



Shape the Future

Canyon Chatter

Friends of Madera Canyon

July 2026



The Desert Iguana is an herbivorous, medium-sized lizard which averages 16 inches in total length but can grow to a maximum of 24 inches including the tail. It is a Sonoran Desert species that prefers habitat contained within the range of the creosote bush, mainly dry, sandy desert scrubland below 3,300 feet. It has a significant presence in the Sonoran and Mojave deserts and can be found in rocky streambeds up to 1,000 m (or 3,300 feet). In the southern portion of its range, these lizards live in areas of arid subtropical scrub and tropical deciduous forest. It does not occur in the Santa Ritas. This photo was taken in Sahuaro National Park West. This photo is on the cover of the July *Chatter* because it has a radio transmitter attached to its pelvic region and the lizard's behavior is likely influenced by humans. The fact that it is carrying a transmitter means that it was caught, handled by a person who took its length and weight. They may have counted some scales, probed its cloaca to determine its sex, or swabbed its mouth with a cotton-tipped stick. Swabbed its mouth with a cotton-tipped stick to collect some DNA or microbes. It is on the front cover because new research shows that humans can change an animal's behavior no matter how subtly or carefully done. JCM

Contents

From the President 3

Field Notes from your Executive Director 5

Madera Canyon Vegetation Maintenance 7

Spotlight on Pablo Rocha Error! Bookmark not defined.

The Bird Page 9

A Biological Restriction in Madera Canyon 13

The Education Reports 15

The Editor's Desk 17

The Last Page 20

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Join Friends of Madera Canyon. Below are links to join as a new member, renew a membership or donate. The links will take you to a secure server to use to for making an automated payment or to use for making an automated payment. Do you have any questions? Let us know. If you prefer to help by writing a check, please make your check payable to Friends of Madera Canyon - mail to: FoMC, Box 1203, Green Valley, Arizona, 85622-1203. [New Membership Click Here](#) or [Renew An Old Membership](#).

From the President

Madera Canyon: “A Pleasuring Ground”

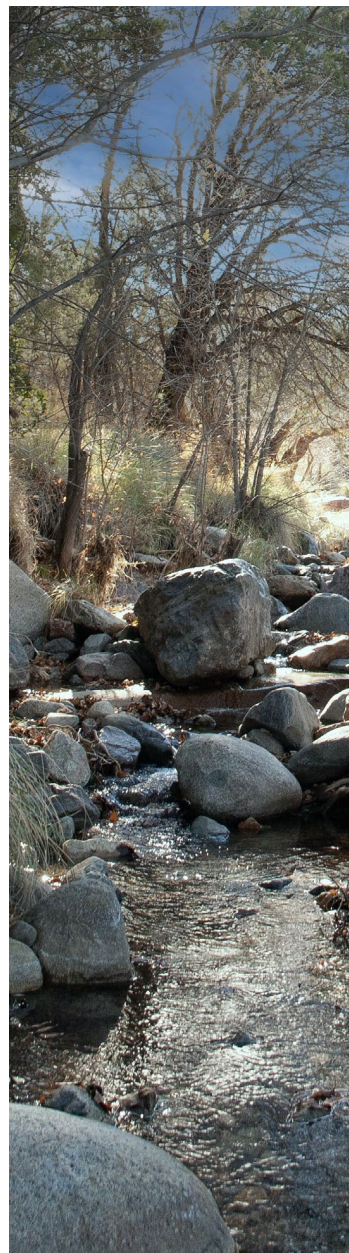
Dan White

Peter Hassrick, Director of the Petrie Institute of Western American Art at the Denver Art Museum, once wrote: “When the National Park Act was passed in 1872...hidden in the language of the bill...[it was] made clear that Yellowstone was being set aside as a “pleasuring ground for the general benefit and enjoyment of the people. In 19th century parlance, “pleasuring” meant something more than simply the delectations of recreation and curiosity gazing. A “pleasuring ground” for the public “enjoyment” implied aesthetic regard and a cultural corrective...”

“...From 18th century philosophers...had come the concept, widely embraced in the 1870s, that personal, human gratification could be found in its highest form through associations with raw nature...Thoreau demanded that nature be preserved so that the connections could be made.”

In my musings in the *Chatter* over the last several months, I have touched on such topics as why the people of 1987 formed the Friends, reasons I have heard and sensed from current members about why they remain members, the value of the Canyon as a source of inspiration and a moment’s respite from the craziness that seems to engulf daily life outside the Canyon. I wrote about the value of the Friends to the general purpose of making early and lasting impressions on kids of all ages about the benefits of caring for the natural world and finding ways to encourage people to think of the Canyon as a treasure to care for.

Adopting the 19th-century phrase has provided me a context in which each of the topics above connects with the others to make a coherent whole: Madera Canyon as a “pleasuring ground.” The canyon then becomes more than “simply the delectations of



recreation and curiosity gazing.”

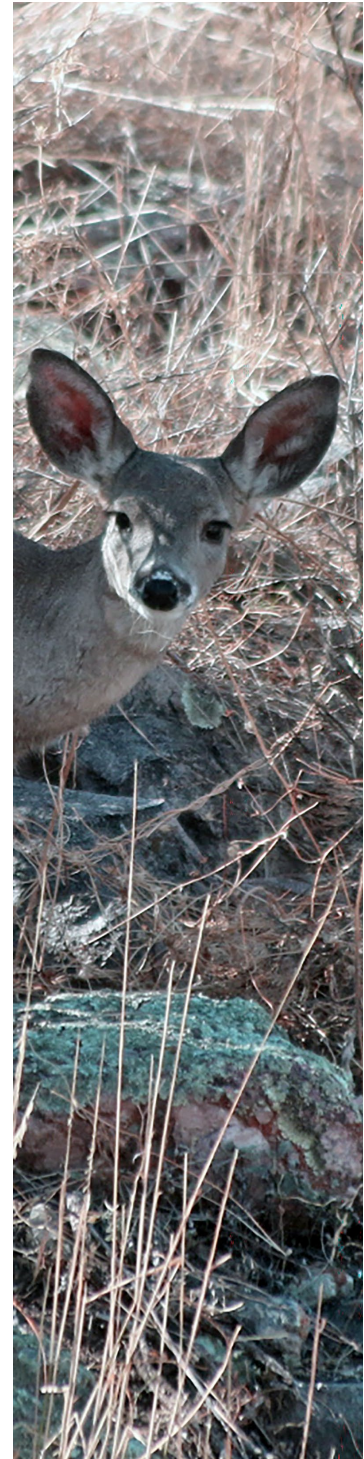
Consider how you and I react to a favored painting or song or book. Those art forms can stir something within us that deepens our appreciation for both the artist and the art. Often we can’t quite explain in words why we react as we do. But we are grateful to have those moments of joy when we seem to lose ourselves and find satisfaction.

Whether you are a hiker, a birder, or one who just finds a quiet spot to sit for a spell, something in those experiences brings you back for more. If you are at the VIS for your periodic service, something in that encounter with people wanting to know more about the Canyon and your drawing energy from their excitement and curiosity: there is something about that connection with other human beings that ensures you will come to volunteer the next time.

Whatever your connection is with the Canyon, something keeps drawing you back. Maybe it is the idea that whatever service we offer—guiding, trail work, cleaning up on Mondays, being a docent, restocking brochures—is to people we don’t know who are drawn to the “pleasuring ground” we help to steward.

Indeed, it is also possible that such service is for you, as it is for me, a form of “pleasuring” itself.

To the right, a white-tail deer, also known as a Coues Deer. Photo JCM



Field Notes from your Executive Director

Madera Canyon –A Living Classroom, Two Decades with Doug Moore — and the Mission He Carries

Kristin Wisneski-Blum

As Friends approach our 40th Anniversary in 2027, we've been reflecting on what has carried our mission forward and few people embody it more fully than our Education Director, Doug Moore. For more than twenty years, since 2005, Doug has been the heart of FoMC education — about half the lifetime of the organization itself. A former teacher with a background in biology and natural-science illustration, he came to the canyon almost by accident: he would bring his father to the accessible Proctor Trail, where he met Patsy Proctor, whose ranching family the trail is named for. Before long she had convinced him to take local fourth graders into the canyon as a docent. He has been at it ever since — up to five times a month — reading the desert grasslands, the mesquite bosque, the riparian creek, and the oak-juniper woodlands like chapters in a book he never tires of.

Doug opens every student walk with the same question: Who owns Madera Canyon? The answer — it belongs to all of us — is the whole of our mission in a single sentence. Everything our education program does grows from it:

- 4th grade nature walks — the program's enduring heart for more than two decades, introducing local students to their canyon, because today's field-trip student is tomorrow's steward.
- High school field trips with Sahuarita and Walden Grove, where older students dig deeper into Sky Island ecology.
- Adult and member activities, community lectures, and tours that carry the canyon's story far beyond the trailhead.
- Accessible programming, including this spring's joyful walks with Adventures with Friends — fittingly, on the very trail that first drew Doug here.
- Online learning resources, with new bilingual trail guides and wildflower e-books reaching learners who may never set foot on the trail.
- The Bud and Mary Gode Scholarship, awarded this year to Walden graduate Xavier Limon — an investment in the next generation of stewards.

None of it happens alone. Doug leads a remarkable docent corps—some serving since the 1990s—and we are grateful to every volunteer, partner, teacher, and supporter who makes this work possible. As we step into our fifth decade, the mission holds steady: preserve, conserve, and restore the canyon by helping people fall in love with it. Spring Education Appeal—Thank You

This spring, our Conservation through Education Appeal invited you to help expand the programs that turn today's field-trip student into tomorrow's canyon steward—more elementary and high school field trips, more community events, and a growing bilingual (English and Spanish) online as we look toward our 40th Anniversary in 2027. To stretch further, the Board of Directors offered a \$2-to-\$1 match. And you answered. Together you raised \$10,805, and the Board added a matching gift of \$5,402—a combined \$16,207 invested directly in canyon education. Thank you. Every dollar becomes more mornings on the trail, more bilingual learning materials, and more students discovering their canyon. Special thanks to Michele Gazica, Development Chair, Friends of Madera Canyon, for leading this Education-focused Spring Appeal.

A gentle note: only the Board match has ended—support for canyon education never closes. You can designate a gift to our Education Fund at any time, online at friendsofmaderacanyon.org or by check, and it will go directly toward inspiring the next generation in Madera Canyon.

With gratitude,
Kristin Wisneski-Blum
Executive Director, Friends of Madera Canyon

To the right. An Acorn Woodpecker near the Proctor Trail.
JCM



Madera Canyon Vegetation Maintenance

Jackie Smith

The Prescott Engine 633 crew is serving as a “surge resource,” assisting with initial attack readiness and forest management work. It is common for the Forest Service to send resources to nearby forests even when there is no active wildfire response need. The work is part of the Madera Canyon Vegetation Maintenance (64846) project. The piles currently being built will cure for one to two years



Above: Prescott Engine 633 Crew Photo by Jackie Smith.



Above: 6 x 6 piles of vegetation in Madera Canyon.
Photo by Jackie Smith.

before they are burned. Before any burn, firefighters will confirm that conditions are within prescription, including relative humidity, wind, resource availability, and expected consumption levels. If conditions fall outside prescription, the burn will stop and be rescheduled. The safety of firefighters and the public remains the top priority.

Under the leadership of Nogales District Ranger Jorge Enriquez, Fire Management Officer Jorge Amaya helps ensure that firefighters can perform their work safely, efficiently, and effectively. His coordination with other Nogales Ranger District specialists helps meet the needs of both visitors and private landowners in the district.

Located within the Santa Rita Ecosystem Management Area, this work is designed to reduce hazardous fuel accumulation, improve recreation and watershed conditions, support road management, and return the ecosystem to a more fire-resilient state.

This information is from Starr Farrell, Public Affairs Officer, Forest Service, Coronado National Forest.

Spotlight on Pablo Roch

Michele Gazica

Erasmus "Pablo" Rocha is a United States Forest Service employee stationed in the Nogales Ranger District — our district. He serves as our USFS Recreation point of contact, and over the years he has supported the Friends of Madera Canyon by personally assisting the trail crews, the VIS volunteers and management, and the cleanup team. Pablo, a trained biologist, is equally comfortable with parking control on Easter Sunday, trimming overgrown grasses on accessible trails, updating the Friends leadership team on Forest Service happenings, and fighting fires across the western United States. He has consistently "been there" for the Friends of Madera Canyon, offering reliable continuity during the budget and staffing upheavals of 2025. For a time, Pablo's work took him away from the Canyon on assignment as a wildlife biologist for the Nogales District — important work ensuring that the many users of the Coronado National Forest operate in harmony with the Government's conservation goals. We are glad to share that he has now returned to his recreation post, once again our point of contact for Madera Canyon. Even during his time away, he never stopped finding the time to check in, provide counsel, and support the Friends of Madera Canyon — and we're delighted to have him back in the canyon with us.



The Bird Page

Canyon Bird Lists

Bob Pitcher

I've run across a checklist of the Birds of Madera Canyon published by the Friends in January 1992. This is probably the second Canyon checklist compiled by the Friends, but I've seen no trace of the first. I've been involved in the preparation of the latest two Friends' lists of Canyon Birds, in 2020 and 2023, and thought it might be of interest to compare the 1992 and August 2023 versions, prepared some 30 years apart. The question is whether those two checklists reflect significant changes in the Canyon's birdlife during that time.

Some Species Added

What strikes one seeing the two lists side by side is that the 2023 edition looks much more crowded. And it is: it includes 263 birds, the 1992 list only 227. The older list also covered a larger area, from the bridge over Florida Wash on up to the peaks at the Canyon's south end. By contrast, the new list only covers the Canyon proper, from the Proctor Road parking area to the upper end of the Canyon. As a result, the '92 list includes several grassland birds common near the Wash, perhaps ten species, that aren't seen in the area covered by the '23 list. Most of the birds included in the new, but not the old, list are species that were not recorded before 1992 but have been seen in the Canyon since. Most of these additions are seen only rarely and irregularly, and some have been reported only once or twice. In general, the added sightings are almost surely the result of a greater number of birders in the Canyon in more recent years, possibly better equipped. Sightings of new species continue, too. The 2023 list isn't yet three years old, but several more birds will need to be added when it's next revised. One is Clark's Nutcracker, one or two of which were seen several times over the winter of 2024-25, high up in the Canyon. These additions suggest growth in record-keeping more than a dramatic shift in birdlife. This difference in coverage matters more than the raw totals suggest.

Taxonomic Changes

Then there are changes in bird names and taxonomy between the two lists, of which there have been a great many in the thirty years separating them. Eighteen of the birds in the earlier version, not quite ten percent, have had a name change – the most notorious of the recent ones, the re-naming of the Elegant Trogon as the Coppery-tailed Trogon. As with the Trogon, most of the name changes have come about through the splitting of a species, in which subspecies earlier recognized have been raised to full-species status. In only one instance, I believe has it

gone the other way – the Cordilleran and Pacific-slope Flycatchers (which no one could reliably tell apart anyhow) have been lumped together as the Western Flycatcher. Splitting species will continue, as DNA testing spreads and becomes more sensitive. These taxonomic shifts change the list, but they do not by themselves prove major changes in the Canyon's birdlife. Even more striking than all the name changes of the birds is the relative movement of the families in which they are grouped; this, too, is the result of DNA testing. Quail now head the list, followed by Doves, Cuckoos, Nightjars (Nighthawks and their kin), Swifts, and Hummingbirds. In 1992, Vultures were at the head, followed by Hawks, Falcons, Quail, Doves, Cuckoos, and Owls. And so on, down to the end, where one found Blackbirds and Finches thirty years ago, and sees Warblers and Buntings these days. That older Finch family has, in fact, been split into two.

There have been changes in the order of species within families as well, especially in the hummingbirds and warblers. Two birds, in fact, once counted as Warblers, the Olive Warbler and the Yellow-breasted Chat, have each now been put in their own family. (Everybody's known for years that these two weren't Warblers, but no one knew what to do with them taxonomically.) These sorts of changes are still ongoing in the taxonomic world.

Increases or Declines?

How about the actual birdlife in the Canyon, though – has it changed in thirty years? Yes, it has, but as far as I can tell, probably to a rather limited extent. One change that stood out near the head of the list were the Turkeys. Turkeys were hunted out of the Santa Ritas about 1900 and were only reintroduced from Mexican stock decades later. They were still considered rare in the Canyon in 1992. They certainly aren't now!

This is the sort of change that shows up most clearly. Some species have declined as others have increased. Apparently, there may be fewer Band-tailed Pigeons now than before, but more White-winged Doves. Common Poorwills are more common, it seems, but the Buff-collared Nightjar, at best a very rare bird anywhere in this country, hasn't been seen or heard in the Canyon – except maybe fleetingly – for years, and it used to breed here in very small numbers.



Rufous-backed Robin, *Turdus rufopalliatus*,
family Turdidae. Photo by Pablo Lèautaud.

A trade-off for the Nightjar might be the Berylline Hummingbird, a Mexican species that used to be seen in the Canyon occasionally, but one or more of which seems to be on hand most every year now from early springtime until late summer. A hybrid Berylline/Broad-billed Hummingbird is now visiting the Lodge feeders. Whiskered



The Yellow-breasted Chat. Image by Jim Conrad -
JIM CONRAD'S NATURALIST NEWSLETTER

Screech Owls, a bird possibly most easily seen (or at least heard) in this country in Madera Canyon, seem to be more common now, too. And Trogons seem to be a little more common than they were thirty years ago, when they were sought after as much as they are now.

Turning to the Passerines, the Perching Birds, there have been fewer changes in abundance among these species than in some of the other orders of birds. Changes among the Perching Birds are mostly

additions to the list of species that hadn't been reported here by 1992. Most of these birds are strays from the East. Four species of eastern Vireos have been added,

three eastern or Great Plains Sparrows, and thirteen Warblers! All remain rare here.

Exciting as eastern birds are to see unexpectedly in the West, it is on Mexican rarities that much of Madera



Slate-colored Red Start.
<https://www.sharpphotography.co.uk/>

Canyon's birding reputation is built. And a good number of Mexican strays have been added to the Canyon list since '92, several staying for weeks or months in the Canyon and drawing hundreds of birdwatchers. Notable in this category is probably the White-throated Thrush of several years ago. But two other thrushes have been added to the Canyon list, the Clay-colored and the Rufous-backed Robin, the latter of which stayed most of the winter of There have been Mexican Warblers too: the Crescent-chested, Fan-tailed, and Rufous-capped (though this last was for years found much more reliably in Florida Canyon), and the Slate-colored Redstart. But while Madera Canyon can boast of a rarity or two at any given time, it's the constant or at least seasonal

presence in the Canyon of many species that are rare or simply absent outside Southeast Arizona and, even within this area, are most reliably seen in Madera. The Trogon is one, but Sulfur-bellied Flycatchers and several of the hummingbirds are simply more easily seen here than anywhere else. Over the thirty years represented by these two bird lists from the Friends, that fact seems not to have changed: Madera Canyon remains especially reliable for these species. That steadiness, more than any single addition or name change, is the main story these lists

A BIOLOGICAL RESTRICTION IN MADERA CANYON

Kristin Wisneski-Blum

We are hoping to clear up recent confusion regarding the use of power equipment, such as leaf blowers and weed wackers, within Madera Canyon. While there are currently no fire-related restrictions in place, there is a mandatory biological restriction that we must follow to protect one of the canyon's most sensitive residents: the Western Yellow-billed Cuckoo.

Madera Canyon is officially designated as Unit 46 (AZ-34) Critical Habitat for this federally threatened species. Because these birds are extremely reclusive and sensitive to human intrusion, we must adjust our volunteer activities during their critical residency period.

The Restriction Period: May 25 – September 30. The U.S. Fish and Wildlife Service (USFWS) recommends avoiding activities that produce excessive noise during this window to prevent adverse effects on migrating and breeding cuckoos.



Yellow-billed Cuckoo.
Photo by Alan Schmierer

Why This Matters

- **Nest Desertion:** Yellow-billed cuckoos are highly sensitive to disturbances near their nesting sites. Excessive noise or vibration can cause parent birds to desert their nests.
- **Short Breeding Window:** These birds have an incredibly fast breeding cycle—just 17 days from egg-laying to fledging. Because their time in Arizona is so brief (arriving in June and often leaving by late August), they have very little opportunity to re-nest if a primary nest fails due to disturbance.

- **Critical Habitat Features:** The "Physical or Biological Features" of Madera Canyon—including its unique Madrean evergreen woodland and riparian stringers—are essential for the species' survival and recovery.

Required Actions for Volunteers

- Stop use of leaf blowers and weed whackers in or near suitable foraging and breeding habitat through September 30.

- Minimize all excessive noise and construction-related activities that could disrupt the quiet environment these birds require for the successful rearing of offspring.
- Report sightings: If you see a cuckoo (look for the long tail with white spots and a yellow bill), please maintain a respectful distance to avoid causing stress to the bird. See bird profile: https://tucsonbirds.org/bird_profile/yellow-billed-cuckoo/

Important Update: Biological Restrictions in Madera Canyon (May 25 – Sept 30).

The Education Reports

Summer, 2026: FoMC Education Program

Doug Moore, Education Director

Summer officially arrived very early this Sunday morning, but for everyone living locally, summer-like heat and low humidity have been around for weeks already! Oh, yes, I know—there have been a couple of strays' "it rained over there for two minutes" afternoons, but otherwise, it's just been hot "dry summer" conditions. And the upcoming last week of June forecast looks fun—105+!

Dry summer is always a challenge. When it gets so hot and dry, outdoor recreation can become downright dangerous during the day even up in Madera Canyon—heat-related illness is NO joke! For member/public safety precautions, the FoMC suspends outdoor education activities when these conditions arise, following recommendations from the USFS and other state agencies. It is good common sense not to put lives into potential jeopardy. An incident can put not only one's own life at risk, but also the rest of the group and any first responders that are called in for rescue.

Despite not being officially out-of-doors with the FoMC, the Education Committee remains quite active with several summer projects that are keeping us busy at home "in the office."

My priority is planning for the resumption of outdoor activities later this summer. All of us locals are keeping our fingers crossed for a good summer monsoon season right around the corner. An active monsoon a "wet summer"—means precipitation, potentially lower temps, and a green Madera Canyon active with critters and wildflowers. While keeping vigilant for thunderstorms, it can be the most exciting time of the year to explore the canyon. If/when the monsoon kicks in, it is the season for Bug Nights and botany, birding, and nature hikes—watch for the FoMC e-blast for activity notifications. And, of course, planning and teacher contacts for fall 4th grade nature field trips always commence later in August.

Another exciting developing Ed Program project is a new "Respect the Canyon" video series that Jim Burkstrand and I are currently working on. (Actually, I write the scripts and "critique"; Jim finesses the software and tech magic that transform mere text into video! Big-time thank you, Jim!) The series focuses on best practices for responsibility, preparation, safety, and leaving no trace minimal impact use for canyon activities like hiking, picnicking, and birding/wildlife viewing. Our wonderful 4th grade teachers at Mt. View Elementary in Rio Rico will be helping us with Spanish language translations of the videos.

Recent research indicates that even when people use currently accepted “best practices” outdoors, they cause observable effects on wildlife—particularly stress and resultant changes in natural behaviors. A primary “Respect the Canyon” video is planned specifically to bring awareness to this important information and try to provide advice from experts on what we, as canyon visitors, can do. There may be no absolute solutions—short of closing the canyon—but what more can be done to mindfully minimize canyon visitation impacts while maximizing our protection of animals, plants, and wild habitats we emphatically care about?

Finally, in addition to our “Online Learning Resources” under the “Education” button of the FoMC website, I am working on a pair of e-books—common wildflower guides to the Proctor Nature Loop Trail. The first e-book is commonly encountered spring flowers; the second will be monsoon/fall flowers. Both volumes will have a short intro to Madera Canyon and the Sky Islands, and each is organized by flower color. Both will be available on the website in PDF format for students, teachers, and the public.

FoMC 2022 Scholarship Winner Update

Judy White

We extend hearty congratulations to Grace Harris, the recipient of the Friends scholarship in 2022, who graduated this summer from Northern Arizona University with a bachelor’s degree in forestry sciences. She will be continuing her education next year at NAU, having been selected as one of only 10 students to a special accelerated program that will allow her to complete a master’s degree in forestry sciences in one year. Her graduate degree will focus on the importance of collaborative land management and the economic impacts of management practices on small communities.

Grace is a wonderful example of the young people FoMC is seeking to support through its scholarship program as they begin their college studies in some field of natural sciences. You can learn more about the scholarship program on the Friend’s website. <https://friendsofmaderacanyon.org/scholarship-program/>

The Editor's Desk

In late May of this year (2026), Ruth Oliver and about 79 other people co-authored this article in *Science*, Interacting effects of human presence and landscape modification on birds and mammals. *Science*. 2026 May 21;392(6800):879-84.

The paper is important because it changes how ecologists think about human impacts on wildlife. For decades, most studies have treated human influence primarily as a property of the landscape—roads, cities, agriculture, housing density, or habitat fragmentation. Oliver et al. demonstrate that the physical presence of people themselves is a separate ecological force and that this force often interacts with landscape modification in ways that cannot be predicted from habitat alteration alone.

It separates two effects that are usually confounded. Most previous research assumed that developed landscapes were simply proxies for human disturbance. However, an urban park at dawn with few people and a wilderness trail crowded with hikers represent very different experiences for wildlife.

Oliver and colleagues distinguished between landscape modification (roads, urbanization, agriculture, and energy infrastructure) and dynamic human presence (the actual number of people moving through an area).

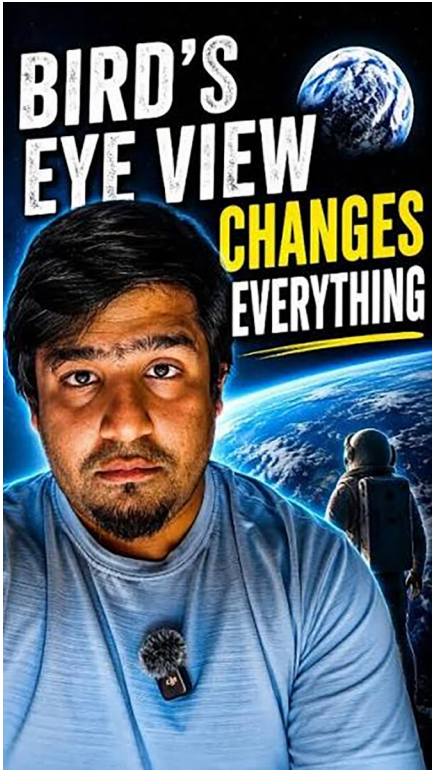
Using anonymized mobile-device data, they quantified human presence independently of land-use patterns. This allowed them to ask whether animals respond to infrastructure, to people, or to both. That distinction is conceptually important because it separates structural habitat change from behavioral disturbance.

The study is remarkable for its scale: approximately 11.8 million GPS locations from 4,581 tracked animals representing 37 species (22 birds and 15 mammals) across the continental United States. Very few movement ecology studies combine telemetry datasets of this size across so many taxa. This makes the conclusions far more general than studies focusing on a single species or protected area.

Human presence affected most species. One of the headline findings is that more than 65% of species changed their space use in response to human presence. This demonstrates that people themselves—not merely the landscapes we build—are major drivers of animal behavior. That has broad implications because wildlife managers often measure only habitat characteristics.

The interaction between people and habitat matters; perhaps the most important ecological result is that the effects were interactive rather than additive. For roughly 60% of responsive species, the effect of human presence depended on how modified the landscape already was. For example, animals often reacted more strongly to people in relatively intact habitats, while populations living in developed landscapes were sometimes less sensitive, possibly because of habituation or because their movement options were already constrained. This finding means there is no universal "human disturbance effect."

Instead, wildlife responses depend on the combination of habitat conditions and current human activity. That is a much richer—and more realistic—view of human–wildlife interactions.



It provides evidence for behavioral plasticity. The authors exploited the unusual circumstances of the COVID-19 pandemic. Because human mobility changed dramatically between 2019 and 2020, they could compare the same individual animals across years. They found that many individuals altered their behavior as human presence changed, demonstrating behavioral plasticity, not merely differences among populations. This strengthens the inference that animals are responding directly to changes in human activity.

It has direct conservation applications. The study suggests that conservation planning should incorporate when and where people are present, not simply where development occurs.

Potential applications include seasonal trail closures, timed recreational access, regulation of tourism, scheduling forestry or mining activities, road-use management, and timing of hunting or wildlife viewing. Many management decisions may be improved by reducing human presence during sensitive periods rather than permanently restricting land use.

It changes how movement ecology can be conducted. Methodologically, the paper represents an important advance because it integrates GPS animal telemetry, environmental niche analysis, Bayesian hierarchical models, and large-scale human mobility datasets.

The authors argue that dynamic human mobility should become a standard predictor in movement ecology, much like temperature or vegetation productivity. This is likely to influence future studies across ecology and conservation biology.

This study suggests that human activity itself may also influence movement patterns, even in relatively intact habitats.

For example, hikers may alter the activity patterns of lizards in rocky canyons; repeated recreational use could affect basking or refuge selection; off-road vehicle traffic may influence snake movements beyond the physical effects of roads; and seasonal recreation could alter dispersal or breeding movements of amphibians. Although reptiles were not included in this analysis, the conceptual framework is readily transferable to herpetology and raises important questions about whether telemetry studies of reptiles should incorporate measures of human mobility in addition to habitat variables.

Bottom line

The major contribution of Oliver et al. is not simply that humans affect wildlife—that has long been known. Rather, it demonstrates that human presence is a dynamic ecological variable that is distinct from habitat modification and often interacts with it in complex, species-specific ways. By combining nationwide telemetry with high-resolution human mobility data, the authors provide one of the clearest demonstrations to date that understanding wildlife behavior requires measuring both the landscapes we build and the people who move through them.

Astronauts view humans as passengers on one shared spacecraft. When viewing our planet from space, they see no borders, politics, or races. Instead, they see one unified family living on a rare, beautiful oasis in a dark, empty universe. They believe all humanity must work together to protect our home.

Astronauts often describe this as a special feeling when they see Earth from space. This is called the Overview Effect. It is a sudden change in how you think.

Astronauts say you cannot see countries or borders from space. They see Earth's atmosphere as a tiny, thin green or blue layer covering the planet; it's called the biosphere. All living things stay inside this thin line. Everything outside of it is too harsh for life to live outside the layer.

Reference. Oliver RY, Yanco SW, Ellis-Soto D, Jesmer BR, Cohen J, Gao S, Patchett R, Avgar T, Bildstein K, Bakner NW, Barber D. et al. 2026. Interacting effects of human presence and landscape modification on birds and mammals. Science. May 21;392(6800):879-84.

The Last Page

As we reflect on the numerous values of wilderness, it is essential to incorporate economic considerations into our discussions. Wilderness is not only a sanctuary for solitude and recreation, and a source of clean air and water, but it also serves as a significant economic driver in many regions. In Arizona, the state's natural wonders attract millions of tourists annually, with preserved natural areas playing a crucial role in this appeal. A recent report from the National Park Service highlights the economic impact of national parks across the nation. In Arizona alone, nearly 10 million visitors to national parks contribute close to three-quarters of a billion dollars each year, benefiting the state's economy significantly. Arizona is home to a remarkable variety of protected lands, from the iconic Grand Canyon National Park to lesser-known gems like the Sonoran Desert National Monument. These wilderness areas attract a diverse range of travelers and residents alike. Saguaro National Park (SNP) exemplifies the vital role of wilderness areas for both locals and tourists. "This park is unique in the national park system. Saguaro's 92,000 acres are 78% wilderness, and the Park is managed as wilderness. We're also unique in that we sit adjacent to Tucson, a major metropolitan area with nearly one million residents," explains Robert Newton, Executive Director of the Friends of Saguaro National Park. Visitor statistics illustrate how SNP caters to both residents seeking a natural escape and tourists contributing to the local economy. According to the recent National Park report, over 90% of the 634,000 annual visits to Saguaro National Park come from outside the Tucson area. The economic benefits of preserved natural lands extend to ecotourism as well. The Grand Canyon attracts visitors from all 50 states and 41 foreign countries, generating hundreds of millions of dollars for the Arizona economy. Wildlife tourism also plays a significant role; a study by the Tucson Audubon Society revealed that in 2011, visitors contributed more than \$183 million to the state's economy through wildlife-watching activities. While the primary reasons for preserving wilderness focus on ensuring a wild natural legacy, the economic advantages demonstrate that wilderness indeed makes "dollars and sense." Below is an ecotourist photographing a Western Diamondback Rattlesnake. Photo and text JCM.

