship.

5.2.2 Online Stewardship Turf Map

These data were used to develop a publicly available, interactive map using ESRI's ArcGIS Online¹. Users can interact with the data in a number of ways. The spatial turfs are associated with an attribute table containing all survey data. Thus, users can search by location (Figure 19) or filter by a particular attribute. For example, a user interested in developing environmental education programs could search for all organizations who chose “Educate” as one of their stewardship activities (Figure 20).

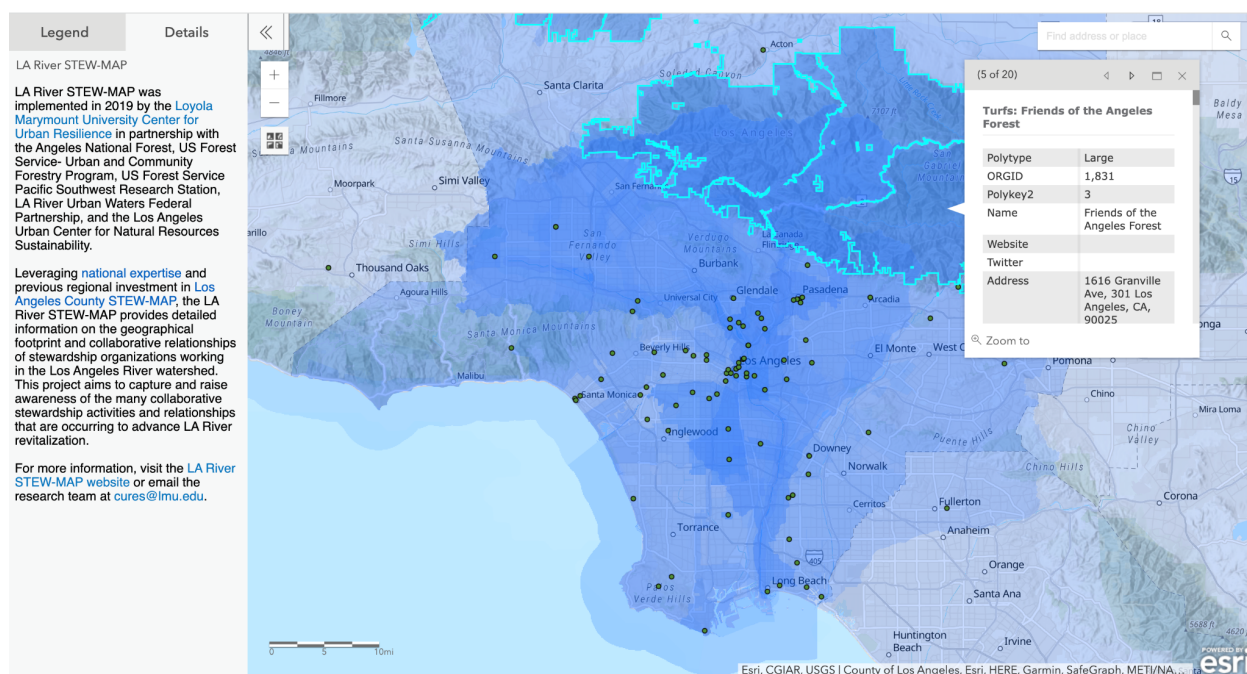


Figure 19. Clicking on a specific geography allows users to view all of the groups that indicated working at that location.

¹ <https://www.arcgis.com/home/webmap/viewer.html?webmap=0b112c5e86974b18bf3be3ef30dc06de>

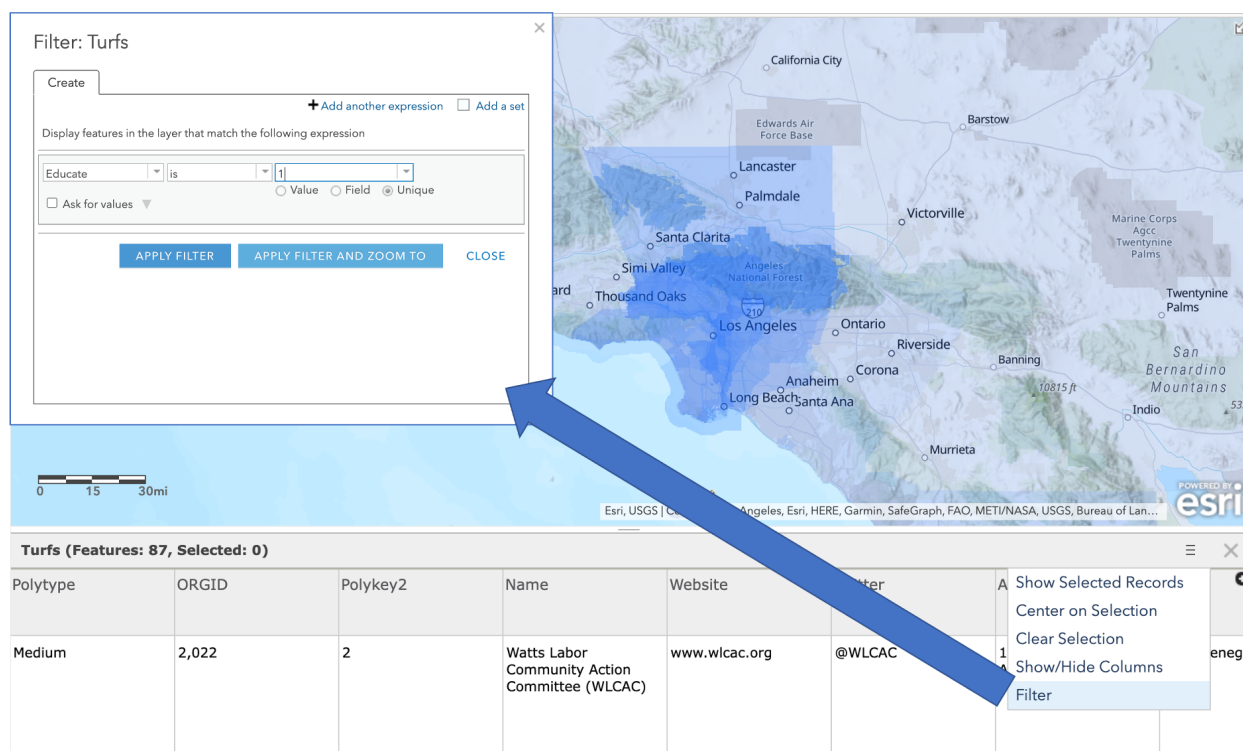


Figure 20. Illustration of how LA River STEW-MAP users can filter turfs by the organizational characteristics, such as filtering for groups that chose “Educate” as a stewardship activity.

The stewardship turf data are also available as a layer that can be downloaded and used by organizations or in future research to compare stewardship to other spatial variables. An example of this is shown in Figure 21, in which stewardship density is compared against CalEnviroScreen indicators (version 3.0, 2016). CalEnviroScreen is a mapping tool that combines environmental, health, and socioeconomic data to produce a score describing pollution burden across California communities, with higher scores indicating increased pollution and/or populations with higher sensitivity to pollution (State of California Office of Environmental Health Hazard Assessment, 2021). By looking at individual Census tracts on the map in Figure 21, areas with high pollution levels of pollution/high sensitivity and low stewardship can be identified and potentially prioritized as places to focus future stewardship activities. This type of analysis can help guide municipalities, potential funders, and others to consider where to invest resources when considering issues of equity and environmental justice.

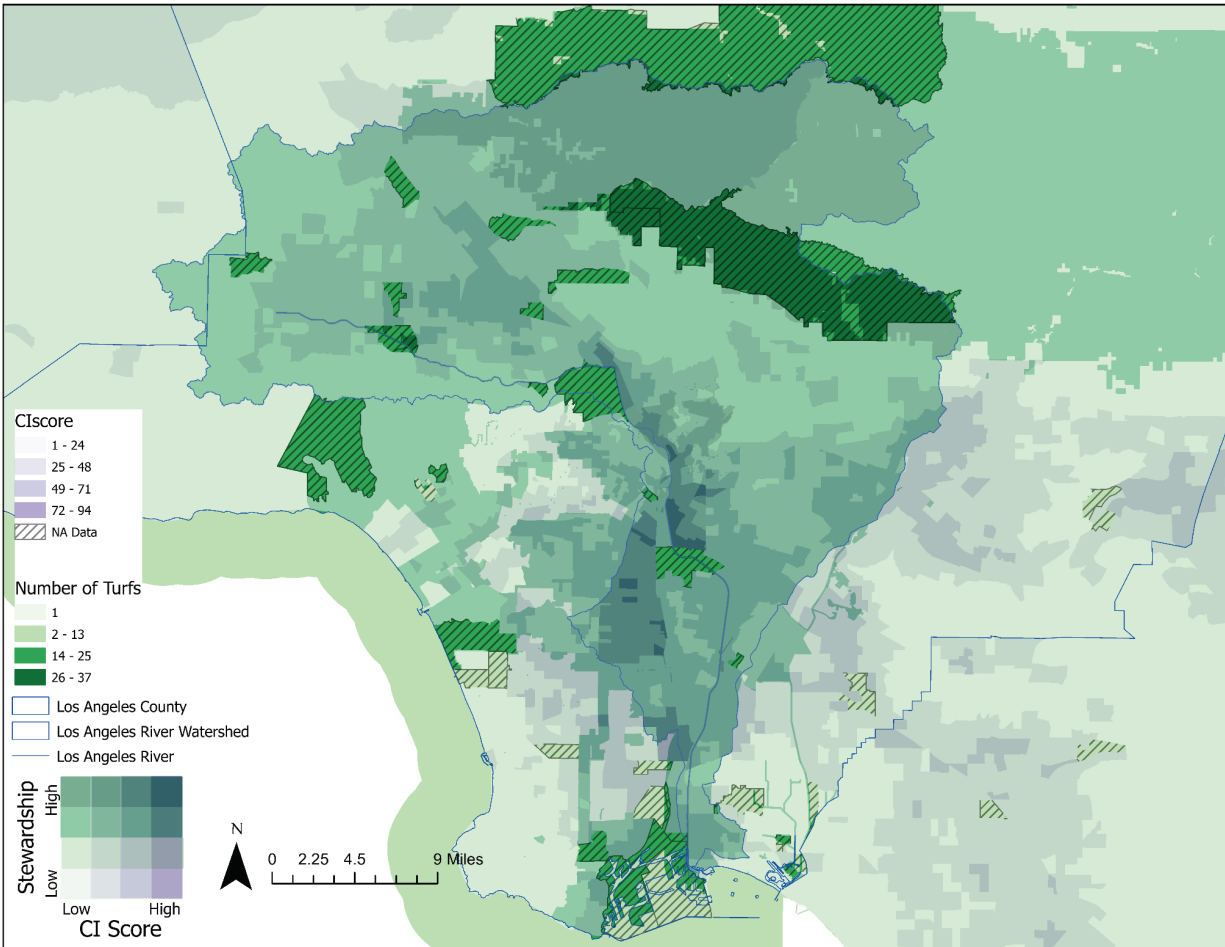


Figure 21. Map of a bivariate analysis of the number of stewardship turfs compared to the CalEnviroScreen indicators (CI).

5.3 Stewardship Networks

The third component of the survey was the social networks of the responding organizations. A social network is made up of a set of individuals (i.e., the organizations) along with the connections (or *ties*) between them (Otte and Rousseau 2002), and “focuses on the characteristics of ties rather than the characteristics of the individual members” (Wetherell et al. 1994, p. 645). Examining the networks between stewardship organizations can show how organizations are or are not connected; and highlight links between groups for collaboration, knowledge/data/expertise, and resources.

For this section of the survey, organizations were asked: List the groups that your group collaborates with and indicate how you collaborate. Specifically, they were to list the names of organizations and then indicate one or more of the associated options, We go to these groups for:

- Regular collaboration on environmental projects or programs
- Knowledge, data, or expertise related to environmental issues
- Funding, materials, work share, or work trade for environmental projects or programs

Seventy-two respondents listed other groups whom they go to for collaboration, knowledge, and/or funding related to environmental stewardship. In total, respondents listed 1215 connections with other groups. Many of the responses listed groups already found on the initial inventory; however, there were 147 new organizations identified. Thus, the overall LA River stewardship population was increased to 682 organizations: the 535 organizations in the initial inventory plus the 147 that were identified by respondents. The cleaned data were then utilized for two purposes: conducting social network analyses and developing an online tool.

5.3.1 Social Network Analysis

As shown in **Table 2**, LA River STEW-MAP survey responses to “List the groups that your group collaborates with and indicate how you collaborate”. Table 2, a subset of the survey respondents identified other groups that they go to for various collaborative activities related to environmental stewardship. The largest number of respondents (63) identified 478 regular collaborations on environmental projects or programs. Fifty-eight respondents indicated 463 connections with other groups who they go to for knowledge, data, or expertise related to environmental issues, and 53 respondents identified 285 relationships in which they go to other groups for funding, materials, work share, or work trade for environmental projects or programs.

Table 2. LA River STEW-MAP survey responses to “List the groups that your group collaborates with and indicate how you collaborate”.

Relationship Type	Respondents	# Ties Reported
Regular collaboration	63	478
Knowledge, data, or expertise	58	463
Funding, materials, work share, or work trade	53	285

Examining how the ties are distributed allows for a better understanding of the network. Groups that have a relatively large number of ties can be considered the “hubs” of activity, information, or funding, depending on the question. This can be calculated using a metric called degree centrality, which simply quantifies the number of ties for each node (Prell 2012). Specific to this report, in-degree centrality was calculated to assess the number of times a group was named by another group as a collaborator. Rather than relying on self-reporting, in-degree centrality measures how popular a group is based on the responses of others. The results of in-degree centrality analysis follow: Figures 22-24 display a visual of the collaboration, knowledge, and funding networks; and tables 3-5 display lists of organizations that were most frequently (in-degree ties ≥ 4) identified by survey respondents as groups who they go to for collaboration, knowledge, and funding related to environmental projects and programs. The legal designation of each group is also listed; for organizations who did not respond to the survey, their legal designation was identified through an internet search.

Figure 22 shows a visualization of the in-degree network related to *regular collaboration* among LA River stewardship groups, and Table 3 shows the list of 24 organizations most commonly identified as regular collaborators. As shown, the top three collaborators were all 501(c)3 groups (Friends of the Los Angeles River, Los Angeles Conservation Corps, and TreePeople), followed by a federal government (the National Park Service) and state government (California Department of Parks and Recreation) organization.

Regular collaboration was the most frequently identified type of relationship overall; and was also the type of relationship with the highest concentration of ties. Eleven groups identified Friends of the Los Angeles River as a group they go to for regular collaboration, Los Angeles Conservation Corps and TreePeople were named by 10 groups each, and the National Parks Service was identified by 9 groups. These exceed the number of ties held by groups in the knowledge network (maximum number of ties = 8) and funding network (maximum number of ties = 7).

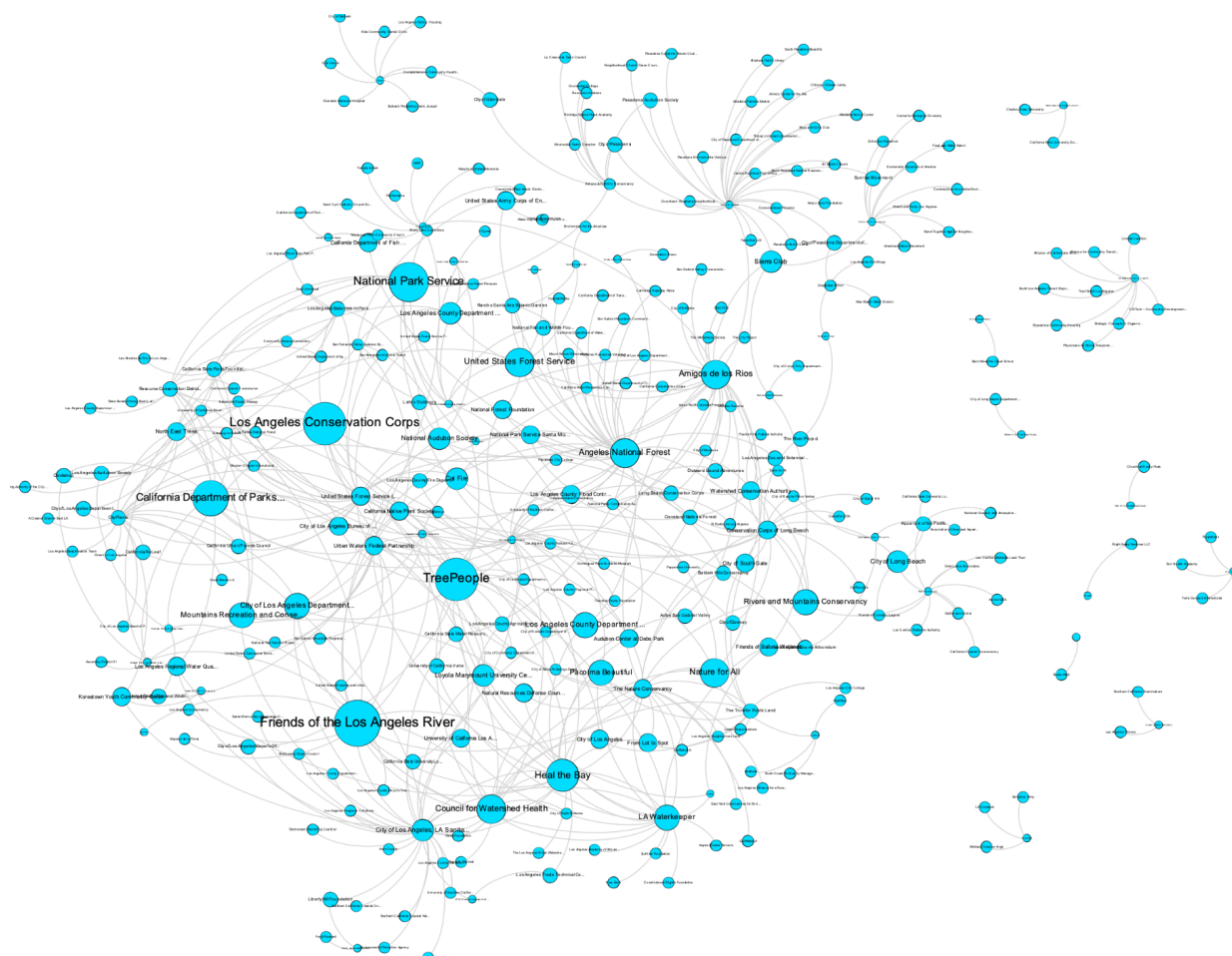


Figure 22. Illustration of the collaboration network of LA River STEW-MAP survey respondents. Node size is relative to the number of in-degree ties for each group.

Table 3. LA River Watershed stewardship organizations most frequently identified by STEW-MAP survey respondents as regular collaborators on environmental projects. **Bold** represents groups that were identified by survey respondents as a go-to organization for all three types of relationships, and *italics* represents groups that were identified as a go-to for two types of relationships.

Organization name	Legal designation	In-degree collaboration ties
Friends of the Los Angeles River	501(c)(3) nonprofit	11
Los Angeles Conservation Corps	501(c)(3) nonprofit	10
TreePeople	501(c)(3) nonprofit	10
National Park Service	Federal government	9
California Department of Parks and Recreation	State government	8
<i>Heal the Bay</i>	<i>501(c)(3) nonprofit</i>	7
<i>Amigos de los Rios</i>	<i>501(c)(3) nonprofit</i>	6
<i>Angeles National Forest</i>	<i>Federal government</i>	6
Council for Watershed Health	501(c)(3) nonprofit	6
<i>Nature for All</i>	<i>501(c)(3) nonprofit</i>	6
United States Forest Service	Federal government	6
<i>City of Los Angeles Department of Water and Power</i>	<i>City/Local government</i>	5
<i>LA Waterkeeper</i>	<i>501(c)(3) nonprofit</i>	5
<i>Los Angeles County Department of Public Works</i>	<i>County government</i>	5
<i>Mountains Recreation and Conservation Authority</i>	<i>Joint Powers Authority*</i>	5
<i>Pacoima Beautiful</i>	<i>501(c)(3) nonprofit</i>	5
Rivers and Mountains Conservancy	State government	5
City of Long Beach	City/Local government	4
City of Los Angeles, LA Sanitation & Environment	City/Local government	4
Los Angeles County Department of Parks and Recreation	County government	4
<i>Loyola Marymount University Center for Urban Resilience</i>	<i>Private college or university</i>	4
National Audubon Society	501(c)(3) nonprofit	4
California Department of Forestry & Fire Protection (Cal Fire)	State government	4
Sierra Club	501(c)(3) nonprofit	4

* A Joint Powers Authority is a legally created entity that allows two or more public agencies to jointly exercise common powers.

Figure 23 shows a visualization of the in-degree network related to *the flow of knowledge* among LA River stewardship groups, and Table 4 shows the list of 22

organizations that were most identified by survey respondents as providing knowledge, data, or expertise related to environmental issues (in-degree ties ≥ 4). Three of the top five (TreePeople, National Park Service, California Department of Parks and Recreation) providers of knowledge were the same as the top five groups for collaboration, representing a 501(c)3, federal government, and state government. Heal the Bay (a 501(c)3 group) and Los Angeles County Department of Public Works (county government) TreePeople and Heal the Bay were the other two groups in the top five for providing knowledge.

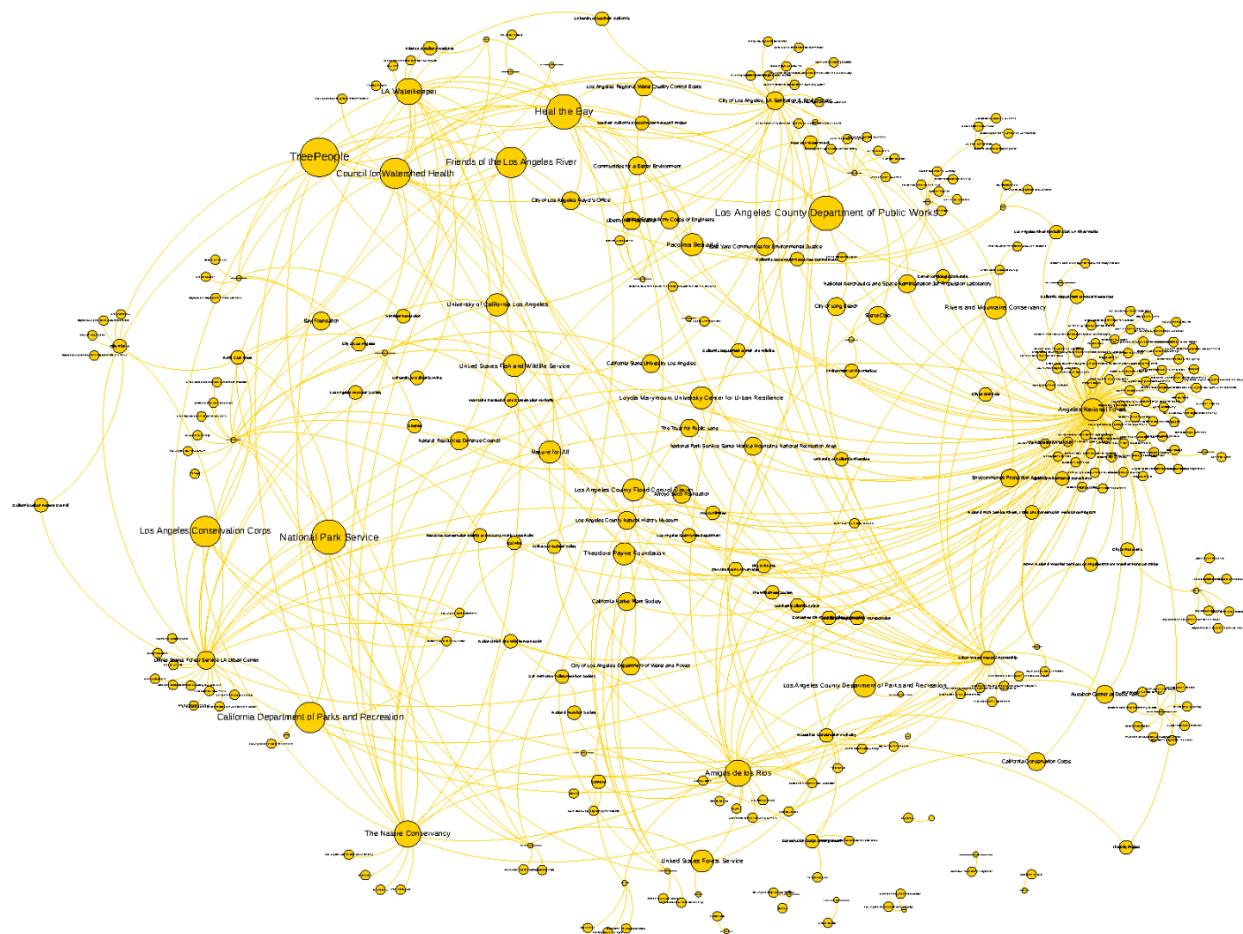


Figure 23. Illustration of the knowledge network of LA River STEW-MAP survey respondents. Node size is relative to the number of in-degree ties for each group.

Table 4. LA River stewardship organizations most identified by STEW-MAP survey respondents as providing knowledge, data, or expertise related to environmental issues. **Bold** represents groups that were identified by survey respondents as a go-to organization for all three types of relationships, and *italics* represents groups that were identified as a go-to for two types of relationships.

Organization name	Legal designation	In-degree knowledge ties
TreePeople	501(c)(3) nonprofit	8
<i>Heal the Bay</i>	<i>501(c)(3) nonprofit</i>	7
<i>Los Angeles County Department of Public Works</i>	<i>County government</i>	7
National Park Service	Federal government	7
California Department of Parks and Recreation	State government	6
Council for Watershed Health	501(c)(3) nonprofit	6
Friends of the Los Angeles River	501(c)(3) nonprofit	6
Los Angeles Conservation Corps	501(c)(3) nonprofit	6
<i>Amigos de los Rios</i>	<i>501(c)(3) nonprofit</i>	5
<i>LA Waterkeeper</i>	<i>501(c)(3) nonprofit</i>	5
<i>The Nature Conservancy</i>	<i>501(c)(3) nonprofit</i>	5
<i>Angeles National Forest</i>	<i>Federal government</i>	4
Los Angeles County Department of Parks and Recreation	County government	4
Los Angeles County Flood Control District	County government	4
<i>Loyola Marymount University Center for Urban Resilience</i>	<i>Private college or university</i>	4
<i>Nature for All</i>	<i>501(c)(3) nonprofit</i>	4
<i>Pacoima Beautiful</i>	<i>501(c)(3) nonprofit</i>	4
Rivers and Mountains Conservancy	State government	4
Theodore Payne Foundation	501(c)(3) nonprofit	4
United States Fish and Wildlife Service	Federal government	4
United States Forest Service	Federal government	4
University of California Los Angeles	Public college or university	4

Figure 24 shows a visualization of the in-degree network related to the flow of funding and resources among LA River stewardship groups, and Table 5 shows the list of 12 organizations that were most frequently identified by survey respondents as providing funding, materials, work share, or work trade for environmental projects or programs (in-degree ties ≥ 4). As shown, the top three groups indicated as providing funding or other resources were public parks agencies at varying levels of government: Los Angeles County Department of Parks and Recreation, California Department of Parks and Recreation, and

the National Park Service. This is aligned with the 70% of organizations that identified the government as a funding source (Section 4.1.9; Figure 14). Additionally, four of the top five were also in the top five for one or both of the other relationship types, but the National Fish and Wildlife Foundation does not appear as a top organization elsewhere.

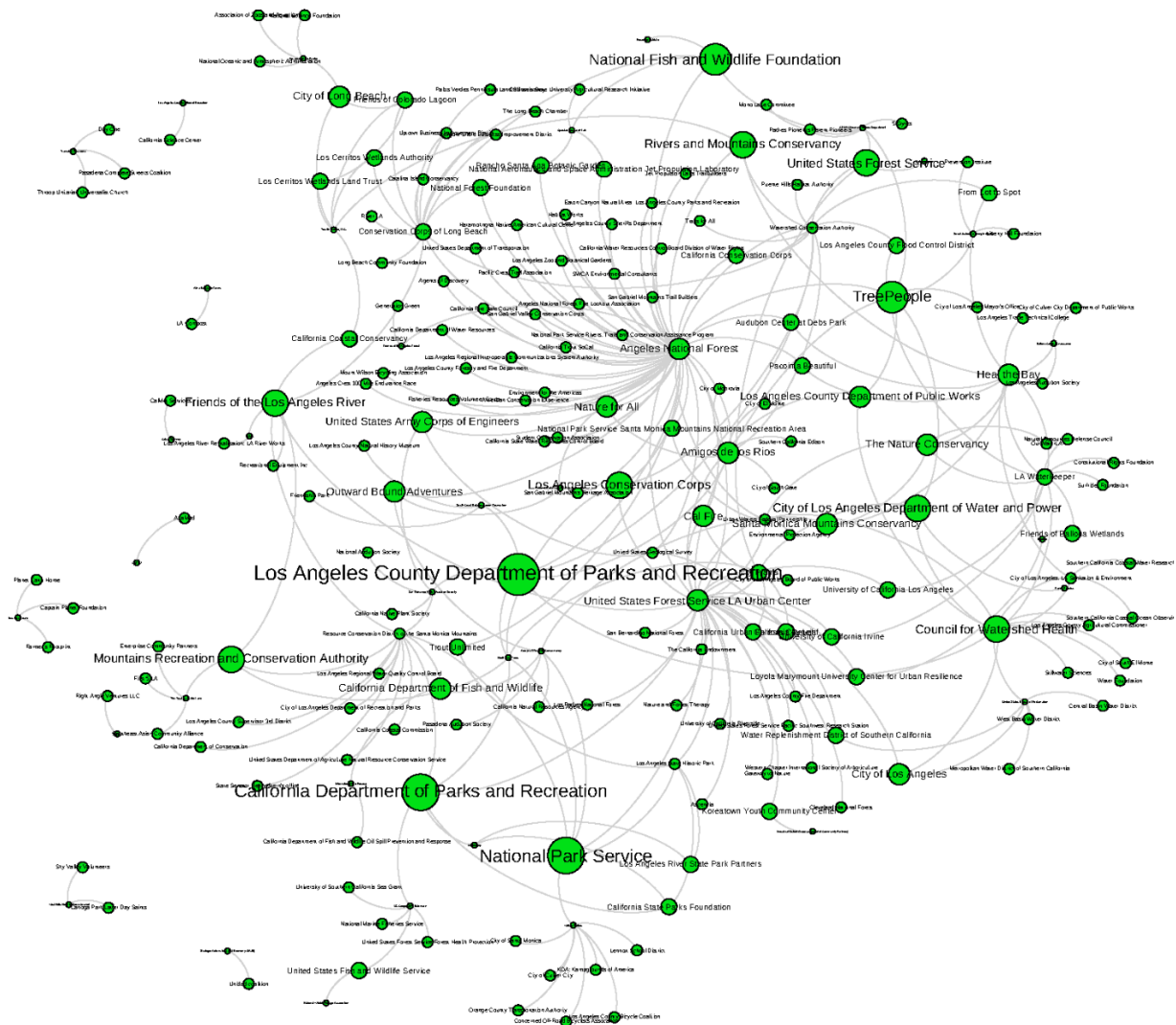


Figure 24. Illustration of the funding network of LA River STEW-MAP survey respondents. Node size is relative to the number of in-degree ties for each group.

Table 5. LA River stewardship organizations most identified by STEW-MAP survey respondents as providing funding, materials, work share, or work trade for environmental projects or programs. **Bold** represents groups that were identified by survey respondents as a go-to organization for all three types of relationships, and *italics* represents groups that were identified as a go-to for two types of relationships.

Organization name	Legal designation	In-degree funding ties
Los Angeles County Department of Parks and Recreation	County government	7
California Department of Parks and Recreation	State government	6
National Park Service	Federal government	6
TreePeople	501(c)(3) nonprofit	5
National Fish and Wildlife Foundation	501(c)(3) nonprofit	5
Council for Watershed Health	501(c)(3) nonprofit	4
Friends of the Los Angeles River	501(c)(3) nonprofit	4
Los Angeles Conservation Corps	501(c)(3) nonprofit	4
<i>City of Los Angeles Department of Water and Power</i>	City/Local government	4
<i>Mountains Recreation and Conservation Authority</i>	Joint Powers Authority*	4
Rivers and Mountains Conservancy	State government	4
United States Forest Service	Federal government	4

* A Joint Powers Authority is a legally created entity that allows two or more public agencies to jointly exercise common powers.

In total, 30 groups had four or more in-degree ties in at least one relationship type (i.e., collaboration, knowledge, and/or funding). These groups can be viewed as hubs of activity in the network; comprised of 14 501(c)3 groups (47%), 13 government agencies from the local to the federal level (43%), two universities, and a Joint Powers Authority. Figure 25 shows the subset of “hub organizations” that had four or more in-degree ties in multiple relationship types.

This section provides one type of analysis that can be performed with network data, but there are many other ways to investigate stewardship networks. For example, more in-depth social network analyses can focus on examining the networks by specific characteristics (e.g. organizational sector, stewardship site type, focus area of organization, etc.). Researchers and others interested in further exploring the network data can also utilize the online network mapping tool.

≥ 4 in-degree ties in 3 relationship types	CA Dept of Parks & Recreation Council for Watershed Health Friends of the LA River LA Conservation Corps LA County Dept of Parks & Recreation National Park Service Rivers & Mountains Conservancy TreePeople US Forest Service
≥ 4 in-degree ties in 2 relationship types	Amigos de los Rios Angeles National Forest City of LA Dept of Water & Power Heal the Bay LA Waterkeeper LA County Dept of Public Works LMU Center for Urban Resilience Mountains Recreation & Conservation Authority Nature for All Pacoima Beautiful
≥ 4 in-degree ties in 1 relationship type	CA Dept of Forestry & Fire Protection (Cal Fire) City of Long Beach City of LA, LA Sanitation & Environment LA County Flood Control District National Audubon Society National Fish & Wildlife Foundation Sierra Club The Nature Conservancy Theodore Payne Foundation US Fish & Wildlife Service UCLA

Figure 25. Groups listed by at least 4 STEW-MAP survey respondents as collaborators, knowledge providers, or funding providers. Nine groups had 4 or more in-degree ties for all three relationship types, and ten groups had 4 more in-degree ties for two relationship types.

5.3.2 Online Network Mapping Tool

STEW-MAP researchers used the open-source platform KUMU to develop an online, interactive network mapping tool² displaying the relationships among LA River stewardship organizations, as reported by survey respondents. The interface allows users to search for organizations or organizational attributes, as well as to visualize the networks and profiles of individual organizations (Figure 26). Users may also use KUMU to conduct their own network analytics and can download all of the embedded data for their own use.

² <https://kumu.io/lmucures/la-river-stew-map>

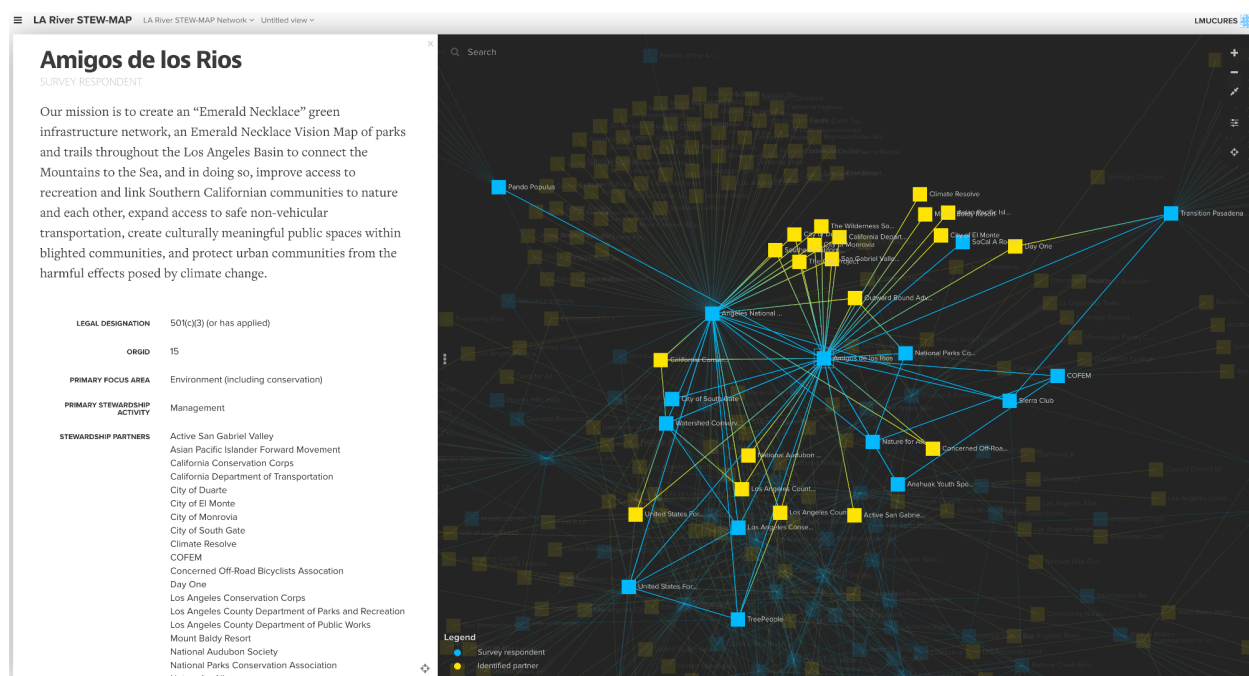


Figure 26. A stewardship organization’s network as reported on the LA River STEW-MAP survey and visualized through the online network mapping tool.

6 SUMMARY & DISCUSSION

LA River STEW-MAP followed an established approach to inventory and survey environmental stewardship groups working in the Los Angeles River Watershed. This work capitalized on the previous STEW-MAP research in LA County, as well as the current momentum surrounding restoration and revitalization of the LA River. STEW-MAP researchers utilized several data sources to develop an inventory of 535 environmental stewardship organizations working in the LA River Watershed and employed the nationally developed STEW-MAP survey to collect data from June–December 2019. A total of responding groups provided enough information to include in the mapping and/or social networking analyses, and 96 of the groups submitted complete enough information for analysis of their organizational characteristics.

The results showed that the majority of groups were 501(c)3 nonprofits, with less than ten percent representing other legal designations. The next largest group was city/local government (Figure 4). These results support the findings from previous STEW-MAP research (Svendsen and Campbell 2008, Westphal et al. 2014, Romolini et al. 2016) that environmental stewardship work is largely carried out by nonprofit groups and local agencies. However, over two-thirds of respondents identified *government* as a funder of their stewardship activities, and the social network results showed that county, state, and federal government agencies were often identified by respondents as groups that they go to for collaboration, knowledge, and funding related to environmental projects. This may reflect the historical development, land ownership, and current political climate of the LA River—all of which are largely led by agencies at all levels of government.

The results of LA River STEW-MAP support Fisher et al.'s (2012) finding that environmental stewardship groups tend to be younger, smaller organizations with few paid employees and limited budgets. Most groups had been founded since the 1990s, with nearly a quarter of groups founded in just the past ten years (Figure 12). Although only half of the respondents were willing to provide a budget, those responses were wide-ranging, from \$0 to \$80 million (Figure 14). It is difficult to evaluate whether LA River stewardship groups have limited budgets, given the low response rate for that question. Staffing was extremely variable, ranging from zero to 4,000 full-time staff members (Table 1). The average staffing was high, with 125 full-time and 16 part-time staff members; however, the median number of 9 full-time and 3 part-time staff more closely aligns with Fisher et al.'s (2012) findings. Notably, the average hours respondents reported from occasional volunteers was 152 hours/month, the equivalent of almost a month of full-time work.

STEW-MAP defines a stewardship group as one that works to “conserve, manage, monitor, transform, educate on and/or advocate for the environment.” The survey also included “participate” as a stewardship activity type to capture organizations that are active collaborators and supporters of stewardship activities; but may not conduct traditional on-the-ground stewardship. A large majority of LA River STEW-MAP survey respondents indicated that they engaged in multiple aspects of stewardship work, with *participate and educate* identified as the most common functions (Figure 3). Education arose frequently elsewhere in the results. It was the second most common focus area for responding organizations, following *the environment* (Figure 8). Mission statement analysis found *education* to be among the most frequent words (Figure 10). Finally, when asked about services provided, *educational curricula/training* was the top service identified by respondents (Figure 13). Thus, LA River stewardship groups play a key role in educating their communities about the LA River watershed and broader environmental issues.

The survey results also underscored how stewardship groups' activities are supportive not only of local environments but also communities. *Community/communities* were overwhelmingly the most frequent words found in responding organizations' mission statements, *community improvement and capacity building* was among the most chosen focus areas, and *community organizing* was identified by nearly half of respondents as a service they provide (Figures 10 and 13). This is consistent with previous research found in the stewardship literature. For example, Wolf et al. (2013) also found that community was the most common word in the mission statements of Seattle environmental stewardship groups, and Svendsen and Campbell (2008) found that community development was the most common theme of mission statements and programs in six cities in the Northeastern United States and in the New York City Region. Community can thus be an influential reason people take part in environmental stewardship activities (Asah and Blahna 2013).

Previous STEW-MAPs have typically focused on a defined area within political boundaries, such as a city (e.g., Baltimore, Philadelphia), county (e.g., Los Angeles County), or region (e.g., New York City's five boroughs). Although the recent Bridger-Teton National Forest STEW-MAP focused on a natural resource area, LA River STEW-MAP was the first known STEW-MAP effort to use watershed boundaries to define the stewardship area. This geography was chosen as many multi-jurisdictional policies and plans are centered around the LA River Watershed. LA River STEW-MAP was intended to capture watershed-level stewardship to produce data and associated products that could

facilitate this work. Utilizing watershed boundaries for STEW-MAP data collection also may be advantageous in avoiding scale mismatch when exploring future research questions; for example, assessing ecological outcomes of stewardship activities. The LA River STEW-MAP results reflected this watershed approach, with water-related site types representing three of the top five most chosen by survey respondents (Figure 5), and *water quality/water conservation* among the top three most chosen focus areas (Figure 10). However, somewhat surprisingly, the average responding organization did not identify any of the eight plans and programs related to the LA River Watershed as being influential to their work (Figure 15). This dilution of influence of any one plan may be attributed to the large number of ongoing policy and planning efforts within the watershed. It also may highlight a need for even greater engagement with stewardship groups in implementation.

Density of groups' mapped stewardship turfs was highest within LA River Watershed boundaries, though many groups worked countywide and in the Southern California region, and a few worked nationwide (Figure 18). The highest concentration of stewardship was found in downtown Los Angeles, which is aligned with the concentration of office locations found there (Figure 16). High stewardship concentration was also found within the Angeles National Forest (Figure 18). Although this could be an effect of the data collection process itself, with the Angeles National Forest participating in the STEW-MAP working group, it may also reflect the Angeles National Forest's focus on partnerships and the overall US Forest Service focus on shared stewardship (US Forest Service n.d.).

The spatial data were used to develop a publicly available, interactive map using ESRI's ArcGIS Online (Figures 19 & 20). The stewardship turf data is also available as a layer that can be downloaded and used by organizations or in future research to compare stewardship to other spatial variables (see Figure 21 for an example). Future work could involve additional development of the online mapping platform to include more features (c.f. NYC STEW-MAP) and research to compare stewardship with any number of metrics of interest. For example, previous work compared stewardship with tree canopy in Baltimore and Seattle (Romolini et al. 2013), and another study compared stewardship against a number of socioeconomic and environmental variables in Baltimore, Chicago, New York, and Seattle (Johnson et al. 2019).

Groups identified over 1200 connections with other groups whom they go to for collaboration, knowledge, or funding related to environmental stewardship. Since respondents were able to write in their responses, this provided the opportunity to add new groups not included in the initial inventory of organizations. Social network analyses used in-degree centrality to reveal the groups that could be identified as hubs of activity in the network, mostly 501(c)3 nonprofit groups and government agencies from the local to the federal level. The in-degree centrality analysis provides an initial view into the network data, which may prompt future analyses. For example, it is notable that two universities were among the hub organizations, and colleges and universities were also the third most common type of organization responding to the survey. Although institutes of higher education may not be traditionally considered stewardship groups, partnerships between community groups and colleges and universities can help community groups' aptitude for stewardship (Jordan et al. 2016, Gray et al. 2017). More in-depth social network analyses can focus on examining the networks by specific characteristics such as organizational sector, stewardship site type, focus area of organization and others. Further research could

explore other factors, such as why networks are formed, or how they change over time (utilizing LA County STEW-MAP data). An example is a recent study using STEW-MAP network data to examine the factors that shape collaboration around environmental stewardship (Jasny et al. 2019). Finally, the network data can be further explored through the online network mapping tool created as part of this project.

Evidence from previous STEW-MAP efforts suggests myriad opportunities to utilize the results and mapping tools in practice. In Baltimore, the STEW-MAP data were used in a process led by the City's TreeBaltimore program where multiple factors were considered in choosing priority neighborhoods for tree planting (Locke et al. 2013). The density of "potential stewardship" was considered a positive by some participants, as it implied that more groups may be available to steward newly planted trees. In New York City, the Gowanus Canal was rezoned for increased housing while it was being cleaned up and the neighborhood was becoming more desirable. The Gowanus Canal Conservancy used STEW-MAP data to build relationships with other stewardship organizations and mobilize a community network (US Forest Service 2021). These are two of many examples that have been shared anecdotally among members of the STEW-MAP community of practice and are beginning to be compiled on the national STEW-MAP website.

7 NEXT STEPS

The LA River STEW-MAP products are:

- 1) This Research Report summarizing the results of the survey
- 2) The ArcGIS Online Map
- 3) The KUMU Online Social Network map & tool
- 4) The data itself, which can be accessed through the LMU CUREs website

The LA River STEW-MAP survey only reached about 20% of the initial list of organizations. Thus, follow-up work could include on the ground outreach to increase the response rate. LA River STEW-MAP has the potential to be a dynamic, regularly updated database and map that provides a current view of stewardship across the watershed rather than a snapshot in time. The LA River Urban Waters Federal Partnership may be a good place to discuss possibilities for further development and ongoing maintenance of the database and mapping tool.

The summary statistics, initial maps and network analyses provided here offer an extensive look at stewardship across the LA River Watershed. As described above, there are numerous possibilities across the data types for more intensive examination. One research project already underway is an in-depth analysis of the mission statements of survey participants, to better understand how well they fit with traditional definitions of stewardship (Thomas and Romolini, Submitted). Future analyses may include spatial, social network or other explorations of this rich dataset to better understand environmental stewardship in Los Angeles, especially in the LA River Watershed.

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9 APPENDIX

APPENDIX 1: Table of Responding Organizations

Excludes respondents that did not want to be publicly identified

Alliance of River Communities	Council for Watershed Health
Alma Backyard Farms	California State University Los Angeles
Amigos de los Rios	California State University Northridge, Chicana/o Studies Department
Anahuak Youth Sports Association	EcoKai
Angeles National Forest	Friends of Colorado Lagoon
Antioch University Los Angeles	Friends of the Angeles Forest
Aquarium of the Pacific	Friends of the Los Angeles River
Arroyos & Foothills Conservancy	Glassell Park Improvement Association
Ascencia	Greywater Action
Atwater Village Neighborhood Council	Greywater Corps
Ballona Creek Renaissance	GrowGood
Bureau of Reclamation	Heal the Bay
Cal State Dominguez Hills	Industrial District Green
California Science Center	InnerCity Struggle
California State Parks Foundation	International Bird Rescue
Center for Geospatial Science & Technology at California State University Northridge	Keep Downey Beautiful
City of Los Angeles, LA Sanitation & Environment	Kiss the Ground
City of Paramount	L.A. River Tours
City of South Gate	LA Waterkeeper
City Plants	Los Angeles Conservation Corps
Clockshop	Los Angeles County Business Federation
COFEM	Los Angeles County Office of Education

Conservation Corps of Long Beach	Los Angeles State Historic Park
MobilizeGreen	Strategic Actions for a Just Economy
Mountains Recreation & Conservation Authority	Studio-MLA
National Park Service	The Compton Initiative
National Parks Conservation Association	The Nature Conservancy
National Wildlife Refuge Association	The River Project
Natural Resources Defense Council	The Trust for Public Land
NOAA National Weather Service Los Angeles/Oxnard Weather Forecast Office	The Water Replenishment District of Southern California
North East Trees	ThriveLA
Occidental College - Moore Lab of Zoology	Tidal Influence, LLC.
Palos Verdes Peninsula Land Conservancy	Transition Pasadena
Pando Populus	TreePeople
Promesa Boyle Heights	UC Cooperative Extension
Questad Research Lab	Unycyn Civic Arts
Rancho Santa Ana Botanic Garden	University of California Los Angeles, Extension Landscape Architecture
Resource Conservation District of the Santa Monica Mountains	University of California Los Angeles, Luskin Center for Innovation
Resource Institute	United States Geological Survey
Sacred Places Institute for Indigenous Peoples	Urban Waters Federal Partnership
San Fernando Valley Audubon Society	US Fish and Wildlife Service
Sierra Club	US Forest Service
Smart Growth California	Walk 'n Rollers
SoCal 350 Climate Action	Watershed Conservation Authority
SoCal A Rocha	Watts Labor Community Action Committee
Social Justice Learning Initiative	West Hills Neighborhood Council
South Coast Botanic Garden Foundation	Women In Non-Traditional Employment Roles

APPENDIX 2: LA River STEW-MAP Survey

English

Welcome

Welcome to the LA RIVER STEW-MAP survey!

STEW-MAP stands for Stewardship Mapping and Assessment Project.

LA River STEW-MAP is collecting information about groups and organizations that do environmental stewardship work in the LA River watershed. These organizations may not *primarily* focus on the environment, but instead be focused on housing, immigration, social services; however, they still engage in caring for the environment in some fashion.

STEW-MAP uses a *broad definition of stewardship*: conserving, managing, caring for, monitoring, advocating for, and educating the public about local environments. Stewardship activities can include planting trees, restoring a wetland, transforming the local food system, advocating for open space preservation, gardening in a school yard, cleaning up a vacant lot, environmental education, or partnering with other organizations on local environmental issues.

By participating in STEW-MAP, you can help potential volunteers, public agencies, funders, and other stewards find your group and learn about what it does. You will also be able to learn about other groups doing stewardship work in the Los Angeles region.

Your participation in LA River STEW-MAP is completely voluntary. Your personal contact information will not be made public in any way; it will only be used by the research team to contact you if we have questions about information you provide on the survey.

STEW-MAP projects have already been done in Baltimore, Chicago, Los Angeles County, New York City, Philadelphia, and Seattle, as well as San Juan, Puerto Rico; Valledupar, Colombia; and Paris, France. Please visit <https://www.nrs.fs.fed.us/urban/monitoring/stew-map/> and learn more.

The valid OMB control number for this information collection is 0596-0240.

Section 1

Section 1: Contact information

Your personal information is confidential. We will not share your name, personal email, personal phone number, or other identifying information with anyone outside of the research team. We may contact you if we have questions about information you provide on this survey.

Your Name:

Your Position in Your
Organization:

Number of Years With Your
Organization:

Your Phone Number:

Your E-mail:

Are you in a group?

We define a group as having two or more members. This survey is intended for groups and organizations, not for individuals working alone, as sole proprietors, or as independent contractors.

If you are a member of a group with multiple programs, please answer for your entire organization. If you are from a national organization, please answer for your local chapter.

Are you a member of a group or organization?

- ☐ Yes
☐ No

If you answered no, you do not need to complete this survey. If you feel you have gotten this in error, please go back to the survey and continue.

Section 2

Section 2: Basic information about your group/organization.

If you are not able to answer all of the questions, please reach out to someone else in your group or organization and ask them to fill out the survey.

Group/Organization Contact Information.

Group/Organization Name (required):	
Website (if available):	
Twitter Handle (if available):	
Mailing Address (with city, state, zip):	
Group/Organization E-mail:	
Group/Organization Phone Number:	

Does your group/organization agree to be included in the online stewardship map?

The information associated with your group on the map will be limited to group information and stewardship territory, which will be addressed later in the survey.

- ☐ Yes
- ☐ No

Section 2, cont.

Section 2: Basic information about your group/organization, *continued*.

Does your group/organization do any of the following in the LA River watershed ([see map for area of interest](#))?

Please choose all that apply.

- ☐ **Conserve** or preserve the local environment (for example, hold a conservation easement, protect land or water)
- ☐ **Manage** or take care of a place in the local environment (for example, a community garden, a block of street trees, an empty lot, a riverbank, a schoolyard, a forest preserve, a brownfield)
- ☐ **Transform** local environmental systems (for example, reduce, reuse, recycle, compost, waste stream, sustainable energy)
- ☐ **Monitor** the quality of the local environment (for example, monitoring air or water quality, dumping, species monitoring, or citizen science)
- ☐ **Advocate** and/or plan for the local environment (for example, community planning, organizing, direct action, fundraising)
- ☐ **Educate** the public about the local environment (for example, youth curriculum, adult curriculum, job training)
- ☐ **Participate** in, partner with groups, provide funding for, or support other environmental work

Of these functions, what is your primary stewardship activity?

Select one.

- ☐ Conservation
- ☐ Management
- ☐ Transformation
- ☐ Monitoring
- ☐ Advocacy
- ☐ Education
- ☐ Participation / Support
- ☐ None of the Above

Thank you for your interest in filling out this survey. Your group's work does not meet our definition of environmental stewardship so we have no further questions. If you feel you have gotten this in error, please go back to the survey and continue.

Section 2, cont.**Section 2: Basic information about your group/organization, *continued*.**

What is your group/organization's legal designation?

Please choose the most appropriate response.

Non-profit organizations and community groups

- ☐ 501(c)(3) (or has applied)
- ☐ 501(c)(4) (or has applied)
- ☐ Group without 501(c)(3) or 501(c)(4) status (for example, a community garden group or block club)
- ☐ Religious/faith-based organization (church, mosque, synagogue, etc.), but not a 501(c)(3)
- ☐ Private college or university

Public and government entities

- ☐ City/Local government
- ☐ County government
- ☐ State government
- ☐ Federal government
- ☐ School district
- ☐ Public college or university

For-profit entities

- ☐ Private firm, for-profit business

Other

- ☐ Public-private partnership
- ☐ Other, please specify:

Section 3**Section 3: Where your group works.**

Please describe in detail the boundaries of where your group has done stewardship work within the past year (you can list multiple locations). Be as specific as possible.

For example:

- On Sun Valley Blvd. between Scottsdale Rd. and Highland Ranch Pkwy;
- Boyle Heights Neighborhood east of the LA River;
- Council Districts 6 and 7;
- El Cariso Park Community Garden;
- Shoreline in the City of Long Beach;
- The Sepulveda Basin;
- Zip codes 91030 and 91031;
- All parks in the City of Compton

** If you have multiple programs in different sites or at different scales, please list each with corresponding programs. (e.g. our education programs are citywide; we operate a compost facility at x school).*

Does your group have a Geographic Information System (GIS) file showing the boundaries of where you have done stewardship work within the past year?

- ☐ Yes (if you check here, the research team will contact you to request the file)
- ☐ No

Section 3, cont.

Section 3: Where your group works, *continued*.

In the last year, what sites has your group's stewardship work focused on?

Please choose all that apply.

Land & Built Environment-Related

- ☐ Athletic field
- ☐ Bike paths / Greenway / Rail-trail
- ☐ Botanical garden / Arboretum
- ☐ Brownfield
- ☐ Community garden
- ☐ Courtyard / Atrium / Plaza
- ☐ Dog run / Dog park
- ☐ Green buildings
- ☐ Grounds of public building other than school (e.g. city hall, library, hospital)
- ☐ Flower box
- ☐ Forest / Woodland
- ☐ Park
- ☐ Playground
- ☐ Public right of way (sidewalk, street ends, traffic island, public plaza)
- ☐ Recreation center
- ☐ Residential building grounds (apartment courtyard, back yard, etc.)
- ☐ Rooftop
- ☐ School yard or grounds; outdoor classroom
- ☐ Street tree
- ☐ Urban farm
- ☐ Vacant land / Vacant lot

Fresh Water & Marine-Related

- ☐ Freshwater wetland
- ☐ Nearshore marine
- ☐ Reservoir
- ☐ Salt marsh
- ☐ Stream / River / Canal
- ☐ Waterfront / Beach / Shoreline
- ☐ Watershed / Sewershed

Systems-Related

- ☐ Food system (e.g., grocery stores, CSA, compost sites)
- ☐ Sustainable energy system (e.g., solar array, windmill)
- ☐ Storm water management system
- ☐ Waste system (e.g., e-waste drop off location)
- ☐ Other - please specify:
- ☐ None of the above

Of the above, which is the *primary* site type on which you work?

Land & Built Environment-Related

- ☐ Athletic field

- ☐ Bike paths / Greenway / Rail-trail
- ☐ Botanical garden / Arboretum
- ☐ Brownfield
- ☐ Community garden
- ☐ Courtyard / Atrium / Plaza
- ☐ Dog run / Dog park
- ☐ Green buildings
- ☐ Grounds of public building other than school (e.g. city hall, library, hospital)
- ☐ Flower box
- ☐ Forest / Woodland
- ☐ Park
- ☐ Playground
- ☐ Public right of way (sidewalk, street ends, traffic island, public plaza)
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- ☐ Storm water management system
- ☐ Waste system (e.g., e-waste drop off location)

☐ Other - please specify:

☐ None of the above

Section 3, cont.

Section 3: Where your group works, *continued*.

Who is the owner of the *primary* property or properties on which your group has done stewardship work within the past year?

- ☐ City/Local government
- ☐ County government
- ☐ State government
- ☐ Federal government
- ☐ Other government (e.g. Joint Powers Authority)
- ☐ Individual
- ☐ Corporation (including joint ventures, real estate investment groups)
- ☐ Nonprofit
- ☐ We work across public and private lands
- ☐ Don't know

☐ Other - Please specify

Section 4

Section 4: More about your group.

What does your group work on?

Please select all that apply.

- ☐ Animal related
- ☐ Arts, culture, creative practices
- ☐ Community improvement and capacity building
- ☐ Climate change / Climate change adaptation
- ☐ Crime, criminal justice
- ☐ Economic development
- ☐ Education
- ☐ Emergency management and disaster response
- ☐ Employment, job related
- ☐ Energy efficiency
- ☐ Environment (including conservation)
- ☐ Faith-based activities
- ☐ Food
- ☐ Housing and shelter
- ☐ Human services (including daycare, family services)
- ☐ International, foreign affairs, and national security
- ☐ Legal services, civil rights
- ☐ Native species restoration
- ☐ Power / Electricity generation
- ☐ Private grantmaking foundation
- ☐ Public health (including crisis intervention)
- ☐ Recreation and sports (including birding and fishing)
- ☐ Research in science and/or technology
- ☐ Risk mitigation
- ☐ Seniors
- ☐ Toxics / Pollution related
- ☐ Transportation
- ☐ Urban forestry / Tree planting
- ☐ Water quality / Water conservation
- ☐ Youth
- ☐ Other - please specify

If you had to choose just one activity, what would you say is your group's *primary* focus?

Please choose one.

- ☐ Animal related
- ☐ Arts, culture, creative practices
- ☐ Community improvement and capacity building
- ☐ Climate change / Climate change adaptation
- ☐ Crime, criminal justice
- ☐ Economic development
- ☐ Education
- ☐ Emergency management and disaster response
- ☐ Employment, job related
- ☐ Energy efficiency
- ☐ Environment (including conservation)
- ☐ Faith-based activities

- ☐ Food
- ☐ Housing and shelter
- ☐ Human services (including day care, family services)
- ☐ International, foreign affairs, and national security
- ☐ Legal services, civil rights
- ☐ Native species restoration
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- ☐ Seniors
- ☐ Toxics / Pollution related
- ☐ Transportation
- ☐ Urban forestry / Tree planting
- ☐ Water quality / Water conservation
- ☐ Youth
- ☐ Other - please specify

Section 4, cont.

Section 4: More about your group, *continued*.

Describe the mission of your group. If you have a formal mission statement, please use that, otherwise use your own words to describe your group's goals:
(1000 characters or less)

Considering all of the programs, activities, and services your group works on, what percentage of your group's effort has been for environmental stewardship during the past year?

Please select one.

- ☐ 0%
- ☐ 1-19%
- ☐ 20-39%
- ☐ 40-59%
- ☐ 60-79%
- ☐ 80-100%

What year was your group/organization founded?

Note: for national or regional groups/organizations please tell us the approximate year your chapter was founded.

Approximately how many of the following does your group/organization have:

Note: For national groups/organizations please provide regional information.

Full-time Staff:

Part-time Staff:

Members:

Regular Volunteers:

Note: regular volunteers are those who routinely volunteer in your

group/organization's activities. This is different from volunteers who may come out for a single work day.

For those volunteers who come out occasionally, can you *estimate* the total number of hours they contribute per month?

Hours:

Section 5

Section 5: Networking.

List the groups that your group collaborates with and indicate how you collaborate.

Note: These groups may be government agencies, offices of elected officials, community-based groups, nonprofits, private companies, religious-based groups, informal groups, etc.

Please be as specific as possible, for example, if you collaborated with a specific program or department within a larger agency or organization, please name both on the same line.

Please spell out the whole name rather than using abbreviations and select all that apply.

We go to these groups for:

	Regular collaboration on environmental projects or programs	Knowledge, data, or expertise related to environmental issues	Funding, materials, work share, or work trade for environmental projects or programs
Group Name 	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐

Do you have additional groups to list?

- ☐ Yes
☐ No

Section 5, cont.

We go to these groups for:

	Regular collaboration on environmental projects or programs	Knowledge, data, or expertise related to environmental issues	Funding, materials, work share, or work trade for environmental projects or programs
Group Name 	☐	☐	☐

	Regular collaboration on environmental projects or programs	Knowledge, data, or expertise related to environmental issues	Funding, materials, work share, or work trade for environmental projects or programs
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐

Do you have additional groups to list?

- ☐ Yes
- ☐ No

Section 5, cont.

We go to these groups for:

Group Name	Regular collaboration on environmental projects or programs	Knowledge, data, or expertise related to environmental issues	Funding, materials, work share, or work trade for environmental projects or programs
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐

Section 6

Section 6: Programs and policies that influence your work.

Please tell us how influential the following plans and programs have been on your group's work.

Not at all influential	Somewhat influential	Neutral	Moderately influential	Highly influential	N/A
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	Not at all influential	Somewhat influential	Neutral	Moderately influential	Highly influential	N/A
City of LA: LA River Revitalization Master Plan	☐	☐	☐	☐	☐	☐
LA County: LA River Master Plan	☐	☐	☐	☐	☐	☐
Sustainable City pLAn	☐	☐	☐	☐	☐	☐
One Water LA 2040	☐	☐	☐	☐	☐	☐
Enhanced Watershed Management Plan – Upper LA River Watershed	☐	☐	☐	☐	☐	☐
Integrated Regional Water Management Plan - Greater Los Angeles County Region	☐	☐	☐	☐	☐	☐
Angeles National Forest Land Management Plan	☐	☐	☐	☐	☐	☐
San Gabriel Mountains National Monument Management Plan	☐	☐	☐	☐	☐	☐
Other policy, plan or report. Please specify: 	☐	☐	☐	☐	☐	☐

Do you have additional policies, plans or reports to list?

- ☐ Yes
☐ No

Please list below any additional plans and programs and tell us how influential they have been on your group's work.

	Not at all influential	Somewhat influential	Neutral	Moderately influential	Highly influential	N/A
Other policy, plan or report. Please specify: 	☐	☐	☐	☐	☐	☐
Other policy, plan or report. Please specify: 	☐	☐	☐	☐	☐	☐
Other policy, plan or report. Please specify: 	☐	☐	☐	☐	☐	☐
Other policy, plan or report. Please specify: 	☐	☐	☐	☐	☐	☐
Other policy, plan or report. Please specify: 	☐	☐	☐	☐	☐	☐

Section 7**Section 7: Tell us a bit more about your group.**

What types of services does your group provide?

Please select all that apply.

- ☐ Educational curricula / Trainings
- ☐ Legal resources
- ☐ Buildings / Facilities
- ☐ Plant materials / Equipment
- ☐ Technical assistance
- ☐ Labor (e.g., volunteers, students, interns)
- ☐ Grants
- ☐ Community organizing
- ☐ Public relations / Marketing
- ☐ Data / Information / Scientific research
- ☐ Other:

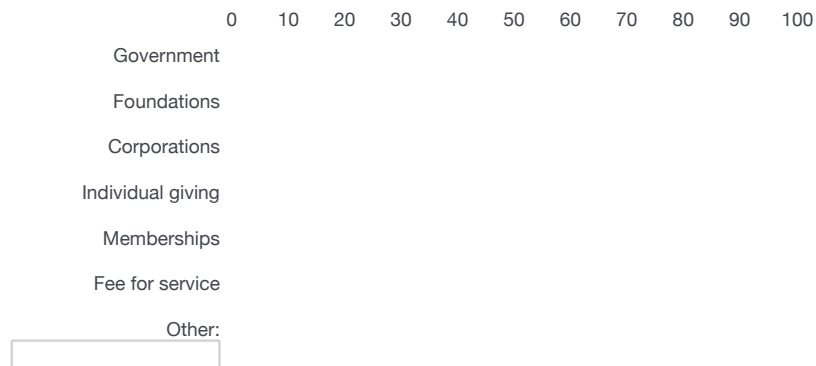
What is your group's estimated annual budget for the current year?

Note: we will summarize the information with all groups' budgets and we will not share your specific budget publicly.

- ☐ \$
- ☐ We have no budget
- ☐ Prefer not to answer

What proportion of your budget comes from the following sources?

Percent (out of 100)

**Section 8****Section 8: Final section.**

- ☐ Please check here if you give permission for a member of our research team to contact you with follow-up questions regarding the STEW-MAP project.
- ☐ Please check here if you do NOT give permission for a member of our research team to contact you with follow-up questions regarding the STEW-MAP project.

Is there anything else you would like to tell us about your group or this survey?

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