

# Wild megalopolis: Study shows unexpected pockets of biodiversity pepper Los Angeles

May 29 2024

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Red-shouldered hawk (*Buteo lineatus*) perched on a telephone pole in urban Los Angeles. Credit: Nurit. D. Katz, CC-BY 4.0 ([creativecommons.org/licenses/by/4.0/](https://creativecommons.org/licenses/by/4.0/))

UCLA biologists have some good news and some bad news for lovers of urban wildlife in Los Angeles. The good news? Unexpected pockets of

biodiversity pepper the city. The bad news? It will be a challenge to elevate the level of overall biodiversity of the city. Of all the major taxonomic groups studied, only snails and slugs are 'easy' to find in Los Angeles, probably because of the abundance of landscaping, gardens and irrigation.

The research points toward ways Angelenos—and people elsewhere—can make their city more hospitable not only to urban-tolerant species such as coyotes, but also to species that usually avoid cities, such as wrentits, a small songbird.

"Los Angeles should rightly pat itself on the back for attracting and supporting [mountain lions](#), most notably, the late, great P-22," said Joseph Curti, a doctoral candidate in ecology and [evolutionary biology](#) and lead author of [a new study published](#) in the journal *PLOS One*. "Our study highlights additional native species that are present within even the most urbanized areas of the city."

The research was conducted with Los Angeles as part of the LA City Biodiversity Index, a tool designed to monitor progress toward L.A.'s Green New Deal goal: no net loss of native biodiversity by 2050. The index assesses what's happening to habitats and how various habitats connect, as well as how well the city is engaging with students and the larger community regarding biodiversity and how it's working to protect [endangered species](#) through action plans and policies.

In the city's LA Biodiversity Index Baseline Report, Los Angeles received 37 out of 110 possible points. In general, the greater the urban intensity, the fewer native wild species lived there. This metric was designed to be reevaluated every three years, so the city can track measures to attract urban biodiversity.

"This work provides the foundational data and maps needed for the city

and Angelenos to proactively create habitat for biodiversity," said co-author Michelle Barton, an environmental manager for the city of Los Angeles. "Over time, we hope to see that initiatives that create new habitat support not just urban tolerant species, but also our urban avoider species."

Using observations logged by the public on the iNaturalist app, the UCLA-led prong of the project evaluated the response of 510 native species within a 124-mile radius of Los Angeles to urban intensity, as indicated by the amount of noise, light and impervious surfaces.

Not surprisingly, the regions of greatest diversity were in areas that bordered hills and mountain ranges or in affluent neighborhoods with ample green spaces. But UCLA researchers also discovered isolated refuges in the heart of the city where some species flourished. Twenty-spotted lady beetles and house wrens, for example, abound in the Dodger Stadium parking lot. Downtown's Pershing Square supports mourning doves, Vaux's swifts, gopher snakes and exotic streaktails, a type of fly that feeds on aphids.

The authors focused on 12 taxonomic groups that are accurately detected and logged by community scientists on iNaturalist:

- amphibians and reptiles
- bees and wasps
- birds
- butterflies and moths
- dragonflies and damselflies
- grasshoppers, locusts and crickets
- hoverflies
- lady beetles
- leafhoppers
- mammals

- snails and slugs
- spiders

The researchers selected observations of animals that were native to the study area, that had a [natural history](#) typical for other members of their taxonomic group, and mapped the observations on a quarter-mile grid across the city.

They calculated the relationship of a given species to the three measures of urban intensity (noise, light and impervious surfaces) and calculated the community-wide average of these species-level responses to urban intensity for each quarter-mile grid cell throughout the city. The scores were intended to assess how well the species fared in the city relative to other species and place them within a continuum of urban tolerance, from most to least avoidant.

For example, data published by previous researchers show that many species of urban raptors, such as Cooper's hawks and red-shouldered hawks, do pretty well in response to urban intensification and increase nesting in urban areas. But some urban raptors, such as American kestrels, decrease nesting in response to increased urban intensification.

Looking at the response to urban intensity as a continuum instead allowed the researchers to understand the responses of species at a finer resolution. For example, red-shouldered hawks had a high score of 0.19 and Coopers hawks had a fairly high score of 0.11, but kestrels had a lower score of -0.03. The scores reveal that while both hawk species are doing relatively well, the Cooper's hawks favor the city somewhat less, and kestrels tend to avoid the city. The findings support and add nuance to the earlier research.

"Now we have a sense of not only urban tolerant/urban avoidant, but the degree to which each species is responding to our measures of urban

intensity," Curti said. "This allows us to better understand the species and their relationship to the urban environment."

The city of Los Angeles provides a [list of ways](#) in which people can promote biodiversity in their neighborhoods, including:

- Plant native plants. Those specific areas can be found at [Calscape](#), the California Native Plant Society's website.
- Create a habitat in your yard by avoiding excessive pruning in the spring and leaving leaves in your yard in the fall, retaining tree snags and other deadwood, which provide habitat for many species.
- Remove artificial light sources from your home at night.
- Do not spray herbicides/pesticides around your home.

People should also consider keeping their feline friends indoors because research has established that cats are major predators of birds and other small animals, Curti said.

**More information:** Using unstructured crowd-sourced data to evaluate urban tolerance of terrestrial native animal species within a California Mega-City, *PLoS ONE* (2024). DOI: [10.1371/journal.pone.0295476](https://doi.org/10.1371/journal.pone.0295476). [journals.plos.org/plosone/arti ... journal.pone.0295476](https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0295476)

Provided by University of California, Los Angeles

Citation: Wild megalopolis: Study shows unexpected pockets of biodiversity pepper Los Angeles (2024, May 29) retrieved 21 June 2024 from <https://phys.org/news/2024-05-wild-megalopolis-unexpected-pockets-biodiversity.html>

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