Wildlife Crossings
“Drawing Attention to New Connections”

Marci Lininger (USFWS)
Ohio Transportation Engineering Conference
October 27th/28th, 2015
Introduction

- Wildlife crossings allow connections between habitat and aim to combat habitat fragmentation caused by roads. Additionally, they aim to reduce collisions between animals and vehicles which is estimated to cost 8 billion dollars a year. *(FHWA Wildlife Vehicle Collisions Reduction Study, 2008)*

- Wildlife crossings attempt to solve these problems by providing the safe movement of people and wildlife by allowing them to coexist through innovative engineering and ecology.
Reconnect Our Landscapes

• Roads have become the leading cause of habitat fragmentation resulting in the creation of barrier effects between wildlife populations. This reduces connectivity and permeability between habitat which leads to less genetically diverse populations.
Reduce Roadway Mortality and Improve Motorist Safety

• The Ohio Insurance Institute estimates 20,201 deer-vehicle crashes in 2013, down 3.8 percent from 2012. These crashes included 8 fatalities and 968 injuries. (Ohio Insurance Institute, 2013)

• Based on a State Farm estimate of $3,888 per claim nationally, this cost $79.1 million in 2013 based on the number of vehicles involved. (State Farm, 2014)

• Additional safety concerns when motorists suddenly slow down or swerve to miss wildlife.

• Impacts to small mammal, reptile and amphibian populations are detrimental when roads inhibit permeability between habitats.

Photo Credit: Associated Press

Photo Credit: Ohio Department of Transportation
Large Scale Application of Wildlife Crossings
Wildlife Crossing Applications in Ohio

Photo Credit: Ohio Department of Transportation
How to site Wildlife Crossings?

Legend:
- 0.1 percent corridor
- 1.0 percent corridor
- 2.0 percent corridor
- 3.0 percent corridor
- 4.0 percent corridor
- 6.0 percent corridor
- 7.0 percent corridor
- 8.0 percent corridor
- 9.0 percent corridor
- 10.0 percent corridor
- Habitat block
- Habitat block
- Highways
- Analysis area

This map shows the connected habitat networks, which are composed of Habitat Concentration Areas (HCAs) and linkages that connect them, for sixteen focal species. Color is used to represent varying numbers of networks that overlap.

Photo Credit: Rocky Mountain Wild

Design: Crossing Structures

Wildlife underpass along U.S. Highway 93 on the Flathead Indian Reservation, MT.

The barrier wall-culvert system on the northwest side of Paynes Prairie, FL. The prefabricated concrete box culvert is 2.7 x 2.7 m.

Photo Credit: ARC Wildlife Crossing Structures

Photo Credit: Florida Integrated Science Center

Photo Credit: Wildlife Structures Handbook
Design: Wildlife-Exclusion Fencing

• Wildlife-Exclusion fencing creates purposeful barrier effects on populations in order to direct wildlife to crossings.
Design Example: Trumbull County S.R. 88

- State Route 88 is a two-lane highway that bisects Category 3 wetlands in the 7,500 acre Grand River Wildlife Area in northeast Ohio.

Photo Credit: Ohio Department of Transportation
Design Example: Trumbull County S.R. 88

- Small mammals, amphibians, and reptiles have used the culverts more than 3,500 times.
- During monitoring in 2013 and 2015, exclusion fencing reduced roadkill 50% compared to control area.
- Factors such as habitat and fencing design contribute to successful use of the culverts and fencing. Fencing requires long-term maintenance to ensure efficiency.

Northern Watersnake, May 2015
Snapping Turtle, May 2015
Wood Duck and seven ducklings, June 2015

Photo Credit: Ohio Department of Transportation
Design: Jump-Outs

- Wildlife trapped by fencing in the transportation corridor poses a safety risk to both the animal and motorists.
Design: Boulders as Purposeful Barriers

- Large boulders make it hard for animals, especially ungulates, to walk across an area. Boulders effectively discourage wildlife from entering right-of-way at end of exclusion fencing.
Further Application

Many opportunities for growth in the field of wildlife permeability.

- Collaboration with agencies to ensure benefit of the species and safety of the motorist
- Regular communication helps determine appropriate site and provides effective project planning
- Monitoring and maintenance are necessary to identify deficiencies that require revision
- Adaptive management allows for improved decision making for planning and design of subsequent projects
- Pre- and post-construction data reveal habitat linkages and use of crossing structures
Effectiveness Research: Nelsonville By-pass

U.S. Route 33 Nelsonville Bypass is an 8.5-mile new construction of a four-lane divided highway through Athens and Hocking County, Ohio. This road bisects the Wayne National Forest and working together will a number of resource agencies, ODOT was able to incorporate a series of treatments to mitigate the adverse impacts of the new highway on wildlife in the area. Endangered species in this area are the Indiana Bat and Timber Rattlesnake.

Ohio University will present research at OTEC 2016!
Thank you!

Questions?

Marci Lininger, USFWS
Marci_Lininger@fws.gov

Matt Perlik, DOT-OES
Matthew.Perlik@dot.ohio.gov
Acknowledgements

Thank you for hosting us, Ohio Transportation Engineering Conference!

We would like to thank the following for their contributions to this project;

• Matt Perlik, Matt Raymond and Katie Dunlap for their support and expertise for the TRU-88 Study.
• ODOT Central Office Staff their help in collecting data, handling field equipment and/or technical assistance for the TRU-88 Study.
• ODOT District Five staff for their innovation in purposeful barrier use and assistance for deploying wildlife cameras.
• Chris Staron ODOT Central Office for assisting in collecting information for this presentation.
• Grace Debbeler ODOT Central Office for assistance with this presentation.
• Deborah McAvory, Matt Trainer, Gary Conley and the entire research team at Ohio University for sharing their photos for this presentation.
• Jim Sanders, Owner and Operator of JTS Wildlife Cameras for designing and building cameras to our specifications for the TRU-88 Study.
• Federal Highway Administration for funding the TRU-88 Study.