CITY OF LOS ANGELES
INTER-DEPARTMENTAL CORRESPONDENCE

DATE: October 14, 2022

TO: Councilmember Mitch O'Farrell, Chair
Councilmember Paul Koretz
Councilmember Gilbert A. Cedillo
Councilmember Kevin de Leon
Councilmember Paul Krekorian
Energy, Climate Change, Environmental Justice, and River Committee

FROM: Barbara Romero, Director and General Manager
LA Sanitation & Environment

SUBJECT: **LA SANITATION & ENVIRONMENT REPORT BACK TO AUGUST 5, 2021 ENERGY, CLIMATE CHANGE, AND ENVIRONMENTAL JUSTICE COMMITTEE MEETING (COUNCIL FILE 15-0499)**

RECOMMENDATIONS

1. Instruct LA Sanitation and Environment (LASAN) to report back to ECCEJR annually to share progress on biodiversity initiatives.
2. Instruct LASAN to continue to lead and work with the Biodiversity Expert Council, the Biodiversity Interdepartmental Team, and the Biodiversity Stakeholders in order to advance Citywide biodiversity initiatives.
3. Instruct LASAN to seek funding for biodiversity initiatives and pilot projects.
4. Adopt the transmitted annual departmental biodiversity plans and require each of the 14 departments to individually report back to ECCEJR annually to provide updates on biodiversity goals.
5. Request that City Council examine and consider adopting the recommendations set forth by Mayor Garcetti in the C40 Final Urban Nature Declarations document.
6. Advise City Council to declare its support for the Biophilic Cities Network by enacting a formal resolution stating its support for the principles of the Biophilic Cities Network and authorizing staff to secure the City of LA's membership into the network as a partner City.
    a. Advise City Council to authorize LASAN, on behalf of the City of Los Angeles, to participate in and administer the membership in the Biophilic Cities Network.

b. Instruct LASAN with the assistance of the CLA to draft a resolution for Council consideration that declares the City of Los Angeles is a participating member.

7. Instruct the Personnel Department and the Board of Public Works to report, with the assistance of the Department of City Planning (DCP), LASAN, the Department of Water and Power, the Department of Recreation and Parks, relevant Bureaus in the Department of Public Works, and all involved departments, including the other proprietaries, on the feasibility, scope, duties, and responsibilities of creating a citywide Urban Ecologist position to address the comprehensive ecological issues within Los Angeles' natural, recreational, and built environments and better protect wildlife habitat connectivity between them.

TRANSMITTALS

1. PDF of the LA Biodiversity Index Baseline Report
2. Compilation of Annual Departmental Biodiversity Reports received from the 14 Departments Represented on the Biodiversity Interdepartmental Team

DISCUSSION:

#1A Progress on Biodiversity Initiatives

LA Sanitation & Environment (LASAN) is happy to report back to ECCEJR with general progress made on biodiversity initiatives. Most notably, the LASAN Biodiversity Team recently completed the first-ever assessment of the LA City Biodiversity Index, an index tailored specifically to assess biodiversity in the City of Los Angeles. The results were published in late June in the LA Biodiversity Index Baseline Report. The benchmark assessment of the LA City Biodiversity Index yielded an overall score of 37 out of 110 possible points, suggesting that there is much room for improvement and that significant action is needed to protect biodiversity and improve the index score. The report outlines five steps that the Biodiversity Team plans to pursue, such as working with other departments and stakeholders to better integrate biodiversity considerations into projects, that will protect and enhance biodiversity across the City while simultaneously increasing future index scores. Additionally, the LASAN Biodiversity Team is using this low baseline score as a call to action to mobilize resources and stakeholders to protect and enhance biodiversity across the City.

LASAN has also been working hard to engage the public about the benefits of biodiversity through outreach, public presentations, workshops, and more. Staff from the LASAN Biodiversity Team has done extensive outreach and given lectures and presentations to UCLA Conservation Biology students, LAUSD science students, practicum courses, the Community Forestry Advisory Committee, and many others over the course of the last year. Outreach and public engagement are important aspects of the program and will continue in the future.

Other Notable Updates:

In March 2022, LASAN submitted an application to the National Park Service's Rivers, Trails, and Conservation Technical Assistance Program (NPS-RTCA) to develop a prioritization scheme to identify areas in the City for conservation, restoration, and/or acquisition. The application has been put forth in partnership with the Department of Recreation & Parks, the Department of City Planning, and the Resource Conservation District of the Santa Monica Mountains. As LASAN's Biodiversity Program pivots to look at implementation projects, the maps and tools that stem from this prioritization work will ensure that the best, most impactful sites are selected for grant projects. The prioritization plan should, ideally, set the City up for success and ensure that City staff are armed with a strategically developed list of grant projects and conservation work to pursue.

In August 2022, the LASAN Biodiversity Team completed the necessary steps to re-certify the City of Los Angeles as a Community Wildlife Habitat through the National Wildlife Federation. The National Wildlife Federation officially announced the recertification on August 31, 2022. Shortly thereafter, the National Wildlife Federation interviewed Dr. Mas Dojiri and Michelle Barton for a feature article on the City's certification and other biodiversity initiatives that is expected to be published later this year. The City of Los Angeles is the largest certified entity in the United States.

In September 2022, LA County and LA City jointly established a Calflora Weed Manager Group. LASAN's Biodiversity Team hopes that City staff will use Calflora's Weed Manager to track, monitor, and manage the spread of invasive plant species across the City. The Los Angeles County Agricultural Commissioner/Weights & Measures, Integrated Pest Management Division generously provided the funding needed to gain access to the software for partners, including the City of Los Angeles, to have access to the software and all of the benefits it provides. Recreation & Parks and LASAN staff are facilitating the launch of this software across the City and will help organize a formal training session with Calflora later in the fall.

In September 2022, LASAN's Biodiversity Team and the LA Public Library co-hosted the second annual LA Bioblitz Challenge. The challenge encouraged the use of community science applications, like iNaturalist, to document observations of wild plants, animals, and fungi across the City, with an emphasis on making observations in data-poor areas. Additionally, the challenge encouraged participants to upload observations of a special set of biodiversity indicator species that are being monitored for the LA City Biodiversity Index. Over the course of four weeks, over 1,000 Angelenos made 8,200+ observations of wild plants, animals, and fungi in the City of Los Angeles.

#1B Coordination with the Biodiversity Expert Council and Interdepartmental Biodiversity Team

LASAN reported to the Energy, Climate Change, Environmental Justice, and River Committee in August 2021, LASAN has made progress on a number of biodiversity initiatives and has continued to lead the work of the Biodiversity Expert Council, the Biodiversity Interdepartmental Team, and the Biodiversity Stakeholder Group. The Biodiversity Expert Council and the Biodiversity Interdepartmental Team provided valuable feedback on the baseline assessment of the LA City Biodiversity Index and helped shape the content included in the official report. The annual Biodiversity Expert Council meeting was held on August 1, 2022 and encouraged coordination and a robust exchange of ideas. A meeting with the Interdepartmental Biodiversity Team, primarily to discuss the creation of departmental biodiversity plans and annual biodiversity reporting, was held on August 25, 2022. More information about departmental biodiversity plans is included below in #2A.

#1C Funding

LASAN submitted a budget request for two full-time positions (Environmental Specialist and Environmental Supervisor) to support grant writing, project oversight, and implementation projects for FY 2022-23. LASAN is grateful that both positions were granted. As the positions were funded for six months of the fiscal year, LASAN hopes to fill the positions in December 2022 or January 2023. In the meantime, LASAN's Biodiversity Team and Centralized Grants Unit are tracking potential grant opportunities that the expanded Biodiversity Team can pursue to protect and restore habitat, enhance connectivity, and/or improve equitable access to nature.

#1D Equity

To date, LASAN's biodiversity equity efforts and efforts to increase access to nature have been related to the measurement of biodiversity metric 2.1a, Access to Natural Areas. Conversations with Recreation and Parks are ongoing to address equity/access to nature issues. The NPS-RTCA proposal noted above in #1A includes equitable access to nature as a key component of the prioritization scheme. Next steps will involve coordinating with the Climate Emergency Mobilization Office, and the Civil and Human Rights and Equity Department to create a Biodiversity Equity Expert Group that will discuss biodiversity equity issues and look for opportunities to increase equitable access to nature.

#2A Department-Specific Biodiversity Goals

In 2021, ECCEJR directed a subset of City departments to develop department-specific biodiversity goals. In order to facilitate this process, LASAN's Biodiversity Team coordinated

with the following 14 departments on the Interdepartmental Team to produce the first set of annual departmental biodiversity reports:

1. Board Offices of Public Works
2. BOE
3. City Planning
4. LADOT
5. LADWP
6. LAFD
7. LAPL
8. LASAN
9. LAWA
10. LA Zoo
11. Port
12. RAP
13. StreetsLA
14. Street Lighting

On August 25, 2022, the LASAN Biodiversity Team hosted an Interdepartmental Biodiversity Team meeting with all departments/offices listed above to kickstart the process. At the meeting, LASAN shared the rationale for departmental biodiversity plans and reporting and provided a draft template for departmental input. All departments were encouraged to comment on the template. After incorporating feedback, LASAN distributed the final template to all 14 departments. At this time, the 11 reports received have been transmitted to ECCEJR for review.

Each departmental plan outlines how the department intersects with native biodiversity issues and how each department is working to protect and enhance biodiversity in their operations. In their biodiversity plans, departments proposed future departmental actions that they can take or policies that they could implement to improve the state of biodiversity across the City. Departments also reported on challenges encountered when implementing biodiversity projects/goals (e.g., the need for additional and more generalized conservation classifications in the City to better support biodiversity efforts). Each department also assessed internal practices and policies related to biodiversity to assign a letter grade and numeric grade based on their engagement with biodiversity initiatives. Most importantly, each department set at least five SMART (Strategic, Measurable, Attainable, Relevant, and Time-Based) biodiversity goals that they hope to accomplish during fiscal year 2022-23. Specific metrics to gauge success on each of these initiatives and descriptions of how the goals will be implemented were also included. In all, 56 goals have been set across the City that will help protect and enhance biodiversity.

The table below summarizes the information put forth by each department or office.

Department / Office	***# of Goals***	***Letter Grade***	***Numeric Grade***
Board Offices of Public Works	6	B	85
Bureau of Engineering	6	B	80
City Planning	5	B-/C+	82.5
LA Dept. of Transportation			
LA Dept. of Water & Power	5	B	80
LA Fire Department			
LA Public Library	2	B	80
LASAN	7	B-	80
LA World Airports	5	B+	88
LA Zoo	5	B-	82
Port			
Recreation & Parks	5	B-	80
StreetsLA	5	C	75
Street Lighting	5	C	75
	56	**B-**	**80.7**

In addition to coordinating with the 14 departments and offices listed above on biodiversity plans, LASAN also intends to coordinate with five additional departments (Animal Services, Building & Safety, Economic & Workforce Development, the Department of Neighborhood Empowerment, and General Services) that have the ability to influence biodiversity issues and/or messaging, and, therefore, should consider biodiversity in their planning and activities to the extent possible. These departments will not be asked to develop formal biodiversity goals but they will be asked to consider biodiversity in their operations and provide short write-ups on how they plan to do so. LASAN's Biodiversity Team intends to hold a meeting with this group in fall 2022 to facilitate the next steps in this process.

<u>#2B Bird-Building Collisions</u>

The Department of City Planning has been studying the issue of bird-building collisions. As part of this process, the Department of City Planning has been reviewing best practices for bird-friendly

building designs from other cities. At this time, there are two efforts underway within Planning to address bird-building collisions and require treatments that make windows more bird-friendly:

1. Draft Wildlife Ordinance: The most recent draft of the Wildlife Ordinance includes regulations for bird-safe windows and requires that windows exceeding 40 square feet in size incorporate one of the following solutions: fritted, angled, or UV reflective glass; frosted, stenciled, etched, or sandblasted windows; or architectural features, like overhangs, that break up large expanses of glass (Section 13.21.F.1.h).

2. The Cornfield Arroyo Seco Specific Plan (CASP) was adopted in 2013, and implements the Central City North, Northeast LA and Silverlake/ Echo Park/Elysian Valley Community Plans. Chapter 2.3 of the CASP includes glazing requirements that will reduce birds' access to glass in an effort to prevent collisions.

   a. At least 50% of ground-floor window and door glazing shall be transparent and have a 0-10% reflectivity rating, and/or include shading devices, screens or other barriers to reduce birds' access to glass. In addition, or alternatively, the glass may be installed between 20-40 degrees from vertical.

   b. Glazing on the upper floors shall include one or more of the following: 0-10% reflectivity, etching, sandblasted patterns, fretting, low-e patterning, shading devices, screens, other barriers to reduce birds' access to glass, and/or angle the glass between 20-40 degrees from vertical.

While the new Zoning Code does not propose bird-friendly development standards at the Citywide scale, there may be opportunities moving forward to advance bird-safe building standards and measures through development standards districts in Community Plans, where appropriate. The appropriateness of such standards would need to be studied to ensure that requirements can be reasonably applied in new development projects.

#2C Audubon Cooperative Sanctuary Program for Golf

The Department of Recreation and Parks (RAP) Golf Division has submitted a formal application to Audubon International for participation in the Audubon Cooperative Sanctuary Program for Golf Courses. The certification process has been initiated for all 12 City golf courses and program fee payments have been made by RAP. The program involves the establishment of standard environmental best management practices for golf courses in the areas of environmental planning, wildlife management, integrated pest management, water conservation and water quality management, and outreach/education. The certification program can take one to two years for full completion. As of the submission of this status update, initial certification materials have been distributed to appropriate golf course staff and site assessment and environmental planning activities have begun. The RAP Golf Division is being assisted by

RAP's Urban Ecologist on habitat surveys and other baseline environmental site condition assessments as part of this phase of the certification process.

#2D Integrating Biophilic Design into Projects

Coordination between LASAN's Biodiversity Team, the departments represented on the Interdepartmental Biodiversity Team, and the Biodiversity Expert Council on how to better integrate biophilic design into City projects is ongoing. This is happening via three main mechanisms:

1. Biodiversity Guidelines: The LASAN Biodiversity Team is partnering with LA County staff to develop Biodiversity Guidelines that will help project managers incorporate biodiversity-friendly practices into their designs. The guidelines will provide guidance to public and private landholders on how to best design projects and sustainably manage properties in order to improve habitat quality and enhance local biodiversity, ultimately supporting biophilic design. Once drafted, they will be circulated to the Interdepartmental Biodiversity Team and the Biodiversity Expert Council for input.
2. Biophilic Cities: Los Angeles is excited to engage with the Biophilic Cities Network and is optimistic about the exchange of ideas and information it will bring. The City looks forward to developing more connections in the global network of biodiversity advocates in order to promote biophilic design, advance biodiversity policy, promote harmonious coexistence with wildlife, and enhance land stewardship.
3. Landscape and Site Design Standards: The Department of City Planning's Urban Design Studio is drafting an ordinance directly addressing biophilic design through the creation of Landscape and Site Design standards. Responding to programs identified in the Plan for a Healthy Los Angeles and stakeholder input, Planning is developing a code amendment that would update Section 12.40 of the Los Angeles Municipal Code, known as the Landscape Ordinance. The amendment would streamline existing procedures and expand the ordinance to promote healthy building design, biodiversity, and climate-adapted site design solutions in new, ground up construction projects. The ordinance is currently being drafted and is tentatively expected to be released for public comment before the end of the year.

#3 Urban Ecologist

In consultation with the CLA and CAO, in developing solutions to the City's currently dissonant response to protecting the biodiversity of Los Angeles, there is a need for comprehensive rules, regulations, and policies to protect wildlife habitat connectivity, urban-animal habitats, and most importantly increase equitable access to nature for all our communities. There is growing confidence in the scientific benefits of a robust urban ecology policy and there are solutions to be discovered across the city departments. LASAN has identified internal city partners through

the work of the Biodiversity Interdepartmental Team. These efforts could be the basis for a determination of whether a citywide Urban Ecologist position is a worthwhile endeavor. The Biodiversity Interdepartmental Team can discuss the mechanisms through which the position could support comprehensive efforts to protect and enhance the rich ecosystems in Los Angeles and collaborate to develop a job description.

#4 C40 Urban Nature Declaration

In 2021, Mayor Garcetti joined 30 other mayors around the globe in signing the C40 Urban Nature Declaration. Mayoral signatories of the C40 Urban Nature Declaration are committed to investing in urban nature, ensuring that their cities are climate resilient, and providing equitable access to green space. The City of Los Angeles's specific pledges can be viewed on pages 74-75 of the Final Urban Nature Declarations document. The content in the pledge coincides with many of the goals put forth in the Urban Ecosystems chapter of LA's Green New Deal (2019 Sustainable Cities pLAn).

FISCAL IMPACT STATEMENT:

LASAN will continue to work with the Biodiversity Expert Council, the Biodiversity Interdepartmental team, the Biodiversity Stakeholders, and students from local universities to advance biodiversity assessments and research in the field. LASAN is not requesting any additional funding for biodiversity during FY 22-23.

MB:BR

C: Dr. Mas Dojiri

LA BIODIVERSITY INDEX BASELINE REPORT

2022

environment LA SANITATION
CITY OF LOS ANGELES
zero waste • zero wasted water

FOREWORD

As the Director and General Manager of LA Sanitation & Environment (LASAN), I am thrilled to present the LA Biodiversity Index Baseline Report. LASAN is honored to lead the City's biodiversity efforts to protect and enhance the diverse array of native plants and animals that call Los Angeles home.

While much of the current work to protect biodiversity across the globe is happening at the international, national, and state level, I believe that local agencies and municipalities have a vital role to play in protecting biodiversity This is all the more important in Los Angeles, as the City is part of the California Floristic Province, one of only 36 globally recognized biodiversity hotspots.

Our distinction as a biodiversity hotspot is complex. It means that Los Angeles is home to an incredible array of plants and animals, but also that our biodiversity is under threat from habitat loss, climate change, and pollution. It is our responsibility as Angelenos, to address these threats and ensure that ecosystems are protected, enhanced, and restored and that the City of Los Angeles is resilient and biodiversity-friendly for generations to come.

This report presents the first official measurement of the LA City Biodiversity Index. While the Index is a technical tool that our Department has designed to measure progress on Citywide biodiversity goals, it is also an important educational tool. It can be used to raise awareness on biodiversity issues and engage new stakeholders and stewards to participate in activities to protect biodiversity.

Each of the 25 metrics scored in this report has a list of management implications that serve as goals and targets which can be used to guide the City's next steps. It is LASAN's role to lead the City's efforts to enact these recommendations and ensure that we are taking meaningful steps to provide habitat for the diverse organisms that call Los Angeles home. While many of the actions are specific to City Departments, there are also a variety of actions that individual Angelenos can take to steward biodiversity and make Los Angeles a more resilient and biodiversity-friendly City.

While many of the goals in this baseline report are ambitious, they are absolutely necessary if we are to slow, and ultimately reverse, biodiversity loss. A paradigm shift of this magnitude will require each and every Angeleno to recognize the importance of biodiversity and ecosystem health to their personal well-being, inspiring them to take action. The City family, residents, and young people alike, need to understand what is at stake, to get involved, and to serve as agents of change to solve the predicament of biodiversity collapse.

Only when we work collectively will we be able to ensure that ecosystems are protected, enhanced, and restored, environmental and public health benefits are maximized and equitably shared by all, and that Los Angeles is a resilient, biophilic City for generations to come.

Barbara Romero
Director and General Manager
LA Sanitation and Environment

ACKNOWLEDGEMENTS

This report was prepared by the LA Sanitation & Environment Biodiversity Team under the direction of Dr. Mas Dojiri, Assistant General Manager. The report was written and prepared by Michelle Barton, Environmental Supervisor. Current members of the LASAN Biodiversity Team, namely Jon Ball, Susie Santilena, and Hassan Rad, and former members of the team, namely Melinda Bartlett, Isaac Brown, Deborah Deets, and Peggy Nguyen were integral to the index measurement and report writing process. We would also like to thank Irina Koroleva, LASAN's Climate Action Corps 2021-22 Fellow, who assisted with data analysis, graphic creation, and GIS work and is responsible for creating many of the beautiful maps and charts presented in this report, Adam Pingatore, LASAN's Climate Action Corps 2022 Fellow, who assisted with editing and design, and Abigail Drood, Project Assistant who assisted with document editing.

While this is technically an LASAN report, we fully acknowledge that it would not be possible without the incredible partners that have generously contributed to this work. Thank you to Mayor Eric Garcetti and LA City Councilmember Paul Koretz of Council District 5 for providing outstanding leadership in the field of urban biodiversity. In particular, we would like to thank Victoria Simon, Director of Operations for LA Mayor Garcetti's Sustainability Office, and Andy Shrader, Director of Environmental Affairs, Water Policy & Sustainability for Councilmember Koretz, for being such great advocates for biodiversity issues.

Thank you to all Biodiversity Expert Council Members and Interdepartmental Biodiversity Team members who provided indispensable guidance throughout and feedback on the baseline assessment of the LA City Biodiversity Index and helped shape this report. A special thank you to members of the Expert Council who participated in the April 2021 metric refinement workshops. A full list of Expert Council and Interdepartmental Team members is included below. A list of contributors to the measurement, analysis, and interpretation of individual metrics is included at the end of this report. We are truly grateful for their dedication and contributions.

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Eaton Wash (Photo: Michelle Barton)

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Eaton Wash
(Photo: Michelle Barton)

LAND ACKNOWLEDGEMENT

We acknowledge that what is now the City of Los Angeles is located on land that has long been a center for Native peoples. This area is the traditional homeland of the Chumash, Tongva, and Kizh Peoples. We acknowledge all Native peoples who came before us and continue to contribute to the stewardship of biodiversity in the region.

Mule fat (*Baccharis salicifolia*)
(Photo: Graham Montgomery)

Pelagic cormorant (*Urile pelagicus*)
(Photo: Graham Montgomery)

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EXECUTIVE SUMMARY

The LA Biodiversity Index Baseline Report (2022 Biodiversity Report), builds on the biodiversity work presented by LA Sanitation & Environment in the 2018 and 2020 Biodiversity Reports, which measured the Singapore Index on Cities' Biodiversity for Los Angeles and presented the customized LA City Biodiversity Index (2018, LASAN; 2020, LASAN).

This report presents the first official benchmark assessment of the LA City Biodiversity Index, a tool that was designed to monitor progress toward the no-net loss target presented in LA's Green New Deal. The topics covered in the Index comprehensively assess not only what is happening to habitats and how well connected various habitats are, but how well the City is engaging with students and the larger community on the topic of biodiversity and how the City itself is working to protect endangered species and manage threats, like invasive species, via action plans and policies. The body of the report provides detailed information on the assessment of all 25 metrics in the LA City Biodiversity Index. Background information, metric scores, measurement results, a brief discussion of results, and a list of management implications are presented for each metric. The results of the exercise are summarized in the table below.

For the baseline assessment of the Index, the City received a score of 37 out of a possible 110 points, with an average metric score of 1.7/5 points. Please note that detailed methods that explain how individual metrics were calculated are included in Appendix II.

It is our hope that the baseline index results presented in this report will serve as a call to action to help focus future conservation priorities and engage the City family, stakeholders, and all Angelenos to prevent future biodiversity loss in the City of Los Angeles.

Santa Monica Mountains
(Photo: Michelle Barton)

LA CITY BIODIVERSITY INDEX - BASELINE ASSESSMENT RESULTS METRIC SCORE RANGE = 0 - 5			
1.1a	1.1a: % Natural Areas	3	
1.1b	Habitat Quality of Urban Landscapes & Open Space	2	
1.1c	Habitat Quality of Streams	0	
1.1d	Connectivity of Natural Areas	2	
1.1e	Connectivity of Urban Landscapes & Open Space	2	
1.1f	Connectivity of Streams and Riparian Areas	2	
1.2a	% Open Space with Charismatic Umbrella Species	3	
1.2b	Native Species Presence in Urban Areas	2	
1.2c	Species of Conservation Concern Gained or Lost	N/A	
1.3a	Urban Edge Effects on Natural Areas	2	
1.3b	Presence & Spread of Invasive Plants	2	
1.3c	Wildfire Frequency	2	
2.1a	Access to Natural Areas	3	
2.1b	Neighborhood Landscape / Tree Canopy Footprint	2	
2.2a	School (K-12) Biodiversity Topics	2	
2.2b	Off-Campus Biodiversity Educational Visits	0	
2.2c	Campus Nature Education Gardens	2	
2.3a	Community Scientist Activities and App Utilization	N/A	
2.3b	# Certified Biodiversity-Friendly Areas	N/A	
3.1a	Biodiversity Vision/Action Plan	0	
3.1b	% Departments with Biodiversity Programs & Policies	3	
3.2a	% Protected Natural Areas	1	
3.2b	Protected Natural Areas Management and Monitoring	1	
3.2c	Management of Invasive Species & Pests	0	
3.2d	Management of Species of Conservation Concern	1	

2022 ASSESSMENT TOTAL: 37 / 110

Mountain lion (*Puma concolor*)
(Photo: Robert Martinez)

INTRODUCTION

REVERSING BIODIVERSITY DECLINE

There is broad recognition that reversing biodiversity loss is important for food security, climate stability, and public health. In the 2022 Global Risks Report, the World Economic Forum reports that biodiversity loss is one of the three most severe threats to global prosperity. The World Wildlife Foundation's Living Planet Index indicates that mammal, bird, fish, amphibian, and reptile populations are declining globally at unprecedented rates – 68% since 1970. The situation is so dire that scientists believe that we are in the midst of a sixth mass extinction. Unless significant, transformative action is taken, it is estimated that one million species will go extinct in the next few decades (IPBES, 2019). Climate change is only expected to worsen the problem. Climate change experts predict a future increase in the risk of extreme heat waves, uncontrolled fires, and the destruction of natural ecosystems, increasing threats to global biodiversity.

Fortunately, leaders around the globe are taking action. In late 2022, the UN Biodiversity Conference (COP 15) will convene governments from around the world to set new biodiversity goals that will dictate actions for the next decade. COP 15 will build on the Convention on Biological Diversity's Post-2020 framework to work towards the ambitious vision of living in harmony with nature by 2050. Leaders are also coalescing around the 30 by 30 initiative (30 x 30), a bold goal to protect at least 30% of earth's cover by 2030. President Biden and Governor Newsom have both signed executive orders committing to 30 x 30. California's 30 x 30 commitment also establishes a new California Biodiversity Collaborative.

Locally, leaders are also taking action to protect biodiversity and conserve natural lands. In an effort to mitigate the causes of climate change, reduce environmental pollutants, and build a more resilient Los Angeles, Mayor Eric Garcetti signed Executive Directive No.7 in 2015 and introduced the Sustainable City pLAn. In 2019, the pLAn was updated and rebranded as LA's Green New Deal. Mayor Garcetti's Green New Deal is an innovative document that exceeds initiatives put forward by leaders, advocates, and policy makers in cities around the nation. The pLAn calls for ambitious biodiversity goals, including to:

- Achieve and maintain 'no-net loss' of native biodiversity,
- Set biodiversity targets and pilot LA's first wildlife corridor,
- Complete the first biodiversity assessment using the LA-specific index,
- Build up the City's Biodiversity Program to improve internal practices,
- Monitor biodiversity and natural areas,
- Collect data and map urban biodiversity to identify key areas to enhance or protect,
- Protect and restore sensitive habitats,
- In partnership with LA County, get LA into the top three cities/counties in the City Nature Challenge by 2025,
- Develop strategies to increase community science app users, especially in data-poor areas,
- Increase observations of LA's biodiversity indicator species, and
- Host an annual bioblitz using community science apps such as iNaturalist or eBird.

In addition, in 2017 Councilmember Koretz introduced the Biodiversity Motion that called for a variety of actions to protect and enhance biodiversity in LA. Specifically, the motion calls for policies and projects that aim to enhance biodiversity to consider:

- Where communities currently lack access to natural areas and open space,
- Where linkages between habitats can be restored, created, or strengthened, and
- Where biodiversity provides a particular benefit to larger ecosystem functions and services.

Lastly, in 2021, Mayor Eric Garcetti signed the C40 Cities Urban Nature Declaration. This is a commitment to establish ambitious nature targets and develop living, climate-ready, and crisis-prepared cities. The declaration includes a commitment to support skills-building programs for green jobs, "set ambitious targets to restore, conserve and increase equitable access to nature," and conduct a gap analysis of where new greening is needed.

BIODIVERSITY IN LOS ANGELES

The City of Los Angeles is located within the California Floristic Province, one of 36 global biodiversity hotspots (i.e., regions rich in endemic biodiversity, yet facing severe threats). The California Floristic Province has 2,125 endemic plant species, but estimates suggest that half of these species are currently threatened, and that the combination of climate change and increased development may lead to the loss of as many as two thirds of California's endemic plant and animal species by 2100. These estimates highlight the urgent need for informed conservation strategies to address these challenges.

The LA City Biodiversity Index, presented in the 2020 Biodiversity Report, is tailored specifically to the Los Angeles context and is designed to monitor progress toward the no-net loss target presented in LA's Green New Deal (LASAN, 2020). The LA City Biodiversity Index was crafted with the guidance of project stakeholders and an Expert Council of local practitioners, landscape architects and designers, non-governmental organizations (NGOs), scholars, educators, and City staff. It is intended to be institutionalized within municipal environmental management practices as a central tool in implementing future biodiversity guidelines and in steering long-term management and monitoring of biodiversity stewardship. It includes three core themes of urban biodiversity: 1) conservation of native biodiversity, 2) social justice aspects of biodiversity with a focus on equity, and 3) governance and management activities.

LA SANITATION & ENVIRONMENT'S BIODIVERSITY PROGRAM

LA Sanitation & Environment (LASAN) leads the City's Biodiversity Program and is working diligently with the Biodiversity Expert Council, the Biodiversity Interdepartmental Team, and Biodiversity Stakeholders to achieve the biodiversity goals in the Green New Deal and in the Biodiversity Motion. Ultimately, the Biodiversity Team is strategically working to achieve the goals outlined in the program's newly released Biodiversity Vision Statement.

Buckwheat at Topanga State Park
(Photo: Michelle Barton)

BIODIVERSITY VISION STATEMENT:

"Los Angeles is a City where all Angelenos value biodiversity, honor and respect nature, and steward the natural world, ensuring that ecosystems are protected, enhanced, and restored, environmental and public health benefits are maximized and equitably shared by all, and that Los Angeles is a resilient, biophilic City for generations to come."

Longhorn bee (*Melissodes* sp.)
(Photo: Graham Montgomery)

BASELINE MEASUREMENT OF THE LA CITY BIODIVERSITY INDEX

LASAN is proud to present the results of the first "benchmark assessment" of the LA City Biodiversity Index. Major benchmark assessments of the biodiversity index, like this one, will take place once a decade. In the interim, monitoring assessments will occur approximately every three years to gauge progress on biodiversity metrics. The 25 metrics in the LA City Biodiversity Index cover an array of topics and rely on a variety of data sources, some of which have discrete updates, and others of which are updated continuously. For metrics that rely on data that is continuously updated, the benchmark assessment of the LA City Biodiversity Index covers the years 2017-2020. The anticipated data date ranges for future assessments are outlined in the table below:

Assessment	***Years Covered***
Benchmark Assessment 1 (Baseline)	2017 - 2020
Monitoring Assessment 1	2021 - 2023
Monitoring Assessment 2	2024 - 2026
Benchmark Assessment 2	2027 - 2030

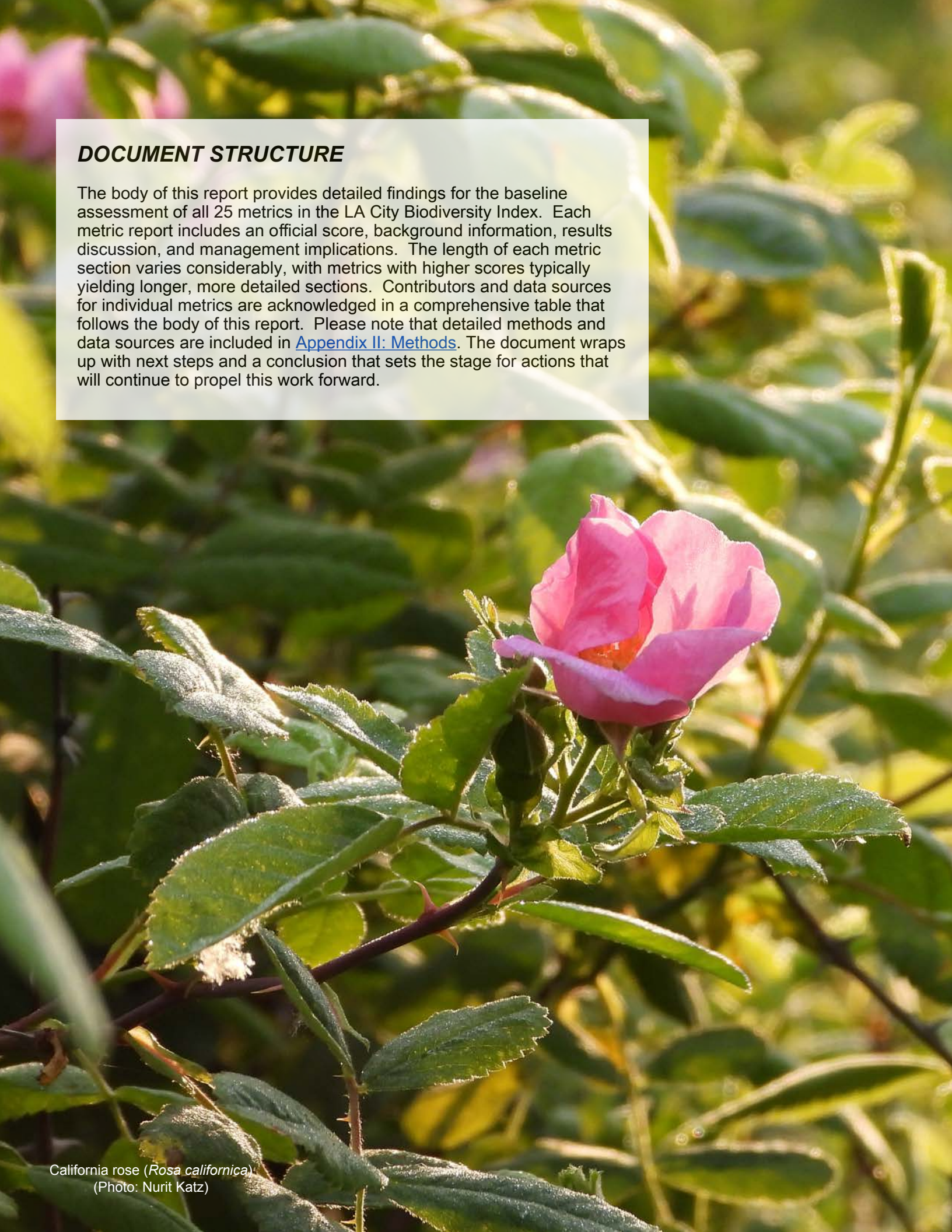
This approach ensures that index measurements always have a current snapshot and that, collectively, index assessments provide comprehensive, continuous information. As the approach to many metrics shifted or has been refined since the LA City Biodiversity Index and Preliminary Methods were published in 2020, updated details on the final LA City Biodiversity Index, methods, and scoring are summarized in tabular form in Appendix I.

It is our hope that the baseline index results presented in this report will build capability in biodiversity conservation, help focus conservation priorities, and assist the City in implementing the Post-2020 Global Biodiversity Framework.


Topanga State Park
(Photo: Michelle Barton)

DOCUMENT STRUCTURE

The body of this report provides detailed findings for the baseline assessment of all 25 metrics in the LA City Biodiversity Index. Each metric report includes an official score, background information, results discussion, and management implications. The length of each metric section varies considerably, with metrics with higher scores typically yielding longer, more detailed sections. Contributors and data sources for individual metrics are acknowledged in a comprehensive table that follows the body of this report. Please note that detailed methods and data sources are included in Appendix II: Methods. The document wraps up with next steps and a conclusion that sets the stage for actions that will continue to propel this work forward.



California rose (*Rosa californica*)
(Photo: Nurit Katz)

METRIC FINDINGS

THEME 1: NATIVE SPECIES PROTECTION & ENHANCEMENT

Great egret (*Ardea alba*)
(Photo: Graham Montgomery)

1.1A % NATURAL AREAS

Score: 3 points - 20%

Points	% Natural Areas
0	< 1%
1	1% – 5%
2	5% – 10%
3	**10% – 30%**
4	30% – 50%
5	> 50%

Background:

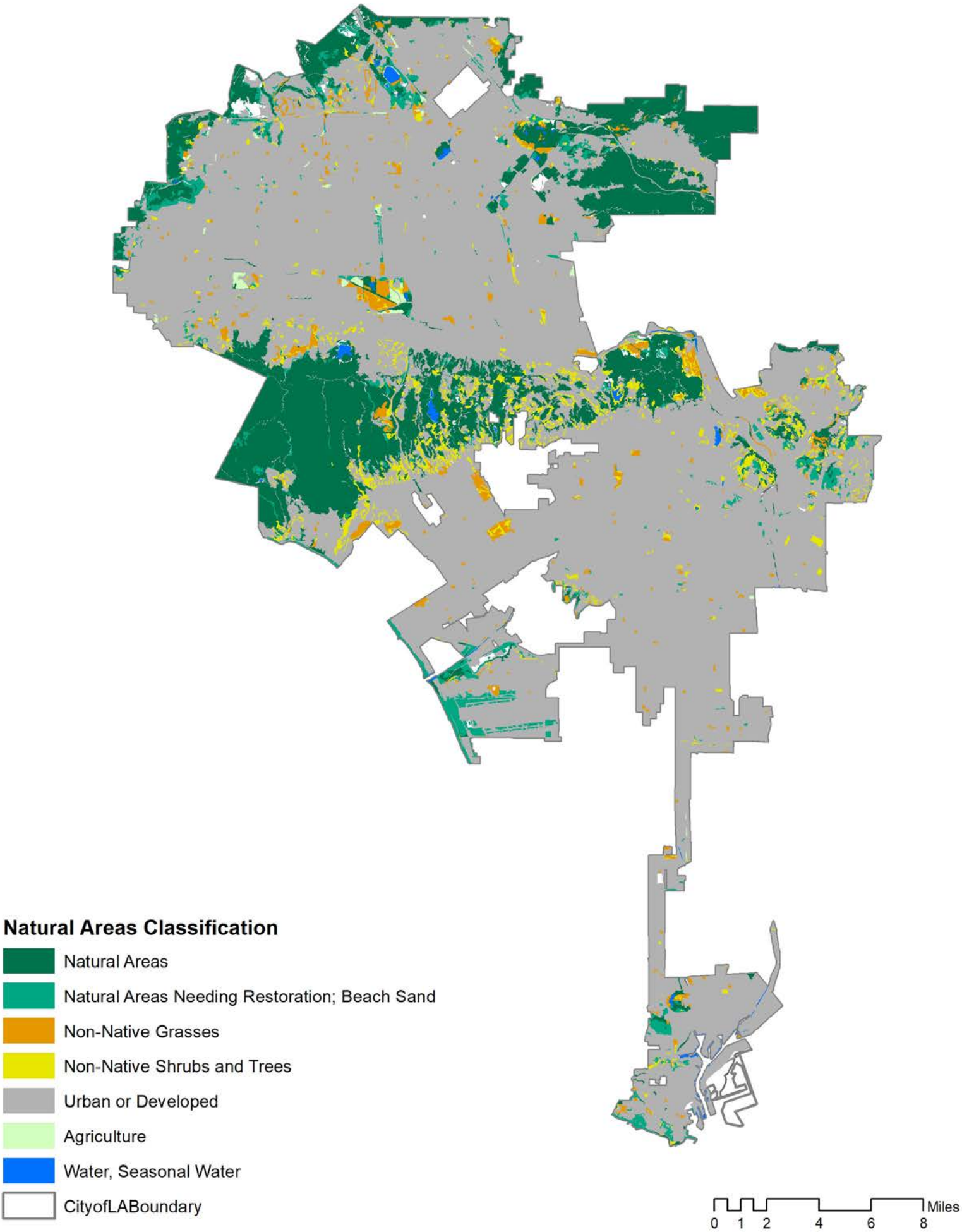
This metric aims to show how the percentage of land in the City of Los Angeles considered to be "natural" increases or decreases over time. The CALVEG 2000-2010 dataset was used to estimate natural areas in the City. The dataset relies on satellite remote sensing to estimate vegetation alliances and is the only complete, uniformly sampled dataset covering the entire City of Los Angeles. Vegetation alliances were classified as "natural" based on consensus of the Expert Council when this metric was assessed in 2018 as part of the Singapore Index assessment for Los Angeles (LASAN, 2018). Unfortunately, CALVEG data has not been updated for the Southern Coast Section of California since 2010. The U.S. Forest Service (USFS) which manages the statewide data reports that it is in the process of updating the mapping protocol and hopes to have the updated protocol available soon. See Appendix II for additional detailed methods and data discussion.

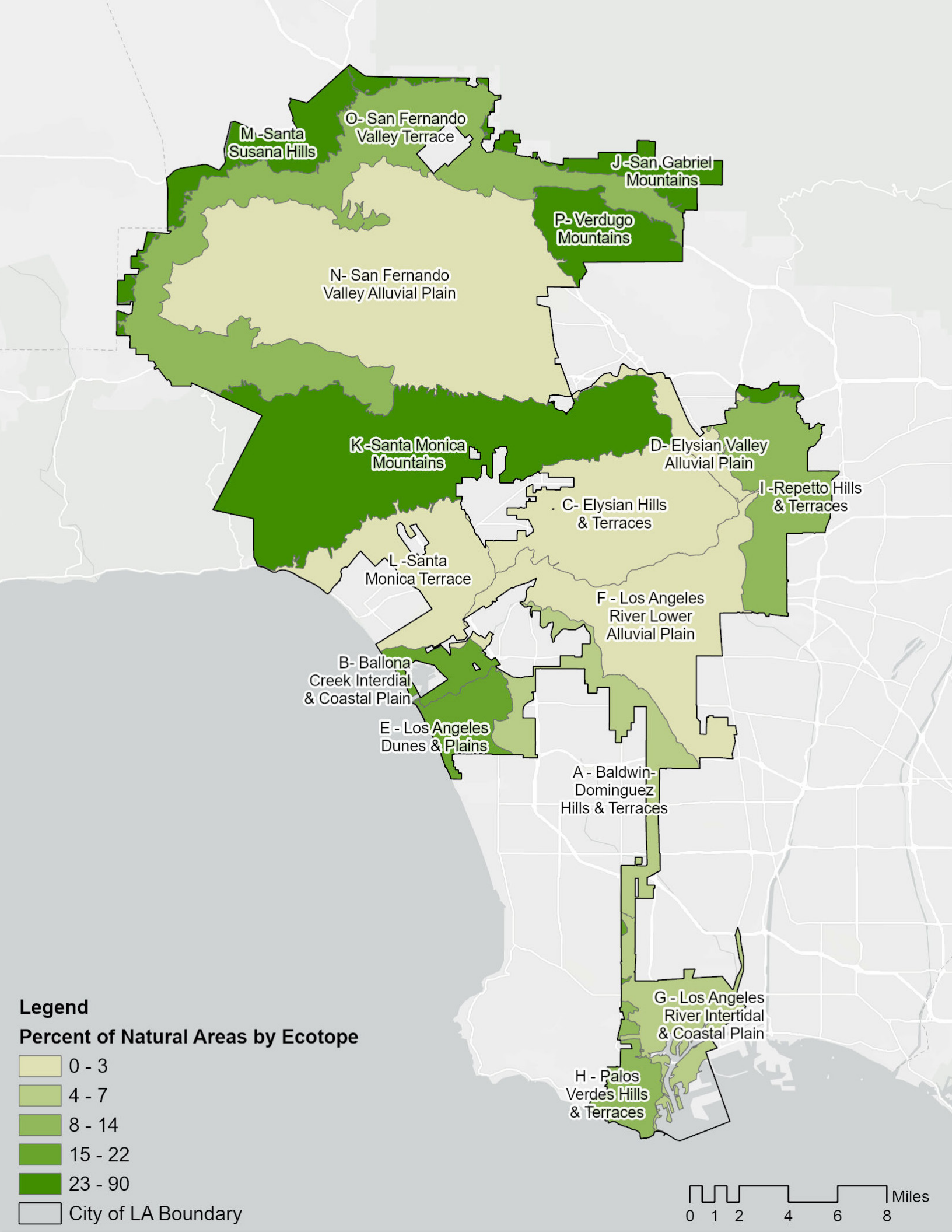
Results Discussion:

Just over 20% of the City of Los Angeles is classified as natural (95.48 square miles out of 470.85 square miles in the City). Most of these areas are concentrated in large, high-quality open spaces in the Santa Monica and San Gabriel Mountains. The breakdown of how the 55 CALVEG alliances in the City were classified is included in the table below:

City of LA Classification	Number of Vegetation Alliances
Agricultural	5
Bare Soil	1
Degraded Natural Areas	3
Natural	35
Non-native Perennial Grasses (e.g., non-native annual grasses and forbs)	1
Non-native Shrubs and Trees	5
Urban	1
Water (e.g., reservoirs, natural water bodies, etc.)	4

This remotely sensed data is not able to capture smaller urban natural areas and it is thought that there is some level of error in original classifications. Further, since this data was collected around 2000, a variety of changes, disturbances, and projects may have altered and further degraded ground conditions. Fires, developments, and other disturbance events have likely reduced the proportion of areas that would be considered natural in the City or degraded their quality. On the flip side, restoration activities and beneficial changes that have occurred to revitalize degraded urban or non-natural areas have also occurred that would likely increase the areas that would be classified as natural today. In addition to understanding how the overall proportion of natural areas in the City changes over time, when new CALVEG data is released it will be important to assess and track how the proportion and location of specific vegetation alliances have shifted in the City and in individual ecotopes over time.


Natural Areas Classification
Natural Areas
Natural Areas Needing Restoration; Beach Sand
Non-Native Grasses
Non-Native Shrubs and Trees
Urban or Developed
Agriculture
Water, Seasonal Water
CityofLABoundary
0 1 2 4 6 8
Miles


M -Santa Susana Hills
O- San Fernando Valley Terrace
J -San Gabriel Mountains
P- Verdugo Mountains
N- San Fernando Valley Alluvial Plain
K -Santa Monica Mountains
D- Elysian Valley Alluvial Plain
I -Repetto Hills & Terraces
C- Elysian Hills & Terraces
L -Santa Monica Terrace
F - Los Angeles River Lower Alluvial Plain
B- Ballona Creek Interdial & Coastal Plain
E - Los Angeles Dunes & Plains
A - Baldwin-Dominguez Hills & Terraces
G - Los Angeles River Intertidal & Coastal Plain
H - Palos Verdes Hills & Terraces
Legend
Percent of Natural Areas by Ecotope
0 - 3
4 - 7
8 - 14
15 - 22
23 - 90
City of LA Boundary
0 1 2 4 6 8
Miles

San Gabriel Mountains
(Photo: Michelle Barton)

Non-native fountain grass in Griffith Park
(Photo: Michelle Barton)

Management Implications:

- Since the CALVEG dataset is roughly 20-years old, updated, comprehensive, high-resolution data is sorely needed to provide an accurate characterization of the current vegetation conditions and makeup across the City.
- Urban areas and non-natural areas can be classified and evaluated for native biodiversity value.
- A ranking system to better differentiate the gradient of natural to non-natural alliances, and their relative biodiversity value, should be pursued.
- As the U.S. Forest Service (USFS) has indicated that they plan to both update statewide data and overhaul the protocol used to create CALVEG maps that will focus more on the rate of change in vegetation communities over time, the City of Los Angeles should keep in touch with the USFS team and try to ensure that planned updates will better enable urban biodiversity analyses.

1.1B HABITAT QUALITY OF URBAN LANDSCAPES AND OPEN SPACE

Score: 2 points - 2

Points	*Weighted Average Score*
0	0
1	1
2	**2**
3	3
4	4
5	5

Background:

With dire predictions that over 1 million species worldwide are threatened with extinction over the next few decades (IPBES, 2019), immediate actions are needed to conserve the world's biodiversity. Cities, typically associated with land conversion, habitat fragmentation, and environmental disruptions are often seen as drivers of species loss. However, as the world continues to urbanize, urban places have an important role to play in stewarding biodiversity. Cities have the potential to shift the narrative and live in harmony with nature. Cities like Los Angeles that are located in global biodiversity hotspots can, and should, become biophilic havens for native species, providing refuge for species, including habitat, adequate food/prey, and shelter.

This metric aims to capture the current availability and quality of habitat across the City at a fine scale (10-foot grid) resolution. When tracked over time, City staff will be able to use habitat quality data to assess where projects and management actions have enhanced habitat and where new development has degraded it. In addition to identifying trends in habitat restoration or degradation, this metric can help identify areas that lack habitat/biodiversity and would benefit from habitat enhancement, restoration, creation of new parks, tree planting, and/or nature-based solutions.

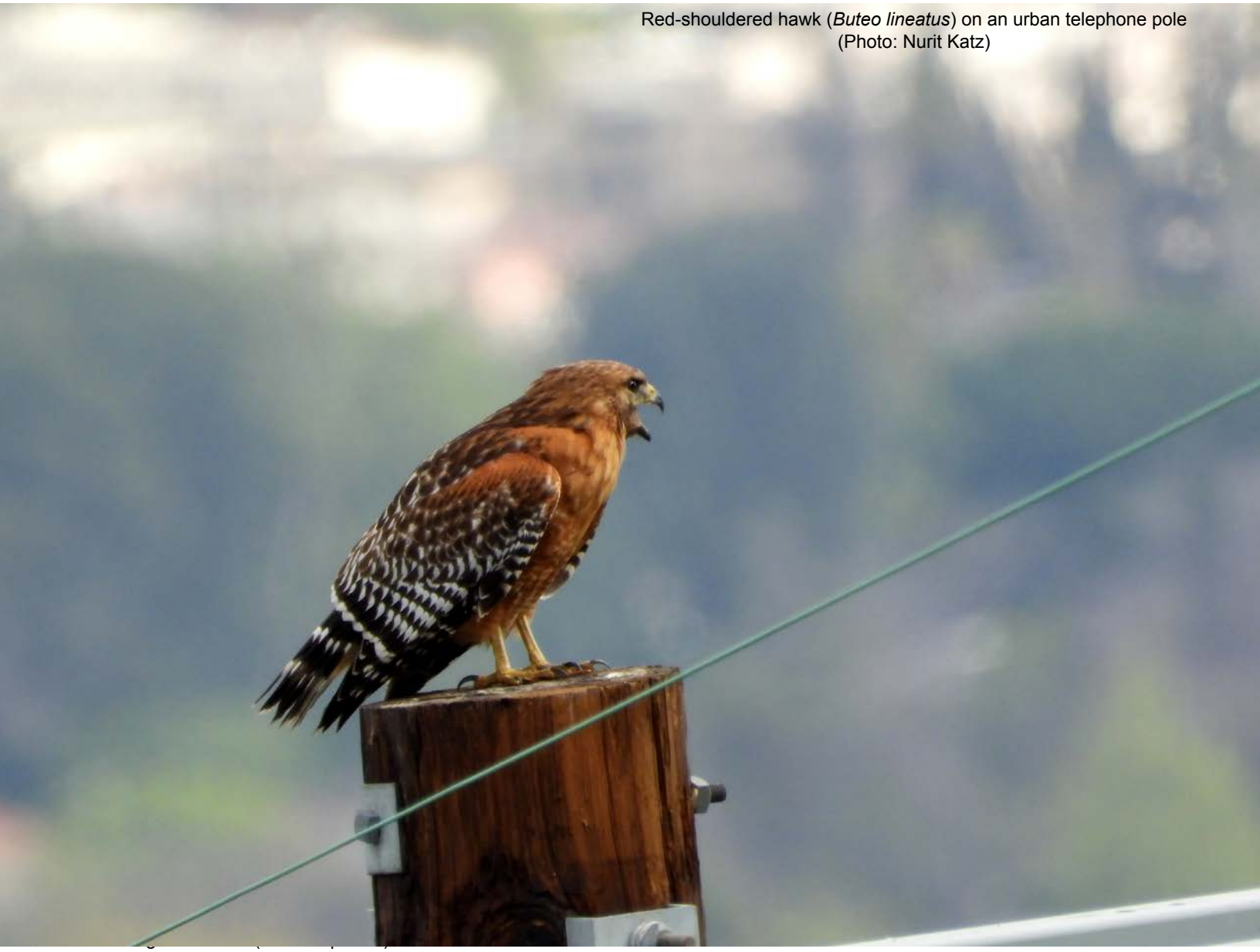
Results Discussion:

Measuring habitat quality for urban biodiversity is a valuable tool for stewardship decision making and an important first step in connectivity modeling. Despite intensive development of flat, valley areas, the City of Los Angeles has large, important natural areas (e.g., Griffith Park), rugged mountain areas (e.g, the San Gabriel foothills), and wetlands (e.g., the Ballona Wetlands) that have high quality habitat and support a variety of rare and endemic species. The score received for this metric (2 out of 5) suggests that the City has huge potential to increase habitat quality at a variety of scales. Restoring degraded habitats in large open spaces, creating habitat in previously paved or barren urban areas, and enhancing the tree canopy and landscape makeup throughout the urban matrix all have the potential to boost the City's score. As this metric is measured in 10-foot pixels, even small actions on private property have the ability to contribute meaningfully to future change.

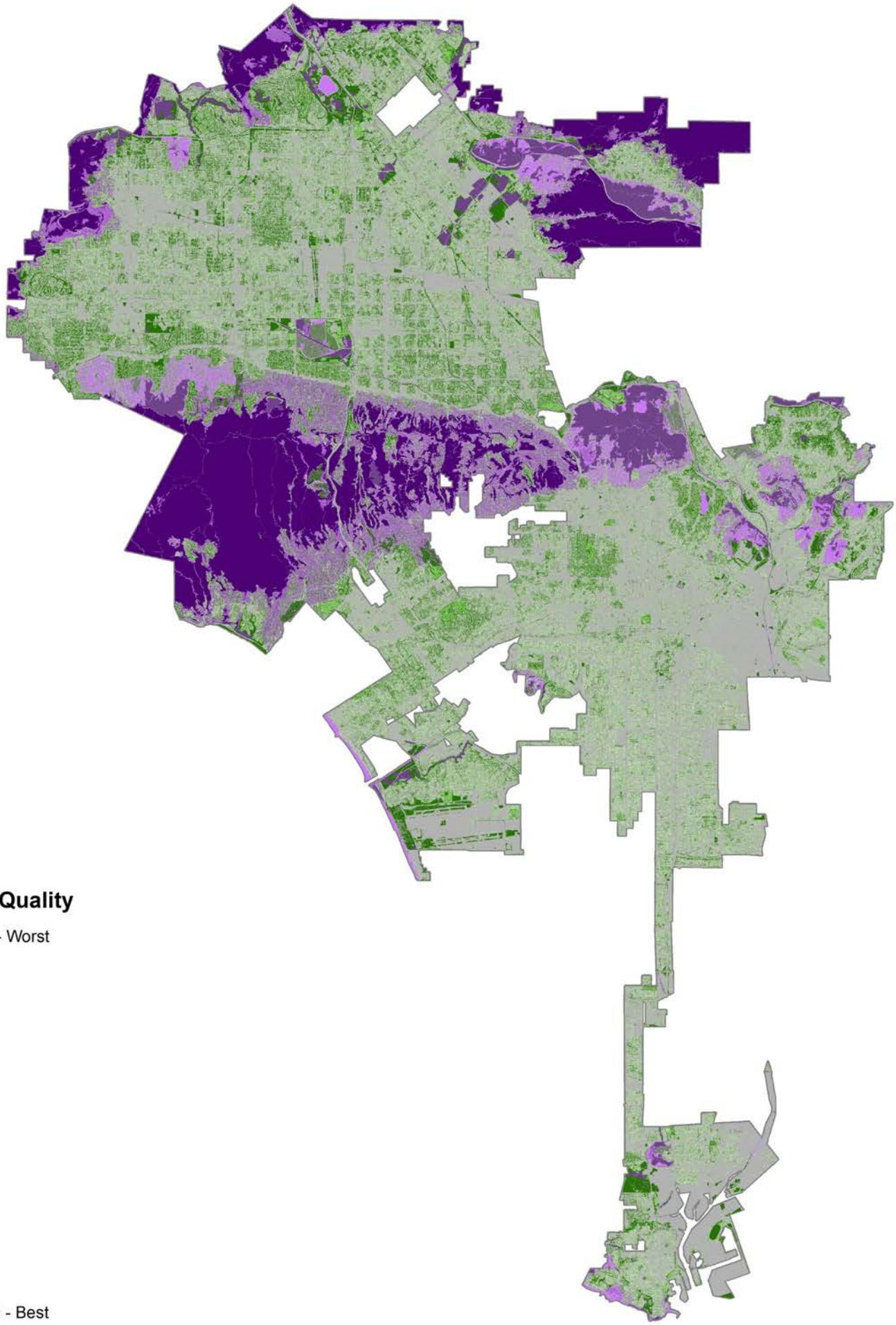
Management Implications:

- Since the CALVEG dataset that provides the backbone of the habitat quality data layer is roughly 20-years old and very outdated, updated, high-resolution data is needed to provide an accurate characterization of the habitat quality across the City. As mentioned for metric 1.1a, LASAN's Biodiversity Team should continue to advocate to the U.S. Forest Service for more frequent updates to this valuable dataset.
- Alternative data sources, such as Landscape Cover Analysis and Reporting Tools (LandCART) should be explored and utilized to track changes in natural areas and vegetation over time.
- These spatially-explicit results can, and should, support decision making to protect, enhance, and equitably distribute biodiversity. Areas of the City with low habitat quality (shown in gray on the map) should be prioritized for public greening activities, such as street tree plantings.
- The City of Los Angeles should continue to engage with Biophilic Cities, CitiesWithNature, the National Wildlife Federation, and other local, national, and international organizations that promote biophilic design, harmonious coexistence with wildlife, and land stewardship.

- The Federal and State 30 x 30 initiatives may provide important opportunities to conserve, protect, enhance, or restore habitat in the City of Los Angeles or in surrounding areas that can enhance both habitat quality and connectivity. Participation in these initiatives is vital to ensuring that the biodiversity interests of Los Angeles are adequately addressed in these plans.
- As there are unprecedented sums that have been budgeted by the State of California for climate resilience, nature-based solutions, and biodiversity, the Interdepartmental Biodiversity Team should pursue funding that will enable the restoration of degraded habitat and/or the creation of new habitat to support biodiversity.
- This metric is connected to so many other metrics in the index (e.g., 1.3a Urban Edge Effects on Natural Areas, 1.1d-1.1f Connectivity, 3.2c Management of Invasive Species & Pests, etc.) and meaningful action on them will yield progress on this metric as well.
- The City can take action to protect against future developmental change (i.e., habitat loss and/or degradation) through zoning changes, regulations, and ordinances.
- Biodiversity Design Guidelines should be developed to provide guidance to public and private landholders on how to best design projects and sustainably manage properties in order to improve habitat quality and enhance local biodiversity. Guidelines should be designed in a way so that they are applicable to a variety of land uses and scales. Examples from around the world (e.g, City of Surrey) can be used as inspiration.



Red-shouldered hawk (*Buteo lineatus*) on an urban telephone pole (Photo: Nurit Katz)


Legend
Habitat Quality
0 - Worst
1
2
3
4
5
6
7
8
9
10 - Best
City of LA Boundary
Miles
0 1 2 4 6 8

1.1C HABITAT QUALITY OF STREAMS

Score: 0 points - CSCI < 0.62

Points	*Average California Stream Condition Index (CSCI) for the City** **the higher scores also incorporate data from the Algal Index of Biotic Integrity for Streams*
0	**≤ 0.62 (very likely altered)**
1	0.63 – 0.79 (likely altered)
2	0.80 – 0.91 (possibly altered)
3	≥ 0.92 (likely intact)
4	≥ 0.92 (likely intact) and ASCI > 10th percentile
5	≥ 0.92 (likely intact) and ASCI > 30th percentile

Background:

The California Stream Condition Index (CSCI) is a biological index that was developed by the State Water Resources Control Boards to assess communities in rivers and streams. The CSCI is a "biological scoring tool that helps aquatic resource managers translate complex data about benthic macroinvertebrates found living in a stream into an overall measure of stream health. The CSCI communicates whether, and to what degree, the ecology of a stream is altered from a healthy state. Direct measures of ecosystem health like the CSCI are preferable to those based on chemical or physical measurements for many management questions. Living organisms integrate the effects of multiple stressors, such as sedimentation, nutrient enrichment, and riparian disturbance, over both space and time" (Mazor et al., 2016, Rehn, et al., 2015). CSCI scores, obtained for specific points, can be used to model and categorize streams based on the thresholds reported in Mazor et al. 2016. Traditionally, CSCI scores range from about 0.1 to 1.4. For the purposes of making statewide assessments, three thresholds have been established based on the 30th, 10th, and 1st percentiles of CSCI scores at reference sites.

These three thresholds divide the CSCI scoring range into 4 categories of biological condition as follows:

- ≤0.62 = very likely altered condition;
- 0.79 to 0.63 = likely altered condition;
- 0.91 to 0.80 = possibly altered condition;
- ≥0.92 = likely intact condition (Renh, et al., 2015).

The CSCI provides an appropriate mechanism to assess the habitat quality of streams in the City of LA. To measure metric 1.1c, the flow ecology stream class data with predicted CSCI scores for streams within the City of LA were analyzed. If the average predicted CSCI score for the City of LA increases as measurement of this metric continues over time, it will indicate that the habitat quality of local streams is improving.

LA's Green New Deal has many initiatives related to the LA River including a target to complete or initiate restoration identified in the Federal LA River Ecosystem Restoration Plan ('ARBOR' Plan) by 2035. Planned restoration and revitalization efforts will, hopefully, bolster the habitat quality of the LA River as well as other major streams and rivers in the City, including Ballona Creek, in the future.

Results Discussion:

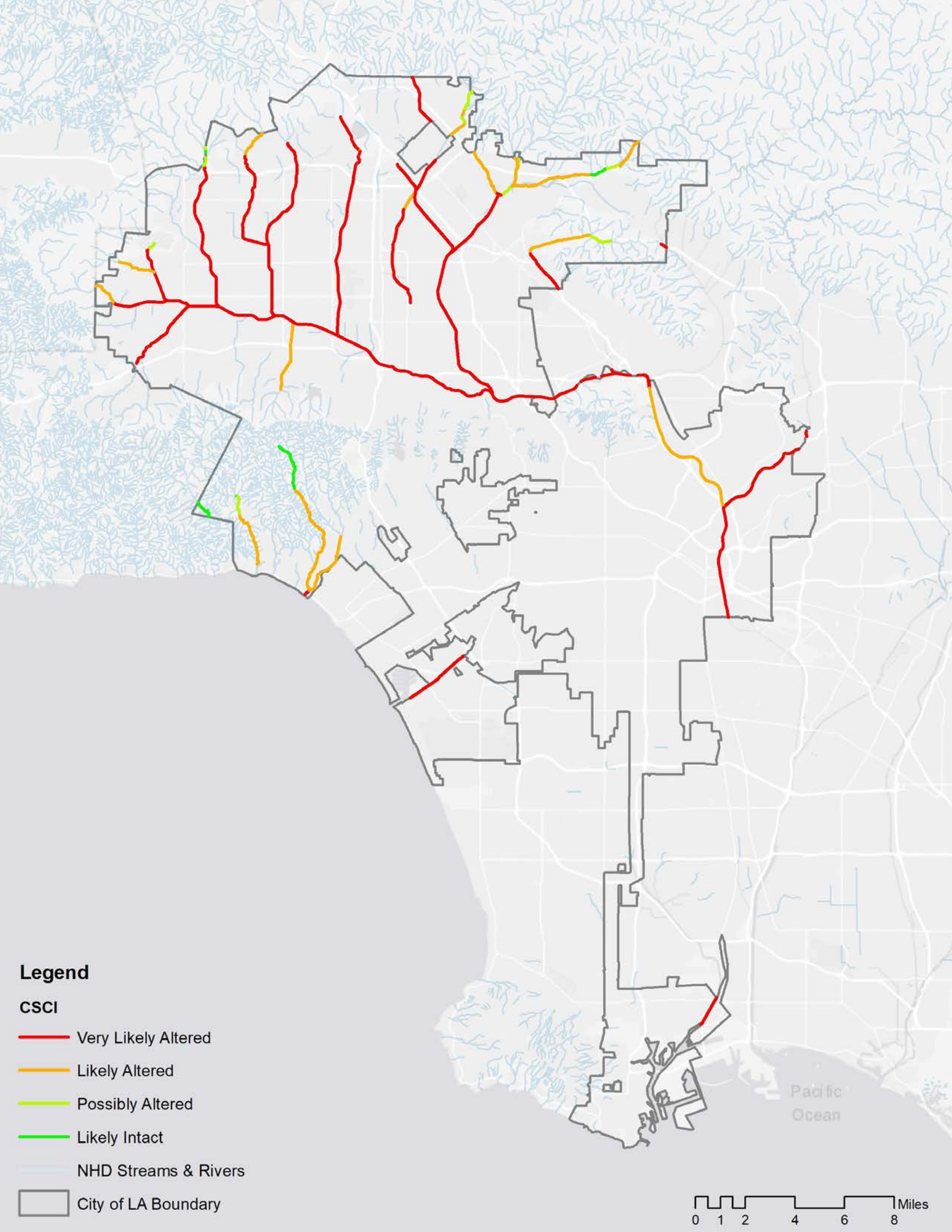
The average predicted CSCI score for the City was calculated and categorized according to the thresholds listed in the table below. The average CSCI score for the stream segments in the City of LA is 0.61 (very likely altered). The highest recorded score within the City limits is 1.05 and the lowest recorded score is 0.26. One segment, the Burbank Western Chanel, was not assessed and thus was filtered out of calculations. The average CSCI score for areas considered to be "natural" based on the analysis performed for LA City Biodiversity Index metric 1.1a (% natural areas) is 0.65 (likely altered), slightly higher than the score for streams in non-natural conditions across the City. Overall, streams in the City of LA, regardless of whether they are in urban or natural areas, are altered and of degraded quality.

Classifications of Streams in the City of Los Angeles:

Score	***CSCI Score***	***# of Assessed Segments***	***% of Assessed Segments***
0 (very likely altered)	<0.62	49	52.7%
1 (likely altered)	0.63-0.79	26	28.0%
2 (possibly altered)	0.80-0.91	11	11.8%
3 (likely intact)	>.92	7	7.5%

This means that 80.7% of streams in LA City are very likely altered or likely altered and only 7.5% of streams are likely intact. In contrast, the Ecosystem Health Sustainability Report Card for Los Angeles County reports that in LA County, 57% of sites are likely or very likely altered and 24% of streams are likely intact (Reid-Wainscoat et al., 2021).

Riparian habitat along the Glendale Narrows, LA River
(Photo: Michelle Barton)


Legend
CSCI
Very Likely Altered
Likely Altered
Possibly Altered
Likely Intact
NHD Streams & Rivers
City of LA Boundary
Pacific Ocean
0 1 2 4 6 8
Miles

Natural stream in the San Gabriel Mountains (Photo: Michelle Barton)

Management Implications:

- Continue to compare scores in LA City to those in LA County and the greater Southern California region via the Stormwater Monitoring Coalition's Stream Survey to understand how the City compares to the rest of the region and to better contextualize results.
- In the future, additional metrics, such the Stream Quality Index, which unlike the CSCI includes data on chemical and physical stressors, could be assessed in tandem with the CSCI for a more holistic approach.
- Increasing the number of CSCI assessment sites would provide better spatial coverage and increasing the frequency with which scores are measured could provide more trends on how stream quality in the City is changing over time.
- Integrated, multi-disciplinary efforts to improve the state of streams, rivers, and riparian habitats across the City are needed to improve stream condition and increase the score for this metric.
- Planned improvements under the ARBOR plan along the LA River, and other initiatives to restore riparian habitats and improve river and stream condition, such as the Westwood Greenway project, could improve this score in the future and serve as a model for other targeted restoration work.
- SCCWRP is currently conducting research to better understand factors that affect conditions within modified stream channels. Incorporating the results in future analysis could be beneficial, given the extent of modified channels within the City.
- Riverfront projects focused on social amenities should be designed intentionally to improve, rather than degrade, stream quality.

1.1D CONNECTIVITY OF NATURAL AREAS

Score: 2 points - 738 hectares

Points	*Effective Mesh Size (hectares)*
0	< 200 ha
1	200 – 500 ha
2	**501 – 1,000 ha**
3	1,001 – 1,500 ha
4	1,500 – 2,000 ha
5	> 2,000 ha

Background:

This metric aims to assess the connectivity of natural areas by measuring effective mesh size. Measuring effective mesh size (m_{eff}) is an accepted method to assess landscape fragmentation as it provides a useful measure of the overall pattern of natural areas in a City. Effective mesh size is based on the probability that two points in a landscape are connected to each other (i.e., if the points are in the same patch) (EEA, 2011). Lower m_{eff} values suggest a more fragmented landscape and higher values indicate greater connectivity. To analyze m_{eff} and understand patterns of landscape fragmentation, the spatial relationships of relevant landscape elements (e.g., roads, man-made barriers, etc.) must be analyzed. It should be noted that this calculation does not take the movement patterns of specific species into account. Rather, it is a general assessment of connectivity between natural area patches.

The revised Handbook on the Singapore Index updates recommendations on this metric (Chan, et. al., 2021). Rather than simply reporting $m_{eff,}$ the handbook recommends taking the calculation one step further to calculate coherence, to better account for the physical size of individual cities. The City will calculate both effective mesh size and coherence, but will score this metric based on effective mesh size.

Coherence = Effective Mesh Size/Total Area of Natural Areas

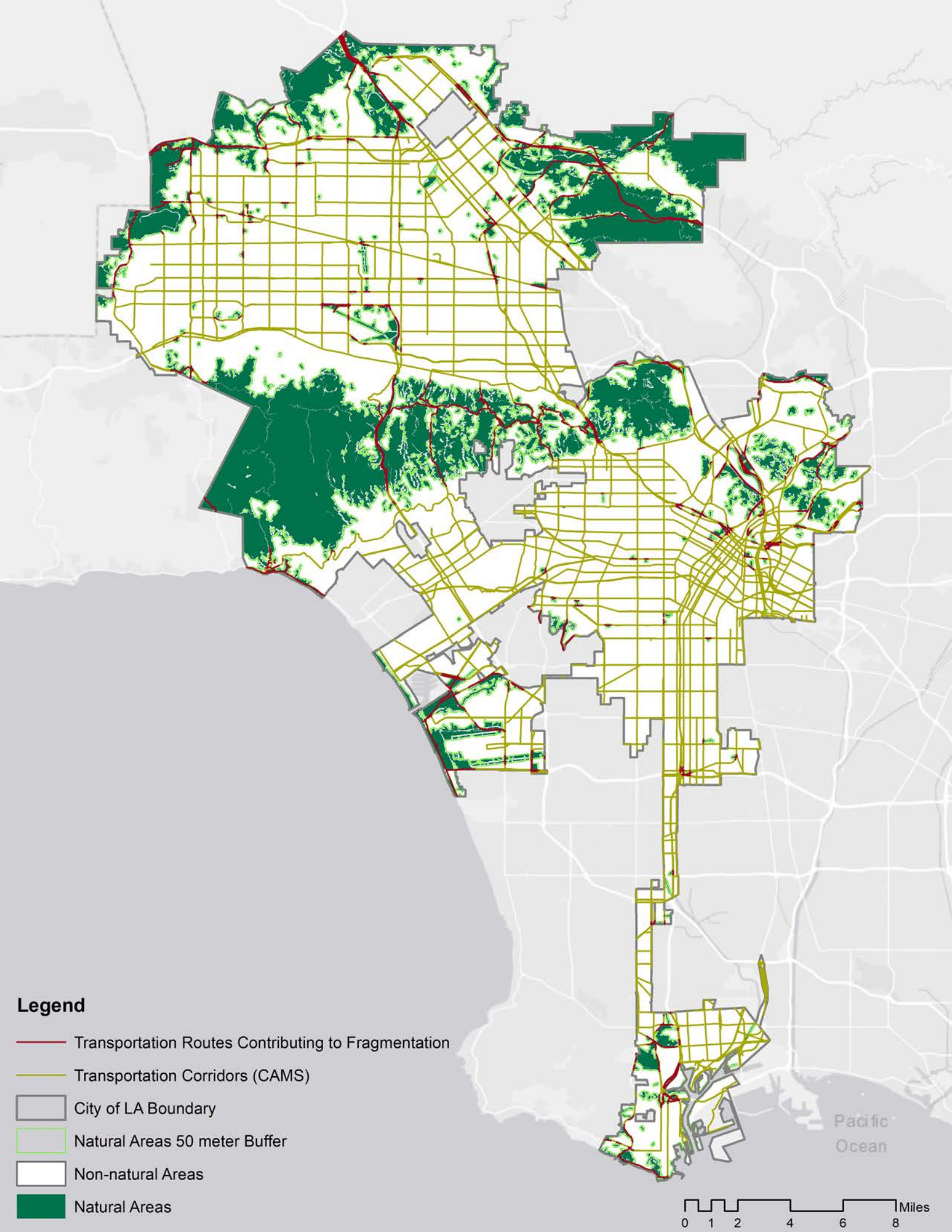
Results Discussion:

The City of LA received a score of 2 points for this metric as effective mesh size was calculated to be 738 hectares. As the data inputs for this metric have not been updated since the City of LA calculated and published effective mesh size results in the 2018 Biodiversity Report, the previously reported results still stand (LASAN, 2018). Effective mesh size does not fully address configuration of ecological networks, only total connectivity. As the LA City Biodiversity Index has three connectivity metrics (1.1d - 1.1f), each of which examines a different aspect of connectivity, the metrics should be looked at collectively to understand how connectivity patterns are changing over time. Additionally, assessing connectivity metric results and data layers, will help identify areas to prioritize for restoration, preservation, and enhancement.

Coherence was calculated to be 3% for the City (Coherence = 738 / 24,731 = 3%).

Management Implications:

- As previously mentioned, regular updates to CALVEG data are crucial to understanding and analyzing temporal change. Efforts should continue to coordinate with the U.S. Forest Service and push for immediate and regular updates to this dataset to enable additional calculations.
- To move the needle in a substantive way on effective mesh size, the City, the County, and the Biodiversity Expert Council will need to work to both increase the size of natural area patches through restorations and/or conservation easements and to reduce connectivity barriers between patches.
- Large-scale, integrated planning across jurisdictional boundaries is needed to create real change when it comes to landscape-level connectivity. Numerous regional initiatives are underway to evaluate and plan for connectivity, such as the National Park Service's Rim of the Valley Corridor, which should contribute positively to all three connectivity metrics over time.


Legend
Transportation Routes Contributing to Fragmentation
Transportation Corridors (CAMS)
City of LA Boundary
Natural Areas 50 meter Buffer
Non-natural Areas
Natural Areas
Pacific Ocean
0 1 2 4 6 8 Miles

1.1E CONNECTIVITY OF URBAN LANDSCAPES & OPEN SPACE

Score: 2 points - 1.9 / 5

Points	*Average Pixel Connectivity Score for Area of Interest*
0	Impermeable barriers, average pixel connectivity score = <0.5
1	Impeded, average pixel connectivity score = 0.5-1.5
2	**Pinch-points, average pixel connectivity score = 1.5- 2.5**
3	Channeled, average pixel connectivity score = 2.5 - 3.5
4	Intensified, average pixel connectivity score = 3.5 - 2.5
5	Diffuse, average pixel connectivity score = 4.5+

Background:

Preserving and enhancing the connectivity of urban landscapes and open space is vital for biodiversity. Landscape-level connectivity allows movement between patches of suitable habitat, increases the chance of survival for small populations, and enables gene flow across patchy landscapes. Connecting ecosystems through urban areas is essential to enhancing biodiversity, addressing climate change, and providing general "resilience" on a global scale. As a megacity located in one of 36 Global Biodiversity Hotspots, Los Angeles is uniquely positioned to have a significant impact on the health and resilience of ecosystems and biodiversity in southern California and beyond. Cities, such as Los Angeles, can set a precedent for how to address some of the most essential conservation strategies, such as enhancing ecological connectivity, within the most developed parts of the world.

There are many different efforts underway across the region and state to identify and address the need for more connected landscapes that enhance urban biodiversity. Linkage designs have been mapped within the Southcoast Ecoregion, but currently do not identify corridor opportunities in the Los Angeles area. Wildlife, including the California State-listed mountain lion, live and move through Los Angeles, and depend upon connections to disperse, find mates, etc. In order to accurately and efficiently create such connections, a map identifying priority ecological connectivity areas in Los Angeles must be created.

Metric 1.1e uses Omniscape, modeling software that produces maps of omni-directional habitat connectivity, to measure connectivity of all landscape types, including both natural and non-native landscapes, spatially, at a 30' grid resolution using a ½ mile moving window. Please see Chapter 3 of the 2020 Biodiversity Report, as well as Appendix II of this report, for additional details regarding Omniscape and the inputs (e.g., source and resistance layers) that have been developed for this metric (LASAN, 2020; Brown, 2019).

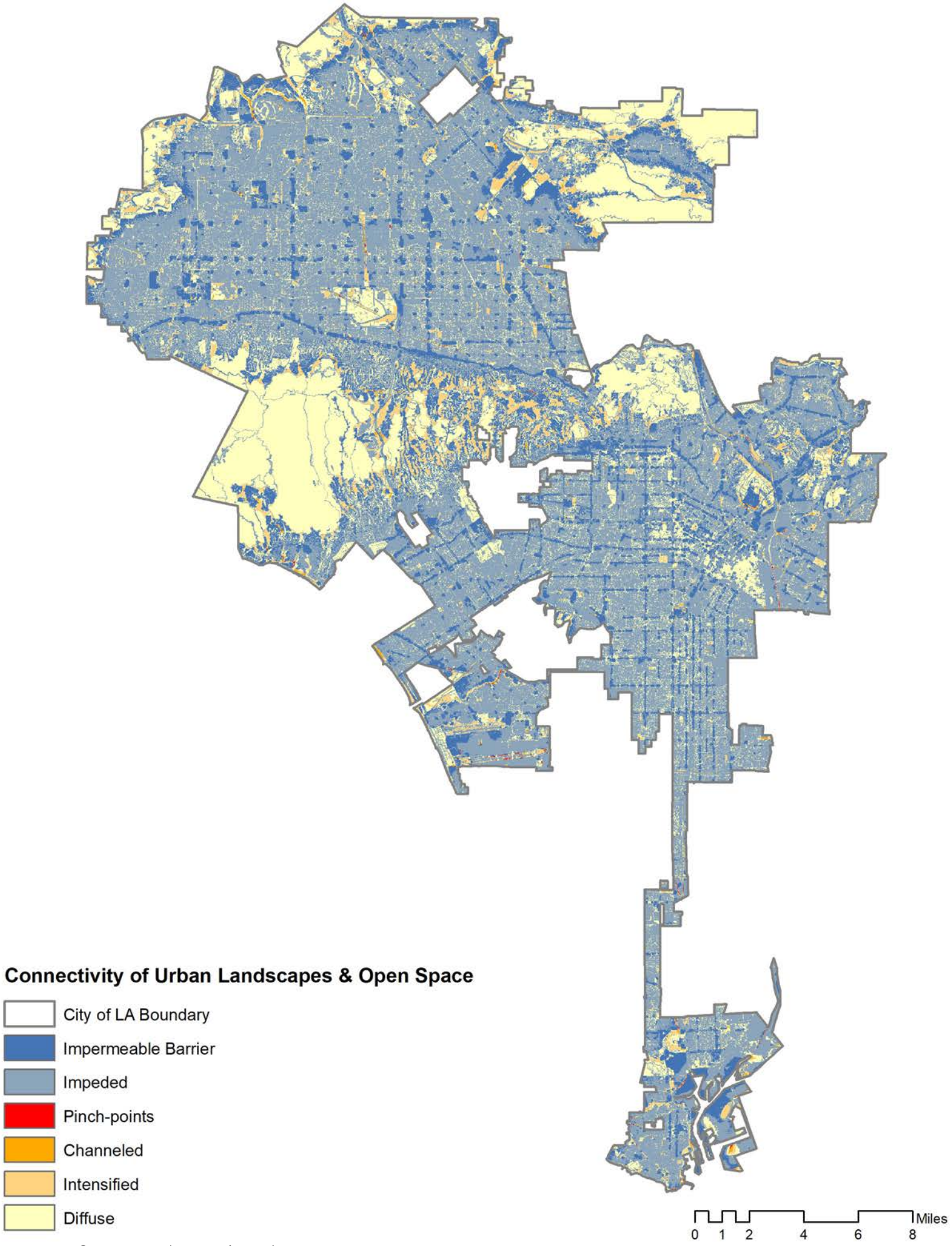
Results Discussion:

The mean connectivity pixel score for this metric was 1.9, yielding an overall metric score of 2. These results are the first published assessment of wall-to-wall connectivity for the City of Los Angeles at 30' resolution. The normalized current flow from Omniscape shows expected patterns with the most urban, developed areas having low-flow channeled around natural barriers, like highways, airports, and dense development (McRae et al., 2016). All pixels in the normalized flow output have been classified as:

- Impermeable Barriers,
- Impeded,
- Pinch-points,
- Channeled,
- Intensified, and
- Diffuse.

See Appendix II for additional details on classification definitions/values.

While the publication of these initial connectivity results is groundbreaking, we recognize that the resulting map is not perfect, but is a work in progress. There are certain areas, like the Fashion District in Downtown LA, which are largely classified as diffuse, when in reality they are heavily paved, heavily developed areas that provide limited habitat value. The classification of areas like the Fashion District as diffuse suggests that in some cases the connectivity results presented here may be overly rosy, inflating the overall Citywide connectivity score. Future assessments should use LiDAR, or other imagery, to obtain up-to-date building footprints, and weigh them more heavily, to develop more accurate resistance layers. In the future, finer-scale results (e.g., 10' resolution) would enhance the value of a connectivity product and help users hone in on opportunities to


Connectivity of Urban Landscapes & Open Space
City of LA Boundary
Impermeable Barrier
Impeded
Pinch-points
Channeled
Intensified
Diffuse
0 1 2 4 6 8
Miles

enhance wildlife movement. Re-running the analysis with a larger moving window (e.g., 5-miles), would allow better assessment of long-range connectivity, essential for species like the mountain lion.

It should be noted that this baseline assessment was dictated by the following factors:

- Input layer resolution
  - The source layer resolution was 10', but the resistance layer resolution was 30', limiting the output resolution to 30'.
- Computing power
  - Running Omniscape at 10' resolution or with a larger moving window requires extensive computing power, which appears to exceed the capabilities of City GIS computers.

Initial interpretations of the normalized flow output suggest that notable pinch-points exist along various stretches of the LA River, near the Van Nuys Airport, and on the southwest side of Elysian Park/ Dodger Stadium. These pinch-points, and others, would benefit from connectivity improvements and enhancements. The map also identifies areas in underserved communities where there are opportunities to enhance connectivity and access to biodiversity. Areas that are shown as impenetrable or impeded would benefit from tree planting, green infrastructure, and new community parks.

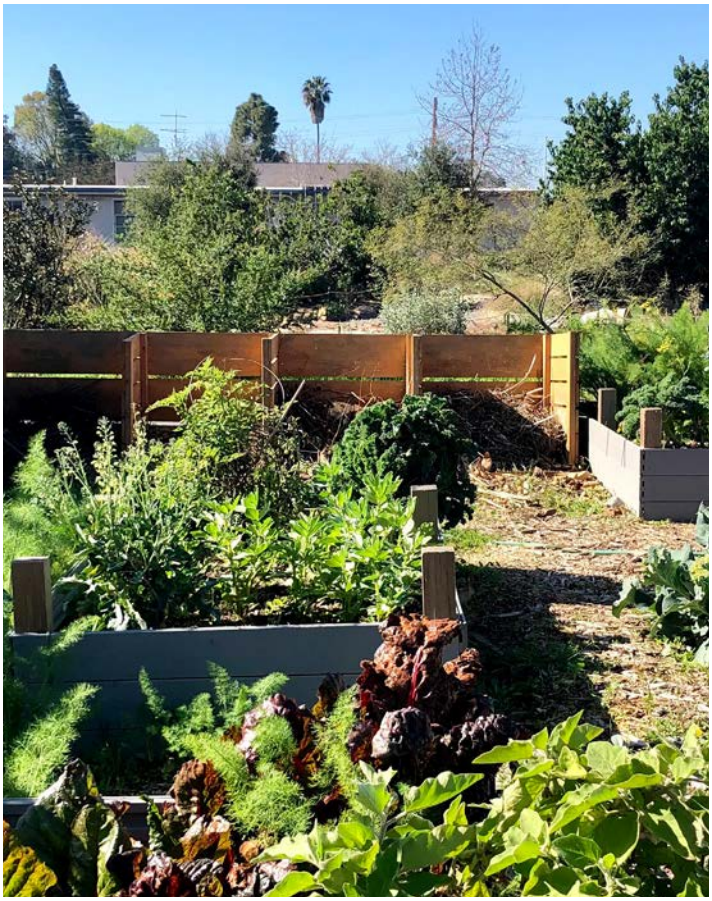
Additional interpretation of the resulting connectivity layer, as well as comprehensive planning to enhance Citywide connectivity, is needed and will, hopefully, follow the publication of this report. Potential interpretations may include creating an essential linkage map for the City or creating a prioritized list of connectivity interventions/improvements. However, it should be noted that interpretations of the output and planned implementation actions will vary site-by-site and require additional evaluations and ground-truthing. While the focus of planning should be to connect ecological communities, initiatives like the Connecting Wildlands & Communities project, which is exploring how connected landscapes support the resilience of ecosystems and communities in Southern California, demonstrate the importance of an integrated regional planning framework. As implementation projects to forge new connections or enhance existing ones proceed, considerations for how projects may increase equitable access to nature/parks should be included.

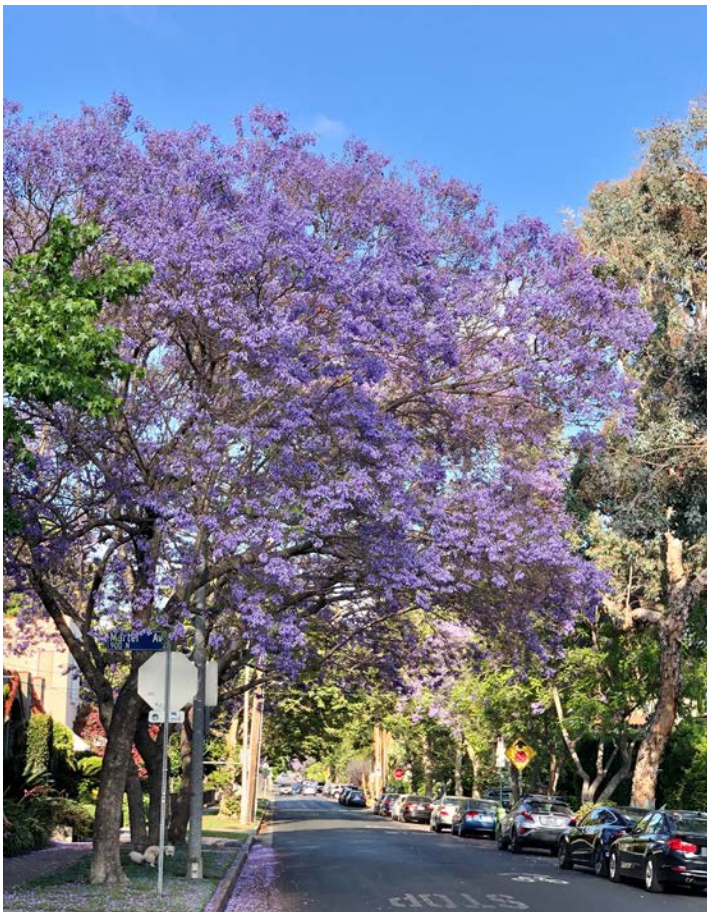
It should also be noted that this connectivity assessment does not address climate change and that maintaining biodiversity and connectivity in the face of climate change requires dynamic modeling and adaptive management approaches. As dynamic, climate-sensitive connectivity modeling advances (e.g., The Conservation Ecology Lab at SDSU) the City should consider refining its modeling approach to incorporate the range of potential changes in habitat availability and location anticipated under various climate change scenarios (Jennings et. al., 2019, McRae et. al., 2016).

While there are still many ways this assessment can be improved and further assessed, the publication of this high-resolution, wall-to-wall connectivity map for the City of Los Angeles is a fantastic start and is a science-based methodology for mapping connectivity in urban areas that can be replicated in other cities across the nation and around the world.

Management Implications:

- As there are a variety of groups and initiatives working on connectivity issues in greater LA (e.g., Arroyos & Foothills Conservancy, the Emerald Necklace Initiative) regularly convening the Southern California Wildlife Habitat Connectivity Group, a regional connectivity working group to coordinate connectivity needs, agree upon maps, and identify projects across the region that can be collectively pursued to enhance regional connectivity, will be key to success.
- As feasible, future connectivity assessments should include climate change considerations.
- Unlike other metrics, metrics 1.1e and 1.1f require intensive computing power and specialized GIS experience. When these metrics are reassessed in ten years, there will be a need for dedicated staff and/or a skilled subcommittee to assist in the creation of the input layers (source and resistance), Omniscape processing, and interpretation of results. Resources may be needed to access cloud computing and/or for consultant assistance.
- Additional, targeted efforts to interpret the results of this connectivity assessment are needed to analyze results and make recommendations on how this output can contribute to project design, planning considerations, and more.
- Future restoration, conservation, and connectivity planning should hinge on this map, or future iterations of this map.
- These baseline results should not be seen as static or final, rather they should serve as a launching point for future evaluations, refinements, and updates as tweaks to scoring and other refinements will help advance strategic planning and implementation projects that broadly improve landscape-level connectivity.
- Updates to scoring, analysis, and interpretation of metric 1.1e should be done in tandem with updates to metric 1.1f.





Urban landscapes in LA. Clockwise from top left: urban garden at a local elementary school, an outdoor classroom at Walgrove Elementary, a DTLA freeway interchange, LA streetscape. (Photos: Michelle Barton)

1.1F CONNECTIVITY OF STREAMS AND RIPARIAN AREAS

Score: 2 points - 1.7 / 5

Points	*Average Pixel Connectivity Score for Area of Interest*
0	Impermeable barriers, average pixel connectivity score = <0.5
1	Impeded, average pixel connectivity score = 0.5-1.5
2	**Pinch-points, average pixel connectivity score = 1.5- 2.5**
3	Channeled, average pixel connectivity score = 2.5 - 3.5
4	Intensified, average pixel connectivity score = 3.5 - 2.5
5	Diffuse, average pixel connectivity score = 4.5+

Background:

This metric measures the connectivity of streams and riparian areas. Streams and riparian areas provide core habitat for aquatic, partially aquatic, and terrestrial species. Spatial mapping of connectivity along streams and in riparian areas can provide a useful tool for measuring, monitoring, and managing changes to connectivity across the urban environment. Further, spatial assessment can help identify stream/river segments and/or riparian areas that would benefit from restoration and enhancement activities to improve connectivity and to capture the impacts of projects that aim to enhance or restore connectivity.

Enhancing riparian and stream connectivity is an important consideration and high-priority goal across the region. Many plans, including LA's Green New Deal and the LA River Master Plan have goals to enhance riparian and stream connectivity in the LA region. For example, supporting healthy, connected ecosystems is one of nine major goals presented in the LA River Master Plan. The plan outlines six actions, ranging from using the river corridor as a living laboratory to creating a connective network of habitat patches to facilitate wildlife movement, that can be followed to create healthy connected ecosystems and to advance this goal. As there are currently many major and minor projects planned for the LA River and beyond, quantifying the benefits of restoration projects along stream corridors can demonstrate their value towards achieving connectivity targets.

Like metric 1.1e, metric 1.1f uses Omniscape to measure the connectivity of streams and riparian areas spatially, at a 30' grid resolution. As a first step, a stream network was designed using data from the National Hydrography Dataset (NHD) Plus High Resolution (HR) dataset and the County of Los Angeles stormwater drainage system. The resulting stream network was buffered to account for adjacent riparian zones. Stream naturalness and riparian zone naturalness was defined and ranked from 1 to 5. Areas that are more natural with higher scores are assumed to provide greater habitat values for species. The composite naturalness layer served as the "source layer" for Omniscape analysis. A "resistance layer" was constructed for the network based on land use, building footprints, and other barriers to movement in stream and riparian corridors. Please see the Technical Memorandum from Stillwater Sciences, as well as Appendix II of this report for additional details regarding the Omniscape modeling and the inputs (e.g., source and resistance layers) that have been developed for this metric.

Results Discussion:

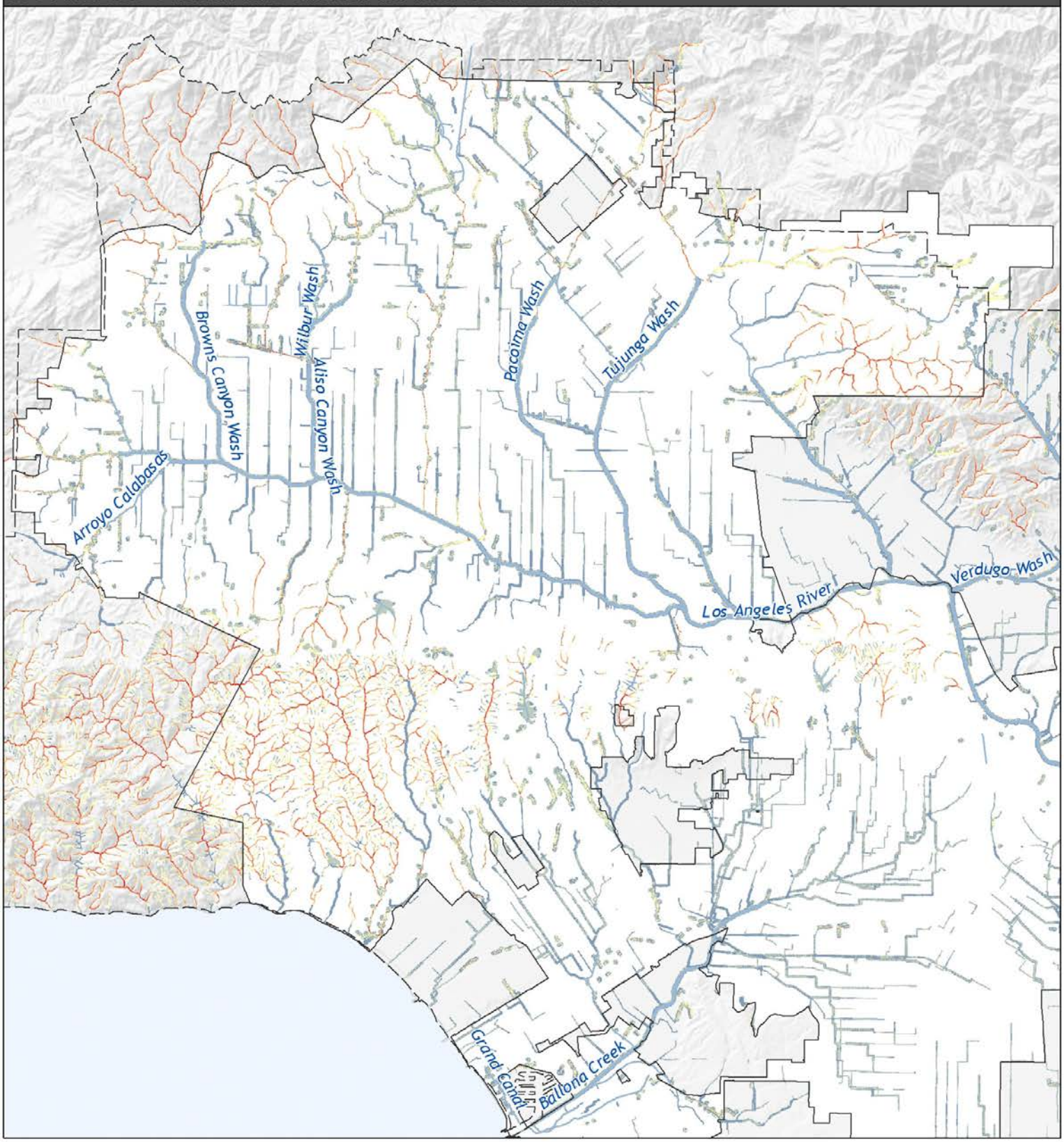
The mean connectivity pixel score for this metric was 1.7, yielding an overall metric score of 2. To arrive at this score, results of Omniscape modeling were interpreted and converted to a metric score on the standard five point scale. Pixels were classified based loosely on McRae et al. (2016) into the following categories: highly impeded, impeded, pinch-points or highly channeled, channeled, intensified, or diffuse, with intensified and diffuse classifications being the most desirable. Classifications are summarized in the table below and outlined in more detail in Appendix II and the Stillwater Sciences Technical Memorandum.

Metric 1.1f Score	*Connectivity Category*	*Category Description*
0	Highly Impeded	Highly impeded areas are largely defined by built features that are assumed to have a limited role in connectivity.
1	Impeded	Impeded areas provide limited value to connectivity and typically consist of built features or lower value landscapes. As these areas are often near high biodiversity value resources, they can be key for restoration work.
2	Pinch-points / Highly Channeled	Pinch-points are concentrated areas of connectivity within impeded or channeled zones. These areas often consist of vegetation, open-water, or streams surrounded by dense development.
3	Channeled	Channeled areas are concentrated areas of connectivity that are relatively constrained by surrounding urban land uses.
4	Intensified	Intensified areas are of relatively high connectivity value that consist of a mix of high-value habitat and built structures.
5	Diffuse	Diffuse areas are of the highest connectivity value. Diffuse areas provided connected stream and riparian corridors through high-value vegetation or water.

Generally, higher metric 1.1f scores reflect greater connectivity and more potential for species movement. However, riparian corridors naturally have relatively concentrated, or channeled, connectivity conditions along narrow ecological features. Therefore, even scores of two or three that occur within high quality natural stream corridors are of high value, despite falling in the middle of the scoring range. Changes, or projected changes, in 1.1f scores over time are key to monitoring connectivity change. Locations that see scores decline or improve over time should be inventoried and underlying causes for changes should be examined to better understand the overall health and connectivity of our stream and riparian corridors.

These results are the first published assessment of wall-to-wall connectivity for a buffered stream and riparian network in the City of Los Angeles at 30' resolution. To better understand how to interpret and utilize the results, modeling will be performed to assess the impact of planned channel enhancements via the ARBOR LA River Ecosystem Project and the LA River Fish Passage and Habitat Structures Design Project. Changes will be made as needed to ensure that the modeling and scoring approaches are appropriately quantifying connectivity changes.

LOS ANGELES STREAM AND RIPARIAN AREA CONNECTIVITY



Connectivity Categorization - Northern Los Angeles

- Highly Impermeable (<1.1)
- Impeded (1.2 - 2.1)
- Diffuse (2.2 - 3.4)
- Intensified (3.5 - 4.9)
- Channeled (5 - 7)
- Pinch Points or Highly Channeled (>7.1)
- City of L.A.
- Study Area

Map Sources:
Stream network:
USGS 2019, LA DPW 2021
Cities, roads: ESRI 2019

N

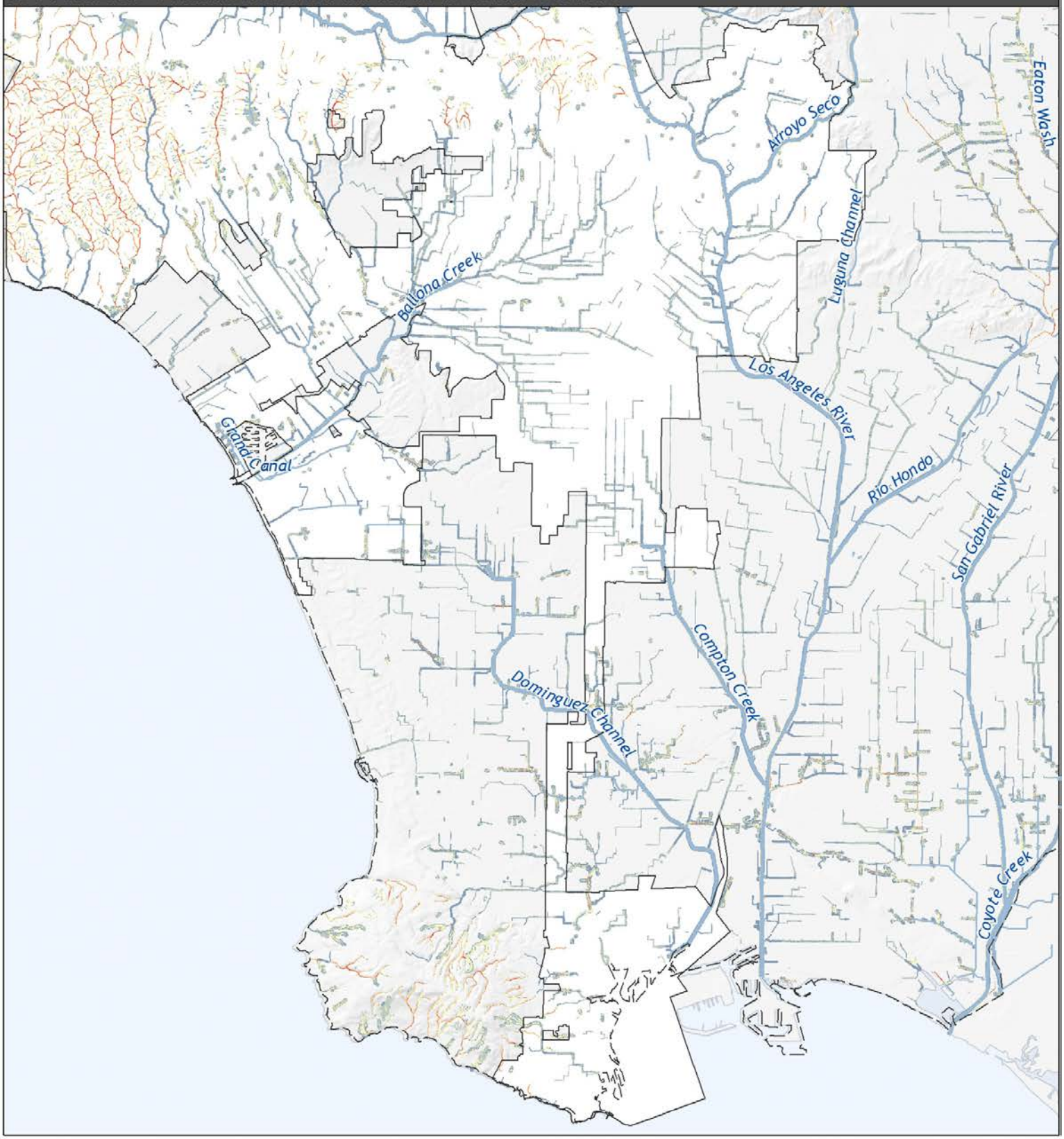
0 1 2 4 Kilometers

0 0.75 1.5 3 Miles

Stillwater Sciences

Map Location

LOS ANGELES STREAM AND RIPARIAN AREA CONNECTIVITY



Connectivity Categorization - Southern Los Angeles

- Highly Impermeable (<1.1)
- Impeded (1.2 - 2.1)
- Diffuse (2.2 - 3.4)
- Intensified (3.5 - 4.9)
- Channeled (5 - 7)
- Pinch Points or Highly Channeled (>7.1)
- City of L.A.
- Study Area

Map Sources:
Stream network:
USGS 2019, LA DPW 2021
Cities, roads: ESRI 2019

N

0 1.5 3 6 Kilometers

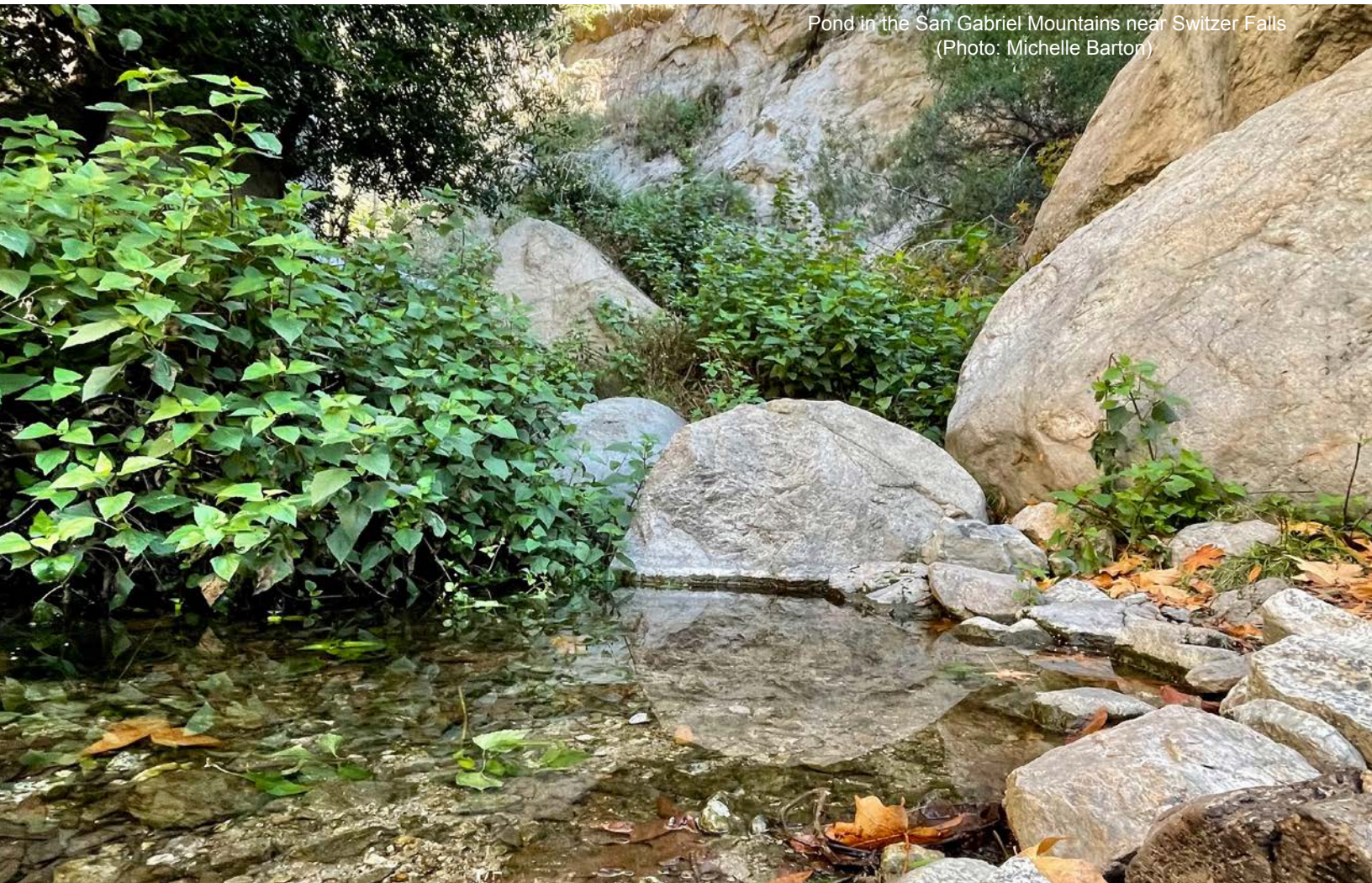
0 1 2 4 Miles

Stillwater Sciences

Map Location

Management Implications:

- Future assessments/improvements to the methodology for metric 1.1f should consider the habitat and movement needs of different taxa.
- As there are a variety of groups and initiatives working on stream and riparian connectivity issues in the greater LA area, a regional connectivity working group to coordinate connectivity needs, agree upon maps, and identify projects/actions across the region that can be collectively pursued to enhance regional connectivity, will be key to success.
- To the extent feasible, future connectivity assessments should include climate change considerations.
- Unlike other metrics in the LA City Biodiversity Index, metrics 1.1e and 1.1f require intensive computing power and specialized GIS experience. As such, when these metrics are reassessed in ten years, there will be a need for dedicated staff and/or a skilled subcommittee to assist in the creation of the input layers (source and resistance), Omniscape processing, and interpretation of results. Resources may be needed to access cloud computing and/or hire consultants.
- Additional, targeted efforts to interpret the results of this connectivity assessment are needed to analyze results and make recommendations on how this output can contribute to project design, planning considerations, and more.
- Future restoration, conservation, and connectivity planning for riparian areas should hinge on the 1.1f map, or future iterations of the map.
- These baseline results should not be seen as static or final, rather they should serve as a launching point for future evaluations, refinements, and updates as tweaks to scoring and other refinements will help advance strategic planning and implementation projects that broadly improve landscape-level connectivity.
- Updates to scoring, analysis, and interpretation of metric 1.1f should be done in tandem with updates to metric 1.1e. Scoring and refinement on the connectivity output for metrics 1.1e and 1.1f should continue.



Pond in the San Gabriel Mountains near Switzer Falls
(Photo: Michelle Barton)

1.2A % OPEN SPACE WITH CHARISMATIC UMBRELLA SPECIES

Score: 3 points - 30.1%

(28.83 mi² / 95.5 mi²)

Points	*% of Natural Areas with Charismatic Umbrella Indicator Species*
0	Charismatic umbrella species present in <10% of natural areas.
1	Charismatic umbrella species present in 10-20% of natural areas.
2	Charismatic umbrella species present in 20-30% of natural areas.
3	**Charismatic umbrella species present in 30-50% of natural areas.**
4	Charismatic umbrella species present in 50-75% of natural areas.
5	Charismatic umbrella species present in 75%+ of natural areas.

Background:

This metric assesses the percentage of open space with charismatic umbrella indicator species. In other words, this metric provides a spatially explicit indication of biodiversity status by targeting and monitoring indicator fauna in large natural areas.

Criteria/Definitions:

- Charismatic species - Species that are iconic, photogenic, or unmistakable. Species that the general public is familiar with or excited to encounter (and photograph).
- Umbrella species - Species whose presence suggests that a broad ecological community of plants and animals is present. Protecting umbrella species will likely result in the protection of other species.
- Natural-area dependent - Species that are typically found in natural areas.
    - Note: while these species can be observed outside of natural areas in parks/suburban areas, by definition they should rely on natural areas for food, breeding, etc.

In order to assess this metric, the first step was to establish a formal list of indicator species for the City of Los Angeles that are simultaneously 1) charismatic, 2) umbrella, and 3) natural-area dependent. In June 2021, LASAN formally released the first list of 37 charismatic umbrella indicator species for the City of Los Angeles (see table below). The list, which was developed in conjunction with the LA Biodiversity Expert Council, provides a focused set of birds, herptiles, mammals, and insects that the City can track over time. While most of the final indicators are species, in four instances, genera or families were used as the taxonomic identification at these higher hierarchical levels because the original specific identifications were not reliable via community science platforms. All selected indicator species are "avoider" species (i.e., species that don't venture far from large natural areas), such as mule deer (*Odocoileus hemionus*), California quail (*Callipepla californica*), and mountain lions (*Puma concolor*). Their presence indicates the overall biodiversity status of large, open space areas, suggesting that areas possess a broad suite of habitat quality and connectivity functions, are of sufficient size, and have relatively limited urban edge effects.

LASAN's Biodiversity Team will track observations of these species made on community science platforms (e.g., iNaturalist and eBird) over time to assess changes in biodiversity and habitat quality and to assess if species are thriving or declining, and what measures should be taken to ensure their continued survival.

Public engagement regarding the official list of indicator species began in earnest in summer 2021 when LASAN partnered with the Los Angeles Public Library to encourage Angelenos to observe, photograph, and map indicator species during the inaugural LA Bioblitz Challenge (see metric 2.3a report for additional information on the LA Bioblitz Challenge). Ultimately, participants observed 29 indicator species including the spotted towhee (*Pipilo maculatus*), bobcat (*Lynx rufus*), and the endangered El Segundo blue butterfly (*Euphilotes battoides allyni*) as part of the project.

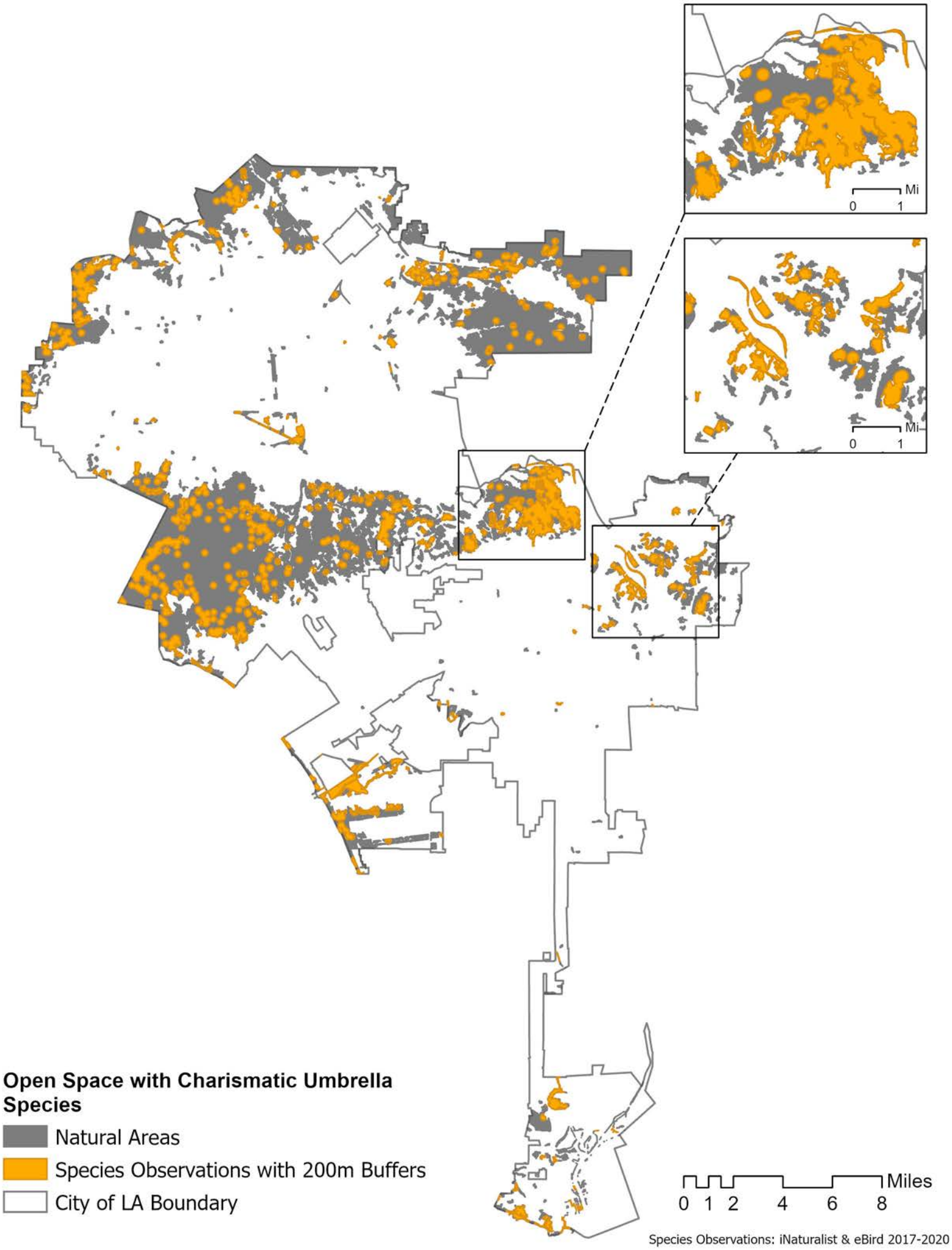
Sideblotched lizard (*Uta stansburiana*)
(Photo: Nurit Katz)

Spotted towhee (*Pipilo maculatus*)
(Photo: Nurit Katz)

Gopher snake (*Pituophis catenifer*)
(Photo: Dan Cooper)

Baja California tree frog (*Psuedacris hypochondriaca*)
(Photo: Dan Cooper)

CHARISTMATIC UMBRELLA INDICATOR SPECIES		
Group	**Scientific**	**Common**
Amphibians	*Anaxyrus boreas*	Western toad
	Batrachoseps nigriventris	Black-bellied slender salamander
	Pseudacris hypochondriaca	Baja California tree frog
Birds	*Agelaius phoeniceus*	Red-winged blackbird
	Ardea herodias	Great blue heron
	Bubo virginianus	Great horned owl
	Buteo jamaicensis	Red-tailed hawk
	Callipepla californica	California quail
	Catherpes mexicanus	Canyon wren
	Circus hudsonius	Northern harrier
	Geococcyx californianus	Greater roadrunner
	Lophodytes cucullatus	Hooded merganser
	Melanerpes formicivorus	Acorn woodpecker
	Pipilo maculatus	Spotted towhee
	Sialia mexicana	Western bluebird
	Spatula cyanoptera	Cinnamon teal
	Sturnella neglecta	Western meadowlark
Invertebrates	*Ammopelmatus* sp. (Genus)	North American Jerusalem crickets
	Bombus sp. (Genus)	Bumblebees
	Euphilotes battoides allyni	El Segundo blue butterfly
	Mutillidae (Family)	Velvet ants
	Pogonomyrmex (Genus)	Harvester ants
	Anthocharis sara	Sara orangetip
	Apodemia virgulti	Behr's metalmark
	Callophrys dumetorum	Bramble green hairstreak
	Limenitis lorquini	Lorquin's admiral
Mammals	*Lynx rufus*	Bobcat
	Neotoma fuscipes	Dusky footed woodrat
	Odocoileus hemionus	Mule deer
	Puma concolor	Mountain lion
	Urocyon cinereoargenteus	Gray fox
Reptiles	*Actinemys marmorata*	Western pond turtle
	Masticophis flagellum	Coachwhip snake
	Crotalus oreganus	Western rattlesnake
	Lampropeltis californiae	California kingsnake
	Pituophis catenifer	Gopher snake
	Uta stansburiana	Sideblotched lizard


Mi
0
1
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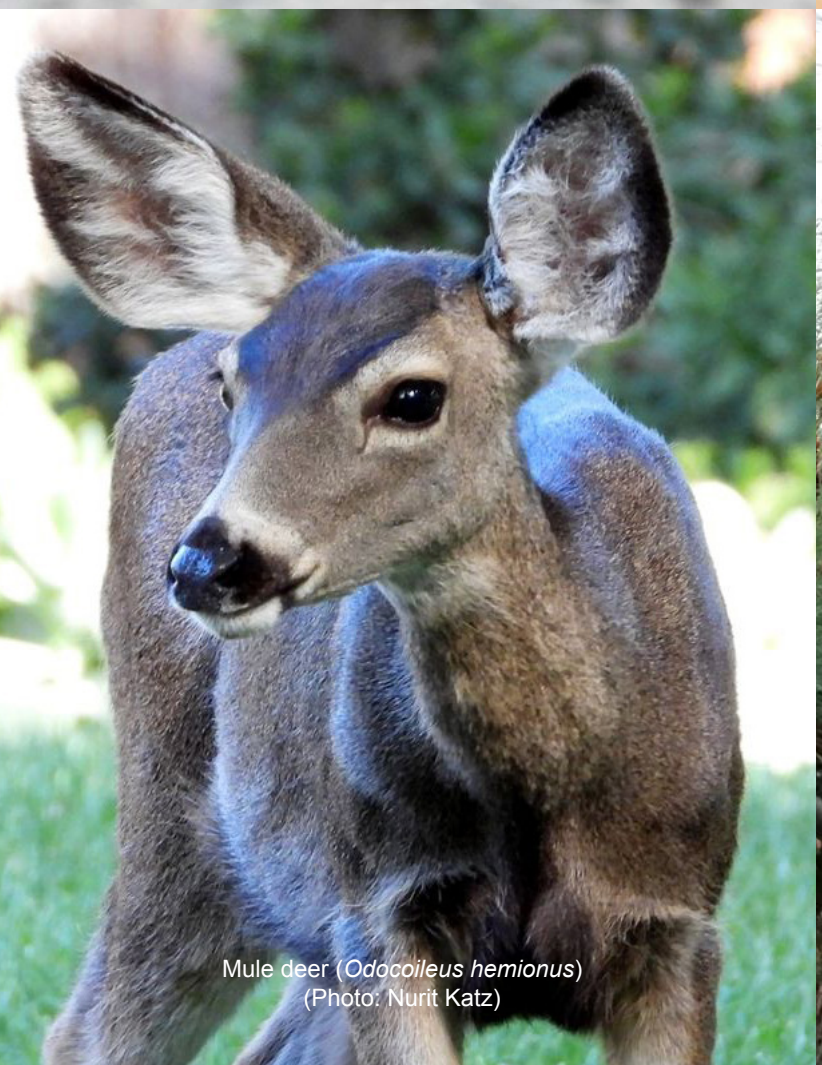
Open Space with Charismatic Umbrella Species
Natural Areas
Species Observations with 200m Buffers
City of LA Boundary
Miles
0 1 2 4 6 8
Species Observations: iNaturalist & eBird 2017-2020

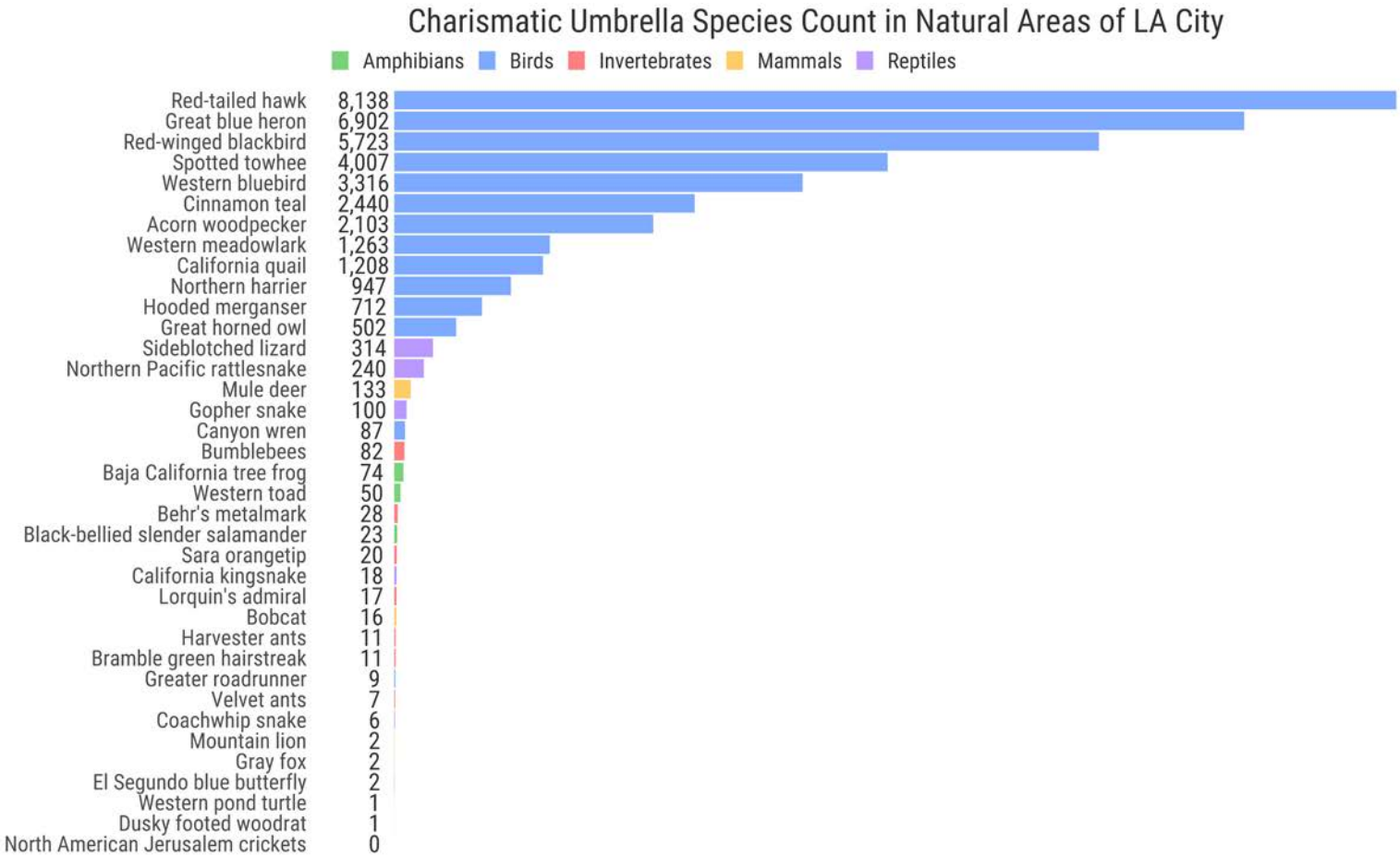
California quail (*Callipepla californica*)
(Photo: Nurit Katz)

Western pond turtle (*Actinemys marmorata*)
(Photo: Nurit Katz)



Mule deer (*Odocoileus hemionus*)
(Photo: Nurit Katz)

Great horned owlets (*Bubo virginianus*)
(Photo: Nurit Katz)



Results Discussion:

The first assessment of this metric suggests that indicator species are only present in 30.1% of natural areas, suggesting limited coverage. This limited coverage is likely due to the fact that large swaths of natural areas are rugged, remote, and inaccessible to the general public (e.g., western portions of the Santa Monica Mountains). Still, raising awareness of the 1.2a indicator species and stressing the importance of comprehensively sampling natural areas should drive up both the number of observations of indicator species and the percentage of natural areas that have observations of indicator species.

While the City list of indicator species covers mammals, birds, herptiles, and insects, the number of observations for various bird indicator species vastly outweighs all other taxa (see chart). The red-tailed hawk (*Buteo jamaicensis*) was the most observed species with a total of 8,138 observations in natural areas, followed by the great blue heron (*Ardea herodias*) with 6,902 observations, and the red-winged blackbird (*Agelaius phoeniceus*) with 5,723. The least observed species were the dusky footed woodrat (*Neotoma fuscipes*), with one observation in natural areas, and the North American Jerusalem cricket (*Ammopelmatus* sp.), with zero.

It is interesting to note that while the indicator species tracked for this metric are meant to be natural-area dependent, many of them are regularly observed by community scientists outside of natural areas. The percentage of observations found in natural areas when compared to Citywide observations varies species-by-species, and ranges from 5.7% for the gray fox (*Urocyon cinereoargenteus*) up to 91.7% for the bramble green hairstreak (*Callophrys dumetorum*). With species like the gray fox, where only a fraction of observations were in natural areas, results could either be a product of community science observation biases or evidence of how some wildlife is adapting to and utilizing urban settings in addition to more natural ones, or a combination of both.

While a handful of cities around the world and different U.S. government agency publications (e.g., National Park Service and US Fish & Wildlife Service) refer to tracking charismatic indicator species, published lists of target species are not easily accessible and the lists appear to be used primarily by scientists/researchers. The City of Los Angeles has broken new ground by publishing a list of charismatic umbrella species in a way that actively engages the public and then using the community-generated data


California Quail


Lorquin's admiral


Bobcat


Western pond turtle

environment LA SANITATION
CITY OF LOS ANGELES
zero waste • zero wasted water

Biodiversity Indicator Species:

A Guide to the City of Los Angeles' Charismatic Umbrella Species


Gray fox


Bumblebee


Baja California tree frog


Western bluebird

to track and monitor biodiversity over time. Individual habitat suitability models for all 37 species, seven group-specific models, and a composite habitat suitability model showing suitable habitat for all species have been drafted in partnership with UCLA. While the resulting maps are preliminary, and should continue to be refined, they have incredible value as analytic tools. Comparing habitat suitability models to community science observations can help scientists understand where it would be most beneficial to do on-the-ground monitoring for indicator species or where it would make sense to strategically plan and promote community science observations via planned bioblitzes. The all-species suitability model can be used to select sites for restoration, enhancement, and or connectivity work.

Changes to charismatic wildlife species are always interesting to the general public and are therefore useful for education and outreach. Additionally, changes to charismatic wildlife species are easier to grasp by laypeople, and thus, are useful for raising awareness and facilitating beneficial change. To further increase public interest in LA's indicator species, a beautiful booklet with information on all 37 indicator species was created in partnership with UCLA students in a practicum course. The Biodiversity Indicator Species: A Guide to the City of Los Angeles' Charismatic Umbrella Species booklet includes information on habitat, diet, predators, and behaviors as well as full page photos, observation tips, and fun facts.

Management Implications:

- The effectiveness of the selected 1.2a indicator species should be evaluated over time in terms of:
    1. Public engagement with individual species,
    2. Species responses to management outcomes or events like wildfires.
- The LASAN Biodiversity Team should continue working with LAPL's Neighborhood Science program to promote educational resources on the City's charismatic umbrella species.
- In the future, habitat suitability models could be refined to better understand how current observation distribution patterns compare with suitable habitat.
- Monitoring and/or management budgets should be established and/or increased to encourage professional, comprehensive surveys of the City for 1.2a indicator species in natural areas and to generally assess ecosystem health.
- Future public engagement efforts should:
    - Aim to drive up observations of non-bird indicator species, and
    - Encourage comprehensive assessment of natural areas for indicator species.
- The LASAN Biodiversity Team should create projects on platforms like Zooniverse and Scistarter that focus on indicator species.
- To more formally assess all natural areas for presence of indicator species, a combination of formal surveys, camera traps, and/or eDNA sampling may be needed to supplement community science data

Western meadowlark (*Sturnella neglecta*)
(Photo: Nurit Katz)

1.2B NATIVE SPECIES PRESENCE IN URBAN AREAS

Score: 2 points - 1.97

Points	*Urban Association Index Score*
0	Urban Association Index average score = 0 (urban-tolerant species).
1	Urban Association Index weighted average score = 1.
2	**Urban Association Index weighted average score = 2.**
3	Urban Association Index weighted average score = 3.
4	Urban Association Index weighted average score = 4.
5	Urban Association Index weighted average score = 5 (natural area-dependent species observed).

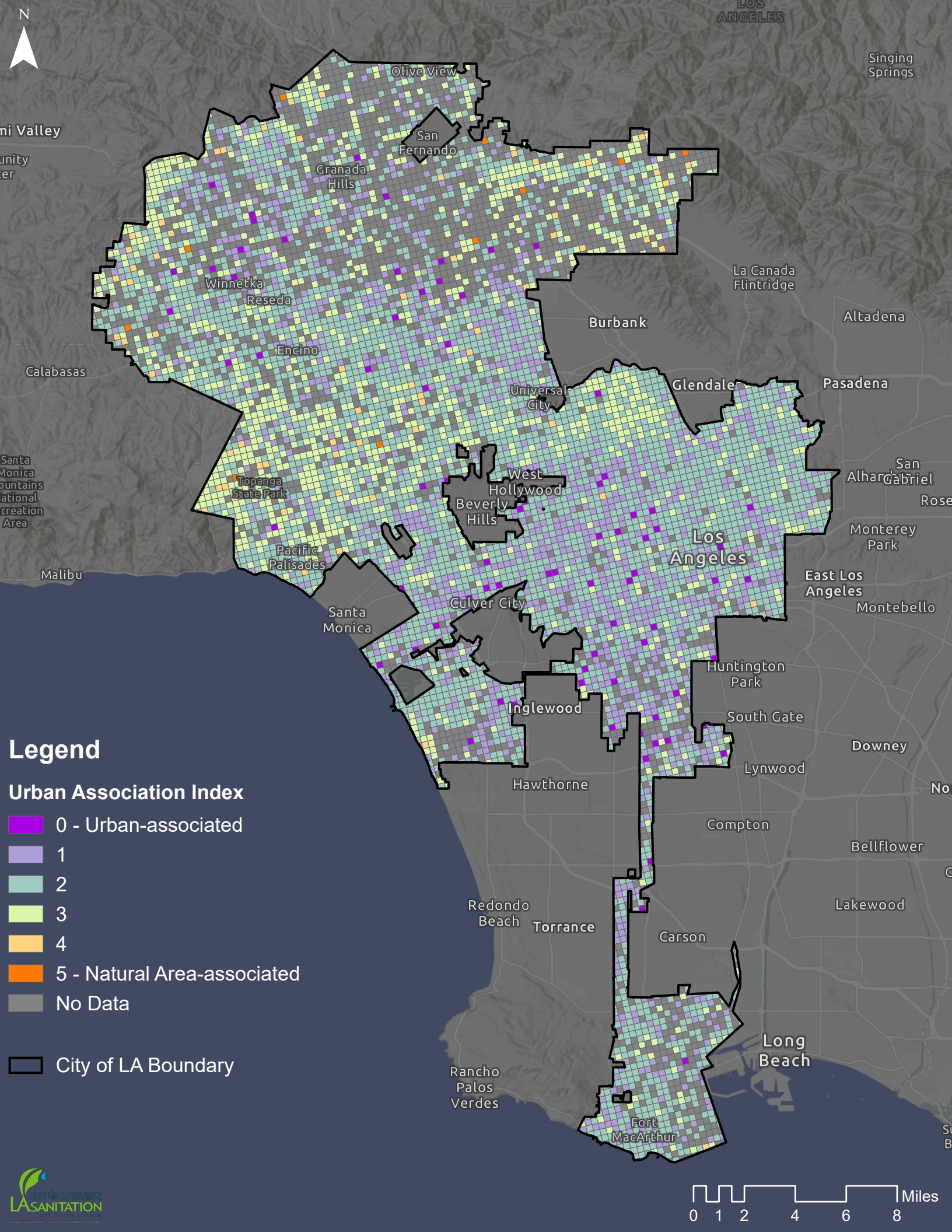
Background:

Urbanization is a serious threat to biodiversity and a driver of species loss in the City of Los Angeles and across the globe. When natural areas and open space that have traditionally provided habitat to a wide array of plants and animals are urbanized, or developed and converted to other uses, the ecological community will respond and distribution patterns of plants and animals will likely shift. Typically, urbanization is detrimental to native species, and many will respond by avoiding developed, urban areas. However, it is important to note that some bird species, like the Cooper's hawk (*Accipiter cooperii*), dark-eyed junco (*Junco hyemalis*), and Allen's hummingbird (*Selasphorus sasin*), have successfully adapted to the urban environment and exploited conditions to establish new ecological niches (Bressler, et al., 2020, Cooper et al., 2020). As cities continue to urbanize, tools are needed to assess how nature responds over time. Additional tools can shape the way in which urbanization and future development/re-development is implemented, so that urban areas become more friendly to native species over time.

This metric has been designed to be sensitive to changes in the distribution of native wildlife species in urban areas over time. As native wildlife exhibit varying levels of urban tolerance, understanding species' tolerance to urbanization will be key to successful conservation of biodiversity in cities (Cooper et. al., 2020). As species respond differently to the array of environmental factors in developed areas (e.g., light, noise, etc.) a baseline understanding of the urban tolerance of different native species must be established. To do this, an Urban Association Index was developed in partnership with UCLA. To create and assess the index, the following steps were taken (see Appendix II for additional details and data):

- A native species database was developed.
    - Target taxonomic groups were selected with expert input to represent species groups that are generally well-detected and well-surveyed by community scientists.
- An "urban intensity layer" was developed for southern California by combining three correlated variables that represent different urban effects: noise, nighttime light, and impervious surfaces.
- Each native species in the database was assigned an urban association, or affinity, score based on the correlation of observational data with the urban intensity layer.
- Native species occurrence data for the City of Los Angeles was spatio-temporally thinned and filtered to limit biases, then matched with urban affinities.
- The average urban association score was calculated for individual ¼ mile pixels.
- A Citywide urban association score was calculated by averaging the urban tolerance scores of all pixels across the City.

Tracking how both the distribution of native species across the City of Los Angeles and the urban tolerance of individual species change over time provides important information to biodiversity researchers, indicating changes in habitat quality or availability as well as adaptation to unique urban environments. Further, this metric will help assess whether ecological communities are distributed equally across all areas of the City, or if biodiversity is primarily constricted to some areas of the city, such as large, natural areas.


N
Olive View
San Fernando
Granada Hills
Winnetka
Reseda
Encino
Calabasas
Burbank
La Canada Flintridge
Altadena
Glendale
Pasadena
Universal City
West Hollywood
Beverly Hills
Topanga State Park
Pacific Palisades
Malibu
Santa Monica
Culver City
Los Angeles
East Los Angeles
Montebello
Monterey Park
San Gabriel
Huntington Park
Inglewood
South Gate
Downey
Lynwood
Hawthorne
Compton
Bellflower
Lakewood
Redondo Beach
Torrance
Carson
Long Beach
Rancho Palos Verdes
Fort MacArthur
Singing Springs
Legend
Urban Association Index
0 - Urban-associated
1
2
3
4
5 - Natural Area-associated
No Data
City of LA Boundary
Miles
0 1 2 4 6 8
LA Sanitation

Results Discussion:

The mean of the Urban Association Index created for this metric was 1.97, yielding an overall score of 2. This score suggests that, in general, the City of Los Angeles is home to a diverse set of species with varying levels of urban tolerance, including many which are inhabiting or thriving in urban areas. If the score improves over time, and the overall index goes from a score of 2 to a score of 3, it would indicate a key tipping point where species in aggregate have switched from being urban-associated to urban avoidant. A score of 5, which would suggest that species in aggregate are more natural area associated, would imply that the City has conserved, restored, and enhanced habitat across the entire City in a manner that appropriately supports urban-avoidant species.

In order to perform this assessment, a database of 967 native, terrestrial species (within the target taxa groups shown in the table below) was created and vetted by local experts for the southern California region. Each species with sufficient observational data (n=511) was assigned an urban affinity score. A large number of species (n=456) did not have enough information, but may be able to have scores assigned in the future. Affinity scores are continuous and can be negative or positive, with 0 indicating no relationship to urban intensity, negative indicating urban avoidance, and positive indicating urban attraction. For reference, the urban-adapted species mentioned above received the following scores:

- Cooper's hawk (*Accipiter cooperii*) → 0.19
- Dark-eyed junco (*Junco hyemalis*) → -0.03
- Allen's hummingbird (*Selasphorus sasin*) → 0.29

Conversely, known urban avoiders, like the Western toad (*Anaxyrus boreas*), Sara orangetip (*Anthocharis sara*) both had negative scores of -0.17 and -0.35, respectively.

The overall average urban affinity score for all 511 species assessed was -0.21, suggesting that fauna in the Los Angeles region tend to avoid urban areas. The average scores within broad taxonomic groups is detailed in the table below. Snails are the most urban associated group with a score of 0.24, and the only taxa group with an average score above zero. Lepidoptera and Mammals were the most urban-avoidant taxa groups with average group scores of -0.40 and -0.39, respectively.

View of Downtown Los Angeles from Elysian Park
(Photo: Michelle Barton)

Taxa Group	*Average Urban Affinity Score*
Bees	-0.16
Beetles	-0.08
Birds	-0.15
Cicadellidae	-0.08
Flies	-0.11
Herptiles	-0.34
Lepidoptera	-0.40
Mammals	-0.39
Odonates	-0.20
Orthoptera	-0.37
Snails	0.24
Spiders	-0.14

While understanding the overall City score is useful for assessment of the metric, visualizing the score in individual quarter mile pixel patterns can discern patterns of urban association of species across the City. As expected, pixels in large, intact natural areas (e.g., the Santa Monica Mountains, Hansen Dam, Santa Susanna foothills, etc.) have high average scores of 3, 4, and 5 as observations are dominated by species that are more natural area associated (i.e., urban avoiders). Overall, the average pixel score for natural areas (i.e., pixels defined as ≥ 33% natural areas per metric 1.1a) is 2.41, while the average pixel score for non-natural areas is lower at 1.84. Interestingly, patterns across the LA Basin in urban and suburban areas display a high degree of variability, without a strong pattern, suggesting that other local habitat features may be influencing the pattern of native fauna across these areas of the City. However, it is important to note that these patterns may also be due in large part to the inherent biases of community science data.

The City of Los Angeles exhibits incredible species richness in natural areas and open space, but also has areas that are highly developed and devoid of native habitat, resulting in an unequal distribution of biodiversity. This unevenness is important, because it exacerbates existing inequities in access to biodiversity and to natural areas (Cooper et. al., 2021). Given the uneven distribution of biodiversity, one might also speculate that there is a lack of contiguity in habitat patches across the City. Over time, trends in how this metric changes should be carefully examined in conjunction with the results of connectivity (metrics 1.d- 1.1f) and equitable access to nature (metric 2.1a).

Efforts to reverse habitat degradation across the urban matrix, to improve habitat quality in neighborhoods, to preserve existing pockets of native habitat that harbor native species, and to create meaningful corridors and connections that native species can use to traverse the City are vital if the City is to counteract urban species loss and achieve its goal of no-net loss of native biodiversity. These changes will require an immense amount of coordination, resources, and policy support. These efforts will be bolstered as progress is made on governance metrics 3.1a, Biodiversity Vision/Action Plan, and 3.1b, % Departments with Biodiversity Programs & Policies. A future biodiversity action plan, as well as the departmental biodiversity plans prescribed for metric 3.1b, should address the threats and needs of wildlife species across the urban association spectrum, providing protection for urban avoiders and urban-tolerant species alike.

The comprehensive and unique approach piloted by the LASAN Biodiversity Team and UCLA to assess and track the distribution of native wildlife species in urban areas over time can and should be applied to other cities and jurisdictions in the southern California region. This approach can be used for other urban areas across the country and around the world as the global community works to stem biodiversity loss.

Mourning dove (*Zenaida macroura*)
(Photo: Graham Montgomery)


Bushtit (*Psaltriparus minimus*)
(Photo: Graham Montgomery)

Management Implications:

- While community science observation data provides a cost-effective way to monitor and track changes to biodiversity over time, multiple limitations and sampling biases exist. To correct for these issues, the Biodiversity Team and Biodiversity Expert Council should promote more even community science sampling of all native wildlife species throughout neighborhoods and natural areas present across the City as additional data points will yield more precise urban affinity scores and analysis products.
- Urban affinity scores for individual wildlife species should be reassessed approximately once a decade, as benchmark assessments of this metric are performed, as species dynamics and interactions with the urban environment may shift over time.
- The patterns of urban tolerance on the official 1.2b metric map should be correlated with the underlying urbanness layer to map and understand patterns/opportunities for habitat restoration.
- The Interdepartmental Biodiversity Team and the Biodiversity Expert Council should work collectively to pursue projects, initiatives, and policies that lead to a more even distribution of native wildlife species across the entire City, ensuring equitable access to nature, increasing habitat quality, and bolstering connectivity.
- The Biodiversity Team should work in partnership with the Interdepartmental Biodiversity Team and the Biodiversity Expert Council to develop Biodiversity Design Guidelines that will help protect high-quality habitat and rewild degraded/ lost habitat across the City.

1.2C SPECIES OF CONSERVATION CONCERN GAINED OR LOST

Score: N/A (Baseline)

Points	% of Suitable Sensitive Species Still Present
0	0% (No sensitive species remain)
1	1 – 10%
2	10 – 25%
3	25 – 50%
4	50 – 99%
5	100%

Background:

Due to urbanization, California has the largest number of threatened and endangered species and species of special concern in the contiguous United States. The City of Los Angeles area is believed to be home to 108 species of conservation concern that have protection via State and Federal agencies, like the California Department of Fish and Wildlife (CDFW) and the U.S. Department of Fish and Wildlife (USFWS). These species merit protection under various environmental laws including, but not limited to, the California Endangered Species Act, the Federal Endangered Species Act, the California Environmental Quality Act (CEQA), and the Migratory Bird Treaty Act.

Initially, metric 1.2c was intended to track a subset of threatened and endangered indicator species over time; however, the Biodiversity Expert Council felt strongly that this metric should track the status of all species of conservation concern in the City of LA, rather than a subset. Therefore, a qualified subcommittee of the Biodiversity Expert Council set out to create the City's first official Inventory of Species of Conservation Concern. The goal was to develop a baseline Inventory of Species of Conservation Concern that includes species that have been confirmed within the City of LA limits. The inventory includes species that have been observed since 1990 and are therefore thought to currently exist within the City limits.

The resulting inventory is largely based off of a comprehensive export from the CDFW California Natural Diversity Database (CNDDB). To be as comprehensive as possible, the definition of "species of conservation concern" for purposes of this metric, and the resulting inventory, includes species that are listed under the Federal and/or State Endangered Species Acts, as well as species that have other special statuses/rarity rankings (e.g., State Rank, Global Rank, Rare Plant Rank, etc.) from State and Federal Agencies (e.g., CDFW Species of Conservation Concern, CDFW Watch List, etc.). After the Citywide baseline inventory was established, efforts were made to develop ecotope-specific inventories of species of conservation concern. However, given the dearth of data available on species of conservation concern in the LA area, it was deemed too complex to determine which species of conservation concern are plausible in each of the 16 ecotopes. Therefore, coarser assignments to the following four ecotope types were made:

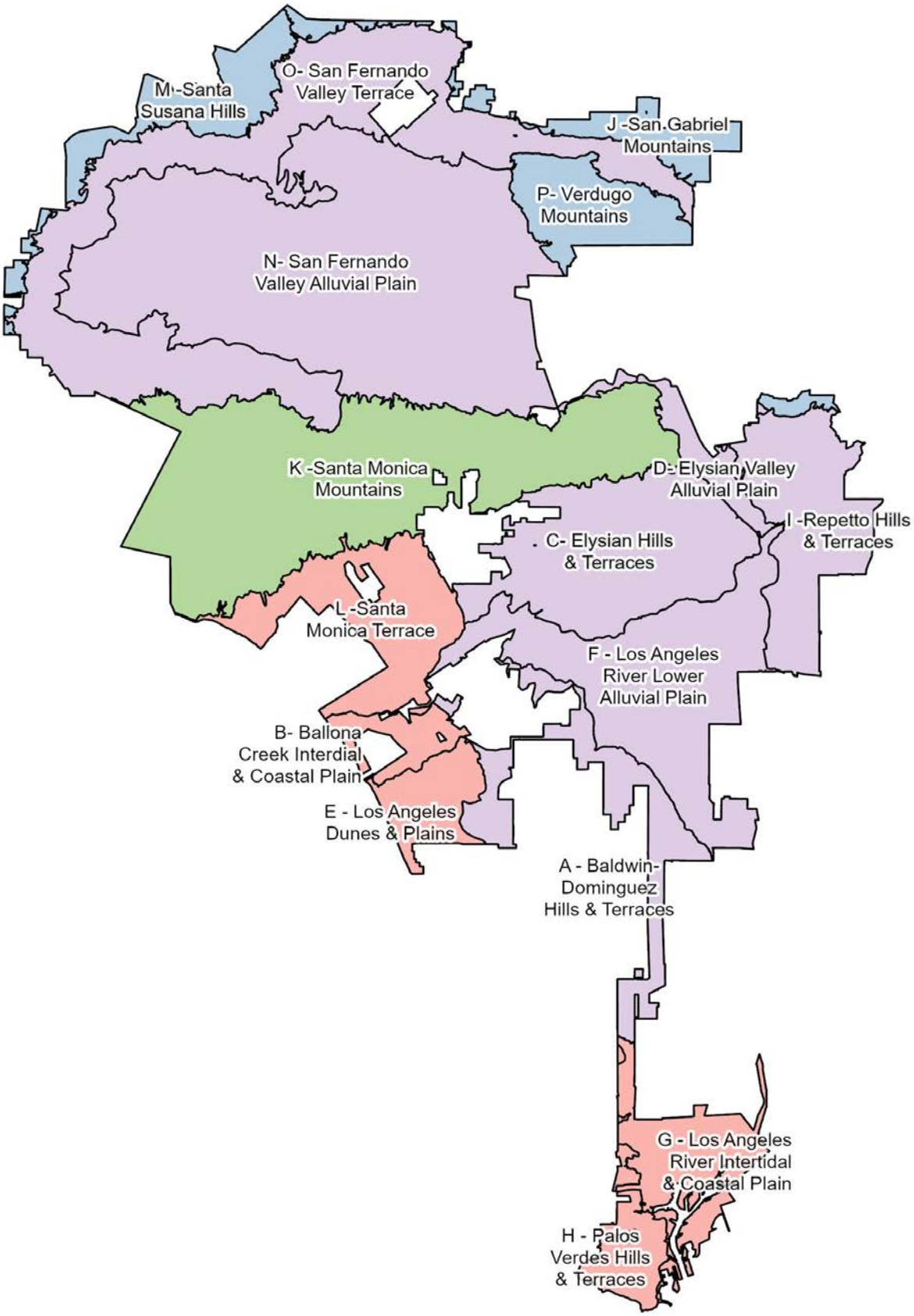
- Coast (i.e., bluffs, estuaries, dunes, beach),
- Foothills (i.e., San Gabriel Mountains, Santa Susanas),
- Hills (i.e., Santa Monica Mountains), and
- Valleys (i.e., San Fernando Valley, LA Basin).

The Citywide Inventory of Species of Conservation Concern, as well as the sub-inventories for each of the four ecotope types are included in Appendix II.

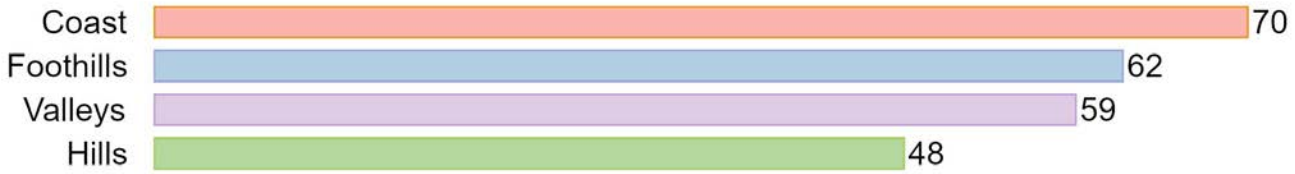
Over time, metric 1.2c will track how the abundance and distribution of all species of conservation concern change in the City of LA and in the four ecotope types. As loss or recovery of protected flora and fauna is a major indicator of alignment with the goals of the Endangered Species Act, this metric will serve as a barometer for how well the City is providing for species of conservation concern over time.

Results Discussion:

The Inventory of Species of Conservation Concern that resulted from the baseline assessment of this metric will be a valuable asset to the City of LA. In addition to enabling assessment of this metric, metric 1.2c, the resulting product will serve as the official Inventory of Species of Conservation Concern for the City (see metric 3.2d) and provide a launching point to organize monitoring and management efforts for special-status species.



# of Species of Conservation Concern and Ecotope Type Associations



While establishing a baseline Species of Conservation Concern Inventory for the City is very exciting, it should be acknowledged that this inventory is imperfect, as, unfortunately, comprehensive occurrence data for species of conservation concern is sorely lacking. Community science observations of species of conservation concern are of little help as these species, which are by definition rare, are infrequently observed by the general public, and when they are, the exact coordinates are often obscured. CDFW's CNDDB is more comprehensive, and a better overall resource, but it also has limitations due to its relatively small user-base and its opportunistic, infrequent data updates.

Further, the effort to categorize species of conservation concern by ecotope type has yielded four sub-inventories that can and should be monitored over time. The sub-inventories, shown in full in Appendix II, have the following:

- Coast Ecotopes: 70 species
- Foothill Ecotopes: 62 species
- Hill Ecotopes: 48 species
- Valley Ecotopes: 59 species

The sub-inventories will be used to gauge progress on this metric when the next benchmark assessment of the LA City Biodiversity Index is made in 2030. It should be noted that the established inventory will need to be refreshed periodically to ensure that both the species included are still confirmed as present or thought to be plausible in the City and that previously excluded species are still implausible in the City. In other words, species that have been assessed, but ultimately left off of the official inventory for various reasons, should be reassessed periodically for inclusion in the inventory as climate-change induced range shifts, management interventions, or other environmental changes may mean that these species could be found within the City limits. In some cases, species left off of the inventory have been extirpated from the City limits. Sightings/reintroductions of species considered extirpated would be a major conservation success for the City and contribute positively to the effort to achieve no-net loss of native biodiversity.

Management Implications:

- In the future, if data resolution allows, 16 ecotope-specific inventories of species of conservation concern should be created and ecotope-specific monitoring or assessments should be performed.
- Partnerships with State agencies, Federal agencies, and other local entities (e.g., LA County) should be pursued to bolster future monitoring efforts for all species of conservation concern listed on the official City inventory.
- Detailed ecotope type assessments or habitat suitability modeling exercises should be performed to assess potential habitat for species on the inventory.
- As many species on the inventory are climate-sensitive species, occurring near City mountain tops or along coastlines, and are vulnerable to the impacts of climate change, adaptive management approaches should be applied

El Segundo blue butterfly (*Euphilotes battoides allyni*)
(Photo: Dan Cooper)

1.3A URBAN EDGE EFFECTS ON NATURAL AREAS

Score: 2 points - 29% of Citywide maximum

Points	*Night Lighting % of Score Range*
0	Night lighting in buffer areas is > 75% of the highest score observed in the City
1	Night lighting in buffers is 50-75% of the highest score for the City
2	**Night lighting in buffers is 25- 49% of the highest score for the City**
3	Night lighting in buffers is between 15-24% of the highest score for the City
4	Night lighting in buffers is between 5-14% of the highest score for the City
5	5 points: night lighting in buffer areas is <5% of the highest score for the City

Background:

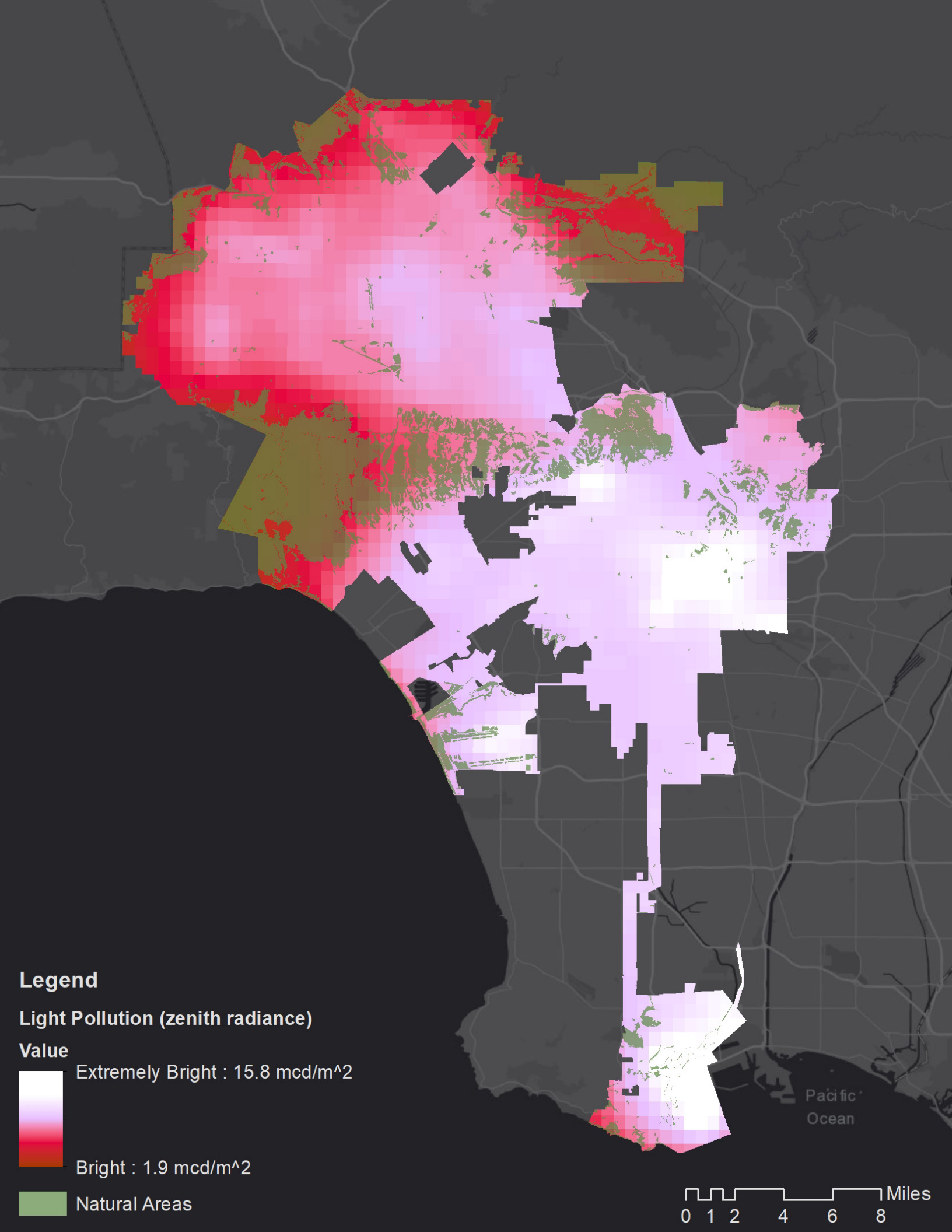
This metric assesses urban edge effects, defined as changes in population or community structure that occur at the edge of an intact habitat patch. In the urban environment, these edges are often part of the wildland-urban interface (WUI), where urban development and undeveloped wildland vegetation overlap and intermix (Radeloff et al., 2017).

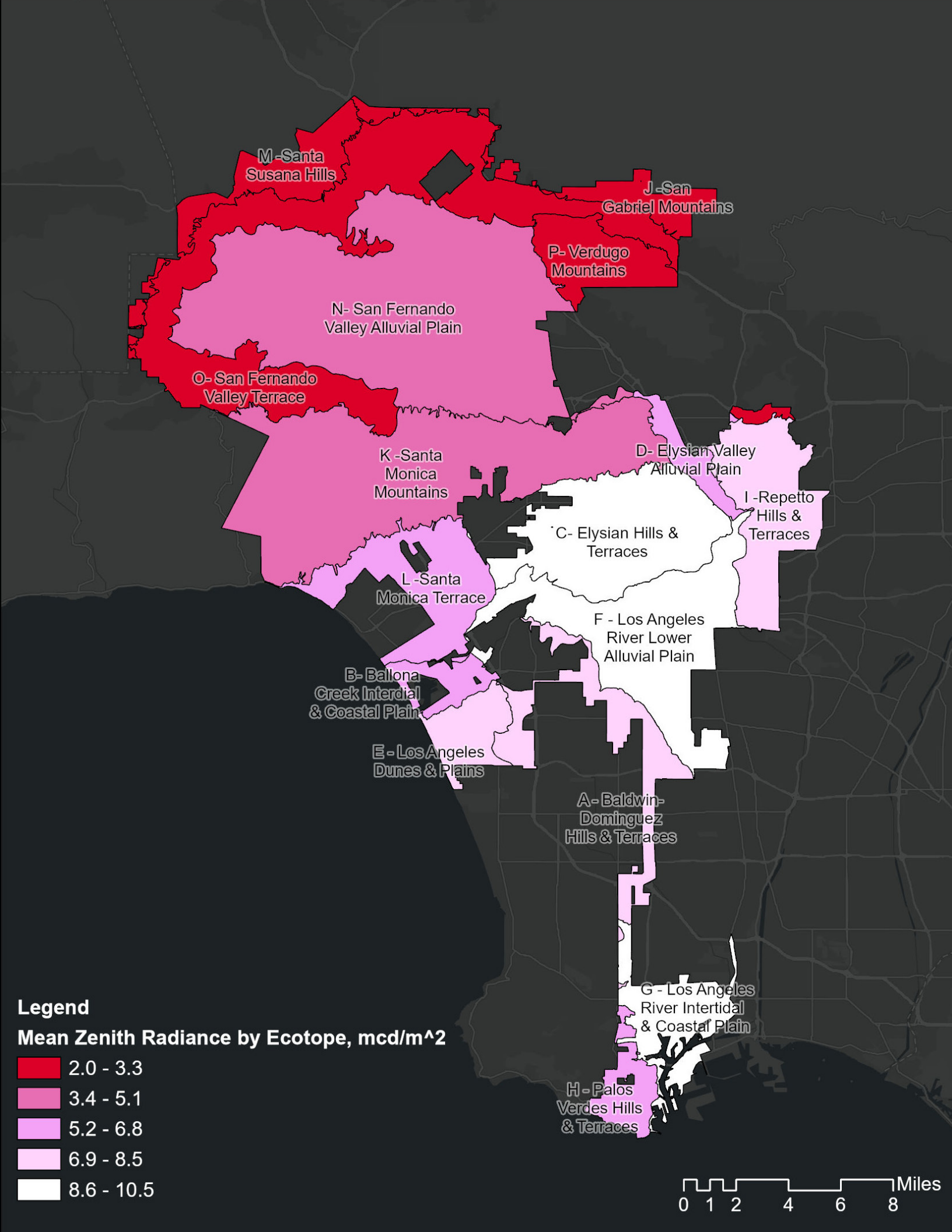
This metric uses artificial night lighting as a proxy to assess the extent of edge effects on natural areas. While an imperfect assessment of edge effects, artificial night lighting is a metric that can easily be monitored. This assessment uses data from the New World Atlas of Artificial Sky Brightness; however for comparisons of the extent of night lighting over time, Visible Infrared Imaging Radiometer Suite (VIIRS) Day-Night Bands (DNBs) could be analyzed.

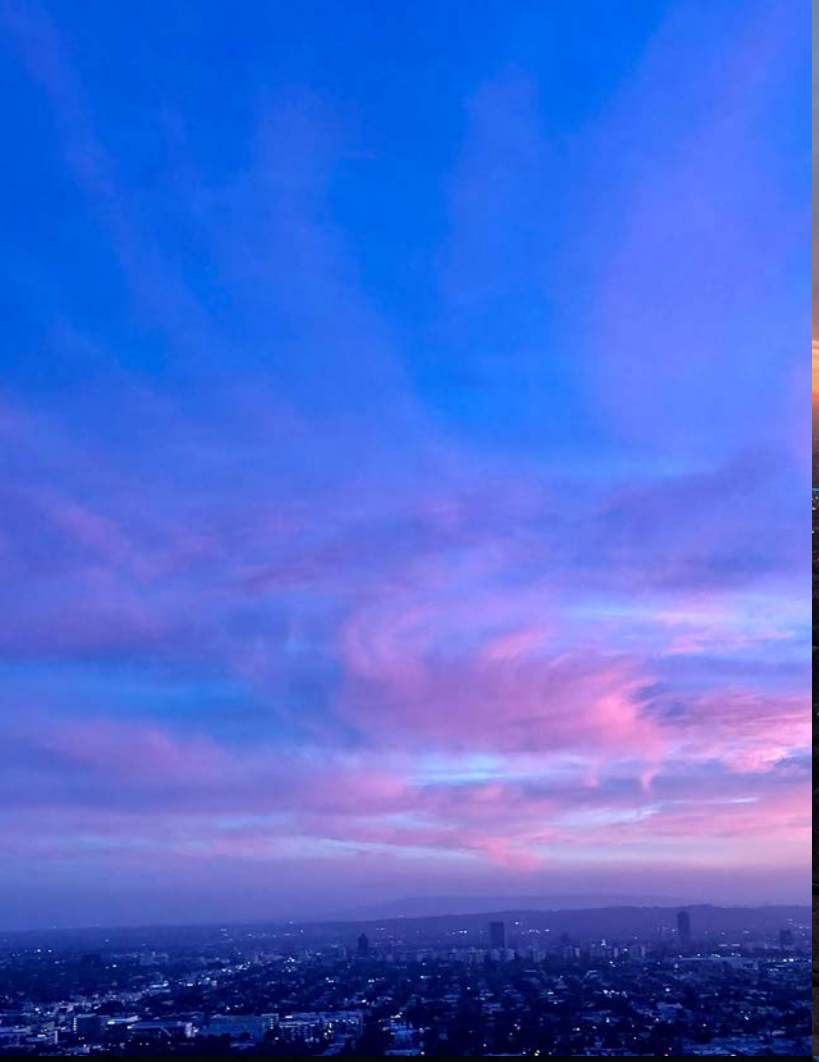
Artificial night lighting has consequences for non-human species and ecosystems. Ecological light pollution by definition is artificial light pollution that disrupts ecosystems and can alter animal behaviors, such as mating, foraging, and hunting. Ecological light pollution can include glare, increased illumination, duration and areal coverage of illumination, and fluctuations in lighting. Sources are varied, but can include lighted buildings, security lights, vehicle lights, streetlights, and more. Ecological light pollution can contribute to four major categories of ecological disruption: 1) attraction and disorientation, 2) loss of connectivity, 3) interference with pollination and foraging, and 4) circadian rhythm disruption (Rich & Longcore, 2006).

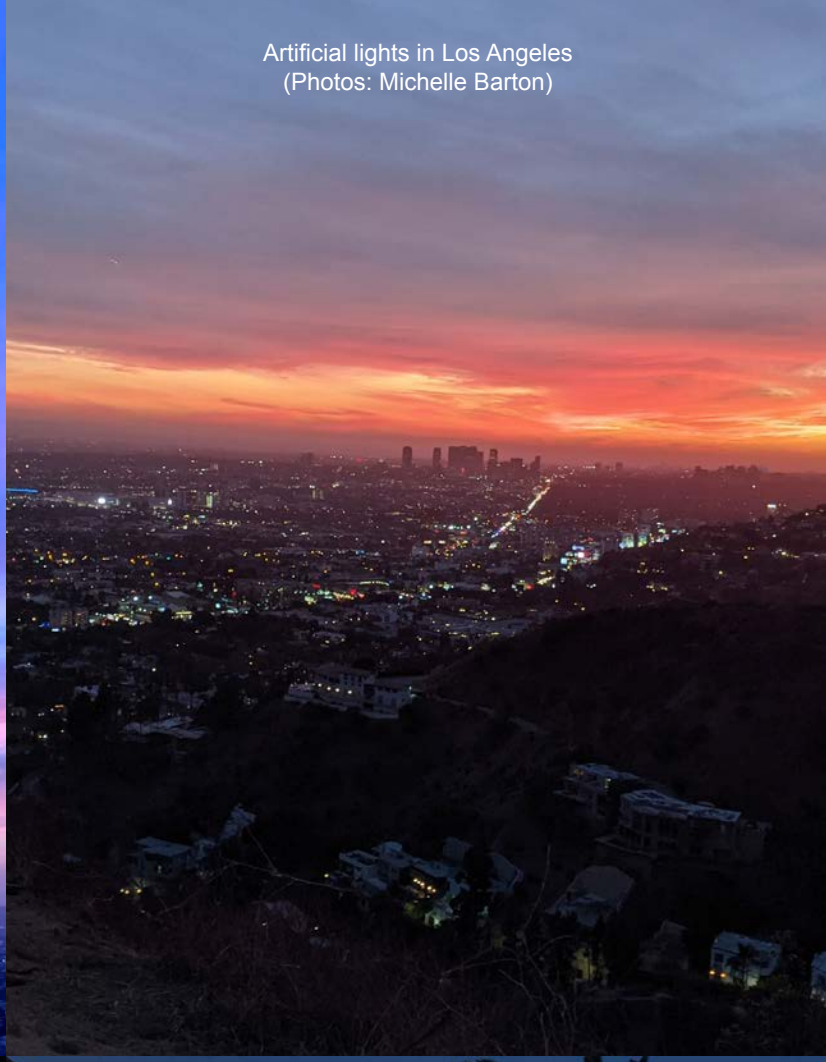
Results Discussion:

The score received (2 out of 5) suggests that LA's natural areas are highly impacted by edge effects. Given that the City of Los Angeles is a highly developed urban metropolis with over four million people, this result is not surprising. However, raising awareness of the consequences of habitat fragmentation and edge effects is important so that the City and all Angelenos can take actions to mitigate edge effects and reverse fragmentation trends. There are many meaningful actions, like limiting maximum lumens and better controlling the direction of artificial lighting, that can be taken to mitigate edge effects and reduce ecological light pollution in sensitive areas as outlined in the next section.

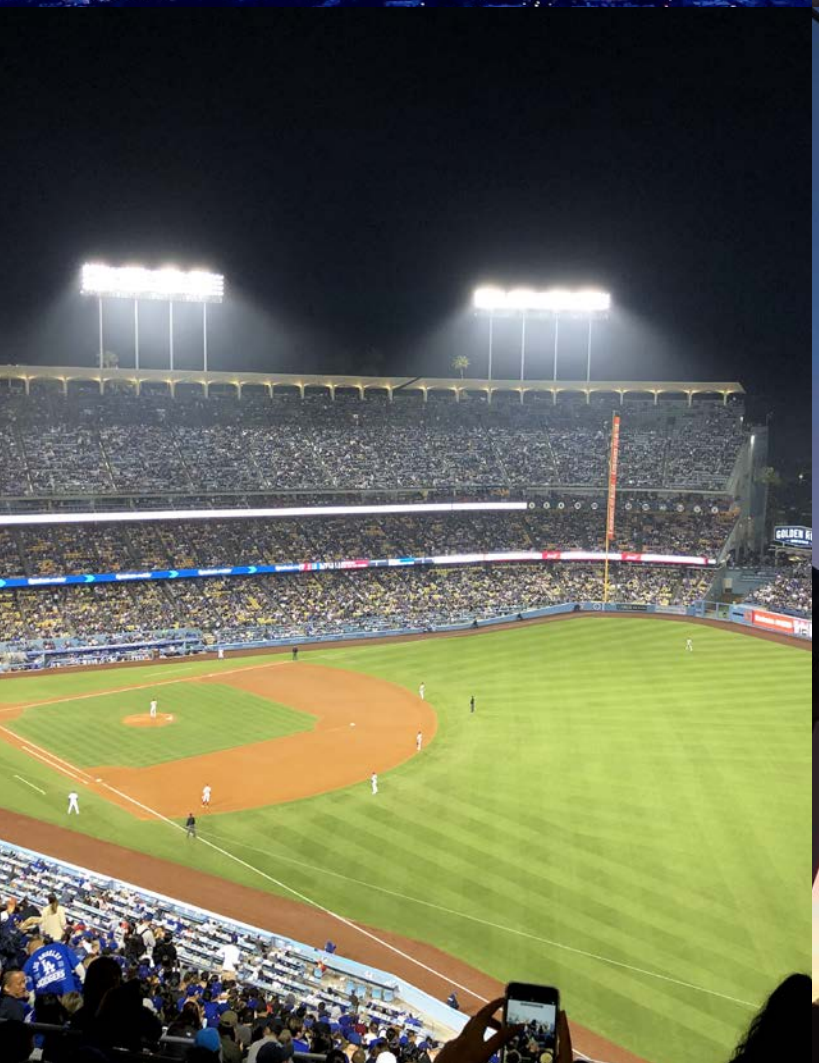

Legend
Light Pollution (zenith radiance)
Value
Extremely Bright : 15.8 mcd/m^2
Bright : 1.9 mcd/m^2
Natural Areas
Pacific Ocean
Miles
0 1 2 4 6 8


M -Santa Susana Hills
J -San Gabriel Mountains
P- Verdugo Mountains
N- San Fernando Valley Alluvial Plain
O- San Fernando Valley Terrace
K -Santa Monica Mountains
D- Elysian Valley Alluvial Plain
I -Repetto Hills & Terraces
C- Elysian Hills & Terraces
L -Santa Monica Terrace
F - Los Angeles River Lower Alluvial Plain
B- Ballona Creek Interdial & Coastal Plain
E - Los Angeles Dunes & Plains
A - Baldwin-Dominguez Hills & Terraces
G - Los Angeles River Intertidal & Coastal Plain
H - Palos Verdes Hills & Terraces
Legend
Mean Zenith Radiance by Ecotope, mcd/m^2
2.0 - 3.3
3.4 - 5.1
5.2 - 6.8
6.9 - 8.5
8.6 - 10.5
0 1 2 4 6 8 Miles





Artificial lights in Los Angeles
(Photos: Michelle Barton)



Management Implications:

- Reduce ecological light pollution across the City, particularly in areas buffering natural areas.
  - Encourage expanded application of some of the proposed lighting standards in the Department of City Planning's Wildlife Ordinance, particularly to properties in natural areas or in the Wildland Urban Interface.
  - General lighting recommendations (for public and private property):
    - Limit lumens: Limit maximum lumens in the City by area as recommended by the International Dark-Sky Association (DSA, 2002):
      - Residential = 5,500 lumens for single family residences or 10,000 lumens/ acre for larger residential properties,
      - Commercial and industrial = 100,000 lumens/acre.
    - Direction: Shield lights and direct lighting downwards (i.e., avoid unnecessarily reflecting light upward).
    - Color: Encourage the use of warmer lights, particularly "warm-white" or filtered LEDs in outdoor spaces (i.e., not blue-rich LEDs). Discourage use of outdoor lights with a color correlated temperature, or CCT, higher than 3,000 K Citywide or higher than 2,700 K (i.e., the color of an incandescent bulb) in more sensitive areas (e.g., the WUI). Lower CCT (<2200 K) is preferable in environmentally sensitive areas.
    - Duration: Prohibit searchlights and outdoor lighting that flashes near natural areas. Encourage motion-sensitive lighting to limit duration of lighting.
  - Promote the reduction of unnecessary or wasteful night lighting via policy, design guidelines, public education, and outreach.
  - Promote the wealth of information available from the DSA at darksky.org. The DSA has information about outdoor lighting, light pollution, and ways to protect the night skies (including a guide to dark-sky-friendly lighting).
  - Encourage the Bureau of Street Lighting (LA Lights) to address the impacts of artificial light pollution on local wildlife in updates to the LA Lights Strategic Plan. The Draft Salt Lake City Street Lighting Master Plan and darksky.org are excellent resources. In addition, LA Lights is encouraged to implement the general lighting recommendations listed above.
  - Educate the public on the ecological consequences of holiday lighting.
- Address fragmentation and enhance connectivity in and around natural areas to mitigate edge effects.
  - Limit/prevent future fragmentation of natural areas via roads, development, lighting, etc.
  - Heed the recommendations presented on the various connectivity metrics (e.g., 1.1d, 1.1e, and 1.1f) and work to improve connectivity between large, high quality habitat patches (e.g., building or enhancing wildlife crossing structures).
  - Encourage measures and actions that mitigate impacts to natural areas in buffer zones.
- Monitor habitat edges for declines in habitat quality, emerging threats, and potential detriments (e.g., presence of invasive species, wildlife-vehicle collisions).

1.3B PRESENCE & SPREAD OF INVASIVE PLANTS

Score: 2 points - 2.3 / 5

Points	*% of Score Range for Individual Ecotopes*
0	> 95%
1	95% – 50%
2	**49% – 35%**
3	34% – 25%
4	25% – 15%
5	< 15%

Background:

Non-native and invasive species are a huge problem globally and in the Los Angeles area. Presently, non-native plant species account for 31% of the known vascular plant species in the Santa Monica Mountains National Recreation Area (NPSpecies, 2021). While some non-native plant species have limited impacts on biodiversity, others are invasive and can be detrimental to native ecosystems, displacing native plants and reducing habitat quality. As non-native invasive species often become established in disturbed areas and displace/negatively impact native biota, the frequency and distribution of plant invasions can be a measure of ecosystem health.

Metric 1.3b looks at the presence of invasive plant species and their relative threat to native biodiversity. Initially, this metric was designed to use 7.5 x 7.5 quad data exported from CAL-IPC's CalWeedMapper, but the tool no longer supports spatial download. After conferring with CAL-IPC, the methodology for metric 1.3b was updated to rely on a direct data download from Calflora's Observation Download Portal based on the invasive species identified in LA County's Regional Prioritization Spreadsheet. Species were assigned specific weights based on CAL-IPC threat rankings (e.g., watch species = 0.5, limited = 1, moderate = 2, high = 3). The weighted count of invasive species was then calculated for each ecotope. Relative scores, compared to the ecotope with the highest species count, were used to assess the individual ecotope scores shown on the 1.3b map.

Results Discussion:

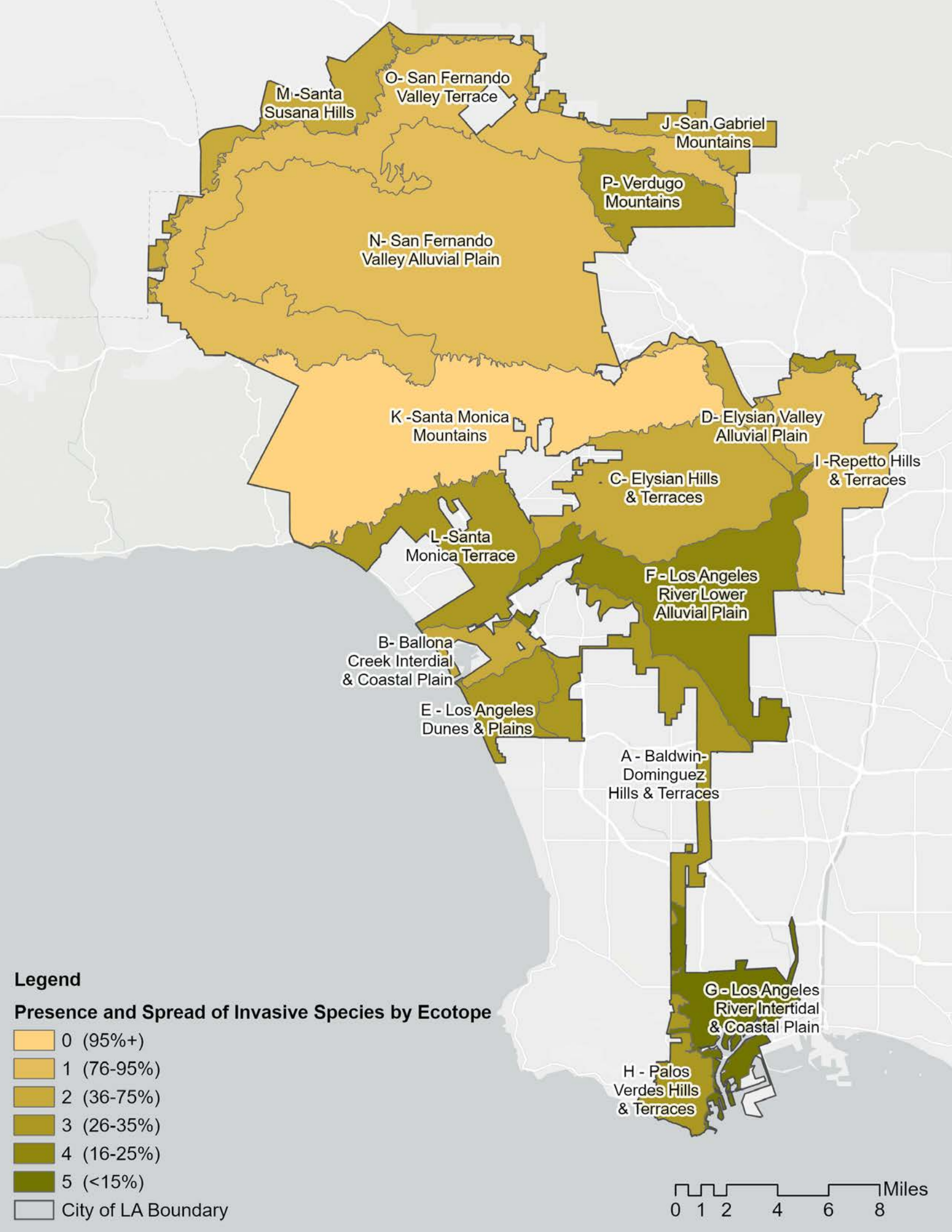
Raw data indicates that the Santa Monica Mountains ecotope has the greatest number of known invasive species (n=40) and that the Los Angeles River Intertidal & Coastal Plain ecotope has the lowest number of invasive species (n=4). Weighted data that emphasizes the threat level of the observed invasive plants suggests that invasion threats are greatest in the Santa Monica Mountains and in the Repetto Hills & Terraces.

There appears to be a bias towards collecting data on invasive species in natural areas (e.g., the Santa Monica Mountains) where invasive weeds pose the greatest threat. While the results suggest that natural areas have a greater diversity of known weed species, there is significantly more effort expended by scientists and by community scientists to observe and monitor weeds in natural areas. To this point, the dataset downloaded from Calflora had 125 unique observations in the Santa Monica Mountains ecotope and only nine observations in the Los Angeles River Intertidal & Coastal Plain ecotope, the ecotope that performed the best on this metric when assessed individually. However, this difference could also be due to the presence of impervious surfaces. Ecotopes that are largely composed of impervious surfaces (e.g., Los Angeles River Lower Alluvial Plain and Los Angeles River Intertidal & Coastal Plain) have fewer recorded invasive species than more pervious ecotopes (e.g., The Santa Monica Mountains). As more evenly distributed data points would improve the robustness of this metric, ecologists and community scientists should be encouraged to upload observations of invasive species to community science platforms in urban areas to improve knowledge about the presence and spread of invasive species in built environments in the City.

While CAL-IPC is the State's authority on invasive weeds, the species rankings they provide are Statewide. This means that locally, in LA, these rankings are not perfect (i.e., some CAL-IPC high priority species are not top priorities in Los Angeles and vice versa). As an example, the Santa Monica Mountains National Park Service's Evil 25 list focuses on 25 species that are highly problematic in the Santa Monica Mountains. Of the 24 species that are dual-listed as Evil 25 species and included on the South Coast List, five are considered "limited spread" species, 12 are considered "moderate", and seven are considered "high" threat, demonstrating that local priorities can diverge from high priority CAL-IPC species.

Delairea odorata, Los Leones
(Photo: Nurit Katz)

Invasive mustard
(Photo: Nurit Katz)


M -Santa Susana Hills
O- San Fernando Valley Terrace
J -San Gabriel Mountains
P- Verdugo Mountains
N- San Fernando Valley Alluvial Plain
K -Santa Monica Mountains
D- Elysian Valley Alluvial Plain
I -Repetto Hills & Terraces
C- Elysian Hills & Terraces
L -Santa Monica Terrace
F - Los Angeles River Lower Alluvial Plain
B- Ballona Creek Interdial & Coastal Plain
E - Los Angeles Dunes & Plains
A - Baldwin-Dominguez Hills & Terraces
G - Los Angeles River Intertidal & Coastal Plain
H - Palos Verdes Hills & Terraces
Legend
Presence and Spread of Invasive Species by Ecotope
0 (95%+)
1 (76-95%)
2 (36-75%)
3 (26-35%)
4 (16-25%)
5 (<15%)
City of LA Boundary
Miles
0 1 2 4 6 8

Management Implications:

- Continue to work with organizations like Calfora and CAL-IPC to better pinpoint, track, monitor, and manage invasions.
- Train Recreation & Parks staff to identify common and/or highly problematic invasive species (e.g., Dirty Dozen lists, the Evil 25 (used by the National Park Service), etc.).
- Encourage the public and City staff to upload observations of weeds on platforms like Calflora and iNaturalist, particularly in urban areas, to more comprehensively and evenly document weed distributions.
- Educate the public and nursery managers about invasive species and encourage them to stop selling and planting invasive species. Plantright is a great resource for this.
- Strengthen the ability of the LA County Weed Management Area to work collaboratively across jurisdictional lines.
- Consider software, like Calflora's Weed Manager, to track and record the presence and spread of invasive plant species. This software should be purchased, and utilized, in conjunction with LA County to improve the amount of data available and encourage collaborative efforts across jurisdictions.

Non-native fountain grass
(Photo: Graham Montgomery)

1.3C WILDFIRE FREQUENCY

Score: 2 points - Moderate risk

Points	*Assessment of Percent Fire Return Interval Departure (PFRID) Scores and Condition Classes (CCs)*
0	Majority of areas (>50%) assessed at severe risk of overburning (CC -3) or underburning (CC 3). Less than 10% of PFRID scores exhibit low departure scores (CC -1 or CC 1).
1	Area assessed at high risk of overburning or underburning. Less than 10% of PFRID scores are considered low departure (CC -1 or CC 1).
2	**Area assessed at moderate to high risk of overburning or underburning. Less than 25% of PFRID scores are considered low departure (CC -1 or CC 1).**
3	Area assessed at moderate to limited risk of overburning or underburning. More than 50% of PFRID scores are low (CC -1 or CC 1) and less than 10% of PFRID scores are severe (CC -3 or CC 3).
4	Majority of area assessed at limited risk of overburning or underburning. More than 75% of PFRID scores are low (CC -1 or CC 1).
5	Entirety of area assessed at limited risk of overburning or underburning. All PFRID scores are neutral or low (CC -1 or CC 1)

Background:

Fire is an important natural disturbance process that drives biodiversity change in the City of Los Angeles. In modern times, natural fire frequencies have been disrupted by human activities, fire management policies (i.e., suppression), and climate change (Safford & Kip, 2014). Historically, the types of vegetation present in the City of Los Angeles (e.g., coastal sage scrub), would naturally burn approximately every 20 years. Invasive plants burn more readily than natives, making degraded southern California landscapes more susceptible to burns. Increasing fire frequency and divergence from the natural fire cycle clearly has significant consequences for biodiversity. Further, invasive plants will regularly colonize habitats disrupted by wildfire, particularly those that have been severely burned, perpetuating the spread of invasive species and further altering regional fire regimes.

Wildfire history is well-monitored in California by scholars and by CAL FIRE and can be tracked over time to understand trends and potential impacts to better protect native ecosystems. While shifting environmental conditions and climate change mean that restoring historical fire conditions may not be feasible, comparing historical and current regimes can be an important exercise in prioritizing natural areas for restoration work/management (Safford & Kip, 2014).

Metric 1.3c uses a dataset from the U.S. Forest Service (USFS) that examines the Fire Return Interval Departure (FRID), which compares the burn frequencies for major vegetation types to historic burn data (USDA, 2020). The FRID dataset uses presettlement fire regime data and CalFIRE's fire perimeter database (FRAP) to compare historical and current fire regimes for different vegetation types (e.g., coastal sage scrub). The resulting data is broken into six condition classes, or CCs, that indicate the direction and magnitude of fire frequency (see the table below), with negative scores indicating overburning and positive scores indicating underburning. FRID data is useful for land and resource planning, such as fuels treatment planning, post-fire restoration, fire management, and assessing the effects of fire on ecosystems. Additionally, it provides context for understanding and comparing the contemporary and historic occurrence of fire in California. FRID data for the South Coast Region from the USFS was used to map the Percent Fire Return Interval Departure (PFRID).

Results Discussion:

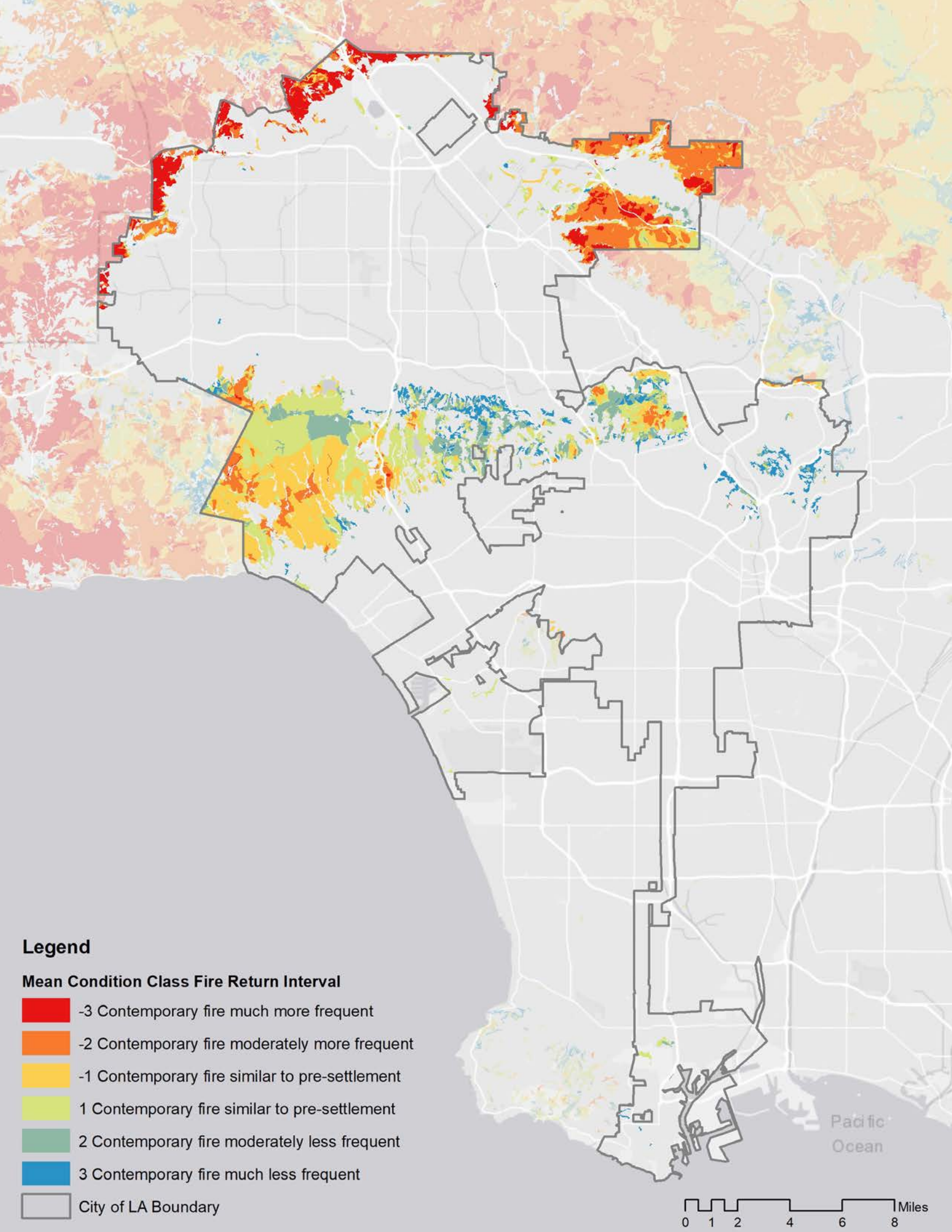
Analysis of this metric indicates that the areas of the City of Los Angeles assessed for this metric are subject to frequent wildfires and are experiencing relatively short fire return intervals (i.e., more frequent burns). This is particularly true for the larger natural areas in the City (e.g., the western Santa Monica Mountains) and areas on the periphery of the City (e.g., the Santa Susana Mountains, the San Gabriel Mountains, etc.). Interestingly, the areas of the City that have experienced less frequent wildfires (the

Santa Monica Mountain foothills, Elysian Park, etc.) are typically more urban and fragmented.
Over 50% of PFRID scores are in the lowest condition classes and considered to have low departure (e.g., CC -1 or CC 1) from natural conditions. However, 17% of scores are in the highest condition classes (e.g., CC -3 or CC 3) and significantly diverge from historical fire conditions. The high percentage of severe PFRID scores dictate the assignment of an overall score of 2 for this metric (see full results in table below).

In total, 58% of CC scores are negative, suggesting that the Los Angeles area is subjected to more frequent burns (i.e., shorter fire return intervals) when compared to pre-settlement conditions. This trend is true for Los Angeles County as well (UCLA IoES, 2015). As future climate change is expected to further increase wildfire frequency in LA County, opportunities to mitigate risk and protect ecosystems from wildfire damage should be seized.

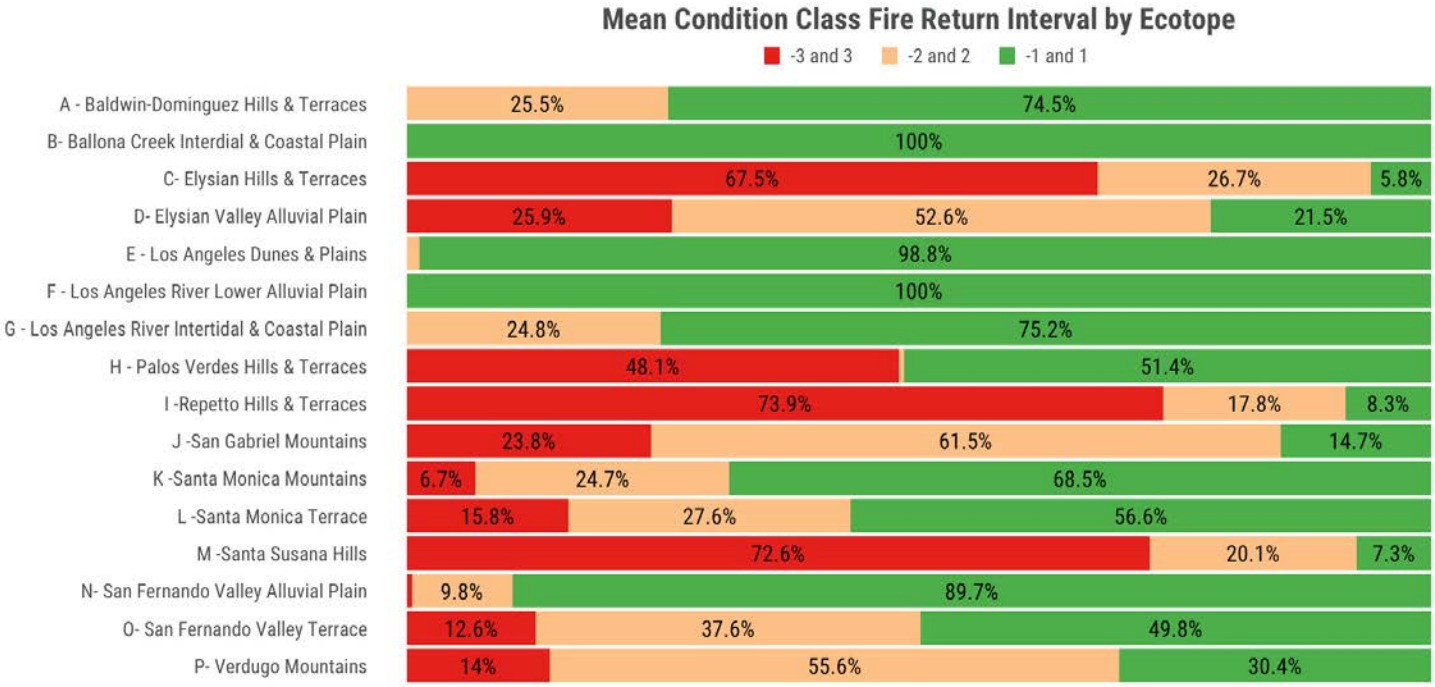
Condition Class (CC)	***CC Definition***	***Acres***	***Percentage***
-3	Contemporary fire much more frequent than presumed pre-settlement condition	5,255	11%
-2	Contemporary fire moderately more frequent than presumed pre-settlement condition	10,143	21%
-1	Contemporary fire close to pre-settlement condition	12,124	26%
1	Contemporary fire close to pre-settlement condition	11,754	25%
2	Contemporary fire moderately less frequent than presumed pre-settlement condition	5,353	11%
3	Contemporary fire much less frequent than presumed pre-settlement condition	2,804	6%
		47,432	***100%***

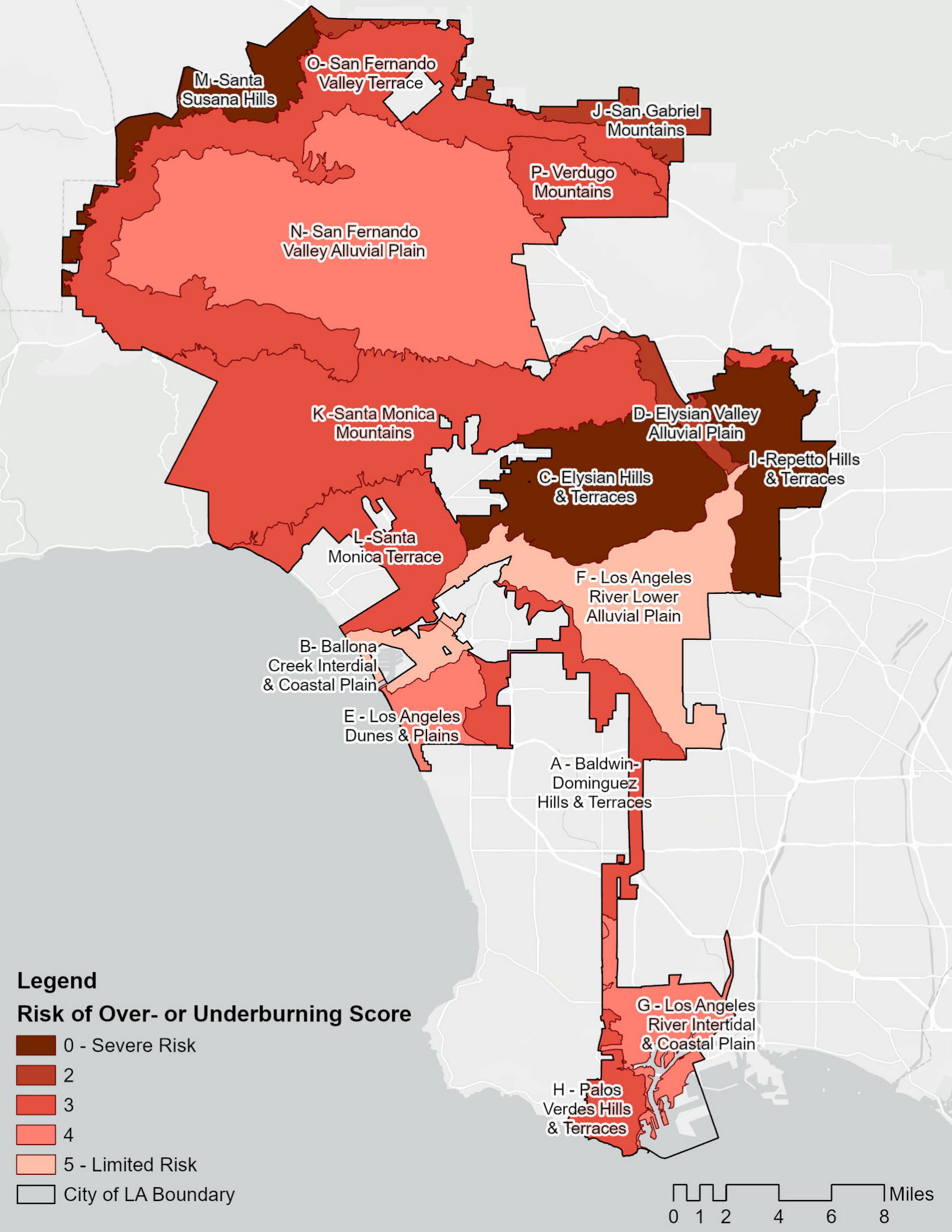
Condition Classes	***Burned Area in COLA***
CCI -3 and 3	17.0%
CCI -2 and 2	32.7%
CCI -1 and 1	50.3%


Legend
Mean Condition Class Fire Return Interval
-3 Contemporary fire much more frequent
-2 Contemporary fire moderately more frequent
-1 Contemporary fire similar to pre-settlement
1 Contemporary fire similar to pre-settlement
2 Contemporary fire moderately less frequent
3 Contemporary fire much less frequent
City of LA Boundary
Pacific Ocean
0 1 2 4 6 8
Miles

Ecotopes Results:

This metric was also assessed for each of the City's ecotopes. Individual ecotopes vary significantly in terms of their fire return intervals. Low-lying, coastal ecotopes (e.g., E- Los Angeles Dunes & Plains) tend to have low condition class scores, indicating relatively little departure from natural conditions, whereas hill and mountain ecotopes (e.g., C- Elysian Hills & Terraces and M - Santa Susana Hills) have a majority of high condition class (e.g., 3 and -3) scores (see table below).




M -Santa Susana Hills
O- San Fernando Valley Terrace
J -San Gabriel Mountains
P- Verdugo Mountains
N- San Fernando Valley Alluvial Plain
K -Santa Monica Mountains
D- Elysian Valley Alluvial Plain
I -Repetto Hills & Terraces
C- Elysian Hills & Terraces
L -Santa Monica Terrace
F - Los Angeles River Lower Alluvial Plain
B- Ballona Creek Interdial & Coastal Plain
E - Los Angeles Dunes & Plains
A - Baldwin-Dominguez Hills & Terraces
G - Los Angeles River Intertidal & Coastal Plain
H - Palos Verdes Hills & Terraces
Legend
Risk of Over- or Underburning Score
0 - Severe Risk
2
3
4
5 - Limited Risk
City of LA Boundary
Miles
0 1 2 4 6 8

Management Implications:

- The City should sustainably monitor, manage, and reduce hazardous fuels. Fuel reduction projects, such as thinning, pruning, and underbrush management, can decrease wildfire hazards and lessen the risk of catastrophic fires. These projects should be undertaken with biodiversity and habitat considerations in mind.
- The City departments involved in wildfire management, climate mitigation, and biodiversity management (e.g., RAP, LAFD, LASAN, etc.) should coordinate efforts to maximize carbon sequestration in healthy wildland habitat, provide habitat for native biodiversity, and safely reduce hazardous fuel loads to achieve mutually beneficial goals in natural areas and in the WUI.
    - Efforts should be made to revise, reduce, or eliminate practices that benefit one of these realms at the expense of others (e.g., denuding hillsides to meet brush clearance requirements).
    - A roundtable discussion between relevant City departments should be held to creatively address the issues at hand. Ideally, the roundtable should result in a set of guidelines that outline best practices for adapting to changing environmental conditions, protecting life and property from fire damage, and ensuring protection of native species and landscape in the name of building a more resilient City.
    - Efforts can, and should, be ecotope specific as wildfire stress differs greatly between ecotopes.
    - A set of best management practices should be developed to help City departments, utilities, and private property owners simultaneously reduce human-caused fires (e.g., electrical/ powerline fires) and sustainably manage their lands to be resilient to wildfires.
- As invasive species continue to fuel extreme wildfires in southern California, better management of invasive plant species will benefit nature in the City (see management implications outlined for metric 3.2c for detailed recommendations).
- LADWP should pilot the creation of pollinator habitats (e.g., native grasses and low-lying shrubs) in areas under power lines that are traditionally cleared to meet fire/brush clearance requirements.
- A list of native plants that are resilient and appropriate in fire-prone areas should be created and distributed with brush clearance notifications.
- The PFRID can be calculated for individual ecotopes to better tailor ecotope-specific mitigation actions and plans.

The La Tuna Fire burning hillside vegetation (September 2017)
(Photo: Michelle Barton)

METRIC FINDINGS

THEME 2: SOCIAL EQUITY CONSIDERATIONS

Birder at the Ballona Wetlands
(Photo: Michelle Barton)

2.1A ACCESS TO NATURAL AREAS

Score: 3 points - 56.1% of the population has access

Points	*% of Population within ½ Mile of Natural Areas / Open Space*
0	< 25%
1	25% – 40%
2	40% – 55%
3	**55% – 70%**
4	70% – 85%
5	> 85%

Background:

This metric looks at the percentage of Angelenos that have access to open space and natural areas. Open space and natural landscapes not only support native biodiversity, but provide educational opportunities, afford space for recreational activities, and contribute to the City's character. Additionally, high-quality, biodiverse landscapes and open space provide a variety of ecosystem services that regulate temperature, mitigate pollution, and contribute to public health, boosting physical and mental well-being. Plus, access to nature, and experiences in nature, increase awareness of local biodiversity. Unfortunately, access to parks, natural areas, and open space is not equitable across the City of Los Angeles. Underserved communities often lack opportunities to connect with nature and derive the benefits described above.

The Trust for Public Land (TPL) has developed a ParkScore index that ranks and compares the park systems of the 100 most populated cities across the U.S. The ParkScore system ranks cities on five metrics:

1. Access
2. Investment
3. Acreage
4. Amenities
5. Equity

In 2021, the ParkScore index ranked the City of Los Angeles #71 out of 100. Major findings are summarized below:

- Equity: In terms of equity, which looks at the distribution of parks and park acres, the City scored 32/100. The Trust for Public Land found that residents in neighborhoods of color have access to 13% less park space per person and individuals in low-income neighborhoods have access to 24% less park space when compared to the Citywide median.

- Access: In terms of access, defined as the proportion of residents within a 10-minute walk of a park, the City received a score of 45/100 as 64% of residents currently live within a 10-minute walk of a park.

To address park equity and access disparities, there are many efforts at the City and State level to connect all residents, workers, and visitors to neighborhood green spaces, natural areas, and parks. At the City level, Mayor Garcetti has pledged support to the 10-Minute Walk campaign, which aims to ensure that all City residents have access to a quality park within 10 minutes of their homes by 2050. Mayor Garcetti also issued Executive Directive #31 - Achieving Park Equity, which outlines actions to ensure that the benefits of parks and open space are equitably available to all Angelenos. Execution of the various recommendations will increase and improve park access, increase investments in parks, and increase park acreage and tree canopy in communities that need it most.

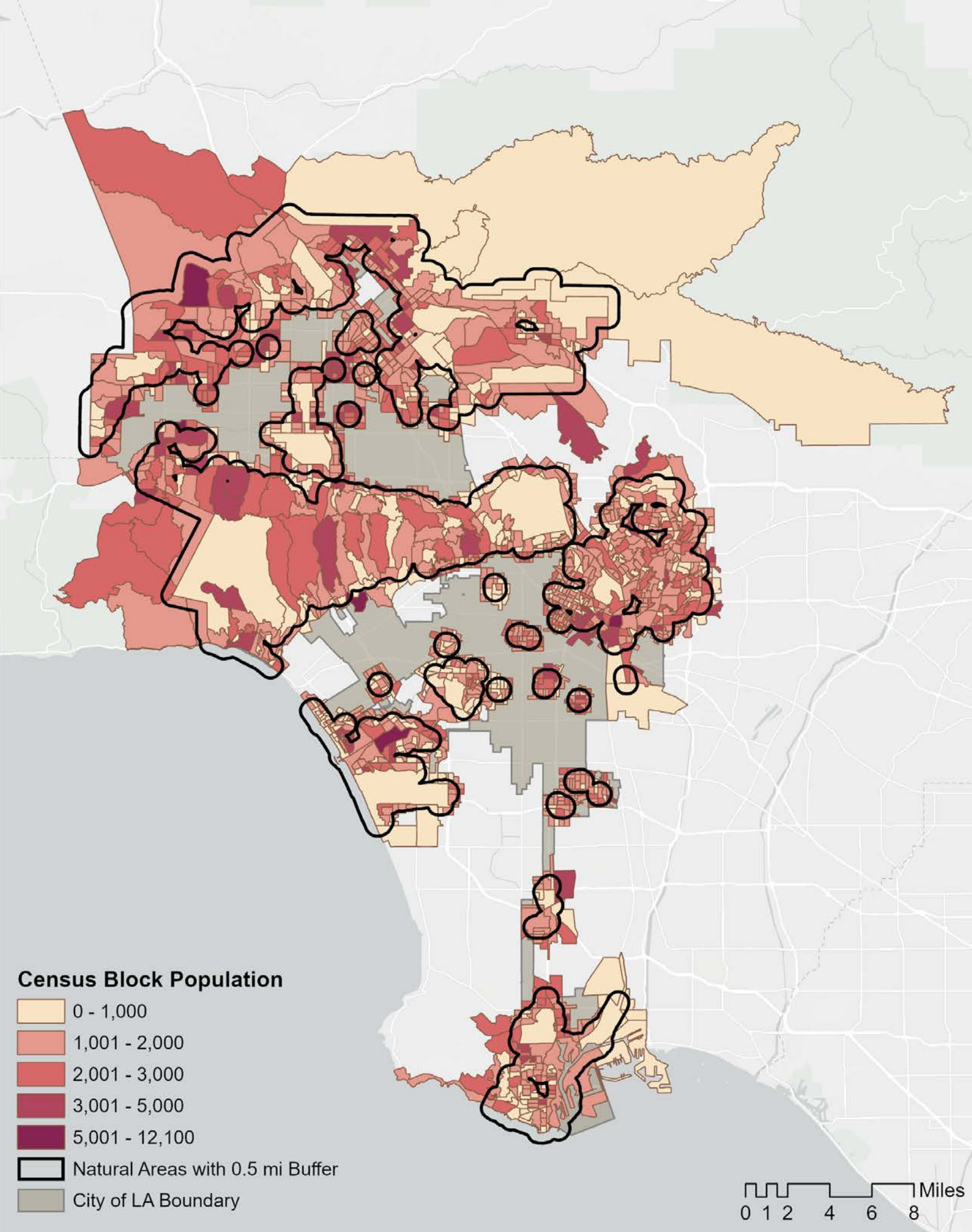
At the State level, the California Natural Resources Agency (CNRA) launched the Outdoors for All initiative in December 2021 that aims to expand equitable outdoor access to underserved communities across California. In addition to providing $1 billion in investments to increase equitable access, this initiative will also promote the State's 30 x 30 initiative and prioritize the use of Nature-Based Solutions to achieve climate goals.

Hikers enjoy views of the LA Basin
(Photo: Michelle Barton)

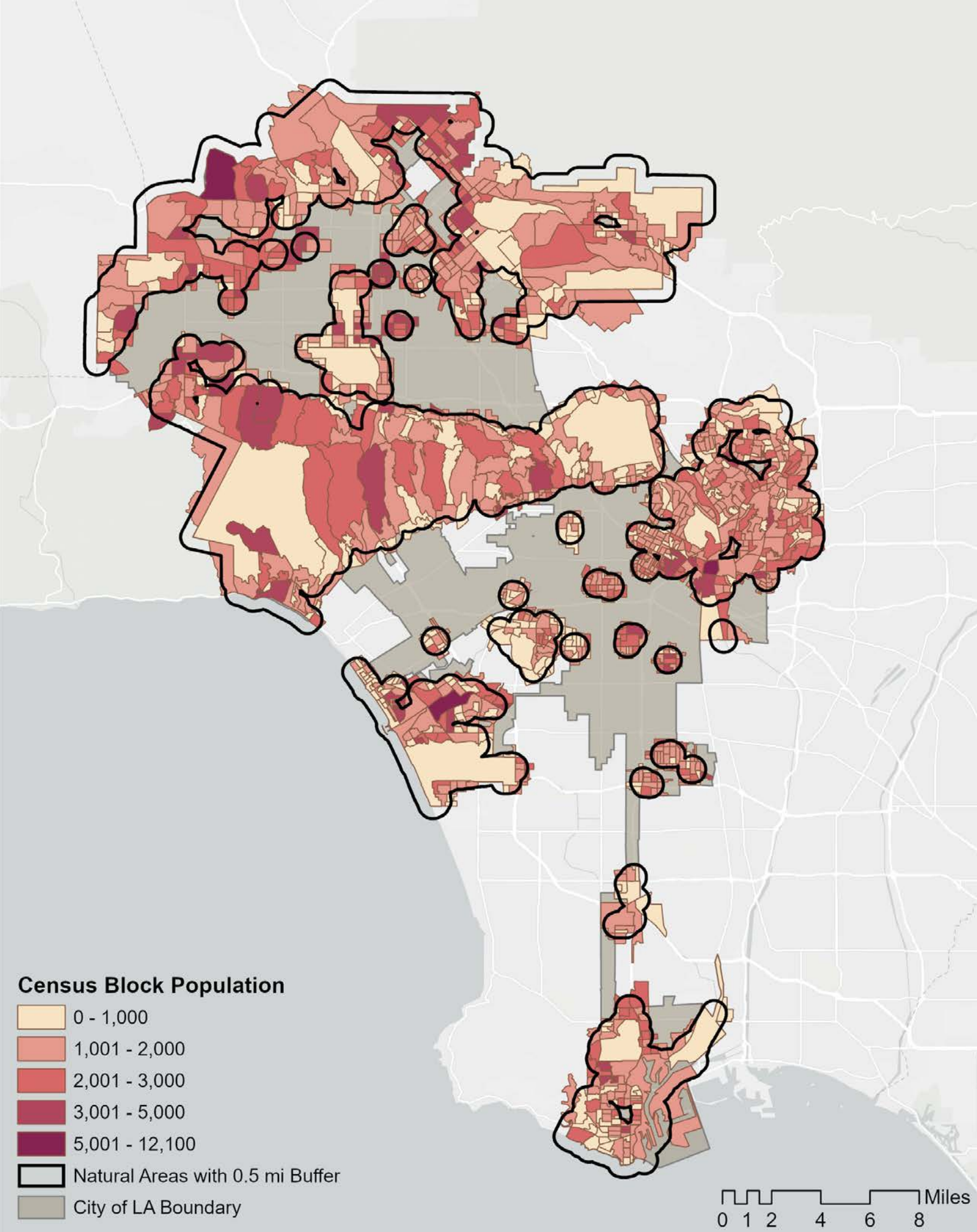
Results Discussion:

The percent of the City population within 0.5 mile of natural areas is 56.1% (2,602,700 (population within 0.5 mile) / 4,636,108 (total City population) x 100), yielding a final score of 3 out of 5. However, the default methodology for this metric, which involves capturing the population for all census tracts that intersect with the specified 0.5 mile buffer, potentially overestimates the population living within 0.5 miles from natural areas due to the irregular size and shape of census block groups. In other words, extremely large census tracts that extend miles beyond the natural areas buffer and have minimal overlap are included as accessible. To address this issue, and better represent the number of Angelenos that have access to natural areas, the LASAN Biodiversity Team performed additional spatial analysis to refine the results. Various intersection thresholds (i.e., the overlap of a census block group with the natural areas buffer) were assessed. Ultimately, a 30% threshold (i.e., census block groups must have at least 30% overlap with the buffer), was selected as it most accurately hugged the natural areas buffer and the City of LA boundary, thus limiting overcounting due to large census blocks and due to census blocks that are mostly or totally outside of the City boundaries. The results of the alternative analysis is 44.6% (2,066,945/4,636,108 x 100), yielding a lower score of 2. Maps resulting from the default and alternative methodology are presented here for comparison, and in the future, it may be deemed more appropriate to use the more conservative alternative methodology.

It should be noted that Mayor Garcetti and the Department of Recreation & Parks have opened 37 new parks since 2013, most of which are in underserved areas. Additionally, the City has acquired 164 acres of new parkland and invested tens of millions of dollars in parks and improving services. Collectively, these initiatives have significantly increased access to parks, defined as residents living within ½ mile of a park, from 53% in 2013 to 64% in 2021. These additional strides forward on this initiative are not yet captured in publicly available spatial data and should be captured during the next assessment of this metric.



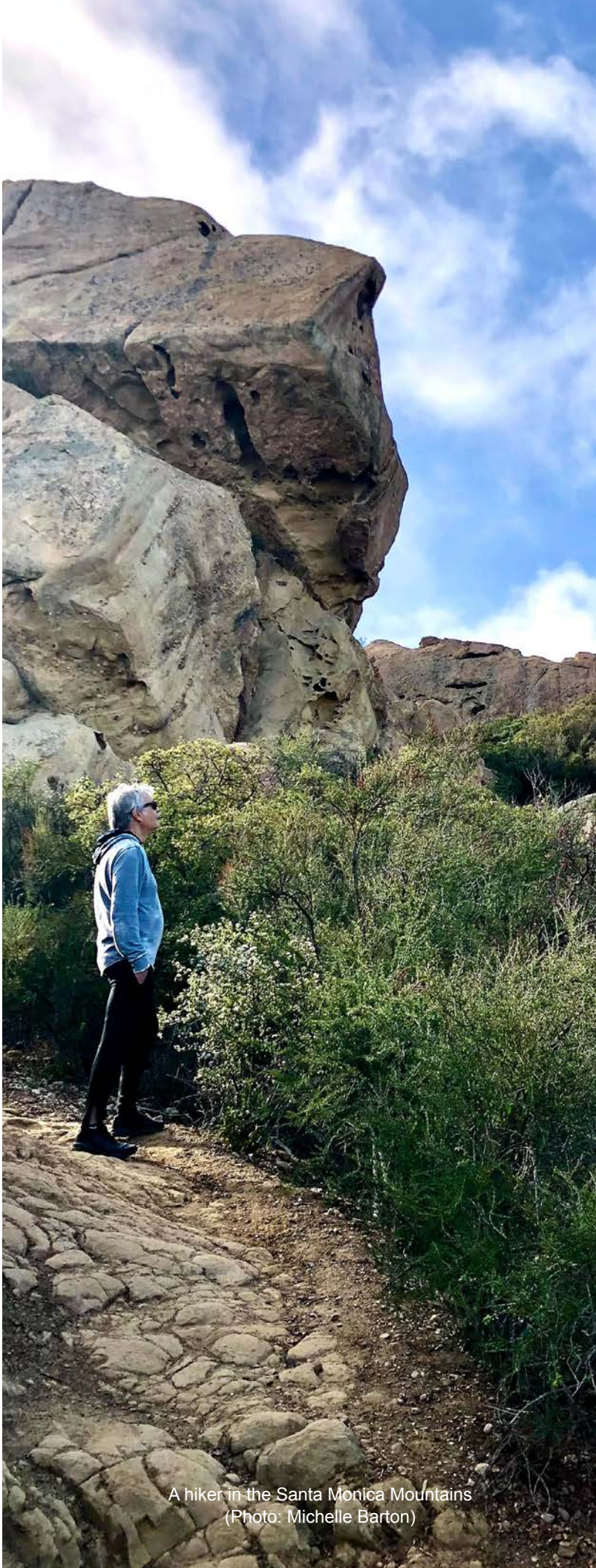
https://data.census.gov ACS 5-Year Estimate 2019 by census blocks is used for population data



https://data.census.gov ACS 5-Year Estimate 2019 by census blocks is used for population data

Management Implications:

- Create new parks:
  - The City should continue to open new parks in underserved areas and acquire new parkland to increase the overall size of the park system and increase equitable access.
  - The TPL ParkServe mapping application can be used as a resource to pinpoint where parks are needed most in the City. The map makes recommendations for ten optimal locations for new parks.
  - Creating new parks or transforming underutilized parks in the communities of greatest need can be propelled by activating local and national partnerships with groups like the:
    - Trust for Public Land,
    - Santa Monica Mountains Conservancy,
    - Los Angeles Neighborhood Land Trust, &
    - Mountains Recreation and Conservation Authority.
  - New parks should be strategically created to simultaneously increase equitable access to green space, increase climate resilience, and boost habitat connectivity. Parks can also utilize and revitalize neglected and/or underutilized areas like brownfields.
- Enhance existing parks:
  - Existing park space should be reimagined and retrofitted as needed to provide biodiversity habitat. Neighborhood parks with native plant palettes that support biodiversity have the potential to expose Angelenos to a more diverse array of native species.
- The City should work independently and in partnership with the County to implement the related recommendations outlined in the 2021 Sustainability Report Card for Los Angeles County on Ecosystem Health (Reid-Wainscoat, et. al., 2021), specifically that:
  - All new parks should incorporate multi-purpose green space that serves both the needs of the community and local biodiversity,
  - Existing parks should be retrofitted to include adequate green space,
  - New parks should not be located within 1,000 feet of a freeway, and
  - Joint-use plans that capitalize on underutilized spaces can be used to increase access to green space in dense neighborhoods.



A hiker in the Santa Monica Mountains
(Photo: Michelle Barton)

- Transportation:
  - The possibility of increasing service on transit lines that connect Angelenos to open space and natural areas, such as beaches, mountains, and large parks, should be examined.
  - Active transportation (e.g., multimodal paths) should be designed with the goal of connecting all Angelenos to the City's patchwork of open space, parks, and natural assets. The City should strive to better incorporate biodiversity considerations into transportation planning and these paths should double as wildlife corridors to support the movement and dispersal of native species.
- The CNRA has budgeted over $500 million dollars in grants to local communities to increase park equity, fund park programming, and enhance park infrastructure. City departments involved in outdoor recreation, park-equity, and access to nature (e.g., RAP, LASAN, DCP, etc.) should pursue grant funding from the State's Outdoors for All Initiative to achieve the park equity goals outlined in Executive Directive #31.
- LASAN, RAP, CEMO, and the Civil + Human Rights and Equity Department should form a Biodiversity Equity Group to collaboratively address biodiversity equity and access to nature issues.


Angelenos in Griffith Park (Photo: Michelle Barton)

2.1B NEIGHBORHOOD LANDSCAPE / TREE CANOPY FOOTPRINT

Score: 2 points - 36.8%

Points	*% Landscape and Tree Canopy Cover*
0	< 15%
1	15% – 25%
2	**25% – 40%**
3	40% – 50%
4	40% – 50% Citywide & all ecotopes > 30% landscape and tree canopy
5	> 50% Citywide & all ecotopes > 35% landscape and tree canopy

Background:

Metric 2.1b captures information about urban biodiversity and urban greening across the City. As urban trees, parks, green space, and home gardens provide valuable ecosystem services to Angelenos, this metric serves as a proxy for nature-derived ecosystem services, particularly those related to cooling and carbon capture.

The intent of this metric is to account for large and small scale interventions that add landscape, tree canopy, and greening to the City of LA. New tree plantings, green infrastructure projects, green roof installations, nature-based solutions, and more will be captured over time and improve the score of this metric. On the other hand, tree removals, new roads/ parking lots, use of gray infrastructure in lieu of green infrastructure, and densification development will cause this score to decline. To maintain, or ideally improve, the score on this metric, the City must both preserve existing green spaces and create new ones.

Trees, green infrastructure, and nature-based solutions (NbS) are cost-effective solutions to the dual crises of climate change and biodiversity loss, building resilient environments while lessening impacts on biodiversity. Nature-based solutions are defined by the International Union for Conservation of Nature (IUCN) as "actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits". Unlike gray infrastructure, which includes human-engineered infrastructure such as dams and bridges, NbS are designed to deliver important societal benefits while maintaining biodiversity and the ability of natural ecosystems to function over time. Research suggests that NbS are 50% cheaper than gray infrastructure alternatives and deliver up to 28% more value in terms of the suite of benefits they provide (World Economic Forum, 2022).

Notable City-level Activities:

The City and its nonprofit partners are taking action on a number of fronts to protect and enhance the urban forest and green spaces across Los Angeles. There are four high-level goals in the City's Green New Deal that guide much of this work:

1. To plant 90,000 trees by 2021.
2. To increase tree canopy by at least 50% by 2028 in areas with the least shade, which tend to be the City's hottest, low-income communities.
3. To complete a citywide tree inventory by 2021.
4. To complete an Urban Forest Management Plan by 2028.

To date, impressive progress has been made on all four goals: over 65,000 trees have been planted, canopy equity is an important criterion in determining tree planting locations, the Citywide tree inventory is nearly complete, and the Urban Forest Management Plan is in development.

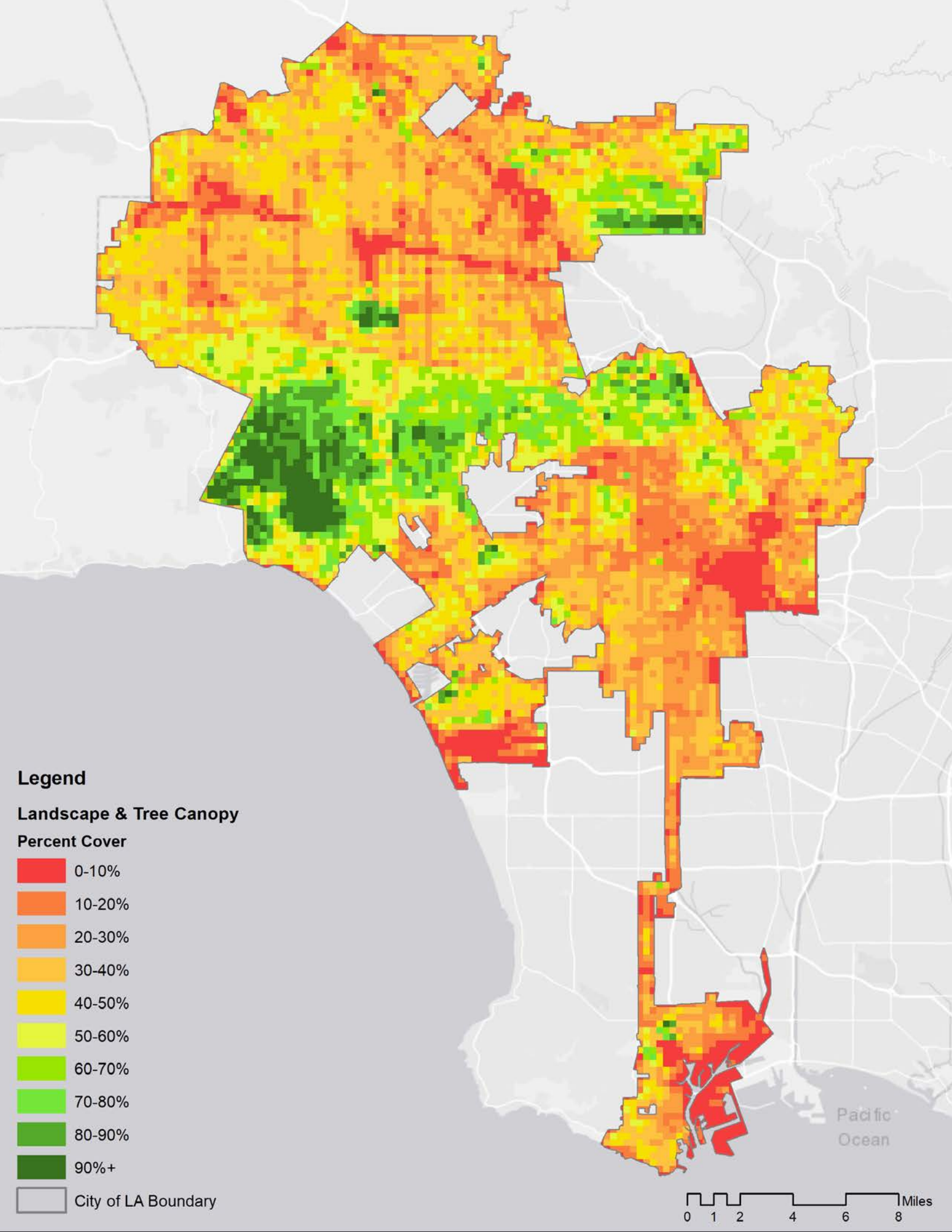
In addition to pursuing these goals, the City is taking a variety of steps to improve financing, data management, and maintenance of public trees. Notably, the City is working to complete a comprehensive inventory of all public trees. Licensed arborists are currently collecting information about the location and health of park and street trees across the City and adding them to a dynamic data management platform called Davey TreeKeeper (see the public-facing TreeKeeper page). Once complete, the inventory will provide the basis for data-driven planning and decision-making. However, the inventory data alone is not enough. Comprehensive, equity-focused planning, regular maintenance, Citywide management, and sufficient funding are needed to ensure that the City's urban forest grows, thrives, and is properly and safely managed. To this end, efforts are underway to develop an Urban Forest Financing Study for Los Angeles, which will identify costs, benefits, and funding strategies for a comprehensive urban forestry program, and to create

and implement an Urban Forest Management Plan, which will provide the necessary strategic planning to ensure long-term growth, health, and safety of the urban forest. A comprehensive urban forestry program is one that includes the management of the whole life cycle of LA's urban forest, including tree planting, establishment, maintenance, removal, and beneficial reuse, as well as the enforcement of tree protection and preservation codes. These efforts will build on the valuable findings, proposed steps, and momentum from the First Step: Developing an Urban Forest Management Plan for the City of Los Angeles report, published in 2018, which identified an estimated $70-80 million gap to urban forest management aligned with best management practices in Los Angeles.

In 2019, Mayor Garcetti appointed the first City Forest Officer for Los Angeles. The City Forest Officer is spearheading the development of the citywide Urban Forest Management Plan, working to increase tree canopy equity, and in charge of coordinating tree planting activities between City departments and external partners. This role has increased high-level planning and coordination of tree planting activities across the City that will have long-term benefits for the City's canopy.

In 2020, the Department of Recreation and Parks, LA Parks Foundation, City Plants, and the Los Angeles Conservation Corps began working to grow trees and plants from locally sourced seed at the historic Commonwealth Nursery. The Commonwealth Nursery project sets an example for how public-private partnerships can transform Los Angeles into a more livable place for plants, animals, and people. Centrally located in LA, the 11-acre Commonwealth Nursery site in Griffith Park serves as an urban ecological laboratory and training grounds, where plants are grown, people are trained, and transformational seeds are sown. The goal of the nursery is to strengthen the City's partnerships with nonprofits and the public, achieve progress towards the resiliency goals outlined in the City of LA's Green New Deal, the City's Biodiversity Program, and beyond, through local-level seed collection and propagation.

Commonwealth Nursery, Griffith Park
(Photo: Grown in LA)


Legend
Landscape & Tree Canopy
Percent Cover
0-10%
10-20%
20-30%
30-40%
40-50%
50-60%
60-70%
70-80%
80-90%
90%+
City of LA Boundary
Pacific Ocean
0 1 2 4 6 8
Miles

Tree delivery for a City Plants community adoption event (Photo: City Plants)

Private Property

While public trees are very valuable greening assets, the aim of this metric is to understand holistic greening patterns across the City. As such, efforts to increase tree canopy and create habitat on private property must also be examined. Efforts on creating habitat for biodiversity are tracked as part of metric 2.3b, # of Certified Biodiversity-Friendly Areas. However, it is understood that the information available on private property activities via certifications is limited. By looking at fine-scale (10-foot) imagery, over time this metric will more comprehensively gauge the success of various City initiatives to increase canopy, green space, and habitat across private property. This is particularly important as it is estimated that over 90% of the urban forest is located on private property. The hope is that this metric will reflect the progress and successes of programs such as:

- The City Plants Yard Tree Program: City Plants offers free yard trees via a home delivery program and community "adoption" events.
- The Department of City Planning's Healthy Buildings, Healthy Places Design Guidelines: The design guidelines encourage the development of green spaces, green roofs, and urban gardens to promote access to nature, physical activity, and access to healthy food.

Community Engagement:

Community engagement is key to encouraging activities that enhance and protect green spaces across the City. To celebrate trees, and the multitude of benefits they provide, the City family hosts an annual Arbor Day celebration each spring. The event brings together community members to plant trees, build community, and spread awareness about the benefits of the urban forest and green spaces.

In 2021, City Plants and the LA Department of Water and Power worked with a broad coalition of partners to launch the Tree Ambassador - Promotor Forestal Program, a bilingual pilot program designed to amplify community voices and plant and care for trees across the City. The Tree Ambassador Program aims to develop invested community leaders to raise awareness on the benefits of trees, particularly in low-canopy, historically redlined communities that are subject to the urban heat island effect. A detailed, ten chapter, Community Action Toolkit is being developed in English and Spanish that will serve as an excellent, publicly available resource for motivated residents to learn about urban forestry and tree planting.

Arbor Day 2022 Celebration
(Photo: City Plants)

Results Discussion:

Analysis indicates that 36.8% of the City of Los Angeles is tree canopy and landscape. This footprint demonstrates that the City has a substantial amount of greenery to support biodiversity and provide ecosystem services. While these results are encouraging, data and anecdotal evidence suggests that tree canopy in the City has been declining over time, due primarily to development. Google's Tree Canopy Insights Tool estimates the average canopy coverage in the City to be a mere 14%. Further, as indicated on the map, trees, landscape, and nature-based solutions, and the biodiversity that they support, are not equitably distributed across neighborhoods (Wood and Esaian, 2020). A supplemental ecotope-based analysis further exemplifies this with landscape and canopy cover ranging from a mere 17% in the Los Angeles River Intertidal & Coastal Plain Ecotope to over 70% in the Santa Monica Mountains Ecotope. These results can be used to support urban design, planning, and other project efforts to maintain adequate and equitable levels of landscape and tree canopy in all Los Angeles neighborhoods.

As part of the City's ongoing effort to increase canopy equity, the City and City Plants worked with Dr. Vivek Shandas, the City's first Urban Forest Equity Visiting Scholar, on research and mechanisms to increase canopy equity. The Los Angeles Urban Forest Equity Assessment Report and the Los Angeles Urban Forest Equity Streets Guidebook were published in 2021 as part of this effort. Collectively, these reports provide guidance on how to sustainably and effectively remedy canopy inequities demonstrated by the metric 2.1b analysis. The results of the equity reports are beautifully summarized in this infographic. These resources are crucial to advancing equity goals and providing access to canopy and landscape to all.

Saplings at Commonwealth Nursery
(Photo: City Plants)

Management Implications:

- The City should strive to connect all residents, workers, and visitors to nature every day by working to increase opportunities to experience nature near City facilities, promoting opportunities to engage with biodiversity on social media platforms, and doing other types of community engagement.
- Nature should be intensified in natural areas and in neighborhoods across the City to maximize the footprint of green spaces and the associated ecosystem services that these spaces provide.
  - Degraded and/or sub-optimized public and private land across the City should be restored to better integrate nature into the City.
  - Soils should be unsealed and restored to increase habitat, cover, and sources of food for wildlife.
- Nature-based solutions should be promoted as cost-effective solutions to the dual crises of climate change and biodiversity loss. However, the lack of a clear mechanism to accomplish NbS is a critical challenge. Funding mechanisms and revenue streams to support tree planting, green infrastructure, and NbS are sorely needed. A financing study, similar to the one outlined above for urban forestry, should be developed to examine the means of broadly implementing and maintaining NbS across the City.
- Greening projects should be designed to address equity issues and bring trees, shrubs, and other landscape elements to the neighborhoods that would benefit the most from associated ecosystem services, such as cooling and shading.
- Encourage public and private projects to use diverse, native planting palettes to support native biodiversity, e.g., pollinators, and provide ecosystem services.
- Encourage the use of locally collected native seeds in restoration projects to increase diversity in the soil and minimize the introduction of invasive weeds. Support nurseries (e.g., Commonwealth Nursery) and regional seed banking partnerships like SeedLA that safely collect seeds and propagate stock locally.
- Community Engagement:
  - The materials in the Tree Ambassador Community Action Toolkit should be promoted and widely distributed to develop knowledgeable, community-based advocates.
  - Disseminate relevant resources to determine appropriate native groundcover plants and trees:
    - Calscape Native Planting Guide and Advanced Search Tool
    - CalFlora Planting Guide
    - UC Berkeley Jepson eFlora
    - Cal Poly SelecTree Tool
    - National Wildlife Federation Native Plant Finder
  - The Neighborhood Council Sustainability Alliance, Community Forestry Advisory Committee, and other engaged groups should be recruited to help increase tree canopy and green infrastructure across the City.
- The City should pilot a program for site selecting and planting trees on private property, particularly in low canopy, historically disinvested communities, to maximize the social and environmental benefits of its urban tree canopy, close the urban forest equity gap, and aid Angelenos in “right tree, right place” methodology to strengthen the survival of newly planted trees.
- Protected Trees:
  - The City should continue to protect all tree species covered in the City’s Protected Tree Ordinance and work to improve meaningful enforcement efforts.
  - The City should educate developers and homeowners about the value of protecting the species protected by ordinance and the general value of preserving onsite mature trees.
  - The City should continue to develop and explore collaborative and innovative partnerships to insource plant and tree production from locally sourced, genetically diverse, and climate-adapted seeds to meet the demands of urban tree canopy, green infrastructure, and biodiversity policy targets.

2.2A SCHOOL (K-12) BIODIVERSITY TOPICS

Score: 2 points - State-compliant

Points	*Level of Compliance with State of California Biodiversity Learning Standards*
0	Out of State compliance on biodiversity-related topics at designated grades (classroom instruction at designated grades meets the Performance Expectation)
1	At State compliance on biodiversity-related topics at designated grades (classroom instruction at designated grades meets the Performance Expectation)
2	**At State compliance on biodiversity-related topics across a grade-band (classroom instruction at all grades in a grade-band collectively build towards the ability to meet the Performance Expectation)**
3	Above State compliance on biodiversity-related topics that involve local biodiversity investigations and explanations
4	Above State compliance on biodiversity-related topics that involve local and advanced biodiversity investigations and explanations by understanding local problems and beginning to plan for action
5	Above State compliance on biodiversity-related topics that involve local and advanced biodiversity investigations and explanations and engaging in action projects (with local organizations when possible) that work to solve local problems (with local-to-global problem solving in high school)

Background:

Metric 2.2a measures the exposure of students to local and global biodiversity topics through school curricula. In 2013, the State of California adopted the Next Generation Science Standards (NGSS), which are K-12 science standards that integrate crosscutting concepts, science and engineering practices, and disciplinary core ideas. The NGSS standards include performance expectations related to biodiversity, ecosystem, and habitat throughout elementary school (Kindergarten - 5th grade), middle school (6th - 8th grade), and high school (9th - 12th grade). The Los Angeles Unified School District (LAUSD) is required to implement California NGSS.

To supplement the public information available on LAUSD's website about NGSS, in 2020, a survey was sent out to LAUSD Science, Technology, Engineering, Arts, & Math (STEAM) Coordinators and Science Coordinators to collect supplemental information on biodiversity education at LAUSD K-12 schools.

Science classroom
(Photo: Michelle Barton)

Results Discussion:

All Los Angeles Unified Schools are in full implementation of the California NGSS. While LAUSD addresses biodiversity topics at all grades, a focus on local biodiversity is not required/built into the standards. However, LAUSD has pages of optional middle school and high school instructional resources, including sample lesson plans (e.g., Sea Star Ecosystems) that emphasize local biodiversity on its website. In addition to regular science instruction, the LAUSD Office of Outdoor and Environmental Education (LAUSD OOEE) exposes students to local biodiversity and hosts extended learning resources, including NGSS lesson plans for various grade bands and learning videos on local tide pools, soil, botany, and more, that serve as valuable biodiversity resources for teachers. In their survey responses, LAUSD STEAM Coordinators and Science Coordinators suggested that there is an interest at district schools regarding local biodiversity topics and that many students engage with local biodiversity first-hand at biodiversity-related field trips (e.g., Outdoor Education, the Cabrillo Marine Aquarium, and the Los Angeles Zoo) and/or through interactions with biodiversity-focused organizations (e.g., the Natural History Museum of LA County and Deb's Park). However, as the emphasis on local biodiversity is not universal at all schools, a score of 2 was assigned for this metric. Enhanced data collection and/or tracking on how biodiversity is taught at LAUSD schools would ease future assessments and enable more specific data collection. To this end, the LASAN Biodiversity Team joined WestEd and UCLA to submit an NSF grant proposal that specifies working with LAUSD to implement NGSS at its schools, possibly involving biodiversity projects or other environmental sciences issues. Efforts of this nature will lead to future score improvements for this metric.

Management Implications:

- The LASAN Biodiversity Team should coordinate with LAUSD STEAM Coordinators to better track student engagement with local biodiversity issues.
- The LASAN Biodiversity Team, the Biodiversity Expert Council, the Interdepartmental Team, and stakeholders should work with LAUSD/ LAUSD STEAM Coordinators to develop lessons/ curriculum that focus on local biodiversity and encourage students to participate in local actions/ planning related to biodiversity.
- The LASAN Biodiversity Team and the Los Angeles Public Library's Neighborhood Science (NeiSci) Program should encourage students to participate in bioblitzes, like the LA Bioblitz Challenge. Further, LASAN and LAPL can provide programming and opportunities for students to learn about the City's indicator species and, ideally, upload observations of them to community science platforms, like iNaturalist.
- The Biodiversity Expert Council should lobby for updates to the California NGSS that require education around local biodiversity.
- The Biodiversity Expert Council should work with LAUSD/LAUSD STEAM Coordinators to identify partners/organizations that can create, enhance, or teach biodiversity lessons/curriculum.

Students planting trees in front of a school
(Photo: City Plants)

2.2B OFF-CAMPUS BIODIVERSITY EDUCATIONAL VISITS

Score: 0 points - 0.21 visits

Points	*Average Formal Education Visits/ Student/Year*
0	**< 0.25**
1	0.25 – 0.5
2	0.5 – 1.0
3	1.0 – 1.5
4	1.5 – 2.0
5	> 2.0

Background:

Metric 2.2b is designed to measure the first-hand exposure that K-12 students get to local and global biodiversity through visits to natural areas or nature centers. The LAUSD Office of Outdoor and Environmental Education (OOEE), which is part of the Beyond the Bell Branch, provided comprehensive data on district-wide field trips. OOEE reported that its programs are in high demand, and that efforts to increase field trip offerings at no cost to schools or students are underway.

Additional data was collected on informal and non-sponsored field trips (see definitions below) via a survey distributed to education coordinators at organizations that host biodiversity-related field trips. The survey was designed to understand the scope of global and/or local biodiversity topics in the educational programming associated with field trips. Additionally, the survey asked questions to understand opportunities for students and/or schools to develop long-term relationships with sites and/or organizations.

LAUSD Field Trip Definitions:

Approved Curricular Field Trip: A school-sponsored and approved field trip to an approved site on the LAUSD Field Trip List. Curricular excursions, such as non-routine camping or overnight non-athletic trips, and trips involving trails, bodies of water, and visits to state/national parks need the approval of the OOEE and Risk Management.

Informal Field Trip: An opportunistic field trip that occurs on a school-by-school or teacher-by-teacher basis. These field trips are not required or institutionalized; however, they do still expose a large swath of students to ecological concepts, natural areas, and LA's biodiversity. These trips may be led by teachers, informal educators, or community-based organizations.

Non-Sponsored Trip: A field trip organized by a school community as a non-school event to sites or activities without LAUSD approval. As such, teachers and parents personally accept liability for injury or misfortune.

Results Discussion:

Approved Curricular Field Trips:

LAUSD OOEE provides day-trip and overnight residential science school opportunities for approximately 38,000 students annually throughout LAUSD. This means that roughly 6% of the student body (38,000/652,648) participates in a formal field trip or that a typical student experiences 0.06 formal biodiversity field trips per year. Future investments will increase the capacity for OOEE to offer these field study programs to an additional 10,000 students per year, as well as expand the range of participants to grades K-12.

Informal Field Trips and Non-Sponsored Trips:

According to our survey (# of respondents = 7), the average number of students who annually engage in programming at participating organizations was 99,000 (as a reference point, the number of LAUSD & charter schools for the 2020-21 school year was 652,648, so this represents ~15% of students). Most trips serve grades 3-8 and are considered to be educational tours. Since none of the participating organizations in our survey are considered to host "approved curricular field trips," this shows how "informal field trips" are shaping the educational experiences of students. Moving forward, it will be important for OOEE to coordinate with organizations that host existing "informal education visits". The main challenges survey respondents reported facing are in regards to funding for transportation and the capacity to do outreach. Two respondents represented City Departments/facilities, the Cabrillo Marine Aquarium (Recreation & Parks) and the Environmental Learning Center (LASAN). Collectively, these City Departments engage with an estimated 600 - 750 schools, or 73,000 students annually.

LAUSD Field Trip
(Photo: LAUSD Office of Outdoor Education)

Collective results:

Approximately 21% ((38,000 + 99,000) / 652,648) of LAUSD students participate in formal and informal biodiversity field trips annually. In other words, a typical LAUSD student has 0.21 curricular or informal biodiversity field trips per year.

Management Implications:

- LAUSD OOEE should work to increase the number of approved curricular and informal field trip opportunities for students to be exposed to biodiversity. Biodiversity field trips should be frequent and intentionally aligned with classroom instruction to reinforce concepts.
- The City should increase funding for OOEE to create more outdoor education facilities, increase OOEE staff, and increase the number of field trip partners.
- LAUSD should encourage field trip organizers to have a better understanding of the NGSS standards so that they can reinforce particular concepts.
- Educational programming that provides opportunities for long-term community partnerships that maximizes the educational value for students should be highlighted.
- LAUSD should identify a permanent funding source to decrease or eliminate the barriers presented by transportation to and from field trip sites and to cover entrance fees.
- LAUSD should consider how students with disabilities and learning differences are able to participate in these experiences.
- LASAN and the Department of Recreation and Parks should collaborate to better track student visits and field trips to their respective facilities. Additionally, LAUSD and Recreation & Parks should make an effort to monitor annual formal education visits to parks with natural areas.

LAUSD Field Trip to the Angeles National Forest
(Photo: LAUSD Office of Outdoor Education)

2.2C CAMPUS NATURE EDUCATION GARDENS

Score: 2 points - 76.7% of LAUSD campuses

Points	*% of Schools with a Living Schoolyard Area*
0	< 50%
1	50-75%
2	**75%+**
3	75%+ and a majority (50%+) have at least ONE programming element*
4	85%+ and a majority (50%+) of gardens have at least TWO programming elements*
5	95%+ and all gardens have at least TWO programming elements*

**e.g., community partnership, biodiversity curriculum, community access, NWF (or other) certification)*

Background:

Metric 2.2c looks at the presence of campus gardens and biodiversity habitats across the Los Angeles Unified School District. School gardens have the ability to serve as intentional spaces for outdoor learning and exposure to nature. Plus, in communities that lack access to open space and park space, school green space provides access to nature for young people.

This metric also examines the existence of partnerships (e.g., Audubon Society or Enrich LA), community access (via joint-use agreements), and certifications (via the National Wildlife Federation) on LAUSD campuses. Collectively, partnerships, community access, and certifications are referred to as "programming elements". Although it was originally hoped that this metric would solely track gardens/habitats with a specific focus on biodiversity, this was not possible due to the way the LAUSD Garden Survey was structured. Additionally, the LASAN Biodiversity Team felt it was important to acknowledge the educational value and ecosystem services provided through the presence of any type of schoolyard greening— such as edible vegetable gardens, and opted to broaden the approach.

LAUSD Background:

LAUSD is the second largest school district in the nation and serves over 600,000 students in kindergarten through twelfth grade at over 1,000 schools. The District also has over 200 independently-operated public charter schools, authorized by the Los Angeles Unified School District Board of Education. These schools cover the City of LA and parts of 31 municipalities and several unincorporated regions of Southern California. In the 2020-2021 academic year, LAUSD had 1,413 campuses and facilities (including 231 charters), and over 652,000 students. Of the 1,413 sites, 785 are K-12 schools and the remaining schools are other types of centers and facilities.

LAUSD Garden Background:

In February 2021, LAUSD approved the School Garden Resolution to create new school gardens and school community-shared green spaces. As part of the resolution, a City partnership with the Department of Recreation and Parks has emerged and a Green Space Task Force has been initiated. The Green Space Task Force, which is composed of the Los Angeles Unified School District, United Teachers Los Angeles, and the City of Los Angeles, aims to create new school gardens and school community-shared outdoor spaces. In addition, LAUSD has the following greening/sustainability programs:

- Sustainable Environment Enhancement Developments for Schools (SEEDS)
  - Launches school-initiated projects that provide site improvements and make sites "garden ready".
- Nature Explore Outdoor Classrooms
  - Creates outdoor learning spaces for early childhood education centers.
- Paving and Repair Sustainability Projects
  - Updates LAUSD campuses that are in the greatest need of repairs.
- Campus-Wide Modernization Projects
  - Creates new, safe, and updated facilities for the 21st century.

In an interview, LAUSD also reported that the district is excited to work with Green Schoolyards America in hopes to provide outdoor learning solutions for schools within the Los Angeles Unified School District.

An outdoor classroom at Walgrove Elementary School
(Photo: Michelle Barton)

LAUSD Facility Assessments:

LAUSD assesses facilities regularly via the Facilities Condition Assessment, which provides granular building and grounds data on facilities, including landscape elements, like gardens. LAUSD also performed a one-time Garden Survey which provided valuable, detailed data on campus green space, garden size, plantings, responsible group assigned, and type of function. This survey was performed in response to a request made by the LAUSD school board.

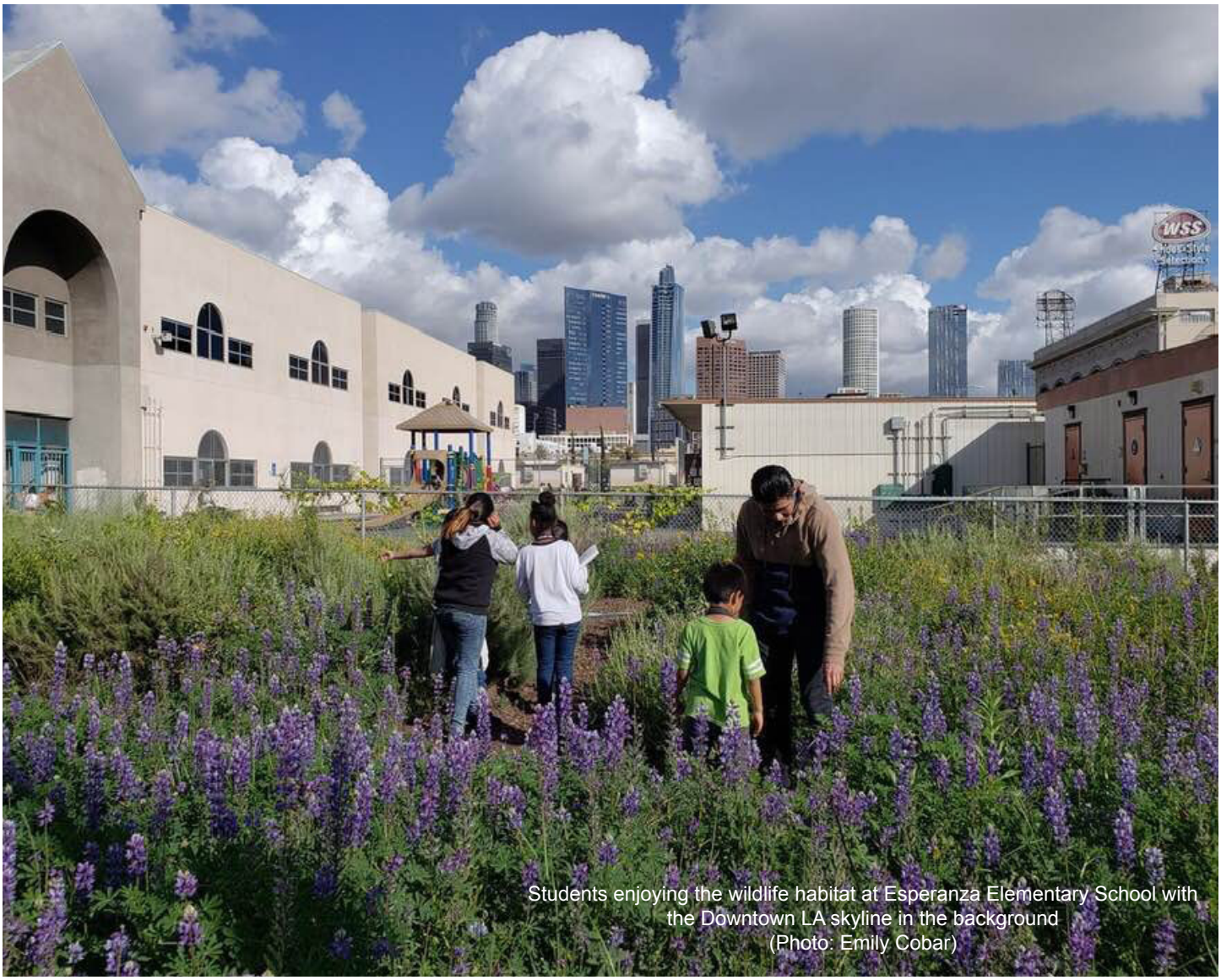
Results Discussion:

LAUSD Data:

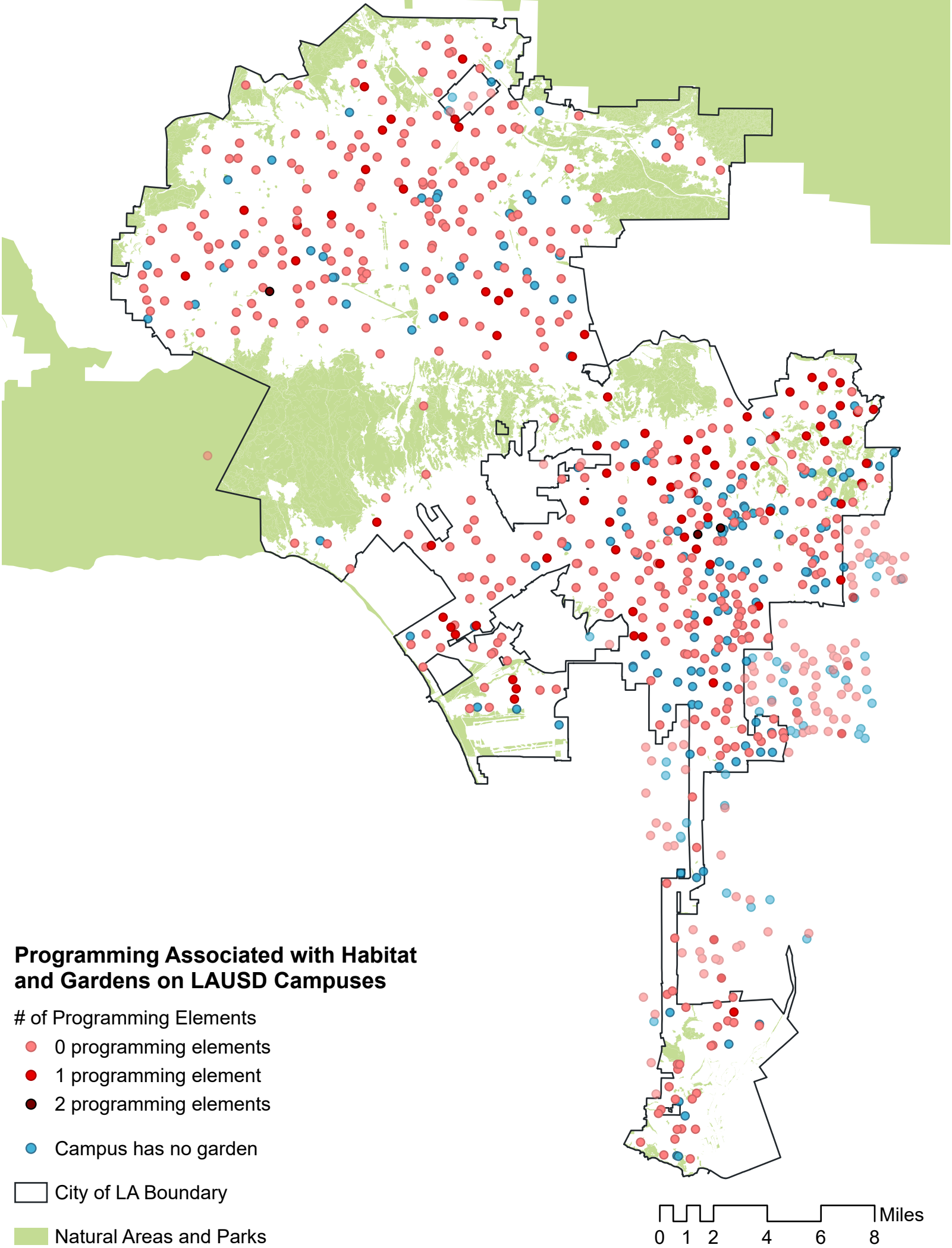
Data analysis indicates that 76.7% of LAUSD K-12 schools have some form of educational garden or habitat on campus. Please note that many LAUSD campuses have multiple garden and/or habitat areas, so data was aggregated by school campus prior to this districtwide analysis. Across the entire district, there are 597 gardens on LAUSD campuses (4,787,253 square feet or 109.9 acres of gardens). This means that 76.1% (597/785) of LAUSD schools have gardens or habitats on campus. On average, schools have 0.13 programming elements/school.

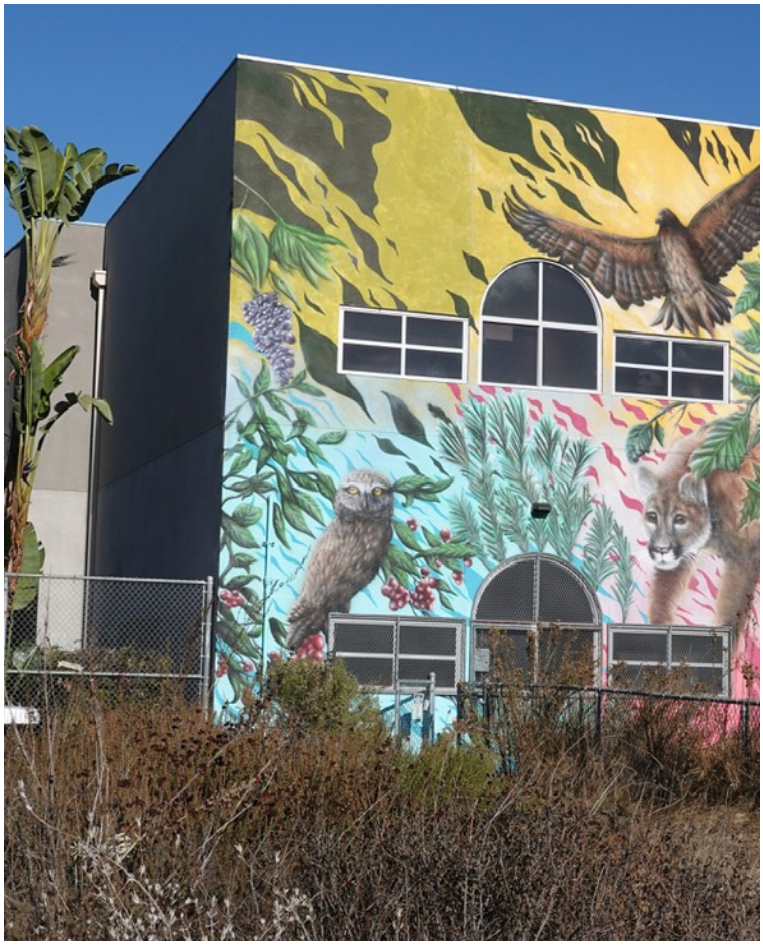
LAUSD Campuses in the City of Los Angeles:

Of the 785 K-12 campuses in the district, 640 are within the City of Los Angeles and 145 fall outside of City boundaries. In the City, there are 491 gardens on LAUSD campuses (4,194,608 square feet or 96.3 acres of gardens). This means that 491/640, or 76.7%, of LAUSD schools in the City of LA have gardens or habitats on campus. In the City, schools have 0.15 programming elements/school.



Students enjoying the wildlife habitat at Esperanza Elementary School with the Downtown LA skyline in the background
(Photo: Emily Cobar)


Programming Associated with Habitat and Gardens on LAUSD Campuses
# of Programming Elements
0 programming elements
1 programming element
2 programming elements
Campus has no garden
City of LA Boundary
Natural Areas and Parks
Miles
0 1 2 4 6 8



Clockwise from top left: Esperanza habitat before planting in 2016, Esperanza's wildlife mural, Esperanza students at Bird LA Day in 2016, a burrowing owl seen on the Esperanza campus. (Photos: Brad Rumble)

Management Implications:

- In order to better understand how LAUSD facilities adapt and change over time, the LASAN Biodiversity Team encourages LAUSD to comprehensively refresh facility and garden assessments every decade to better track the progress of the LAUSD Green Space Task Force and other greening initiatives:
    - Facilities Condition Assessment
    - LAUSD Garden Survey
- The LAUSD Green Space Task Force should consider prioritizing the planting of native plant habitats that can serve as learning laboratories, especially in lieu of grass and/or water-intensive non-native ornamental plants.
- Projects that remove asphalt/pavement and create green space should be prioritized in areas that are park poor, have poor access to natural areas, and/or are subject to the urban heat island effect.
- Joint-use agreements with Recreation and Parks and non-profits, like the LA Neighborhood Land Trust, should be pursued to create community-school parks to increase access to green space, especially in areas that are park-poor (see metric 2.1a results).
    - Mayor Garcetti's Executive Directive #31, Achieving Park Equity, has language that directs RAP, the General Services Department (GSD), and the CAO to work with the City Attorney and LAUSD to "examine and resolve the liability and other structural barriers to a master joint-use policy applicable to all schools in the District to establish community school parks, especially those in park-deficient communities." If enacted, a master joint-use policy would have profound implications for community access to school gardens.
- Advance the Trust for Public Land's Community Schoolyards project, which aims to turn paved public schoolyards into vibrant outdoor spaces that can benefit the entire community.
- Foster partnerships with groups like Feed Our Soul, which installs gardens on school campuses, tends to gardens, teaches a Department of Energy-approved curriculum to students, and provides educational live cooking demonstrations.
- LASAN should partner with LAUSD and non-profit organizations to promote the creation of new school gardens and habitats and support the development of K-12 curriculum/learning modules on local biodiversity, healthy soils, and regenerative agriculture.
- The City and LAUSD should prioritize equity and access in all efforts to expand biodiversity educational programming. For instance, LAUSD could prioritize the creation of new campus gardens in communities with limited tree canopy (see metric 2.1b) and/or limited access to nature/open space (see metric 2.1a). Additionally, an effort to create more intentional ways for students with disabilities to engage with garden programming should be pursued.

2.3A COMMUNITY SCIENTIST ACTIVITIES AND APP UTILIZATION

Score: N/A Baseline = 925,023 observations

Points	*# of Annual Observations (Relative to Baseline & Adjusted for Population Change)*
0	< baseline year annual observations
1	<20% above baseline
2	20% - 50% above baseline
3	50% - 100% above baseline
4	100% - 500% above baseline
5	>500% above baseline

Background:

Community science refers to a data-gathering collaboration between members of the public and the scientific community. The public provides real-time scientific data that is aggregated into a dynamic repository used by researchers and scientists for a variety of research projects.

Metric 2.3a seeks to measure the number of observations made via community science apps (e.g., iNaturalist and eBird) in the City of Los Angeles to better understand the level of public engagement with biodiversity. As many other metrics in the LA City Biodiversity Index, particularly the three on indicator species (e.g., 1.2a, 1.2b, and 1.2c), rely on data generated by community science, significant improvements in the score of this metric can have far-reaching implications for how well biodiversity within the City limits can be tracked and monitored.

There are a number of goals in Mayor Garcetti's Green New Deal that deal with public participation in community science:

- Goal 51: In partnership with LA County, get LA into the top three cities/counties in the City Nature Challenge by 2025
- Goal 52: Develop strategies to increase community science app users, especially in data-poor areas
- Goal 53: Increase observations of LA's biodiversity indicator species list
- Goal 54: Host annual bioblitz using community science apps such as iNaturalist or eBird

Clearly, increasing the base of active, engaged community scientists will benefit the LA City Biodiversity Index while also progressing many of the goals in Mayor Garcetti's Green New Deal.

Community Science Projects:

The iNaturalist platform allows users to create projects based on parameters of interest (e.g., geographic boundaries, time frame, species of interest, etc.). There are a variety of very large iNaturalist projects focused in or around the LA area (see table below).

iNaturalist Project	*Description*
RASCals (Reptiles and Amphibians of Southern California)	Aims to improve knowledge of native and non-native reptiles and amphibians in southern California.
The "Evil 25" Invasive Plants of the Santa Monica Mountains	Aims to track observations of 25 invasive plant species across the Santa Monica Mountains National Recreation Area.
Los Angeles (City) Biodiversity Initiative	Compilation of all species observed within the City of Los Angeles limits.

Projects, such as the three highlighted above, are excellent ways to deepen connections to biodiversity in general or special groups (e.g., invasive species, herptiles, etc.), build community around projects, and/or promote observation and identification of specific taxa or species.

Programming:

In 2021, LASAN partnered with the Los Angeles Public Library (LAPL) to launch the inaugural LA Bioblitz Challenge. LASAN's Biodiversity Team and LAPL's Neighborhood Science Program collaborated to develop, target, promote, and engage residents to participate in a Citywide challenge to inventory biodiversity in the City. The strategy for the distribution of program information involved existing stakeholders groups from both agencies and the use of emails and social media that generated more than 141,000 impressions over the course of the challenge. The partnership effectively combined the missions of protecting public health and the environment with enriching, educating, and empowering City residents. The challenge introduced the interconnectedness of biodiversity and people, framing the public's perception of plant and animal wildlife in a beneficial, essential manner and encouraging public sentiment to reflect and accept the challenge as an important necessity for themselves.

The 2021 LA Bioblitz Challenge coincided with the library's two-month long Summer Reading Challenge. The collaboration engaged participants with fun, interactive activities to observe, photograph, and learn about the wildlife in their neighborhoods, at local parks, and in natural areas to enhance their connection to the City's biodiversity. The main objectives of the challenge were to:

- Document and enumerate the City's existing native biodiversity.
- Increase observations of LASAN's indicator species*.
- Encourage observations in data cold spots (i.e., areas that lack recent community science data observations).
- Increase awareness and participation in LAPL Neighborhood Science (NeiSci) programs.
- Support Summer Reading Challenge participation with an LA BioBlitz Challenge badge, reading lists, and curated books.
- Encourage Angelenos to learn and read about biodiversity, and the impact of urban environments and other environmental issues for their health and well-being.

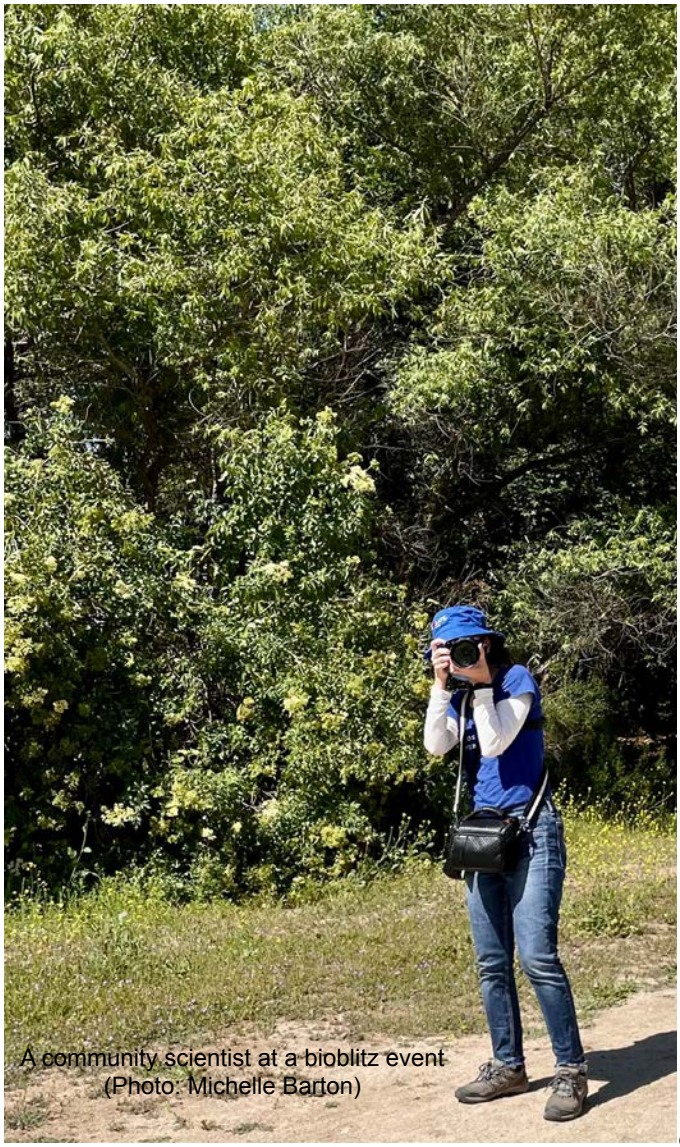
*The 38 indicator species used for the challenge differ slightly from those used in metric 1.2a at the request of the library [Removed (for safety concerns): western rattlesnake and mountain lion. Added: monarch butterfly, toyon, and California rose].

An iNaturalist project was created to track involvement in the program. Over the eight weeks of this first challenge, 14,796 observations of animals and plants were recorded and shared to the LA Bioblitz Challenge iNaturalist project. In total, 29 of the 38* indicator species were observed and identified. Identifications included the spotted towhee (*Pipilo maculatus*), the bobcat (*Lynx rufus*), and the endangered El Segundo blue butterfly (*Euphilotes battoides allyni*). The three most observed indicator species over the course of the challenge were the monarch butterfly (*Danaus plexippus*), red-tailed hawk (*Buteo jamaicensis*), and great blue heron (*Ardea herodias*).

The communications plan for the challenge included:

- Determining campaign position, key messages, and supporting information,
- Hosting webinars, and
- Publishing five blog posts.

The event was such a success that the team decided to make it an annual event because of its critical aim to change human behaviors and increase awareness of native plants and wildlife. The second annual LA Bioblitz Challenge will be held in September 2022.



A community scientist at a bioblitz event (Photo: Michelle Barton)

Explore • Observe • Connect

LOS ANGELES PUBLIC LIBRARY

Help support biodiversity and wildlife in L.A. by photographing and mapping animals, insects and plants around your home, neighborhood, parks and other areas.

It's easy and fun:

1. Download the iNaturalist app on your mobile device.
2. Watch the video tutorial at **lapl.org/bioblitz**.
3. Get outside! Explore, observe, record and share the wildlife around you.

Scan to learn more and get started!

L.A. BioBlitz Challenge

Photo Credits: Daniel S. Cooper; Nurit Katz; Robert Martinez; Jeff Adams Stauffer; Citizens for Los Angeles Wildlife (CLAW); iNaturalist Users: Jesse Rorabaugh, Dario, Photographer, Kyle Nessen, Patrick Alexander and Andre Giraldi.

lapl.org/bioblitz

L.A. BioBlitz Challenge

Explore • Observe • Connect

June 7 - August 7

LOS ANGELES PUBLIC LIBRARY

environment LA SANITATION CITY OF LOS ANGELES zero waste • zero wasted water

@lapubliclibrary

lapl.org/bioblitz

Observe, photograph & map the listed species

L.A. BioBlitz Challenge


Acorn woodpecker


Baja California tree frog


Behr's metalmark


Great blue heron


Great horned owl


Greater roadrunner


Harvester ants


Hooded merganser


Black-bellied slender salamander


Bobcat


Bramble green hairstreak


Bumblebees


California kingsnake


Lorquin's admiral


Monarch butterflies


Mule deer


North American Jerusalem crickets


Northern harrier


California quail


California wild rose


Canyon wren


Cinnamon teal


Coachwhip snake


Red-tailed hawk


Red-winged blackbird


Sara orangetip


Spotted towhee


Toyon


Common side-blotched lizard


Dusky footed woodrat


El Segundo blue butterfly


Gopher snake


Gray fox


Velvet ants


Western bluebird

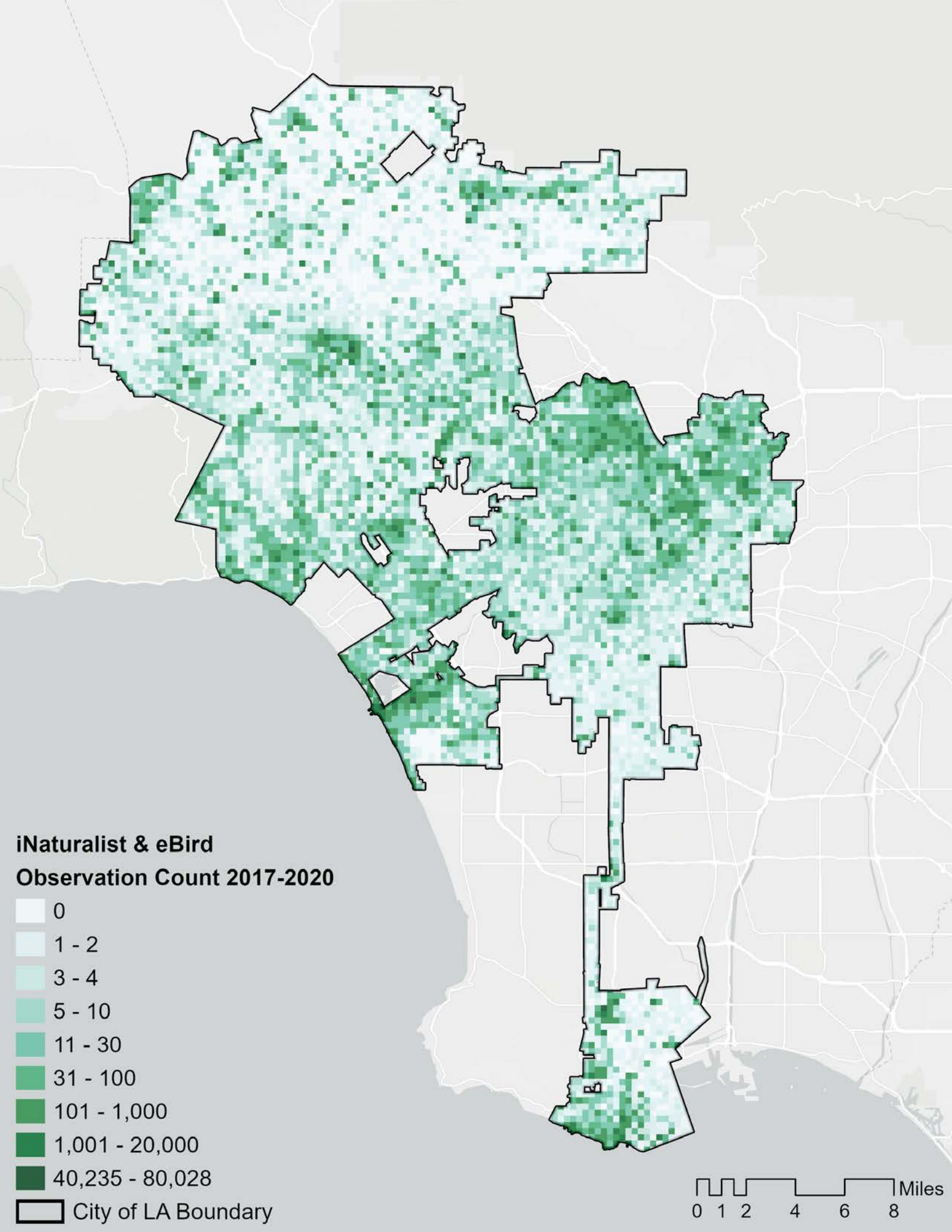

Western meadowlark


Western pond turtle


Western toad

lapl.org/bioblitz

LA Bioblitz Challenge postcard (top = front; bottom = back)


iNaturalist & eBird
Observation Count 2017-2020
0
1 - 2
3 - 4
5 - 10
11 - 30
31 - 100
101 - 1,000
1,001 - 20,000
40,235 - 80,028
City of LA Boundary
Miles
0 1 2 4 6 8

Biodiversity Roundtable:

In June 2021, LASAN, the Natural History Museum of Los Angeles County, and the California Landscape Stewardship Network hosted a half-day roundtable with a number of community-based organizations in the LA area that are engaged in community science. The objective of the Biodiversity Roundtable was to hear about the organizations' needs and perspectives related to environmental/biodiversity issues and community science in our region. Justice, Equity, Diversity, and Inclusion (JEDI) issues related to community science work were discussed with the goal of developing solutions to address shortcomings. The Biodiversity Roundtable deepened and cultivated relationships between groups working on community science and environmental issues in Los Angeles. Overall, the meeting sparked meaningful conversation and helped to inform the direction, range, and reach of future community science program work.

Results Discussion:

A total of 925,023 research-grade observations were made via iNaturalist and eBird during the time frame of interest (2017-2020). These observations were for 2,884 unique species. As this is the baseline measurement of this metric, an official score cannot be assigned. However, year-over-year changes for the time frame of interest (2017 - 2020) increase annually as shown in the table and chart below.

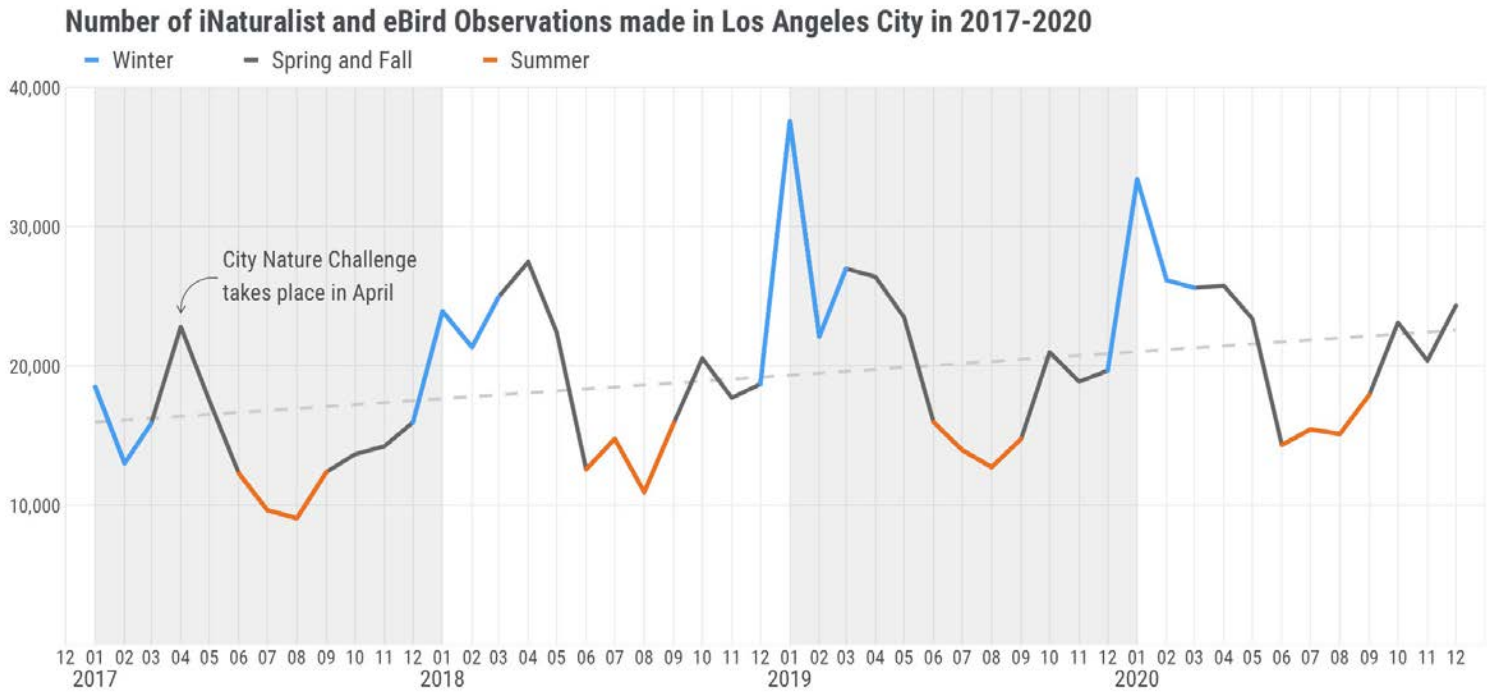
Year	*# Observations*	*Year-over-year % Change*
2017	175,061	N/A
2018	231,322	132.1%
2019	253,585	109.6%
2020	265,055	104.5%
Grand Total	**925,023**	

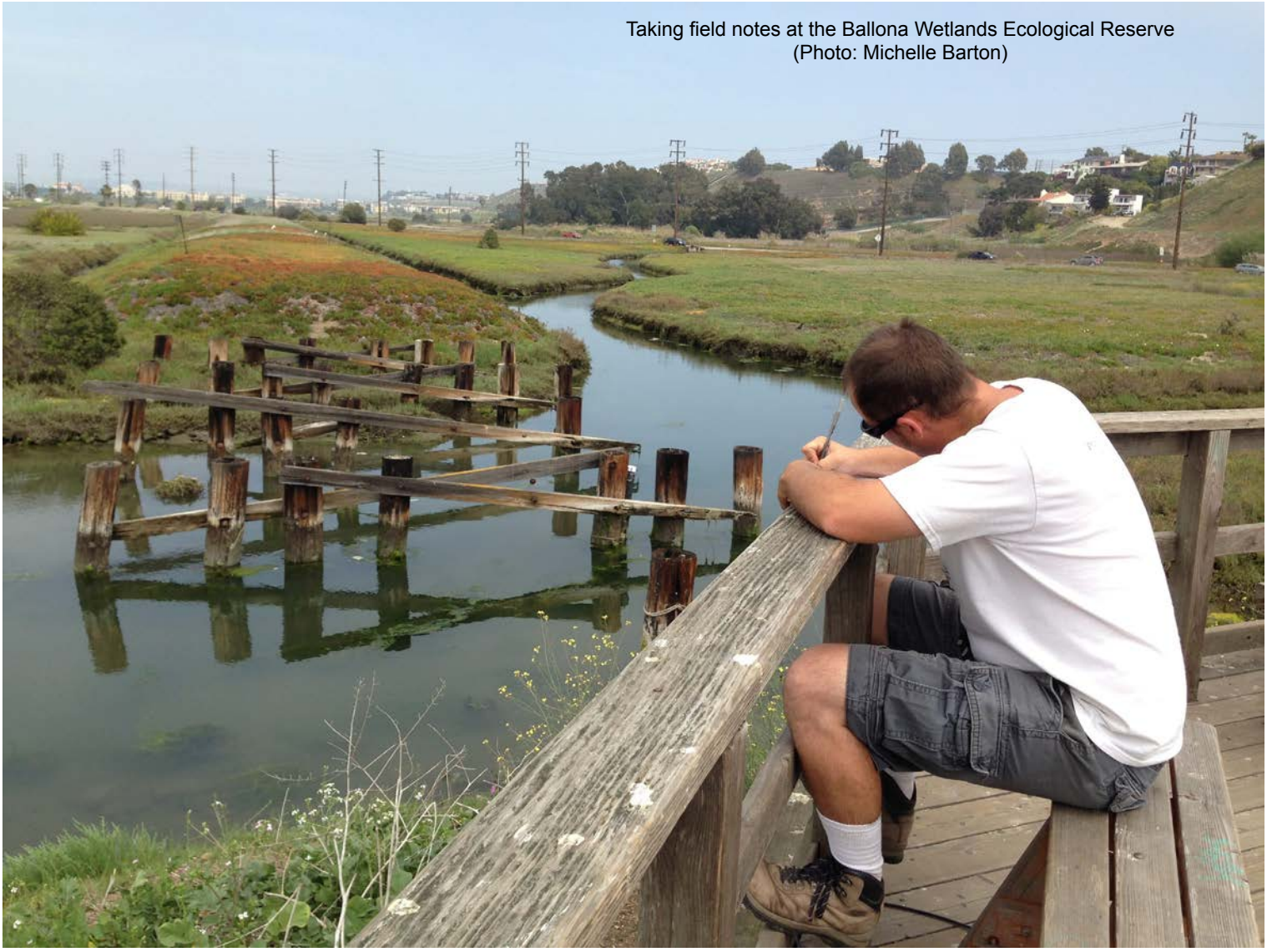
It is important to note the uneven distribution of community science observations across the City (see the metric 2.3a map). The distribution of community science observations across the City mimics the distribution of natural areas and parks (see metric 1.1a), patterns of habitat quality (see metric 1.1b), and the landscape and tree canopy footprint (see metric 2.1b). In essence, this suggests that participation in community science efforts is concentrated in neighborhoods that have access to parks, ample green space, and leafy tree canopy. Efforts to increase participation in community science across all neighborhoods, particularly those that are park-poor, are vital to remedying disparities. More efforts like the June 2021 Biodiversity Roundtable to better understand and overcome barriers to participation in community science programming are needed.

It is also important to note that while this metric is technically only concerned with participation in community science, some of these observations have obscured locations. In other words, some observations have high coordinate uncertainty, diminishing their overall value as data points. Of the nearly one million observations made during the time frame of interest, roughly 1.5% of the coordinates have uncertainty levels that exceed the quarter mile grid size used on the accompanying map. Coordinates can be obscured for two reasons: 1) the community scientist intentionally obscures coordinates (or makes them totally private) for personal reasons or 2) the species observed has special status. While research grade observations with coordinate uncertainty are still valuable, they offer less use to biodiversity researchers than those with precise coordinates.

Notably, the nearly one million research grade observations made from 2017-2020 are almost all to the species or subspecies level. A very small fraction, 0.3%, of identifications were at a higher taxonomic category, e.g., genus or family.

Over time, progress made on this metric will build up a group of dedicated community scientists that will likely also help the City achieve the various goals outlined in the background section above.





Taking field notes at the Ballona Wetlands Ecological Reserve
(Photo: Michelle Barton)

A mother and daughter at an LASAN bioblitz event (Photo: Michelle Barton)

Management Implications:

- Increase participation:
  - In order to increase the score for this metric, the City should continue to encourage participation in community science, especially in underrepresented areas. This can be done in a variety of ways:
    - Encourage existing community scientists to continue to make observations.
    - Encourage new users to sign up for accounts with iNaturalist or eBird
    - Incorporate exposure to community science platforms and data collection as part of K-12 school science curriculum.
  - Encourage participation in various iNaturalist projects [e.g., Los Angeles (City) Biodiversity Initiative, RASCals].
  - Encourage participation in annual community science programming, specifically the City Nature Challenge and LA Bioblitz Challenge, through public outreach.
  - Develop a campaign and promotional materials (e.g., social media graphics, videos, logs, web materials, etc.) to encourage participation in community science. In particular, the campaign should target new community scientists who could become lifelong contributors (e.g., students/school groups).
  - The City should partner with the Natural History Museum to train new community scientists, hold training and/or bioblitz events, and encourage regular, year-round participation in community science.
- Improve the quality of community science data:
  - In order to improve the quality of community science data, and its potential research and science applications, community scientists uploading observations should be encouraged to provide unobscured geographic coordinates.
  - Reviews of community science-generated datasets suggest that it is important to find a balance between increasing sampling in coldspots and sampling hotspots during less popular (i.e., off-peak) times, days, or seasons to increase data quality (Callaghan et al., 2019).
- Educate the public and increase awareness of local biodiversity:
  - The public should be educated about the City's charismatic umbrella indicator species list (metric 1.2a) and encouraged to upload observations of species on the list.
  - Enhancing public awareness of LA's biodiversity can foster a culture of stewardship where Angelenos are inspired to conserve, protect, and enhance local ecosystems.
  - Work with LAUSD to integrate the use of community science tools into K-12 curricula.

2.3B # CERTIFIED BIODIVERSITY-FRIENDLY AREAS

Score: N/A Baseline

Points	# of Certified Biodiversity-Friendly Areas
0	< benchmark-year certifications
1	<20% above benchmark-year certifications
2	20% - 50% above benchmark-year certifications
3	50% - 100% above benchmark-year certifications
4	100% - 500% above benchmark-year certifications
5	>500% above benchmark-year certifications

Background:

Metric 2.3b tracks the number of certifications of public and private parcels as certified biodiversity-friendly habitats. Certification systems administered by non-profits provide a convenient way to evaluate stewardship activities on public and private lands and can be effective promotional tools for biodiversity. The baseline assessment of this metric includes data from the National Wildlife Federation (i.e., Certified Wildlife Habitat data) and the Surfrider Foundation (i.e., Ocean Friendly Gardens). Other programs (e.g., the Audubon Cooperative Sanctuary Program) did not have any certifications within the City limits to report for this assessment, but should be included in future assessments.

NWF signage at TreePeople's Coldwater Canyon Park
(Photo: Michelle Barton)

Organization	*Program*	*Elements*	*Cost*
National Wildlife Federation	Certified Wildlife Habitat	• Food • Water • Shelter • Places to raise young	$20 / site
Surfrider Foundation	Ocean Friendly Gardens	• Conservation • Permeability • Retention	Free
Audubon International	Cooperative Sanctuary Program for Golf	• Site Assessment/Environmental Planning • Wildlife and Habitat Management • Chemical Use Reduction and Safety • Water Conservation • Water Quality Management • Outreach and Education	$400 / golf course

It is also important to note that certified habitats can range widely in terms of their makeup. While some spaces mostly consist of native plants, others are landscaped largely with non-native ornamental species. Typically, native fauna prefer native species for foraging and for their habitat value. However, research is needed to better understand how the mix of native and non-native flora across urban landscapes and gardens in Los Angeles is sustaining native fauna and to determine scientifically-based recommendations for balancing ratios of native and non-native plants in planting palettes.

Citywide Certification:

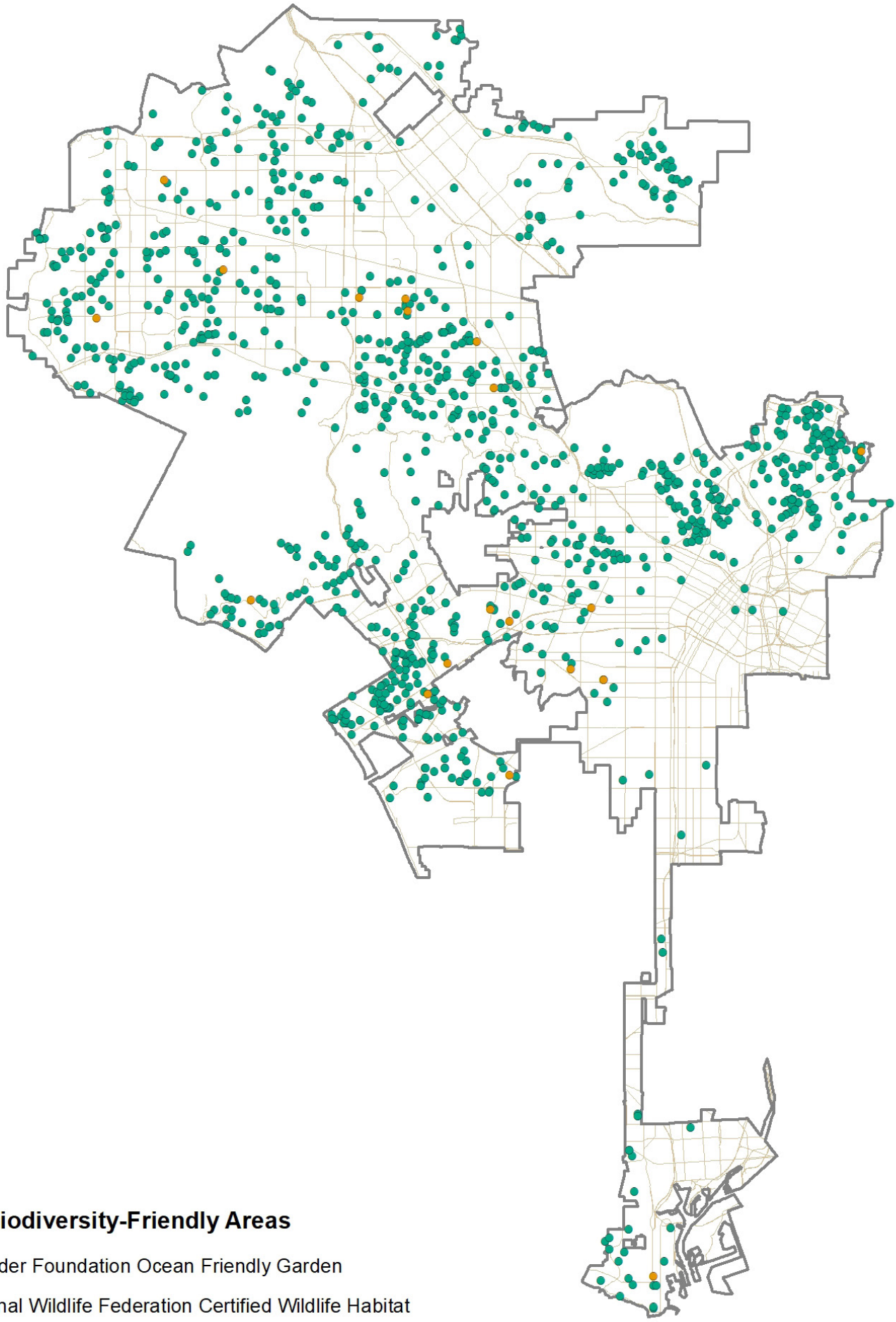
On May 3rd, 2021 the City of Los Angeles became the largest City in the USA to be certified by the National Wildlife Federation as Community Wildlife Habitat. This accomplishment is a real testament to the power of collective action by Angelenos, who registered 1,078 residential yards, 34 schools and 140 common areas, mainly at places of work, that cumulatively allowed the City to become certified as a whole.

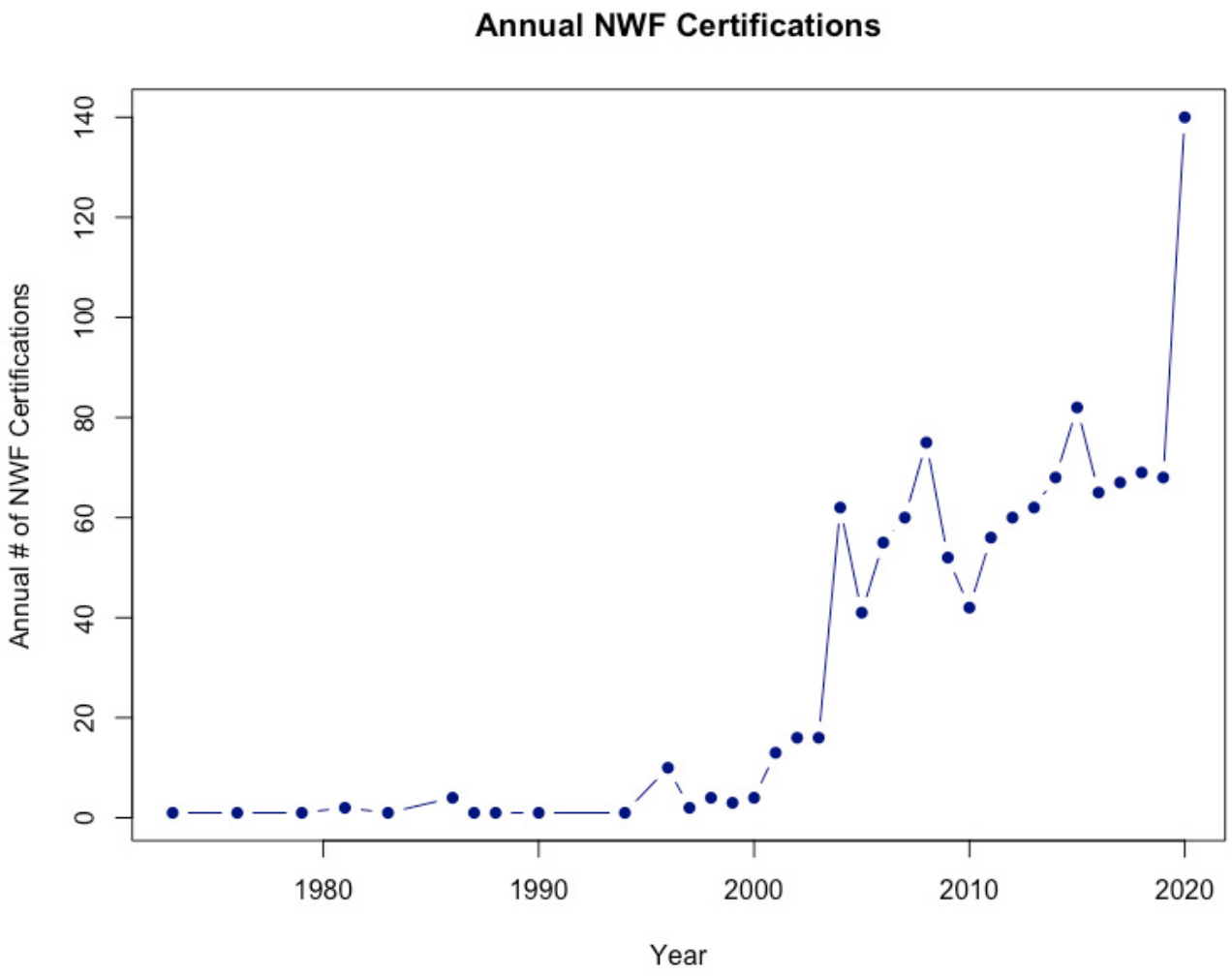
To achieve Citywide certification, the City of Los Angeles encouraged residents, schools and organizations to apply for and achieve their own certification by gardening with wildlife in mind, using native plants and sustainable practices, providing cover and food and water, and reducing or eliminating the use of chemical pesticides and fertilizers. Designing gardens and green spaces following these principles supports wildlife, restores connectivity, and enhances climate resilience. These outreach efforts become apparent. The City registered for the program with the National Wildlife Federation in August 2020. The spike in certifications on the graph below shows the jump in certifications that occurred after the City registered.

Results Discussion:

The City of Los Angeles has 1,181 unique certified gardens and habitats. This includes 19 Ocean Friendly Gardens and 1,162 National Wildlife Federation habitats. It is important to note that there are actually 1,206 habitats that have been certified by the National Wildlife Federation, but 47 of these had multiple certifications.

NWF-certified coastal habitat (Photo: Michelle Barton)


Certified Biodiversity-Friendly Areas
Surfrider Foundation Ocean Friendly Garden
National Wildlife Federation Certified Wildlife Habitat
City of LA Boundary
Roads (CAMS)
0 1 2 4 6 8
Miles



Management Implications:

- Encouraging Angelenos to create habitat and use sustainable, wildlife-friendly practices across the City has immense value. While public spaces can be certified by NWF, the Surfrider Foundation, and Audubon programs, the majority of certified habitats are on private property. As 87% of land in the City of Los Angeles is privately-owned, it is important that these lands are beneficial to native species.
- Policies, like the Draft Wildlife Ordinance, should encourage private landowners to create habitat for wildlife, create wildlife corridors, and enhance connectivity.
- Residents should be encouraged to create habitats on private land that are composed of at least 50% native species to support native insects, birds, and food webs.
- The City, and other major public landowners in the City (e.g., the County, Metro, LAUSD), should also seize opportunities to make public lands more biodiversity-friendly and train staff to manage parklands and open space with organic regenerative management techniques as outlined in the RegenerateLA Motion.
- Many resources exist that provide guidance on incorporating native plants into landscaping. These resources and tools, listed and linked below, should be promoted and shared widely.

Beautiful NWF-certified habitat in Venice
(Photo: Michelle Barton)

- Native Plant List, LA County Waterworks Districts - This site includes plant lists and resources for designing gardens with drought tolerant native plants.

- Landscaping Guidelines and Plant Palettes, Los Angeles River Master Plan - This resource includes guidelines and plant palettes for the Los Angeles River and the Tujunga Wash.

- Emerald Necklace Native Plants Palette, Amigos De Los Rios / Emerald Necklace Group - This site includes plant lists that were developed by a multidisciplinary team for river corridor plantings and restoration work.

- Native Plant Finder, NWF - This tool provides zip code-specific lists of native plants to users. Additionally, the tool ranks native plants by the number of butterfly and moth species that they support.

- Native Plants Database, Audubon - This tool provides zip code-specific lists of native plants to use and shows the bird species that each plant species may attract.

- Pollinator-Friendly Native Plant Lists, Xerces Society - This site provides lists of pollinator plants by state.

- Planting Guide, Calflora - This site provides a location-specific list of plants.

- Theodore Payne Foundation - This organization provides a variety of Plant Guides, has an extensive Native Plant Database, and offers a California Native Plant Landscaper Certificate Program.

- California Native Plant Society (CNPS) - CNPS offers a variety of gardening resources and tools. In particular, the Calscape tool allows users to find plants that have desired plant characteristics.

METRIC FINDINGS

THEME 3: GOVERNANCE & MANGEMENT

Los Angeles City Hall
(Photo: Julie Pepin)

3.1A BIODIVERSITY VISION/ACTION PLAN

Score: 0 points - No Plan

Points	*Biodiversity Vision Plan / Action Plan*
0	**No Plan**
1	Biodiversity Vision Plan only
2	Biodiversity Vision Plan and Action Plan
3	Biodiversity Vision Plan and Action Plan plus 1-5 local initiatives that are measurable and achievable
4	Biodiversity Vision Plan and Action Plan plus 5-10 local initiatives that are measurable and achievable
5	Biodiversity Vision Plan and Action Plan plus >10 local initiatives that are measurable and achievable

Background:

As cities and subnational governments are increasingly seen as playing important roles in biodiversity conservation, policies, rules, and regulations around biodiversity management and conservation must be put into place. Traditionally, issues such as climate change and biodiversity conservation have been seen as national issues, but recent efforts aim to include cities and subnational governments in the process. For example, the Edinburgh Process was created to amplify the roles of subnational governments in regards to the Post-2020 Global Biodiversity Framework.

Metric 3.1a evaluates the presence of a biodiversity vision or action plan and the existence of other local initiatives that supplement the action plan. A formal Local Biodiversity Strategy and Action Plan (LBSAP), is a comprehensive plan designed by the Convention on Biological Diversity (CBD) in order to allow cities, regions, or states to holistically detail how to achieve goals relating to the conservation and enhancement of biodiversity locally. While alignment with the CBD guidelines is not necessarily required for Los Angeles to create a comprehensive biodiversity vision or action plan, available resources and examples could be helpful in framing what needs to be considered by a future plan.

Views of Santa Monica Bay
(Photo: Michelle Barton)

Results Discussion:

As Los Angeles City does not yet have a comprehensive, City-wide biodiversity vision or action plan, this indicator receives a score of 0. Therefore, it is necessary to establish a vision plan and/or action plan in order to raise the score of this indicator. However, as demonstrated in the table below, a variety of local initiatives, defined here as “a program, project, or policy relating to biodiversity enacted by a Los Angeles City department or agency,” have been established in Los Angeles.

Views of Los Angeles City Hall
(Photo: Michelle Barton)

This table details local initiatives in the City by department based on research detailed in 3.1b, along with Convention on Biological Diversity (CBD) Aichi targets, CBD Post-2020 targets, and Sustainable Development Goal (SDG) targets the City has met. See Appendix II for additional information on these targets.

City Department	***Plans / Guiding Documents / Policies / Procedures / Regulations that Conserve and Enhance Biodiversity***	***CBD Aichi Targets***	***CBD Post-2020 Targets***	***SDG Targets***
Los Angeles World Airports	Sustainability Action Plan: Natural Resources Management (2019)	B C E	1 2 3 4 10 13	15.1 15.5 15.8
Department of Animal Services	Wildlife Webpage	B		15.5
City Planning	LA River Planning / Venice Local Coastal Program / Conservation / Wildlife Pilot Study	B C E	1 2 10	15.1
Port of Los Angeles	Biological Baseline Surveys / Biological Mitigation / California Least Tern / Invasive Species	B C E	1 2 3 4 10 13	15.1 15.5 15.8
Recreation & Parks	Urban Forest Program	B C D	1 2 3 10 18	15.2 15.5 15.8
LA Environment & Sanitation	Biodiversity Webpage	A B C D E	13 18 19	15.9 15.A
Street Services Bureau (StreetsLA)	Urban Forestry Division	B C D	1 2 6 10	15.2 15.5
Los Angeles Zoo	Conservation Project Partners / California Condor Recovery Program / Animal Management Programs / Endangered Species / Conservation Strategic Plan	C D	10 18	15.5 15.C
Department of Water and Power	Water Conservation: Encouragement of Native Plants, Water Wise Yard	B E	4 6 9 18	
Bureau of Engineering	Unofficial native plants policy / LA River Master Plan Guidelines for restoration	B C E	1 2 4 13	15.1

A black walnut tree in Elysian Park
(Photo: Michelle Barton)

Say's pheobes (*Sayornis saya*)
(Photo: Graham Montgomery)

Management Implications:

- LASAN should hold a workshop with the Biodiversity Expert Council and Interdepartmental Biodiversity Team to write a biodiversity vision plan.
- LASAN should work with the Biodiversity Expert Council and Interdepartmental Biodiversity Team to write a biodiversity action plan to accomplish the City's biodiversity vision that utilizes existing Convention on Biological Diversity resources, particularly the CBD Guidelines to develop and implement national, subnational, and local BSAPs. CBD's list of subnational and local BSAPs should be referenced for inspiration.
- The establishment of a biodiversity vision and action plan for the City of Los Angeles would aid in meeting higher score criteria for multiple metrics in the management and governance theme, including:
  - Metric 3.1b: % Departments with Biodiversity Programs
  - Metric 3.2b: Protected Natural Areas Management & Monitoring
  - Metric 3.2c: Management of Invasive Species & Pests
  - Metric 3.2d: Management of Threatened, Endangered, and Species of Concern
- The five actions described in the Next Steps section at the end of this document can serve as a starting point for a Local Biodiversity Action Plan for the City.

3.1B % DEPARTMENTS WITH A BIODIVERSITY PROGRAM OR POLICY

Score: 3 points - 63%

Points	*% of City Departments Expected to Have Biodiversity Programs or Policies*
0	< 20%
1	20% – 35%
2	35% – 50%
3	**50% – 65%**
4	65% – 85%
5	> 85%

Background:

Metric 3.1b seeks to measure biodiversity programs, policies, and projects within individual City departments in order to understand engagement with biodiversity across various governmental sectors. As a first step, online research was conducted via City department websites, social media, and press releases on all 45 City Departments & Bureaus. In addition, a survey sent to Departmental Chief Sustainability Officers (DCSOs) was used in order to gather supplemental information. Collectively, this information was used to populate a comprehensive database with data on all City Departments. The following information was collected: links to departmental websites, links to departmental environmental or biodiversity programs, information about biodiversity programs and policies, and contact information. Based on online research and the DCSO survey, each department was assigned a score from 0-2.

Scoring Guidelines:

- 0: Department has no environmental or biodiversity programs or policies
- 1: Department has environmental programs or policies, but none directly related to biodiversity
- 2: Department has biodiversity related programs or policies

After individual departments were scored, departments that lack connections to biodiversity were removed from further analysis. To score the metric, the percentage of existing versus expected departmental biodiversity programs and/or policies was calculated. The department-specific information gathered for this metric will be subsequently used to determine which departments should develop and implement biodiversity action plans.

Results Discussion:

Out of the 45 total Los Angeles City departments, 12 were found to have biodiversity programs, projects, and/or policies, with an additional 10 departments engaging with some aspect of environmental programs or policies (e.g., clean energy, environmental justice, etc.), but without specific reference to biodiversity (see table below).

Score	**0**	**1**	**2**
Number of Departments	23	10	12

While it is important to understand the percentage of City departments with environmental and biodiversity programs, many departments (e.g., 311 Call Center) do not have functions that directly relate to biodiversity. As such, it was deemed beneficial to remove departments from this analysis based on a lack of land or natural resource management jurisdiction (e.g., 311 Call Center, Office of the City Clerk, etc.) and score this metric with only biodiversity-relevant departments. Of the 45 City Departments, 19 departments have direct or indirect connections to biodiversity or natural resources in their core activities. This means that 63% of departments (12/19) that should be considering biodiversity actually have biodiversity programs or policies. The remaining seven departments are encouraged to incorporate biodiversity considerations into their operations and practices in the immediate future. LASAN and the other 11 departments that have biodiversity policies and plans can be used as resources. As more than 50% of departments have departmental programming or policies related to biodiversity, a score of 3 is received for this metric.

Score	Have Biodiversity Programs or Policies	Expected to Have Biodiversity Programs or Policies	N/A
Number of Departments	12	7	26
Percentage of Departments	63%	37%	

Have Biodiversity Programs or Policies	City Planning
	Department of Animal Services
	Department of Water & Power
	Engineering Bureau (Public Works)
	Los Angeles Public Library
	Los Angeles World Airports
	Los Angeles Zoo
	Port of Los Angeles
	Public Works
	Recreation & Parks
	Sanitation Bureau (Public Works)
	Street Services Bureau (StreetsLA)
Expected to Have Biodiversity Programs or Policies	Building & Safety
	Department of Neighborhood Empowerment
	Economic & Workforce Development
	Fire Department
	General Services Department
	Street Lighting Bureau (Public Works)
	Transportation Department

Departmental Biodiversity Action Plans:

In 2021 City Council requested that a subset of City departments develop department-specific biodiversity action plans. Individual plans should outline how each department intersects with native biodiversity issues and how each department is working to protect and enhance biodiversity in their operations. In addition, plans should include recommendations and goals that outline how the department can help achieve the no-net loss of biodiversity goal. Plans should address the threats and needs of wildlife species across the urban association spectrum, providing protection for urban avoiders and urban-tolerant species alike.

Departments that create and submit plans will be requested to share progress annually with LASAN. In total, 14 of the 19 departments and proprietaries (see table below) that have connections to biodiversity are directed to draft biodiversity action plans.

Biodiversity Considerations:

Five departments, that have the potential to impact biodiversity, should consider biodiversity in their planning and activities to the extent possible, but will not be required to develop formal biodiversity action plans.

Biodiversity Plan Required	***Consideration of Biodiversity Recommended***	***No Plan / No Consideration Required***
Board Offices of Public Works	Building & Safety	311 Call Center
City Planning	Department of Animal Services	Contract Administration Bureau (Public Works)
Department of Water & Power	Department of Neighborhood Empowerment	Convention & Tourism Development
Engineering Bureau (Public Works)	Economic & Workforce Development	Cultural Affairs Department
Fire Department	General Services Department	Department of Aging
Los Angeles Public Library		Department of Cannabis Regulation
Los Angeles World Airports		Department of Disability
Los Angeles Zoo		El Pueblo de Los Angeles Historical Monument Authority
Port of Los Angeles		Emergency Management Department
Recreation & Parks		Fire & Police Pensions Department
Sanitation Bureau (Public Works)		Housing & Community Investment Department
Street Lighting Bureau (Public Works)		Housing Authority
Street Services Bureau (StreetsLA) (Public Works)		Information Technology Agency
Transportation Department		LA Memorial Coliseum
		Los Angeles City Retirement System
		Office of Finance
		Office of the City Administrative Officer
		Office of the City Attorney
		Office of the City Clerk
		Office of the City Controller
		Personnel Department
		Police Department
		Police Inspector General
		Project Restore
		Public Works Office of Accounting
		The Office of (Rate Payer) Public Accountability (OPA)
14	***5***	***26***

Clarkia, grindelia, poppies, baby blue eyes, chia, and yarrow in bloom in a Test Plot at Elysian Park (Photo: Michelle Barton)

Management Implications:

- While the scoring for this indicator only counts departments with programs or policies relating directly to biodiversity, the 0-2 system is helpful in understanding the broader environmental commitments being made in the City. Furthermore, a score of 1 in the database shows which departments have taken environmental action, which could indicate departments where biodiversity programs or policies could be more easily initiated in the future. Engagement with these departments on biodiversity topics should be pursued as these departments influence a variety of activities, policies, and procedures across public and private property in the City of LA. Ideally, all 45 City departments should creatively address wildlife and natural resources in their programs and policies.
- Three departments, the LA Fire Department, LA Department of Transportation, and LA Lights, do not appear to have biodiversity policies or programs in place, but are encouraged to develop them in the immediate future as their core functions have the ability to harm, or benefit, native biodiversity.
- Fourteen departments (see full list above) should develop biodiversity action plans and report on progress and activities annually.
- Cross-departmental collaborations are essential to promote biodiversity issues.
- Management of biodiversity should be better integrated across City operations, governance, and major projects.
- The City should develop Biodiversity Design Guidelines that will enable biodiversity considerations for major public and private projects.
- The City of Los Angeles should look to other cities, states, and countries for inspiration on how to better integrate biodiversity into all City Departments and coordinate interdepartmental projects and initiatives. In particular, the City of Los Angeles should look to the City of San Francisco for inspiration. San Francisco has requested that 15 City Departments articulate their commitments to San Francisco's Biodiverse City Vision in public memos or resolutions.

3.2A % PROTECTED NATURAL AREAS

Score: 1 point - 61%

Points	*% Protected Natural Areas*
0	< 60%
1	**60% – 65%**
2	65% – 70%
3	70% – 80%
4	80% – 90%
5	> 90%

Background:

Metric 3.2a tracks the proportion of natural areas that are protected and preserved for nature in perpetuity. Protected areas are essential for biodiversity conservation. However, an inadequate fraction of the globe (15% of land and 7.5% of the ocean) is protected to stem the loss of biodiversity at the global scale (Pörtner et. al., 2021). The United States and the State of California are both committed to the 30 x 30 initiative, which aims to protect 30% of land and coastal seas by 2030.

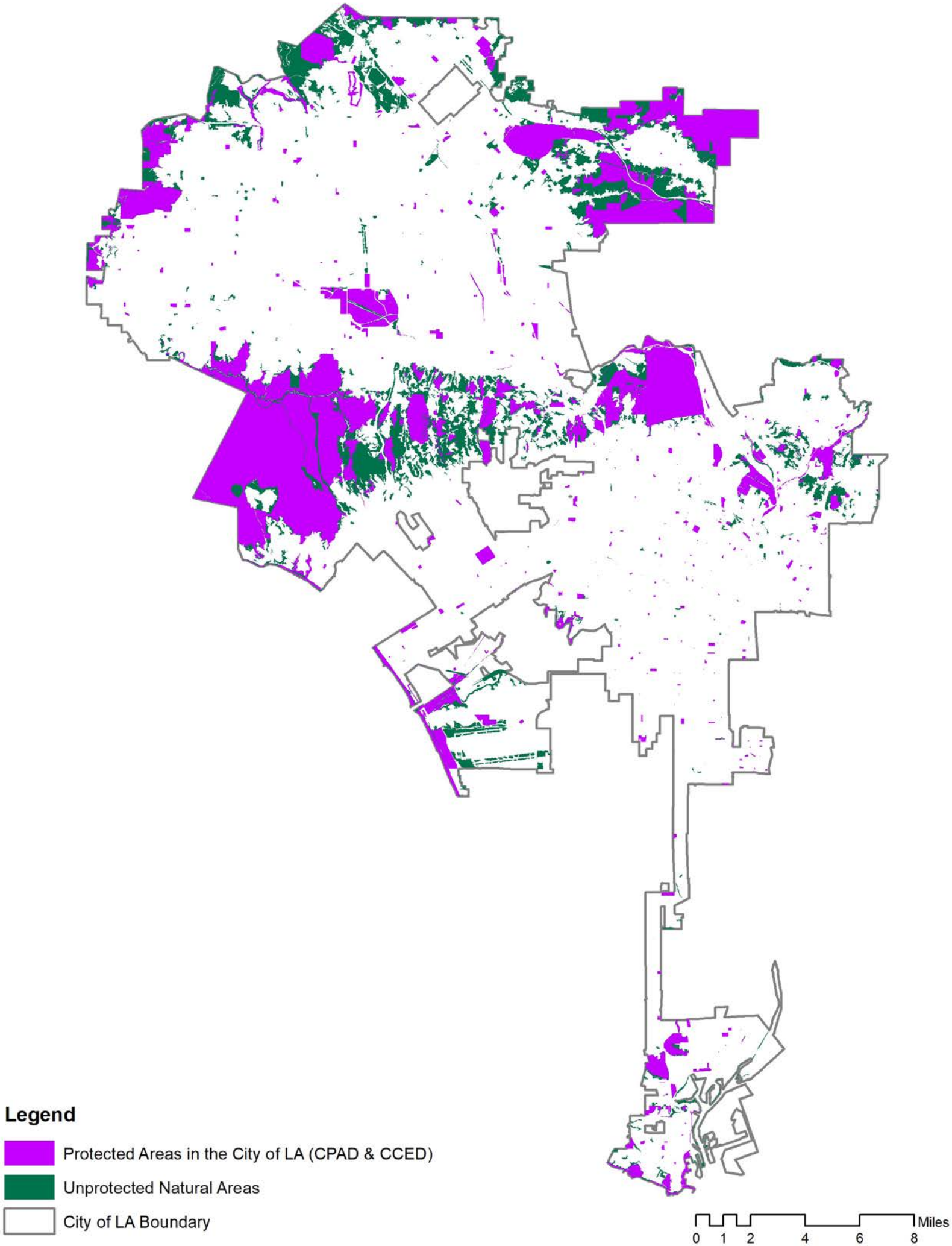
In 2017, Representative Adam B. Schiff introduced the Rim of the Valley Corridor Preservation Act. Shortly thereafter, Senators Feinstein and Padilla introduced a companion bill in the Senate. At this time, the House bill has been approved and the Senate version is under consideration. If passed by the Senate, this important bill would adjust the boundary of the Santa Monica Mountains National Recreation Area to include the Rim of the Valley Unit (see map), protecting vital lands and corridors in the greater Los Angeles area for biodiversity and wildlife in perpetuity.

Results Discussion:

Roughly 20% (95.4 square miles) of the City of Los Angeles is considered to be natural, open space (see metric 1.1a). Of this, 61% (58.3 square miles) is considered protected by the California Protected Areas Database (CPAD) or by the California Conservation Easement Database (CCED). This means that 12.4% of the overall area within the City limits is legally protected. Given the National and State 30 x 30 goals, the City should work to increase the proportion of open space that is protected for biodiversity and conservation purposes. The City should work to establish an actionable restoration and conservation plan that will allow the Biodiversity Team, the City family, and other biodiversity stakeholders to prioritize locations for future conservation, preservation, or restoration activities across LA. In other words, the Biodiversity Team should lead an effort to create a roadmap to the 30 x 30 initiative for Los Angeles (e.g., the Bay Area Conservation Lands Network).

Management Implications:

- Strategically increase protected areas in the City of Los Angeles (via direct acquisition or acquisitions via local partners) that will augment local wildlife connectivity needs, especially in the face of direct and indirect impacts of climate change.
    - Conduct additional analysis and interpretation of the various connectivity analyses (metrics 1.1c -1.1f) to determine areas of the City that can be protected to support wildlife connectivity.
    - Use the list of management target priorities and a list of acquisition priorities created by the Conservation Ecology Lab at San Diego State University (SDSU) (Jennings et. al., 2019) to make data-driven decisions. In the City of Los Angeles, the Arroyo Seco corridor has been identified as a top management and acquisition priority to ensure regional biodiversity, ecological function, and wildlife connectivity (see SDSU Story Map).
    - Encourage new research that will develop data resources that will help guide acquisition decisions based on their habitat value, ability to support rare or special-status species, etc.
    - Consider protecting non-natural areas that support biodiversity or connectivity, particularly in urban, environmental justice neighborhoods that are underserved by natural areas and lack access to biodiversity.
    - Research strategic acquisition opportunities (e.g., brownfields or vacant lots) that can augment habitat.
- Assess/account for level of protection since the level of protections offered can vary.
- Evaluate strategies for further protections through zoning, easements and biodiversity design guidelines.


Legend
Protected Areas in the City of LA (CPAD & CCED)
Unprotected Natural Areas
City of LA Boundary
0 1 2 4 6 8
Miles

3.2B PROTECTED NATURAL AREAS MANAGEMENT AND MONITORING

Score: 1 point - Critical Management

Points	*Level of Management and Monitoring of Protected Natural Areas*
0	No management program
1	**Critical management activities only**
2	Volunteers or equivalent hours to 1 dedicated staff per >100 acres
3	Equivalent hours to 1 dedicated staff per 100 acres
4	Equivalent hours to 1 dedicated staff per 50 acres
5	Equivalent hours to 1 dedicated staff per 25 acres

Background:

Metric 3.2b builds on metric 3.2a, % Protected Natural Areas, to assess the level of physical-on-the-ground stewardship in natural areas based on person-hours per acre per year.

Recreation & Parks (RAP) takes pride in supporting the City's urban wilderness and open spaces by maintaining and caring for LA's vast natural resources, including its urban tree canopy, 13 different lakes, and 92 miles of hiking trails. The department oversees Griffith Park, one of the largest urban parks in North America, and is home to a number of landmarks, such as the world-class Griffith Observatory and the world-famous Hollywood Sign. Recreation & Parks also owns and operates Venice Beach, the Cabrillo Marine Aquarium, and 12 museums, which attract millions of residents and visitors from around the world and provide opportunities to educate the public and build a new generation of environmental stewards. Some of these sites, like the White Point Nature Education Center and Preserve located on a beautifully restored 102-acre preserve in San Pedro, are co-managed with non-profit partner organizations, such as the Palos

The natural areas at Runyon Canyon Park are managed by the Department of Recreation & Parks (Photo: Michelle Barton)

Verdes Peninsula Land Conservancy, to restore and steward the land and provide educational opportunities to the public. Similarly, Augustus F. Hawkins Nature Park, a former LADWP pipe yard converted to a nature park with a trail in urban South LA, was funded by SMBRC and City, County, and State bond measures and is managed in partnership with the Mountains Recreation and Conservation Authority (MRCA).

RAP engages with a variety of stewardship partners, some that are focused on specific parks and others that work across the City. A full list of stewardship partners in parks, including park-specific partners, is included below.

Views from Runyon Canyon Park
(Photo: Michelle Barton)

STEWARDSHIP PARTNERS IN LA CITY PARKS:

- Biocitizen - Los Angeles
- California Native Plant Society
- City Plants
- Friends of the Los Angeles River (FOLAR)
- Koreatown Youth + Community Center
- LA Parks Foundation
- Los Angeles Audubon Society
- Los Angeles Beautification Team
- Los Angeles Conservancy
- Los Angeles Conservation Corps (LACC)
- Los Angeles / Santa Monica Mountains Chapter California Native Plant Society
- Mountains Recreation & Conservation Authority (MRCA)
- North East Trees
- Palos Verdes Peninsula Land Conservancy
- San Fernando Valley Audubon Society
- TreePeople
- University of California
- US Forest Service

PARK-SPECIFIC PARTNERS:

Griffith Park:

- Friends of Griffith Park

Sepulveda Basin:

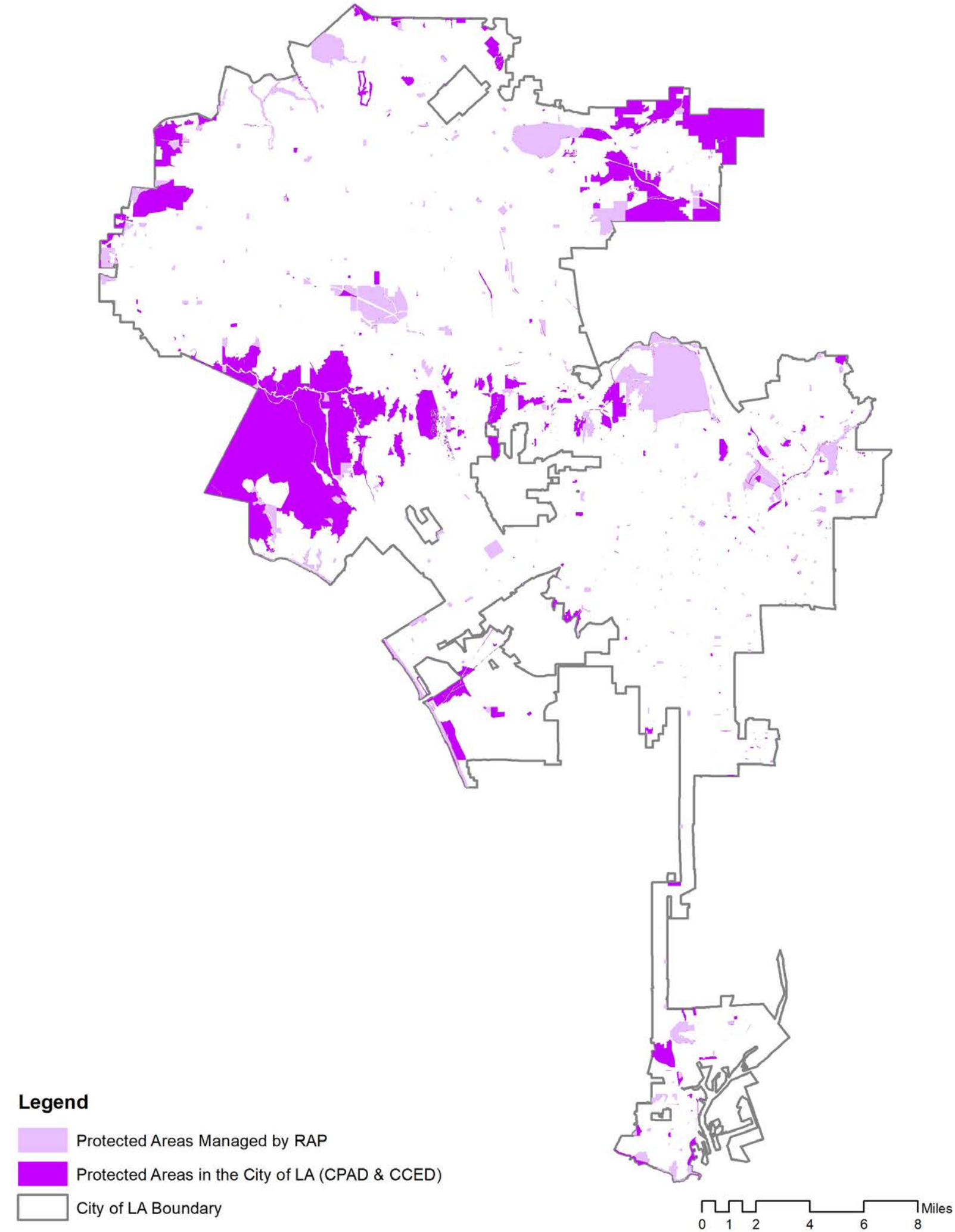
- Sepulveda Basin Wildlife
- Sierra Club, Los Angeles Chapter
- State of California, Department of Parks and Recreation
- Resource Conservation District of the Santa Monica Mountains
- The River Project

Elysian Park:

- Echo Park Historical Society
- Citizens Committee to Save Elysian Park
- Echo Park Chamber of Commerce
- Echo Park Neighborhood Council
- Historic Solano Canyon

Hansen Dam:

- US Army Corps of Engineers


Legend
Protected Areas Managed by RAP
Protected Areas in the City of LA (CPAD & CCED)
City of LA Boundary
0 1 2 4 6 8
Miles

The habitat in Griffith Park is managed by the Department of Recreation & Parks
(Photo: Michelle Barton)

Results Discussion:

The City of Los Angeles Department of Recreation and Parks provides stewardship for more than 17,000 acres of land and offers programming and recreational opportunities at 450+ parks across the City. 27.52 square miles (17,613 acres) or 38% of the 72.35 square miles of protected areas in the City of Los Angeles are managed by the Department of Recreation and Parks. Protected park facilities include important open space and natural areas with hiking trails across the City, such as Griffith Park, Verdugo Mountain Park, the Sepulveda Basin, Hansen Dam, O'Melveny Park, and Ernest E. Debs Regional Park.

In recent years, RAP and other relevant City departments have made great strides in being better stewards of the City's natural habitats. New positions have been created at LASAN, RAP, and the Department of City Planning to better monitor and manage the City's biodiversity, institutionalize wildlife-friendly practices, and raise awareness around biodiversity issues. The most recent position, RAP's Urban Ecologist, will increase the ability of RAP to monitor and manage habitat in the City's parks. Additionally, RAP, LASAN, Kiss the Ground, and LA Compost have created a training course called RegenerateLA that will provide training to RAP staff on how to better steward land and soil to protect the City's biodiversity.

Engaged stewardship partners aid RAP in managing a large portion of the natural areas in the City of LA. While there are a variety of ongoing stewardship initiatives, stewardship efforts are not currently tracked in a comprehensive way that allows an assessment based on the person-hour per acre. Although person-hours of critical management activities (e.g., invasive weed management, trail maintenance, etc.) are not tracked, and readily available, these activities are ongoing. Further, as indicated by the staffing and training developments and stewardship partnerships noted above, there is growing interest and effort in better managing the City's protected natural areas. However, without centralized records that enumerate stewardship activities, a score of 1, critical management activities only, has been assigned for the baseline assessment of this metric.

Management Implications:

- Recreation & Parks should continue to establish and grow relationships with non-profit partners who can help steward natural lands. The Los Angeles Stewardship Mapping & Assessment Project (STEW-MAP) developed by Loyola Marymount University can serve as a resource to identify stewardship partners for specific projects/ areas of the City.
- Recreation & Parks should investigate ways to use time codes to better track internal stewardship activities/biodiversity-related tasks for future assessments.
- Efforts by RAP stewardship partners should be tracked annually in a comprehensive way that allows an assessment based on the person-hour per acre. Data from listed partners on effort expended and activities engaged in should be collected by RAP annually. The LASAN Biodiversity Team can help develop a database (or other tracking mechanism) to comprehensively track, monitor, and prioritize future stewardship activities on City lands.
- RAP and the LASAN Biodiversity team should collaborate to:
    - Develop a list of Best Management Practices (BMPs) to guide management and stewardship activities.
    - Pilot restoration projects that can demonstrate the impacts of stewardship and management.
- City staff should inventory and analyze the management needs of the City's Parks and Protected Areas for Wildlife (PAWs) and develop a list of management priorities.
- The Biodiversity Team and Recreation & Parks should partner to engage the public about local ecological stewardship volunteer opportunities (e.g., making observations of indicator species, making observations of problematic invasive weeds, applying compost and mulch to urban parks, etc.).
- Members of the community can be called upon to serve as stewards for our natural areas. Resources, such as the City Plants Tree Ambassador Community Action Toolkit and curriculum, should be promoted and shared with the public.

Natural areas in Runyon Canyon Park provide habitat for native species. (Photos: Michelle Barton)

3.2C MANAGEMENT OF INVASIVE SPECIES & PESTS

Score: 0 points - No Inventory

Points	*Level of Practices and Policies Addressing Invasive Species*
0	**No inventory of invasive species**
1	Inventory of invasive species
2	Inventory and monitoring of invasive species
3	Inventory and monitoring of invasive species plus invasive species policy that prohibits the sale of invasive plants and bans second generation rodenticide
4	Inventory and monitoring of invasive species, invasive species policy that prohibits the sale of invasive plants and bans second generation rodenticide, and integrated pest management (IPM) for invasive species
5	Inventory and monitoring of invasive species, invasive species policy that prohibits the sale of invasive plants and bans second generation rodenticide, integrated pest management (IPM) for invasive species, and Management Plan to prevent future invasions

Background:

Metric 3.2c assesses the level of invasive species and pests management activities currently implemented in the City of Los Angeles. It looks at the existence of an invasive species inventory, various control of spread policies, an integrated pest management plan for invasive species, and managed areas. As stated in the report for metric 1.3b, invasive plant species can be hugely detrimental to native biodiversity, displacing native species and even eliminating host plants that native wildlife species depend on (Cooper & Mathewson, 2009). Similarly, the presence of invasive fauna (e.g., Eastern fox squirrel (*Sciurus niger*), American bullfrog, (*Lithobates catesbeianus*)) and insect pests (e.g., invasive shot-hole borer (*Euwallacea fornicatus*)) is problematic. Invasive species and pests can alter ecosystem processes (e.g., invasive grasses increase wildfire ignition and reduce the ability of landscapes to sequester carbon). They also lead to displacement, predation, disease and can be detrimental to agriculture and other industries. The impacts of invasive species are so important that the Intergovernmental Panel on Biodiversity and Ecosystem Services (IPBES) lists invasive species as one of five drivers of change in nature. Further, in North America, invasive species and disease are the most common causes of native species extinction (IPBES, 2018). IPBES (2018) points to various impediments in the control of invasive-alien species in the Americas including:

- The lack of information about invasion pathways and mechanisms of successful establishment,
- Low awareness of the risks posed by invasive species by the people involved in major invasion pathways (e.g., shipping industry),
- The lack of infrastructure to intercept and quarantine invasive species, and
- The insufficient funding for monitoring and management.

Globally, and locally, there is much that can be done to improve the monitoring and management of invasive species.

American bullfrog (*Lithobates catesbeianus*) in invasive water lettuce.
(Photo: Nurit Katz)

Results Discussion:

LA City:

The City of Los Angeles does not have a formal inventory of invasive plant species, nor does the City of LA have a strategy to comprehensively monitor or manage invasive species and pests. The Department of Recreation & Parks, which manages much of the open space in the City, does commit resources to removing invasive species, but the work is opportunistic and done site-by-site or project-by-project as resources permit. However, work done by LA County and non-profit organizations (see below) supplements the work that is formally performed or contracted by the City.

LA County:

- The Los Angeles County Agricultural Commissioner/Weights & Measures Department has a number of Bureaus and programs that address invasive plant species and pests.
- The Pest Exclusion and Produce Quality Bureau keeps exotic pests out of the County. County staff has been delegated authority by the State to inspect shipments at USPS, UPS, FedEx, LAX, and nurseries to detect pests.
- The Weed Hazard/Pest Management Bureau, Weed Hazard Division works with the County Fire Department to deal with and remove brush and invasive weeds to reduce fire risks. The Weed Hazard/Pest Management Bureau, Pest Management Division is responsible for the eradication of all CDFA "A" rated weeds and the control of other invasive weeds in LA County.
- The Environmental Protection Bureau, Pest Detection Division is in charge of detecting pests in LA County that may have made it past pest exclusion and USDA inspections. The Division sets up traps for fruit flies and other tracked pests. These activities are extremely important as LA is a shipping hub/huge produce market and if there is a pest infestation here, shipping partners may not allow shipments of produce or plants.

Additionally, LA County has a Weed Management Area (WMA) that brings together landowners and managers to coordinate efforts and expertise against invasive weeds. Prior to the COVID-19 pandemic, the LA County WMA met quarterly to discuss relevant invasions and has undertaken several projects to more effectively manage the most invasive weeds in the County. Since 2001, the WMA has been surveying selected invasive plants (based on threat levels). The group had specific control projects to manage spotted knapweed, arundo, and perennial pepperweed.

Invasive mustard and other weeds
(Photo: Nurit Katz)

Others (Non-profits):

Other non-profit and community-based groups, like Northeast Trees (NET), focus on the preservation and restoration of open space in the LA area. NET pursues grant-funded projects that remove invasive species and restore natural ecosystems in public parks (e.g., Deb's Park, Ascot Hills Park, Ramona Gardens, etc.). NET reports that the major hurdle to doing this kind of work at a larger scale is funding. Traditionally, there have not been many grant programs that focus on restoration and invasive species control. Grants for fuel management or fire fuel replacement are often available, but the focus of these programs is primarily on wildfire prevention, not ecosystem restoration.

Cities can contribute significantly to biodiversity protection when they manage threats like pollution and invasive species. Despite limited resources, the Department of Recreation & Parks is doing some invasive species management. The Department is also in the process of updating their Integrated Pest Management Plan. In the future, it makes sense to house efforts related to invasive species in RAP. Recommendations on how to shape these efforts are outlined in detail below.

Volunteers removing invasive species
(Photo: Michelle Barton)

Management Implications:

- Data
  - An inventory of known invasive species and pests should be established for the City of Los Angeles.
    - An initial list should be jointly drafted by the LASAN Biodiversity Team and Recreation & Parks. Public data on the presence and spread of invasive species across the State of California (e.g., CAL-IPC, Calflora, iNaturalist, CDFA) exists and can be used to build a formal inventory. Data from scientific reports, other departments, and from partners at LA County can help supplement public data.
    - Once drafted, the list should be circulated to the Biodiversity Expert Council for input.
    - Once finalized, this inventory should be adopted by the City and published online via the Recreation & Parks webpage.
    - The inventory should be refreshed and updated every decade.

- Training & Resources:
  - Better train, resource, and equip City staff who manage open space (particularly RAP staff) to identify, monitor, and manage invasive species so that they are positioned to better track and tackle the spread of invasive species.
  - Incorporate invasive species identification, monitoring, and management into Recreation & Parks training.
  - Conduct regional prevention, promote early detection, and expand rapid response training with staff and the public to better monitor and control invasive species.
  - As invasive species are a top threat to local and global biodiversity, there is a need for dedicated Recreation & Parks staff to oversee activities related to the monitoring and management of invasive species and pests, particularly in natural parks (e.g., Griffith Park, Elysian Park, etc.).

- Software:
  - The City should consider purchasing software, like Calflora's Weed Manager, to track and record the presence and spread of invasive plant species. This software should be purchased, and utilized, in conjunction with LA County to improve the amount of data available and encourage collaborative efforts across jurisdictions.

- Collaborations:
  - The City should collaborate across jurisdictions, agencies, and with community groups to better monitor and manage invasive species. The City can learn from the work that is being done by others and partner on initiatives to increase impacts.
  - The City should partner with Los Angeles County to develop an invasive species management plan. This recommendation is also promoted by the UCLA Ecosystem Health Report Card for Los Angeles County, a comprehensive sustainability report card for Los Angeles (Reid-Wainscoat et al., 2021).
  - The City should formally join the Los Angeles County WMA and participate in meetings moving forward.
  - The City should mobilize and collaborate with volunteer groups (e.g., the LADWP Green Team) to help collect data on the presence of invasive species using Calflora and/or iNaturalist.

3.2D MANAGEMENT OF SPECIES OF CONSERVATION CONCERN

Score: 1 - Inventory

Points	*Management of Species of Conservation Concern*
0	No inventory of species of concern in the City
1	**Inventory of species of conservation concern in the City**
2	Inventory and monitoring of species of concern in the City
3	Mitigation plan for impacts species of concern in the City
4	No-net-loss plan for species of concern in the City
5	Adopted recovery plan for species of concern in the City

Merlin (*Falco columbarius*)
(Photo: Graham Montgomery)

Background:

Metric 3.2d seeks to measure City engagement with the management, monitoring, and protection of threatened, endangered, and species of conservation concern ("species of conservation concern"). More specifically, this metric seeks to understand the City's efforts towards the protection and recovery of species considered threatened or endangered by the California Endangered Species Act (CESA) and/or the U.S. Endangered Species Act (ESA) as well as other species of conservation concern.

As described in the report section on metric 1.2c, the City of Los Angeles is thought to provide habitat for over 100 species of conservation concern. Information on policies, projects, and programs related to the management of these 100 species of conservation concern was gathered through online research and the CSO survey described in the report for metric 3.1a, Biodiversity Vision/Action Plan. In particular, respondents were asked to detail projects, programs, and policies relating to the management of species of conservation concern.

Additional information on projects, programs, and policies related to T/E/SoC is summarized in the table below. The table includes information on department-specific projects, programs, and/or policies relating to the management of threatened, endangered, and species of concern.

City Department	***Projects, Programs, and Policies Relating to Management of Species of Conservation Concern***	***Sources***
Los Angeles World Airports	• LAX Dunes: Protection, Monitoring, Management, Stewardship / El Segundo blue butterfly, California coastal gnatcatcher monitoring	Sustainability Action Plan: Natural Resource Management
Port of Los Angeles	• Biological Baseline Surveys: Monitoring, Reporting • Biological Mitigation: Habitat Restoration • California Least Tern: Protection, Monitoring • Vessel Speed Reduction: for air quality with ancillary benefit to blue whales / Eelgrass beds designated as "essential fish habitat"	Biological Resources Webpage / CSO Survey
Los Angeles Zoo & Botanical Gardens (LA Zoo)	• Global Conservation Project Assistance • California Condor Recovery Program • Conservation Strategic Plan • Endangered Species at Zoo / Animal Management (SSPs) • Zoo-based Breeding Program	Conservation Webpage

Recreation & Parks (RAP)	• Endangered Species Conservation Program
	• Nesting bird surveys
	• Cabrillo Marine Aquarium:
	  ○ Tidewater Goby: Husbandry, Education
	  ○ Habitat Loss: Education
		Conservation Webpage / Griffith Park Wildlife Management Plan

LA Sanitation & Environment	• Biodiversity Reports: monitoring T/E/SoC and City management practices	Biodiversity Webpage
City Planning	• LA River Ecosystem Restoration: Habitat for various species of concern • Wildlife Pilot Study	LA River Ecosystem Restoration Webpage / Wildlife Pilot Study
Street Services Bureau (StreetsLA)	• Ordinance 177404: Native Protected Tree Ordinance • Compliance with CA Fish and Game Code 3503 and 3503.5 regarding protected birds	Urban Forestry Division / Ordinance 177404 / CA Fish and Game Code 3503 & 3503.5 / CSO Survey
LA Department of Water & Power	• Strategic Landholdings Analysis to help identify untapped beneficial uses to support habitat and biodiversity values and engage/ educate customers about ecosystems • Power-in-Pollinators initiative to look at opportunities to consider pollinators in LADWP operations	CSO Survey

The two-striped gartersnake (*Thamnophis hammondii*)
(Photo: Graham Montgomery)

The wandering skipper (*Panoquina errans*)
(Photo: Graham Montgomery)

The activities of three departments, Recreation and Parks, the LA Zoo, and Bureau of Engineering are highlighted and further detailed below:

1. RAP: Parks across the City support plants and animals protected by California and Federal law. In particular, Griffith Park supports 19 known special status species, all of which are detailed in the Griffith Park Wildlife Management Plan. As impacts to species of conservation concern that are regulated by the CESA and ESA need to be regularly evaluated at City parks for activities, including brush clearance, and events, the newly created inventory of special status species will provide a useful starting point. Additional monitoring, mitigation, and better management of special-status species will help focus future surveys, planning, and efforts at park facilities.

2. LA Zoo: In 2021, the LA Zoo launched its Conservation Plan which, amongst other things, details past successes and future goals to support California's native biodiversity. The LA Zoo is committed to rescuing endangered species and has helped save three endangered California species. Additionally, the Zoo is engaged in partnerships and activities, such as captive breeding and release, translocations, etc., that are responsible for saving species locally and around the globe. In the Conservation Plan, the Zoo pledges to expand conservation partnerships and act in a leadership role to accelerate success related to conservation. According to the Conservation Plan, they "pledge to lead efforts to safeguard California's biodiversity, beginning locally in Griffith Park and extending throughout the state."

3. BOE: BOE supports City Departments in CEQA/ NEPA environmental review of projects, including assessing potential biological impacts and assists in the development of mitigation measures or integration of biodiversity protection measures into project design.

Results Discussion:

Via the publication of this report, the City of Los Angeles officially has an Inventory of Species of Conservation Concern and therefore has been given a score of 1 for this metric. Establishing an agreed upon inventory of special-status species for the City of Los Angeles is a very important first step to making progress on how the City approaches threatened, endangered, and species of conservation concern. However, in order for the inventory to be a useful resource that raises awareness and spurs activity, it not only needs to be embedded across relevant City departments, but spur monitoring, mitigation planning, no-net loss planning, and/or the creation of recovery plans.

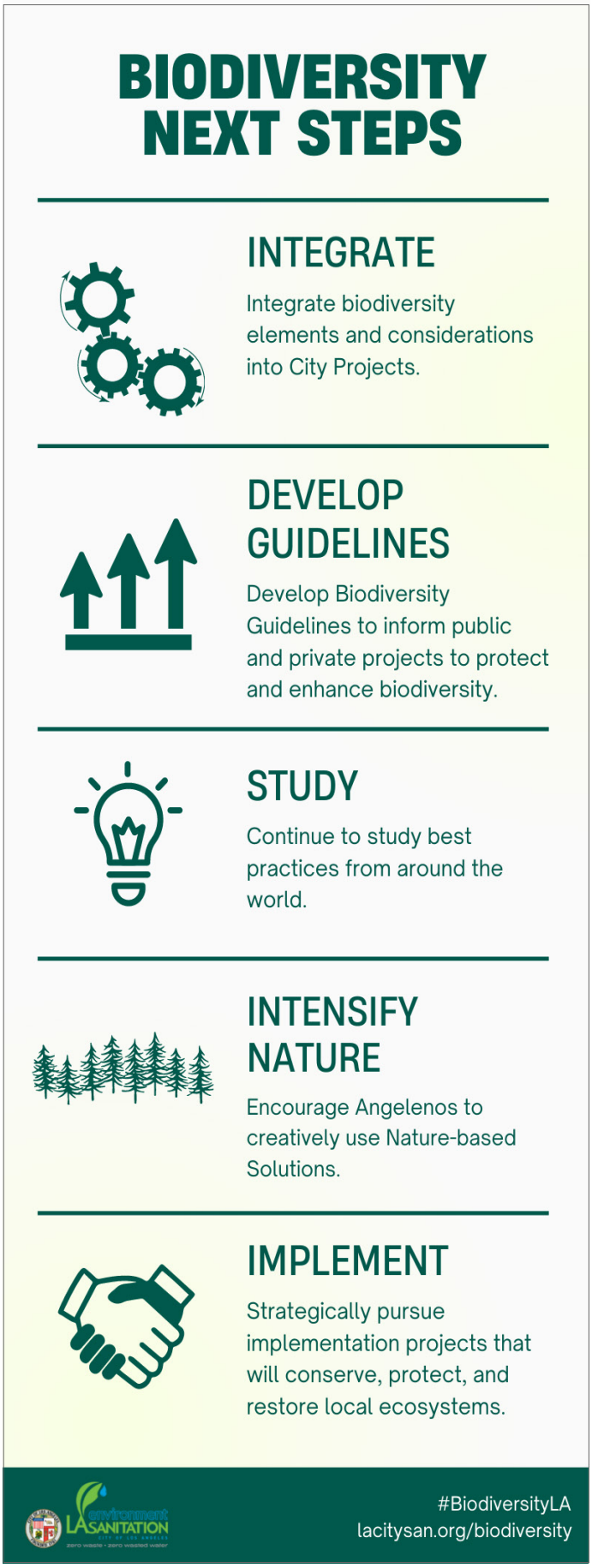
Assessment of City activities suggests that eight City departments have projects, programs, and policies related to species of conservation concern, as outlined in the table above. While certain departments perform project-specific monitoring for species of conservation concern, or include mitigation measures related to them, neither monitoring or mitigation is happening comprehensively Citywide. The results of this assessment suggest that there is a strong need for centralized management of species of conservation concern if the City is to achieve the no-net loss of native species goal.


Western pond turtle (*Emys marmorata*)
(Photo: Nurit Katz

Management Implications:

- A centralization monitoring and management of species of conservation concern necessary in order for the scoring on this metric to be improved. The City cannot collectively work towards the important no-net loss of native biodiversity goal until a monitoring plan is established.
- The City should establish a consortium to monitor and manage special-status species and deal with regulatory compliance. At a minimum, this group should include: the Zoo, BOE, RAP, and LASAN, but other members of the Biodiversity Interdepartmental Team should be included as deemed appropriate. The consortium should:
  - Formally adopt the proposed Inventory and maintain an up-to-date Inventory (e.g., refresh/update the Inventory every decade).
  - Establish a web page or other landing space that hosts the official City inventory of special-status species and serves as a hub for up-to-date information on species of conservation concern (e.g., LASAN's Biodiversity page).
  - Work collectively to establish more comprehensive monitoring for species of conservation concern.
- The proposed consortium should oversee the inventories and monitoring efforts for both 3.2c and 3.2d to maximize efficiency.

Long-billed curlew (*Numenius americanus*)
(Photo: Graham Montgomery)



NEXT STEPS:

Now that the baseline assessment of the LA City Biodiversity Index is complete, the LASAN Biodiversity Team will shift its attention to outreach activities and implementation projects that will collectively increase the overall LA City Biodiversity Index score and help the City achieve its broad biodiversity initiatives. Planned next steps can be broadly grouped into five categories:

1. Integrate Biodiversity into City Projects:

The Biodiversity Team plans to work to better integrate biodiversity elements/considerations into City projects. While this is already starting to happen with LASAN projects like the Slauson Corridor: Making Connections project, which will plant 1,600 new street trees and install thousands of California native and drought-tolerant understory plants, the hope is to better incorporate biodiversity into projects across the City. LASAN's Biodiversity Team will brainstorm with the Interdepartmental Biodiversity Team for the best, most efficient ways to make this happen. The Biodiversity Team will also work with the Expert Council and other City departments (e.g., Bureau of Engineering, Department of Recreation and Parks, the LA Zoo, LA Public Library, and the Department of City Planning) to promote practices, programs, and projects that support biodiversity, improve connectivity, and make Los Angeles more sustainable and resilient.

2. Develop Biodiversity Guidelines:

Another major goal is to develop Biodiversity Guidelines that will help project managers incorporate biodiversity-friendly practices into their designs. Guidelines should be developed to provide guidance to public and private landholders on how to best design projects and sustainability manage properties in order to improve habitat quality and enhance local biodiversity. Official guidelines will help streamline this process, providing straightforward suggestions for how projects can prevent undue stress/damage to biodiversity (e.g., protecting intact habitat, limiting night lighting, etc.) and ways to provide habitat for biodiversity (e.g., planting native plants, creating corridors for wildlife movement, etc.). Guidelines should be designed in a way so that they are applicable to a variety of land uses and scales. Examples from around the world can, and should, be looked to for inspiration.

3. Study Best Biodiversity Practices from Around the World:

The City of Los Angeles plans to continue looking to other cities in the state and nation and across the globe for inspiration, especially in regards to policy and models for incorporating biodiversity interests into all municipal projects. The City of San Francisco, which, like Los Angeles, is located in a global biodiversity hotspot, has created the San Francisco Biodiversity Policy and is working to integrate Biodiversity Guidelines into the Municipal Green Building Code. San Francisco has also incorporated a parcel-specific list of recommended native plants to the San Francisco Property Information Map, which is similar to NavigateLA or ZIMAS.

4. Intensify Nature:

Perform public education and outreach to encourage Angelenos to intensify nature through the use of nature-based solutions across the City. This can be done by creating pollinator gardens, planting native plants, creatively adding green space and green infrastructure to small spaces (e.g., rooftop gardens and vertical gardens), and using sustainable, regenerative practices (e.g., avoiding the use of herbicides, pesticides, and chemical fertilizers).

A connectivity workshop at UCLA's Stunt Ranch
(Photo: Nurit Katz)

The Pacific Ocean and the Santa Monica Mountains
(Photo: Michelle Barton)

5. Strategically Pursue Implementation Projects:

Lastly, the LASAN Biodiversity Team intends to partner with the Biodiversity Expert Council and Interdepartmental Team to strategically pursue implementation projects that will conserve, restore, or protect local ecosystems. However, the City must first understand where implementation projects will be the most impactful. To this end, LASAN, Recreation & Parks, City Planning, and the Resource Conservation District of the Santa Monica Mountains are hoping to jointly develop a prioritization scheme that will guide City efforts to conserve and protect biodiversity while also increasing access to parks and to nature. The intent is for the scheme to balance access to nature, restoration, patch size, edge effects, and connectivity. The prioritization exercise should ideally arm City staff with a strategically developed list of priority projects to pursue. Further, the hope is that the output of this project will be an agreed upon prioritization for conservation and restoration projects that City departments, land managers that work in or adjacent to the City could work to collectively realize, increasing effectiveness and cohesion of local conservation efforts. However, staff and resources are needed to support the design, execution, and ongoing maintenance of implementation projects.

Volunteers tend to a TestPlot in Elysian Park.
(Photo: TestPlot)

CONCLUSION:

This report provides the first ever assessment of all 25 metrics in the LA City Biodiversity Index. By design, the topics covered in the Index comprehensively assess not only what is happening to habitats and how well connected various habitats are, but how well the City is engaging with students and the larger community on the topic of biodiversity and how the City itself is working to protect endangered species and manage threats, like invasive species.

For the baseline assessment of the Index, the City received a score of 37 out of a possible 110 points (110 = 22 x 5), with an average metric score of 1.7/5 points. Please note that three metrics (1.2c, 2.3a, and 2.3b) assess change over time and so they were not given official scores for this assessment and will be scored for the next benchmark assessment in 2030. The overall score of the baseline assessment of 37/110 leaves much room for improvement, indicating that substantial work remains to be done if the City aims to effectively protect and enhance biodiversity and take appropriate action to halt biodiversity loss.

A gray fox (*Urocyon cinereoargenteus*) at sunset (Photo: Robert Martinez)

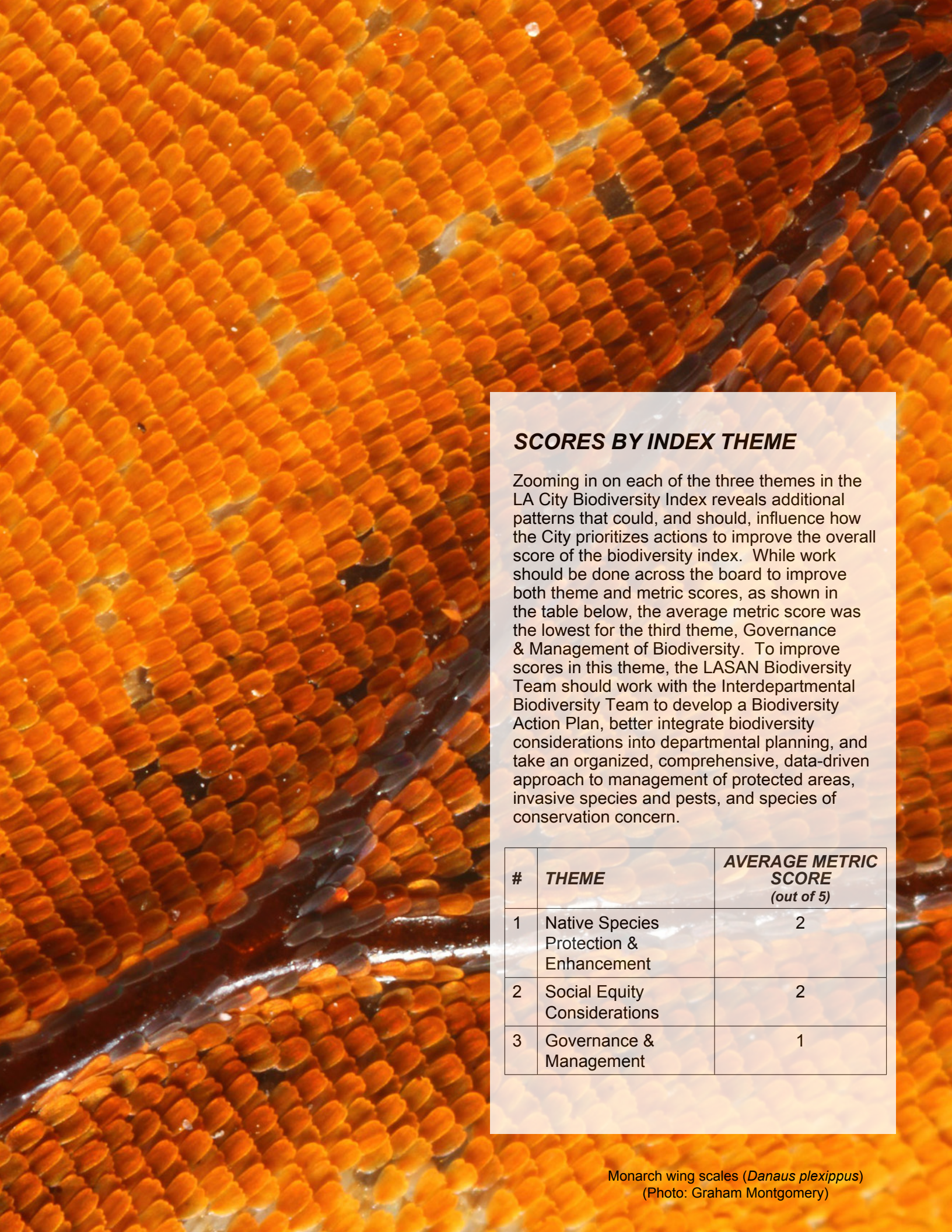
LA CITY BIODIVERSITY BASELINE ASSESSMENT

INDEX SCORE

37 / 110
POINTS

AVERAGE METRIC SCORE

1.7 / 5
POINTS



SCORES BY INDEX THEME

Zooming in on each of the three themes in the LA City Biodiversity Index reveals additional patterns that could, and should, influence how the City prioritizes actions to improve the overall score of the biodiversity index. While work should be done across the board to improve both theme and metric scores, as shown in the table below, the average metric score was the lowest for the third theme, Governance & Management of Biodiversity. To improve scores in this theme, the LASAN Biodiversity Team should work with the Interdepartmental Biodiversity Team to develop a Biodiversity Action Plan, better integrate biodiversity considerations into departmental planning, and take an organized, comprehensive, data-driven approach to management of protected areas, invasive species and pests, and species of conservation concern.

#	*THEME*	*AVERAGE METRIC SCORE (out of 5)*
1	Native Species Protection & Enhancement	2
2	Social Equity Considerations	2
3	Governance & Management	1

Monarch wing scales (*Danaus plexippus*)
(Photo: Graham Montgomery)

Anise swallowtail caterpillar (*Papilio zelicaon*)
(Photo: Graham Montgomery)

Ultimately, the score of the baseline assessment of the LA City Biodiversity Index should serve as a call to action to direct biodiversity stakeholders across the City to push forward bold initiatives, form new partnerships, conceive of innovative implementation projects, and engage in a Citywide fight to protect existing biodiversity and prevent future biodiversity loss in the City of Los Angeles.

Fortunately, due to the way the index was developed, there is already local consensus around the index framework and a collective will to take the steps necessary to not only improve the City's index score, but to meaningfully preserve, conserve, and protect biodiversity in the City of Los Angeles. However, as biodiversity issues are independent of jurisdictional boundaries, a broader coalition is needed to engage in biodiversity protection. The City hopes that in the future, LA County, and neighboring jurisdictions will adopt, or slightly modify, this framework as well so that monitoring, management, and conservation efforts can be conducted and coordinated regionally to better protect the precious biodiversity of the California Floristic Province.

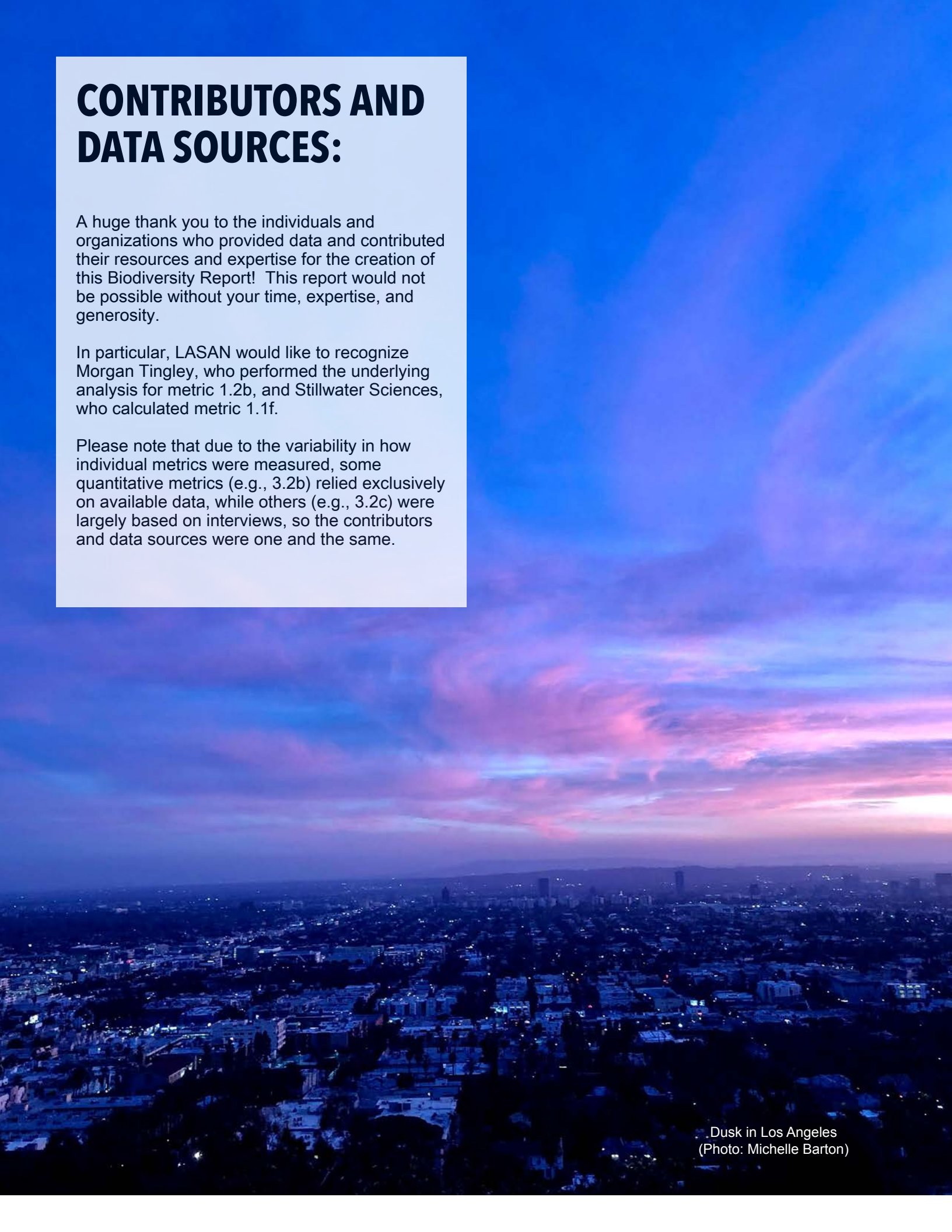
Monumental actions to address the twin crises of climate change and biodiversity collapse will be needed to realize the City's Biodiversity Vision Statement and create "a City where all Angelenos value biodiversity, honor and respect nature, and steward the natural world, ensuring that ecosystems are protected, enhanced, and restored, environmental and public health benefits are maximized and equitably shared by all, and that Los Angeles is a resilient, biophilic City for generations to come."

CONTRIBUTORS AND DATA SOURCES:

A huge thank you to the individuals and organizations who provided data and contributed their resources and expertise for the creation of this Biodiversity Report! This report would not be possible without your time, expertise, and generosity.

In particular, LASAN would like to recognize Morgan Tingley, who performed the underlying analysis for metric 1.2b, and Stillwater Sciences, who calculated metric 1.1f.

Please note that due to the variability in how individual metrics were measured, some quantitative metrics (e.g., 3.2b) relied exclusively on available data, while others (e.g., 3.2c) were largely based on interviews, so the contributors and data sources were one and the same.



Dusk in Los Angeles
(Photo: Michelle Barton)

Metric	*Contributors and Data Sources*	
1.1a	Data Source:	• CALVEG Southern Coast Section
1.1b	Contributor:	• Isaac Brown, Stillwater Sciences
1.1c	Contributors:	• Raphael Mazor, and Eric Stein, Southern California Coastal Water Research Project; • Sabrina Drill, University of California Agriculture and Natural Resources
	Data Source:	• Stephanie Bucknam and Shuka Rastegarpour, California State Water Quality Control Board
1.1d	Contributors:	• Irina Koroleva, LASAN
1.1e	Contributors:	• Isaac Brown, Stillwater Sciences; • Peggy Nguyen, LASAN; • Amanda Briones, City Planning; Diana Kitching, Kat Superfisky, and Tom Tran, City Planning; • Snigdha Suvarna, SDG Intern; • National Park Service; • Arroyos & Foothills Conservancy; • Occidental College;
	Data Source:	• 2020 Biodiversity Report; • Isaac Brown's Dissertation
1.1f	Contributors:	• Anna Ballasiotes, Derek Booth, Isaac BrownWendy Katagi, Bruce Orr, and Karley Rodriguez, Stillwater Sciences
1.2a	Contributors:	• Irina Koroleva, LASAN
	Data Source:	• The Global Biodiversity Information Facility (GBIF)
1.2b	Contributors:	• Joseph Nikko Curti, Alison Lipman, and Morgan Tingley, UCLA; • Rhay Flores, Stephanie Franco, Maren Lechner, Krista Mercado, and Albert Park, UCLA undergraduate students; • Dan Cooper, Resource Conservation District of the Santa Monica Mountains; • Oscar Figueroa, Amber Huu, and Kirstin Rochel, LASAN
	Data Source:	iNaturalist
1.2c	Contributors:	• Dan Cooper, Cooper Ecological; • Robert Fisher, USGS; • Travis Longcore, UCLA; • Isaac Brown, UCLA
	Data Source:	• CNDDB, iNaturalist
1.3a	Contributor:	• Travis Longcore, UCLA
	Data Source:	• The New World Atlas of Artificial Sky Brightness

Clouds over the Santa Monica Mountains
(Photo: Michelle Barton)

Metric	Contributors and Data Sources	
1.3b	Contributors:	• Jutta Burger, Doug Johnson, and Nicole Valentine, California Invasive Plant Council; • Joseph Algiers, Jr., National Park Service; • Jim Hartman, Los Angeles County, Agricultural Commissioner, Integrated Pest Management Division
	Data Sources:	• Calflora; Los Angeles County, Agricultural Commissioner, Integrated Pest Management Division
1.3c	Data Source:	• Fire Return Interval Data, USDA, Forest Service (FRID 2019, South Coast, CALVEG Zone 7)
2.1a	Contributor:	• Irina Koroleva, LASAN
	Data Source:	• Census block population data (Total Population Estimate ACS 2019)
2.1b	Contributors:	• Rachel Malarich, City Forest Officer; • Rachel O'Leary and Cindy Chen, City Plants; • Vivek Shandas, Urban Forest Equity Visiting Scholar
	Data Source:	• Los Angeles County Tree Canopy Assessment (2016), prepared by SavATree Consulting Group, University of Vermont Spatial Analysis Laboratory, TreePeople, and Loyola Marymount University Center for Urban Resilience
2.2a	Contributor:	• Los Angeles Unified School District (LAUSD)
	Data Sources:	• LAUSD page on CA NGSS (relevant standards tracked in this Table); interviews with LAUSD staff; data from a survey sent to LAUSD Science, Technology, Engineering, Arts, & Math (STEAM) Coordinators and Science Coordinators
2.2b	Contributors:	• Gerry Salazar, LAUSD Office of Outdoor and Environmental Education; • Maggie Smart McCabe, SDG Intern
	Data Sources:	• LAUSD Office of Outdoor and Environmental Education; LAUSD science administrators and educators; education and outreach coordinators at organizations that host biodiversity field trips
2.2c	Contributors:	• Lepoldo Munoz, Krisztina Tokes, Christos Chrysiliou, and Jan Ducker (retired), LAUSD Facilities Services Division, Maintenance & Operations; • Maggie Smart McCabe, SDG Intern; • Irina Koroleva, LASAN; • Sharon Cech and Rosa Romano, Urban and Environmental Policy Institute at Occidental College; • Margot Griswold, LandIQ
	Data Sources:	• LAUSD Garden Data; LAUSD joint-use agreements/tenants; Urban and Environmental Policy Institute survey results; school garden community partners, including EnrichLA, Garden School Foundation, Captain Planet, and the National Wildlife Federation

Clouds over the Santa Monica Mountains
(Photo: Michelle Barton)

Metric	Contributors and Data Sources	
2.3a	Contributors:	• Lila Higgins, Miguel Ordeñana, and Gregory Pauly, Natural History Museum of Los Angeles County; • Vivienne Byrd, Diane Olivo-Posner, Jimmy Tokeshi, and Margaret Trtryan, Los Angeles Public Library; • McClaran Shirley, SDG Intern; • Irina Koroleva, LASAN
	Data Sources:	• GBIF; U.S. Census Data
2.3b	Contributors:	• The Surfrider Foundation; • The National Wildlife Federation; Audubon; • McClaran Shirley, SDG Intern
	Data Sources:	• The Surfrider Foundation; • The National Wildlife Federation; • Audubon
3.1a	Contributors:	• McClaran Shirley, SDG Intern
	Data Sources:	• Convention on Biological Diversity (CBD) Aichi targets; CBD Post-2020 Targets; Sustainable Development Goal 15 Targets
3.1b	Contributor:	• McClaran Shirley, SDG Intern
	Data Sources:	• LA City Departmental web pages; • Survey results from Departmental Chief Sustainability Officers
3.2a	Data Sources:	• California Protected Areas Database 2020b; • California Conservation Easement Database 2020b
3.2b	Data Sources:	• California Protected Areas Database 2020b; • California Conservation Easement Database 2020b; • Department of Recreation and Parks
3.2c	Contributors:	• Jutta Burger, Doug Johnson, and Nicole Valentine, California Invasive Plant Council (CAL-IPC); • Joseph Algiers, Jr., National Park Service; • Jim Hartman, Los Angeles County Agricultural Commissioner Integrated Pest Management Division; • Max Regis, Los Angeles County ACWM-Pest Exclusion/Produce Quality; • Aaron Thomas, Northeast Trees; • Bill Neill, California Native Plant Society; • Drew Ready, Council for Watershed Health; • Recreation and Parks staff
3.2d	Contributor:	• McClaran Shirley, SDG Intern
	Data Sources:	• LA City Departmental web pages; • Survey results from Departmental Chief Sustainability Officers

Clouds over the Santa Monica Mountains
(Photo: Michelle Barton)

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Views of Los Angeles from Runyon Canyon Park
(Photo: Michelle Barton)

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Views of Los Angeles from Runyon Canyon Park
(Photo: Michelle Barton)

Contact Us

LASAN is dedicated to protecting public health and the environment for all Angelenos. For more information about the Biodiversity Program, please contact michelle.barton@lacity.org or visit us at lacitysan.org/biodiversity.

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Walnut tree
(Photo: Michelle Barton)

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2022 Departmental Biodiversity Reports

This transmittal contains reports from the following departments and offices:

1. Board Offices of Public Works
2. BOE
3. City Planning
4. LADWP
5. LAPL
6. LASAN
7. LAWA
8. LA Zoo
9. RAP
10. StreetsLA
11. Street Lighting

ANNUAL DEPARTMENTAL BIODIVERSITY REPORTING - DEPARTMENT OF PUBLIC WORKS, BOARD OFFICES

NOTES:

- Departmental biodiversity plans will be submitted to City Council and become part of the public record.
- Departmental biodiversity plans should be innovative and aspirational to help the City achieve the no-net loss goal of native biodiversity. While these plans should be put forth in good faith as public commitments to protect and enhance biodiversity, it is recognized that progress on stated goals may be subject to future budget decisions, policy direction, or other factors.

DEFINITION:

- NATIVE SPECIES = species that have ranges in the LA area (e.g., the LA River, Ballona Creek, Dominguez Channel, and Rio Hondo Watersheds and tributaries).

RESOURCES:

- Inspiration, Resources, and Recommendations
- Departmental Actions Outlined in the LA Biodiversity Index Baseline Report

DEPARTMENTAL INFORMATION:	
Date:	10/04/2022
Department Name:	Department of Public Works- Board Offices
Point of Contact:	Rachel Malarich
Contributors:	1. Rachel Malarich 2. Marta Segura

BASICS:	
BACKGROUND: Discuss how your department interacts with native biodiversity. Please describe departmental operations, activities, or priorities that impact native biodiversity or touch on biodiversity issues.	*Office of Forest Management (OFM)* The Office of Forest Management (OFM) is inherently connected to biodiversity efforts as it focuses on improving the planning, care, and preservation of the City's trees through improved urban forest management and public engagement. To that end, OFM is involved with policy development, interdepartmental coordination, and public education around issues related to trees and the urban forest. This includes topics like discussion of tree planting species selection criteria across different sites, which can include native trees, when appropriate. OFM is the main contact for the City Plants program, which has been exploring opportunities to develop nursery stock of locally collected native seed for their program distributing trees for planting on private property for city residents. OFM is also involved in preservation of native trees, including things like improving interdepartmental processes for review of actions that impact those trees, overall policy improvement, etc. *Board of Public Works (Board)* The Board reviews and approves or denies permits for Protected Tree or Shrub Removal and Street Tree Removal for projects proposing to remove three or more trees. The Board supports StreetsLA's Urban Forestry Division in encouraging projects to redesign in order to reduce impacts to trees.

BASICS:	
CHALLENGES: What challenges does your department encounter when implementing biodiversity projects/goals?	In the work related to improved policy implementation and strengthened/expanded policies for tree preservation, there are limited technical staff resources within Urban Forestry Division for project review both due to the position authorities and due to the challenges to filling vacant positions that might support this work. Development of new classifications for inventory or inspection arborists, biologists, and/or other ecologically focused staff may be warranted as well, as the current classifications available are limited when it comes to plant knowledge and expertise. Policy discussions that relate to protecting biodiversity should be paired with appropriate staff resources for implementation, particularly as this has been a historic and pervasive issue (see below). - Grant programs do not fund long-term Operations and Maintenance and in the staff cuts related to the Great Recession, Urban Forestry Division was one of the last groups in the City to be brought back to pre-Recession levels. - In 2006 the Oak Tree Ordinance became the Protected Tree Ordinance and changed the policy to not only include additional species of trees, but also expanded eligible project sites. The Division was given no additional staff resources for the expanded ordinance, but went from reviewing around 7 cases a year on average to over 100. - Grant programs for tree planting frequently do not include more than 2-3 years of watering and establishment care, when staff and City partners have identified that frequently 5 years is needed to ensure establishment due to LA's long dry periods. The City could apply for more grants available at the State or Federal level if there was an ability to match those outside resources with the remaining staff resources for establishment care that are needed to make the project whole. The City also has limited resources for on-going staff development that would help support implementation of some of the City's biodiversity goals. OFM could assist with some of these areas with additional resources.

BASICS:	
BENEFITS: How does your department benefit biodiversity? Check all that apply	☑ Controlling invasive species/pests ☐ Pursuing projects that create, restore, or enhance native habitat ☐ Planting native trees or shrubs ☐ Enhancing wildlife connectivity ☑ Increasing equitable access to nature ☑ Creating policy to protect biodiversity ☐ Protecting species of conservation concern ☑ Performing public outreach on biodiversity, ecosystem services, green infrastructure ☐ Other:_____
NARRATIVE: please describe the ways in which your department benefits biodiversity in more detail.	OFM influences tree planting and biodiversity protection through policy development, limited project review (as feasible). It also is working on policies that would expand and improve tree protection, contracting issues related to native tree procurement, studies that address the issue of tree canopy equity and access to nature, and regularly engages with the public on issues related to green infrastructure.

WEB PRESENCE:	
If you have a web page devoted to biodiversity, please provide the link. If you do not, we encourage you to build a webpage that publicly showcases biodiversity efforts and lists your biodiversity-related goals for the near and long term future.	
Relevant link(s):	https://dpw.lacity.org/commissioners-boardroom/office-city-forest-management https://www.climate4la.org/resources/
Notes:	

SELF-ASSESSMENT:	
Assign a numeric and letter grade (e.g., 85%, B) with how your department is currently addressing biodiversity issues. ***Individual departments may self-select the criteria/metrics that go into their assessment** ***Future assessments will be made relative to your baseline score**	
Letter Grade:	☐ A (Excellent) ☑ B (Very Good) ☐ C (Good) ☐ D (Poor) ☐ F (Very Poor)
Numeric Grade:	85%
Grading Criteria & Narrative: *please detail the criteria/metrics used to assign a grade	Score assigned as a significant percentage of staff time within OFM is spent working directly on issues impacting tree preservation and equitable access.

HOW CAN YOUR DEPARTMENT BETTER PROTECT BIODIVERSITY?	
How can your department improve the state of biodiversity in the City? Be specific. Actions can include: • Protecting habitat, • Restoring degraded habitat, • Enhancing connectivity, • Increasing patch size, • Protecting threatened or endangered species, • Eradicating invasive species and/or pests.	The development of the Urban Forest Management Plan, which is being lead by OFM, will include: • A draft integrated pest management plan ("eradicating invasive pests") • Recommendations for tree preservation policy expansion/enhancement ("protecting habitat" and potential for "restoring degraded habitat" or "increasing patch size" or "eradicating invasive species")

HOW CAN YOUR DEPARTMENT BETTER PROTECT BIODIVERSITY?	
List practices or actions your department can take to integrate biophilic, nature-centered design into: • Capital improvement projects, • City-scale planning, or • Policy.	OFM provides limited project review that focuses on having the highest impact trees and inclusion of urban forestry best practices in design and implementation. OFM could provide training on relevant criteria to other City staff on a more broadscale basis. OFM work in the area of policy is focused on enhancing nature in our city across the landscapes of streets, parks and private property development.

BIODIVERSITY GOALS FOR FY 22-23:

List at least 5 departmental biodiversity goals for 2022-23. Goals should be SMART:

S - Strategic
M - Measurable
A - Attainable
R - Relevant
T - Time-based

***Note: next year you will be asked to report back on the progress made on each of these goals (from 0-100%)**

#	*Assigned Goal Lead*	*Goal Description*	*Metric(s) to Track Progress/Success*
#1	OCB	By the end of FY 2022-2023, explore how Office of Community Beautification grants, projects, and contracts, for example the Adopt a Median program, could incorporate biodiversity priorities, metrics, and resources	Provide one to two page report on the opportunities and feasibility of implementing biodiversity metrics in one or more OCB programs
#2	CEMO	By the end of FY 2022-2023, lead and participate in panels and virtual events addressing Biodiversity Equity, Shade Equity, and its relations to Climate. Also, participate in conversations relating to Biodiversity as it relates to Climate and Extreme Heat (as	# of meetings attended # of Panels/Events

BIODIVERSITY GOALS FOR FY 22-23:			
		instructed in CF 15-0499), in collaboration with Planning, LASAN, OFM, and other relevant divisions.	
#3	OFM & CEMO	By the end of FY 2022-2023, support City departments and non-profit partners developing and submitting grant applications that support biodiversity across the City through urban greening/urban forestry projects through facilitation of a minimum of four (4) urban forestry grants coordination meetings.	# of grant coordination meetings
#4	OFM	By the end of FY 2022-2023, ensure Urban Forest Management Plan in development protects, supports, and enhances biodiversity through inclusion of urban forestry best practices to support healthy urban trees, including an Integrated Pest Management Plan and plan for addressing equitable distribution of urban canopy and urban forest resources across the City.	UFMP outline that reflects inclusion of the listed components of urban forest best practices, IPM and equity
#5	OFM & CEMO	By the end of FY 2022-2023, support City Plants' efforts to utilize the Commonwealth Nursery in Griffith Park to grow trees for LA's urban forest, propagate native trees through locally collected seed and potentially propagate native plants for other city projects.	# of meetings attended
#6	OFM	By the end of FY 2022-2023, work with LASAN's Biodiversity team to understand current habitat patches and integrate into recommendations for potential projects that could use trees to address access to nature and critical protection from urban heat island and air quality impact in low canopied areas as well as enhance connectivity between habitat patches.	Brief report (1-2pgs) summarizing opportunities, challenges, and recommendations for utilizing trees to address tree canopy equity and connectivity of patch habitats.

BIODIVERSITY PLAN
Please describe how your department will take action to better protect biodiversity, institute biodiversity policies, and help make progress on the no-net loss of native biodiversity goal over the course of the next year (FY 22-23).
Actions to Protect Biodiversity: Continue work on UFMP development and adoption, which should include policy recommendations that will directly and positively impact biodiversity.
Policies to Institute: Continue work on UFMP development and adoption, which should include policy recommendations that will directly and positively impact biodiversity.
How Will the Above Actions and Policies Contribute to the City's No-Net Loss of Native Biodiversity Goal? The UFMP should have the following components addressed that will support the City's No-Net Loss of Native Biodiversity Goal: • Proper care and management of the city-managed trees is necessary to prevent early removal of tree resources. This includes regular inspections, structural and proactive pruning for potential hazards, as well as integrated pest management activities to identify and address current and emergent pests/diseases that could lead to premature tree loss. It also includes addressing water restrictions and drought conditions to prevent tree stress and loss. • Robust tree preservation policy is needed to protect existing native and non-native trees, that also provide habitat for native birds and insects, from damage or removal on private property. • Strategic planning and investment in new urban forest resources (i.e. planting and establishment care) should be done to use resources of space and water thoughtfully towards goals that support both human safety from extreme heat and other climate crisis related impacts, and native biodiversity.

IMPLEMENTATION:	
Describe how you plan to coordinate efforts internally to make progress on your chosen goals and your biodiversity plan.	Goal #1: Work with LASAN's Biodiversity team to review and explore opportunities to incorporate biodiversity metrics in OCB programs. Develop a brief report (1-2pgs) summarizing opportunities, identifying next steps and resources needed.

IMPLEMENTATION:	
	Goal #2: Schedule regular meetings with CEMO, OFM, and City Plants to align policy goals and coordinate priorities regarding tree canopy equity and nature-based solutions.
	Goal #3: Schedule and facilitate urban forest grant coordination meetings. Provide technical assistance, as feasible, to City grant applications, and provide coordination support, as feasible, to non-profit grant applications.
	Goal #4: Complete UFMP contracting and begin working with the consultant(s) on UFMP Scope of Work. Continue facilitating the internal UFMP Steering Committee and kick-off other engagement activities related to the project.
	Goal #5: Continue to support City Plants and engage and/or facilitate meetings, as needed, with other departments and organizations involved in the Commonwealth Nursery project.
	Goal #6: Meet with LASAN's Biodiversity Team to understand current and needed resources for habitat connectivity mapping, prioritization. Coordinate with LASAN and UFD to develop priorities and recommendations to include in a brief report regarding use of street trees to connect patch habitats while also prioritizing human health and safety in tree planting project prioritization.
	GENERAL NOTES:
Does the department have the resources and staffing needed to effectively meet these goals? Please describe gaps or resourcing needs.	OCB will need technical support. OFM will have to continue to balance these goals with other specified priorities for the Office, but has tried to include goals that address on-going work priorities and Biodiversity targets. It is highly encouraged that the "Challenges" included in this report be considered and addressed to help expedite implementation of the City's biodiversity goals.

City Forest Officer

10/11/22
Date

Director, Climate Emergency Mobilization Office

10/7/2022
Date

Executive Officer, Board of Public Works

10-12-2022
Date

ANNUAL DEPARTMENTAL BIODIVERSITY REPORTING - BOE TEMPLATE

NOTES:

- Departmental biodiversity plans will be submitted to City Council and become part of the public record.
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DEFINITION:

- NATIVE SPECIES = species that have ranges in the LA area (e.g., the LA River, Ballona Creek, Dominguez Channel, and Rio Hondo Watersheds and tributaries).

RESOURCES:

- Inspiration, Resources, and Recommendations
- Departmental Actions Outlined in the LA Biodiversity Index Baseline Report

DEPARTMENTAL INFORMATION:	
Date:	10/11/2022
Department Name:	Bureau of Engineering
Point of Contact:	Zohra Akhter, BOE Chief Sustainability Officer, and Richard Fisher, Landscape Architect
Contributors:	Deborah Weintraub, Chief Deputy City Engineer Zohra Akhter, BOE Chief Sustainability Officer Richard Fisher, Landscape Architect Jane Adrian, Landscape Architect Joshua Link, Landscape Architect Associate Sarah Bryson, Environmental Supervisor

BASICS:	
BACKGROUND: Discuss how your department interacts with native biodiversity. Please describe departmental operations, activities, or priorities that impact native biodiversity or touch on biodiversity issues.	BOE Operations & Activities: 1. LA River planning, design and construction & coordination with Army Corps of Engineers on biodiversity objectives of Corps 2. Design and construction of streets, bridges, bikeways, and other public-way infrastructure, and stormwater facilities including water bodies and streams. 3. Regulating natural watercourses through the watercourse permit process. 4. Design and construction of Municipal Facilities such as police/fire stations, offices, libraries, maintenance facilities, parks, recreation centers, pools, water quality and nature focused open space projects, etc. 5. Public Right of Way Permits: B Permits, Revocable Permits, and more. 6. Mapping & GIS services (Navigate LA) 7. BOE Survey Division 8. BOE Environmental Group (CEQA & NEPA, and Coastal Permits), and monitoring plans for species of concern or listed species 9. Sustainable Design Implementation Program: Design and construction of Leadership in Energy and Environmental Design (LEED) and Envision certified municipal facilities and infrastructure projects. BOE Policy & Priorities: 1. Increase resiliency and sustainability practices (from Strategic Plan, Goal II) 2. Implementation of BOE specific initiatives listed in Sustainable City pLAn. 3. BOE Vision Statement: *Lead the transformation of Los Angeles into the world's most livable and resilient city.* 4. BOE Mission Statement: *To serve all Angelenos by delivering innovative, sustainable, high-quality services and projects.* 5. LEED & Envision certification for new building & infrastructure projects.

BASICS:	
CHALLENGES: What challenges does your department encounter when implementing biodiversity projects/goals?	1. CIP projects often do not have adequate funding for the more extensive type of site work required for some biodiversity enhancement measures not in the original (funded) project scope. 2. Client Departments/Bureaus do not have adequate funding or staffing for more extensive or specialized practices for site maintenance work required for biodiversity enhancement measures. Also, biodiversity efforts may suffer due to staff's general lack of understanding or familiarity with the issue. Long term maintenance has a very large impact on project success for landscaped areas. 3. Implementation of plans/specifications regarding biodiversity goals during project construction may not be strictly enforced due to other priorities (schedule, funding), and lack of understanding or familiarity with the issue. 4. Potential conflicts with the requirements and priorities of regulatory/permitting agencies or other City departments. 5. Building and maintaining biodiverse (native plant) landscapes in dense urban environment presents unique design challenges – these landscapes can be short-lived and expensive to maintain/repair/replace due to pets (dog urine), theft & vandalism, adjacent land uses, homelessness, etc. Many native species are less well adapted to urban landscape conditions. 6. Preconceptions of what "appropriate" landscapes (especially in more urban settings) should look and feel like can present a challenge to the adoption of more biodiverse landscape styles and appearances. 7. Construction projects can introduce or facilitate the spread of invasive/exotic weed species if not carefully monitored and managed. Imported soils and large construction equipment can be a source of invasive species introduction through seed contamination. 8. New construction projects can negatively impact soils during construction due to compaction and contamination, some of which is required by Building Code, and some due to other construction activities such as vehicle traffic, parking, and material storage. All of these can

BASICS:	
	compromise both existing vegetation and future planting success. 9. Import of new soil fill during construction must be done with careful analysis of the ***agronomic impacts*** to new & existing vegetation. This consideration is sometimes compromised to accommodate engineering requirements, project schedule, budget, etc.
BENEFITS: How does your department benefit biodiversity? Check all that apply	✓ Controlling invasive species/pests
	✓ Pursuing projects that create, restore, or enhance native habitat
	✓ Planting native trees or shrubs
	✓ Enhancing wildlife connectivity
	✓ Increasing equitable access to nature
	✓ Creating policy to protect biodiversity
	✓ Protecting species of conservation concern
	✓ Performing public outreach on biodiversity, ecosystem services, green infrastructure

BASICS:	
NARRATIVE: please describe the ways in which your department benefits biodiversity in more detail.	The Bureau of Engineering's (BOE) staff and consultant Engineers, Architects and Landscape Architects are the primary designers and permit reviewers of the City's new roads & bridges, stormwater and sewer infrastructure, maintenance facilities and office buildings, parks and recreation facilities, and Los Angeles River revitalization efforts. The BOE has a long-standing commitment to sustainable and resilient design, and to protecting, creating, and enhancing native biodiversity within these projects is an important element. Through the planning, design, and construction of municipal projects, the BOE performs public outreach and education on biodiversity, ecosystem services, green infrastructure, and the need to increase equitable access to nature. Our projects provide great opportunities to create, restore, or enhance native habitat and provide wildlife connectivity. Through review and permitting of impacts to watercourses on private lands, BOE has the opportunity to facilitate the protection and enhancement of native biodiversity and connectivity related to natural watercourses. BOE can develop specifications for both the management and control of invasive species and reduce the harm to native pollinators and beneficial insects from pesticide use during construction.

WEB PRESENCE:	
If you have a web page devoted to biodiversity, please provide the link. If you do not, we encourage you to build a webpage that publicly showcases biodiversity efforts and lists your biodiversity-related goals for the near- and long-term future.	
Relevant link(s):	No
Notes:	After finalization of BOE's Biodiversity Plan it will be posted on the BOE website.

SELF-ASSESSMENT:		
Assign a numeric and letter grade (e.g., 85%, B) with how your department is currently addressing biodiversity issues. ***Individual departments may self-select the criteria/metrics that go into their assessment** ***Future assessments will be made relative to your baseline score**		
Letter Grade:		A (Excellent) = 5
		B (Very Good) = 4
		C (Good) = 3
		D (Poor) = 2
		F (Very Poor) = 1
Numeric Grade: (1-5)	4	
Grading Criteria & Narrative: *Please detail the criteria or metrics used to assign a grade	Based on the metric and evaluation sections in the Baseline Index Report (sections listed below) we have identified those which BOE has a direct or tangential nexus. Among those, the question is re-framed to include projects that BOE has done in approximately last 15 years, and where current Policies and Goals apply. Clearly, some of these metrics do not easily apply to BOE or are a product of things outside of BOE's control (shown in gray). For metrics that do apply, they have been given a weighting for the broader relevance to our work, and a rating of BOE's past work within that metric. Metrics determined to be non-applicable were not considered in the rating. **<u>1.1 Habitat Quality: Estimates the value of all landscapes, including urban and natural areas, in the City as habitat for native species</u>** 1.1A % OF NATURAL AREAS - NA 1.1B HABITAT QUALITY OF URBAN LANDSCAPES AND OPEN SPACE Within BOE's design and construction of urban landscapes on municipally owned building sites/parks or the Los Angeles	

SELF-ASSESSMENT:	
	River, locally native plants have been featured where appropriate or required. Rating: 4 1.1C HABITAT QUALITY OF STREAMS BOE has completed several projects that involved areas where urban "streams" have been daylit and major urban water bodies have been restored with the correlating enhancement to habitat quality. The involvement with the Los Angeles Revitalization Master Plan and related projects has many future opportunities in this area. Rating: 4 1.1D CONNECTIVITY OF NATURAL AREAS - NA 1.1E CONNECTIVITY OF URBAN LANDSCAPES & OPEN SPACE BOE designs & constructs Los Angeles River and adjacent projects and works on other project sites that provide the opportunity to protect and enhance existing linkages or provide the foundation for future linkages. Rating: 4 1.1F CONNECTIVITY OF STREAMS AND RIPARIAN AREAS Major: As a part of the Los Angeles Revitalization Master Plan and related projects, this is a key focus for BOE. Also, the BOE's review and permitting of watercourse alterations presents another opportunity for protecting native biodiversity and connectivity. Rating: 5 **1.2 Indicator Species: Assesses presence and distribution of species that are indicators of broader biodiversity.** 1.2A % OPEN SPACE WITH CHARISMATIC UMBRELLA SPECIES - NA 1.2B NATIVE SPECIES PRESENCE IN URBAN AREAS Similar to 1.1B: Within BOE's design and construction of urban landscapes on municipally owned building sites/parks, urban water bodies or the Los Angeles River, locally native plants have been frequently featured where appropriate or required. Rating: 4 1.2C SPECIES OF CONSERVATION CONCERN GAINED OR LOST - NA **1.3 Threats to Native Biodiversity: Assesses human-caused threats to native biodiversity from land use and invasive species.**

SELF-ASSESSMENT:	
	1.3A URBAN EDGE EFFECTS ON NATURAL AREAS Within the small subset of municipal projects located in urban-interface areas, CEQA requirements and our own emphasis on resilient and sustainable design have always been applied. Rating: 4 1.3B PRESENCE & SPREAD OF INVASIVE PLANTS This is an area we recently identified in-house where we can make changes to our General Requirements and Specifications to improve on this issue during construction. Rating: 3 1.3C WILDFIRE FREQUENCY - NA **2.1 Access to Biodiversity: Assesses equity of access to nature, biodiversity, and landscapes.** 2.1A ACCESS TO NATURAL AREAS Within BOE's work on the LA River bikeway trails, equestrian trailheads, and other trails projects we have made large contributions in this area. Rating: 5 2.1B NEIGHBORHOOD LANDSCAPE / TREE CANOPY FOOTPRINT Many of our project sites are in neighborhoods or adjacent areas, and BOE has had a continuing emphasis on tree planting and maintaining or enhancing the total tree canopy. Rating: 5 **2.2 Education: Evaluates educational programs and access to nature, biodiversity, and vegetated space on school campuses** 2.2A SCHOOL (K-12) BIODIVERSITY TOPICS - NA 2.2B OFF-CAMPUS BIODIVERSITY EDUCATIONAL VISITS - NA 2.2C CAMPUS NATURE EDUCATION GARDENS Considering park and municipal facility sites to fall within this general area, many BOE projects have featured educational elements such as interpretive signage, and "outdoor classroom" areas. Rating: 5 **2.3 Community Action: Evaluates biodiversity stewardship and engagement activities by members of the public.** 2.3A COMMUNITY SCIENTIST ACTIVITIES AND APP UTILIZATION - NA

SELF-ASSESSMENT:	
	2.3B # CERTIFIED BIODIVERSITY-FRIENDLY AREAS This is an area that has not had an emphasis in the past but represents great opportunities for future projects. Rating: 2 **<u>3.1 Governance: Evaluates City governance structure and policies.</u>** 3.1A BIODIVERSITY VISION/ACTION PLAN BOE does have long-standing goals and policies regarding sustainable design and resiliency, which are close allies to Native Biodiversity. There is no specific policy regarding Native Biodiversity that has been adopted thus far. Rating: 3 3.1B % DEPARTMENTS WITH A BIODIVERSITY PROGRAM OR POLICY - NA **<u>3.2 Management: Evaluates City management activities emphasizing on-the-ground stewardship.</u>** 3.2A % PROTECTED NATURAL AREAS - NA 3.2B PROTECTED NATURAL AREAS MANAGEMENT AND MONITORING Where municipal projects interface with important natural areas on City-owned lands, in review and regulation of watercourse development, and in coordination with CEQA, NEPA and other Agency requirements such as California Fish and Wildlife as well as with our own internal design sensitivities and construction monitoring standards, we have done an outstanding job in this area. Rating: 5 3.2C MANAGEMENT OF INVASIVE SPECIES & PESTS One area we recently identified in-house where we can make improvements to our General Requirements and Specifications for improving on this during construction. Past projects: 3 3.2D MANAGEMENT OF SPECIES OF CONSERVATION CONCERN Similar to 3.2B above; some of our construction sites may include or have adjacency to species of concern. With CEQA, NEPA and Fish and Wildlife regulations, we do an excellent job addressing this. We also design for future habitats for species of concern such as including bat boxes in new bridges. This is an area where BOE has done well. Rating: 5

HOW CAN YOUR DEPARTMENT BETTER PROTECT BIODIVERSITY?	
How can your department improve the state of native biodiversity in the City? Be specific. Actions can include: ● Protecting habitat, ● Restoring degraded habitat, ● Enhancing connectivity, ● Increasing patch size, ● Protecting threatened or endangered species, ● Eradicating invasive species and/or pests.	1. By identifying and protecting existing native biodiversity resources and linkages within project work sites in the early stages of work. Including: a. Existing native (and protected) or other high-value climate adapted/mature tree species used by birds & insects, and other animals. b. Existing or remnant native habitat patches, including high quality areas to be protected, and degraded areas needing restoration or enhancement. c. Existing and potential future habitat linkages within project sites and enhancing and avoiding impacts to those areas. d. Seasonal bird migration corridors, such as the LA River channel bottom, other urban water bodies, and other wetlands areas. 2. Creating, restoring and/or enhancing native habitat areas and linkages to the greatest extent practical on City-owned or managed sites through careful site planning and landscape design, and construction practices; with a focus on planting and protecting locally native species where appropriate, to support local fauna, native pollinators, and migratory bird & butterfly species. 3. Investigate the current process and underlying ordinance language for the review and permitting of watercourse development and alteration, with the goal of better preserving existing native biodiversity and preventing the loss of surface streams, and identifying opportunities for enhancement and connectivity within existing watercourses. 4. Developing and adopting “bird-safe” building design measures to reduce harm to migratory birds for public buildings. 5. Identifying and eradicating invasive plants and pest species within public project work sites. 6. Eliminating the use of Neonicotinoids and other pesticides that adversely impact native bees and other critical pollinators. 7. Providing maintenance and management guidelines to client Departments or Bureaus to help guarantee the long-term success of biodiversity elements included in new

HOW CAN YOUR DEPARTMENT BETTER PROTECT BIODIVERSITY?	
	construction projects.

List practices or actions your department can take to integrate biophilic, nature-centered design into: ● Capital improvement projects, ● City-scale planning, or ● Policy.	1. Incorporate specific native biodiversity goals into the current BOE strategic plan (within Section II: Sustainability & Resilient design). 2. Include budgeting for native biodiversity elements in future projects where appropriate. 3. Include native Biodiversity elements in the BOE Project Delivery Manual to Improve understanding of native biodiversity project elements and concerns. 4. Protecting native biodiversity by identifying, locating, and documenting existing native trees/plants and habitat patches located within a project site during pre-design/investigatory and/or CEQA phases of work. 5. Review the BOE's Watercourse Permit process and the underlying ordinance language and other factors to investigate opportunities to preserve and enhance existing native biodiversity within regulated watercourses. 6. Create a BOE Standard in General Requirements for invasive plant management on work site during construction, and cross reference item in Clearing & Grubbing Specifications. 7. Create a BOE standard in General Requirements limiting the use of insecticides (Neonicotinoids and others) on City construction projects that adversely impact native bees and other critical pollinators. 8. Create native biodiversity design guidelines & review checklist for City staff and consultants to use in evaluating opportunities and implementing native biodiversity design goals on public projects. 9. Track newly created or enhanced existing native biodiversity/habitat area for BOE projects. 10. Certify public landscapes via NWF, the Surfrider Foundation, Audubon programs or other appropriate certifications. 11. Create a maintenance/management guide for client agencies to better train, resource, and equip City staff who manage landscapes to improve post-construction success of biodiversity planting elements and to identify, monitor, and manage invasive species. 12. Explore the possibility of creating a tool to integrate a parcel-specific list of recommended locally native plants for landscaping to NavigateLA. (This resource exists in "Calscape" website Advanced Search feature:

	https://calscape.org/search.php, where you can search by home address or zip code, etc.). 13. Identify areas of cooperation or coordination needed with other City Departments of Bureaus to enhance native biodiversity efforts.

BIODIVERSITY GOALS FOR FY 22-23:			
List at least 5 departmental biodiversity goals for 2022-23. Goals should be SMART: **S -** Strategic **M -** Measurable **A -** Attainable **R -** Relevant **T -** Time-based ***Note: next year you will be asked to report back on the progress made on each of these goals (from 0-100%)**			
#	*Assigned Goal Lead*	*Goal Description*	*Metric(s) to Track Progress/Success*
#1	Strategic Plan Committee	Incorporate Biodiversity goals into current BOE Strategic Plan, and prepare web page for communicating BOE's native biodiversity efforts	% Completion, Y/N
#2	ARC/LA's	Create a BOE Standard in General Requirements and specifications for invasive plant management and elimination of harmful pesticides on work sites during construction.	% Completion, Y/N
#3	ARC/LA's	Create a Biodiversity Guideline/Checklist for all new projects to help identify, quantify, and track biodiversity opportunities and project components during the planning, design & construction process.	SF of native biodiversity created, protected or enhanced, by project/per year.
#4	NavigateLA/GIS	Within NavigateLA, add a link to the Calscape website that will provide property owners with an automatically generated list of locally native plants appropriate for their address, ZIP code, etc.	% Completion, Y/N
#5	ARC/LA's	Create a template for maintenance & management guidelines for client agencies to educate staff and improve post-construction success of biodiversity project elements.	% Completion, Y/N

BIODIVERSITY GOALS FOR FY 22-23:			
#6	Permit Case Management Division	Review the BOE's Watercourse Permit process and the underlying ordinance language and other factors to investigate opportunities to preserve and enhance existing native biodiversity within regulated watercourses, and creating a plan of action listing the steps required to achieve this goal within the City's regulatory framework.	% Completion, Y/N

BIODIVERSITY PLAN

Please describe how your department will take action to better protect biodiversity, institute biodiversity policies, and help make progress on the no-net loss of native biodiversity goal over the course of the next year (FY 22-23).

Actions to Protect Biodiversity:

1. Identifying, locating and documenting existing site biodiversity resources such as native trees and shrubs, existing or remnant habitat patches, and existing or potential habitat connectivity linkages within a project site during the pre-design/investigatory and/or CEQA phases of work to ensure these elements can be protected and enhanced by incorporation into the design program and project scope/budget from the earliest stages. Invasive species can be identified for removal.
2. Review the BOE's Watercourse Permit process and the underlying ordinance language and other factors to investigate opportunities to preserve and enhance existing native biodiversity within regulated watercourses.
3. Creating a native Biodiversity Guidelines & Checklist for all new projects to help identify, quantify, and track biodiversity opportunities and project components during the planning, design & construction process.
4. Adopting General Requirements section for invasive plant management during construction and a corresponding reference in BOE Standard Specifications for Clearing & Grubbing.
5. Adopting General Requirements section for limiting the use of insecticides (Neonicotinoids and others) on City construction projects that adversely impact native bees and other critical native pollinators and beneficial insects.
6. Create a template for maintenance/management guidelines for client agencies to educate staff and improve post-construction success of biodiversity project elements.
7. Facilitate public access to information on native biodiversity for individual parcels within the City via a link inside NavigateLA to *Calscape*.

BIODIVERSITY PLAN
Policies to Institute: 1. Incorporate protecting and enhancing native biodiversity into the BOE Strategic Plan. 2. Add a section or sub-section on Biodiversity goals and project elements in the BOE Project Delivery Manual.
How Will the Above Actions and Policies Contribute to the City's No-Net Loss of Native Biodiversity Goal? BOE's proposed actions and policies will contribute to the No-Net-Loss of Native Biodiversity Goal by: 1. Increasing community awareness of native biodiversity and access to nature/natural landscapes through public project meetings. Also, by adding a link within NavigateLA to the *Calscape* website, we will provide landowners with a location-based list of locally native species appropriate to that site for use as a reference in landscaping and land management activities. 2. Placing an emphasis on protecting and enhancing native biodiversity during the planning, design, and construction of municipal projects. 3. Protecting native biodiversity and managing invasive species during construction of municipal facilities and decreasing the use of pesticides that harm native pollinators and other beneficial insects on municipal projects.

IMPLEMENTATION:	
Describe how you plan to coordinate efforts internally to make progress on your chosen goals and your biodiversity plan.	Goal #1: The BOE Chief Sustainability Officer with assistance from the BOE subject matter expert will be the primary point of contact and coordinator of implementing the Biodiversity Plan, with assistance from designated staff with technical expertise in this area.
	Goal #2: The Chief Sustainability Officer with assistance from the BOE subject matter expert will work with the Executive Team and Division Managers to finalize lead staff members and/or teams/groups responsible for each Biodiversity goal to ensure there is adequate staffing to accomplish each goal.
	Goal #3: The Chief Sustainability Officer with assistance from the BOE subject matter expert will coordinate monthly with designated lead for each biodiversity goal to discuss schedule & progress, and facilitate any issues or coordination needs that arise.

IMPLEMENTATION:	
	Goal #4: The Chief Sustainability Officer and the BOE subject matter expert will work with the BOE Mapping Division to add a link within NavigateLA to the Calscape website that will provide property owners with an automatically generated list of locally native plants appropriate for their address.
	Goal #5: The Chief Sustainability Officer and the BOE subject matter expert to create a template for maintenance & management guidelines for client agencies to educate staff and improve post-construction success of biodiversity project elements. Goal #6: The Chief Sustainability Officer and the BOE subject matter expert will review the BOE's Watercourse Permit process and the underlying ordinance language and other factors to investigate opportunities to preserve and enhance existing native biodiversity within regulated watercourses and create a plan of action listing the steps required to achieve this goal within the City's regulatory framework.
	GENERAL NOTES:
Does the department have the resources and staffing needed to effectively meet these goals? Please describe gaps or resourcing needs.	No. The Architectural Division's Landscape Architecture Group is already struggling to meet the current BOE project demands with staffing of 7 Landscape Architects and Landscape Associates. The Landscape Group's knowledge base & experience will be needed to make many of the contributions to the BOE biodiversity effort both initially to create & develop many of the elements listed above, as well as assisting with the implementation & monitoring for the longer term. Additional Landscape group staffing will be required.

Akhter

Signature of Dept. Chief Sustainability Officer — 10 / 11/ 2022 — Date

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CITY OF LOS ANGELES

Signature of General Manager — 10/12/22 — Date

CITY OF LOS ANGELES
ANNUAL DEPARTMENTAL BIODIVERSITY REPORTING
DEPARTMENT OF CITY PLANNING

NOTES:

- Departmental biodiversity plans will be submitted to City Council and become part of the public record.
- Departmental biodiversity plans should be innovative and aspirational to help the City achieve the no-net loss goal of native biodiversity. While these plans should be put forth in good faith as public commitments to protect and enhance biodiversity, it is recognized that progress on stated goals may be subject to future budget decisions, policy direction, or other factors.

DEFINITION:

- NATIVE SPECIES: species that have ranges in the LA area (e.g., the LA River, Ballona Creek, Dominguez Channel, and Rio Hondo Watersheds and tributaries).
- CEQA: the California Environmental Quality Act
- CESA: the California Endangered Species Act
- CDFW: the California Department of Fish and Wildlife

RESOURCES:

- Inspiration, Resources, and Recommendations
- Departmental Actions Outlined in the LA Biodiversity Index Baseline Report

DEPARTMENTAL INFORMATION:	
Date:	**OCTOBER 3, 2022**
Department Name:	**DEPARTMENT OF CITY PLANNING**
Points of Contact:	Shana Bonstin, Chief Sustainability Officer (shana.bonstin@lacity.org) Kat Superfisky, Urban Ecologist (kat.superfisky@lacity.org)
Contributors: *(in alphabetical order)*	• Vince Bertoni • Shana Bonstin • Gabriela Juarez • Diana Kitching • Nick Maricich • Conni Pallini-Tipton • Courtney Shum • Kat Superfisky • Lisa Webber • Arthi Varma

BASICS:	
BACKGROUND: *Discuss how your department interacts with native biodiversity. Please describe departmental operations, activities, or priorities that impact native biodiversity or touch on biodiversity issues.*	**The Department of City Planning (DCP) creates and helps implement plans and policies for the City of LA.** • The City's main policy document guiding development is the **General Plan**, which includes sections that relate to biodiversity, including the Framework, Open Space, Conservation and Land Use Elements (including 35 Community Plan areas). ○ **Community Plan Updates** - several Community Plan updates are occurring concurrently. The Southwest Valley Community Plans Update project area includes portions of the Santa Monica Mountain range, which runs along the southern boundary of the communities of Encino, Tarzana, and Woodland Hills. The Southeast Valley Community Plans Update project area includes portions of the Santa Monica Mountain Range, which runs along the southern boundary of the communities of Sherman Oaks, Studio City, and Cahuenga Pass. The goals and policies of both the Southwest and Southeast Valley Community Plans would encourage a balanced approach between allowing for appropriate scale and development in the hillsides and the conservation of valuable natural resources to protect the local ecosystem and encourage biodiversity. • **Conservation Focused Ordinances:** Multiple regulations were adopted over the past decades to address conservation of natural resources in the city: 1) the 1986 ***Landform Grading Manual*** to address grading and density in the hillsides; 2) the 1992 ***Hillside Regulations Ordinance*** to address substandard streets, parking, and fire safety in hillside neighborhoods; 3) the 2011 ***Baseline Hillside Ordinance***, updated in 2017, limiting height, footprint, grading, and Residential Floor Area to address out-of-scale development of single-family dwellings in hillside neighborhoods; 4) the ***Protected Trees and Shrubs Ordinance (PTO)***, first adopted in 1980, updated in 2006, and again in 2021 to not only limit removals of Oak trees and other native trees but also add two shrubs on the list of protected species; 5) the 2017 ***Hillside Construction Regulation (HCR) District*** imposing more restrictive grading limits and

BASICS:	

	hauling standards for certain hillside areas; and the ***Mulholland Scenic Parkway Specific Plan*** adopted by ordinance in 1992 and covering more than 26 miles of corridor. Additionally, a new ordinance that specifically addresses biodiversity is currently being proposed in the Santa Monica Mountains (the Wildlife Ordinance), with future plans to expand to the city's remaining hillside areas.
	
	• **Procedural Improvements:** The manner in which projects are reviewed for compliance with regulations has been a focus of improvements in recent years. Significant attention has been made to improve the application of CEQA law to project review and to coordinate project review among responsible City departments (i.e., Department of Building and Safety, Bureau of Engineering, and Streets LA). Recent environmental and project review process enhancements are described below:
	  ○ **CEQA Process Enhancements -** In 2018, DCP created the Environmental Policy Unit (EPU) to provide guidance and consistency to its staff on how to comply with evolving environmental rules, laws, and regulations. In 2019, DCP updated the Department's CEQA Thresholds to align with the State's revised Appendix G environmental checklist, including the revised Biological Resources thresholds. As the department's environmental clearinghouse, EPU provides DCP staff with training and developing updated procedures and guidance, including forms, templates, and maps for staff to use when conducting project review. Specifically, to address biological resources, EPU developed a number of resources for staff and applicants, including a Tree Disclosure Statement, a Tree Report template, instructions for applicants conducting biological analysis, and minimum criteria for biological assessments. EPU also actively assists staff in reviewing such submitted reports. Together, these enhancements ensure the proper analysis of biological resources and the application of appropriate project based mitigation measures.
	  ○ **Project Review Process Enhancements -** In addition to the CEQA process enhancements described above, DCP has also engaged with the

BASICS:	
	StreetsLA Urban Forestry Division (UFD), BOE, and the City Forest Officer, to improve entitlement case processes with particular emphasis on the protection and retention of native and protected trees as well as trees within the public-right-of-way. Additionally, DCP has developed a habitat suitability map focused on the Santa Monica Mountains and adjoining Coastal Area. This mapping was initiated in response to a petition to list the mountain lion as a candidate species under the CESA. Data is not available that identifies the precise location of mountain lions or their habitat, however the data that is available has been compiled by staff and collected into a GIS program that enables the scoring of the parcels according to criteria indicating how likely or suitable a site is to contain habitat for mountain lions. The intention is to expand the map to include every parcel within the entire City to screen the potential suitability of habitat for listed species and other biological resources. This mapping would identify potential habitat areas generally for protected species, as well as candidate, sensitive, or species of special status as determined by state or federal agencies. The result of this mapping would be a "screening tool" for parcels, identifying additional biological review needed and potential CEQA analysis for parcels meeting criteria for habitat suitability. • **Other Relevant Efforts/Work Programs** As part of the Healthy Buildings, Healthy Places Program, which kicked off in 2021, DCP will update the City's Landscape Ordinance with best practices to address pressing climate needs and social factors, building upon the Plan for a Healthy Los Angeles and existing Citywide Design Guidelines in effect today. The update of the City's current Landscape Ordinance—last revised in 2005—affords an opportunity to take a more holistic approach to site design, climate resilience, and healthy building design best practices.

BASICS:	
CHALLENGES: *What challenges does your department encounter when implementing biodiversity projects/goals?*	• Limited staff and resources - there is a need for more environmental/ecological/biological "specialists" who understand and can assist with biodiversity efforts within DCP. • "Biodiversity" is a newer term (although "plant diversity" and other terms have been referenced in City policies and plans for decades), and is also a newer priority for the City, so it is not yet a well-defined topic or work program within DCP. There is also a lack of a deep or similar understanding of what "biodiversity" means to people, including DCP staff. • Regulations that support biodiversity and control impacts often restrict development or are perceived as limiting building rights; this can be a very contentious localized debate if a broader advocacy and values discussion is not supported. • DCP is responsible for balancing a number of different goals, and sometimes competing needs. For example,it is challenging to balance the need for housing development with preserving and protecting land and biodiversity (including street trees, open space on properties). Other development safety rules are in conflict with approaches to preservation and low impact construction, such as utility access regulations and even "brush clearance" protocols conflict with biological resource protection policies. • There is a lack of localized mitigation banking land to replant required plant species as part of mitigation measures.
BENEFITS: *How does your department benefit biodiversity? (Check all that apply)*	☐ Controlling invasive species/pests ☐ Pursuing projects that create, restore, or enhance native habitat ☑ Planting native trees or shrubs ☑ Enhancing wildlife connectivity ☑ Increasing equitable access to nature ☑ Creating policy to protect biodiversity ☑ Protecting species of conservation concern ☑ Performing public outreach on biodiversity, ecosystem services, green infrastructure ☑ Other: Identifying and mapping biological resources

BASICS:	
NARRATIVE: *Describe the ways in which your department benefits biodiversity in more detail.*	Please reference the response provided above under the BASICS>BACKGROUND>"Discuss how your department interacts with native biodiversity" section.

WEB PRESENCE:	
If you have a web page devoted to biodiversity, please provide the link. If you do not, we encourage you to build a webpage that publicly showcases biodiversity efforts and lists your biodiversity-related goals for the near and long term future.	
Relevant link(s):	• General Plan Overview • Wildlife Pilot Study and Wildlife Ordinance • Sustainability Initiatives - LA River Planning, Urban Agriculture Incentive Zone, Venice Local Coastal Program, Wildlife Pilot Study • Tree Disclosure Statement • Tree Report Template • Urban Design Studio • Urban Forestry Referral - Pilot Program
Notes:	The Department of City Planning does not currently have one single web page devoted to biodiversity, but rather, has multiple web pages for various work programs that address such a topic (listed above).

SELF-ASSESSMENT:	
Assign a numeric and letter grade (e.g., 85%, B) with how your department is currently addressing biodiversity issues. ***Individual departments may self-select the criteria/metrics that go into their assessment** ***Future assessments will be made relative to your baseline score**	
Letter Grade:	☐ A (Excellent) ☑ B (Very Good) ☑ C (Good) ☐ D (Poor) ☐ F (Very Poor)
Numeric Grade:	75-80%

SELF-ASSESSMENT:	
Grading Criteria & Narrative: *please detail the criteria/metrics used to assign a grade	**RUBRIC:** • **A (90-100%)** - Indicates "Excellent" • **B (80-89%)** - Indicates "Very Good" • **C (70-79%)** - Indicates "Good" • **D (60-69%)** - Indicates "Poor" • **F (0-59%)** - Indicates "Very Poor" **GRADING CRITERIA/METRICS:** • Number of overall staff working on biodiversity efforts. • Number of "specialists" on staff within the department (e.g. Environmental Specialists/Supervisors, Biologists, Ecologists, etc.). • Number of plans and policies that address biodiversity. • Number/type/effectiveness of internal processes and procedures that relate to biodiversity. • Number of forms, templates, and guidance documents prepared or revised that address biodiversity. • Number of training sessions provided to staff on biodiversity and biological resources. • Number of internal and external communications focused on biodiversity awareness and education (e.g. website, social media posts, newsletter articles, etc.). **NARRATIVE:** • DCP has a plethora of plans and policies that relate to biodiversity, and is actively working towards expanding regulatory mechanisms. • DCP has also worked diligently to improve the internal processes and procedures related to the review of biological resources and the potential impact that proposed development projects have on them, helping to ensure that DCP is curtailing the decline of biodiversity due to development as much as possible. • Current efforts to address biodiversity within DCP are concentrated within a few divisions/units, and are being spearheaded by a relatively small number of staff compared to the overall department, rather than being spread equally across all parts of the department and all staff. The "grade" associated with these divisions would be a "A-/B+" for their efforts, whereas the other divisions that are not addressing biodiversity as much have more room for improvement (receiving a "C-" grade), which together brings DCP's overall baseline grade for biodiversity to be a "B-/C+".

HOW CAN YOUR DEPARTMENT BETTER PROTECT BIODIVERSITY?	
How can your department improve the state of biodiversity in the City? Be specific. Actions can include: • *Protecting habitat,* • *Restoring degraded habitat,* • *Enhancing connectivity,* • *Increasing patch size,* • *Protecting threatened or endangered species,* • *Eradicating invasive species and/or pests.*	• Enhancing wildlife connectivity through the City of LA via the creation, adoption and implementation of land use regulations that aim to maintain and enhance wildlife habitat and movement. • Protecting habitat by mapping habitat resources and requiring habitat impact and integrity analysis for proposed development projects through a variety of required biological assessments and reporting standards. • Protecting rare, threatened, endangered, candidate, and locally protected species by improving mapping that identifies areas of probable habitat and triggers additional biological review. • Mitigating potential impacts on biological resources through standardized review, including CEQA and biodiversity purposes. • Continuing and increasing coordination with other departments and agencies, such as CDFW.
List practices or actions your department can take to integrate <u>biophilic, nature-centered design</u> into: • *Capital improvement projects,* • *City-scale planning, or* • *Policy.*	• Create a localized, City of LA mitigation bank. • Create a dedicated Environmental Review Team within DCP composed of planners and environmental specialists (such as biologists and/or ecologists) that are focused on reviewing projects for compliance with regulations and potential impact on resources. • Create a pre-approved list of Qualified Biologists by either referencing LA County's existing list or creating a specific City of LA list.

BIODIVERSITY GOALS FOR FY 22-23:

List at least 5 departmental biodiversity goals for 2022-23. Goals should be SMART:

S - Strategic
M - Measurable
A - Attainable
R - Relevant
T - Time-based

***Note: next year you will be asked to report back on the progress made on each of these goals (from 0-100%)**

NOTE: ARCHIVE OF ADDITIONAL (non-selected) GOALS REFERENCED HERE

#	*Assigned Goal Lead*	*Goal Description*	*Metric(s) to Track Progress/Success*
1	Citywide Policy	**Policy Development -** Pilot land use regulations that aim to address wildlife habitat and connectivity (via the Wildlife Ordinance); begin efforts to scope the expansion of the regulations to other ecologically-sensitive areas within the City of LA [such as the other Protection Areas for Wildlife (PAWs)].	• Presenting the proposed Wildlife Ordinance to the City Planning Commission (CPC) for consideration of adoption.
2	Citywide Policy - Environmental Policy Unit (EPU)	**DCP Administrative Procedures/Process Standardization and Streamlining, including:** • Institute procedures for identifying projects needing biological assessment and at what level, such as the completion and implementation of a Citywide Habitat Screening Map. • Finalize Biological Assessment templates and reporting standards, develop associated staff training materials (e.g. ZI) and conduct ongoing staff training sessions. • Update the Biological Resources CEQA Thresholds.	• Completion of four (4) Biological Resources Assessment Templates and standards. • Creation of a repository of biological assessments received. • Creation of four (4) training materials. • Conduct four (4) staff training sessions. • Updated Biological Resources CEQA Thresholds.
3	External Affairs (EA)	**Public Outreach and Engagement -** Create a web page that synthesizes and highlights the sustainability and biodiversity work being done within DCP to provide one landing page/comprehensive overview of departmental	• Web page creation.

BIODIVERSITY GOALS FOR FY 22-23:			
		efforts (with "cross pollination" links to other City department biodiversity efforts).	
4	External Affairs (EA)	**Public Outreach and Engagement -** Increase public awareness through education campaigns that communicate/promote the importance of biodiversity in the City of LA and the DCP's efforts to address biodiversity, potentially including: educational materials and low-cost resources for the public on how to comply with DCP's guidelines, plans and policies related to biodiversity.	• Number of social media posts (on Facebook, Instagram, LinkedIn,Twitter), newsletter stories, Channel 35 video clips, news articles, press, etc.
5	Director, Executive Team, External Affairs (EA); PMU	**DCP Staff Engagement -** Provide advanced training and educational opportunities to increase staff participation in efforts to engage with biodiversity in LA (via the City Nature Challenge and/or LASAN Bioblitz Challenge).	• Number of staff participants in biodiversity events and activities, such as the City Nature Challenge, and LASAN Bioblitz Challenge.

BIODIVERSITY PLAN

Please describe how your department will take action to better protect biodiversity, institute biodiversity policies, and help make progress on the no-net loss of native biodiversity goal over the course of the next year (FY 22-23).

Actions to Protect Biodiversity:

- Develop, adopt and implement plans and policies that address biodiversity (see list below).
- Review proposed development projects for potential impact on biodiversity by using the following procedural resources:
  - Citywide Habitat Screening Map and associated Biological Assessments, and
  - Tree Reports and Tree Disclosure Statements.
- Develop and adopt standard Environmental Protection Measures.
- Create a repository of Biological Assessments received.
- Conduct an annual biodiversity "training" for DCP staff.

Policies to Institute:

- Wildlife Ordinance and expansion to other proposed Protection Areas for Wildlife (PAWs)
- HCR Supplemental District expansion.
- Create a pre-approved list of Qualified Biologists by either referencing LA County's list.

BIODIVERSITY PLAN
How Will the Above Actions and Policies Contribute to the City's No-Net Loss of Native Biodiversity Goal? The actions and policies outlined above will contribute to the City's "No-Net Loss of Native Biodiversity" goal by: • Raising awareness of, knowledge about, engagement with biodiversity among DCP staff. • Protecting resources that provide wildlife habitat and connectivity opportunities, such as waterways and open spaces, and limiting disturbance to soils, waterways, vegetation, and habitat areas. • Preserving access to habitat and facilitating wildlife movement by minimizing obstacles and maintaining unobstructed space between properties. • Minimizing the disturbance to and alteration of areas that provide wildlife habitat and connectivity (including natural landform/topography alteration) via land use regulations related to grading, lot coverage, etc., which will also reduce surface erosion, soil instability, and landslides and help retain existing vegetation (in the Wildlife District, via the Wildlife Ordinance). • Maintaining habitat, managing stormwater and sequestering carbon by retaining Native and Significant Trees, and by incorporating native vegetation that supports wildlife (in the Wildlife District, via the Wildlife Ordinance). • Minimizing the indirect impacts to wildlife created by outdoor lighting, such as disorientation of nocturnal species and the disruption of mating, feeding, migrating, and the predator-prey balance (in the Wildlife District, via the Wildlife Ordinance). • Improving avian safety and reducing avian injuries and death by restricting reflective and transparent windows (in the Wildlife District, via the Wildlife Ordinance). • Minimizing occurrences of human-wildlife interaction by restricting unenclosed trash areas (in the Wildlife District, via the Wildlife Ordinance).

IMPLEMENTATION:	
Describe how you plan to coordinate efforts internally to make progress on your chosen goals and your biodiversity plan.	Goal #1: The Citywide Policy wildlife team will lead on developing a draft Wildlife Ordinance and presenting it to the City Planning Commission (CPC) for consideration of adoption.
	Goal #2: The Environmental Policy Unit (EPU) will take the lead on: • Instituting procedures for requiring biological resource assessments, • Completing and implementing the Citywide Habitat Screening Map, • Providing training sessions on updated biological resources procedures and policies, and • Utilizing Biological Resources CEQA Thresholds.

IMPLEMENTATION:	
	Goal #3: DCP staff, including External Affairs (EA), will work together to assess current DCP web pages and work programs that address biodiversity and create a synthesized web page on DCP's website.
	Goal #4: DCP staff, including the Performance Management Unit (PMU), will work together to create and standardize educational / training programs available for staff and stakeholders.
	Goal #5: DCP staff, including the Performance Management Unit (PMU), will work together to create and standardize educational / training programs available for staff and stakeholders; DCP will report back on various Council Motion requests for reporting back on various biodiversity issues such as Council File Nos. 15-0499-S2 and 21-1286.
	GENERAL NOTES: • A DCP Biodiversity Working Group will be created, composed of staff from various parts of the department, and will meet regularly, such as quarterly throughout the year, to discuss and track progress towards the goals. • If relevant and necessary, the Biodiversity Working Group will create and provide an electronic form/survey to track progress towards goals.

Does the department have the resources and staffing needed to effectively meet these goals? Please describe gaps or resourcing needs.	• Additional staff positions will be needed, including a minimum of 3-5 new planning staff, and 2-3 biological/ecological specialist staff.
	• Additional resources will be needed, included:
	  ○ Training materials and sessions for staff, and
	  ○ Public outreach/educational materials.

Department of City Planning Chief Sustainability Officer

October 3, 2022
Date

Department of City Planning General Manager

October 3, 2022
Date

ANNUAL DEPARTMENTAL BIODIVERSITY REPORTING - TEMPLATE

NOTES:

- Departmental biodiversity plans will be submitted to City Council and become part of the public record.
- Departmental biodiversity plans should be innovative and aspirational to help the City achieve the no-net loss goal of native biodiversity. While these plans should be put forth in good faith as public commitments to protect and enhance biodiversity, it is recognized that progress on stated goals may be subject to future budget decisions, policy direction, or other factors.

DEFINITION:

- NATIVE SPECIES = species that have ranges in the LA area (e.g., the LA River, Ballona Creek, Dominguez Channel, and Rio Hondo Watersheds and tributaries).

RESOURCES:

- Inspiration, Resources, and Recommendations
- Departmental Actions Outlined in the LA Biodiversity Index Baseline Report

DEPARTMENTAL INFORMATION:	
Date:	September 23, 2022
Department Name:	Los Angeles Department of Water and Power
Point of Contact:	Maria Sison-Roces
Contributors:	1. Don Tran 2. Jane Hauptman 3. Nadia Parker

BASICS:	
BACKGROUND: Discuss how your department interacts with native biodiversity. Please describe departmental operations, activities, or priorities that impact native biodiversity or touch on biodiversity issues.	As an electric utility, LADWP manages significant amounts of land that could be used for mitigating impacts on species habitat, engaging or educating the local community, or promoting environmental stewardship through restoration projects. LADWP manages over 950 parcels throughout LA County totaling 6,235 acres. LADWP is also the steward of an additional 470 square miles of land in the Eastern Sierra. • LADWP offers Turf Replacement Design Services to customers, highlighting drought tolerant California-friendly native plants. www.designyourgarden.ladwp.com/ • Coordination with LADWP's Integrated Vegetation Management and Landscaping teams on ROWs to promote desirable low-growing plant communities, where feasible. • Strategic partnerships with industry and non profits that promote biodiversity initiatives, ie Theodore Payne, UCLA, EPRI, etc. Hold pollinator charettes such as the one LADWP sponsored in April 2022. • In 2019, LADWP's Landscaping Team transformed fire prone land that required annual brush clearance into a pollinator-friendly nursery. This nursery provides the landscaping team with harder to find mature native plants in a cost effective manner for re-planting at other facilities. A recently added a water feature now sees various fauna such as jack rabbits. • Monarch tagging efforts in the Owens Valley in December 2019. • Engagement with EPRI in the electric utility industry's Power In Pollinators Project, Monarch CCAA, and Bee Better Certification.

BASICS:	
CHALLENGES: What challenges does your department encounter when implementing biodiversity projects/goals?	LADWP manages a wide variety of land throughout California. Each parcel of land presents a unique set of challenges from fire risk to the presence of homeless encampments. • Implementing changes to land underneath power lines must not impede with LADWP's ability to quickly and safely service these lines as needed. • Meeting regulatory requirements. • Implementing programs that are cost effective for our rate payers. • Ensuring that our maintenance needs can be conducted fully and regularly
BENEFITS: How does your department benefit biodiversity? Check all that apply	✓ Controlling invasive species/pests ✓ Pursuing projects that create, restore, or enhance native habitat ✓ Planting native trees or shrubs ✓ Enhancing wildlife connectivity ✓ Increasing equitable access to nature • Creating policy to protect biodiversity ✓ Protecting species of conservation concern • Performing public outreach on biodiversity, ecosystem services, green infrastructure

BASICS:	
	• Other:_____
NARRATIVE: please describe the ways in which your department benefits biodiversity in more detail.	LADWP benefits biodiversity both internally and externally. Internally, LADWP partnered with the EPRI in 2019 and identified six parcels within LA County that are able to meet the following objectives: • Support habitat and biodiversity above compliance obligations • Engage customers, educate them about urban ecosystems, and increase public access to urban natural areas • Explore opportunities for pollinator habitat • Identify areas with high fire risk. Outside of LA County, LADWP currently has over 100 environmental initiatives in Inyo and Mono Counties related to protecting and sustaining the environment. Externally, LADWP provides free landscape training classes. While these classes emphasize water use reduction, they also promote biodiversity through the use of native plant landscaping. www.designyourgarden.ladwp.com/

WEB PRESENCE:	
If you have a web page devoted to biodiversity, please provide the link. If you do not, we encourage you to build a webpage that publicly showcases biodiversity efforts and lists your biodiversity-related goals for the near and long term future.	
Relevant link(s):	https://ladwpeasternsierra.com/environment
Notes:	

SELF-ASSESSMENT:	
Assign a numeric and letter grade (e.g., 85%, B) with how your department is currently addressing biodiversity issues. ***Individual departments may self-select the criteria/metrics that go into their assessment** ***Future assessments will be made relative to your baseline score**	
Letter Grade:	• A (Excellent) ✓ B (Very Good) • C (Good) • D (Poor) • F (Very Poor)
Numeric Grade:	8/10

SELF-ASSESSMENT:	
Grading Criteria & Narrative: *please detail the criteria/metrics used to assign a grade	In fiscal year 2019/2020, LADWP engaged in studies related to biodiversity opportunities beyond compliance obligations. We are in the process of implementing the recommendations from this report along with efforts to implement GIS mapping so that we can identify key metrics and further take a "measurement management" approach to our efforts.

HOW CAN YOUR DEPARTMENT BETTER PROTECT BIODIVERSITY?	
How can your department improve the state of biodiversity in the City? Be specific. Actions can include: • Protecting habitat, • Restoring degraded habitat, • Enhancing connectivity, • Increasing patch size, • Protecting threatened or endangered species, • Eradicating invasive species and/or pests.	• Perform Transmission Lines Biodiversity Assessment – work with universities • LADWP can pilot the creation of pollinator habitats in areas under transmission lines that are traditionally cleared to meet fire or brush clearance requirements. • In the Big Tujunga Creek, LADWP has an opportunity to treat a widespread invasive species, Arundo donax. Managing the invasive species can help ensure the viability of species of conservation concern in the area such as the Santa Ana sucker and arroyo toad. • LADWP has converted a fire hazard parcel into a pollinator friendly nursery which is used to grow native plants for re-planting at LADWP facilities. • Annually, LADWP hosts the Chatsworth Nature Preserve Earth Day open house to raise awareness of the environment and biodiversity Thousands attended the 2022 Earth Day event.

HOW CAN YOUR DEPARTMENT BETTER PROTECT BIODIVERSITY?	
List practices or actions your department can take to integrate biophilic, nature-centered design into: • Capital improvement projects, • City-scale planning, or • Policy.	• LADWP can implement a policy to landscape using native pollinator friendly plants when possible. This can be done in conjunction with the removal of invasive species when present. • Implement pollinator friendly weed abatement. • Rewild parcels where feasible. • Alongside LADWP's critical water conservation efforts, LADWP will explore adding language highlighting the importance of native plants and biodiversity where appropriate. • Ensure wildlife corridors are implemented where feasible. • Include permeable surfaces where feasible.

BIODIVERSITY GOALS FOR FY 22-23:

List at least 5 departmental biodiversity goals for 2022-23. Goals should be SMART:

S - Strategic
M - Measurable
A - Attainable
R - Relevant
T - Time-based

***Note: next year you will be asked to report back on the progress made on each of these goals (from 0-100%)**

#	*Assigned Goal Lead*	*Goal Description*	*Metric(s) to Track Progress/Success*
#1	Don Tran	Identify biodiversity opportunities at LADWP landholdings beyond compliance obligations and implement GIS tracking and story mapping of these opportunities	# of opportunities identified
#2	Don Tran	Implement signage at select LADWP facilities that are open to the public, ie Hollywood Reservoir, as part of increasing public awareness on biodiversity. These efforts are complementary to water conservation awareness.	# of signage added, # of members of the public engaged through signage
#3	Don Tran	Pilot low growning native plant ground cover at LADWP property including under transmission lines and solar projects where feasible.	Pilot progress or findings, # of feasible sites identified
#4	Don Tran	Expand and strengthen collaboration and partnerships on biodiversity with local non-profits as well as with electric utility industry partners (Annual National Power-In-Pollinators Week)	# of Collaborative efforts in FY

BIODIVERSITY GOALS FOR FY 22-23:			
#5	Don Tran	Collaborate with LADWP Landscaping and Green Team to provide biodiversity/ native plant training to 50 employees, as part of increasing employee awareness on biodiversity.	Number of employees engaged

BIODIVERSITY PLAN
Please describe how your department will take action to better protect biodiversity, institute biodiversity policies, and help make progress on the no-net loss of native biodiversity goal over the course of the next year (FY 22-23).
Actions to Protect Biodiversity: In the next year, LADWP will explore opportunities beyond compliance obligations that can support biodiversity throughout the department. This includes coordination with LADWP's Integrated Vegetation Management and Landscaping teams on ROWs to promote desirable low-growing plants, where feasible. LADWP will also expand education and communication regarding biodiversity through appropriate signage, new employee training, and expanded partnerships with non-profits and industry partners.
Policies to Institute: LADWP can explore a policy to landscape using native pollinator plants where feasible.

BIODIVERSITY PLAN
How Will the Above Actions and Policies Contribute to the City's No-Net Loss of Native Biodiversity Goal? Communication of the importance of biodiversity along with best practices can help avoid actions that harm biodiversity and equip department employees with the ability to identify biodiversity opportunities when present. Signage at relevant high traffic areas can help the public become more aware of issues of native biodiversity loss. Exploring opportunities will help identify limitations and help form better plans in the future.

IMPLEMENTATION:	
Describe how you plan to coordinate efforts internally to make progress on your chosen goals and your biodiversity plan.	Goal #1: Flag biodiversity opportunities in the internal project review system in order to discuss with project managers. Support the EnvRev team in implementing GIS and story-mapping.
	Goal #2: Collaborate with communications and site managements teams for Hollywood Resevoir in order to develop appropriate signage as well as identify signage placement
	Goal #3: Identify regulation restrictions, feasible parcels, and suitable native plant species for identified sites.
	Goal #4: Reach out to external stakeholders for opportunities to collaborate. Engage internal stakeholders for support and participants.

IMPLEMENTATION:	
	Goal #5: Identify target audience(s) and establish a curriculum. Coordinate training events and takeaways.
	GENERAL NOTES:
Does the department have the resources and staffing needed to effectively meet these goals? Please describe gaps or resourcing needs.	LADWP has the staffing to meet these. If additional staff is needed, it will be addressed through LADWP's annual budgeting process.

Signature of Dept. Chief Sustainability Officer — Date: 10/3/22

Signature of General Manager — Date: 10/4/22

ANNUAL DEPARTMENTAL BIODIVERSITY REPORTING - TEMPLATE

NOTES:

- Departmental biodiversity plans will be submitted to City Council and become part of the public record.
- Departmental biodiversity plans should be innovative and aspirational to help the City achieve the no-net loss goal of native biodiversity. While these plans should be put forth in good faith as public commitments to protect and enhance biodiversity, it is recognized that progress on stated goals may be subject to future budget decisions, policy direction, or other factors.

DEFINITION:

- NATIVE SPECIES = species that have ranges in the LA area (e.g., the LA River, Ballona Creek, Dominguez Channel, and Rio Hondo Watersheds and tributaries).

RESOURCES:

- Inspiration, Resources, and Recommendations
- Departmental Actions Outlined in the LA Biodiversity Index Baseline Report

DEPARTMENTAL INFORMATION:	
Date:	SEPTEMBER 14, 2022
Department Name:	LIBRARY
Point of Contact:	
Contributors:	1. Eloisa Sarao 2. Cynthia Smith 3. Diane Olivo-Posner 4. Vivienne Byrd 5. Alexander Tagle 6. Steve Orozco

BASICS:	
BACKGROUND: Discuss how your department interacts with native biodiversity. Please describe departmental operations, activities, or priorities that impact native biodiversity or touch on biodiversity issues.	As a public library, we interact with native biodiversity mainly by engaging the public on the issue through public programs and activities that raise awareness and increase understanding and knowledge. Creating Community Gardens that help engage the community in learning about nature and building bridges between citizens and community partners. Working with Bureau of Engineering to create landscaping that utilizes native California species' and drought resistant plants that can withstand our changing climate. Introducing plants that will attract bees. Utilizing recycled paper goods, reducing paper waste, and reducing plastic bottles used (via bottle water refilling stations).
CHALLENGES: What challenges does your department encounter when implementing biodiversity projects/goals?	Staffing - Branches are constantly facing staff shortage which causes inconsistencies in program offerings. In addition, the coordinating office of the Neighborhood Science initiative is also facing staff shortage to properly administer and ensure smooth planning and execution of the project. Publicity - an increase in media exposure is needed increase participation in the BioBlitz and hence reach the goal of collecting pertinent data to address the biodiversity concerns in the city.

BASICS:	
BENEFITS: How does your department benefit biodiversity? Check all that apply	☑ Controlling invasive species/pests ☐ Pursuing projects that create, restore, or enhance native habitat ☑ Planting native trees or shrubs ☑ Enhancing wildlife connectivity ☑ Increasing equitable access to nature ☐ Creating policy to protect biodiversity ☐ Protecting species of conservation concern ☑ Performing public outreach on biodiversity, ecosystem services, green infrastructure ☐ Other:_____
NARRATIVE: please describe the ways in which your department benefits biodiversity in more detail.	The LAPL's Neighborhood Science (NeiSci) initiative focuses on enhancing the public's awareness of biodiversity and motivating environmental stewardship. The LAPL's Neighborhood Science (NeiSci) initiative collaborated with LASAN to coordinate and launch the annual Bioblitz challenge to encourage public participation in citizen/neighborhood science to help the city's biodiversity research team gather biodiversity data within the city boundaries. LAPL also offers free programs that provide residents with hands-on, minds-on learning experiences on biodiversity topics and an opportunity to explore outdoor spaces in their neighborhood. To make learning more engaging and relevant, LAPL offers the Exploring Biodiversity circulation kit as one of the seven NeiSci DIY kits focusing on the communities' pressing environmental issues. At their own pace, individuals can check out these kits to learn about and participate in citizen science projects using various data collection apps that are accessible via their own smart devices. LAPL's participation in the State Park Pass loaning program offers equitable access to nature and is promoted in conjunction with the NeiSci Exploring Biodiversity kit when possible.

WEB PRESENCE:	
If you have a web page devoted to biodiversity, please provide the link. If you do not, we encourage you to build a webpage that publicly showcases biodiversity efforts and lists your biodiversity-related goals for the near and long term future.	
Relevant link(s):	LA BioBlitz Challenge Neighborhood Science Exploring Biodiversity NeiSci Kit CA State Parks Pass
Notes:	

SELF-ASSESSMENT:	
Assign a numeric and letter grade (e.g., 85%, B) with how your department is currently addressing biodiversity issues. ***Individual departments may self-select the criteria/metrics that go into their assessment** ***Future assessments will be made relative to your baseline score**	
Letter Grade:	☐ A (Excellent) ☑ B (Very Good) ☐ C (Good) ☐ D (Poor) ☐ F (Very Poor)
Numeric Grade:	80%
Grading Criteria & Narrative: *please detail the criteria/metrics used to assign a grade	Please note that the score is based purely on the BioBlitz events and biodiversity programs E&C has coordinated and implemented: • Librarian and Branch participation in the BioBlitz was low. We only have roughly 50 branches **actively** promoting the BioBlitz and offering programs related to biodiversity (i.e., more than just just posting promo graphics on social media). Of these 50 branches that participated, 29 were NeiSci branches. This tells us more work needs to be done

SELF-ASSESSMENT:	
	to get buy-ins from non-participating branches and librarians. ● We need to identify more ways/channels to publicize BioBlitz and other biodiversity programs as they are key to get people to think about local biodiversity. ● Partnership is another thing we need to improve on. Going forward, in addition to LASAN, we should consider inviting other city departments to join as partners - RAPs, Urban Forestry, City Plants, etc. as well as other organizations that have been involved in biodiversity advocacy - NHM, LA Zoo, local botanical gardens, etc. The partnerships will help amplify our efforts and attract more media attention and help raise awareness of the issue.

HOW CAN YOUR DEPARTMENT BETTER PROTECT BIODIVERSITY?	
How can your department improve the state of biodiversity in the City? Be specific. Actions can include: ● Protecting habitat, ● Restoring degraded habitat, ● Enhancing connectivity, ● Increasing patch size, ● Protecting threatened or endangered species, ● Eradicating invasive species and/or pests.	LAPL's NeiSci programs on exploring biodiversity enhance Angelenos' connection with local nature and wildlife. They also increase the public's understanding of biodiversity and its existential relevance to communities. The hands-on, minds-on learning experience through participation in citizen/neighborhood science projects can raise awareness of biodiversity loss and protection and motivate environmental stewardship attitudes and skills, which are crucial to biodiversity conservation efforts. The data collected through the BioBlitz challenge championed by LAPL and LASAN offers the city's research team a better understanding of the distribution of wildlife, quality of habitats, and assessment of conservation efforts that are currently in place.

HOW CAN YOUR DEPARTMENT BETTER PROTECT BIODIVERSITY?	
List practices or actions your department can take to integrate biophilic, nature-centered design into: ● Capital improvement projects, ● City-scale planning, or ● Policy.	● Collaborate with local community gardens on program offerings. ● Invite other city departments to offer programs at the branches. These programs would be a great way to interact with community members, to gauge community's literacy on the topic, and offer a chance to learn about the city's current plans and efforts on biodiversity conservation, sustainable practices and resources.

BIODIVERSITY GOALS FOR FY 22-23:

List at least 5 departmental biodiversity goals for 2022-23. Goals should be SMART:

S - Strategic
M - Measurable
A - Attainable
R - Relevant
T - Time-based

***Note: next year you will be asked to report back on the progress made on each of these goals (from 0-100%)**

#	*Assigned Goal Lead*	*Goal Description*	*Metric(s) to Track Progress/Success*
#1	Vivienne Byrd	Launch 4-week BioBlitz Challenge	10,000 observations recorded on iNaturalist.
#2	Vivienne Byrd	Public educational programs, workshops, and outreach on biodiversity at branches to enhance awareness of local biodiversity and habitat protection.	80 biodiversity-related programs/events for all ages combined.
#3			
#4			
#5			

BIODIVERSITY PLAN
Please describe how your department will take action to better protect biodiversity, institute biodiversity policies, and help make progress on the no-net loss of native biodiversity goal over the course of the next year (FY 22-23).
Actions to Protect Biodiversity: Continue to strengthen the partnership with LASAN in promoting biodversity.
Policies to Institute: To expand the LAPL's Neighborhood Science (NeiSci) initiative at 72 branch libraries.
How Will the Above Actions and Policies Contribute to the City's No-Net Loss of Native Biodiversity Goal? Enhancing the public's awareness of biodiversity by providing educational programs and workshops at Libraries.

IMPLEMENTATION:	
Describe how you plan to coordinate efforts internally to make progress on your chosen goals and your biodiversity plan.	Goal #1: Work with the PR department and Digital Content Team to coordinate the launch of the Bioblitz.
	Goal #2: Encourage staff/public participation in Bioblitz by providing information at public counters at public libraries.
	Goal #3: Encourage Library staff to provide more programs about biodiversity.
	Goal #4:
	Goal #5:
	GENERAL NOTES:
Does the department have the resources and staffing needed to effectively meet these goals? Please describe gaps or resourcing needs.	At current state, staffing remains a challenging issue to ensure consistency in public programming as well as smooth planning and execution of the projects.

_____ _____

Signature of Dept. Chief Sustainability Officer Date

_____ _____

Signature of General Manager Date

LASAN'S ANNUAL DEPARTMENTAL BIODIVERSITY REPORT

NOTES:

- Departmental biodiversity plans will be submitted to City Council and become part of the public record.
- Departmental biodiversity plans should be innovative and aspirational to help the City achieve the no-net loss goal of native biodiversity. While these plans should be put forth in good faith as public commitments to protect and enhance biodiversity, it is recognized that progress on stated goals may be subject to future budget decisions, policy direction, or other factors.

DEFINITION:

- NATIVE SPECIES = species that have ranges in the LA area (e.g., the LA River, Ballona Creek, Dominguez Channel, and Rio Hondo Watersheds and tributaries).

RESOURCES:

- Inspiration, Resources, and Recommendations
- Departmental Actions Outlined in the LA Biodiversity Index Baseline Report

DEPARTMENTAL INFORMATION:	
Date:	Friday, September 2, 2022
Department Name:	LA Sanitation & Environment (LASAN)
Point of Contact:	Michelle Barton michelle.barton@lacity.org
Contributors:	1. Jon Ball 2. Michelle Barton 3. Mas Dojiri 4. Oscar Figueroa 5. Amber Huu 6. Scott Jackson 7. Colette Monell 8. Susie Santilena 9. Michael Scaduto 10. Doug Walters

BASICS:	
BACKGROUND: Discuss how your department interacts with native biodiversity. Please describe departmental operations, activities, or priorities that impact native biodiversity or touch on biodiversity issues.	**<u>Biodiversity Program:</u>** LASAN's Biodiversity Program oversees the City's efforts to protect and enhance biodiversity. LASAN's Biodiversity Program originated in 2017 when the LA City Council adopted the Biodiversity Motion and directed LASAN to lead Citywide Biodiversity efforts. In particular, City Council directed LASAN to create a customized biodiversity index for the City of LA. When LASAN set out to construct a customized biodiversity index, the team was acutely aware that we needed partners and stakeholders to be successful, so LASAN decided to convene three other groups: 1. An Interdepartmental Team, 2. A Biodiversity Expert Council, and 3. A Stakeholder group. These various teams have been critical to success and building consensus. Since 2017, LASAN has coordinated meetings with the various groups to exchange ideas, receive input on documents, advise efforts to develop a biodiversity index, and guide the development of the City's biodiversity program. In 2018, with significant input from the Biodiversity Expert Council, LASAN's Biodiversity Team published the 2018 Biodiversity Report, which documented measurement of an existing index, the Singapore Index on Cities Biodiversity, and included recommendations for how to customize an index for LA. A few years later, the team issued the 2020 Biodiversity Report, introducing the brand new LA City Biodiversity Index as well as the Ecotopes framework. In June 2022, the Biodiversity Team issued its latest report, the LA Biodiversity Index Baseline Report, which presents the first official benchmark assessment of the LA City Biodiversity Index, a tool that was designed to monitor progress toward the

BASICS:	
	no-net loss of native biodiversity target presented in LA's Green New Deal. The topics covered in the Index comprehensively assess not only what is happening to habitats and how well connected various habitats are, but how well the City is engaging with students and the larger community on the topic of biodiversity and how the City itself is working to protect endangered species and manage threats, like invasive species, via action plans and policies. The body of the report provides detailed information on the assessment of all 25 metrics in the LA City Biodiversity Index. The first assessment of the LA City Biodiversity Index yielded a score of 37 out of a possible 110 points, suggesting that much work remains to be done to protect biodiversity across the City. **Watershed Protection / Safe Clean Water :** LASAN's Safe Clean Water Implementation Division is the program manager of the City's implementation of the County-wide Safe, Clean Water Program (SCWP) for the City. In addition to projects that bring water quality, water supply, and community investment benefits, the program prioritizes projects that include nature-based solutions. The scoring matrix for the Regional Program used to determine project eligibility allots up to 15 out of 110 maximum points for a project that implements natural processes or mimics natural processes to slow, detain, capture, and absorb/infiltrate water in a manner that protects, enhances and/or restores habitat, green space and/or usable open space (5 points), utilizes natural materials such as soils and vegetation with a preference for native vegetation (5 points), and removes impermeable area (5 points). The City's own scoring criteria developed for prioritizing projects for the Municipal Program also awards points for projects that increase biodiversity resilience. As a result, most projects implemented by the City include new trees and native vegetation. The Watershed Protection

BASICS:	
	Division is a key collaborator in the origination of SCWP projects, and monitors the effectiveness of projects implemented under the SCWP. In the past, project effectiveness monitoring was primarily focused on water quality benefits and quantifying pollutant reduction. In order to align with the City's goals of preserving and enhancing biodiversity, the Watershed Protection Division aims to incorporate additional components to its monitoring programs that seek to quantify and characterize a project's contribution to biodiversity and native habitat. **Outreach:** LASAN performs a variety of outreach and public education to local awareness of local biodiversity issues. LASAN organizes in-person bioblitz events, runs biodiversity symposia, gives public presentations, and creates outreach materials to engage the public in stewarding LA's rich biodiversity.
CHALLENGES: What challenges does your department encounter when implementing biodiversity projects/goals?	While LASAN has greatly expanded its efforts related to biodiversity in the last five years, biodiversity efforts are concentrated with a few individuals and within a few divisions. Limited resources, in terms of staffing and programmatic funding, continue to constrain what the department can accomplish. To address these challenges, LASAN plans to continue to advocate for resources while simultaneously better integrating biodiversity elements/considerations across programs and divisions so that programs and projects across the agency actively support biodiversity, improve connectivity, and make LA a better place for both Angelenos and wildlife to live. To this point, the goals presented have been gathered from staff across various LASAN divisions. As LASAN looks to pursue grant projects to protect and enhance biodiversity, challenges are anticipated in terms of identifying eligible matching funds.

BASICS:	
	One of the challenges the City faces as a result of implementing biodiversity projects is acquiring the adequately trained operation and maintenance staff to properly maintain projects with green infrastructure or wetland habitat elements. The City does not have the necessary resources (equipment, and training and workforce development) nor efficient contract mechanisms for long-term maintenance of green infrastructure.
BENEFITS: How does your department benefit biodiversity? Check all that apply	☑ Controlling invasive species/pests ☑ Pursuing projects that create, restore, or enhance native habitat ☑ Planting native trees or shrubs ☑ Enhancing wildlife connectivity ☑ Increasing equitable access to nature ☑ Creating policy to protect biodiversity ☐ Protecting species of conservation concern ☑ Performing public outreach on biodiversity, ecosystem services, green infrastructure ☐ Other:_____
NARRATIVE: please describe the ways in which your department benefits biodiversity in more detail.	LASAN leads the City's efforts on biodiversity. LASAN pursues projects that promote watershed health, create habitat, and plant native trees and shrubs. LASAN's Biodiversity Team, Marketing Team, and Public Affairs Office have issued press releases, created flyers, infographics, published reports, given presentations, and much more to increase awareness of biodiversity issues. LASAN's Biodiversity Program is also working with other departments and agencies to better control invasive species and pests, enhance wildlife connectivity, increase equitable access to nature, develop biodiversity guidelines, and create policy to protect biodiversity.

BASICS:	
	See the narrative in the background section above for additional detail.

WEB PRESENCE:	
If you have a web page devoted to biodiversity, please provide the link. If you do not, we encourage you to build a webpage that publicly showcases biodiversity efforts and lists your biodiversity-related goals for the near and long term future.	
Relevant link(s):	lacitysan.org/biodiversity lacitysan.org/healthysoils lacitysan.org/habitat lacitysan.org/trees lacitysan.org/waterprotection
Notes:	LASAN has a variety of web pages devoted to biodiversity, particularly the first three noted above. LASAN is in the process of revamping the main biodiversity page to improve the user experience. There are a variety of other pages, including the tree and watershed protection pages, that also touch on green infrastructure.

SELF-ASSESSMENT:	
Assign a numeric and letter grade (e.g., 85%, B) with how your department is currently addressing biodiversity issues. ***Individual departments may self-select the criteria/metrics that go into their assessment** ***Future assessments will be made relative to your baseline score**	
Letter Grade:	☐ A (Excellent) ☑ B- (Very Good) ☐ C (Good) ☐ D (Poor) ☐ F (Very Poor)
Numeric Grade:	80

SELF-ASSESSMENT:	
Grading Criteria & Narrative: *please detail the criteria/metrics used to assign a grade	While LASAN has a robust, globally recognized Biodiversity Program, biodiversity could be better integrated into projects, initiatives, and considerations across divisions. For this reason, a score of a B- has been assigned.

HOW CAN YOUR DEPARTMENT BETTER PROTECT BIODIVERSITY?	
How can your department improve the state of biodiversity in the City? Be specific. Actions can include: ● Protecting habitat, ● Restoring degraded habitat, ● Enhancing connectivity, ● Increasing patch size, ● Protecting threatened or endangered species, ● Eradicating invasive species and/or pests.	LASAN can: ● Develop a restoration and conservation map that can serve as a decision-making tool to guide future projects. The prioritization scheme should consider balancing the following: ○ Increasing the size of high-quality habitat patches, ○ Locations that would support a large number of diverse species, ○ Landscape-level connectivity, ○ Protection of rare/sensitive species and habitats, ○ Increasing equitable access to parks and natural areas, and ○ Other factors (TBD). ● Support the development of a Regional Wildlife Connectivity Plan with Santa Monica Mountains Resource Conservation District, LA County, Ventura County, and the Biodiversity Expert Council. ● Assist the Department of City Planning in expanding the Wildlife Ordinance to include all Protected Areas for Wildlife (PAWs) and the Rim of the Valley. ● Apply for and secure additional grant funding to restore, conserve, or enhance biodiversity in Los Angeles. ● Develop training materials to teach LASAN staff about biodiversity issues (e.g., tailgates, formal virtual or in-person training sessions, etc.)

HOW CAN YOUR DEPARTMENT BETTER PROTECT BIODIVERSITY?	
List practices or actions your department can take to integrate biophilic, nature-centered design into: ● Capital improvement projects, ● City-scale planning, or ● Policy.	LASAN can: ● Draft Biodiversity Design Guidelines that will help project managers incorporate biodiversity-friendly practices into their projects and designs. ● Draft a resolution to have the City of Los Angeles formally join the Biophilic Cities Network, which will provide access to resources, networking, and inspiration that will help the City better integrate biophilic, nature-centered design into projects, planning, and policy.

BIODIVERSITY GOALS FOR FY 22-23:

List at least 5 departmental biodiversity goals for 2022-23. Goals should be SMART:

S - Strategic
M - Measurable
A - Attainable
R - Relevant
T - Time-based

***Note: next year you will be asked to report back on the progress made on each of these goals (from 0-100%)**

#	*Assigned Goal Lead*	*Goal Description*	*Metric(s) to Track Progress/Success*
#1	Michelle Barton	Develop a draft restoration and conservation map that can serve as a decision-making tool by June 30, 2023.	Presence/absence of a draft mapping tool
#2	Michelle Barton	Support the development of a Regional Wildlife Connectivity Plan with Santa Monica Mountains RCD, LA County, Ventura County, and the Biodiversity Expert Council by June 30, 2023.	Participation in meetings with the Regional Wildlife Connectivity Group

BIODIVERSITY GOALS FOR FY 22-23:			
#3	Michelle Barton	Draft Biodiversity Guidelines that will help project managers incorporate biodiversity-friendly practices into their projects and designs by June 30, 2023.	Completion of draft biodiversity guidelines
#4	Michelle Barton	Apply and secure additional grant funding to restore, conserve, or enhance biodiversity in Los Angeles by June 30, 2023.	# of grant applications submitted, # of grant applications awarded
#5	Jon Ball	Train staff in the Watershed Protection Division to increase awareness of and appreciation for biodiversity by June 2023. This will include: ● Training staff on various smartphone apps, such as iNaturalist, PlantSnap, Merlin Bird ID, that can be helpful in identifying species. ● Having WPD scientists and other interested staff attend a presentation on the City's Biodiversity Index to gain awareness and support for LASAN's biodiversity program.	● # of training sessions on various smartphone apps (e.g., iNaturalist, PlantSnap, eBird, etc) or the # of staff who participate in an organized bioblitz ● # of apps evaluated for potential use in the future biodiversity-related monitoring programs ● # of organized bioblitz events that WPD staff participate in
#6	Colette Monell, Nuna Tersibashian	Develop an inventory of City-owned vacant/underutilized sites throughout the City that could have biodiversity applications that will be mapped and analyzed through a cloud-based mapping tool, such as ArcGIS, by June 30, 2023.	Presence/absence of inventory
#7	LASAN's GIS Team	LASAN's GIS Team will: ● Develop standard area units (e.g., square miles) and GIS projections for future LA City Biodiversity Index analyses by December 2023 (with progress made by June 2023).	● Creation and distribution of an SOP document with guidelines ● Creation and distribution of a

BIODIVERSITY GOALS FOR FY 22-23:			
		• Standardize data structures for biodiversity spatial data groupings with assistance from LASAN Environmental Specialists by December 2023 (with progress made byJune 2023). • Develop a biodiversity-centric open data portal for City staff and members of the public to use to explore data layers by December 2023 (with progress made byJune 2023).	document for City staff to use in gathering, developing, and analyzing data • Development of an LASAN Biodiversity ESRI Experience page linked to LASAN's GIS cloud infrastructure

BIODIVERSITY PLAN
Please describe how your department will take action to better protect biodiversity, institute biodiversity policies, and help make progress on the no-net loss of native biodiversity goal over the course of the next year (FY 22-23).
Actions to Protect Biodiversity: Looking ahead to FY 2022-23 and beyond, LASAN intends to continue to build up the LASAN Biodiversity Program. In particular, LASAN plans to expand the Biodiversity Team by hiring two new full-time staff to support outreach efforts, grant applications, and implementation projects. Additionally, LASAN will continue monitoring and implementing (when appropriate and feasible) green remediation practices, such as phytoremediation/mycoremediation, as cleanup alternatives that are less destructive than standard remediation methods (e.g., dig and haul) to minimize habitat disturbances. LASAN can work with the Olympic Games Sustainability Committee to discuss ways to include biodiversity elements in the 2028 Olympic and Paralympic Games. This can include opportunities to preserve and protect biodiversity and/or outreach efforts to educate participants and spectators on the importance of local and global biodiversity.

BIODIVERSITY PLAN
Policies to Institute: LASAN intends to partner with and advise the Department of City Planning with the Wildlife Ordinance.
How Will the Above Actions and Policies Contribute to the City's No-Net Loss of Native Biodiversity Goal? #1: A restoration and conservation map will serve as a decision-making tool to guide future projects and ensure that they are meaningful, impactful projects. #2: Enhancing regional connectivity is crucial for preserving connectivity here in the City of LA, and in the broader southern California region. #3: Biodiversity Design Guidelines will raise awareness of biodiversity issues and help residents and project managers incorporate biodiversity-friendly practices into their projects and designs. #4: Grant funding will build the impact of the City's biodiversity efforts by accomplishing conservation, restoration, and/or acquisition work. #5: Training staff in the Watershed Protection Division, which deals primarily with water quality issues, on the importance of biodiversity and how water quality, habitat, and biodiversity are linked will lead to multi-beneficial projects. #6: The inventory of vacant/underutilized sites will provide valuable information on sites that can be redeveloped for local communities' beneficial use, including opportunity locations to increase biodiversity. #7: GIS and spatial analysis are key to the way biodiversity data is visualized and communicated to the public and to City officials. Standardizing GIS products will ensure that they are readily usable and shareable. An ESRI Experience page will take this one step further and host interactive data for users to explore and, hopefully, apply to their own biodiversity projects.

IMPLEMENTATION:	
Describe how you plan to coordinate efforts internally to make progress on your chosen goals and your biodiversity plan.	Goal #1: LASAN's Biodiversity Team has secured a Technical Assistance award from the National Park Service's Rivers, Trails, and Conservation Technical Assistance Program to establish an actionable restoration and conservation plan that will allow the Biodiversity Team, project collaborators, the larger City family, and other biodiversity stakeholders to prioritize locations for future conservation, preservation, or restoration activities across LA. The project will run through spring 2023 and engage important partners in the process of creating a mapping tool that has stakeholder buy-in.
	Goal #2: Members of the LASAN Biodiversity Team will participate in meetings with the Regional Wildlife Connectivity Group to advance initiatives and projects that will increase wildlife connectivity and landscape permeability in the City and broader region. LASAN will also continue to advance research on connectivity by serving as a client for the 2022-23 UCLA Institute of the Environment's Senior Practicum on connectivity in Los Angeles.
	Goal #3: The LASAN Biodiversity Team is actively partnering with LA County on joint biodiversity guidelines that aim to integrate the environmental, economic, and healthy benefits of biophilic design for urban environments. City staff will continue to research best practices to include in the guidelines. Draft guidelines will be circulated to the Biodiversity Expert Council for comment and input before being finalized.
	Goal #4: Two new full-time staff (one Environmental Specialist and one Environmental Supervisor) will be hired to support grant writing and grant implementation. These staff will help secure funding to restore, conserve, and/or enhance biodiversity in Los Angeles.
	Goal #5: WPD will arrange two trainings for scientists and other interested staff. One training will introduce staff to biodiversity, the LA City Biodiversity Index, and how they can get involved to protect biodiversity. The other training will be focused on apps and tools, like iNaturalist, that can assist

IMPLEMENTATION:	
	WPD staff in the field to both identify biodiversity and contribute data points that will support metrics in the LA City Biodiversity Index. Training will include hands-on assistance and help as staff download and start to use the applications. This training will set staff up to successfully use these apps to capture biodiversity data and metrics for WPD projects in the future.
	Goal #6: Vacant, underutilized sites will be tracked in a GIS mapping tool and updated on an annual basis. This will be done through visual inspections and/or notifications from partner organizations or community members.
	Goal #7: The GIS Team will create and distribute a SOP with guidelines to standardize area units and GIS projections, to ensure that biodiversity data is formatted consistently to maximize efficiency in data sharing, enable accurate comparisons of data sets/analysis results over time, and more. The GIS Team will also develop guidelines to assist staff in gathering, developing, and analyzing data. Specialized GIS staff will construct an ESRI Experience to serve as a biodiversity-centric data hub that will provide a single location to house and distribute essential biodiversity data.
	GENERAL NOTES:
Does the department have the resources and staffing needed to effectively meet these goals? Please describe gaps or resourcing needs.	No additional resources are requested for FY 2022-23.

Signature of Dept. Chief Sustainability Officer

10/13/22
Date

Signature of General Manager

10/13/2022
Date

Director & GM Barbara Romero,
LASAN & Environment

ANNUAL DEPARTMENTAL BIODIVERSITY REPORTING - TEMPLATE

NOTES:

- Departmental biodiversity plans will be submitted to City Council and become part of the public record.
- Departmental biodiversity plans should be innovative and aspirational to help the City achieve the no-net loss goal of native biodiversity. While these plans should be put forth in good faith as public commitments to protect and enhance biodiversity, it is recognized that progress on stated goals may be subject to future budget decisions, policy direction, or other factors.

DEFINITION:

- NATIVE SPECIES = species that have ranges in the LA area (e.g., the LA River, Ballona Creek, Dominguez Channel, and Rio Hondo Watersheds and tributaries).

RESOURCES:

- Inspiration, Resources, and Recommendations
- Departmental Actions Outlined in the LA Biodiversity Index Baseline Report

DEPARTMENTAL INFORMATION:	
Date:	9/23/2022
Department Name:	Los Angeles World Airports (LAWA)
Point of Contact:	Marjorie Phan mphan@lawa.org
Contributors:	1. Tina Backstrom 2. Amanda Amaral 3. Nancy Price

BASICS:	
BACKGROUND: Discuss how your department interacts with native biodiversity. Please describe departmental operations, activities, or priorities that impact native biodiversity or touch on biodiversity issues.	LAWA's stewardship of the LAX Dunes is one visible display of our commitment to protecting and enhancing biodiversity in the City of Los Angeles. The 300-acre LAX Dunes is located on the western portion of the LAX campus and comprises the largest remaining coastal dune fragment in Southern California. The LAX Dunes was voluntarily set aside as a nature preserve in the early 1990's. The LAX Dunes is home to over 900 native animal and plant species, including the federally endangered El Segundo Blue Butterfly* (Euphilotes battoides allyni) (ESBB) and its host plant Seacliff Buckwheat, also known as Coast Buckwheat (Eriogonum parvifolium). The ESBB was added to the Federal Endangered Species List in 1976. The ESBB population in the LAX Dunes has improved under LAWA's stewardship, but more work is needed to help the species fully recover. Over the years, LAWA has implemented numerous restoration projects and initiatives at the LAX Dunes, focusing on the removal of non-native and invasive plants, planting native plants, conducting biological surveys, and supporting research studies. These activities are ongoing. LAWA staff receives annual specialized training on plant identification and invasive plant removal. These efforts require continuous collaboration with state and federal agencies, local community groups, non-profit organizations, and universities. • LAWA, in partnership with The Bay Foundation (TBF), is restoring 6 acres of dunes habitat in the northern part of the LAX Dunes as part of the Coastal Dunes Development Project (CDIP). This project is expected to be completed in 2023. • LAWA and TBF host monthly volunteer restoration events in the CDIP area. • LAWA works with wildlife biologists to conduct annual ESBB surveys during the butterfly's flight season. • With the support of a Section 6 grant from the United States Fish and Wildlife Service

BASICS:	
	(USFWS), LAWA developed an Invasive Plant Management Plan, which will help LAWA prioritize areas in the LAX Dunes for invasive plant removal. In 2019, LAWA Board of Airport Commissioners adopted the Boldly Moving to Zero: Sustainability Action Plan (SAP), which outlines ambitious goals and targets for several sustainability areas, including natural resources management. The SAP reaffirms LAWA's commitment to restoring the LAX Dunes. LAWA continues to work towards meeting the goals and targets identified in the SAP. Recent successes: • Volunteers have removed over 30,000 pounds of non-native and invasive plants from the LAX Dunes during the past seven years. • Invasive plant control treatments occurred on over 40 acres in the LAX Dunes in 2021, removing 19 types of invasive plant species. • Vegetation monitoring surveys conducted in 2021 show that most of the CDIP area has native cover greater than 50%. TBF planted over 20,000 native plants in the areas from December 2021 to March 2022. • The federally threatened California Gnatcatcher* (Polioptila californica californica) has been documented breeding in the LAX Dunes. LAWA's contracted wildlife biologists now conduct annual surveys during its breeding season. • Sensitive species such as the Burrowing Owl* (Athene cunicularia), Southern California legless lizard* (Anniella spp.) and San Diego Horned Lizard* (Phrynosoma blainvillii) has been observed in the LAX Dunes. LAWA regularly shares information about the LAX Dunes on printed and digital media, such as annual sustainability reports, press releases, and social media. News media have also covered the LAX Dunes and LAWA's restoration efforts numerous times; for example, the local FOX11 channel did a story earlier this year. (link) LAWA's sustainable construction and water efficiency

BASICS:	
	practices have led to a significant increase in native and drought-tolerant landscaping in outdoor spaces. LAWA works closely with United States Department of Agriculture (USDA) to manage wildlife hazards that may impact the safety of aircraft operations at LAX and VNY airports. The USDA utilizes various methods to capture and relocate wildlife away from the airfield. *(*) denotes species that are in the Inventory of Species of Conservation Concern.*

BASICS:	
CHALLENGES: What challenges does your department encounter when implementing biodiversity projects/goals?	LAWA's main challenges for implementing biodiversity projects/goals are lack of resources, particularly in funding and staffing and communicating with the various regulatory agencies. LAWA was severely impacted by the dramatic drop in air travel due to travel restrictions brought on by the COVID-19 global pandemic. In order to cut costs, LAWA implemented the Separation Incentive Program (SIP). Through the SIP, LAWA lost many experienced and knowledgeable maintenance staff, trained to work in our environmentally sensitive LAX Dunes. LAWA has recently begun filling vacant positions, but the hiring process is slow. In addition, new staff requires specialized training prior to working within our LAX Dunes. Some of the maintenance work within the LAX Dunes, is subsized using volunteers on a monthly basis. In addition, communicating, coordinating, and obtaining permissions to work within our LAX Dunes from multiple agencies local, state, and federal, in a timely manner, is challenging within itself. Unlike other Departments, LAWA is a proprietary and also regulated by the Federal Aviation Administration (FAA). While we have a robust management program for a portion of the LAX Dunes, additional funding is needed to better manage the 300-acres that comprise the LAX Dunes.
BENEFITS: How does your department benefit biodiversity? Check all that apply.	☒ Controlling invasive species/pests ☒ Pursuing projects that create, restore, or enhance native habitat ☒ Planting native trees or shrubs ☐ Enhancing wildlife connectivity ☐ Increasing equitable access to nature ☐ Creating a policy to protect biodiversity ☒ Protecting species of conservation concern

BASICS:	
	☒ Performing public outreach on biodiversity, ecosystem services, green infrastructure
	☐ Other:_____
NARRATIVE: Please describe the ways in which your department benefits biodiversity in more detail.	Please see the narrative provided in the **BACKGROUND** section.

WEB PRESENCE:	
If you have a web page devoted to biodiversity, please provide the link. If you do not, we encourage you to build a webpage that publicly showcases biodiversity efforts and lists your biodiversity-related goals for the near and long term future.	
Relevant link(s):	LAWA Sustainability Website: https://www.lawa.org/en/lawa-sustainability Natural Resources Management page: https://www.lawa.org/lawa-sustainability/sustainability-elements-natural-resources 2021 Sustainability Report: https://cloud1lawa.app.box.com/s/pq459i5b4qt4rtw1r2i3296tkixaigxj Dunes brochure: https://www.lawa.org/-/media/sustainability/more-information/lax-dunes-home-page.ashx
Notes:	

SELF-ASSESSMENT:	
Assign a numeric and letter grade (e.g., 85%, B) with how your department is currently addressing biodiversity issues. ***Individual departments may self-select the criteria/metrics that go into their assessment** ***Future assessments will be made relative to your baseline score**	
Letter Grade:	☐A (Excellent) ☒ B+ (Very Good) ☐ C (Good)

SELF-ASSESSMENT:	
	☐ D (Poor) ☐ F (Very Poor)
Numeric Grade:	88
Grading Criteria & Narrative: *please detail the criteria/metrics used to assign a grade	The assessed grade is based on evidence that LAWA is actively addressing biodiversity issues in its day-to-day operations and long-term strategic planning. For example: • There is a sustainability plan that includes a focus on restoring the LAX Dunes; • Funding is allocated to implement programs and initiatives related to biodiversity; • LAWA staff is assigned to work on biodiversity issues full-time; • There are ongoing efforts to raise public awareness and enhance scientific knowledge about the LAX Dunes However, there's room for improvement. The LAX Dunes is still very degraded, and much more can be done to help restore this habitat.

HOW CAN YOUR DEPARTMENT BETTER PROTECT BIODIVERSITY?	
How can your department improve the state of biodiversity in the City? Be specific. Actions can include: • Protecting habitat, • Restoring degraded habitat, • Enhancing connectivity, • Increasing patch size, • Protecting threatened or endangered species, • Eradicating invasive species and/or pests.	LAWA can improve the state of biodiversity in the City by continuing to eradicate invasive species and restore degraded habitat in the LAX Dunes, conduct various surveys and studies that contribute to new or enhance scientific knowledge on the City's biodiversity, and increase public awareness of the coastal dunes and the native and endemic species that inhabit this unique ecosystem.

HOW CAN YOUR DEPARTMENT BETTER PROTECT BIODIVERSITY?	
List practices or actions your department can take to integrate biophilic, nature-centered design into: ● Capital improvement projects, ● City-scale planning, or ● Policy.	LAWA continues to implement the following policies and actions related to capital improvement projects to integrate biophilic, nature-centered design: ● Sustainable Design and Construction Policy: requiring new construction and major rehabilitation projects to achieve minimum LEED Silver standards or the Sustainable Design and Construction Requirements, which include installing native and drought-tolerant landscaping. Biophilic elements are incorporated and continues to be incorporated in development projects, for example, the Tom Bradley International Terminal (TBIT) is designed to resemble ocean waves; the TBIT West Gates building is designed to resemble the swell before the wave. ● Design and Construction Handbook: provides guidelines for capital improvement projects, such as the Sustainable Design and Construction Policy and Requirements.

BIODIVERSITY GOALS FOR FY 22-23:			
List at least 5 departmental biodiversity goals for 2022-23. Goals should be SMART: **S -** Strategic **M -** Measurable **A -** Attainable **R -** Relevant **T -** Time-based ***Note: next year you will be asked to report back on the progress made on each of these goals (from 0-100%)**			
#	*Assigned Goal Lead*	*Goal Description*	*Metric(s) to Track Progress/Success*
#1	LAWA	**Secure grants that will benefit the LAX Dunes; habitat, flora, and fauna:** LAWA will apply for at least one grant opportunity in FY2022-23	• Number of grant applications submitted • Number and/or dollar amount of grants received
#2	LAWA	**Continue to strive for the natural addition of flora and fauna with no net loss of biodiversity in the LAX Dunes:** LAWA will conduct monitoring surveys for the ESBB during its flight season and CAGN during its breeding season in FY2022-23.	• ESBB population estimate (bi-annual) • CAGN counts
#3	LAWA	**Implement invasive plant management in the El Segundo Blue Butterfly Habitat Restoration Area:** LAWA will seek approval for the Invasive Plant Management Plan from the USFWS and identify priority areas in FY2022-23	• Amount of invasive plants removed • Amount of native plants added

BIODIVERSITY GOALS FOR FY 22-23:			
#4	LAWA	**Continue working to improve the Coastal Dunes Improvement Project (CDIP) area in the northern section of the LAX Dunes:** LAWA will continue to work with TBF to implement the project's scope of work in FY2022-23, targeting completion by June 2023.	• Amount of invasive plants removed • Amount of native plants added • Native cover percentage
#5	LAWA	**Continue weeding and restoration activities:** LAWA will continue to host monthly volunteer restoration events and other one-off restoration events whenever feasible in FY2022-23	• Number of restoration events held • Amount of invasive plants removed • Amount of native plants added

BIODIVERSITY PLAN
Please describe how your department will take action to better protect biodiversity, institute biodiversity policies, and help make progress on the no-net loss of native biodiversity goal over the course of the next year (FY 22-23).
Actions to Protect Biodiversity: LAWA plans to continue implementing the activities described in the **BACKGROUND** section during FY2022-23. The activities primarily focus on restoring the LAX Dunes, which is a vital habitat for the federally listed ESBB and CAGN and over 900 native plants and animals. LAWA has staff assigned to manage and funding allocated for the activities. The goals proposed in the **BIODIVERSITY GOALS FOR FY22-23** section will help LAWA prioritize and coordinate resources and tasks.
Policies to Institute: LAWA plans to continue implementing the policies and actions related to capital improvement projects as described in the **HOW CAN YOUR DEPARTMENT BETTER PROTECT BIODIVERSITY?** Section. These policies and actions help LAWA develop more sustainable facilities and mitigate environmental impacts from its development projects. LAWA's Sustainable Design and Construction Policy was adopted by the Board of Airport Commissioners in 2017 and has been incorporated into the project design review process.

BIODIVERSITY PLAN
How Will the Above Actions and Policies Contribute to the City's No-Net Loss of Native Biodiversity Goal? The above actions and policies contribute to restoring the LAX Dunes, which are vital habitat for the federally listed ESBB and CAGN and many other native plants and animals.

IMPLEMENTATION:	
Describe how you plan to coordinate efforts internally to make progress on your chosen goals and your biodiversity plan.	Goal #1: Monitor grant opportunity announcements (ex., sign up for email notifications); work closely with LAWA's grant management team to identify and apply for grant opportunities
	Goal #2: Ensure funding is appropriated for conducting surveys
	Goal #3: Work with biologists to revise the Invasive Plant Management Plan in accordance with USFWS's feedback and resubmit to USFWS for approval; work with biologists to develop a phased and targeted plan and associated costs; ensure funding is appropriated to complete these tasks
	Goal #4: Ensure sufficient funding is appropriated for completing the CDIP project.

IMPLEMENTATION:	
	Goal #5: Continue to promote volunteer opportunities to increase participation
	GENERAL NOTES:
Does the department have the resources and staffing needed to effectively meet these goals? Please describe gaps or resourcing needs.	LAWA needs additional resources, specifically funding and staffing, to effectively meet the goals. While we have a robust management program for a portion of the LAX Dunes, additional funding is needed to better manage the entire 300-acres that comprise the LAX Dunes in order to enhance the natural habitats and protect the wildlife within that area.

Samantha Bricker — 9/19/22

Signature of Dept. Chief Sustainability Officer — Date

9/19/22

Signature of General Manager — Date

ANNUAL DEPARTMENTAL BIODIVERSITY REPORTING – Zoo Department Draft

NOTES:

- Departmental biodiversity plans will be submitted to the City Council and become part of the public record.
- Departmental biodiversity plans should be innovative and aspirational to help the City achieve the no-net loss goal of native biodiversity. While these plans should be put forth in good faith as public commitments to protect and enhance biodiversity, it is recognized that progress on stated goals may be subject to future budget decisions, policy direction, or other factors.

DEFINITION:

- NATIVE SPECIES = species that have ranges in the LA area (e.g., the LA River, Ballona Creek, Dominguez Channel, and Rio Hondo Watersheds and tributaries).

RESOURCES:

- Inspiration, Resources, and Recommendations
- Departmental Actions Outlined in the LA Biodiversity Index Baseline Report

DEPARTMENTAL INFORMATION:	
Date:	10/03/2022
Department Name:	Zoo
Point of Contact:	Dr. Jake Owens
Contributors:	1. Dr. Jake Owens, Director of Conservation 2. Beth Schaefer, Director of Animal Programs 3. Dr. Cathleen Cox, Director of Research 4. Dr. Carol Armstrong, Director of Sustainability and Capital Programs

BASICS:	
BACKGROUND: Discuss how your department interacts with native biodiversity. Please describe departmental operations, activities, or priorities that impact native biodiversity or touch on biodiversity issues.	The Los Angeles Zoo is a biodiversity conservation organization with impacts that start in Los Angeles and stretch around the world. The Department has had significant positive impacts on native California biodiversity throughout its history. This impact is epitomized by our roughly 50 year participation in the California Condor Recovery Program that not only halted their assured extinction, but has seen wild individuals return to the outskirts of Los Angeles in the San Gabriel Mountains. Our founding membership in the Southern Mountain Yellow-legged Frog Recovery Program has resulted in the breeding and release of more than 5,000 tadpoles and frogs into multiple drainages in the Angeles National Forest since 2014. Perhaps most importantly, the Zoo provides up-close experiences with representatives of wildlife species from around the globe and intentional conservation engagement and educational programming for 1.8 million visitors each year. Most of the Zoo's visitors are Angelenos, including thousands of LAUSD students who visit the Zoo for free. These experiences, which are designed to be equitable and accessible for all Angelenos, are intended not simply to entertain, but to facilitate meaningful connections and empathy with nature and environmental identity for our guests. The value to biodiversity conservation of the Zoo's unique role in facilitating the development of these connections and identities with residents of one of the most park-deficient cities in the nation, particularly when the world is facing the greatest environmental challenges seen throughout human history, cannot be overstated. The Zoo grounds itself in providing a variety of resources for the native biodiversity of Los Angeles. Located in the northeastern corner of Griffith Park, the Zoo is situated at the eastern extent of the Santa Monica Mountains and within the Rim of the Valley Corridor. Our 133 acre facility consists of mixed patches of vegetation, including numerous species of native and non-native plants, and human/visitor service areas. Several plant species with special status, including federal and state listed endangered Nevin's barberry, and species of particular interest or concern in Los Angeles (e.g. City Protected Tree

BASICS:	
	Ordinance No. 177404), including coast live oak, California walnut, toyon, and elderberry, grow naturally on Zoo grounds or have been planted during Zoo landscaping activities. Existing habitat patches have varying levels of human disturbance from historical activities and contemporary operations of the Zoo, and their value to native biodiversity vary, respectively. A diversity of native species are capable of flying or climbing over or through the Zoo's perimeter fence. The habitat on Zoo grounds, both inside and outside of animal enclosures, is utilized by numerous native wildlife species for food, water, cover, and space to raise young. Cooper's, red-shouldered, and red-tailed hawks, great-horned owls, Common ravens, Anna's and Allen's hummingbirds, and other species of native birds are often observed nesting and fledging on Zoo grounds. A variety of mammals are either residents, such as ground squirrels, desert cottontails, and woodrats (possibly but unconfirmed to be San Diego woodrat (*Neotoma lepida intermedia*) or occasional visitors, including mountain lions and bobcats. Previous surveys have reported several bat species on Zoo grounds, including two California Species of Special Concern, including western mastiff bats and Yuma myotis. Several reptile and amphibian species are commonly observed on Zoo grounds, including striped racers and southern pacific rattlesnakes, and western fence and coastal whiptail lizards, and Western toads that reproduce in Zoo water features. Another way that the Zoo supports native biodiversity and broader conservation efforts is through our important role in supporting the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS) in efforts to both control non-native species (e.g. the capture and care of an American alligator from Lake Machado, or confiscation support and rehabilitation of trafficked Asian songbirds) and support the rehabilitation of native species of concern (e.g. caring for rescued mountain lion cubs). Not only do these efforts help avoid the direct loss of native biodiversity by preventing their predation, the Zoo's role in receiving, evaluating, quarantining, and caring for non-native species is essential to reducing the likelihood that

BASICS:	
	novel diseases are transmitted from trafficked animals to native populations. It is important to note that the Zoo's operations and activities are also beneficial to non-native biodiversity. The Zoo manages valuable populations of animals from around the world, including numerous IUCN Endangered and Critically Endangered species. Some of the individuals in our care represent species with wild populations comprising fewer than 100 total individuals: the last assurance against total extinction. The wild native animals that live around and within the Zoo do pose a potential risk to the health and safety of the animals in the Zoo's care. The Zoo has an obligation to protect the animal collection from direct loss by predators or indirect loss from diseases (such as *Baylisascaris* and *Sarcocystis*) transmitted by wildlife predators inhabiting the Zoo or entering the Zoo from Griffith Park. As such, the eight foot tall perimeter fence, which is required by the United States Department of Agriculture (USDA), excludes animals that cannot pass over or through the fence from accessing available habitat within. Moreover, the Zoo's Vector and Predator Control program requires a combined effort of maintaining the integrity of the perimeter fence, reporting wildlife sightings, conducting ongoing trapping by Zoo staff and Los Angeles County Animal Control, and trimming trees and pruning foliage to eliminate overhead pathways and hiding areas. While the Zoo takes considerable and ongoing efforts, such as installing excluders and fencing and modifying feeding and cleaning regimens, to reduce the accessibility of diet items to wild animals, wild rodents are continually found in the Zoo. As such, Vector Control contractors conduct ongoing trapping efforts, particularly for the invasive Norway rats. Anticoagulant rodenticides are not used on Zoo grounds, instead liquid rodent contraceptives are carefully placed in targeted locations. In addition to the potential impacts on native animals from the exclusion and vector control efforts needed to reduce the risk of mortality for Zoo animals, other activities at the Zoo may impact native biodiversity. For example, artificial noise and artificial lights have been found to impact the behaviors and movement

BASICS:	
	patterns of wildlife (Francis and Barber 2013; Silva, Diez-Méndez, & Kempenaers, 2017). The Zoo hosts several evening events throughout the year that include music and other amplified sound and artificial lighting. The Zoo has ongoing research programs led by the Director of Research to evaluate the impact of these events on animals in the Zoo's care and ensure they do not exceed levels that reduce their welfare. However, the extent to which these events may disturb native wildlife is currently unknown and more research is needed to determine their impacts. As the Zoo was constructed in the 1960s and many of the animal and human spaces no longer meet today's standards, a significant priority for the Zoo is to completely modernize and transform its facilities through a long-term Vision Plan. This Vision Plan seeks to substantially increase the size and quality of enclosures for Zoo animals and increase the number of visitors it can engage in conservation and learning each year by transforming its grounds. This transformation will occur throughout the existing developed spaces and potentially a 16 acre underutilized space within the Zoo grounds that currently lacks animal enclosures or visitor amenities. This 16 acre patch is interspersed by non-native trees, including Australian eucalyptus, jacaranda, and pines, and an understory with an abundance of non-native grasses and herbs. Native plants identified in this area with protected or concern status include approximately 11 Nevin's barberry shrubs, seven coast live oak and two southern black walnut trees, all of which are patchily distributed in the space. This area is inaccessible to the public, but it is currently used for storage and construction vehicle access. Some species of native wildlife do use this space and the transformation will further disturb the area during construction activities and until new, native habitat is established (as is described in the plan). Throughout the Vision Plan's environmental impact report (EIR), a variety of avoidance and mitigation strategies have been identified to limit the impact of the Zoo's transformation on native biodiversity, and adhere to various local, State, and Federal regulations regarding the potential impact or take of the project on protected native species. An outcome of this project is that there will be more native biodiversity of a greater species richness and habitat quality than

BASICS:	
	currently exists on the Zoo grounds. The Zoo is committed to increasing its role in native biodiversity conservation efforts. This is defined in the 2021 Los Angeles Zoo Conservation Strategic Plan (CSP), as one of the six focal areas in the CSP is on California Conservation. Moreover, our commitment is demonstrated in new programs on grounds and off-site that focus on native biodiversity (see **Benefits** below). This includes examining our existing practices to identify ways in which we can improve or mitigate negative interactions that we may currently have (see **How Can Your Department Better Protect Biodiversity?** section). References Francis, C. D., & Barber, J. R. (2013). A framework for understanding noise impacts on wildlife: an urgent conservation priority. *Frontiers in Ecology and the Environment*, *11*(6), 305-313. Silva, A. D., Diez-Méndez, D., & Kempenaers, B. (2017). Effects of experimental night lighting on the daily timing of winter foraging in common European songbirds. *Journal of Avian Biology*, *48*(6), 862-871.

BASICS:	
CHALLENGES: What challenges does your department encounter when implementing biodiversity projects/goals?	The primary challenges to the Zoo Department implementing native biodiversity projects and achieving our goals is the availability and capacity/expertise of staff needed to engage in the planning and implementation of this work. The Conservation Division at the LA Zoo was created in 2019 with the hiring of its first Director of Conservation. One additional staff, the Curator of Community Conservation, was added to the team in 2020, and an additional team member, the Coordinator of Community Engagement, was approved in the FY 2022-2023 budget, although the position will not be filled until January 2023. Both of these positions focus on programs related to conservation culture and capacity building for internal Zoo communities, including staff and volunteers, and external communities, including youth and adult community members and environmental and community organizations in Los Angeles. However, aside from the Zoo Director of Conservation, few existing job classes available in the City Civil Service classification system are related to modern biodiversity conservation and/or the highly specialized and diverse roles and expertise needed to plan, implement, and assess biodiversity conservation programs. To meet the City's goal to, "achieve and maintain a no-net loss of biodiversity by 2035," additional and more generalized conservation classifications in the City would enable the Zoo and other City Departments to better contribute to the biodiversity goals. For example, if several levels of a broad Conservation Biologist job class were available, specialists could be hired on staff with the necessary backgrounds and requirements needed to restore and/or enhance native habitat, perform ecological monitoring and biodiversity surveys, test, deploy, and develop conservation technology, assess the impacts of public engagement activities, and more. Currently, these positions must be filled through contractual services with consultants. Biodiversity conservation is a priority of the City, and the creation of positions to support this work on an ongoing basis is an action that should be prioritized. Despite the limited availability of generalized

BASICS:	
	conservation specific positions in the City, throughout the Zoo there are individuals with unique capacity among City Departments to support specific conservation programs. Among our staff are experts in: ● husbandry, breeding, and health of an incredible diversity of species; ● education, learning, and engagement of people of all ages and backgrounds ● diversity, equity, inclusion, justice, and accessibility (DEIJA) ● sustainability in animal and human operations The challenges in applying this expertise is that: 1) additional staff are needed to enable our experts time, outside what is required of their existing duties, to engage in conservation efforts; and 2) additional facilities and funding are needed to support more programs. For example, with additional staff in the reptiles, amphibians, and invertebrates section, and isolated space away from other animals in Zoo care (necessary for disease avoidance and mitigation), and funding for equipment, the Zoo would be positioned to engage in additional breeding and release programs similar to that of the southern mountain yellow-legged frog for targeted wildlife species in Griffith Park or other areas of Los Angeles. In general, conservation challenges and the threats facing biodiversity are increasing due to climate change. Thus, climate change itself represents one of the biggest challenges we face in meeting our biodiversity goals. As extreme heat events and the intensity and frequency of fire and drought increase, more resources, programs, interventions, and capital improvements will be necessary to maintain biodiversity. For example, the Zoo will need additional resources to upgrade and expand its irrigation systems to maintain its grounds and develop strategies to reduce the likelihood of – and impacts from wildfire. Zoo grounds need to be upgraded to provide the animals in our care and our visitors, who provide essential funding for our conservation activities, spaces that are more resilient and accommodating in a hotter and drier climate. Zoo grounds need to be transformed to incorporate more native plants that are climate resilient, and shade structures and trees should be available throughout

BASICS:	
	the Zoo.
BENEFITS: How does your department benefit biodiversity? Check all that apply	✔ Controlling invasive species/pests ✔ Pursuing projects that create, restore, or enhance native habitat ✔ Planting native trees or shrubs ✔ Increasing equitable access to nature ✔ Protecting species of conservation concern ✔ Performing public outreach on biodiversity, ecosystem services, green infrastructure ✔ Engaging, educating and employing youth - particularly those from systemically excluded communities and backgrounds
NARRATIVE: please describe the ways in which your department benefits biodiversity in more detail.	The Zoo benefits native biodiversity in a variety of direct and indirect ways as stated in the Background section above. Specific programming for native biodiversity includes: **Controlling invasive species** In 2022, the L.A. Zoo worked with the Department of Recreation and Parks (RAP) to explore partnership opportunities to improve local environments and promote native biodiversity. The Zoo and RAP identified a drainage in southern Griffith Park along the West Trail that has numerous invasive plants, including cocklebur, tree tobacco, castor bean, and mustard. The Zoo received a Right of Entry and has begun a long-term project to engage its communities in the removal of these invasive plants to create space for native plants, and monitor the changes over time. As stated in the background section above, the Zoo has an ongoing rodent control program primarily to manage the invasive Norway rat population on Zoo grounds. The Zoo consultants who are responsible for this Vector Control program do not use rodenticides and instead use a liquid rodent contraceptive.

BASICS:	
	Pursuing projects that create, restore, or enhance native habitat/Planting native trees or shrubs The Zoo is engaged in and pursuing new projects that create, restore, and enhance native habitat on and outside of Zoo grounds. In 2021 the Zoo partnered with LA Parks Foundation to install a native microforest test plot in the Bette Davis Picnic Area of Griffith Park. In addition to planting 145 indigenous plants from 12 species that had been seed-collected from Griffith Park, the Zoo volunteer team followed up with quarterly measuring and maintenance events through the first year of growth. Ad hoc wildlife observations have been submitted to the microforest's iNaturalist Project by Zoo volunteers since the installation, and numerous species have been reported. The largest and most notable project that the Zoo is currently pursuing to restore and enhance native habitat, which would also include the planting of numerous native trees and shrubs, is the Vision Plan EIR Alternative 1.5, The California Focused Conservation Alternative. In this Plan, the Zoo proposes to preserve and restore what is currently a six acre patch of oak woodland and non-native grassland. Restoration of this area would remove and replace the non-native groundcover with native plant species, including a greater density of locally propagated native oak trees and herbaceous Species of Conservation Concern (SCC) and other threatened species. In addition to the oak woodland restoration proposed in Vision Plan EIR Alternative 1.5, the proposed development of the California planning area would result in the extensive planting of numerous native tree, shrub, and herbaceous species. Currently, this 16 acre undeveloped patch on Zoo grounds includes 12.7 acres of laurel sumac shrubland and the remaining area dominated by non-native eucalyptus and pine trees. Throughout the entire patch the groundcover is dominated by non-native grasses, mustard, Russian thistle, castor bean, and other invasive plant species. Transformation of this space into the California area of the Zoo would significantly increase the number of native tree species and shrubs, and SCC's could be targeted for inclusion in the landscaping guidelines to ensure their

BASICS:	
	prioritization. **Increasing equitable access to nature** A lasting relationship with nature – one that is life-long, and inspired and supported by trusted mentors and peers – is the most reliable way to develop a pro-environmental identity, which is critical for conservation behavior change. We also know that living a life connected to nature has physical, mental, and emotional health benefits (Chawla 2006). Yet, access to nature and the ability to develop these relationships is not equitable. A 2017 study showed that “High-income and white people have access to significantly more acres of parks per youth, to more parks with excellent levels of quality, and to safer parks than other groups” (Rigonol 2017). Nearly 80% of National Park visitors are white (National Park Service 2019). Increasing equitable access to nature, pathways to careers, environmental and conservation identity, and similar objectives are at the core of the Zoo’s mission. Each year the Zoo provides in person experiences with the wonder of biodiversity for more than a million visitors. On-site programming developed and led by the L.A. Zoo Learning & Engagement Division professionals engaged nearly 60,500 individuals in the 2021-22 fiscal year. One of the Zoo programs that epitomizes our dedication to equitable access to nature is the Migrant Education Program (MEP) held each year. Coordinated by the Los Angeles Unified School District (LAUSD), the MEP is designed for children who are immediate family members of migrant workers. In 2022, 42 students participated in the four week program at the Zoo, learning about biodiversity, Zoo operations and careers, and conservation. The Zoo has further demonstrated its dedication to increasing equitable access to nature and advancing diversity, equity, inclusion, justice, and accessibility (DEIJA) throughout our operations and programming by creating an Equity Programs Division in 2020 and selecting Social & Environmental Justice as one of its six CSP focal areas. Under the coordination of this Division and as an objective of the CSP, a new Paid Internship Program was started at the Zoo in 2021 to provide opportunities to engage in hands-on learning

BASICS:	
	and explore career paths for students in local colleges from systemically excluded groups in our community. During the 2022 internship, the second year of the program, the program included 14 participants, including 10 in the Conservation Division. The Zoo is also dedicated to working with community partners to continue increasing equitable access to nature. This includes a new and growing partnership with Outward Bound Adventures (OBA). OBA is dedicated to providing access to nature, environmental education, and exposure to careers in conservation for low-income, gang impacted, and overlooked adults and youth. During an initial five week program in Spring 2022, students from OBA worked with the Zoo's Conservation and Learning & Engagement Divisions to learn and apply hands-on conservation fieldwork methods and scientific frameworks in the undeveloped areas of the Zoo grounds. **Protecting species of conservation concern** The Zoo has long been engaged in efforts to recover native threatened species, including the Critically Endangered California condor and Endangered southern mountain yellow-legged frog. Although these two species are not included on the LA Sanitation & Environment Inventory of SCCs, they are both found in Angeles National Forest in the San Gabriel Mountains, and individuals of both species (but especially condors), may now range within the Los Angeles area (as defined above), and close to the City limits. The L.A. Zoo is also the wild condor rehabilitation facility for Southern California. Our Animal Health and Animal Care teams regularly receive injured or sick condors from the region for care and re-release (when possible). Plants The SCC Nevin's barberry grows both naturally and in landscaped areas of the Zoo and they are monitored and prioritized for protection in Zoo operations (e.g. brushfire clearance and landscaping activities).

BASICS:	
	Mammals The Zoo grounds are periodically entered and traversed through by a mountain lion, P-22, including a well-known incident in 2016 in which P-22 killed a koala in the Zoo's collection. In response, the Zoo altered operations to reduce the likelihood of future predation events and protect both P-22 and Zoo animals. The Zoo is also uniquely positioned to aid CDFW in rehabilitation of mountain lions, or other species that are threatened or SCC. For example, in 2020 the Zoo received two orphaned mountain lion cubs from the National Park Service (NPS) via CDFW after the mother was found deceased. Zoo animal care experts provided round-the-clock care for the cubs, and joined CDFW agents in the field during multiple attempts to place the cubs with a wild surrogate mother. Although the surrogate did not work, the orphans survived and were moved to a long-term conservation center under the direction of CDFW. Avians The L.A. Zoo is an active member of the Association of Zoos and Aquariums conservation program called the Saving Animals From Extinction North American Songbird Program (SAFE NAS). The goal of the SAFE NAS is to reduce the threats to North American songbirds and secure sustainable wild populations of these species by harnessing the collective strengths of AZA institutions. In 2022, the LA Zoo Conservation Committee (comprising 50 Zoo staff and volunteers) has focused on specific goals over the next year to support bird diversity, including those SCCs (including yellow warbler, least Bell's vireo, yellow-headed blackbird, and others) that may utilize the Zoo grounds and habitat created or improved through Zoo engagement. These actions include: ● Assessing and mitigating bird collisions with glass on Zoo grounds ● Increasing bird-friendly habitat on and off Zoo grounds ● Monitoring avian populations and diversity through the installation of acoustic monitors ● Engaging the public to inform and support bird-friendly activities (e.g. bird friendly coffee now being sold and promoted on grounds)

BASICS:	
	The Zoo is also a regular nesting site for several species of raptors, including Cooper's hawks, an SCC. In 2021 and 2022 at least eight Cooper's hawks fledged on Zoo grounds from three nests. **Performing public outreach on biodiversity, ecosystem services, green infrastructure** The Zoo regularly participates in off-site outreach programs to engage members of the public in biodiversity, conservation, and nature. In addition to the on-site programming performed by the L.A. Zoo Learning and Engagement Division, Volunteers, and Docents, the Zoo has numerous in-person and virtual programs to engage Angelenos away from Zoo grounds. One of these programs is Zoo PALS, a special grant-funded program for Title I schools that provides kindergarten through 5th grade teachers and their students with free access and transportation to the Zoo, along with programming and supplies for their students. In the fiscal year 2021-22, the L.A. Zoo held: ● 35 off-site outreach programs and co-created programs with community groups that engaged 4,300 members of the public. ● 454 guided Virtual Field Trips for LAUSD Schools reaching 10,643 students and teachers ● 50 Zoo PAL programs with 1,333 participants The Zoo is also currently leading a collaborative project to develop an installation to be installed in the International Terminal at LAX to inform international travelers about the dangers of illegal wildlife trafficking and trade and what they can do to help stop it. This collaboration includes the Zoo, Los Angeles World Airports (LAWA) and Cabrillo Marine Aquarium (a facility of LA Department of Recreation and Parks), USFWS, CDFW, the AZA's Wildlife Trafficking Alliance, and the Aquarium of the Pacific. The installation and associated online resources are anticipated to be completed in Q4 of 2022. References Chawla, L. (2006). Learning to love the natural world enough to protect it. BARN-Forskning om barn og barndom i Norden, 24(2), 57-78. National Park Service (2019). National Park Service

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	Comprehensive Survey of the American Public 2018 – Racial and Ethnic Diversity of National Park System Visitors and Non-Visitors. Natural Resource Report NPS/NRSS/EQD/NRR—2019/2042. Fort Collins, Colorado Rigolon, A. (2017). Parks and young people: An environmental justice study of park proximity, acreage, and quality in Denver, Colorado. Landscape and Urban Planning, 165, 73-83.

WEB PRESENCE:	
If you have a web page devoted to biodiversity, please provide the link. If you do not, we encourage you to build a webpage that publicly showcases biodiversity efforts and lists your biodiversity-related goals for the near and long term future.	
Relevant link(s):	**https://www.lazoo.org/** https://www.lazoo.org/save-wildlife/ https://www.lazoo.org/save-wildlife/actions-we-take/conservation-strategic-plan/ https://www.lazoo.org/save-wildlife/take-action/
Notes:	Throughout the Zoo's website is information about biodiversity and the conservation efforts of the Zoo Department. The "Save Wildlife" sub-page includes more specific information about our Conservation Strategic Plan, our partnerships, and actions people can take to support biodiversity conservation.

SELF-ASSESSMENT:	
Assign a numeric and letter grade (e.g., 85%, B) with how your department is currently addressing biodiversity issues. ***Individual departments may self-select the criteria/metrics that go into their assessment** ***Future assessments will be made relative to your baseline score**	
Letter Grade:	• B- (Good)
Numeric Grade:	82%

SELF-ASSESSMENT:	
Grading Criteria & Narrative: *please detail the criteria/metrics used to assign a grade	As a City department the Zoo has had a long and successful engagement in biodiversity conservation that in recent years has been increasing in strategic planning, programs, and relevant staffing. The Zoo has put significant resources into developing staff capacity to incorporate more research and evaluation throughout our practices to determine their impact and continually improve our practices. The Zoo is also implementing new measures to more thoroughly evaluate its impacts on native biodiversity, including the installation of acoustic monitors and a Motus Wildlife Tracking System on Zoo grounds, which provide continuous data on the presence of wildlife and how this may vary over time and in response to Zoo operations. The Zoo also began collecting aerial footage of its 6-acre Oak Woodland before and after brushfire clearance activities to monitor the change over time and evaluate the impact on the more than 200 native trees and shrubs. However, there are ways we can continue to improve our practices and grow our programming and implement additional policies to increase our score (see **How Can Your Department Better Protect Biodiversity?** section).

HOW CAN YOUR DEPARTMENT BETTER PROTECT BIODIVERSITY?	
How can your department improve the state of biodiversity in the City? Be specific. Actions can include: ● Protecting habitat, ● Restoring degraded habitat, ● Enhancing connectivity, ● Increasing patch size, ● Protecting threatened or endangered species, ● Eradicating invasive species and/or pests.	**Protecting habitat, Restoring degraded habitat, Eradicating invasive species** Increase native habitat area and quality, and the number and diversity of native plant species on grounds through metric-based programs. Create building and landscaping guidelines that promote wildlife friendly practices (e.g. bird-friendly windows, native habitat creation, etc.) for capital projects and all landscaping activities on grounds. Continue to expand our engagement in habitat creation, enhancement, restoration activities, and invasive plant removal throughout Los Angeles. **Protecting threatened or endangered species** Perform wildlife surveys and monitoring to better

HOW CAN YOUR DEPARTMENT BETTER PROTECT BIODIVERSITY?	
	understand and mitigate the impacts as much as possible e.g. monitor bat populations and identify roosts on an ongoing basis to inform Zoo activities and operations and reduce their potential disturbances on SCC species. Create capital improvement guidelines that promote wildlife friendly practices (e.g. bird-friendly windows) for projects on grounds.
List practices or actions your department can take to integrate biophilic, nature-centered design into: ● Capital improvement projects, ● City-scale planning, or ● Policy.	● Create brushfire clearance native plant sustainability management plan ● Create wildlife-friendly light and sound policies ● Establish and implement facility and landscape design guidelines that minimize impacts to native biodiversity and nurture its growth to the maximum extent possible while expanding opportunities to feature and honor natural viewsheds ● Establish and maintain waste disposal infrastructure to minimize impacts on native wildlife and maximize amount of green waste/compost available for reuse ● Expand the reuse of green waste/compostables in Zoo landscaping and grounds maintenance ● Establish contracting policies to ensure Zoo-funded consultants also minimize their impacts to native wildlife ● Incorporate native species in art, design, and naming elements of Zoo facilities and infrastructure to maximize public education opportunities

BIODIVERSITY GOALS FOR FY 22-23:			
List at least 5 departmental biodiversity goals for 2022-23. Goals should be SMART: **S -** Strategic **M -** Measurable **A -** Attainable **R -** Relevant **T -** Time-based ***Note: next year you will be asked to report back on the progress made on each of these goals (from 0-100%)**			
#	*Assigned Goal Lead*	*Goal Description*	*Metric(s) to Track Progress/Success*
#1	Robert Gonzales Senior Park Maintenance Supervisor	**Create and implement a Los Angeles Zoo Native Plant Sustainability Brushfire Maintenance Plan** The current brushfire removal program on Zoo grounds needs to be improved to include additional practices that will reduce its impact on native biodiversity. This goal is to develop and implement a comprehensive plan that complies with the City's brushfire clearance policy, that provides enhanced measures to identify and protect native plants.	Completion of the plan Implementation of the plan in the 2023 brushfire clearance process Count and diversity of plants protected
#2	Jake Owens Director of Conservation	**Develop Restoration Plan for 6 acre Zoo Oak Woodland Habitat** The six acre oak woodland on the Zoo's campus contains numerous mature native trees and shrubs, as well as numerous non-native pines and eucalyptus and a groundcover vegetated by non-native herbs, including mustard, thistle, and grasses. This area also represents a buffer between the visitor and operations areas of the Zoo and Griffith Park Drive and part of the Wilson & Harding Golf Course. This goal is to develop a climate resiliency-focused restoration plan for this area and begin propagating native plants for future	Completion of initial restoration plan Build grow/shade house Begin native plant propagation program

BIODIVERSITY GOALS FOR FY 22-23:			
		restoration activities. Initial steps have already been taken, including the aerial documentation of the Oak Woodland pre- and post-clearance, initiation of a complete tree inventory (in collaboration with RAP), and more thorough requirements on contractors for the photo documentation of the clearance process.	
#3	Jake Owens Director of Conservation	**Zoo Bird Garden Restoration and Maintenance** In 2018 six bird gardens were installed on Zoo grounds to provide habitat for native birds and encourage Zoo visitors to incorporate bird habitat into their communities. The gardens need to be rejuvenated with new plants and messaging, which is one of the goals of the LA Zoo Conservation Committee.	Complete the restoration of two of six bird gardens Number of native plants added Develop and implement a long-term maintenance plan for the gardens
#4	Jake Owens Director of Conservation	**West Trail Invasive Plant Removal Project** See Narrative above (**Controlling invasive species**) for more detail. The goal of this program is to remove invasive plant species from the West Trail drainage to make space for native plant recruitment into the space.	Complete the first year of the program Clear all new invasive plant growth from the area before it seeds in 2023
#5	Jake Owens Director of Conservation	**Bird Safe Window Policy and Monitoring Program** Across the Zoo there are numerous buildings and structures that contain glass and present potential collision threats to native birds. This goal is to develop and implement a long-term plan for monitoring bird collisions on campus, identify high threat windows, install bird-safe window decals or other deterrents where needed, and create policy to ensure all new capital improvement projects include bird-safe glass.	Develop and implement bird collision monitoring plan Identify all threat windows Install bird-safe window deterrents on 100% of targeted (threat) windows.

BIODIVERSITY GOALS FOR FY 22-23:			
			Create bird-safe capital improvement policy

BIODIVERSITY PLAN
Please describe how your department will take action to better protect biodiversity, institute biodiversity policies, and help make progress on the no-net loss of native biodiversity goal over the course of the next year (FY 22-23).
Actions to Protect Biodiversity: The Zoo has demonstrably prioritized native plant preservation in the creation of the Vision Plan EIR Project Alternative 1.5, which would ensure the protection of 22 Southern California black walnut trees, 113 coast live oak trees, 45 toyon, and 21 elderberry shrubs and other native plant species in the 6 acre habitat patch of undeveloped oak woodlands on Zoo grounds. The Zoo has committed to the long-term improvement of this habitat patch through active restoration, developing the programs to remove non-native and invasive plants while collecting seeds from native species to propagate and plant. We are committed to performing this restoration activity while also utilizing this space to engage young Angelenos in programs to promote intergenerational stewardship capacity, including paid internship programs and community partnerships (e.g. OBA). Engaging teens and college students in the study and restoration of this area will provide hands-on learning experiences in conservation and resiliency for the next generation of environmental leaders. Most importantly, the Zoo is dedicated and demonstrably capable of doing this work in ways that emphasize DEIJA, and make nature and careers in the conservation profession more accessible for everyone.
Policies to Institute: Bird Safe Window Policy Native Plant Sustainability Brushfire Maintenance Plan Native Plant Landscape Guidelines Light and Sound Policy for Evening/Night Events

BIODIVERSITY PLAN
How Will the Above Actions and Policies Contribute to the City's No-Net Loss of Native Biodiversity Goal? By instituting the above programs and policies the Zoo will be able to reduce its impacts on native biodiversity, such as the incidental loss of birds from collisions with glass and removal of saplings and other new growth of native plants during brushfire clearance. Habitat creation, restoration, and enhancement activities on and off Zoo grounds will increase the number of native trees and shrubs in the city, providing additional and improved resources for native wildlife species. Active and ongoing removal of invasive plant species will allow native plants to reclaim previously occupied space. All of these actions will increase the abundance and spatial dispersal of native plants, and promote the retention and growth of native wildlife. The actions will also help build the skills, knowledge, experience, and identity that the next generation of conservationist and environmental leaders need to continue and expand upon our current work.

IMPLEMENTATION:	
Describe how you plan to coordinate efforts internally to make progress on your chosen goals and your biodiversity plan.	Goal #1: The Zoo has initiated a working group comprising members from Divisions throughout the Zoo, including Grounds Maintenance, Administration, Sustainability and Capital Programs, and Conservation to achieve this goal. Regular meetings will be scheduled to review and assign specific tasks and responsibilities for each person/Division, evaluate progress, and move forward.
	Goal #2: The Conservation, Grounds, and Sustainability and Capital Programs Division are coordinating to develop a proposal for achieving this goal. The recently formed L.A. Zoo Capital Projects Committee, comprising representatives of each Zoo Division and led by the Zoo Director of Sustainability and Capital Programs, will be engaged in this program during bi-weekly meetings to inform and ensure progress. This program will be bolstered by the hiring of a restoration ecologist in the Conservation Division as a contractual services position in the 2023-2024 City Budget. The Zoo Conservation, Learning & Engagement, and Equity Programs Divisions are also working together to ensure that the engagement of outside organizations and community

IMPLEMENTATION:	
	members in learning, skills building, and career training, meet the DEIJA goals of the City and advance the Zoo's Equity Goals.
	Goal #3: The Zoo Conservation, the Zoo Curator of Birds, and Grounds Divisions are working together with the Zoo Conservation Committee (see above description in the Benefits: Narrative: Avians) to plan the installation, maintenance, and monitoring of these gardens. These groups are also collectively consulting and identifying potential partnerships with outside organizations who can help inform and improve the process and outcome. The Conservation Committee subgroup responsible for this goal meets monthly to monitor progress and plan future work.
	Goal #4: This program is coordinated by the Conservation Division, with support by the Zoo Conservation Committee to aid in planning and organizing the events, and the Grounds and Maintenance Division to supply supplies/equipment and inform the methods.
	Goal #5: This program is coordinated by the Conservation Committee and overseen by the Conservation Division and the Zoo Curator of Birds. Members of the responsible Committee subgroup meet monthly to plan, track progress, and move forward. This program involves the engagement of and coordination with Divisions and individuals throughout the Zoo to monitor and report bird collisions and their outcomes, identify and mitigate collision threats, and modify construction planning processes. The Zoo Division of Sustainability and Capital Programs and the Capital Projects Committee will be engaged in the development of the Bird Safe Window Policy and retrofitting existing windows with anti-collision products.
	GENERAL NOTES:

IMPLEMENTATION:	
Does the department have the resources and staffing needed to effectively meet these goals? Please describe gaps or resourcing needs.	The Zoo does not currently have the resources or staffing required to effectively meet these goals in a timely and efficient way. To actively restore sites on Zoo grounds and elsewhere in the City the Zoo is planning the construction of a propagation and grow house and the associated supplies, which it currently lacks. The biggest challenge is the lack of City positions, especially given that there are no restoration ecologists or similar positions in the City. In general, resources to increase the number of conservation focused positions at the Zoo would substantially increase our capacity to aid the City in its local biodiversity goals, including the creation of SCC specific recovery programs.

Signature of Dept. Chief Sustainability Officer — 10/03/2022 Date

Signature of General Manager — 10/03/2022 Date

ANNUAL DEPARTMENTAL BIODIVERSITY REPORTING - TEMPLATE

NOTES:

- Departmental biodiversity plans will be submitted to the City Council and become part of the public record.
- Departmental biodiversity plans should be innovative and aspirational to help the City achieve the no-net loss goal of native biodiversity. While these plans should be put forth in good faith as public commitments to protect and enhance biodiversity, it is recognized that progress on stated goals may be subject to future budget decisions, policy direction, or other factors.

DEFINITION:

- NATIVE SPECIES = species that have ranges in the LA area (e.g., the LA River, Ballona Creek, Dominguez Channel, and Rio Hondo Watersheds and tributaries).

RESOURCES:

- Inspiration, Resources, and Recommendations
- Departmental Actions Outlined in the LA Biodiversity Index Baseline Report

DEPARTMENTAL INFORMATION:	
Date:	October 3, 2022
Department Name:	Recreation and Parks (RAP)
Point of Contact:	Elena Maggioni
Contributors:	1. Steve Dunlap 2. Craig Raines 3. Courtney MacCammon 4. Rosie Santilena 5. Sefanie Smith 6. Priya Macwans 7. Matthew Rudnick

BASICS:	
BACKGROUND: Discuss how your department interacts with native biodiversity. Please describe departmental operations, activities, or priorities that impact native biodiversity or touch on biodiversity issues.	The City of Los Angeles Department of Recreation and Parks is responsible for the management of 480 parks representing more than 16,000 acres of parkland (6,000 acres of undeveloped parks and 12,500 acres of developed parks). This includes the maintenance of an estimated 187,000 park trees. The City parks system provides extensive biodiversity benefits as it serves an essential role in preserving natural resources, supporting clean air and clean water, and providing wildlife habitats and open space connectivity in a dense urban environment. Many of RAP's operations and activities therefore impact native biodiversity in direct and indirect ways. Examples of RAP policies, activities and operations that impact biodiversity include, but are not limited to, the following: RAP's Tree Policy set Best Management Practices for maintaining a vibrant and sustainable urban forest. With respect to endangered specials, RAP hosts the least tern enclosure at Venice Beach, a peregrine falcon nest at Griffith Park, Whitepoint Reserve (breeding ground for the California Gnatcatcher), riparian habitat where the Least Bell's vireos have been sighted. RAP conducts nesting bird surveys when projects may affect trees or native habitat in the nesting season. RAP collaborates with the Friends of Griffith Park on the Los Angeles Raptor Study that surveys over 600 territories in the LA area including RAP-managed parks. The Department has also allowed the Friends of Griffith Park to conduct a number of scientific surveys over the years including a large mammal camera trap study, bird surveys, and plant inventories. The Department cooperates with the Audubon Society and other non profits which monitor bird species in our parks. Through the LA Park foundation, RAP has a tree planting program open to private donors and

BASICS:	
	collaborates with several non profit organizations to restore native habitat in undeveloped parks. RAP collaborates with North East Trees, Tree People, Anahuacalmecac School, the Santa Monica Mountains Conservancy, City Plants, LACC, Verdant Venice and other groups to plant native trees in parks and to renaturalize beach areas. RAP participates with the steering committee of the Wildlife Area at Sepulveda Basin
CHALLENGES: What challenges does your department encounter when implementing biodiversity projects/goals?	Though care and concern of natural spaces within parks is an important consideration for RAP staff, the focus and priority is often placed on recreational programming. In an effort to expand soccer fields without increased water use, for example, RAP has installed many artificial grass fields. Though less water is used to maintain these fields, this may upset the natural habitat and have other environmental impacts. Consideration of impacts to native biodiversity and species of conservation concern should be prioritized in all projects throughout the department Specific challenges are: ● Lack of resources - Due to staffing and budget reductions in the last two decades, very limited resources are dedicated to proactive implementation of habitat restoration, invasives management, and the implementation of other biodiversity projects/goals. ● Competition for park space - There exists a challenging need for both recreational amenities (i.e. sports fields, courts and active recreational assets) and open space/natural areas, especially in dense, urban areas. ● Need for public education - some of the most challenging impacts on natural ecosystems in parks arises from human activity and a lack of awareness and respect by the public of biological resources.
BENEFITS: How does your department benefit biodiversity? Check all that apply	● Controlling invasive species/pests ☒ ● Pursuing projects that create, restore, or enhance native habitat ☒

BASICS:	
	• Planting native trees or shrubs ☒ • Enhancing wildlife connectivity • Increasing equitable access to nature ☒ • Creating policy to protect biodiversity☒ • Protecting species of conservation concern ☒ • Performing public outreach on biodiversity, ecosystem services, green infrastructure • Other:_____
NARRATIVE: please describe the ways in which your department benefits biodiversity in more detail.	• Expanding healthy soils projects. • Our Forestry Manual provides the Best Management Practices produced by the latest Arboricultural field work done at noted Universities and the International Society of Arboriculture to maintain and increase our biodiversity. • Utilizing decomposed granite, mulch, and drought tolerant and native plants where appropriate • Completion of a park tree inventory which will help RAP in a more individualized approach to the care of its urban forest • The department has transitioned away from the use of pesticides and rodenticides across the park system and is continuing to shift towards non-toxic pest management where possible and use organic fertilizer or soil amendment • RAP's Urban Forest Program Manual has been updated to include a section on biodiversity • The Ranger Division is very conscious of how to mitigate situations that can exacerbate wildfire. RAP Maintenance also conducts regular brush clearance work in parks to decrease wildfire risk • RAP hired an Urban Ecologist to further these and other nature-focused goals • City of Los Angeles is so hardscaped that it is very difficult for animals to live anywhere. LA City parks are one of the few places where animals have green spaces to live out their life cycles. RAP owns undeveloped areas that are not heavily used by the public, where wildlife

BASICS:	
	can thrive. ● RAP actively manages the Peregrine Falcon nest in Griffith Park every year by closing down the trails around the nest and increasing Park Ranger patrols in the area. The pair has successfully fledged since the Department implemented this wildlife management strategy. ● When RAP performs brush clearance for fire prevention in sensitive areas, the department actively protects nesting birds through nesting birds surveys. Biologists survey the areas before brush clearance starts and establish appropriate buffers around nests. ● Training of staff by Urban Ecologist - Forestry, Maintenance, and Park Rangers. Approximately 50 Park Rangers were trained on interpretation within Department Parks and interesting topics to share with youth. Approximately 50 part- and full-time Maintenance employees were trained on general flora and fauna within Griffith Park with a focus on invasive plants. Approximately 50 Forestry division employees were trained on common bird behavior and bird nest identification practices in relation to tree trimming. The Urban Ecologist presented at and some Forestry employees participated in the Tree Care for Birds Workshop in July 2022. ● Monthly Nature Hikes with the RAP Urban Ecologist are held in various areas of Griffith Park. The reservation is capped at 25 people and the hikes are approximately 2 hours. They are open for all ages and the topic of discussion focuses on the history of Griffith Park, flora, and fauna.

WEB PRESENCE:	
If you have a web page devoted to biodiversity, please provide the link. If you do not, we encourage you to build a webpage that publicly showcases biodiversity efforts and lists your biodiversity-related goals for the near and long term future.	
Relevant link(s):	URBAN FOREST | City of Los Angeles Department of Recreation and Parks
Notes:	The panel on the left side contains links to other pages relevant to RAP's Urban Forestry program, including a list of problematic plants on the "dirty dozen" list.

SELF-ASSESSMENT:	
Assign a numeric and letter grade (e.g., 85%, B) with how your department is currently addressing biodiversity issues. ***Individual departments may self-select the criteria/metrics that go into their assessment** ***Future assessments will be made relative to your baseline score**	
Letter Grade:	• A (Excellent) • **B (Very Good)** • C (Good) • D (Poor) • F (Very Poor)
Numeric Grade:	80%
Grading Criteria & Narrative: *please detail the criteria/metrics used to assign a grade	The department does not have a specific focus on biodiversity, but, in general, implements policies that protect the existing tree coverage, enhance the presence of native species and to the extent possible does not conflict with the wildlife using the parks.

HOW CAN YOUR DEPARTMENT BETTER PROTECT BIODIVERSITY?	
How can your department improve the state of biodiversity in the City? Be specific. Actions can include: ● Protecting habitat, ● Restoring degraded habitat, ● Enhancing connectivity, ● Increasing patch size, ● Protecting threatened or endangered species, ● Eradicating invasive species and/or pests.	Protecting habitat: ● Survey parks systematically to understand the type of habitat they include and the function they perform in the LA urban socio ecological system. Based on this understanding, establish levels of protection for the most sensitive areas in specific times of the year. Restoring degraded habitat: ● Identify key areas within Department-managed parks that are in need of restoration. Examples include riparian areas within Griffith Park, chaparral habitat in Debs and Elysian Parks, or wetland habitat in Echo Park. Once identified, RAP should prioritize where action is most needed to remove invasive species and plant native vegetation. Enhancing connectivity: ● Study key wildlife movement patterns in a large context of Los Angeles. The larger parks in the system should be studied for their benefit to wildlife movement to smaller open space patches. This can be accomplished using camera traps strategically placed in wildlife corridors. ● Acquisition of key parcels that will enhance connectivity for wildlife. Increasing patch size: ● Redesign of the community garden policy ● Acquiring areas adjacent to undeveloped parks Protecting threatened and endangered species: ● Healthy soils initiative and move away from pesticides Eradicating invasive species: ● Train staff to recognize invasive species and how to eradicate them ● Incorporate CalFlora Weed Manager into the Department

HOW CAN YOUR DEPARTMENT BETTER PROTECT BIODIVERSITY?	
	● Use information gathered on CalFlora to attack invasive species polygons
List practices or actions your department can take to integrate biophilic, nature-centered design into: ● Capital improvement projects, ● City-scale planning, or ● Policy.	Capital improvements: ● Planting large tree species. Specify diversity in the plant pallet using only species that are compatible with the current climate situation. ● Develop plant lists for each separate microclimate condition ● Using permeable pavers when feasible to do so in order to increase soil infiltration. ● Using design to mitigate impact on habitat. ● Use locally sourced materials and require suppliers to adhere to our environmental concerns. ● Planting native plant species/regionally compatible species to decrease the amount of water used. ● Performing nesting bird surveys when working near trees during the nesting season Policy ● Formalize RAP's regenerative management plans and efforts through an update of the Integrated Pest Management Plan. This update will include mandating the use of organic soil amendments to replace synthetic fertilizers across the park system ● Update the Community Garden and Open Space policies.

BIODIVERSITY GOALS FOR FY 22-23:			
List at least 5 departmental biodiversity goals for 2022-23. Goals should be SMART: **S -** Strategic **M -** Measurable **A -** Attainable **R -** Relevant **T -** Time-based ***Note: next year you will be asked to report back on the progress made on each of these goals (from 0-100%)**			
#	*Assigned Goal Lead*	*Goal Description*	*Metric(s) to Track Progress/Success*
#1	Urban ecologist	Train, resource, and equip staff who manage open space to identify, monitor, and manage invasive species so that they are positioned to better track and tackle the spread of invasive species.	Establish a tracking spreadsheet for the different divisions within the Department; check in on the spreadsheet on a regular basis.
#2	Forestry/Environmental	Redesign the pest management plan	Funding for the update will be requested in the next budget cycle.
#3	Partnerships/ Landscape architecture	Continue to establish and grow relationships with non-profit partners who can help steward natural lands.	Reach out to non-profit partners to understand their plans, and establish "rules of engagement" to work on RAP's properties by the end of the fiscal year.
#4	Urban ecologist/ Environmental	Collaborate with LASAN Biodiversity Team to create an inventory of known invasive species and pests for the City of Los Angeles. An initial list should be jointly drafted by the LASAN Biodiversity Team and Recreation & Parks. Once finalized, the inventory will be published on the RAP webpage	Begin training of staff and key stakeholders of CalFlora Weed Manager app by January 2023. Apply for the Western IPM grant by December 2022 deadline for further invasive species

BIODIVERSITY GOALS FOR FY 22-23:			
			funding.
#5	Golf Division and Urban Ecologist	Audubon Golf Certification Program	Complete baseline biological surveys and mapping for all golf courses by June 2023.

BIODIVERSITY PLAN
Please describe how your department will take action to better protect biodiversity, institute biodiversity policies, and help make progress on the no-net loss of native biodiversity goal over the course of the next year (FY 22-23).
• Train, resource, and equip staff who manage open space to identify, monitor, and manage invasive species so that they are positioned to better track and tackle the spread of invasive species. • Planting native plant species/regionally compatible species to decrease the amount of water used. • Continue replacing trees according to RAP's diameter at breast height policy • Continue nesting bird surveys for projects that require activities on trees and on sensitive areas during nesting bird season. • Audubon Golf Certification Program. • Monthly Nature Hikes with the RAP Urban Ecologist are held in various areas of Griffith Park.
<u>Policies to Institute:</u> • Formalize RAP's regenerative management plans and efforts through an update of the Integrated Pest Management Plan. • Based on the CalFlora Weed Manager Tool, draft an invasive plants management plan; • Update the Community Garden and Open Space policies • Approve the Tree Manual update • Reach out to non-profit partners to understand their plans, and establish "rules of engagement" to work on RAP's properties

BIODIVERSITY PLAN
How Will the Above Actions and Policies Contribute to the City's No-Net Loss of Native Biodiversity Goal? By managing existing trees with the best management practices included in the new tree manual, continuing to plant native trees and components to native habitats, establishing the knowledge basis for an invasive species management plan and protecting wildlife species during nesting season, and managing pest, RAP is committed to contribute to the No-Net Loss on Native Biodiversity.

IMPLEMENTATION:	
Describe how you plan to coordinate efforts internally to make progress on your chosen goals and your biodiversity plan.	Goal #1: Urban Ecologist will reach out to the Maintenance Superintendent on a quarterly basis to ensure all full-time Maintenance staff are trained on invasive species management.
	Goal #2: Funding for the update will be requested in the next budget cycle. The environmental division, under the supervision of Forestry, will draft a scope of work to hire a consultant to update the plan.
	Goal #3: Partnerships and landscape architecture will schedule meetings with our current partners to receive updates.
	Goal #4: Urban Ecologist will coordinate with LASAN and other area experts on common invasive species in Los Angeles to create the document to be published on RAP's website. The Urban Ecologist will engage with LASAN and the County of LA in order to identify key stakeholders to be involved in CalFlora invasive species data collection. The Urban Ecologist is currently working with the RAP Grants

IMPLEMENTATION:	
	Administration Division to apply for the Western IPM Grant.
	Goal #5: The urban ecologist coordinates with the golf division to do biological surveys. RAP will engage with stakeholder groups
	GENERAL NOTES:
Does the department have the resources and staffing needed to effectively meet these goals? Please describe gaps or resourcing needs.	No it does not. The department has limited staffing and resources to proactively pursue its environmental goals. The department needs to hire and train additional staff with biological competencies. It also needs to establish an independent environmental group with additional in-house staff and contractual services resources to further develop, implement and track these goals.

Signature of Dept. Chief Sustainability Officer — Date: 10/03/2022

Signature of General Manager — Date: 10/03/2022

StreetsLA ANNUAL DEPARTMENTAL BIODIVERSITY REPORTING - FY22-23

NOTES:

- Departmental biodiversity plans will be submitted to City Council and become part of the public record.
- Departmental biodiversity plans should be innovative and aspirational to help the City achieve the no-net loss goal of native biodiversity. While these plans should be put forth in good faith as public commitments to protect and enhance biodiversity, it is recognized that progress on stated goals may be subject to future budget decisions, policy direction, or other factors.

DEFINITION:

- NATIVE SPECIES = species that have ranges in the LA area (e.g., the LA River, Ballona Creek, Dominguez Channel, and Rio Hondo Watersheds and tributaries).

RESOURCES:

- Inspiration, Resources, and Recommendations
- Departmental Actions Outlined in the LA Biodiversity Index Baseline Report

DEPARTMENTAL INFORMATION:	
Date:	September 23, 2022
Department Name:	Department of Public Works / StreetsLA
Point of Contact:	Ana Tabuena-Ruddy
Contributors:	1. Hector Banuelos, Street Tree Superintendent I, Urban Forestry Division (UFD) 2. Ana Tabuena-Ruddy, Landscape Architect II, Engineering Services Division (ESD), Grants Group

BASICS:	
BACKGROUND: Discuss how your department interacts with native biodiversity. Please describe departmental operations, activities, or priorities that impact native biodiversity or touch on biodiversity issues.	• Bureau of Street Services (StreetsLA), Urban Forestry Division (UFD) has purview of approximately 700,000 street trees growing in approximately 6,500 miles of roadways. Also under StreetsLA purview are approximately 10.5 million square feet of landscape medians. • The City's tree population is one of the largest in the nation and consists of over 1,000 different species, varieties, and cultivars making it one of the most diverse in the world • Bureau of Street Services (StreetsLA), Engineering Services Division (ESD) has a Grant Group that proactively seeks grant funding to increase CA native plantings in the public right-of-way (PROW). The Grant Group has successfully secured grant funding in the millions supporting biodiversity goals, such as median conversion projects, and integrating greening in active transportation projects • Once funding is secured, ESD designs and implements projects in the public right-of-way that includes tree and landscape planting, including converting existing non-functional turf medians into CA native plantings. • ESD also has teams of plan reviewers (Metro, LAWA, Development Services, Adopt-A-Median) performing reviews of landscape and irrigation plans throughout the City, and through this work, can support biodiversity initiatives

BASICS:	

CHALLENGES: What challenges does your department encounter when implementing biodiversity projects/goals?	● Removal of native trees for development in vacant lots
	● Projects previously approved by other City departments trigger the need to remove trees
	● Replacement of removed trees are not comparable to what was removed
	  ○ Habitat loss from removed trees is difficult to avoid
	  ○ Canopy and habitat loss
	● By-right developments may trigger the need to remove native trees/vegetation (PW/BSS does not have the authority to deny development or no-build option) BSS, however, can ask to reduce project scope to minimize impacts to native habitat. Need support from elected officials to enforce recommendations.
	● Funding needed for specialized maintenance of trees and native species
	● Conflict with utilities to expand tree planting efforts
	● Proposed capital projects that impact biodiversity
	● Future plans for recycled water use may not create conducive conditions for CA native plants
	● Climate change and its impact on trees/plants currently native to our latitude moving to northern latitudes make it challenging to carry out advanced planning of tree planting efforts for resiliency
	● Need for specialized training in irrigation needs and care of native plant species
	● Planting designs that mix natives with drought tolerant creates competition where drought tolerant plants ends up taking over the landscaped area
	● Most native species appear dead or dying between seasons, which may not be appealing to the public; need for a cultural shift to accept this 'rewilding' aesthetic in the PROW

BASICS:	
	• Limited native plant choices that are green year round and stays within the required height and width dimensions for safety and visibility • Lack of CA native plant availability in nurseries
BENEFITS: How does your department benefit biodiversity? Check all that apply	☐ Controlling invasive species/pests ☑ Pursuing projects that create, restore, or enhance native habitat ☑ Planting native trees or shrubs ☑ Enhancing wildlife connectivity ☑ Increasing equitable access to nature ☑ Creating policy to protect biodiversity ☐ Protecting species of conservation concern ☑ Performing public outreach on biodiversity, ecosystem services, green infrastructure ☑ Other: Grant scoping specifically to increase the planting of CA natives in the City median network_____
NARRATIVE: please describe the ways in which your department benefits biodiversity in more detail.	• $10M of Clean CA grant projects specifically targeting conversion of medians with non-functional turf into CA native plantings • 100% green waste recycle to mulch from trimming operations • Davey tree inventory — • PW Trust Fund to plant native oaks, est. 154 trees • ESD projects promote native plantings • Grant scoping includes native plantings, including integrating into active transportation projects • Adopt-A-Median plan reviews encourages the use of CA native plantings in medians and parkways

WEB PRESENCE:	
If you have a web page devoted to biodiversity, please provide the link. If you do not, we encourage you to build a webpage that publicly showcases biodiversity efforts and lists your biodiversity-related goals for the near and long term future.	
Relevant link(s):	N/A
Notes:	May create a web page linking to median conversion projects recently awarded grant funding

SELF-ASSESSMENT:	
Assign a numeric and letter grade (e.g., 85%, B) with how your department is currently addressing biodiversity issues. ***Individual departments may self-select the criteria/metrics that go into their assessment** ***Future assessments will be made relative to your baseline score**	
Letter Grade: 77%	☐ A (Excellent 90-100) ☐ B (Very Good 80-89) ☑ C (Good 70-79) ☐ D (Poor 65-69) ☐ F (Very Poor <65)
Numeric Grade:	
Grading Criteria & Narrative: *please detail the criteria/metrics used to assign a grade	• Grant-seeking and award - A (95) • Integrating natives to Bureau's project portfolio - C (80) • Intentional design - C (75) • Protecting native tree species - B (80) • Staff/Crew Training - D (65) • Plan reviews and recommendations - B (80) • Maintenance of native plantings (65)

HOW CAN YOUR DEPARTMENT BETTER PROTECT BIODIVERSITY?	

How can your department improve the state of biodiversity in the City? Be specific. Actions can include:
● Protecting habitat,
● Restoring degraded habitat,
● Enhancing connectivity,
● Increasing patch size,
● Protecting threatened or endangered species,
● Eradicating invasive species and/or pests.
	● Integrate in scope of work during grant scoping
	● Capital Projects
	  ○ reference the connectivity pinch points for opportunities
	  ○ Include educational signage on natives in projects whenever possible
	● Plan review recommendations
	  ○ Adopt-A-Median - promote native trees and landscaping in applicant proposals
	  ○ Development Services
	  ■ public R/W - UFD to recommend native trees first, if feasible and appropriate
	  ■ Private R/W – DCP approves the plantings
	  ○ Metro - provide feedback to Metro's Tree Policy
	  ○ LAWA - UFD to recommend natives first, if feasible and appropriate
	● Existing UFD programs - public education
	● Wildlife connectivity enhancements
	  ○ Intentional plantings near "connectivity pinch points" (see metric 1.1e in biodiversity report - layer to be posted online soon!)
	  ○ Species-specific corridor (like SF's green haistreak butterfly corridor)
	● Staff/Crew Training:
	  ○ Send UFD landscaping/tree crews and landscape architects to Theodore Payne's landscape certification course (learn deadheading, identify weeds vs. natives) — free class, funded by DWP (program link)

HOW CAN YOUR DEPARTMENT BETTER PROTECT BIODIVERSITY?	

List practices or actions your department can take to integrate biophilic, nature-centered design into:
● Capital improvement projects,
● City-scale planning, or
● Policy.
● Review and scrutinize all tree removal permit requests
	● Apply for more grants for median conversions from turf to native plantings
	● Take advantage of municipal rebate programs for turf conversions - DWP/MWD
	● Form a biodiversity group within StreetsLA
	● No Net Loss Biodiversity Goal
	  ○ Look into how to deal with invasive pests
	  ■ Need to seek funding for an Integrated Pest Management Program
	● Include native trees in all tree planting projects and Cool Streets Program - expand vision for projects and Cool Streets to include natives, where feasible
	● Do an internal assessment of how the Bureau can encourage more biodiversity in projects
	● Plan review recommendations should not just focus on liability issues, but also on biodiversity goals and avoiding invasives
	● Scrutinize all tree removal permit requests to ensure all measures are taken to minimize or eliminate the need to remove tree(s)

BIODIVERSITY GOALS FOR FY 22-23:

List at least 5 departmental biodiversity goals for 2022-23. Goals should be SMART:

S - Strategic
M - Measurable
A - Attainable
R - Relevant
T - Time-based

***Note: next year you will be asked to report back on the progress made on each of these goals (from 0-100%)**

#	*Assigned Goal Lead*	*Goal Description*	*Metric(s) to Track Progress/Success*
#1	Ana Tabuena-Ruddy	Grant-seeking	# of grants and funding amount/year
#2	Hector Banuelos	Review and track number of protected (native) tree removal applications received and processed by StreetsLA	# of applications received and number of trees permitted for removal and retained are being monitored byStreetsLA
#3	Ana Tabuena-Ruddy	Integrating natives into Design/Build projects	# of projects/year; # of native trees/year; sq. ft. of strictly native proposed landscaping/year
#4	Ana Tabuena-Ruddy	Integrating natives into large projects with consultants	# of projects/year; # of native trees/year; sq. ft. of strictly native proposed landscaping/year
#5	Hector Banuelos	Integrating natives into Citywide tree planting programs (i.e. Cool Streets, Sidewalk Repair, Public Works Trust Fund)	# of native trees planted per year

BIODIVERSITY PLAN
Please describe how your department will take action to better protect biodiversity, institute biodiversity policies, and help make progress on the no-net loss of native biodiversity goal over the course of the next year (FY 22-23).
Actions to Protect Biodiversity: The Bureau scrutinizes all tree removal permit requests and tree reports to ensure all feasible alternatives for tree preservation have been considered. Removal of live healthy trees is only considered after all feasible design alternatives have been explored.
Policies to Institute: StreetsLA upholds and enforces the LAMC 62.161 thru 62.171 related to street trees and LAMC 46.00 thru 46.06 and 17.02 related to native trees and shrubs. StreetsLA and other City Departments are collaborating with the application and interpretation of LAMC 46.00 and 17.02 and may be seeking possible revisions to the LAMC's in the foreseeable future.

BIODIVERSITY PLAN
How Will the Above Actions and Policies Contribute to the City's No-Net Loss of Native Biodiversity Goal? Replacement trees are required for all approved tree removal permits consistent with current City policies. Pursuant to current tree protection policies, StreetsLA and other City Departments are collaborating to ensure minimal impact to the native trees, shrub, and habitat from private and public development projects. When native trees and shrubs are removed, tree/shrubs are required.

IMPLEMENTATION:	
Describe how you plan to coordinate efforts internally to make progress on your chosen goals and your biodiversity plan.	Goal #1: Document type and quantity of grant and funding received that contributes to increasing native biodiversity
	Goal #2 Tree reports are reviewed and scrutinized to ensure all projects are designed to minimize and/or eliminate the need to remove native trees. StreetsLA are tracking all tree removal permit applications received and processed
	Goal #3: ESD currently maintains a spreadsheet of projects both designed and built in-house, and those completed with consultants. This spreadsheet reflects the # of trees and landscaping required for each project. Creating another column to indicate # of native trees and square footage of native landscaping proposed for each project can be easily implemented. Additionally, conduct project-related community engagement to educate and support native plantings.
	Goal #4: See Goal #3. In addition, instruct PMs working with consultants to direct the consultant team to prioritize native

IMPLEMENTATION:	
	tree/landscape plantings. Conduct project-related community engagement to educate and support native plantings.
	Goal #5: StreetsLA/UFD are monitoring and tracking the planting of native trees in their tree planting programs including Cool Streets, Public Works trust fund, and Sidewalk Repair programs.
	GENERAL NOTES: Internal staff meetings by UFD and ESD can include reminders about annual goals
Does the department have the resources and staffing needed to effectively meet these goals? Please describe gaps or resourcing needs.	Resource needs include staffing for grant support in seeking funding for native plantings and staffing for continued and regular maintenance of native trees and landscaping.

for 9/28/2022

Signature of Dept. Chief Sustainability Officer Date

for 9/28/2022

Signature of General Manager Date

ANNUAL DEPARTMENTAL BIODIVERSITY PW/BSL

NOTES:

- Departmental biodiversity plans will be submitted to City Council and become part of the public record.
- Departmental biodiversity plans should be innovative and aspirational to help the City achieve the no-net loss goal of native biodiversity. While these plans should be put forth in good faith as public commitments to protect and enhance biodiversity, it is recognized that progress on stated goals may be subject to future budget decisions, policy direction, or other factors.

DEFINITION:

- NATIVE SPECIES = species that have ranges in the LA area (e.g., the LA River, Ballona Creek, Dominguez Channel, and Rio Hondo Watersheds and tributaries).

RESOURCES:

- Inspiration, Resources, and Recommendations
- Departmental Actions Outlined in the LA Biodiversity Index Baseline Report

DEPARTMENTAL INFORMATION:	
Date:	9/7/22
Department Name:	Public Works, Bureau of Street Lighting (BSL)
Point of Contact:	James Quigley
Contributors:	1.

BASICS:	
BACKGROUND: Discuss how your department interacts with native biodiversity. Please describe departmental operations, activities, or priorities that impact native biodiversity or touch on biodiversity issues.	Construction operations are generally limited to the area between the street cub face and 4' towards the property line. Usually this area is concrete sidewalk and the BSL's interaction with wildlife is small to non-existent. *However the impacts of night lighting* have been argued for decades without any consensus or specific resolution. The City of Los Angeles has adopted the Illuminating Engineering Societies (IES) lighting level recommendations which dictates horizontal Foot Candle levels and by extension luminaire Lumen output. Additionally the BSL adheres to the International Dark Sky Association (IDA) guidelines utilizing only full cutoff fixtures with a CCT or 3000 or less which is considerably less then moonlight.
CHALLENGES: What challenges does your department encounter when implementing biodiversity projects/goals?	Little to none from construction and installation. Light trespass and night lighting impacts on wildlife present challenges that the BSL design guidelines work to mitigate and minimize.

BASICS:	
BENEFITS: How does your department benefit biodiversity? Check all that apply	☐ Controlling invasive species/pests ☐ Pursuing projects that create, restore, or enhance native habitat ☐ Planting native trees or shrubs ☐ Enhancing wildlife connectivity ☐ Increasing equitable access to nature ☐ Creating policy to protect biodiversity ☐ Protecting species of conservation concern ☐ Performing public outreach on biodiversity, ecosystem services, green infrastructure ☐ Other:_____
NARRATIVE: please describe the ways in which your department benefits biodiversity in more detail.	

WEB PRESENCE:	
If you have a web page devoted to biodiversity, please provide the link. If you do not, we encourage you to build a webpage that publicly showcases biodiversity efforts and lists your biodiversity-related goals for the near and long term future.	
Relevant link(s):	
Notes:	

SELF-ASSESSMENT:	
Assign a numeric and letter grade (e.g., 85%, B) with how your department is currently addressing biodiversity issues. ***Individual departments may self-select the criteria/metrics that go into their assessment** ***Future assessments will be made relative to your baseline score**	
Letter Grade:	☐ A (Excellent) ☐ B (Very Good) ☑ C (Good) ☐ D (Poor) ☐ F (Very Poor)
Numeric Grade:	
Grading Criteria & Narrative: *please detail the criteria/metrics used to assign a grade	The BSL has little to no impact on, or, conflict with wildlife.

HOW CAN YOUR DEPARTMENT BETTER PROTECT BIODIVERSITY?	
How can your department improve the state of biodiversity in the City? Be specific. Actions can include: • Protecting habitat, • Restoring degraded habitat, • Enhancing connectivity, • Increasing patch size, • Protecting threatened or endangered species, • Eradicating invasive species and/or pests.	Continue all mitigations of nighttime lighting and stay abreast of all new developments in the science of lighting.
List practices or actions your department can take to integrate biophilic, nature-centered design into: • Capital improvement projects, • City-scale planning, or • Policy.	Continue all mitigations of nighttime lighting and stay abreast of all new developments in the science of lighting.

BIODIVERSITY GOALS FOR FY 22-23:

List at least 5 departmental biodiversity goals for 2022-23. Goals should be SMART:

S - Strategic
M - Measurable
A - Attainable
R - Relevant
T - Time-based

***Note: next year you will be asked to report back on the progress made on each of these goals (from 0-100%)**

#	*Assigned Goal Lead*	*Goal Description*	*Metric(s) to Track Progress/Success*
#1		Continue the conversion of HID lighting to full cutoff LED.	% of lighting that has been converted
#2		Continue installing lighting that has CCT of 3000 or less.	% of lighting that has been converted
#3		LA Lights will continue research into the impacts of artificial light pollution on local wildlife in updates to the LA Lights Strategic Plan	
#4		LA Lights will continue to review the lighting components of the draft wildlife ordinance	
#5		LA Lights will investigate tailgate training sessions to inform staff as to the indirect impacts night lighting can have on wildlife, particularly nocturnal species (e.g., disruption of mating, feeding, migration, predator-prey interactions).	

BIODIVERSITY PLAN
Please describe how your department will take action to better protect biodiversity, institute biodiversity policies, and help make progress on the no-net loss of native biodiversity goal over the course of the next year (FY 22-23).
Actions to Protect Biodiversity:
Policies to Institute:
How Will the Above Actions and Policies Contribute to the City's No-Net Loss of Native Biodiversity Goal?

IMPLEMENTATION:	
Describe how you plan to coordinate efforts internally to make progress on your chosen goals and your biodiversity plan.	Goal #1: To date we have converted 92% of our lighting to full cutoff LED and the effort to achieve 100% conversion continues.
	Goal #2: All lighting installed by LA Lights will be 3000 or less CCT
	Goal #3:
	Goal #4:
	Goal #5:
	GENERAL NOTES:
Does the department have the resources and staffing needed to effectively meet these goals? Please describe gaps or resourcing needs.	At this point LA Lights lacks funding or work orders to conduct research and evaluation as we are primarily funded by street lighting maintenance assessments

Signature of Dept. Chief Sustainability Officer — Date: 10/8/22

Signature of General Manager — Date: 10/8/22