

URBAN ECOLOGY AND RESILIENCE

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DEFINITIONS

Urban: No single definition, but a combination of population density, built infrastructure, and land use.

Novel ecosystem: "differ in composition and/or function from present and past systems" *

Introduced species: species brought by human activity, intentionally (e.g. via horticulture) or unintentionally

- *includes but ≠ invasive species*

* Novel ecosystems: implications for conservation and restoration, Richard J.Hobbs, Eric Higgs,James A.Harris, Trends in Ecology and Evolution, 2009

WHY PROTECT URBAN ECOSYSTEMS?

They play an important role in local, regional, and global biodiversity

They can reduce impacts of climate change by mitigating heat and weather impacts – as well as sequestering carbon

Most people on the planet live in cities

- They hold political influence over conservation
- They deserve benefits of access to nature
- Ecological degradation in urban areas affects human health and well-being globally health



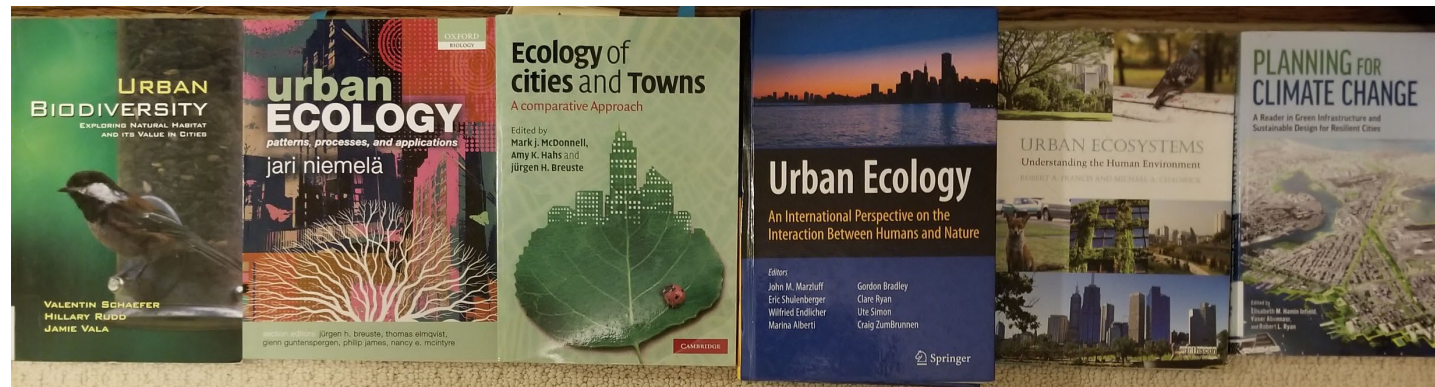
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URBAN ECOLOGY

Treats the city as a set of niches that support species and interactions

Relatively new as a field of study

Combines different fields to examine Socio-Ecological-Technological Systems (SETS)



URBAN ECOLOGY AND RESILIENCE

Urban ecology is the scientific study of the relationship between living organisms, including humans, in urban areas.

Changes to physical conditions in urban areas, as well as cultural factors, create novel ecosystems as native species and introduced species interact

Conservation to promote resilience may shift focus to supporting novel, ecosystems that function, rather than native biodiversity

OR, show historic vegetation
or ecosystem types

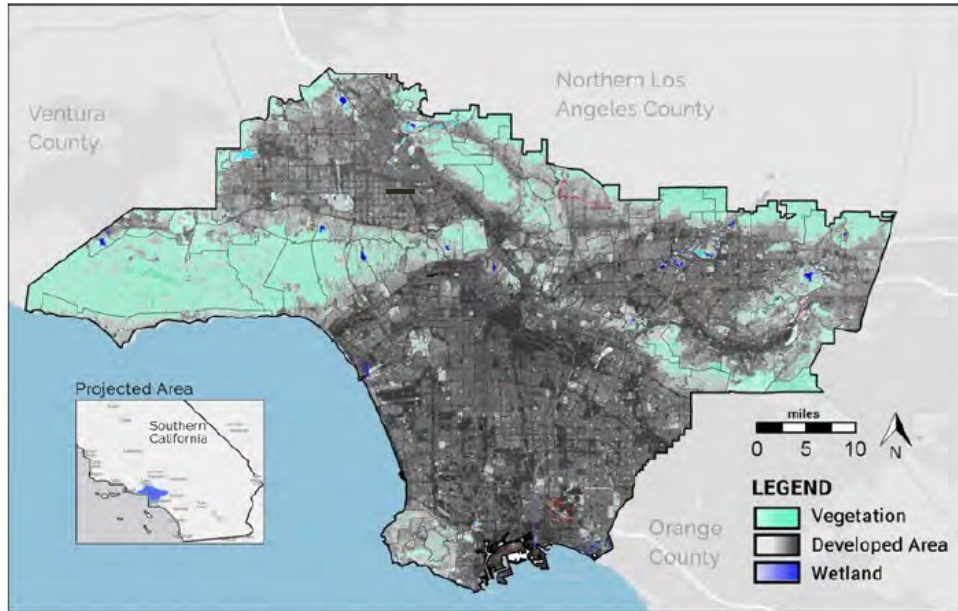


Figure: Study Area Map: Los Angeles County, South

UCLA IOES Practicum2015-
16_NPS_Biodiversity_Indicators_Final_Report.pdf

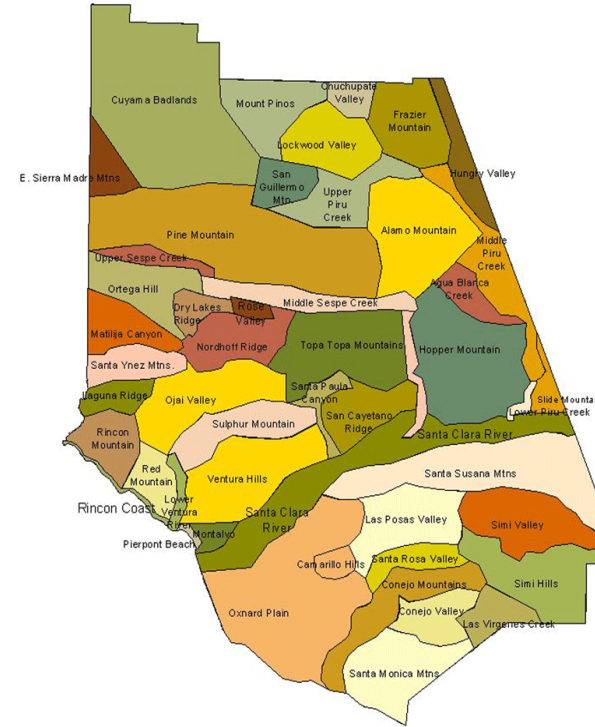


Figure 1. Biogeographic Regions of Ventura County, David Magney Biological Consulting

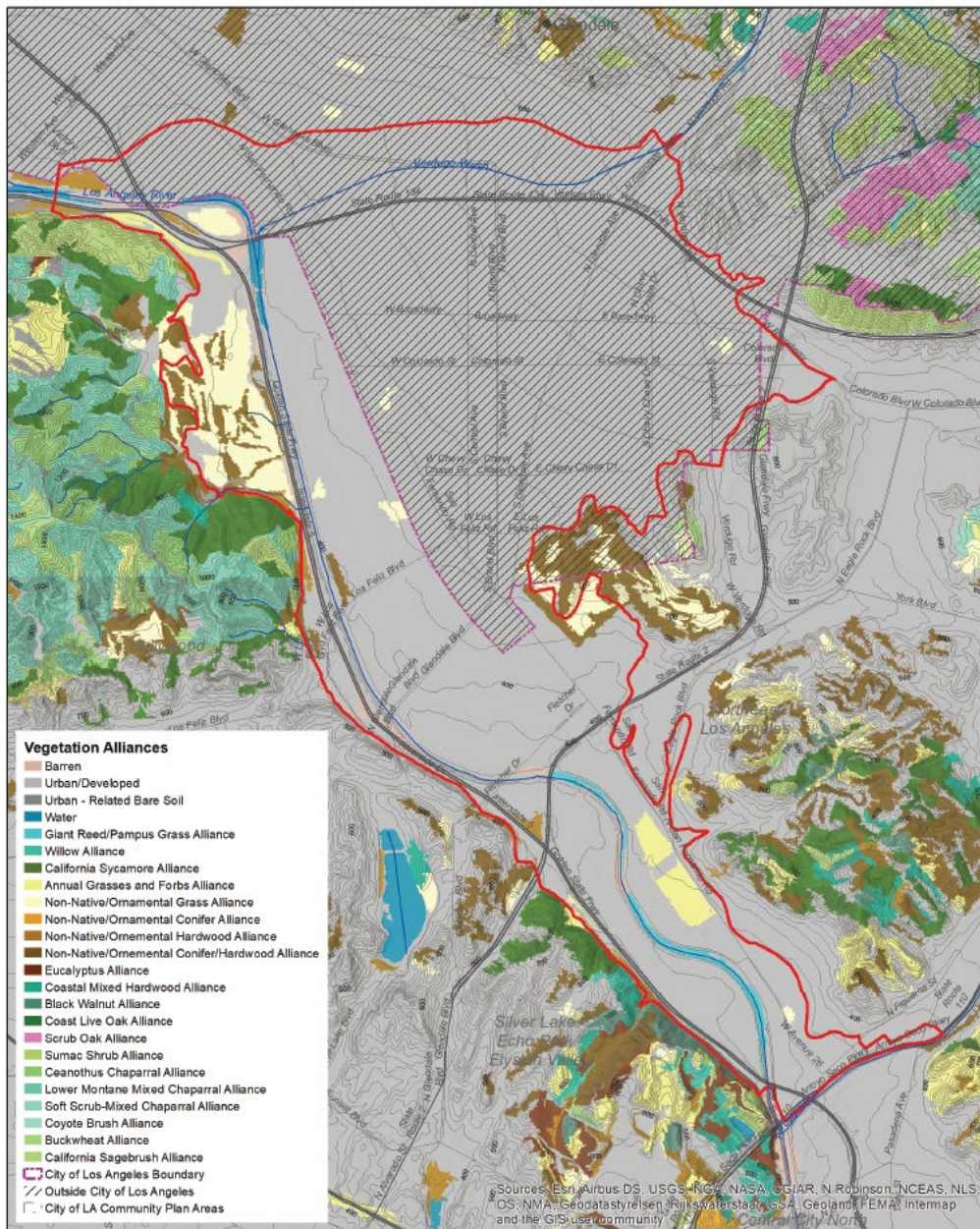


Figure 2-16: Vegetation Alliances
Data source: CALVEG. <https://www.fs.usda.gov/detail/rs/landmanagement/resourcemanagement/?cid=stelprdb5347192>

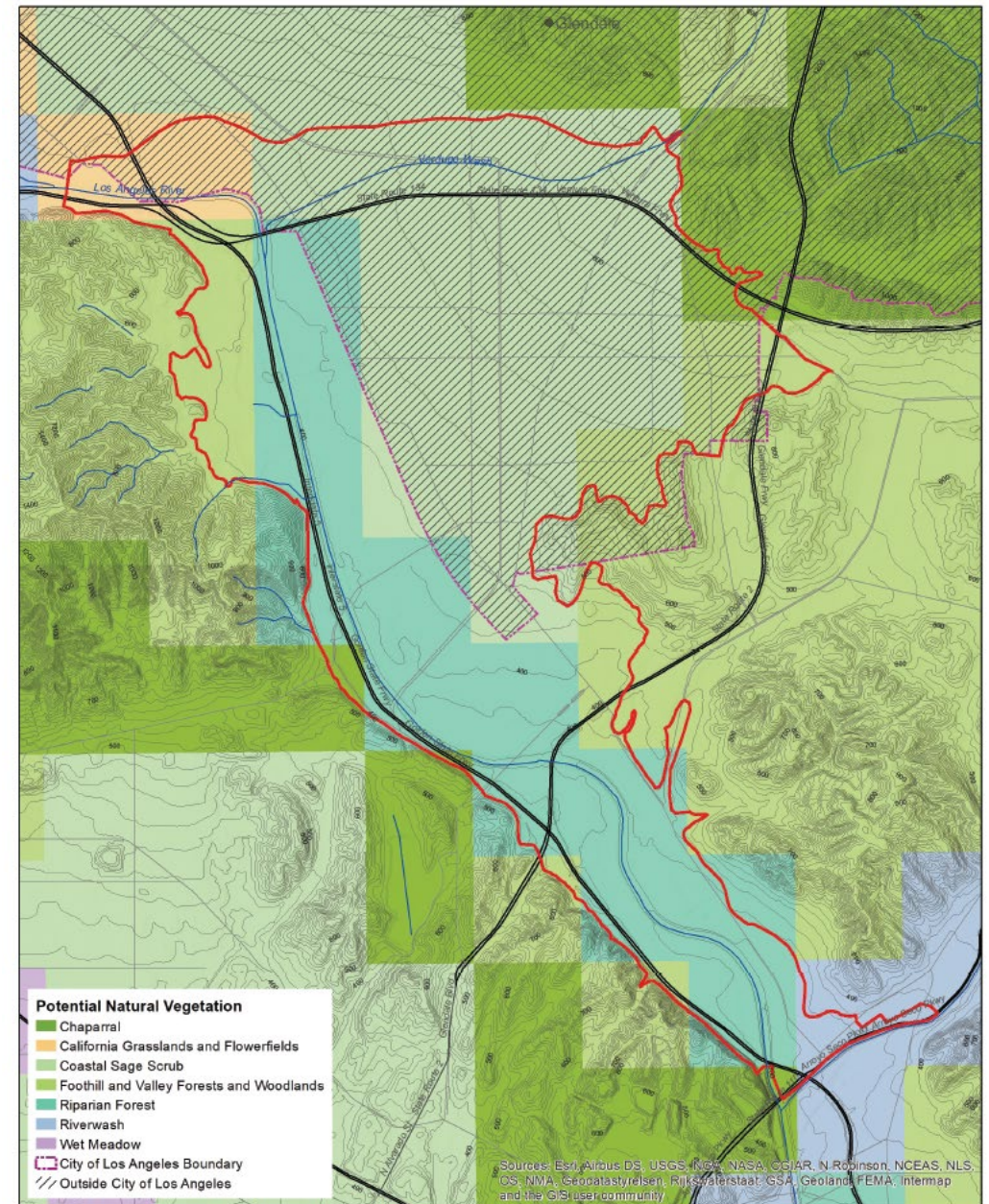


Figure 2-17: Hypothesized Potential Natural Vegetation
Data source: USC Spatial Sciences Institute/UCLA Institute of the Environment: Historical Ecology of the Los Angeles River Watershed Project.

Figures from City of Los Angeles. (2020). *2020 Biodiversity Report*. LA Sanitation and Environment.

ISSUES IN URBAN ECOLOGY

Protecting urban habitat and habitat connectivity

Providing equitable access to nature and natural resources

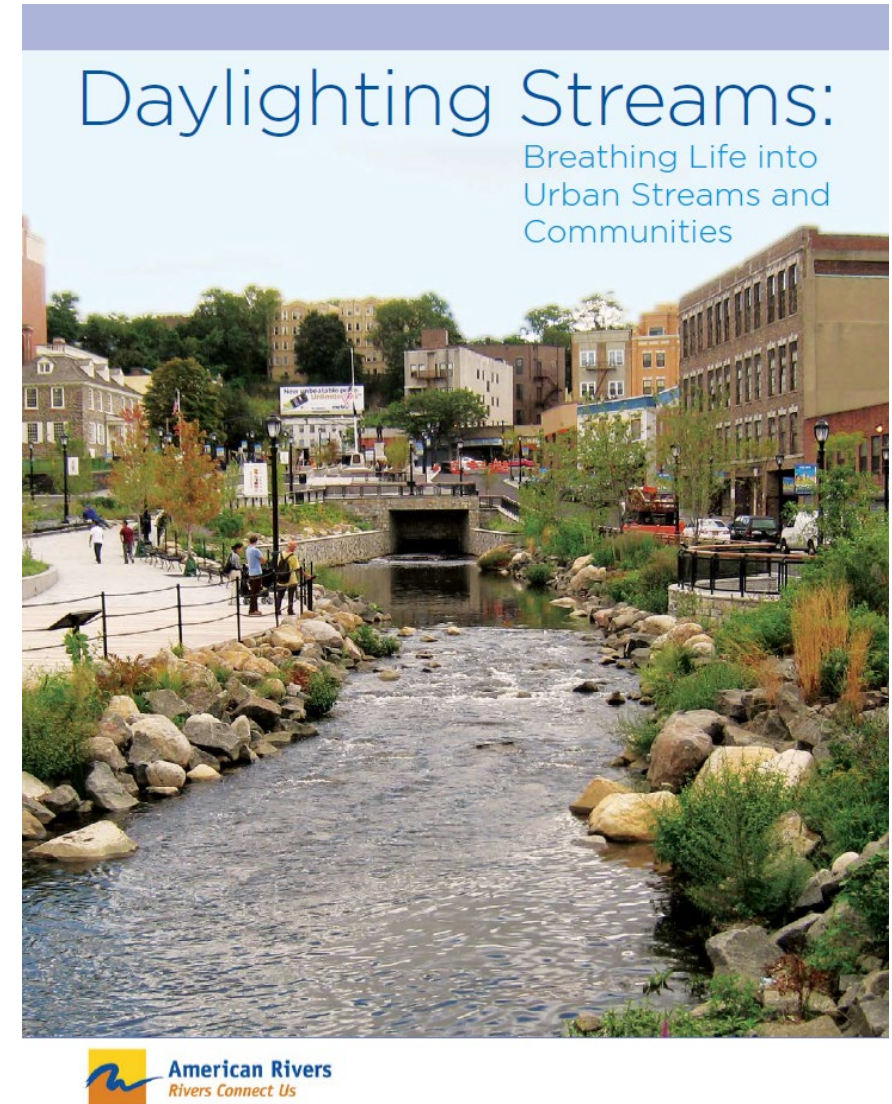
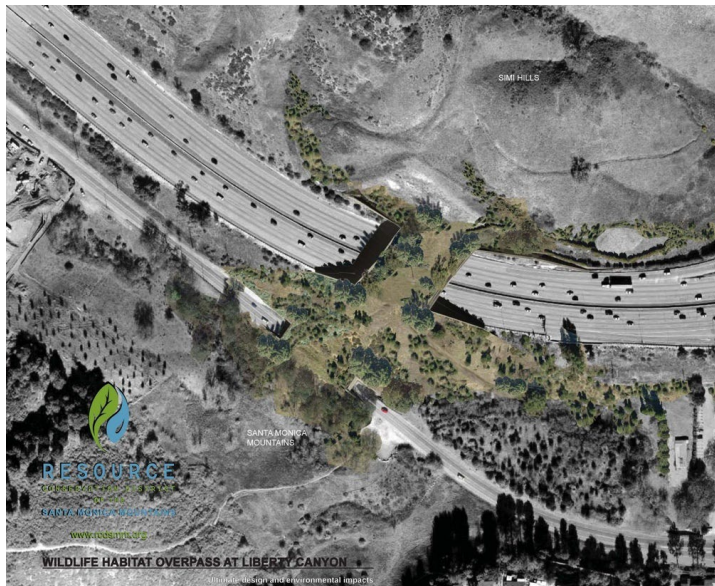
Using nature-based solutions and green infrastructure for ecosystem services

Bringing nature and biodiversity into urban planning

PROTECTING URBAN HABITAT

Protecting/restoring habitat connectivity

- Ability to move between areas



SUPPORTING URBAN HABITAT

Clean-ups, invasive species management,
pollinator support, native landscaping



NATURE BASED SOLUTIONS IN CITIES

Incorporating ecosystem services into urban planning

Using NBS to build climate resilience

Using nature to reduce stress (including during pandemic restrictions)

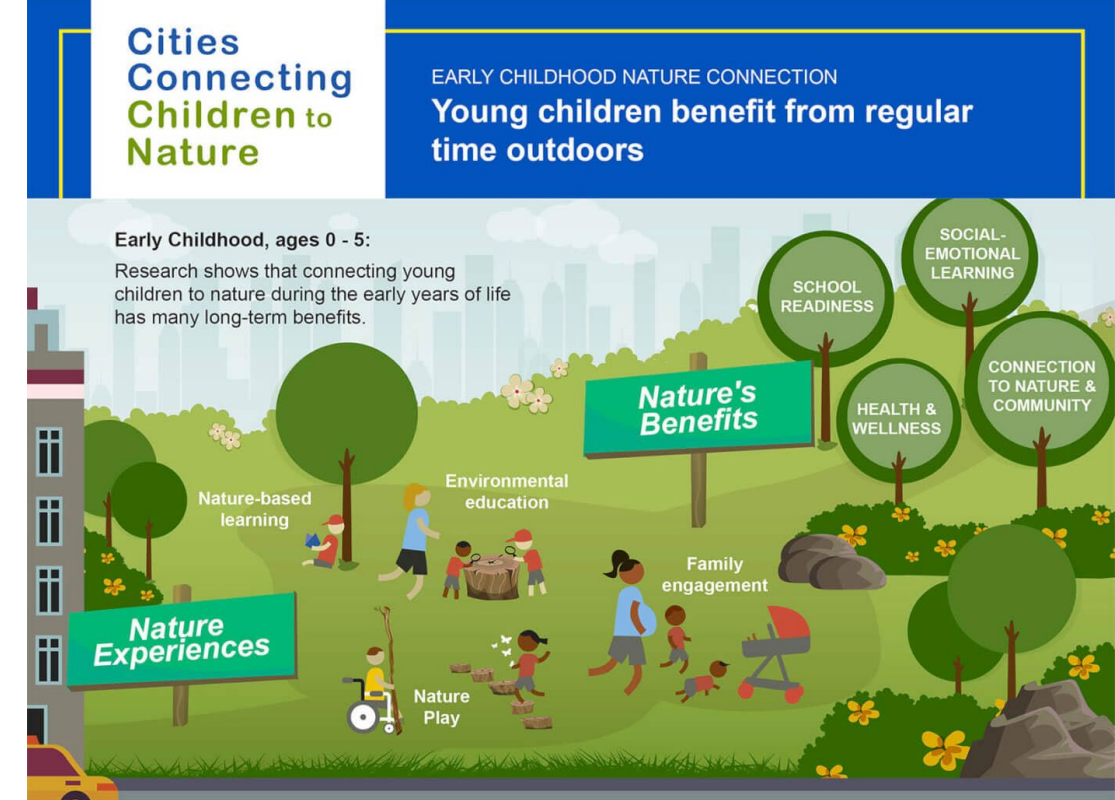


PROVIDING EQUITABLE ACCESS TO NATURE

In a diverse community, inequity can lead to instability

Nature access as a human need and right

Without equity in resource management, we lose a huge resource



THERE ARE FISH THERE? RECOVERING AQUATIC HABITAT IN THE LOS ANGELES RIVER

Dr. Sabrina Drill, UC Cooperative Extension
Rosi Dagit, Nina Trusso, Jennifer Mongolo, RCD of
the Santa Monica Mountains
Andres Aguillar, CSU-LA
Camm Swift, Natural History Museum of Los
Angeles (retd.,)
William Bowling, Friends of the Los Angeles River

LOS ANGELES RIVER

- Upper watershed Angeles NF
- Hydromodification: dams and channels
- Natural bottom in Glendale Narrows and Long Beach
- Slated for ~\$2 billion restoration project
 - Restore connectivity and urban parkland
 - Driving a real estate boom/gentrification



Efforts to Restore the Los Angeles River
Collide With a Gentrifying City

L.A. paved over a riparian watershed; who benefits from its restoration?

WHAT HABITAT SHOULD BE THERE?

Historic condition

Physical realities

Human needs

- Clean water
- Recreation
- Food fish



FIG. 6.5. Twenty-five-inch steelhead trout caught in the river near Glendale in January 1940. Courtesy, family of Dr. Charles L. Hogue.

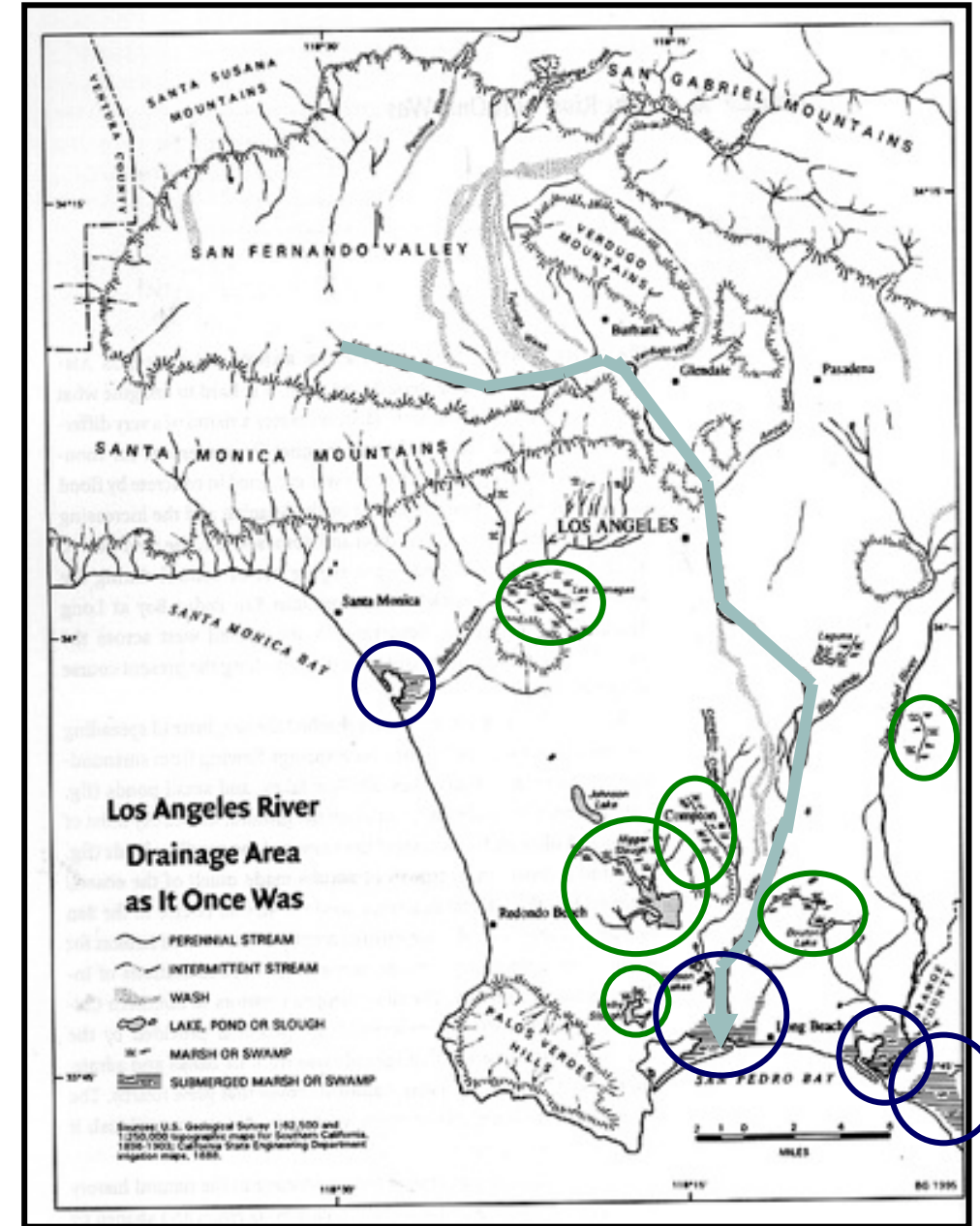
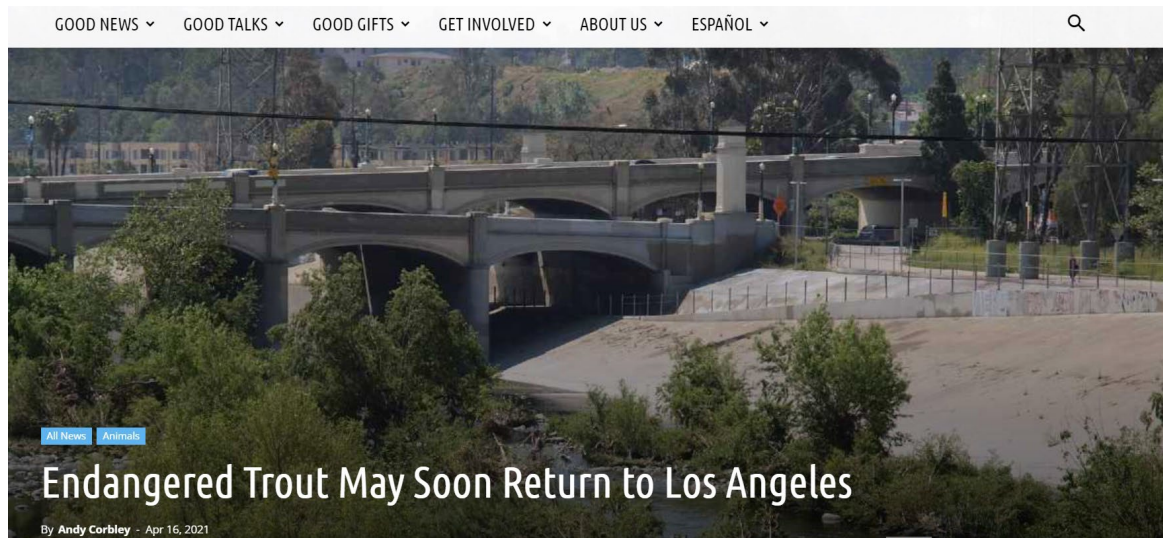


Image adapted from Gumprecht, 2001



Endangered Trout May Soon Return to Los Angeles

By Andy Corbley - Apr 16, 2021

CAN RIVER RE-DEVELOPMENT SUPPORT BIODIVERSITY, NATURAL RESOURCES, AND AVOID GENTRIFICATION?

Theoretical framework: “just green enough” (Wolch et. al 2014) - programs that explicitly protect social AND environmental values.

Can urban river restoration be “just blue enough” to enhance biodiversity balanced with ecosystem and cultural services in a way that does not drive gentrification?

- Habitat
- Flood mitigation
- Groundwater recharge
- Food fishery
- Passive recreation: hiking, birdwatching and biking,
- Active recreation: soccer fields, kayaking, fishing

WHAT FISHES ARE FOUND IN THE LA RIVER?

Glendale Narrows
2008

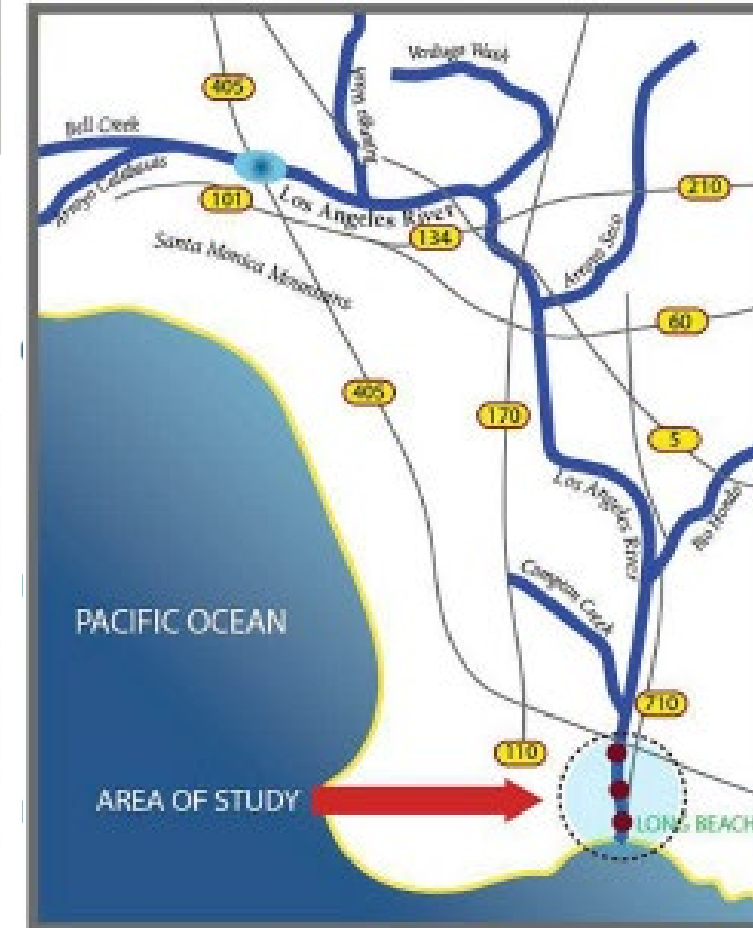
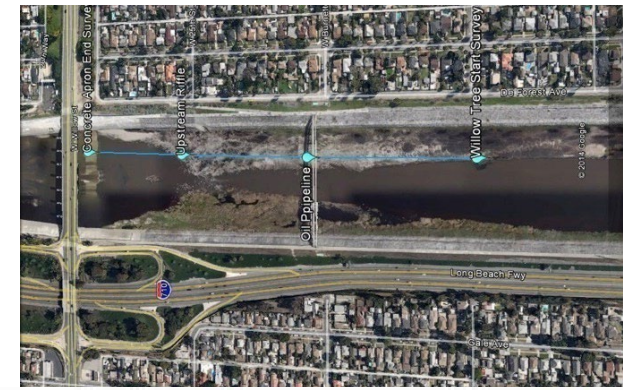
2014-2018

- Lower LA/Estuary
- CSU-Los Angeles Class Surveys
Glendale Narrows/Bowtie
- Sepulveda Dam (upper middle)

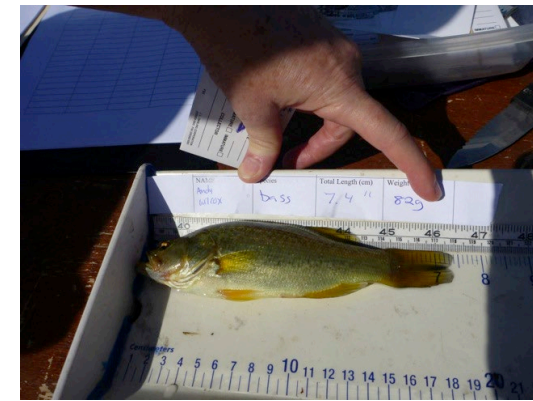
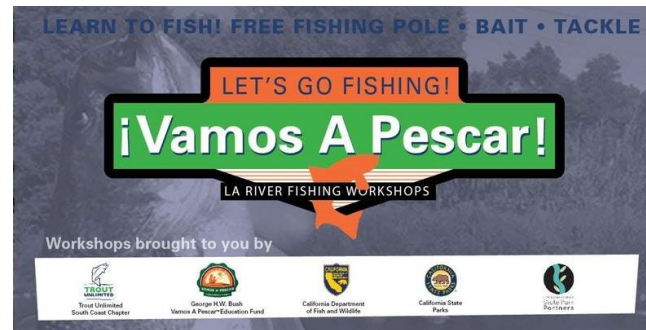
AREA OF STUDY: GLENDALE NARROWS



Photos courtesy of Sabrina Drill



ENGAGING COMMUNITIES: VOLUNTEERS AND FISHING DERBIES



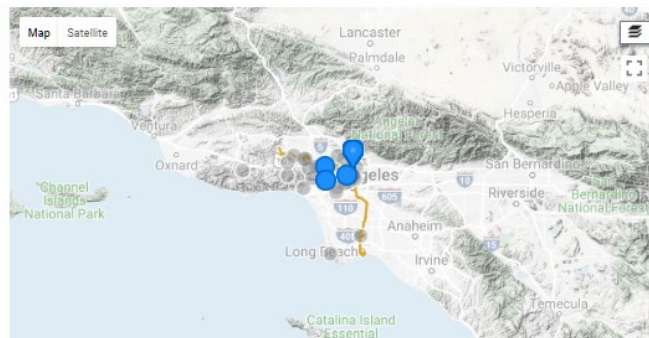
Images, R-L: Off tha'Hook derby logo, Friends of the Los Angeles River; Vamos a Pescar, CA State Parks; OTH Fishing Derby, S. Drill; Long Beach Casting Club Members at a volunteer fish survey day, S. Drill; Fishing in the LA River, Jim Burns/lariverflyfishing.com; Largemouth bass caught at fishing derby, S. Drill

INATURALIST



Stats

Totals	Most Observations	Most Species	Most Observed Species
173 Observations »	pcar773 119 observations	lizardwizard 6 species	Largemouth Bass 71 observations
18 Species »	lizardwizard 15 observations	pcar773 5 species	Green Sunfish 46 observations
16 People »	rosi 7 observations	jasonpost_geosci 3 species	European Carp 14 observations
	lizzym 6 observations	rosi 3 species	Mozambique Tilapia 4 observations
	trincon 4 observations	lizzym 2 species	Blue Tilapia 4 observations



Members 48 members View all members »
Your membership 2 observations
Add from your observations Download template for use in the bulk uploader
Export observations Atom / CSV
Usage stats
Deviant creator tools

Who lives in the Los Angeles River?

¿Quién vive en el Río de Los Angeles?

We need your help to study fish and fishing along the LA River so this resource is represented and protected for future generations.

Necesitamos su ayuda a estudiar los peces y la pesca que ocurre en el Río de Los Angeles para que este recurso sea representado y protegido para generaciones futuras.

How Can I Participate?

Visit www.inaturalist.org and create a free account. Search 'Fish of the LA River' and hit 'Add Observation!' (Your location can be hidden). -OR- Email a photo, fish description, and location (optional) to emontgomery@rcdsimm.org

Is there an App for this?

iNaturalist is a free app for iPhone and Android

Can I submit an observation without a photo?

Yes! However, photos are encouraged.

¿Cómo Puedo Participar?

Visite www.inaturalist.org y haga una cuenta gratis. Busque el proyecto 'Peces del Río de Los Angeles' y empuje 'Add Observations' (Su posición puede ser oculta). -O- Envíe correo electrónico con una foto, descripción del pez, y localización (opcional) a emontgomery@rcdsimm.org

¿Existe una App para eso?

iNaturalist es un App para el iPhone y Android

¿Puedo compartir una observación sin foto?

¡Sí! Pero animamos a todos que incluyen foto.

The mission of 'Fish of the Los Angeles River' is to collect data about fish and fishing of the LA River for the benefit of the people, wildlife, and management of the River. In doing so, we can all help protect this resource for the future enjoyment of generations to come!

green sunfish
largemouth bass
common carp
LA fishing

RESULTS









18 taxa, 14 non-native

- 3 estuarine native, 1 FW native (n >5600)

Healthy, large population

Few native species:

Predominantly warm perennial water fish community

	• fathead minnow, <i>Pimephales promelas</i>	(83)
	• carp, <i>Cyprinus carpio</i>	(58)
	• black bullhead, <i>Ameiurus melas</i>	(24)
	• Amazon sailfin catfish, <i>Pteroplichthys pardalis</i>	(7)
	• mosquitofish, <i>Gambusia affinis</i>	(668)
	• green sunfish, <i>Lepomis cyanellus</i>	(92)
	• largemouth bass, <i>Micropterus salmoides</i>	(1)
	• tilapia, <i>Oreochromis sp</i>	(271)



TEMPERATURE PROFILE

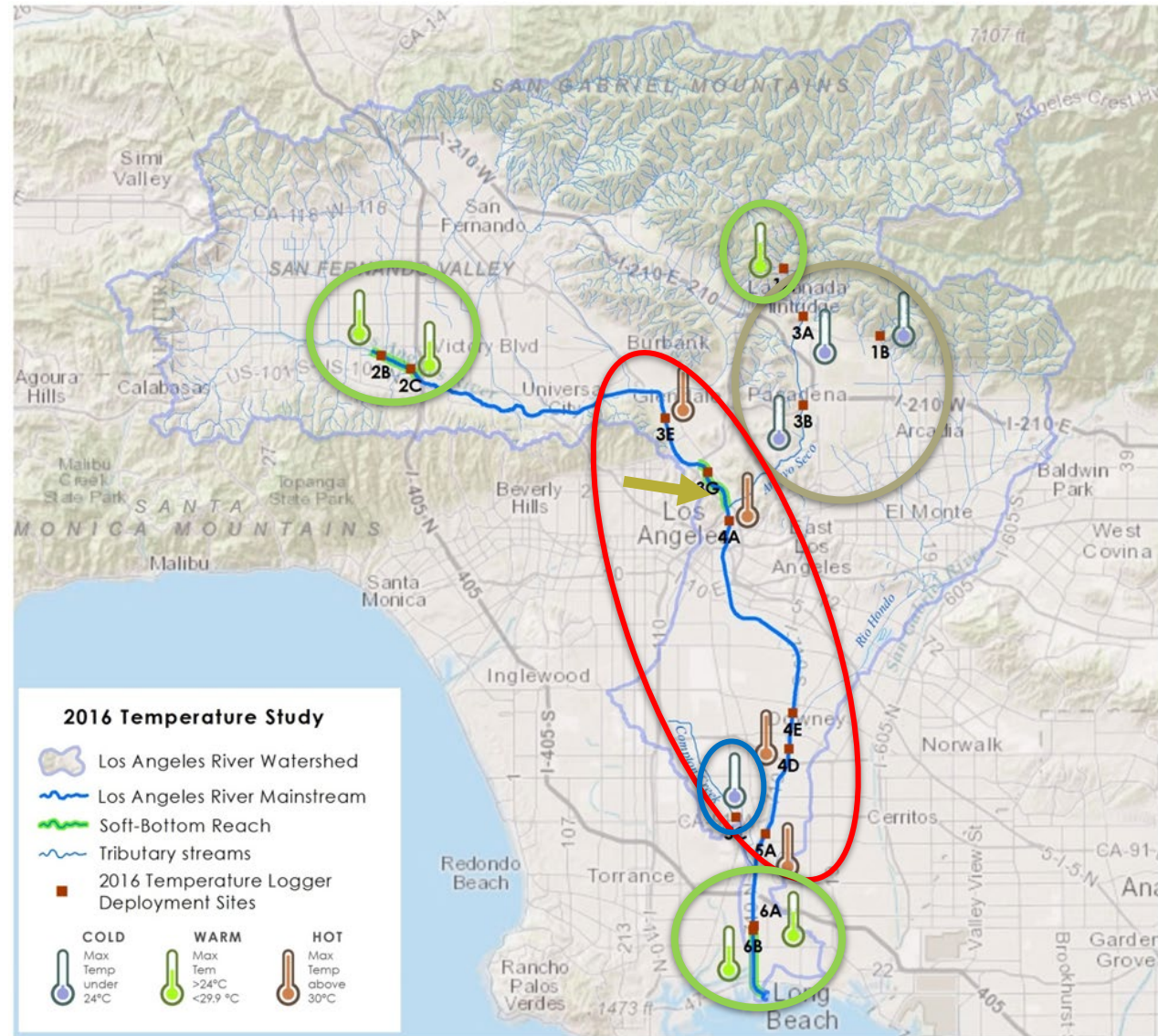


Figure from Mongolo, J., Trusso, N., Dagit, R., Aguilar, A., & Drill, S. L. (2017). A Longitudinal Temperature Profile of the Los Angeles River from June through October 2016.

Bulletin, Southern California Academy of Sciences, 116(3), 174–192. <https://doi.org/10.3160/soca-116-03-174-192.1>

WHO IS RESTORATION/REVITALIZATION FOR?



Images: The La Kretz Bridge in Atwater; the proposed 2750 Casitas development in Glassel Park; new lofts in Frogtown. All from CurbedLA, <https://la.curbed.com/>

Homelessness and the LA River

Source: LA River Master Plan 2020

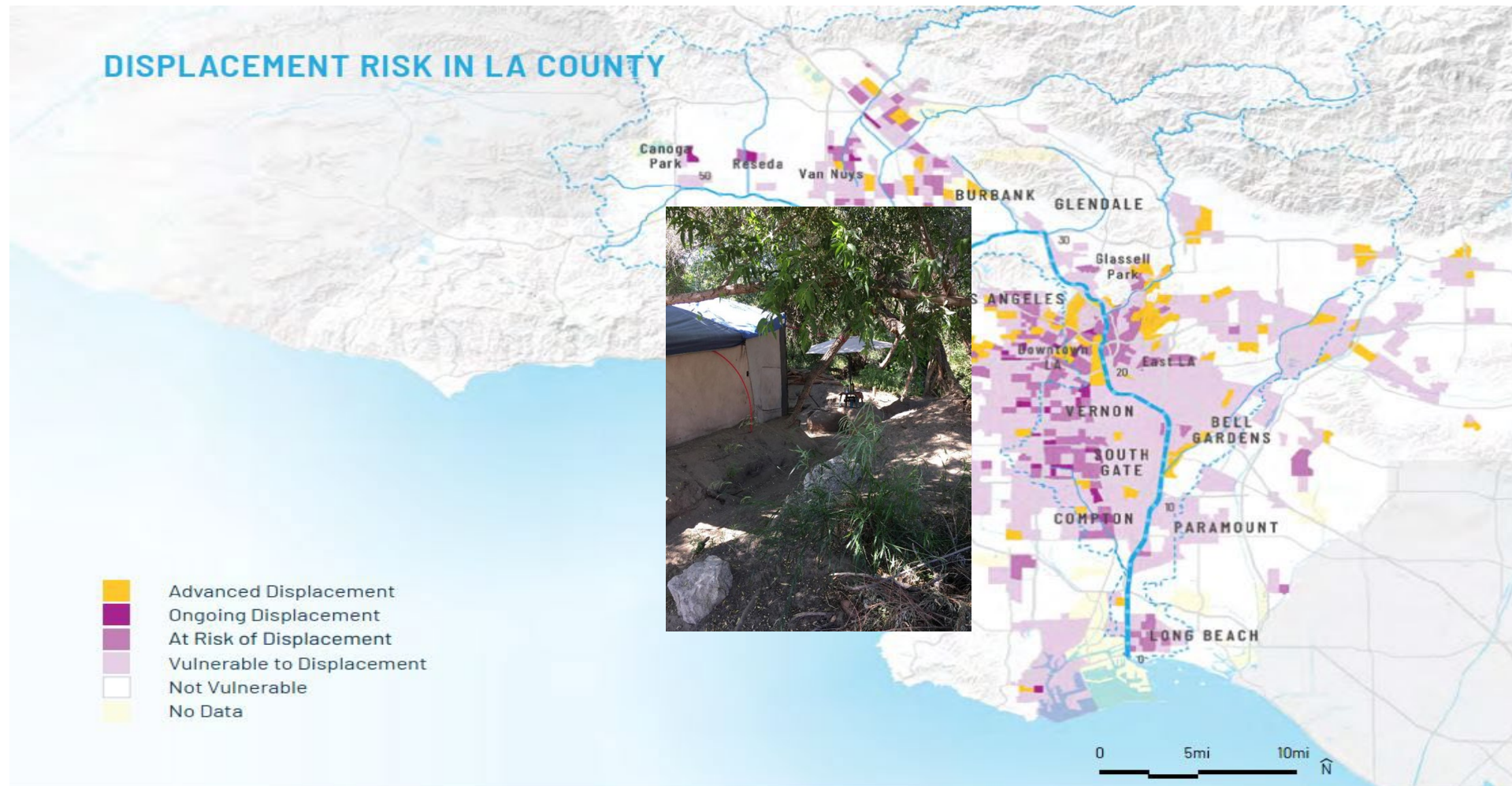


Figure 85. Displacement Risk in LA County. Displacement risk is most pervasive between Downtown LA and Long Beach. This map was developed based on research by the Urban Displacement Project. Source: Chapple, K., Loukaitou-Sideris, A., Waddell, P., Chatman, D., & Ong, P. (2017). Developing a New Methodology for Analyzing Potential Displacement.

Fishing on the LA River



RFC No. 21932
NOTICE TO APPEAR

DATE AND TIME RELEASED: 2-7-08 1330
LAST NAME FIRST NAME: EVELLA ALBERT
MISC. DESCRIPTIVE INFORMATION (SCARS, TATTOOS, ETC.):
SEX: M LUC. NO.:
DOB & DETAIL NUMBER: 705760AR DATE & TIME OF ARREST: 2-7-08 1315
REGISTERED OWNER ADDRESS: CITY: STATE: ZIP:
VIOLATIONS (SECTION NO. & CODE): 41.22 LAME
DESCRIPTION OF VIOLATION: LOSS VIOLATOR IN LA RIVER
FLOOR GEO. Y WASH ADV
FISHING W/O LICENSE
ISSUING OFFICER: 252022 1555 UNAVAILABLE DATES: AA
ARRESTING OFFICER IF DIFFERENT THAN ABOVE: NO. UNAVAILABLE DATES:
WITHOUT ADMITTING GUILT, I PROMISE TO APPEAR AS INDICATED BELOW
SIGN DECLARATION: CULPABLE, PROMITO RESPONDER TAL COMO INDIADO.
FORM APPROVED BY THE JUDICIAL COUNCIL OF CALIFORNIA: 1994
V.C. 40000.1, 40000.2, 40000.3, 40000.4, 40000.5, 40000.6, 40000.7, 40000.8, 40000.9, 40000.10, 40000.11, 40000.12, 40000.13, 40000.14, 40000.15, 40000.16, 40000.17, 40000.18, 40000.19, 40000.20, 40000.21, 40000.22, 40000.23, 40000.24, 40000.25, 40000.26, 40000.27, 40000.28, 40000.29, 40000.30, 40000.31, 40000.32, 40000.33, 40000.34, 40000.35, 40000.36, 40000.37, 40000.38, 40000.39, 40000.40, 40000.41, 40000.42, 40000.43, 40000.44, 40000.45, 40000.46, 40000.47, 40000.48, 40000.49, 40000.50, 40000.51, 40000.52, 40000.53, 40000.54, 40000.55, 40000.56, 40000.57, 40000.58, 40000.59, 40000.60, 40000.61, 40000.62, 40000.63, 40000.64, 40000.65, 40000.66, 40000.67, 40000.68, 40000.69, 40000.70, 40000.71, 40000.72, 40000.73, 40000.74, 40000.75, 40000.76, 40000.77, 40000.78, 40000.79, 40000.80, 40000.81, 40000.82, 40000.83, 40000.84, 40000.85, 40000.86, 40000.87, 40000.88, 40000.89, 40000.90, 40000.91, 40000.92, 40000.93, 40000.94, 40000.95, 40000.96, 40000.97, 40000.98, 40000.99, 40000.100

Violation	Statute	Class*	Total Bail and Maximum Penalty**	Level
Trespass (waterways closed to public access - Ex. flood control channels)	CA Penal Code § 555 et seq.	Misdemeanor, Infraction	\$1000 fine and 6 months imprisonment***	State
Unlawful taking or possessing of fish or wildlife	CA Fish and Game Code § 2000 (a)	Misdemeanor	\$890 and 1 year imprisonment	State
Importing/taking/possessing any rare or endangered animal	CA Fish and Game Code § 2080	Misdemeanor	\$1300 and 1 year imprisonment	State
Fish of indeterminate size	CA Fish and Game Code § 5508	Misdemeanor	\$1095 and 1 year imprisonment	State
Each additional fish of indeterminate size	CA Fish and Game Code § 5508	Misdemeanor	\$82 and 1 year imprisonment	State
Taking or possession of fully protected fish	CA Fish and Game Code § 5515 (a)	Misdemeanor	\$2120 and 1 year imprisonment	State
Fishing without a license	CA Fish and Game Code § 7145	Infraction	\$485	State
Unlawful taking of animal	CA Fish and Game Code § 12003.1 (a)	Misdemeanor	\$1095 and 1 year imprisonment	State
Fishing methods with 2 poles	14 CCR § 2	Misdemeanor, Infraction	\$890 and 1 year imprisonment	State
Fishing methods with net	14 CCR § 2	Misdemeanor, Infraction	\$1300 and 1 year imprisonment	State
Take of Southern California Steelhead (<i>O. mykiss</i>)	16 USC 35 § 1531 et seq.	Misdemeanor	\$50,000 and 1 year imprisonment	Federal

*Violations charged as infractions do not carry jail sentences
 **Total Bail Includes Base Fine, Penalties, Court Fees
 *** Only base fine mentioned

Sources: LACoDPW Signage, California Fish and Game Code §12000, US Endangered Species Act §11 (a-b), California Uniform Bail Schedule (Judicial Council of California, 2019)

NATURALIST PARTICIPATION IDEAS

Interpret urban ecosystems for communities

- Lead an urban hike or kayak

Engage with environmental and climate planning

- Attend or help organize community meetings etc.

Participate in or help coordinate

- clean-ups/maintenance
- tree planting and invasive species removal
- energy or climate risk community audit
- bike/walk friendly community mapping

Educate about green infrastructure

- Install a rain garden or other stormwater BMP

Foster participation in science:

- participate in, generate, train others
https://calnat.ucanr.edu/California_PPSR
- Train community members to access water quality or climate data

Promote environmental equity and justice

- Connect with members of underheard communities
- Share information about input opportunities