Providing Wildlife Connectivity Across Roads in the U.S. in 2026

The Wildlife Society

The Transportation Ecology Working Group

&

Patricia Cramer, PhD

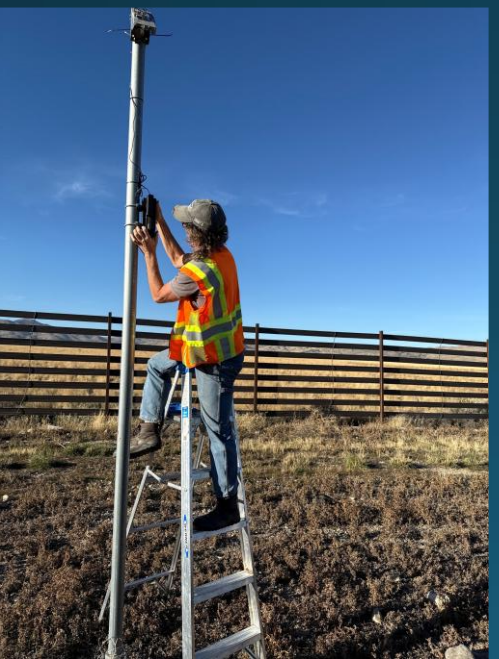
Wildlife Connectivity Institute

January 29, 2026

Photo credit: H. Pippel

Dedication

Our Spouses, Our Partners



Thanks to Research Sponsors

Presentation Outline

Photo Credit: G Andrejko, Arizona GFD

History of Transportation and Wildlife

Types of Wildlife Crossing Structures and Other Innovations

The Research and What is Important to Wildlife Connectivity

Trends for 2026

The 2026 Transportation Act and What you Can Do

Live Survey

Survey Question
Of the following 5 topic areas, which two are you most interested in?

- ☐ History of Transportation and Wildlife
- ☐ Types of Wildlife Crossing Structures and Other Innovations
- ☐ The Research and What is Important to Wildlife Connectivity
- ☐ Trends for 2026
- ☐ The 2026 Transportation Act and What you Can Do

Survey Question

How would you categorize your employment?

- Transportation Agency
- Wildlife Agency
- Private Company – Consulting
- Non-profit
- Academia
- Retired
- Student
- Other

The two most numbers of participants responded with

Last Survey Question

Could you give us one or two words to describe your area of expertise, such as, biologist, ecologist, engineer, researcher, interested public?

Take Home Points

Transportation and planning agencies need information about wildlife movement

Institute checkpoints along the transportation planning process to inject wildlife concerns

Find ways to get others to care about wildlife-vehicle conflict and wildlife connectivity and act

The History of Transportation and Wildlife

From Safety to Protected Species

Moose on highway, Alaska

Photographer unknown

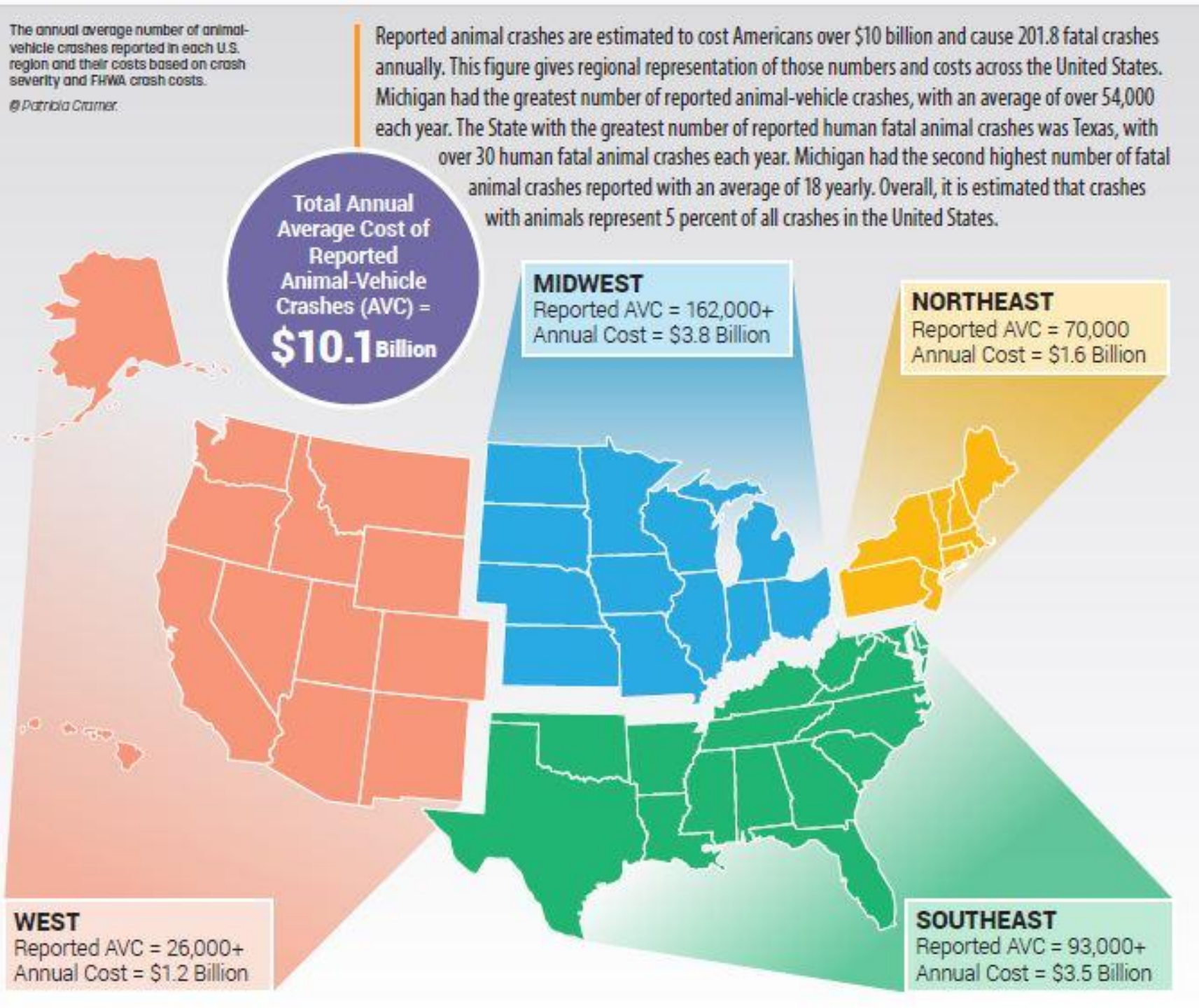
Desert Tortoise using crossing near St. George, UT

Photo credit: A. McLuckie

Number of Reported Crashes Annually

Over 340,000 reported crashes annually

https://www.wildlifeconnectivity.org/national-study-to-integrate-wildlife-into-transportation



From Mule Deer in the West to Florida Panthers and Black Bear

The First North American Overpass, Utah I-15, 1975

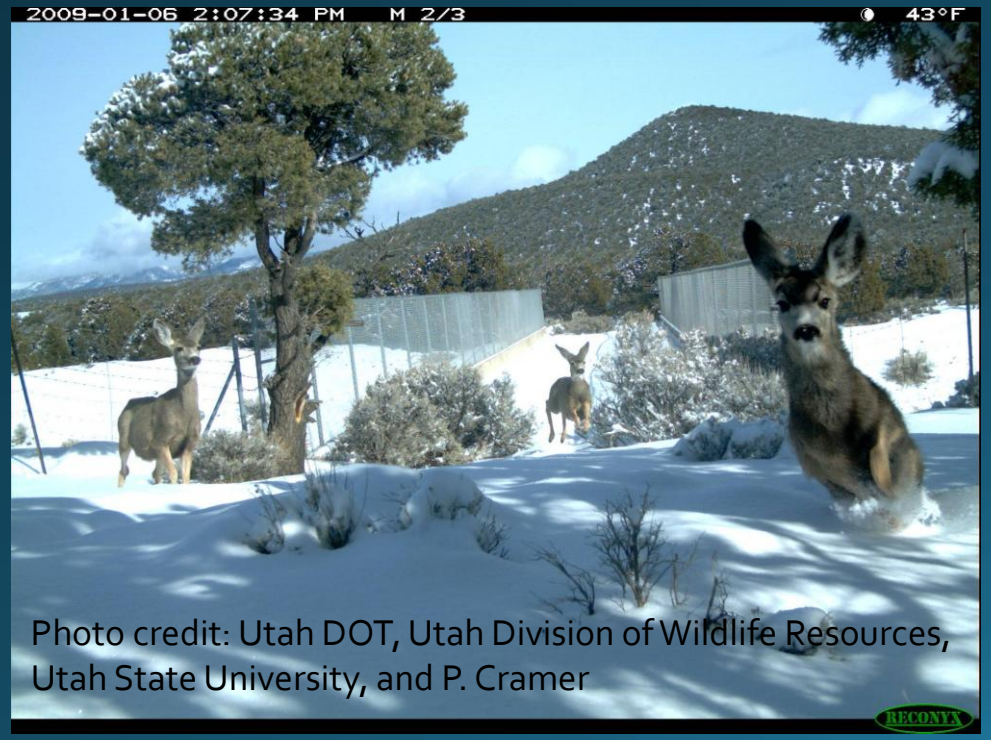


Photo credit: Utah DOT, Utah Division of Wildlife Resources, Utah State University, and P. Cramer

Florida panther at underpass

Photo credit: US Fish and Wildlife Service & Florida Fish and Wildlife Commission, C Ward

Protect Populations of Ungulates & Carnivores

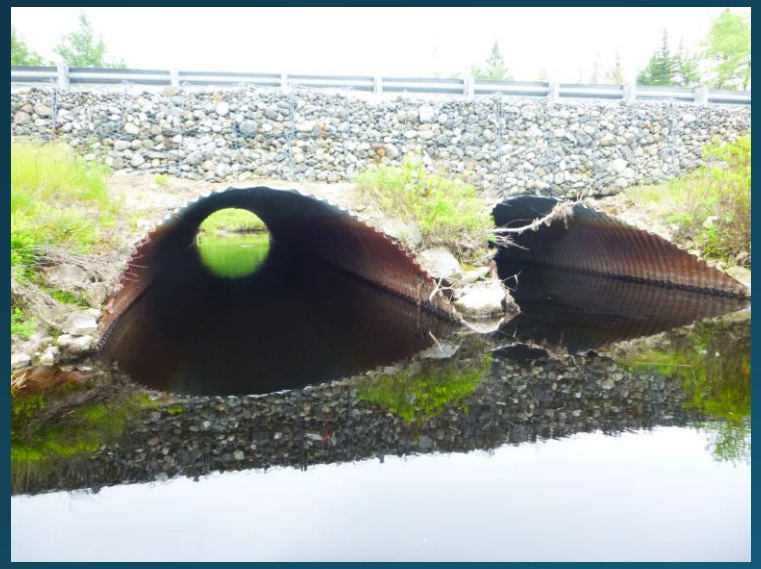
Utah US 191 Monticello Wildlife Underpass

Photo credit: Colorado DOT, Colorado Parks & Wildlife ECO-resolutions, and P. Cramer

Colorado SH 9 Wildlife Underpass

Aquatic Species

Maine's Day Block Township Culvert Replacement for Atlantic Salmon



Initial structure: Two 12.5' span corrugated metal pipes constructed in 1977.

Replacement structure: 72' span bridge with internal wildlife shelves and improved habitat connectivity. Construction was completed in 2019.

Slide courtesy of Kelby Houtz, Maine DOT

Herps and Invertebrates

Indigo Snake, Photo credit: Univ. Georgia Coastal Ecology Lab

Blandings Turtle, Photo credit: Partners in Amphibian and Reptile Conservation

Photo Credit: K. Gade, Arizona DOT

Photo Credit: AP, Monarch Butterfly

Photo Credit: NRCS, Bog Turtle

Photo Credit: K. Nussear, USGS

Follow the Ecological Rule

All transportation plans must have a “No Build” option

The progression of evaluating transportation plans and natural resources is:

Avoid

Minimize

Mitigate*

* Note mitigate is a last resort solution

Montana US 93 South Blodgett Creek Black Bear

Types of Wildlife Mitigation & Accommodation

Colorado I-25 Underpass

Small Underpasses

Salamander Tunnel, Princeton, Massacusetts

Vermont's Monkton Amphibian Crossing Named in Honor of Trisha White

Montana's wildlife shelf in a culvert that conveys water

Medium Underpasses – Culverts & Bridges

Utah's US 91 Underpass near Logan

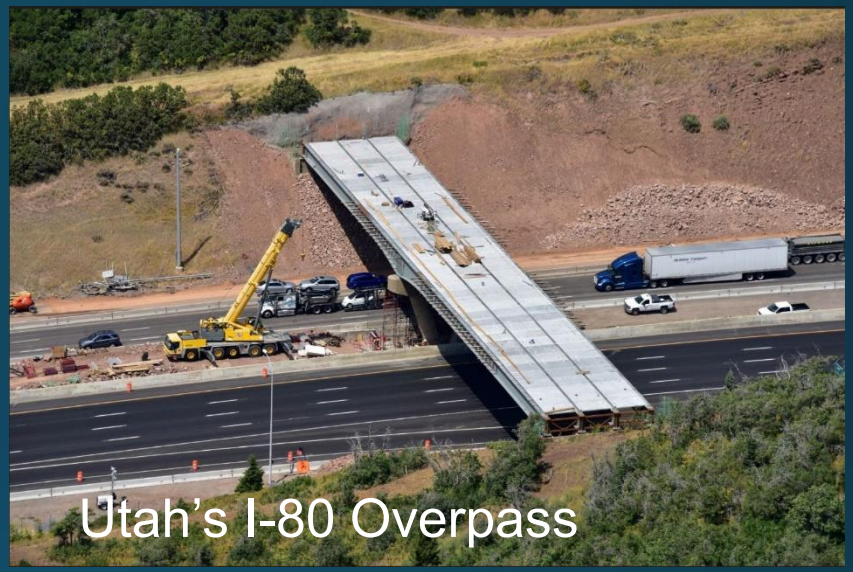
Bridge Underpasses

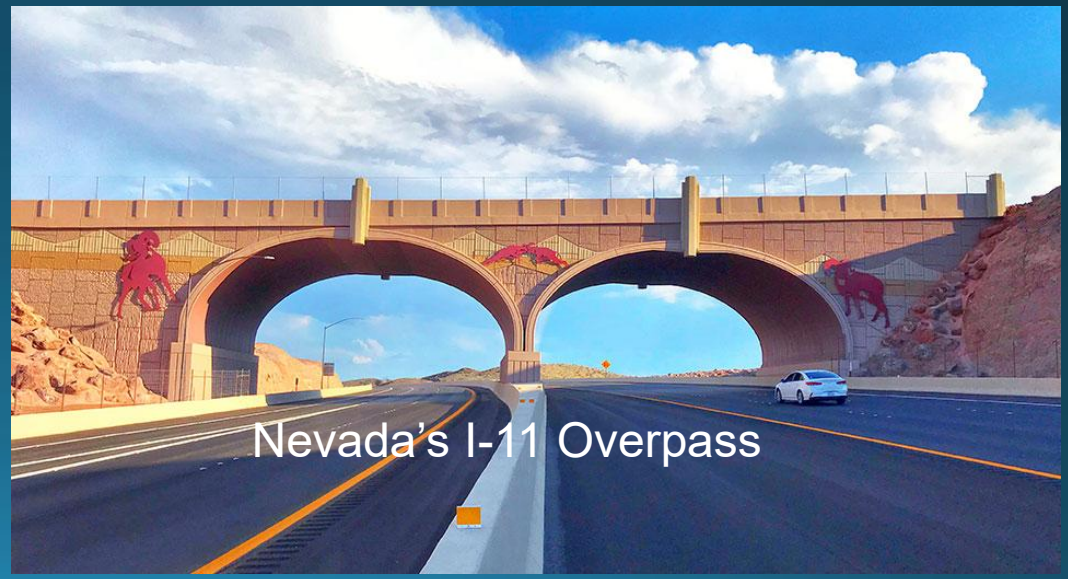
Montana US 93 Underpass

Utah I-70 Wildlife Underpass

Video Credit: P. Cramer MDT

Types of Wildlife Overpasses





Overpasses

Colorado's Chimney Rock Overpass on US 160 and Southern Ute Indian Tribe Nation

Website for reports and updates of the Colorado US 160 Chimney Rock Wildlife Mitigation Research Cramer and Hamlin 2026

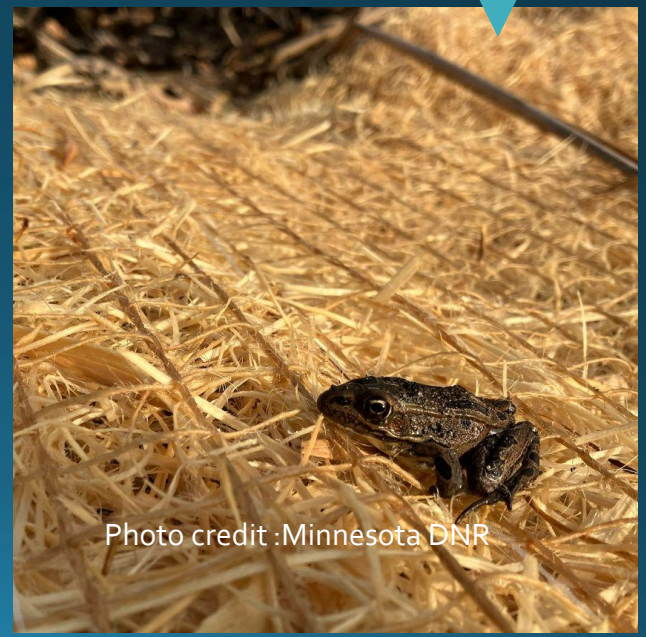
Additional Infrastructure

Escape Ramp, Utah US 189

Report: US 189 Wildlife Crossing Structures and Escape Ramp Monitoring Cramer and Hamlin 2020

Electric Pavement, Colorado SH 13

Website for the CO SH 13 Study: https://www.wildlifeconnectivity.org/co-sh13



Wildlife Benches or Pathways

Montana's US 93 Bitterroot Valley Wildlife Crossing Structures

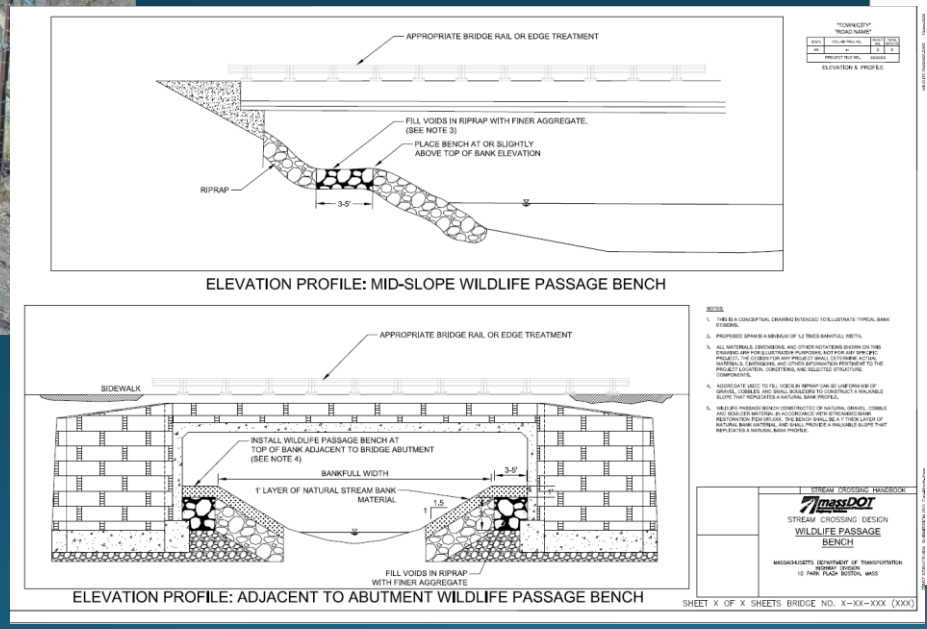
Photo credit: P. Cramer & Montana DOT

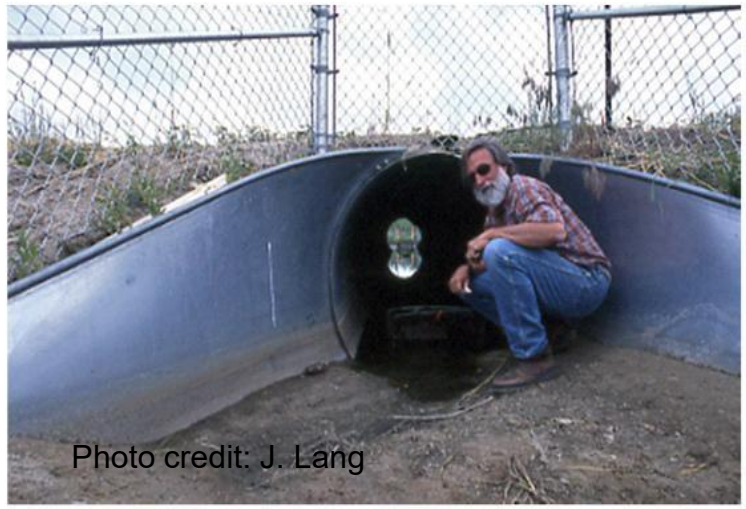
Click on title below to access the final report Evaluation of Wildlife Crossing Structures on US 93 in Montana's Bitterroot Valley

Retrofit Existing Structures

Utah Box culvert for US Forest Service Road retrofit w fence

Nebraska Valentine NWR flashing for turtle movement to existing culvert





Design for a wildlife pathway under bridge next to stream or river

The Research
What it Takes to Provide Information to Help Protect & Restore Connectivity

Photo Credit: Colorado DOT, Colorado Fish Wildlife and Parks, Southern Ute Indian Tribe, and Wildlife Connectivity Institute

Terms

Wildlife-Vehicle Collisions

Wildlife-Vehicle Crashes

Carcasses

Wildlife-Vehicle Conflict

Collisions

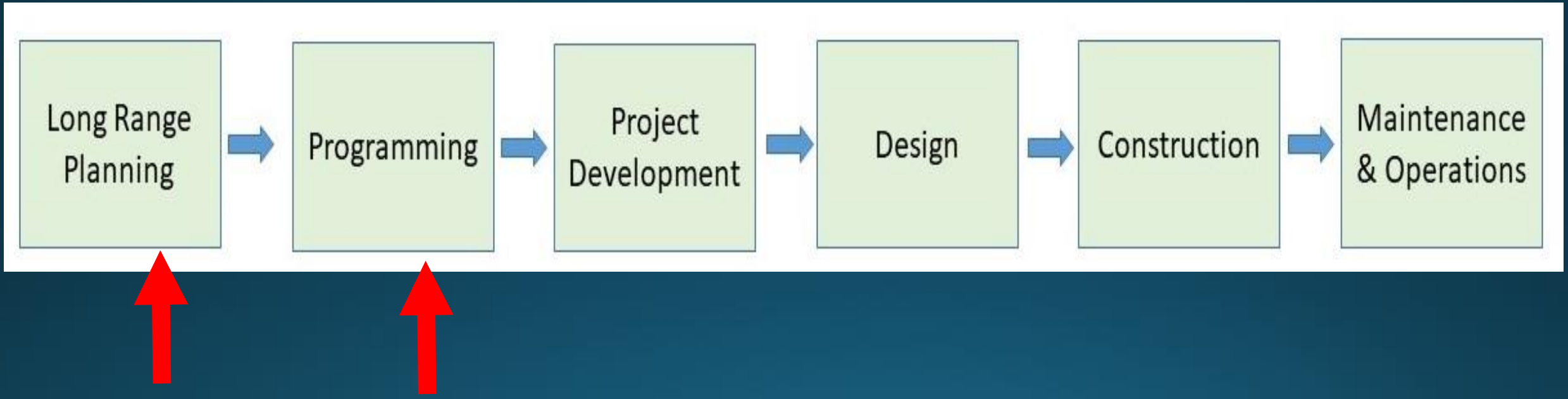
Habitat Fragmentation

Road Area Avoidance

Attraction to road carcasses or salt

Degraded waterways, soils, soundscape

The Transportation Planning Process

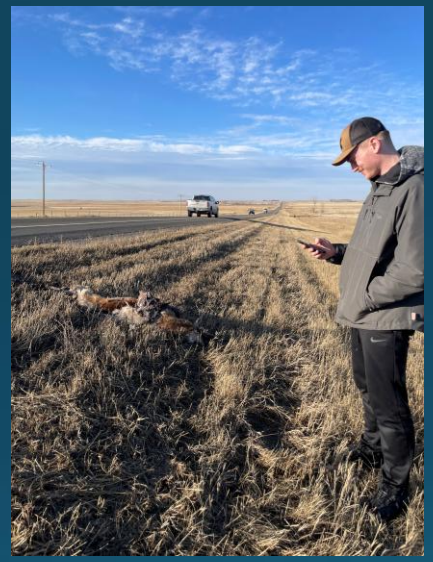


Wildlife information needs to be inserted into the early planning

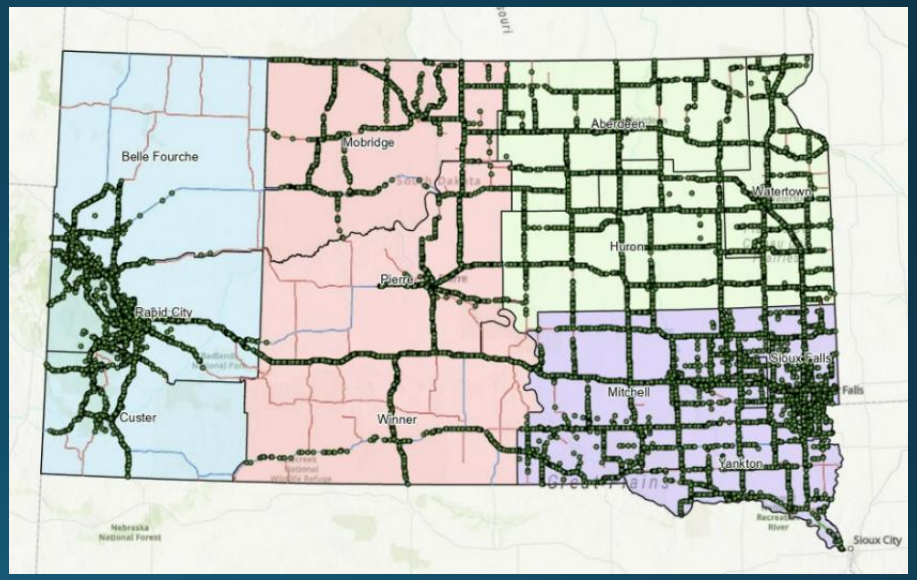
Crash and Carcass Data

Photo Credit: L Frazier

Montana US 93 Hamilton Maintenance District One Morning's Haul Pre Wildlife Crossing Structures



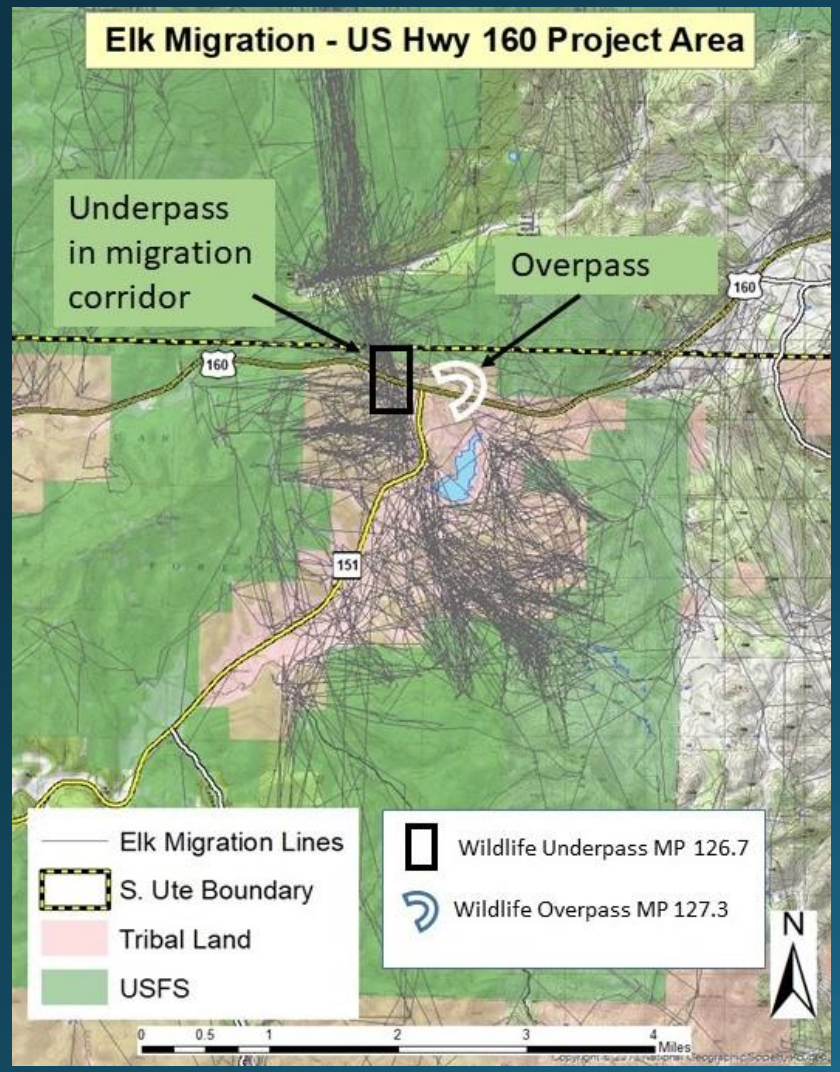
North Dakota – Lawson Frey using his app to record carcass for his Master's Thesis



South Dakota's 52,000+ recorded carcasses 2020- 2025

South Dakota Statewide Rural Wildlife Crossing Study

Telemetry Data and Maps



Aran Johnson and the Southern Ute Indian Tribe biologists were critically important to wildlife crossings happening

Camera Traps

Video credit: P. Cramer & UDOT

Photo credit: J. Gagnon

Photo credit: R. Hamlin

Utah Us 191 Monticello Crossings Monitoring
https://www.wildlifeconnectivity.org/utah-reports

Wildlife And Transportation Connectivity Plans

Photo credit: Arizona Game and Fish

Wildlife And Transportation Connectivity Plans

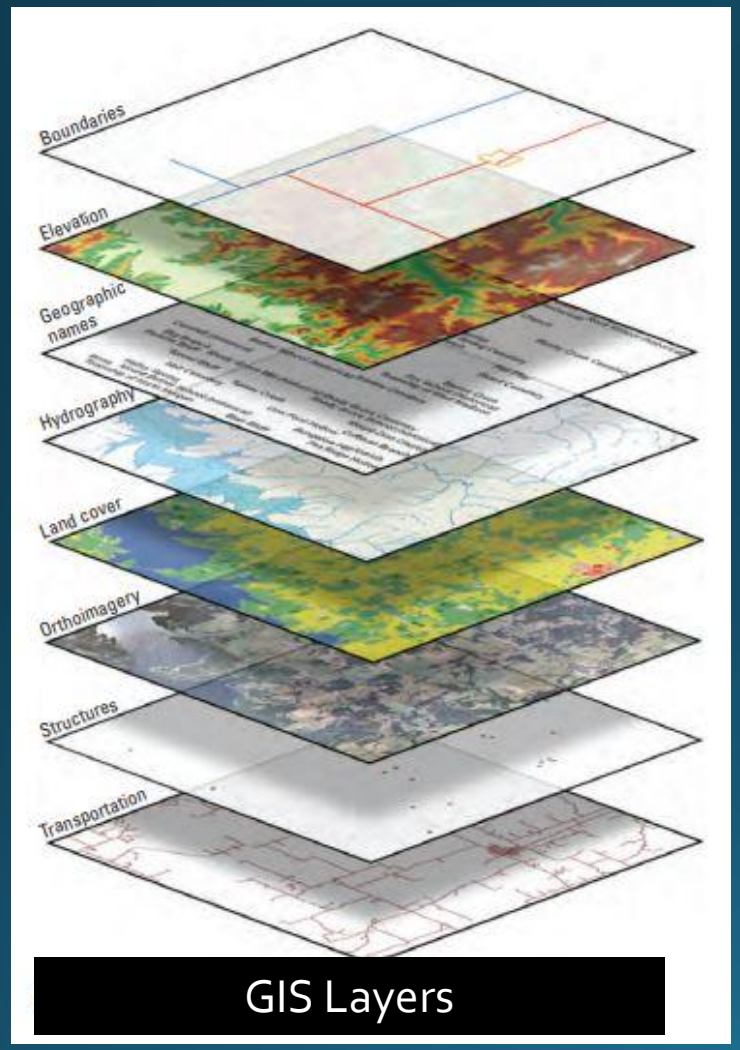


Figure Credit: USGS

Feasibility

Ecological

Transportation

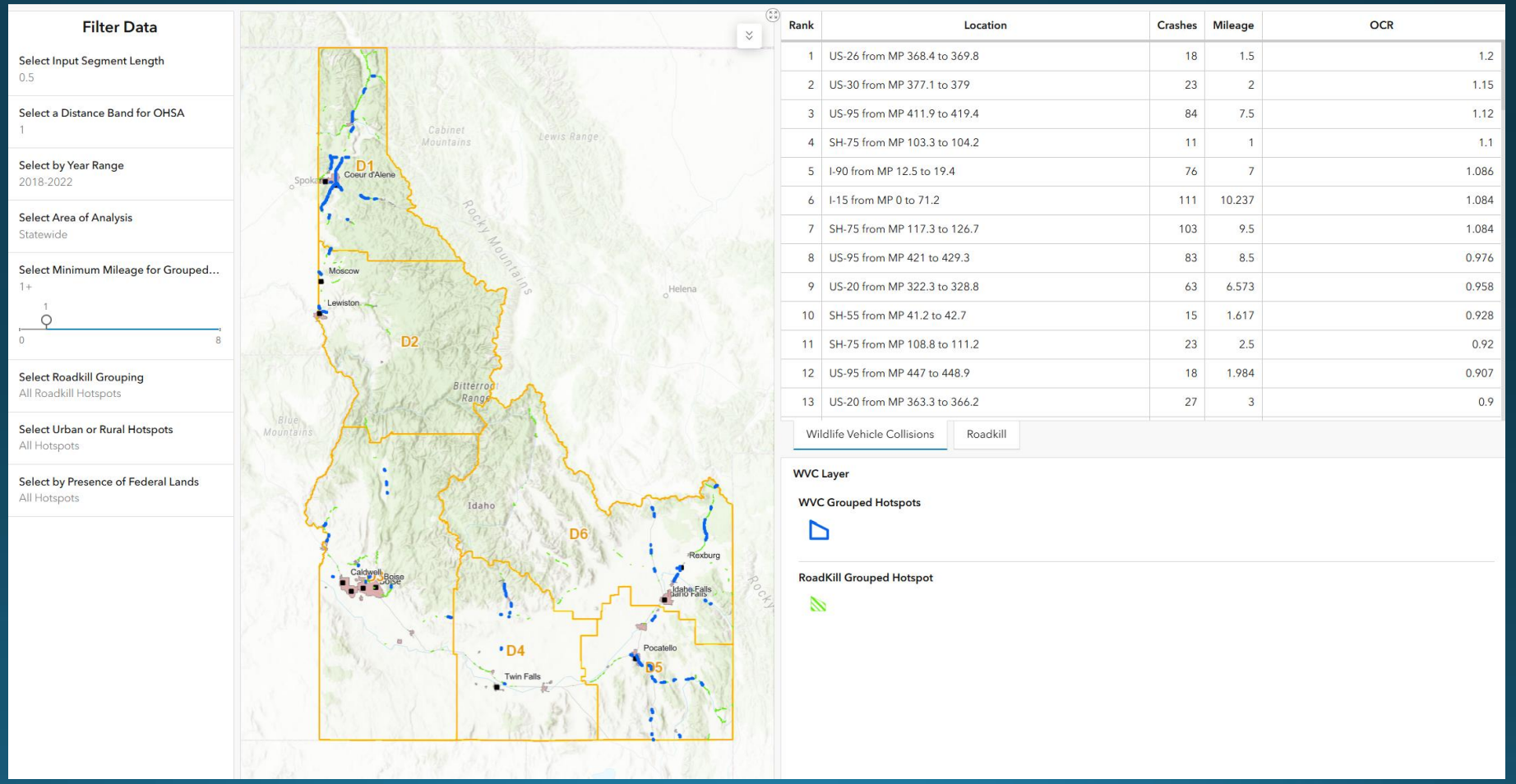
Score	
Land ownership	5
Agency/Public Support	5
Protected Species' habitat nearby	20
Identified corridor	25
Wildlife Agency priority	5
Crashes/or carcasses per mile classification	25
Average Annual Daily Traffic	15
Total points	100

Slide based on P. Cramer experience in multiple states

Create Interactive GIS Layers in Plans

From Idaho's: Identification of Wildlife-Vehicle Conflict Mitigation Opportunity Locations in Idaho

https://itd.idaho.gov/environmental/wildlife/

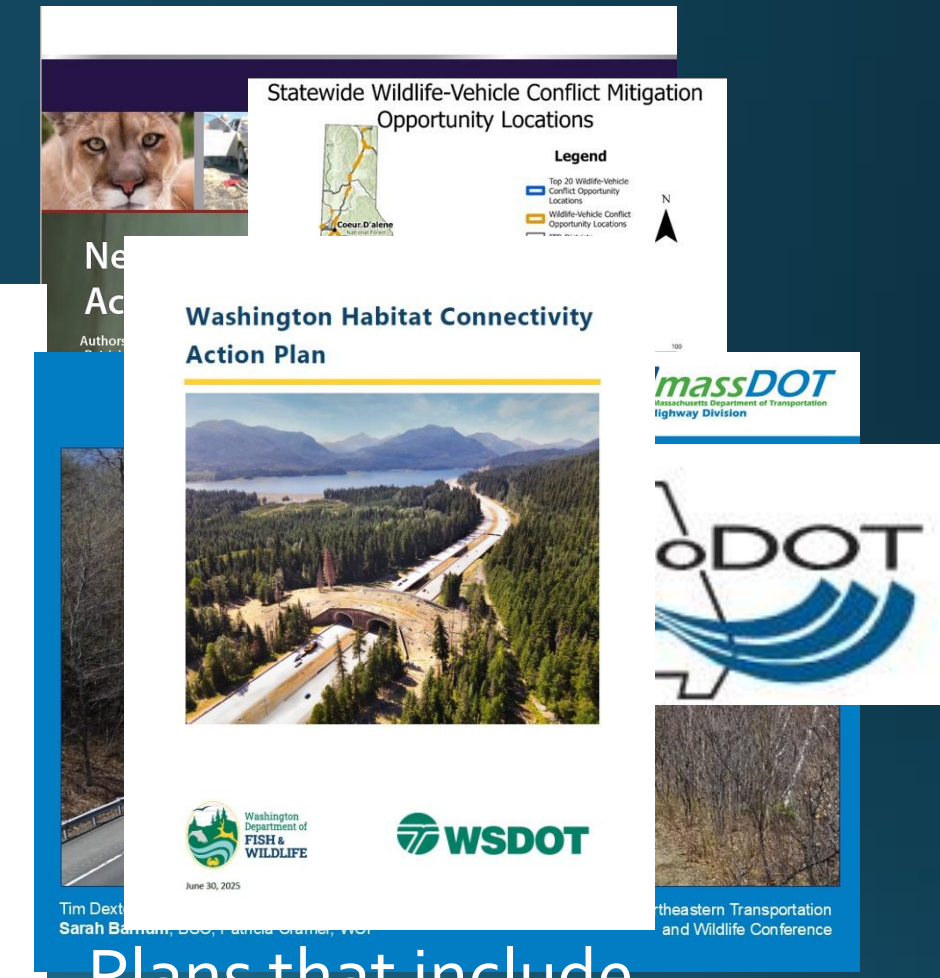


Rank	Location	Crashes	Mileage	OCR
1	US-26 from MP 368.4 to 369.8	18	1.5	1.2
2	US-30 from MP 377.1 to 379	23	2	1.15
3	US-95 from MP 411.9 to 419.4	84	7.5	1.12
4	SH-75 from MP 103.3 to 104.2	11	1	1.1
5	I-90 from MP 12.5 to 19.4	76	7	1.086
6	I-15 from MP 0 to 71.2	111	10.237	1.084
7	SH-75 from MP 117.3 to 126.7	103	9.5	1.084
8	US-95 from MP 421 to 429.3	83	8.5	0.976
9	US-20 from MP 322.3 to 328.8	63	6.573	0.958
10	SH-55 from MP 41.2 to 42.7	15	1.617	0.928
11	SH-75 from MP 108.8 to 111.2	23	2.5	0.92
12	US-95 from MP 447 to 448.9	18	1.984	0.907
13	US-20 from MP 363.3 to 366.2	27	3	0.9

Create Wildlife Connectivity Action Plans

Hot Spot Prioritization Plans

Plans that include wildlife information



Plans that include wildlife info, models, feasibility input

Field Visit Top Sites and Prescribe Mitigation

Missouri Team

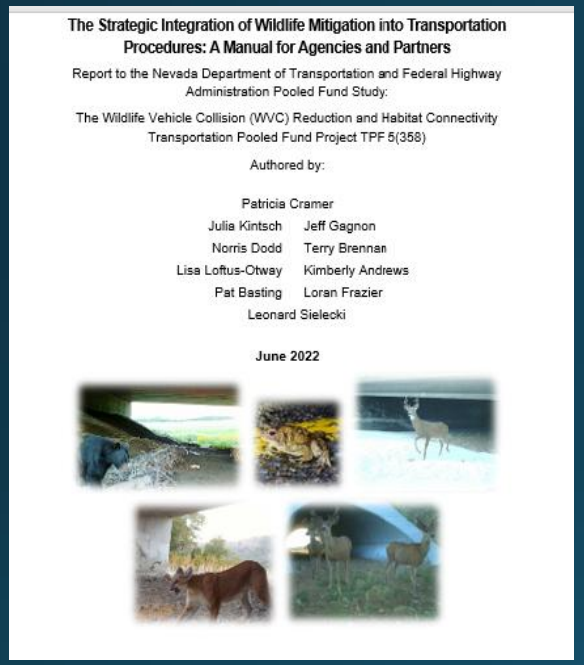
Photo credit: P. Cramer

Missouri Wildlife-Vehicle Collision Study

https://www.modot.org/wildlife-vehicle-collision-study

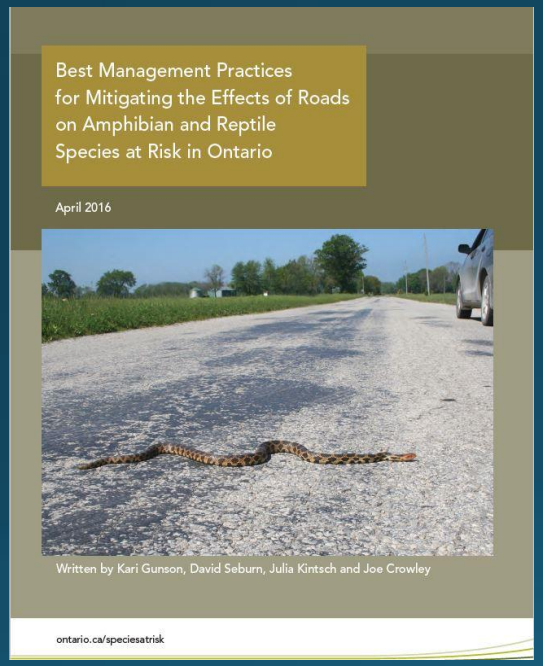
Create Guidelines

National Manual



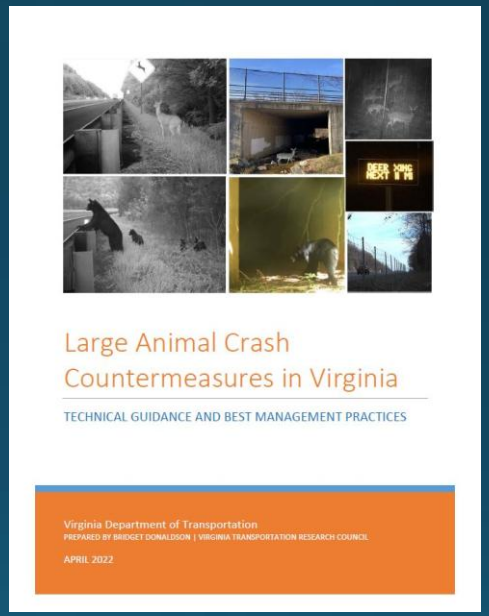
https://www.wildlifeconnectivity.org/national-study-to-integrate-wildlife-into-transportation

Ontario Herps



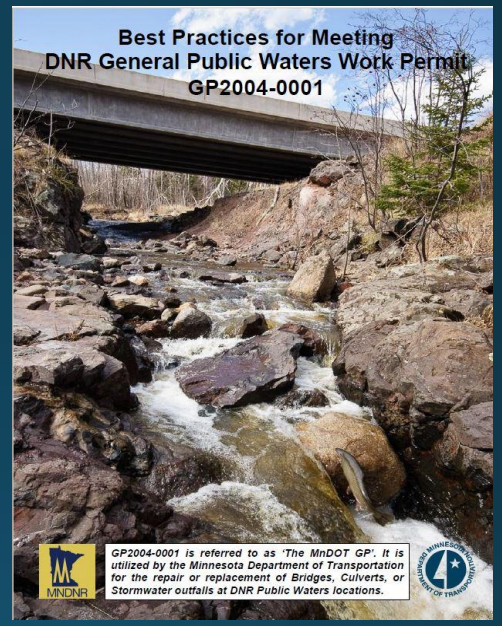
https://files.ontario.ca/bmp_herp_2016_final_final_resized.pdf

Virginia Mammals



https://www.vdot.virginia.gov/media/vdotvirginiagov/doing-business/technical-guidance-and-support/environmental/Large_Animal_Crash_Countermeasures_in_Virginia_April_2022_acc11072024.pdf

Minnesota Aquatic



http://files.dnr.state.mn.us/waters/watermgmt_section/pwpermits/gp_2004_0001_full_document.pdf

Trends for 2026 and Beyond

Photo credit: P. Cramer, Montana DOT

Climate Change

Floods, fires, droughts and more cause animals to have to move to safety and access resources

Transportation planning for resiliency can also include providing passage for wildlife

Climate Change and Connectivity Toolkit:
https://www.fishwildlife.org/application/files/9216/1582/0864/Connectivity_and_Climate_Change_Toolkit_FINAL.pdf

Evaluating and elevating the role of wildlife crossings in climate adaptation:
https://www.wildlifeconnectivity.org/climate

Photo Credit: B. Gootkin, Bridger Mountains, MT Sept. 7, 2020

Photo Credit: P. Cramer, Gallatin River, MT June 13, 2022

What We Learned Needed Improvement

We Were Project-Based

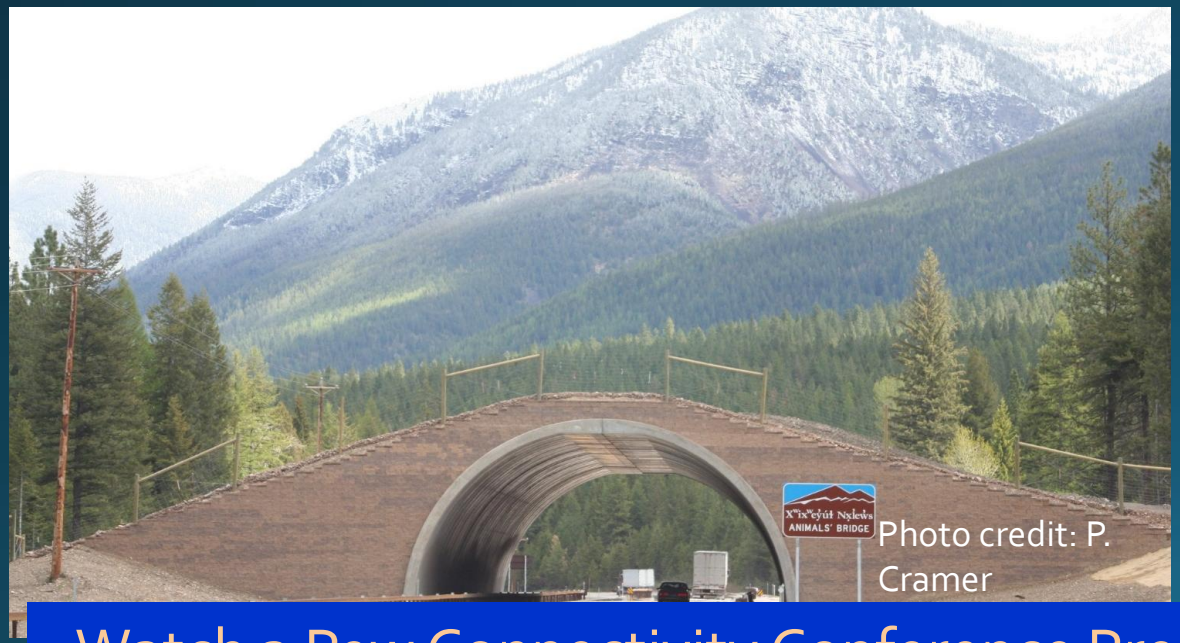


Photo credit: P. Cramer

Montana's Overpass on US 93

We Didn't Understand the Pendulum Effect

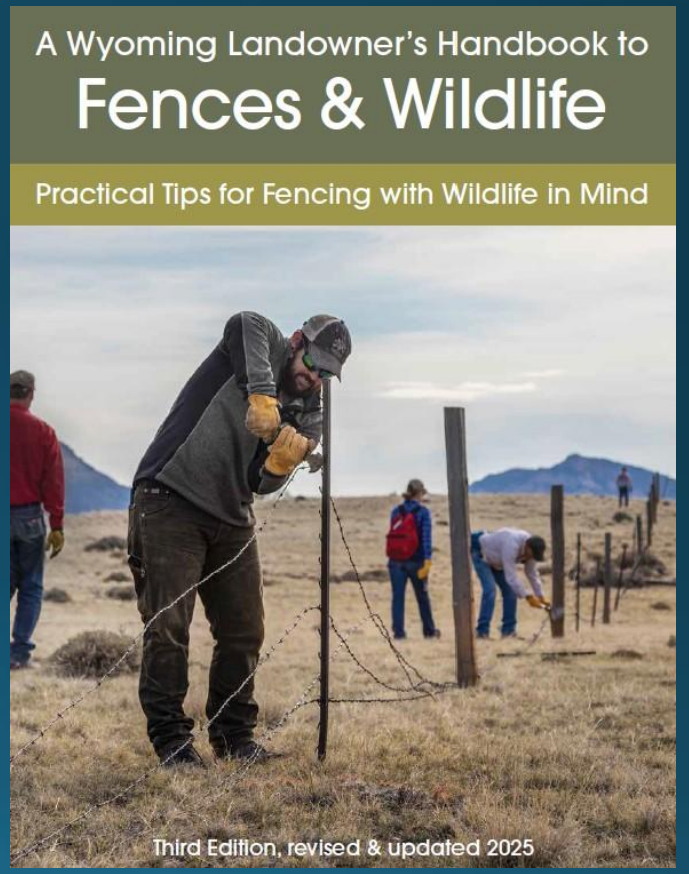
[Watch a Pew Connectivity Conference Presentation on How to Institute Changes]

Trends in Practice: Fences

Fence Improvements


Photo credit: Harrington


Photo credit: P. Cramer



https://westernlandowners.org/publication/a-wyoming-landowners-handbook-to-fences-and-wildlife/

The Small Ones

Oregon's US 30 Red Legged Frog Underpass

Dream Big – Think Small

Photo credits: Oregon Department of Fish and Wildlife

Programmatic Agreements


Photo credit: Maine DOT

A programmatic agreement is a streamlined consultation process used by State DOT's to meet US Fish and Wildlife Service standard requirements for common project types.

MaineDOT has a programmatic agreement with USFWS for Atlantic Salmon which allows for replacement of stream crossing structures on a faster timeline while also improving habitat connectivity in Atlantic Salmon Critical Habitat.

Trends in Practice

Collaborative stakeholder advisory groups

Training Programs

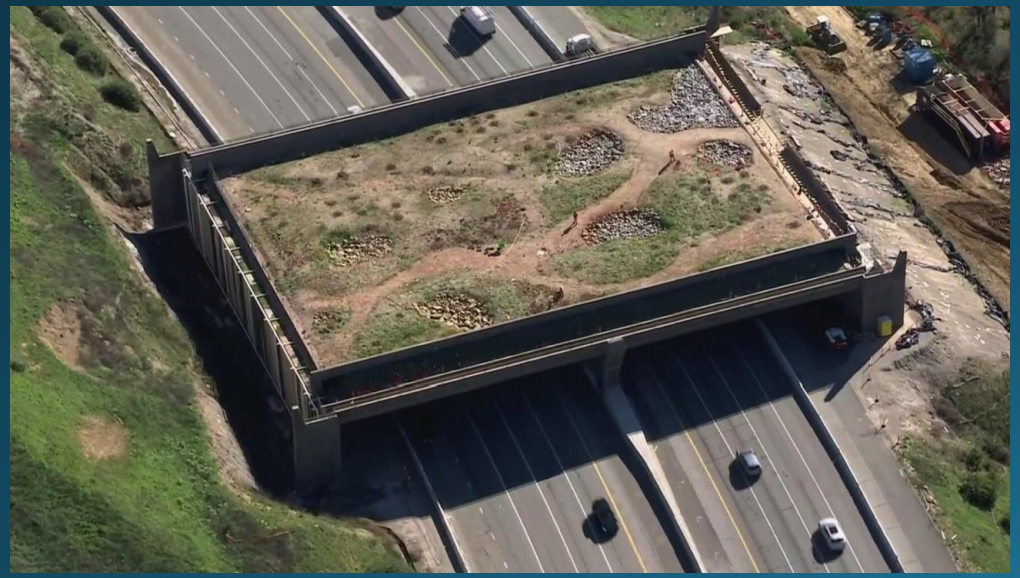
Northeast Habitats & Highways Training

https://www.youtube.com/watch?v=EpuXWU-64cg&list=PL-05jtJniubZXu92FEzNfl-RTZQsr3UmT

How to Watch:

Trends in Practice

Metropolitan and Regional Planning Agencies are Partners, and they create wildlife and aquatic crossings as well



Partners contribute to the cost

Annenberg Overpass
Los Angeles, CA

Overpasses with Landscape Architects

Robert LB Tobin Land Bridge at Phil Hardberger Park
San Antonio, Texas

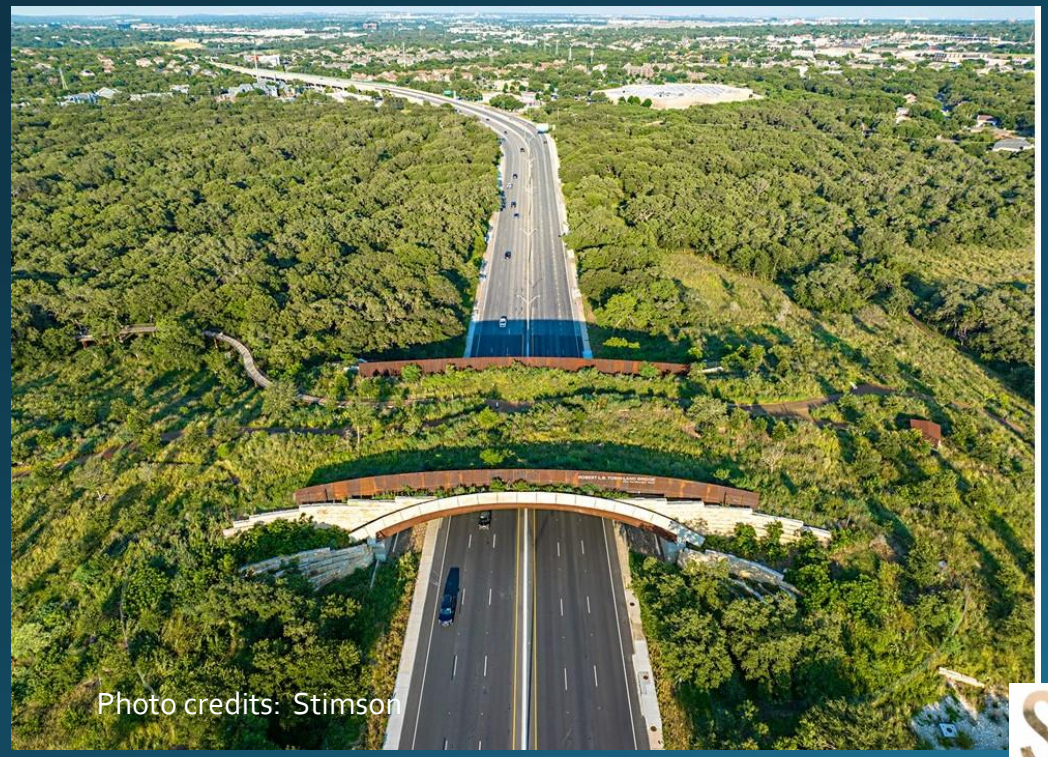
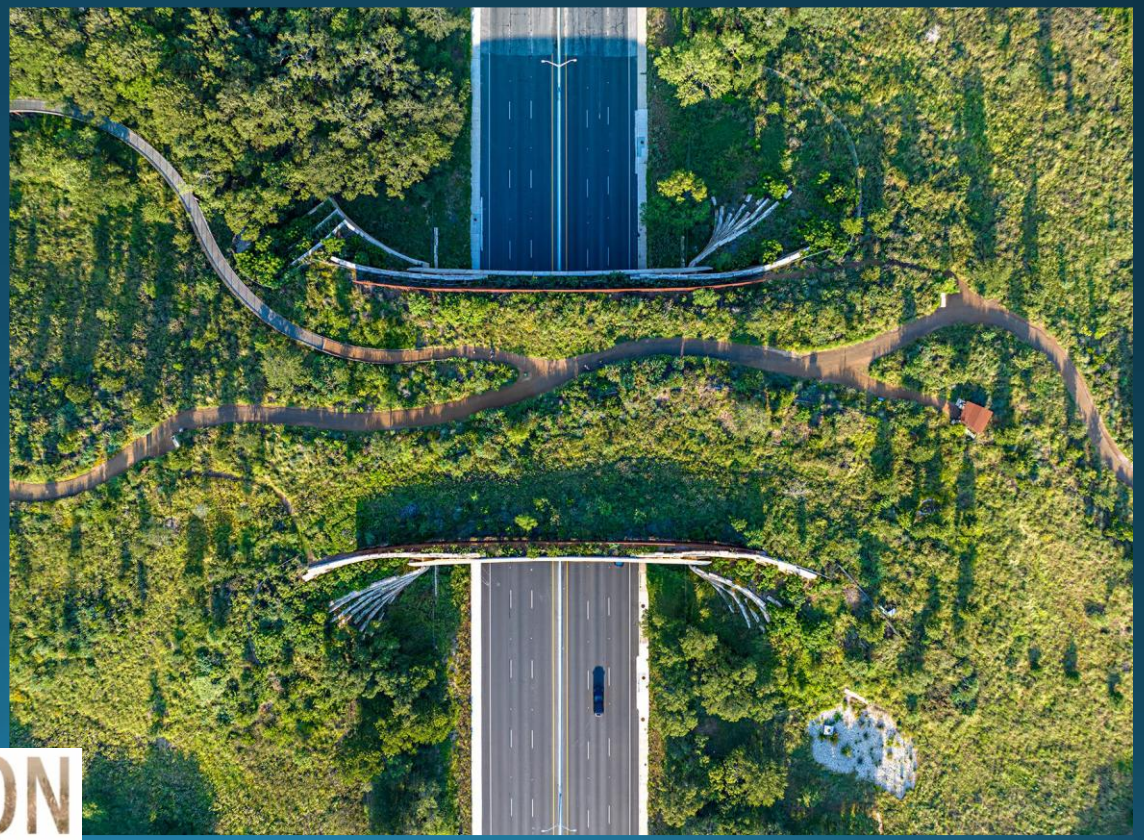


Photo credits: Stimson



STIMSON

Win the Hearts and Minds

2019 Ungulates & Highways Workshop, Salt Lake City, Photo credit: TRCP

Incorporate wildlife awareness into the agency/corporate culture from the top down at the headquarters and local levels

Education programs, one-on-one training, include wildlife concerns in goals of LRTP, partners, research

Photo credit: VTtrans, courtesy of C. Slesar

Photo credit: VTtrans, courtesy of C. Slesar

Photo credit: T. Brennan

Citizens Take Action

Photo courtesy: H. Pippel

Volunteer Efforts Toward Amphibian Crossings

- Volunteers help amphibians cross roads on spring migration nights
- Harris Center for Conservation Education and other Organizations in the Northeast US have trained thousands of people
- Hundreds of volunteers assist at multiple crossing sites each year

Slide courtesy of J. Theriault

Conservation Impacts of Volunteer Efforts

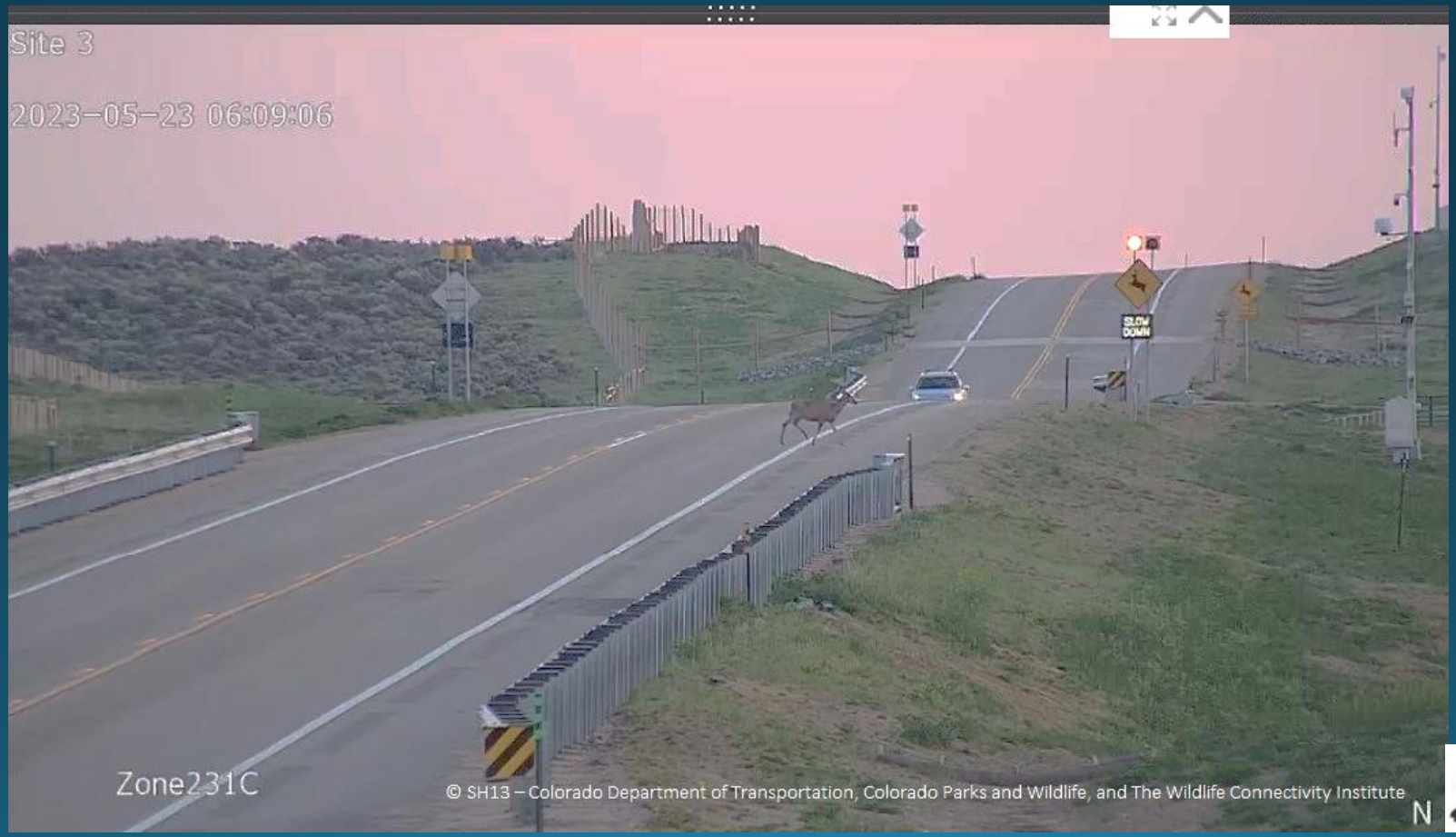
- Volunteer-collected data helps inform key decision makers about crossing locations in need of intervention.
- Road closures in southwestern New Hampshire now reduce amphibian roadkill on Big Nights.
- Amphibian tunnel projects have reduced local mortality by as much as 80%.

Slide courtesy of J. Theriault

Trends in Research

Wildlife-Detection Driver Warning Systems

Colorado State Highway 13, Craig Wildlife Detection Driver Warning System



https://www.wildlifeconnectivity.org/co-sh13

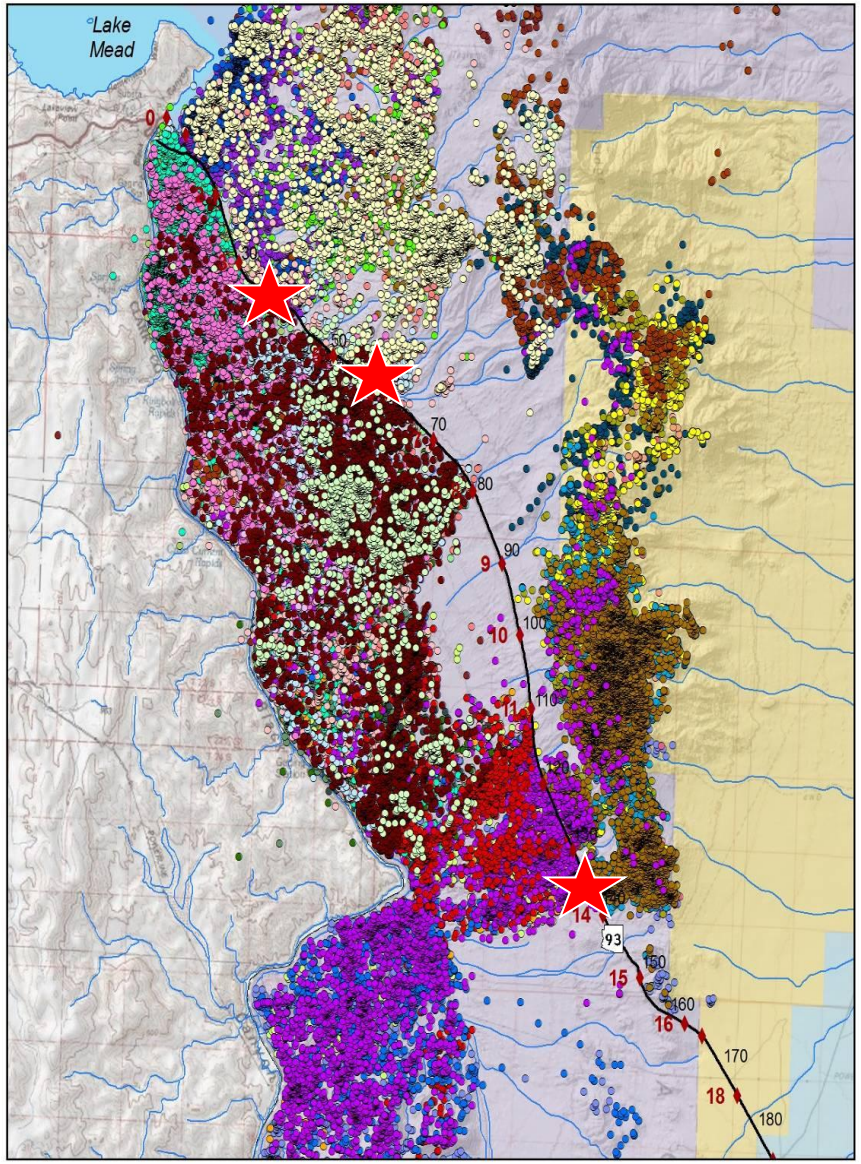
crosstek AFFORDABLE WILDLIFE SOLUTIONS

Trends in Research

Functional Connectivity

Colorado's Chimney Rock Overpass

Trends in Research



Mile Marker
1/10 Mile Segment
BLM
Lake Mead N.R.A.
State Trust

U.S. Highway 93 Desert Bighorn Sheep Study Area with GPS Collar Locations

★ Overpasses

Miles
0 2 4 N

GPS Collars Data

Slide courtesy of: J. Gagnon, Arizona Game and Fish

Trends in Research

Artificial Intelligence

It is NOT a substitute for wildlife professionals to examine wildlife data and photos, it is an assist

It CAN assist with parsing photos for those without wildlife, thus freeing up ecologists' time

It CAN assist with coding GIS, R programs, and your writing

It IS NECESSARY for technologies to detect wildlife at the road edge and trigger driver warning systems

Conference Opportunities

ICOET 2025 | International Conference on Ecology and Transportation

https://icoet.net/

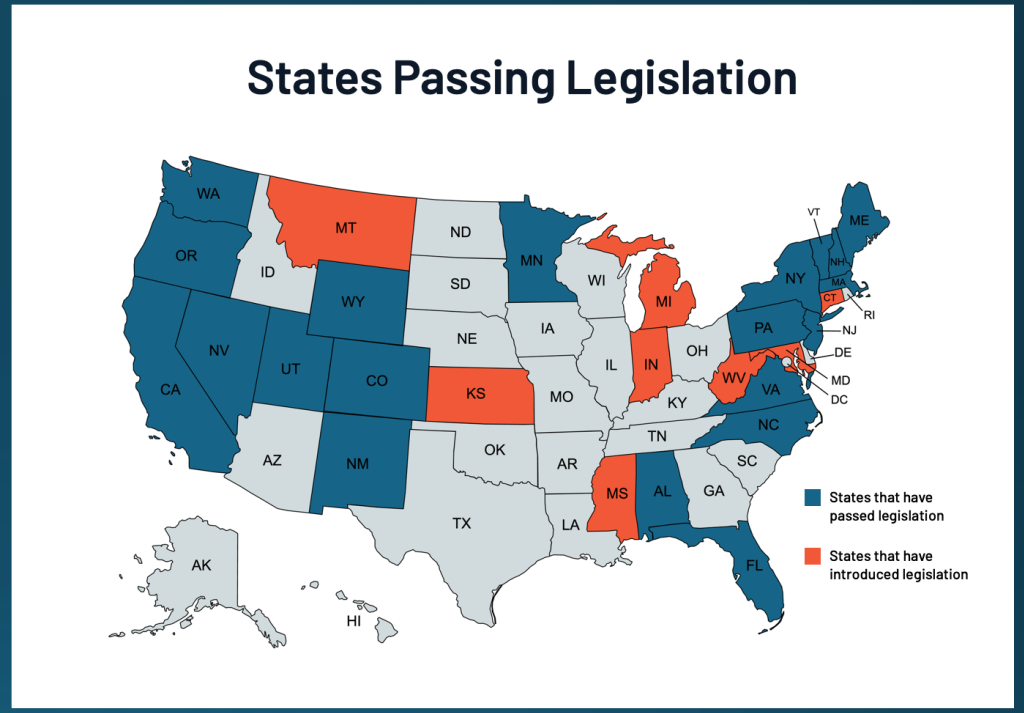
Date To be Announced for 2027 meeting in Portland, Oregon

https://www.netwc.org/

Trends in Policy

State Funding Sources designated by legislatures for wildlife connectivity

(blue states passed legislation as of 2023, several more including the orange ones have also, including UT)



Borrowed from Sito and Christian 2024

FHWA Wildlife Road Crossings Program ?

The 2026 Transportation Act and the Wildlife Road Crossing Program

The Wildlife Society Public Service Announcement on the U.S. 2026 Wildlife Road Crossing Program

Summary & Recommendations

Three Parts to the Approach

Transportation and planning agencies need information about wildlife movement and conflict

Create checkpoints along the transportation planning process to include wildlife concerns

Create a Culture of Awareness, Action, and Partnerships

P Cramer & UDOT, UDWR

TWS Opportunities

TRANSPORTATION ECOLOGY WORKING GROUP

https://wildlife.org/tewg/

LISTEN: TRANSPORTATION ECOLOGY BRIDGES THE GAP

https://wildlife.org/listen-transportation-ecology-bridges-the-gap/

CONGRESS SEEKS PERMANENT FUNDING FOR WILDLIFE CROSSING

December 22, 2025 by Kaylyn Zipp

https://wildlife.org/congress-seeks-permanent-funding-for-wildlife-crossing/

Take Home Message

White-tailed deer moving beneath US 93 at a wildlife underpass in Montana

Never doubt that a small group of committed individuals can change the world. Indeed, that is the only thing that ever has.

Margaret Mead

Resources

WILDLIFE CONNECTIVITY INSTITUTE

Wildlife Connectivity Institute
https://wildlifeconnectivity.org

TRANSPORTATION ECOLOGY WORKING GROUP

https://wildlife.org/tewg/