

Arboreal bridges project in Southern Pacific, Costa Rica

2020 - 2025



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Executive Summary

Roads represent one of the most widespread threats to the integrity of natural habitats worldwide. They act as physical barriers to animal movement, cause direct mortality through vehicle collisions, decrease gene flow between populations, and increase the probability of local extinctions. These impacts are especially pronounced for arboreal (canopy-dwelling) species, which rely on continuous forest cover to move, forage, and reproduce. When roads cut through tropical rainforests, they create canopy gaps that many arboreal mammals are reluctant or unable to cross, leading to isolated populations and heightened vulnerability to local extinction.



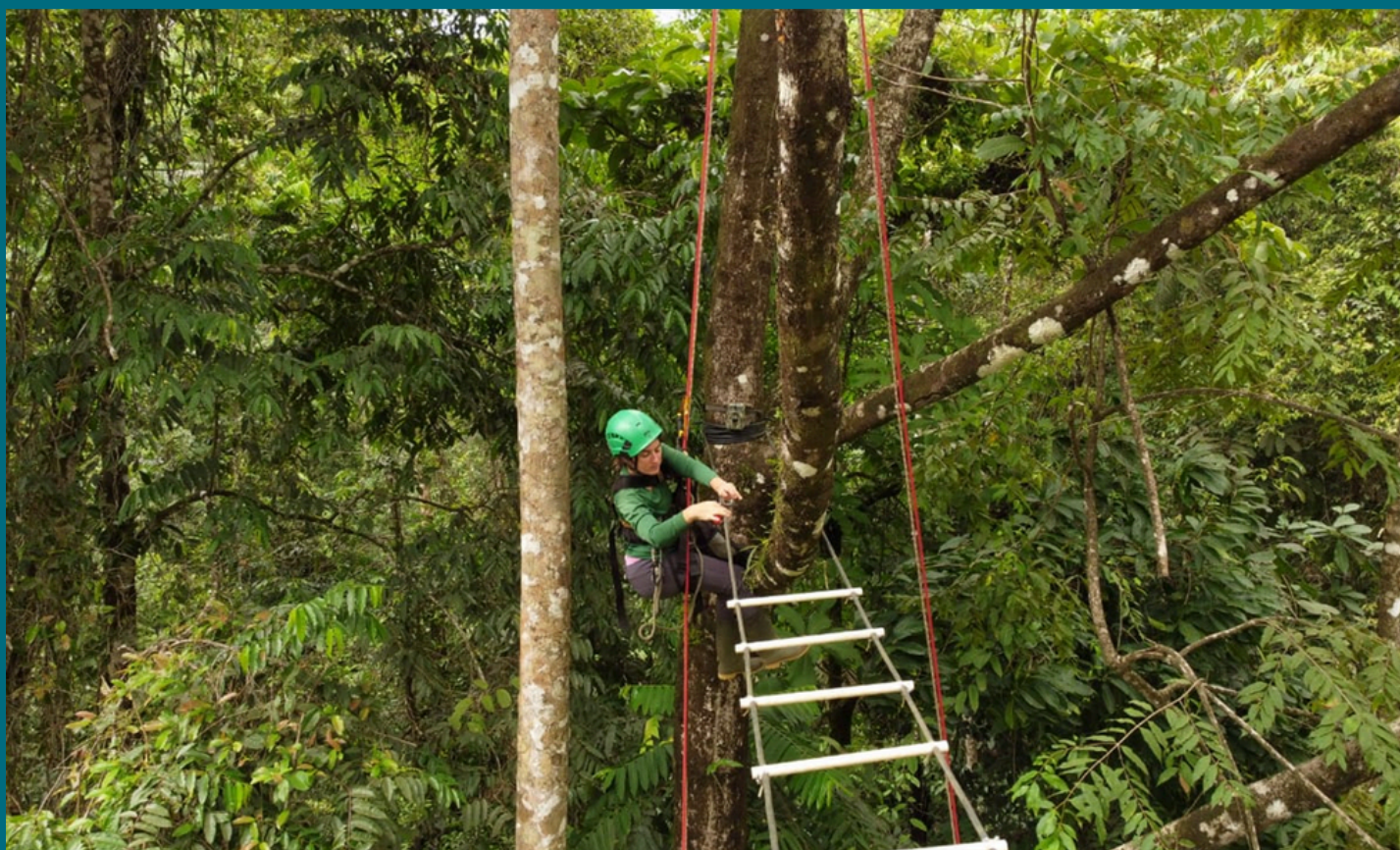
Aerial view of the Osa Peninsula landscape showing an installed arboreal bridge spanning an unpaved road. The bridge reconnects secondary forest patches on both sides of the road, providing a safe canopy-level crossing for arboreal mammals. Note the continuous forest cover extending beyond the road corridor—a key criterion for bridge site selection.

The Osa Peninsula in southwestern Costa Rica is a globally significant biodiversity hotspot, hosting the largest remaining tract of Pacific lowland wet forest in Mesoamerica. The region supports over 15 medium- to large-bodied arboreal mammal species, including endangered primates such as the Central American spider monkey (*Ateles geoffroyi*) and the Central American squirrel monkey (*Saimiri oerstedii*). Despite the presence of protected areas—Corcovado National Park, Piedras Blancas National Park, the Térraba-Sierpe National Wetland, and the Golfo Dulce Forest Reserve—the peninsula is traversed by an expanding network of paved and unpaved roads. These roads fragment habitat, restrict wildlife movement, and increase the risk of roadkill. Recent studies have documented that species such as the northern tamandua (*Tamandua mexicana*), common opossum (*Didelphis marsupialis*), and Mexican porcupine (*Coendou mexicanus*) are particularly vulnerable to vehicle collisions in the region.

To address this conservation challenge, Osa Conservation initiated an arboreal wildlife bridge program in December 2020. Arboreal bridges are artificial structures (ropes, ladders, or mesh) installed above roads to reconnect fragmented canopy habitats, allowing wildlife to cross safely without descending to the ground where they face predation risk and traffic. Since December 2020, we installed a total of 35 arboreal bridges across five designs (single rope, double rope, triple rope, ladder, and mesh) over unpaved roads on the Osa Peninsula and the AmistOsa Biological Corridor.

The results of the first three years of monitoring (2020–2023) demonstrated that arboreal bridges are highly effective at restoring canopy connectivity. All bridges recorded wildlife crossings by at least 13 mammal species. The most frequent users were the Central American woolly opossum (*Caluromys derbianus*) and the kinkajou (*Potos flavus*). Bridge use increased markedly with time since installation, crossing frequency increased nearly 100-fold from 3 months to 30 months post-installation, underscoring the importance of long-term monitoring. Rope-based designs, particularly double- and triple-rope configurations, outperformed ladder bridges in both crossing frequency and species richness. Longer bridges and those with less dense surrounding canopy cover were also associated with higher use.

Complementary analyses of diel activity patterns (2023–2025) revealed that the arboreal mammal community is predominantly nocturnal (83% of observations), with species exhibiting distinct activity peaks that facilitate coexistence through temporal resource partitioning. Seasonal variation in activity was observed only in the white-faced capuchin monkey (*Cebus imitator*), which shifted its peak activity from afternoon in the dry season to morning in the wet season.



High above the forest floor: a team member installs a ladder bridge and camera trap. Every bridge requires skilled climbers and coordinated ground support to restore safe passage for arboreal wildlife.

Here we summarize the main findings of our first five years of study, providing scientific-based evidence on arboreal wildlife bridges as a viable and effective mitigation strategy for reducing road impacts on tropical arboreal mammal communities.

This report synthesizes the technical lessons learned regarding bridge design, site selection, biodiversity monitoring, and community engagement, and provides concrete recommendations for scaling up this approach across the Osa Peninsula and beyond.

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Bridge Design and Installation

Here is the scientific article with all the information for this section: Flatt, E., Basto, A., Pinto, C., Ortiz, J., Navarro, K., Reed, N., ... & Whitworth, A. (2022). Arboreal wildlife bridges in the tropical rainforest of Costa Rica's Osa Peninsula. *Folia Primatologica*, 93(3-6), 419-435.

A key objective of the Arboreal Bridge Project was to identify efficient and feasible infrastructure that could be deployed across the Osa Peninsula to restore canopy connectivity. To achieve this, we selected and tested three bridge designs based on their documented success in previous studies (primarily from Australia and Asia) and the local availability of materials in Costa Rica: (1) single rope bridge, (2) double rope bridge, and (3) ladder bridge.



The installation team gathers supplies before heading to the trees. Successful bridge deployment depends on seamless coordination between climbers and ground crew, a partnership that makes each crossing possible.



Osa's road types, bridge designs installed and monitoring approaches: (a) mesh bridge, (b) double rope bridge, (c) triple rope, (d) double-parallel bridge, (e) ladder bridge

Bridge installation required a minimum team of *four people*: two trained tree climbers and two ground crew. Using a double-rope climbing system, climbers ascended selected host trees on both sides of the road. A throw line was used to haul an intermediate rope across the canopy gap, to which the pre-constructed bridge was attached. The bridge was then pulled into position and secured.

The three designs varied significantly in cost, construction time, and installation time. The 25 mm single-rope was the least expensive (approximately US\$ 70 for a 20 m bridge) and required no construction time, with an installation time of ~3 hours. The double-rope cost approximately US\$ 140 (25 mm) to US\$ 590 (50 mm) and required ~4–5 hours for installation. The ladder-bridge was the most costly design (US\$ 937 for a 20 m bridge), required ~6 hours of pre-construction, and took ~6 hours to install.

Site Selection

Identifying priority locations for wildlife crossing infrastructure is a critical first step to ensure that mitigation efforts are both ecologically effective and financially efficient. In the Osa Peninsula, where resources for conservation are limited and the road network continues to expand, a strategic, multi-data approach is required to pinpoint where wildlife most need safe passage. To this end, we combined three complementary methods: (1) camera trap surveys to measure wildlife activity and species richness in forest patches adjacent to roads, (2) citizen science roadkill data to identify collision hotspots, and (3) Circuitscape connectivity analysis to model landscape-level movement constraints.

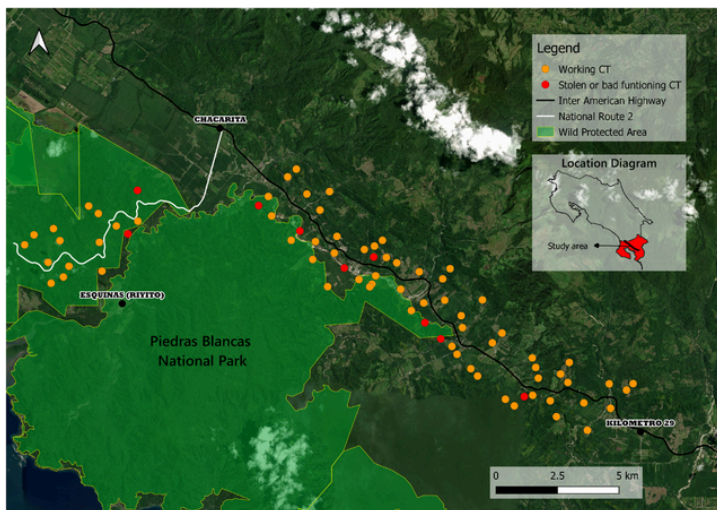
Here is the scientific article with all the information of this section: Pinto, C. M., Soto, J. S. V., Flatt, E., Barboza, K., & Whitworth, A. (2024). Identifying wildlife road crossing mitigation sites using a multi-data approach—a case study from southwestern Costa Rica. *Journal of environmental management*, 361, 121263.

Our study focused on two major paved roads that dissect the Osa region: the Inter-American Highway (Chacarita–Río Claro section, 19 km) and the National Route 245 (Mogos–Chacarita section, 7 km). These roads represent critical barriers between the Osa Peninsula's protected areas—Corcovado National Park, Piedras Blancas National Park, and the Golfo Dulce Forest Reserve—and the mainland's La Amistad International Park.

WILDLIFE ACTIVITY SURVEYS

To assess wildlife presence and activity near the roads, we deployed 78 camera traps in secondary forest patches and strips at varying distances from the road (200 m to 1 km) over a six-month period (February–August 2021). Cameras were placed every 1 km along the road at 200–500 m distance, and every 2 km at 700 m–1 km distance. We recorded 30 terrestrial species (25 mammals and 5 ground birds). The most frequently detected taxa were coatis (*Nasua narica*), agoutis (*Dasyprocta punctata*), and pigeons (Columbidae), present at 81.5%, 76.9%, and 66.2% of camera stations, respectively. Least common were tapirs (*Tapirus bairdii*), otters (*Lontra longicauda*), and kinkajous (*Potos flavus*), each detected at a single station.

Overall, the citizen science monitoring group documented 70 observations of 21 species in total, of which 88.4% were found dead and 11.4% alive. The most frequent species seen on the road were the northern tamandua (*Tamandua mexicana*) (25% of the observations), the raccoon (*Procyon lotor*) (12%), the white-nosed coati (*Nasua narica*) (12%), and the common opossum (*Didelphis marsupialis*) (10%).



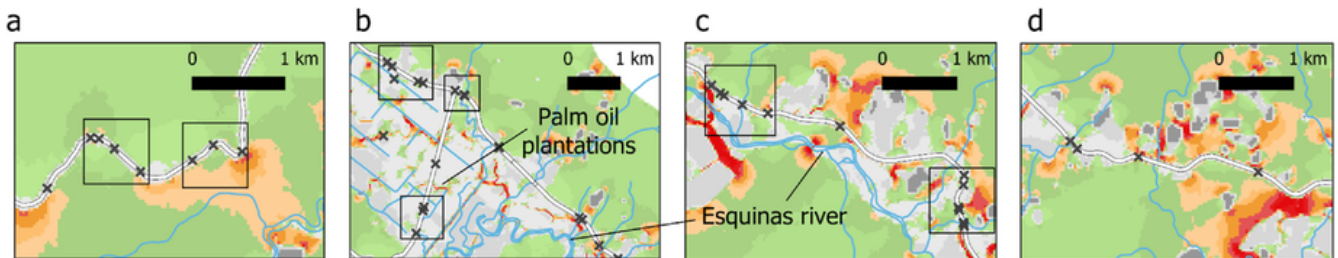
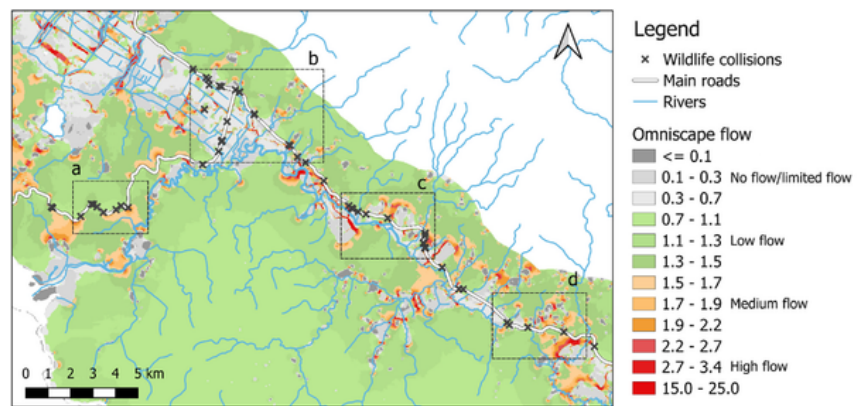
Camera trap locations (orange and red dots) along the Inter-American Highway and National Route 245 in the South Pacific of Costa Rica to assess wildlife activity in forest habitat around roads.



A preventable loss. This kinkajou represents the invisible toll of road fragmentation. Identifying such hotspots is the first step toward effective mitigation.

INTEGRATION AND PRIORITY SITES

By overlaying the three data layers (high wildlife activity/richness, roadkill clusters, and bottleneck sites) we identified four priority locations for wildlife crossing structures, all situated along the Inter-American Highway.



Omniscape analysis based on land cover shows expected connectivity in southern Costa Rica. More intense colors (orange and red) show areas with higher expected flow, where animal movement is more restricted, that constitute bottleneck sites. These sites generally correspond with the areas where collisions with wildlife (black crosses) are clustered.

These findings underscore that preserving high forest cover adjacent to roads is essential for maintaining wildlife presence, and that crossing structures should be placed where forest connectivity on both sides is strongest.

Based on the process described above, each candidate bridge site was evaluated against the following five criteria:

01

Forest patches on both sides of the road

Substantial forest cover must be present on both sides of the road to ensure the bridge connects viable habitat, not isolated trees.

02

Strong anchor trees on both sides

Suitable host trees must be capable of supporting both the bridge structure and the weight of a climbing technician during installation.

03

Road in active use

Bridges are prioritized for roads that are currently operational and pose an ongoing barrier or mortality risk to wildlife, rather than abandoned or low-traffic routes.

04

Ideally no power lines

The absence of electrical lines is preferred. Where power lines are present, bridges must be installed above them to avoid electrocution risks. In such cases, coordination with the Costa Rican Electricity Institute (ICE) is required.

05

Evidence of wildlife crossing attempts

Visual observations or testimonial reports (e.g., from local community members, drivers, or landowners) of animals attempting to cross the road at or near the site.

Users of Arboreal Bridges

Evaluating the ecological impact of the arboreal bridge project requires a detailed understanding of how wildlife interacts with these structures. To this end, we established a long-term biodiversity monitoring program using camera traps deployed at each bridge site. This program allowed us to address three key questions: (1) What are the most important predictors of arboreal bridge use? (2) Is there evidence for species-specific variation in bridge use? and (3) How do diel activity patterns vary among species, seasons, and overlapping species pairs? Here we present results from the first years of wildlife monitoring.

Here are the scientific articles with all the information of this section:

Fischer, M., Kemp, Y.J.M., Pinto, C., Rodríguez Duran, F., Ortiz García, J., Barboza Navarro, K., Flatt, E., Rodríguez, P., Beirne, C., Wearn, O.R., Soto Navarro, C., Hidalgo Chaverri, M., & Whitworth, A. (2026). The use of arboreal wildlife bridges by neotropical mammals increases markedly with time since deployment and varies by design. *Animal conservation*

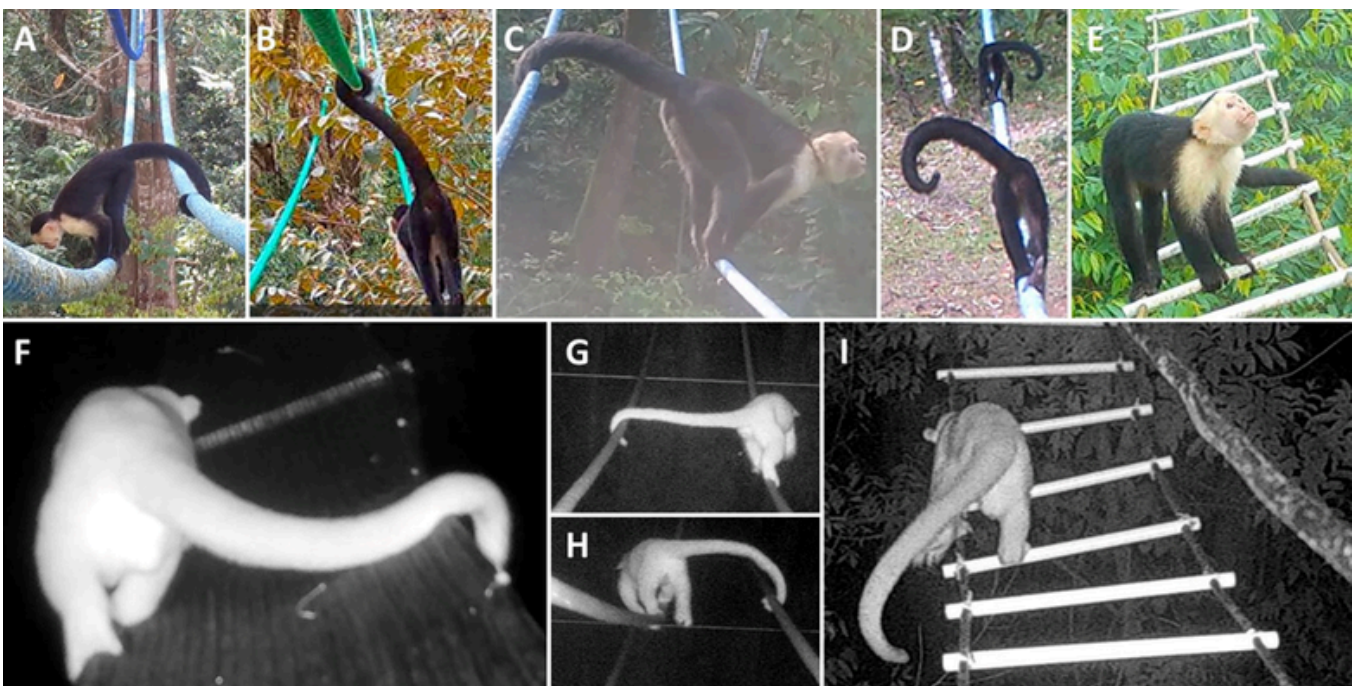
Stenfert, J., Rodríguez-Umaña, P., Grootaers, J., Rodríguez-Durán, F., Ortiz-García, J., Barboza-Navarro, K., & Mendoza-Henao, A. M. (submitted). Rhythms in the rainforest canopy: Overlap and seasonal variation in the diel activity of Neotropical arboreal mammals. *Journal of Zoology*.

OVERALL SPECIES DETECTION AND CROSSING ACTIVITY

A total of 17 arboreal bridges were monitored across five designs (single rope, double rope, triple rope, ladder, and mesh). Here, we used data available between December 2020 and August 2022. Bridges were located over unpaved roads, with lengths ranging from 10 to 33 m and heights from 7 to 30 m. Camera traps were deployed at both ends of each bridge, set to record 20-second videos with a 30-second delay. Over 9,801 combined camera trap days, we recorded 2,231 independent crossing events by at least 13 mammal species. Wildlife activity was recorded at all 17 bridges.

MOST FREQUENT USERS BETWEEN 2020 AND 2022

- Central American woolly opossum (*Caluromys derbianus*)
- Kinkajou (*Potos flavus*)w
- White-faced capuchin monkey (*Cebus imitator*)
- Central American spider monkey (*Ateles geoffroyi*)
- Central American squirrel monkey (*Saimiri oerstedii*)
- Variegated squirrel (*Sciurus variegatoides*)
- Mexican porcupine (*Coendou mexicanus*)
- Bushy-tailed olingo (*Bassaricyon gabbii*)
- Vesper rat (*Nyctomys sumichrasti*)
- Mouse opossums (*Marmosa* spp.)



White-faced capuchins and kinkajous using their prehensile tail while crossing arboreal bridges. White-faced capuchins walking on triple rope bridge (A, B), double rope bridge (C), single rope bridge using their tails as a counterbalance (D), and ladder bridge (E). Kinkajous walking on mesh bridge (F), double rope bridge (G, H) and ladder bridge (I).

Two species known to be highly impacted by vehicle collisions in Costa Rica were recorded using the bridges: the common opossum (*Didelphis marsupialis*) and the Mexican porcupine (*Coendou mexicanus*)



Unlike installing terrestrial camera traps when you have all materials you need handy, to properly install arboreal camera trap you have to make sure that all the equipment you need is attached to you harness before you climb.

Time since installation. Time since bridge installation had the strongest effect size of any predictor. Predicted crossing frequency increased nearly 100-fold, from 0.29 crossings per three-month period after 3 months to 25.82 after 30 months. Species richness also increased over time, from 0.30 species at 3 months to 1.59 at 30 months. Notably, while **species richness appeared to plateau around 24 months**, crossing frequency continued to increase through at least 30 months, showing no signs of decline.

Bridge length. Longer bridges were associated with higher crossing frequency and greater species richness. Crossing frequency increased from 0.66 at the minimum bridge length to 10.70 at the maximum. Species richness increased from 0.63 to 1.57 across the same range.

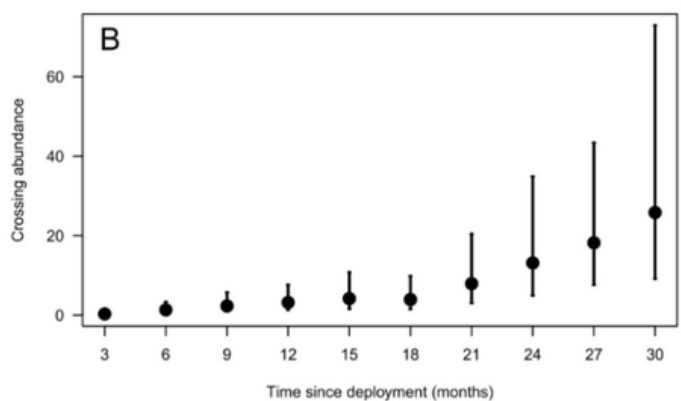
Local canopy cover and bridge height. Denser local canopy cover was associated with slightly lower bridge use, likely because natural canopy crossings provide alternative routes.

PREDICTORS OF ARBOREAL BRIDGE USE

Using linear mixed effects models, we identified the most important predictors of crossing frequency and species richness per bridge. Bridge design, time since installation, and bridge length were the strongest predictors, while bridge height, local canopy cover, and the presence of a vanilla scent lure did not have statistically clear effects.

Bridge height showed no statistically clear effect on either crossing frequency or species richness.

Vanilla lures. The use of vanilla essence as a scent lure **did not significantly increase crossing frequency** or species richness. However, anecdotal observations revealed that kinkajous, woolly opossums, white-faced capuchins, olingos, mouse opossums, and rats did investigate the lures (smelling and rubbing the plastic bottles).



Crossing abundance by time since installation (in months for a single rope bridge, no attractant and mean continuous variables),

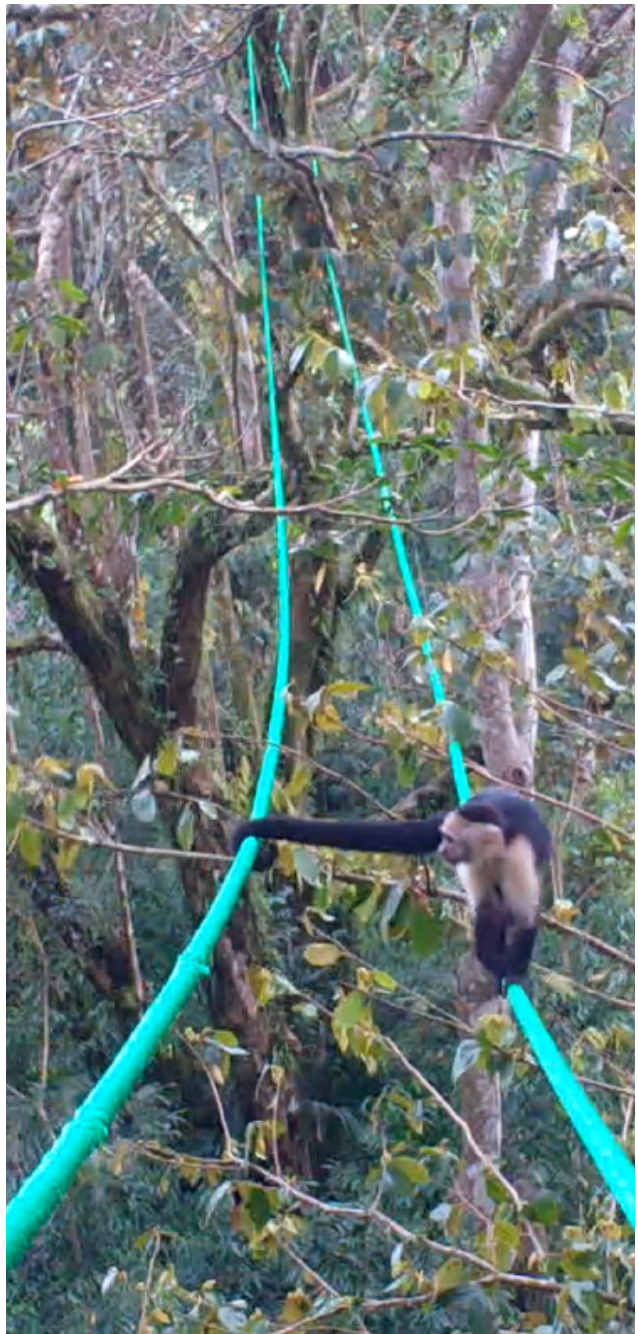
SPECIES-SPECIFIC VARIATION IN BRIDGE USE

We ran taxon-specific models for four groups with sufficient sample sizes (≥ 90 crossings). For woolly opossums (1,016 crossings across all 17 bridges), crossing frequency varied by design (mesh most utilized) and increased with time since installation. For the group comprising rats, mice, and mouse opossums (362 crossings across 11 bridges), rope designs were preferred over mesh and ladder, and crossing events increased with bridge height and time since installation. For white-faced capuchins (91 crossings), bridge use increased with bridge length and time since deployment; although most crossings occurred on rope bridges, design was not retained as a statistically supported predictor due to model convergence issues. For kinkajous (294 crossings), bridge design influenced crossing frequency, with a preference for mesh and triple rope designs.

BEHAVIORAL OBSERVATIONS: PREHENSILE TAIL USE

Behavioral observations from crossing videos provided valuable insights into how different species interacted with bridge designs. Species without prehensile tails (e.g., olingos, squirrel monkeys, small rodents) typically used a single rope regardless of the number available, walking directly on the rope or on the side zipline of ladder and mesh designs. In contrast, species with prehensile tails—white-faced capuchins and kinkajous—were observed using multiple ropes or ziplines simultaneously.

Capuchins used their prehensile tails in 41.8% of crossings, and kinkajous in 56.4% of crossings, typically walking on one rope while gripping another with their tail for stability. This behavioral difference suggests that double- and triple-rope designs offer greater functional versatility, accommodating both quadrupedal species and those that rely on tail-assisted grasping.

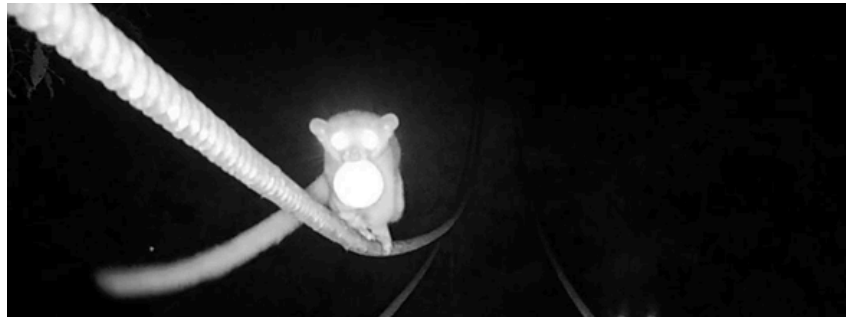
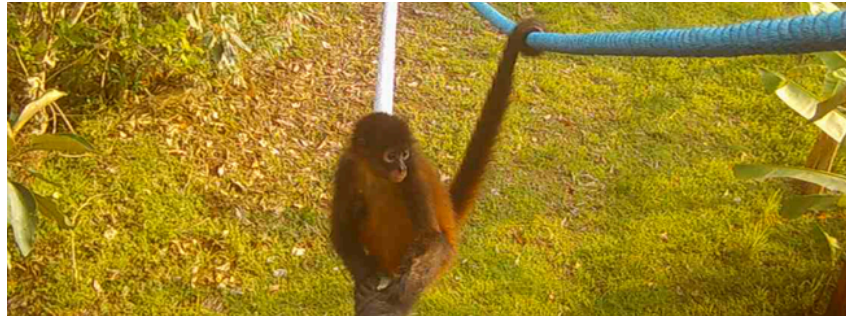


Five-limbed crossing: a capuchin monkey uses its tail as a safety line on a double-rope bridge. Design matters for prehensile-tailed species.

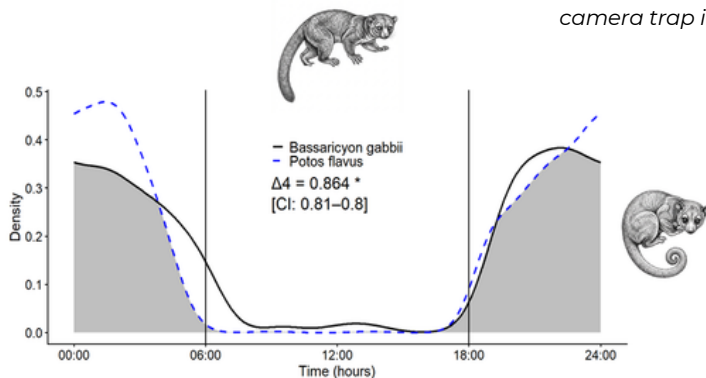
DIEL ACTIVITY PATTERNS

To complement crossing frequency analyses, we examined the diel activity patterns of nine arboreal mammal species using video data from January 2023 to July 2025. A total of 2,755 independent events were analyzed. Four species were classified as diurnal: Central American spider monkey, white-faced capuchin, red-backed squirrel monkey, and variegated squirrel. Five species were nocturnal: Central American woolly opossum, kinkajou, bushy-tailed olingo, vesper rat, and Mexican porcupine. Overall, 83% of independent observations occurred during the night (18:00–06:00).

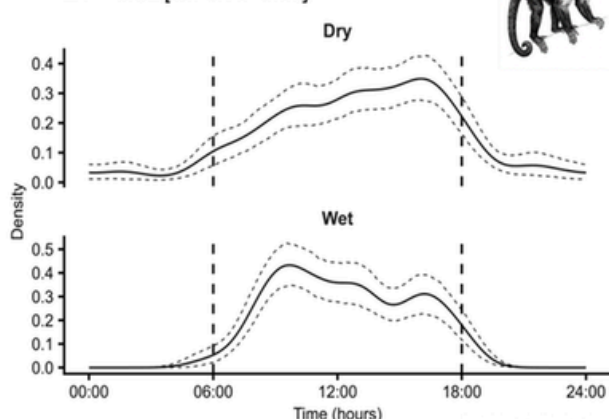
Nocturnal species. The bushy-tailed olingo showed the highest average activity (42% of the diel cycle), with peaks at 20:00 and 22:00. Central American woolly opossums were most active between 19:00 and 00:00 (peak at 19:00). Mexican porcupines exhibited a bimodal pattern (peak at 19:00 and another between 23:00–02:00). Vesper rats were active between 20:00–23:00, while kinkajous showed constant high activity between 23:00–02:00, peaking later than most other nocturnal species.



Day and night. a diurnal spider monkey (above) crosses during daylight hours, while a nocturnal kinkajou (below) uses the structures after midnight. These camera trap images reveal how temporal niche partitioning enables multiple species to share canopy crossing structures.



b. *Cebus imitator*
 $\Delta 4 = 0.82$ [CI: 0.73–0.89]



Diurnal species. The three primate species showed broad activity patterns throughout the day. Spider monkeys peaked around 16:00, white-faced capuchins showed multiple peaks (09:00, 12:00, 16:00), and squirrel monkeys peaked early in the morning (06:00) and late afternoon (17:00), also exhibiting crepuscular activity. The variegated squirrel showed a more concentrated crepuscular pattern, active mainly between 05:00 and 07:00.

Conservation requires knowing not just which species are present, but when they are active. By revealing the daily rhythms of arboreal mammals, this project provides the temporal detail needed to design mitigation that aligns with wildlife behavior.

Above : Kernel density estimates of diel activity patterns for olingo and kinkajou. Temporal overlap is shaded in grey and vertical solid black lines represent sunrise and sunset times. Below: Seasonal patterns in diel activity for white-faced capuchin. Solid black lines represent kernel density estimates, with 95% confidence intervals indicated by grey dashed lines. Time of day in hours on the x-axis and density on the y-axis | $\Delta 4$ = overlap coefficient | Vertical dashed black lines show the sunrise and sunset times

Data Summary 2020-2025



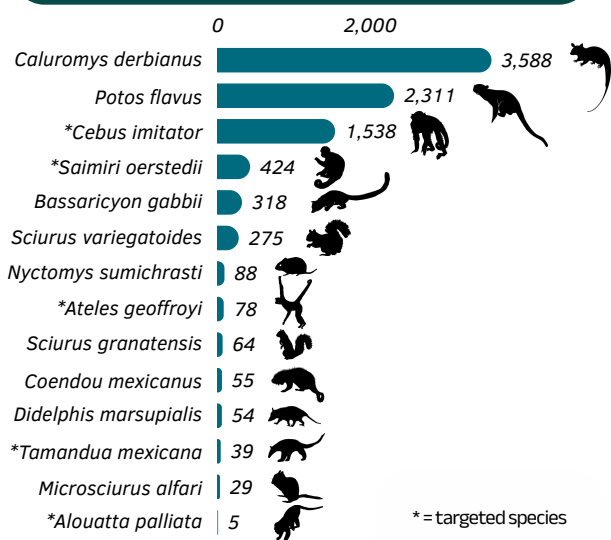
All our data will be stored in the
Global Biodiversity Information Facility

- **36** bridges evaluated along the AmistOsa Biological Corridor; 20 of them remain effective wildlife crossings.
- **5** bridge designs evaluated.
- **10,344** videos of wildlife exploring, interacting with, and crossing the bridges.
- **19** mammal species recorded. The longer the bridges have been in place, the more species are using them.
- **3** associated scientific articles.
- **1** data paper with all records.

Performance of bridge designs tested

Single rope	✓
Double rope	✓ ✓ ✓ ✓
Triple rope	✓ ✓ ✓
Mesh	✓
Ladder	✓ ✓

Total records of top registered species



Bridges location along the Biological Corridor



Targeted species registered



Common opossum
Didelphis marsupialis



White-faced capuchin Monkey
Cebus imitator



Central American Spider Monkey
Ateles geoffroyi



Central American Squirrel Monkey
Saimiri oerstedii



Northern Tamandua
Tamandua mexicana

Recommendations

The following recommendations for practitioners, conservation organizations, and government agencies seek to strengthen arboreal wildlife crossing programs along tropical rainforest environments.



Prioritize double-rope and triple-rope bridges as the most effective and cost-efficient design. Our results show that double- and triple-rope bridges achieved the highest crossing frequencies and species richness among rope-based designs, while ladder bridges performed poorly. Double-rope bridges offer the best balance of functionality enabling prehensil and non prehensile-tailed species to cross (approximately US\$ 140-590 for a 20 m bridge, with 4-5 hours installation time).

Install bridges as long as necessary to span canopy gaps, but prioritize sites where natural canopy cover is already limited. Longer bridges were associated with higher crossing frequency and species richness, likely because they represent larger canopy gaps with fewer natural alternative routes. Bridges should be installed where forest cover on both sides of the road is substantial (at least 500 m buffer), but where local canopy cover over the road itself is relatively open, forcing wildlife to rely on artificial structures.



Use a multi-data approach to identify priority sites. Combining three complementary methods yields the most robust site selection: (1) camera trap surveys to measure wildlife activity and species richness on both sides of the road, (2) citizen science roadkill data to identify collision hotspots, and (3) Circuitscape connectivity analysis to model landscape-level movement constraints.

Prioritize locations where roadkill clusters, bottleneck sites, and high wildlife activity overlap. The highest-priority sites are those where multiple data sources converge. In our study, roadkill clusters coincided with bottleneck areas (where animal movement is constrained by reduced forest cover) and areas of high species richness on both sides of the road. These sites offer the greatest potential return on investment for mitigation actions.



Ready for deployment: a team member transports ropes and installation equipment to a bridge site. Scaling up arboreal bridge implementation across the Osa Peninsula and beyond requires reliable logistical support, well-maintained materials, and trained field crews. Investing in transport infrastructure and equipment storage is a key recommendation for expanding this mitigation strategy to priority road segments.

Recommendations



Implement long-term monitoring for a minimum of 24–30 months. Our results show that bridge use increases dramatically over time, with crossing frequency continuing to rise through at least 30 months post-installation. Short-term evaluations (less than one year) would dramatically underestimate conservation impact.

Use paired camera traps at both bridge ends. Single camera traps may miss wildlife activity and cannot confirm complete crossings, so paired cameras (one at each end) ensure detection of all crossing events. Additional cameras positioned to look toward the adjacent forest can also capture animals approaching or inspecting the bridge.



Continue engaging local communities through citizen science and environmental education. Our citizen science program trained 23 local people to report roadkill observations via iNaturalist, generating 70 observations of 21 species. This program not only provided valuable data but also increased community awareness of road impacts. We recommend expanding this program to include school groups, tour guides, and taxi drivers—frequent road users who can contribute to long-term monitoring

Expand the bridge network to create a functional canopy corridor. We recommend prioritizing future installations along the biological corridor connecting the Osa Peninsula to La Amistad International Park, an essential pathway for climate-driven species movements. This will require coordination with the Ministry of Public Works and Transport (MOPT), SINAC, and local landowners



In addition to camera trap monitoring, we encourage monitoring by citizen scientists, as evidence shows citizen science can be a cost-effective method to collect essential monitoring information over a large geographic area and can produce high levels of engagement. We installed informative signs below each bridge which link to an iNaturalist project

Acknowledgments



We wish to thank the following individuals and organizations whose support made this arboreal bridge project possible.

First and foremost, we extend our deepest gratitude to the Mazar Family Charitable Foundation Trust, the International Conservation Fund of Canada (ICFC), the Gordon and Betty Moore Foundation (Grant #9075), the Bobolink Foundation, and Michael and Sabrina Simons for their generous financial support of conservation efforts on the Osa Peninsula, Costa Rica. Additional funding was provided by the Disney Conservation Fund, the Margot Marsh Biodiversity Foundation, the Krystyna and Dan Houser Foundation, and the HR McNeely Family Foundation.

This research was conducted under research and conservation permits approved and distributed by SINAC (National System of Conservation Areas) in Costa Rica. We thank SINAC for their commitment to biodiversity conservation and for granting permits No. SINAC-ACOSA-DT-PI-R-060-2020, No. SINAC-ACOSA-DASP-PI-R-050-2021, and No. SINAC-ACOSA-DT-PI-R-009-2023.

We are profoundly grateful to the Municipality of Osa and the Municipality of Golfito for road access permits and their ongoing collaboration. We thank the Ministry of Public Works and Transport (MOPT) for their cooperation and support.

We extend our sincere thanks to the volunteers and staff of Osa Conservation for their invaluable assistance with field work, bridge installations, camera trap maintenance, and video review. We thank all the Costa Rican citizen scientists who participated in the iNaturalist roadkill monitoring project. Special thanks to the 23 local community members who attended our workshops and continue to contribute observations.

Finally, we thank students of Wageningen University & Research, the University of Edinburgh, the University of Glasgow, Colorado State University, the University of Buenos Aires, the National University of Costa Rica, the University of Costa Rica, the University of Toronto, the University of British Columbia, the University of Exeter, and Wake Forest University for their contributions to data analysis, and manuscript preparation.

Silhouettes used in the infographic were sourced from [Phylopic](#). We gratefully acknowledge Milena Cavalcanti, Patricia Pilatti & Diego Astúa; Titouan Montessuit; and Gabriela Palomo-Munoz for their contributions, licensed under [Creative Commons Attribution 4.0 International](#).

The success of this project is a testament to the power of collaborative, multi-disciplinary conservation. Any errors or omissions are solely the responsibility of the authors.

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Hugo White | Marion Fischer |
Raúl Álvarez Mora | Juan Ma Contortrix

A person wearing a green helmet and gear is working on a tree, possibly installing or maintaining a rope system. The person is positioned on the left side of the frame, looking towards the right. The tree trunk is on the right, showing a large green rope and a metal hook. The background is a dense forest with green foliage.

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