



NATURE BASED SOLUTIONS EQUITY INDEX

JANUARY 2026



ACKNOWLEDGEMENTS

This report and index were developed and prepared by the LA Sanitation & Environment Climate Action Team. The index was created and the report written by Lily Carlson, Environmental Specialist, with support from Doug Walters, Division Manager and Chief Sustainability Officer; and Amanda Amaral, Environmental Affairs Officer.

Thank you to Nurit Katz, Dan Cooper, Isaac Brown, and Casandra Rauser for reviewing the index and collaborating in its development. Additionally, thank you to the South Los Angeles Connectivity Master Plan core team for providing feedback in its development.

We credit Earthstar Geographics for providing map visuals. Sources for data used are provided in the appendix.

Cover photo credit: Kat Superfisky.



Toyon
Photo: Lily Carlson

INTRODUCTION

Promoting climate resilience and taking climate action is an essential priority of the City of Los Angeles, and nature based solutions (NBS), which ensure human well-being by addressing societal challenges through sustainable actions that protect and restore living ecosystems and their functions, are powerful tools to address climate change. Through providing ecosystem services like producing and cleaning air, reducing extreme heat, and sequestering carbon, NBS are effective at addressing climate change and promoting climate resilience. Additionally, NBS contain a variety of co-benefits, such as enhancing biodiversity, cleaning water and increasing water infiltration, providing recreational opportunities, and more. As such, NBS are uniquely positioned to make progress towards the City's climate goals and promote co-benefits.

However, the nature that provides these crucial services is not equitably distributed. Limited access to nature is a significant environmental issue that intensifies climate burden and vulnerability, as well as other environmental concerns. In Los Angeles, environmental inequity leaves the most vulnerable communities with limited access to essential ecosystem services.



Sepulveda Basin
Photo: Nurit Katz

Environmental justice (EJ) within the City of Los Angeles is the just treatment and meaningful involvement of all people in agency decision-making and other local activities that affect human wellbeing and the environment. Because certain areas bear a greater environmental burden due to a legacy of injustice and disinvestment—such as through practices like redlining—integrating EJ into decision-making is crucial. Strategically focusing efforts, such as creating new green spaces in ecologically disadvantaged areas, helps address these inequities and takes action on climate change.

However, nature often receives limited consideration within the City’s broader EJ and climate efforts, indicating a significant gap in equitably enhancing ecologically disadvantaged communities. For example, CalEnviroScreen 4.0, the currently most widely used measurement of EJ in the City, does not incorporate any nature based metrics into its scoring. As such, there is a need for data that effectively assess nature equity, which is the distribution of the ecosystem services that are crucial for climate action and environmental resilience.

The Nature Based Solutions Equity Index (NBSEI) fulfills this data need through utilizing the most recent data that measures the equity considerations of nature based solutions. The NBSEI will be incorporated into climate decision making and NBS planning, allowing for the data-informed prioritization of ecologically disadvantaged areas in NBS and other climate work.



Echo Park
Photo: LA Sanitation and Environment

INDEX METRICS

The following metrics were incorporated into the NBSEI:

- Access to Natural Areas: Natural areas, areas that are vegetated by naturally occurring or restored native habitat, contain the greatest ecosystem services. As such, access to these natural areas is crucial in order to receive the climate benefits of these areas.
- Neighborhood Landscape / Tree Canopy Footprint: While natural areas provide the best ecosystem services, other landscape types, such as tree canopy and ornamental and recreational landscapes, still provide crucial ecosystem service as well, such as mitigating extreme heat and enhancing air quality.
- Community Scientist Activities and App Utilization: Community science activities are crucial to not only provide a valuable dataset to decisionmakers and researchers but to also represent engagement and the potential for effective stewardship of NBS.

Additionally, population density was used as a factor in creating the NBSEI. With higher population density, there is an increased demand for nature and ecosystem services. Incorporating population density also helps explain community action scores by accounting for the number of participants in community science activities, proportionately measuring engagement.



Freeway in Los Angeles
Photo: Kat Superfisky

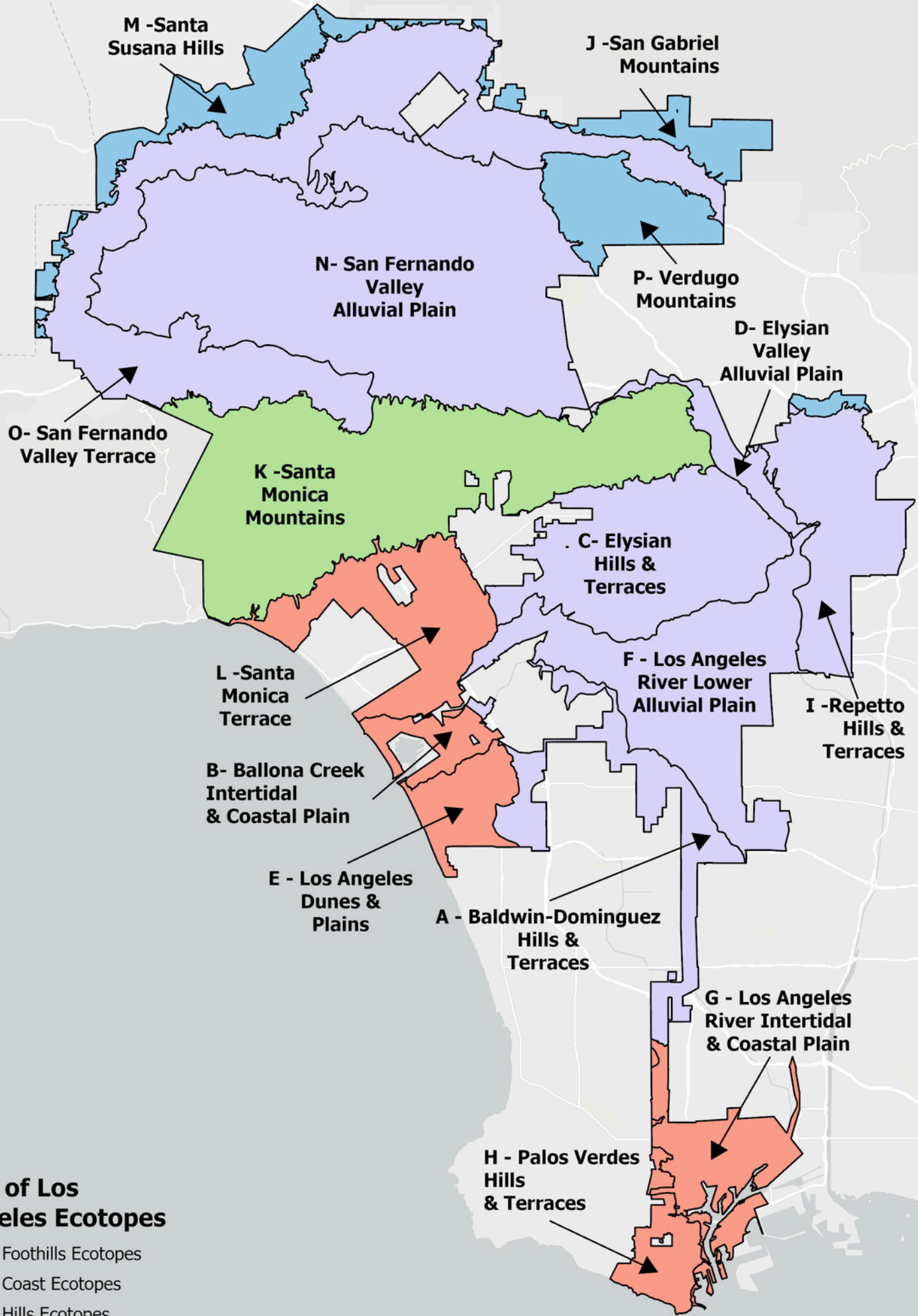
CENSUS TRACTS & ECOTOPES

Census tracts are designed to capture demographic data of communities and are a common way of evaluating EJ across communities. For example, CalEnviroScreen 4.0 summarizes environmental burden by census tracts. As such, summarizing nature equity in census tracts in the NBSEI is crucial to maintain consistency with current standards of evaluating EJ.

Additionally, ecotopes were included as a spatial reference when assessing nature equity, since the framework has been used to evaluate ecological trends. More specific geographic references and neighborhoods are additionally described when evaluating overall trends in the results.

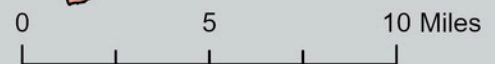


Los Angeles Cityscape
Photo: Kat Superfisky



City of Los Angeles Ecotopes

- Foothills Ecotopes
- Coast Ecotopes
- Hills Ecotopes
- Valleys Ecotopes



METRIC RESULTS

Each metric was scored from 0 to 5, where 0 indicates areas that are most ecologically disadvantaged and are shown in red while 5 indicates areas that are least ecologically disadvantaged and are shown in green. Below are the results of each metric in the NBSEI, including ecotopes overlaid for reference.



Taylor Yard Brownfield
Photo: LA Sanitation and Environment

METRIC #1 - ACCESS TO NATURAL AREAS

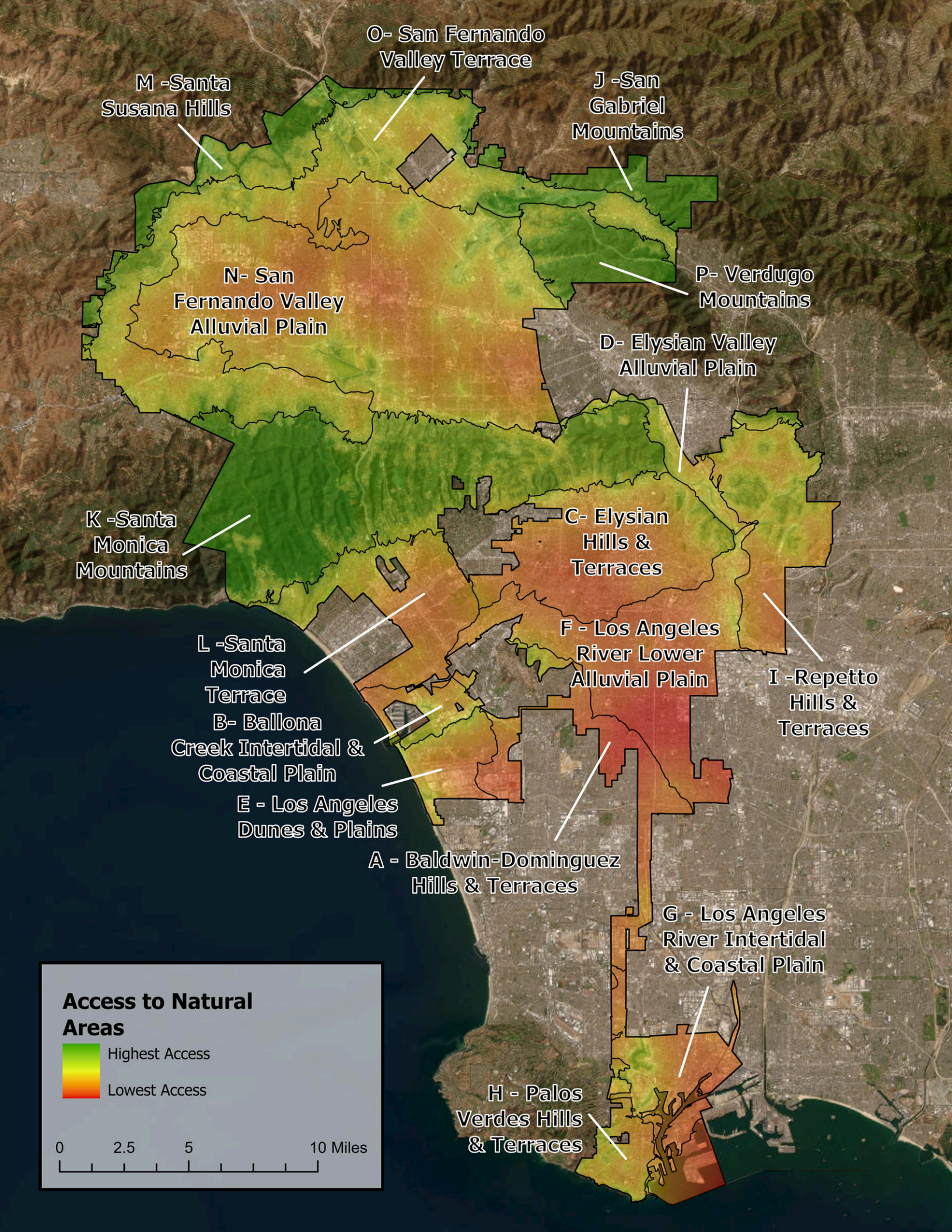
The quality of a patch of natural area is highly tied to the size of the area. As such, distance from a patch of natural area was weighted based on how large the area is.

There is a high level of access around large patches of natural areas, including the Santa Monica Mountains, the Verdugo Mountains, the San Gabriel Mountains, and the Santa Susana Hills. Additionally, smaller natural areas like Elysian Park and Sepulveda Basin still provide high levels of access nearby. However, many areas across the City have poor access to high quality nature, particularly in the Elysian Hills and Terraces, the Baldwin-Dominguez Hills and Terraces, and the Los Angeles River Lower Alluvial Plain, which corresponds to areas like Central and South Los Angeles.

Because most of the total natural area coverage in the City is located in large patches like the Santa Monica Mountains, the differences in overall access at a small scale are low, indicating broader trends across ecotopes and that access to nature is more regional.



Topanga State Park
Photo: Lily Carlson



O - San Fernando Valley Terrace

M - Santa Susana Hills

J - San Gabriel Mountains

N - San Fernando Valley Alluvial Plain

P - Verdugo Mountains

D - Elysian Valley Alluvial Plain

K - Santa Monica Mountains

C - Elysian Hills & Terraces

L - Santa Monica Terrace
B - Ballona Creek Intertidal & Coastal Plain

F - Los Angeles River Lower Alluvial Plain

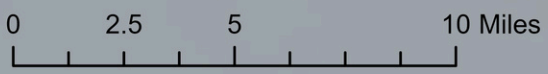
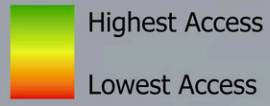
I - Repetto Hills & Terraces

E - Los Angeles Dunes & Plains

A - Baldwin-Dominguez Hills & Terraces

G - Los Angeles River Intertidal & Coastal Plain

Access to Natural Areas



H - Palos Verdes Hills & Terraces

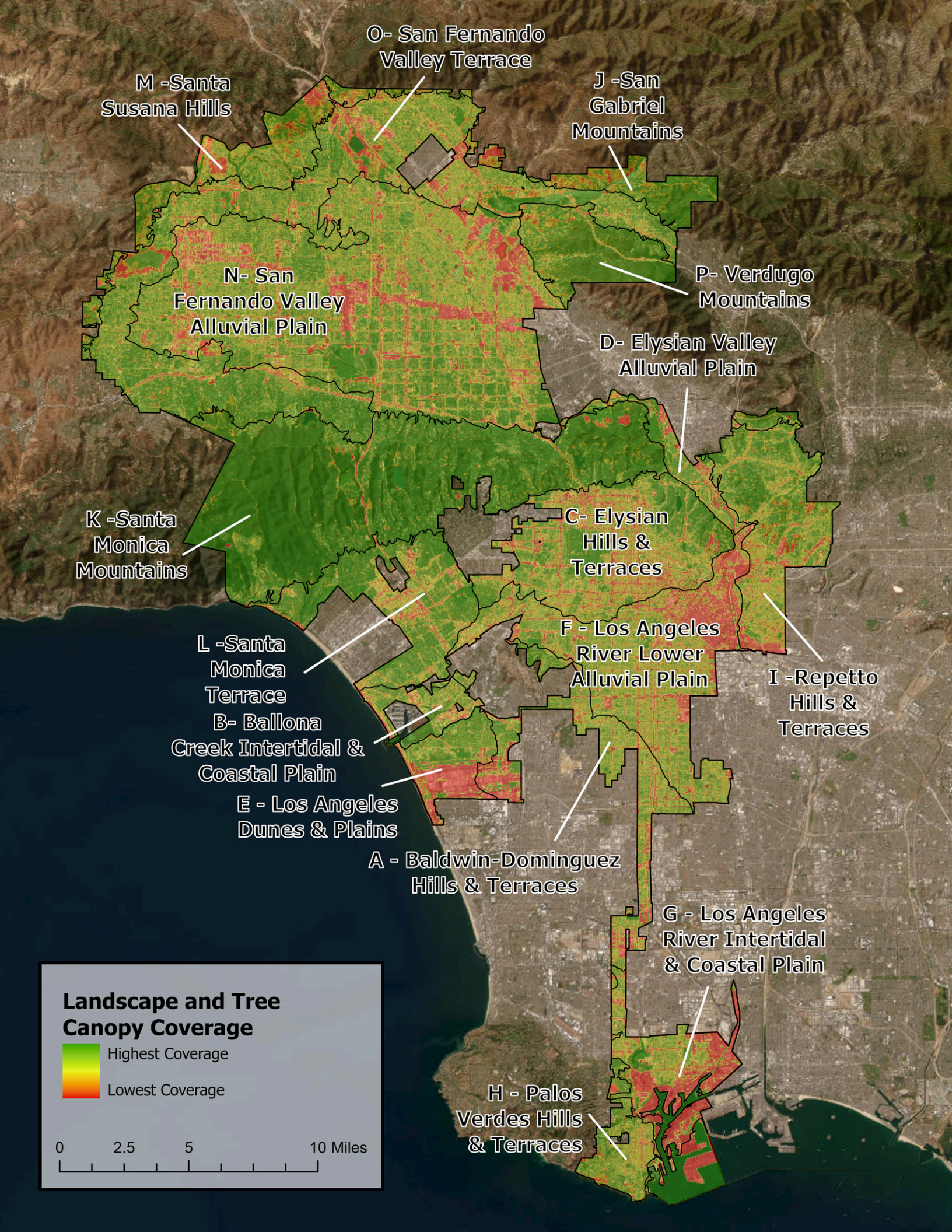
METRIC #2 - NEIGHBORHOOD LANDSCAPE / TREE CANOPY FOOTPRINT

After combining all vegetation and water land cover types together, the total percentage of landscape coverage was calculated for 60 meter by 60 meter grids in order to capture the effects of landscape on a broader area.

This metric has a resolution that captures differences in landscape coverage on a fine scale. As such, there will be significant variation within regions and ecotopes. However, there are broader general trends that can be seen in the results. For example, Downtown Los Angeles generally has low landscape coverage alongside commercial or industrial areas like the City's airports.



Chilopsis linearis
Photo: SelectTree



O - San Fernando Valley Terrace

M - Santa Susana Hills

J - San Gabriel Mountains

N - San Fernando Valley Alluvial Plain

P - Verdugo Mountains

D - Elysian Valley Alluvial Plain

K - Santa Monica Mountains

C - Elysian Hills & Terraces

L - Santa Monica Terrace
B - Ballona Creek Intertidal & Coastal Plain

F - Los Angeles River Lower Alluvial Plain



I - Repetto Hills & Terraces

E - Los Angeles Dunes & Plains

A - Baldwin-Dominguez Hills & Terraces

G - Los Angeles River Intertidal & Coastal Plain

Landscape and Tree Canopy Coverage

 Highest Coverage
 Lowest Coverage

0 2.5 5 10 Miles

H - Palos Verdes Hills & Terraces

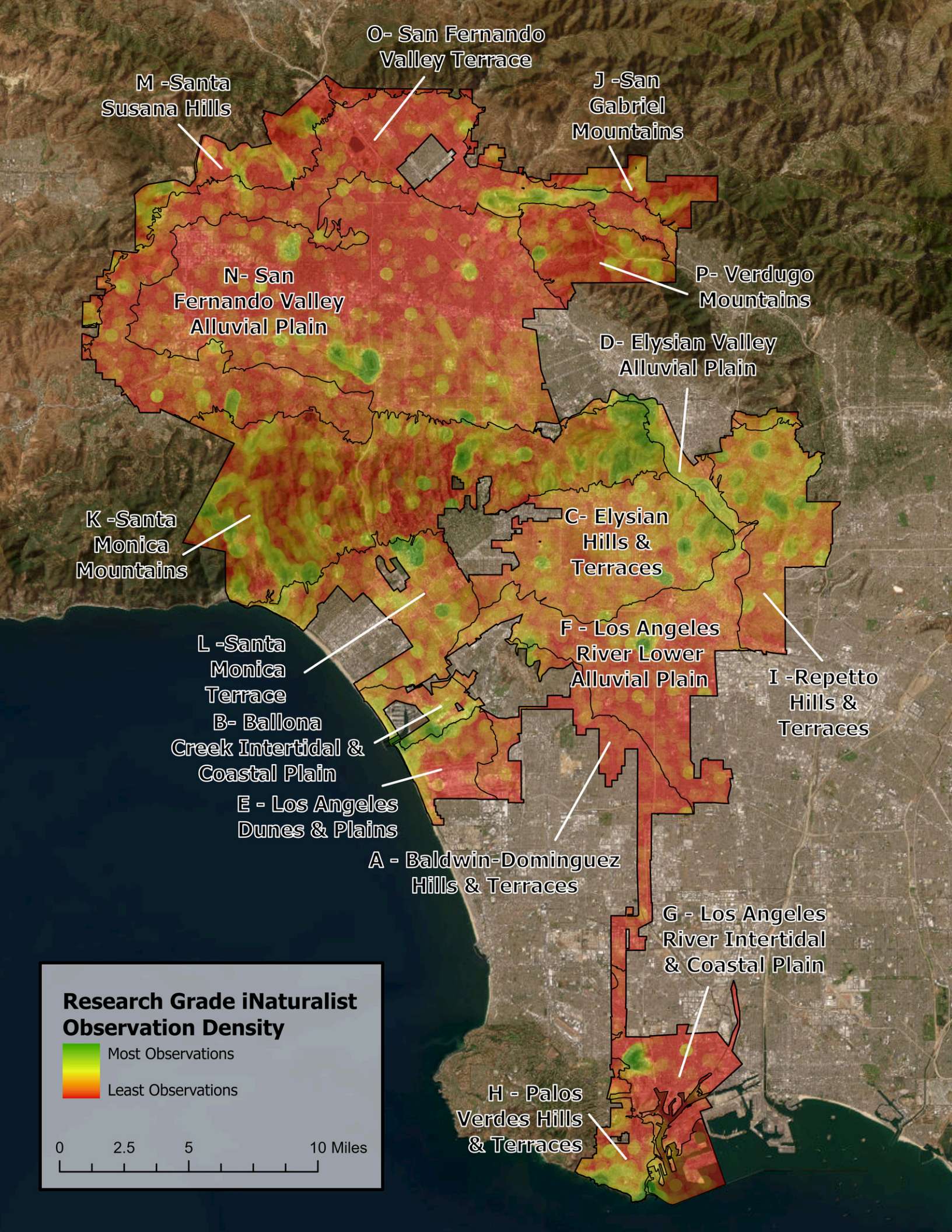
METRIC #3 - COMMUNITY SCIENTIST ACTIVITIES AND APP UTILIZATION

Research grade iNaturalist research grade observations are utilized in order to evaluate this metric.

Observations are clustered in open space that is easily accessible. For example, high amounts of observations are found around Sepulveda Basin, the Natural History Museum and Expedition Park, and Elysian Park and Dodger Stadium. These areas tend to be small patches of high observation density, although the Santa Monica Mountains and the Elysian Valley Alluvial Plain ecotopes tend to have more consistently higher levels of observations. Meanwhile, highly urban areas with limited access to nature have fewer observations—sometimes none at all—such as in South Los Angeles and Wilmington and particularly in ecotopes like the Baldwin-Dominguez Hills and Terraces.



California quail
Photo: Nurit Katz



O - San Fernando Valley Terrace

M - Santa Susana Hills

J - San Gabriel Mountains

N - San Fernando Valley Alluvial Plain

P - Verdugo Mountains

D - Elysian Valley Alluvial Plain

K - Santa Monica Mountains

C - Elysian Hills & Terraces

L - Santa Monica Terrace
B - Ballona Creek Intertidal & Coastal Plain

F - Los Angeles River Lower Alluvial Plain

I - Repetto Hills & Terraces

E - Los Angeles Dunes & Plains

A - Baldwin-Dominguez Hills & Terraces

G - Los Angeles River Intertidal & Coastal Plain

Research Grade iNaturalist Observation Density

Most Observations
Least Observations

0 2.5 5 10 Miles

H - Palos Verdes Hills & Terraces

METRIC #4 - POPULATION DENSITY

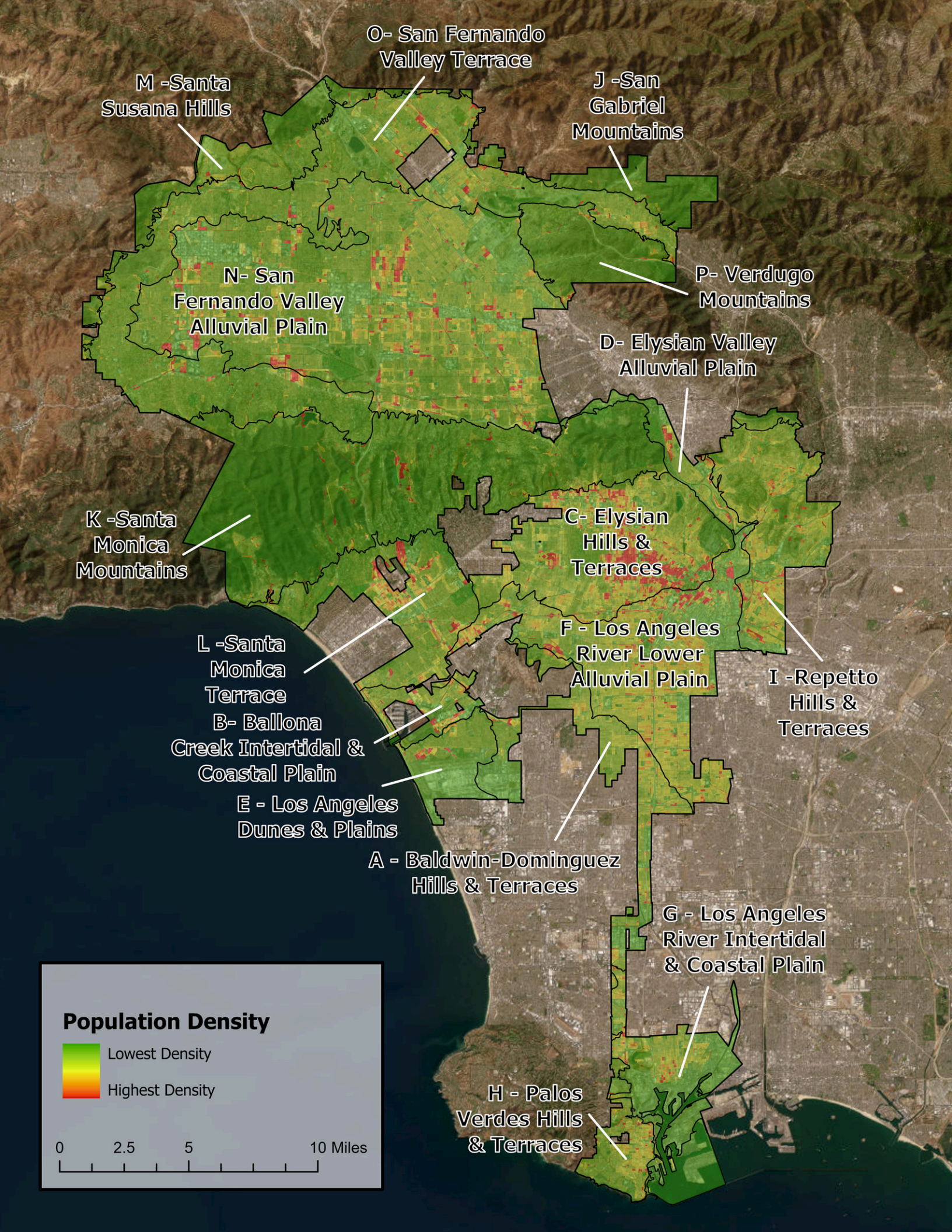
Population density is measured through 2023 census blocks, which were determined to be the best way to achieve accurate results at the finest scale possible.

Many areas of the City are sparsely populated compared to patches of high population density. For example, the Santa Monica Mountains have low population density for the most part alongside other highly-natural ecotopes like the San Fernando Valley Terrace and Verdugo and San Gabriel Mountains. Areas of high population density can be found in Downtown Los Angeles, west of Downtown, and the central San Fernando Valley, corresponding to the Elysian Hills and Terraces and San Fernando Valley Alluvial Plain ecotopes.

However, because census blocks measure population density at a fine scale, population density can vary from block to block, evaluating changes across an area and capturing differences in residential versus nonresidential land use types.



Tree planting event
Photo: LA Sanitation and Environment



O - San Fernando Valley Terrace

M - Santa Susana Hills

J - San Gabriel Mountains

N - San Fernando Valley Alluvial Plain

P - Verdugo Mountains

D - Elysian Valley Alluvial Plain

K - Santa Monica Mountains

C - Elysian Hills & Terraces

L - Santa Monica Terrace
B - Ballona Creek Intertidal & Coastal Plain

F - Los Angeles River Lower Alluvial Plain

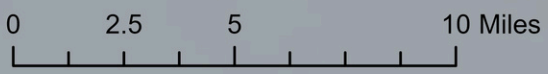
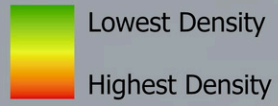
I - Repetto Hills & Terraces

E - Los Angeles Dunes & Plains

A - Baldwin-Dominguez Hills & Terraces

G - Los Angeles River Intertidal & Coastal Plain

Population Density



H - Palos Verdes Hills & Terraces

NATURE BASED SOLUTIONS

EQUITY INDEX OVERALL RESULTS

The final results of the NBSEI are presented below, which involve combining all of the metrics results above together into one layer that is scored from 0 to 20. The final data layer is at a fine, 10 meter resolution that evaluates nature equity on a parcel by parcel basis. As such, the final nature equity layer can be overlaid over something like aerial imagery for various purposes, such as NBS project site selection, suitability modeling, measuring changes in nature equity over time, and more. Additionally, an average score for each census tract is displayed, although there will be variation within each census tract.

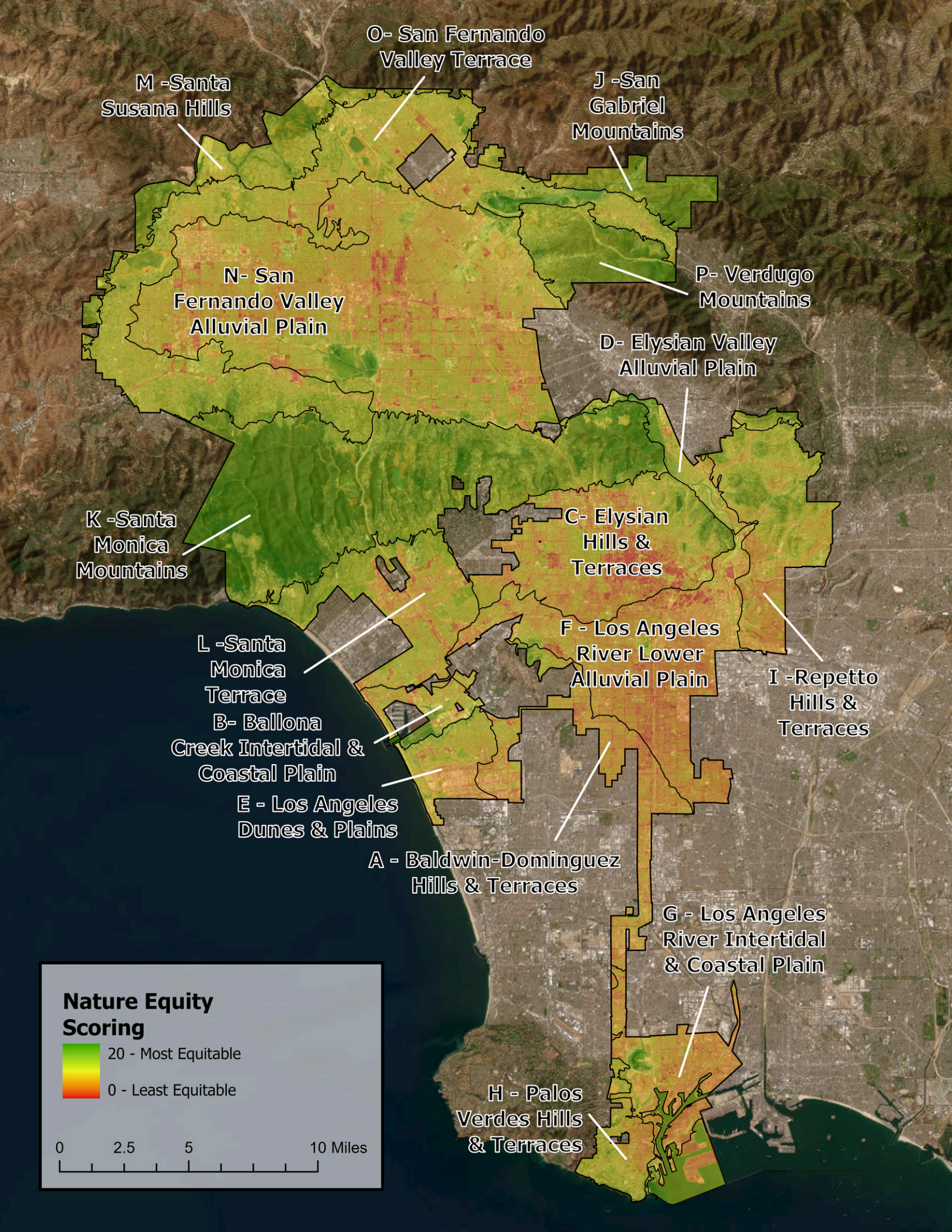
The final NBSEI data demonstrates several, large-scale trends. Nature equity is highest around patches of natural areas, particularly those that are large in size, which is due to high access, landscape coverage, and low population density. Even smaller patches like Sepulveda Basin still show high levels of nature equity, likely due to a high density of community science observations. Ecotopes like the Santa Mountain Mountains, the Verdugo Mountains, the San Gabriel Mountains, the San Fernando Valley Terrace, and the Santa Susana Hills tend to display high levels of nature equity.

Lower levels of nature equity are associated with great distance to natural areas, low landscape coverage, high population density, and limited engagement through community science. This can change on a parcel basis, but ecotopes like the Elysian Hills and Terraces with Downtown Los Angeles and west of Downtown, the San Fernando Valley Alluvial Plain with central San Fernando Valley, and the Los Angeles River Lower Alluvial Plain with South Los Angeles all have portions of significant nature inequity.

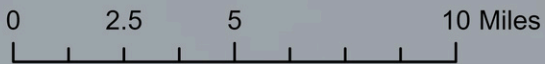
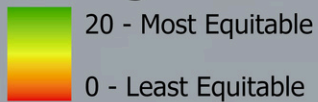
In addition to the overall map, various small scale examples of nature equity are highlighted below.



California poppy at Sage Hill
Photo: Nurit Katz



Nature Equity Scoring





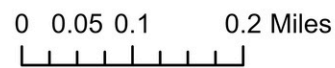
Maxar, Microsoft



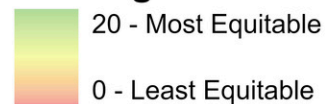
Maxar

(Left) A view of Downtown Los Angeles, highlighting the difference in parcels. Blocks with low landscape coverage and high population density have lower nature equity than areas with higher landscape coverage and low population density.

(Right) A view of different neighborhoods in Encino. One neighborhood contains high population density and low landscape coverage resulting in low nature equity despite access to Sepulveda Basin and the Santa Monica Mountains, contrasted with nearby neighborhoods of higher equity.



Nature Equity Scoring



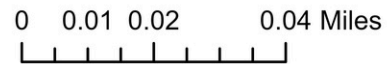


Maxar

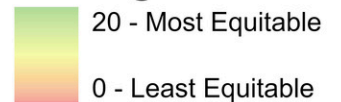


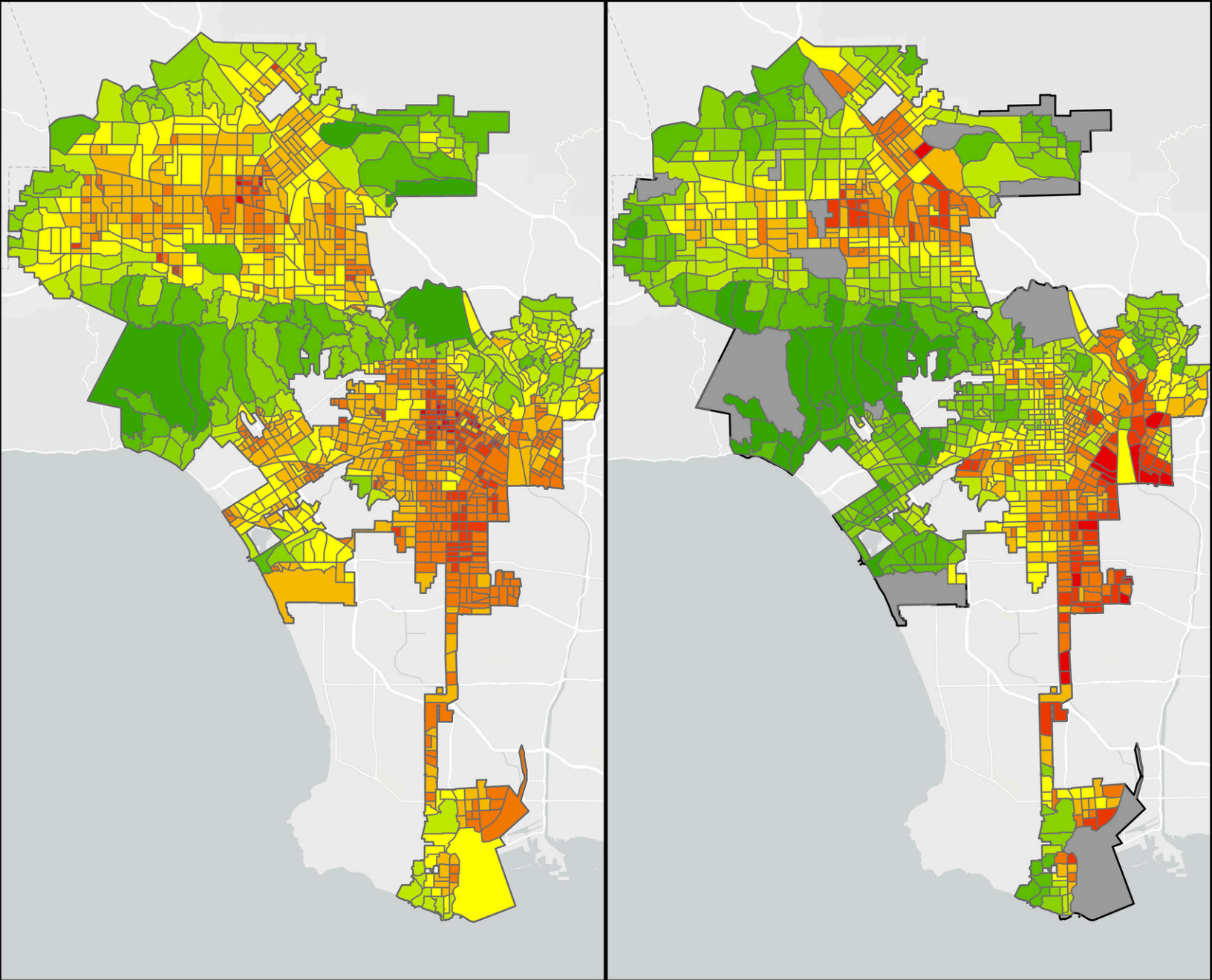
Maxar, Microsoft

(Top) A view of the Los Angeles River in Glendale Narrows, north of Griffith Park, displaying high levels of nature equity. This is contrasted with another view of the Los Angeles River in eastern Downtown Los Angeles **(Bottom)**, displaying much lower levels of nature equity. Due to limited landscape coverage, higher population density, lower engagement through community science, and higher distance to natural areas, the same waterway or ecological feature can have different levels of equity in different locations.



Nature Equity Scoring

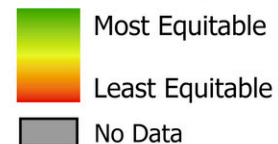




(Left) Nature equity summarized by census tracts. This is contrasted with the CalEnviroScreen 4.0 overall scoring, which are also shown in census tracts **(Right)**. There is some overlap in the trends seen between both, although there are differences. In CalEnviroScreen, areas like Boyle Heights and Pacoima are shown as being least equitable, while areas like Downtown Los Angeles and South Los Angeles are shown as being the least equitable regarding nature. Both datasets should be used in tandem in order to evaluate environmental burden and other relevant factors that inform NBS.



Census Tracts Showing Nature Equity Index (Left) and CalEnviroScreen 4.0 (Right)





Western Honeybee
Photo: Lily Carlson

CONCLUSION

The NBSEI presents a comprehensive nature equity measurement for the City of Los Angeles. It will be incorporated into the City's climate planning, informing where to prioritize nature based solutions and project implementation. Additionally, it is essential that the NBSEI is utilized in tandem with other data, such as CalEnviroScreen, criteria air pollution mapping, and soil mapping in order to ensure that nature based solutions confer the greatest benefits to climate action and resilience. The NBSEI should be updated in the future when new data is acquired or if new methodology is developed in order to ensure it reflects the most recent conditions.

For documentation on the methodology used to create the NBSEI, please see the link below:

[Methodology Appendix \(pdf\)](#)



CONTACT US

LASAN is dedicated to protecting public health and the environment for all Angelenos. For more information about nature based solutions and the Climate Action Program, please contact lily.carlson@lacity.org or amanda.amaral@lacity.org or visit us at lacitysan.org/climateaction.

LA SANITATION AND ENVIRONMENT

LASAN Executive Team

Traci J. Minamide, PE, BCEE, Director and General Manager

Sarai Bhaga, Chief Financial officer

Alex E. Helou, Ch.E., Assistant Director

Gabriel Miranda, Assistant Director

Robert Potter, Assistant Director

Hi-Sang Kim, PE, Acting Hyperion Plant Manager

Nicole Bernson, Assistant Director

As a covered entity under Title II of the Americans with Disabilities Act, the City of Los Angeles does not discriminate on the basis of disability and, upon request, will provide reasonable accommodation to ensure equal access to its programs, services, and activities.

Santa Monica Mountains
Photo: Lily Carlson