Developing national standards for animal-vehicle collision data collection systems: brief review and working discussion

TRB Session 1054
99th Annual Meeting of the Transportation Research Board (TRB)
Washington, D.C.
12 January 2020

Workshop Summary

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March 23, 2020

ACKNOWLEDGEMENTS

Thank you to Alex Levy of Vanasse Hangen Brustlin, Inc. (VHB) for co-facilitating the Transportation Research Board (TRB) Workshop. And to Dan Smith, Committee Chair of ADC30, who helped author the abstract to get the workshop slated at the TRB meeting.

Thank you to Elizabeth Fairbank of the Center for Large Landscape Conservation and Renee Callahan of ARC Solutions for collecting notes at the TRB Workshop and taking minutes at the workshop that have been used in this report.

We appreciate all the workshop participants who took their time to attend and provide their expertise at the workshop.

Thank you to all others who supported and engaged in this workshop, such as other TRB committees and their chairs.

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1. INTRODUCTION

This summary is a compilation of the portions of the workshop that were recorded at each breakout session from staff notes and smart phone photos. Thus, we sought to capture important ideas and outcomes and did not have the resources to record the finer details of everything discussed over the duration of three hours, particularly when breakout sessions of 5 sub-groups were meeting concurrently.

Although the title of the workshop used the term wildlife-vehicle collisions (WVCs), in fact, it is more accurate to describe the workshop as exploring standards for the more inclusive term, animal-vehicle collisions (AVCs). AVCs are crashes with wildlife and domestic animals, such as livestock. Many databases collect both types of collisions, those with wild and domestic animals. However, to accurately record the proceedings of the workshop, the term WVC was used almost exclusively.

Over 40 experts convened at the workshop to discuss the need for national animal-vehicle collision data standards. The attendees represented federal and state wildlife agencies, federal and state transportation agencies, consultants, academia and professional associations. Thirty-eight attendees signed the contact sheet. (Appendix A). This was the first nationally convened meeting of experts to discuss the development of national WVC data system standards.

The workshop was conceived and proposed to TRB by Dan Smith of the University of Central Florida and Rob Ament of the Western Transportation Institute of Montana State University (WTI) in conjunction with the support of several TRB committees: ADC30, ANB20 and ADA40. Facilitators of the workshop were Alex Levy, VHB, and Rob Ament, WTI.

2. WORKSHOP AGENDA

The objective of the workshop was to cooperatively initiate the development of national standards for WVC data collection systems to facilitate the collection and sharing of data by federal, state, local, and tribal agencies, and non-governmental organizations. Also, to enumerate potential pathways and pitfalls to adoption and implementation of national WVC standards

The 3-hour workshop was separated into a 15 minute introduction, a 45 minute panel discussion, followed by two 45 minute sessions comprised of facilitated small group discussions (5 groups with approximately 8 people each) with each group reporting out their findings with each other when reconvened as a whole.

The workshop agenda is Appendix B.

After the two small group sessions, a 15-minute plenary discussion of all 40+ attendees was held to suggest pathways to carry forward the recommendations made at the workshop and to continue to engage with other experts, additional stakeholders and agency leaders.

3. PANEL DISCUSSION RESULTS

The first portion of the workshop was set aside for a panel of experts to provide their perspectives on some of their top tier issues and/or criteria that need to be considered for national WVC data standards. It was a diverse group representing the perspectives of federal and state transportation agencies, federal and state wildlife agencies, data analysts, academia and citizen scientists. Speakers included:

- Dan Buford, Federal Highway Administration (FHWA)
- Julianne Schwarzer, Volpe Center, U.S. Department of Transportation
- Bridget Donaldson, Virginia Transportation Research Council
- Amanda Hardy, National Park Service (NPS)
- Nathan Beauchamp, U.S. Fish and Wildlife Service (USFWS)
- Maggie Ernest Johnson, Association of Fish and Wildlife Agencies
- Fraser Shilling, University of California – Davis

Some of the highlights of the presentations include:

- There are a wide variety of existing data standards, both at the state and national level.
- Every state has its own data standards, which makes it difficult to compare data across state lines.
- There are also a number of national data collection systems and standards including FARS [Fatality Analysis Reporting System?], CRSS [Crash Report Sampling System] GES [General Estimate System?], MMUCC [Model Minimum Uniform Crash Criteria], and others.

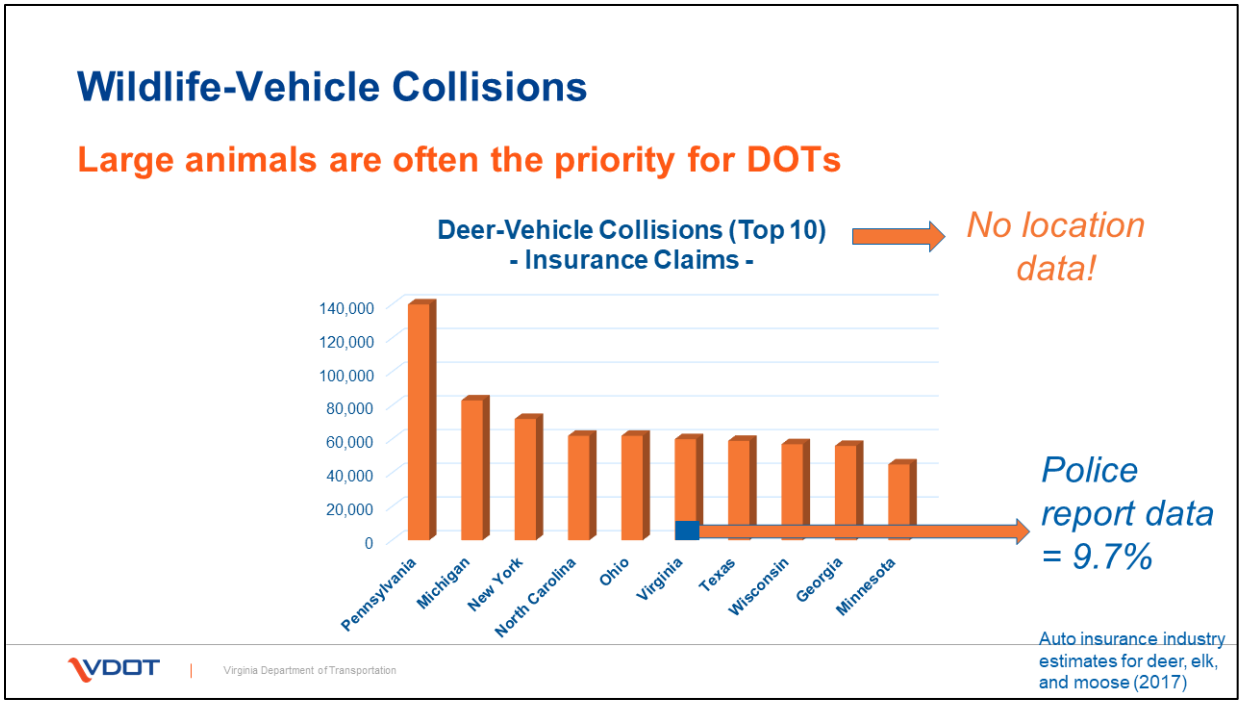

Figure 1. Image of slide from the presentation of Bridget Donaldson, Virginia Department of Transportation.

- The U.S. Department of Transportation (DOT) has launched a Safety Data Initiative featuring several beta tools of potential interest including a pilot to connect state and federal data resources. In addition to its potential role in improving WVC safety solutions and conservation outcomes, the Safety Data Initiative further seeks to:
    - Integrate existing data and new "big data" sources;
    - Use advanced analytics to provide new insights into transportation safety risks; and
    - Create data visualizations to help policymakers arrive at safety solutions.
- Presenters expressed a preference for a single data platform that could be shared across agencies.
- One of the overarching themes was to limit the required data fields to a few simple, core elements, while allowing for optional "extra" fields including, for example:
    - Small wildlife species, *e.g.*, small mammals, snakes, turtles, etc.
    - Count, or number of animals observed (if multiple);
    - Disposal (very important for tracking disease);
    - Live animal sightings, etc.

- There are a number of ongoing U.S. and international WVC systems, and the need to standardize implicates not only field data collection but also other data-related elements including:
    - Metadata;
    - Data organization;
    - Data visualization;
    - Data analysis;
    - Data sharing;
    - System security and access for sharing; and
    - System administration/participation.

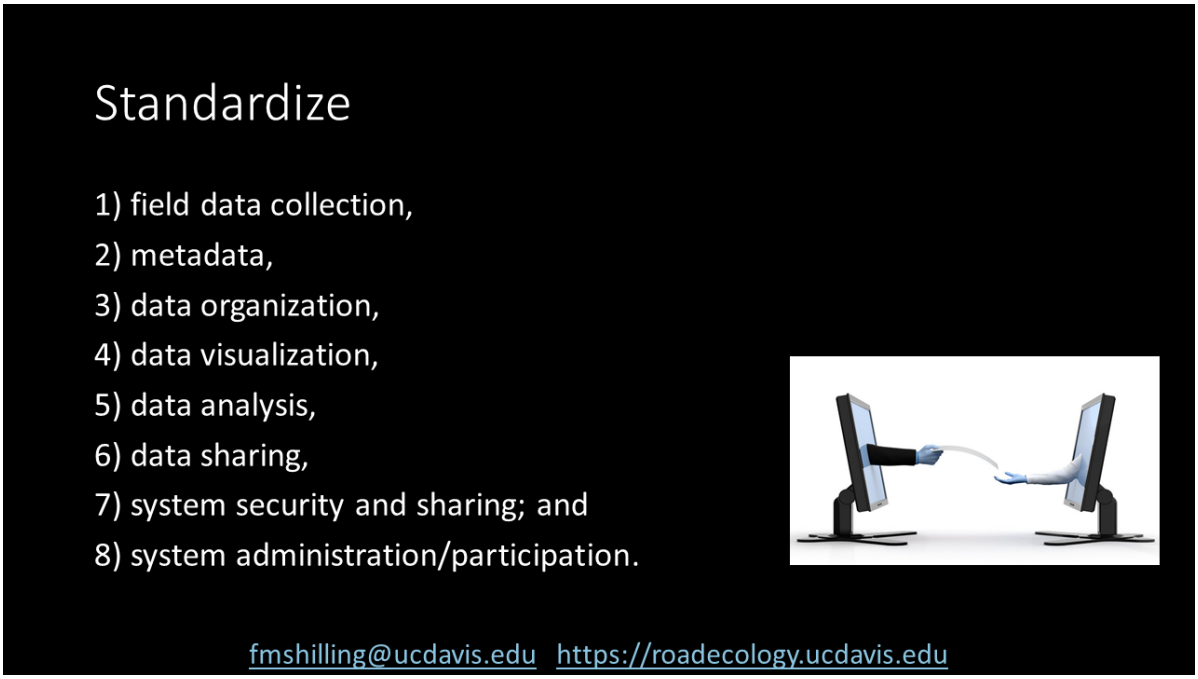

Figure 2. Image of a slide from the panel presentation of Fraser Shilling, University of California-Davis.

- State fish and wildlife agencies see standardization as an opportunity to collect critical data on at-risk or Species of Greatest Conservation Need, the potential to track invasive species movement, as well as climate change-induced range shifts.
- It also provides leverage for funding opportunities for on-the-ground conservation work
- Basic data they would like to see included:
    - Species
    - Sex
    - Count
    - Date, time, weather
- Overwhelmingly, they would like to see a photo requirement with geotagged location (latitude/longitude, not mile posts)
    - This will assist in vetting accuracy of species identification
    - Will provide simple, built-in location information
- Main concern is with the accuracy of species identification (those who are collecting data may not be biologists or have the expertise, they have questions over who will vet the information after collection)
    - Photo requirement will help with this
    - In addition, a drop-down list with common species could assist non-experts in identification
    - Allow a place to input scientific names for those who can identify using latin nomenclature
    - Consider adding a field that allows user to provide confidence in their identification (this is subjective, but could allow for more streamlined verification later on)

- Other data that would be "nice to have" include:
    - State of decomposition (this may help in identifying duplicate submissions)
    - If species was moved (ie. Was hit on road and moved to the shoulder)
    - Ability to collect null data
    - Option for live animal siting
    - Disposal location (important for tracking disease issues such as CWD)

4. ROUND TABLE DISCUSSION 1

Immediately after the panel presentation each of the workshop participants were engaged in addressing the same issue as the panel. They were asked the question, "[w]hat are the most important criteria for the national WVC standards to address for your organization or constituency?" In this session, 5 small groups were formed with a facilitator and a recorder. The facilitators for Round Table Discussion 1 and Round Table Discussion 2 were:

- Catherine Liller, USFWS
- Patrick Dockens, USFWS
- Brooke Stansbury, USFWS
- Amanda Hardy, NPS
- Renee Callahan, ARC Solutions
- Liz Fairbank, Center for Large Landscape Conservation

4.1. Results of Workshop Round Table Discussion 1

During Round Table Discussion 1, a volunteer from each small group recorded the top recommendations and reported them back to the reconvened workshop participants. A compiled summary of the recommendations is in Table 1.

Table 1. A compilation of the top recommendations for WVC data standards by the five small groups in Round Table Discussion 1.

Top Recommendations (X = number of times listed in recommendations)	
Location	XXXX
Photograph • Meta data • Georeferenced for date, time, location	XXXX
Date and Time	XXX
Species • Common Name, Adult/Juvenile; Big/ Small • Common name (required), scientific name (optional), size if not able to identify	XXX
User info	XXX
Roadside condition	XX
Onsite vs. Offsite	XX
Simplicity of survey	XX

• Only 3 required fields, other optional • Ease of use, quick for safety on roadside (minimize exposures)	
Data source	X
Standardized species naming system	X
Standard App does not add on to existing data bases	X
Subject protocol	X
Comments	X
Optional things: disposal location, decomposition (keep these optional, not required)	X
Situation: crash vs. carcass (optional disposal location) vs. sightings	X

5. TRB WORKSHOP ROUND TABLE DISCUSSION 2

After a break, the workshop participants regathered and were asked to once again form small groups supported by a facilitator. Five groups were formed, with approximately 8 persons in each group. A volunteer recorder of the findings of each small group's discussion was identified. The groups were asked to discuss the following two issues:

1) Describe the potential opportunities and pathways to develop national WVC data standards.
2) Identify the best method(s) and potential barriers for any new national WVC data standards to be adopted and implemented.

5.1. Results of TRB Workshop Round Table Discussion 2

During Round Table Discussion 1, a volunteer from each small group recorded the top recommendations and reported them back to the reconvened workshop participants. A summary of the top recommendations generated by the five groups for each question are listed below. They were not assigned a relative value or weight of interest, so they are randomly placed on the list. Also, they were not removed, if they were recorded for the wrong question.

<u>Describe the potential opportunities and pathways to develop national WVC data standards:</u>

- Assure that a lead agency is keen to help develop, accept and promote the standards (e.g., FHWA Eco-Logical).
- A Transportation Research Board (TRB) ad hoc committee could be formed to develop and seek the implementation/adoption of national WVC standards.
- Similarly, a standing TRB subcommittee could accept the lead to develop and seek the adoption and implementation of national WVC standards.
- Incorporate wildlife data standards into the Model Minimum Uniform Crash Criteria (MMUCC) of the National Highway Transportation and Safety Administration (NHTSA). The 6th Edition of the MMUCC is being developed right now and will be completed in summer 2020.
- Determine whether mandatory reporting or a voluntary program with incentives is the best pathway for getting national standards adopted.

- Explore whether legislative language on national WVC data standards could be incorporated into federal legislation.
- Have the National Cooperative Highway Research Program partner with the Association of American State Highway Organizations (AASHTO) to develop standards
- Use long range transportation plans of the FHWA and NHTSA to request/require standards.
- Incorporate data from other sources, such as iNaturalist for wildlife sightings near roads state highway trooper reports, carcass salvage permits, etc.
- Explore partnerships with insurance companies, although they are known to wave business models and don't promote sharing data.
- To recruit support for national standards, relate the data to the end user and the end use needs.
- Often WVCs are not listed in the top highway safety concerns; there is a missing link between single vehicle crashes and animals.
- There is a WVC data coordination opportunity with trucking companies (to know where collisions are happening to avoid/warn drivers in real time).

Identify needs for developing WVC data standards:

- Evaluate existing systems to integrate data among systems.
- Use existing successful models (traffic safety, wildlife crash system).
- Assure a process so that when the standards are developed, they will be implemented.
- Incorporate wildlife data standards into the Model Minimum Uniform Crash Criteria (MMUCC) of the National Highway Transportation and Safety Administration (NHTSA). The 6th Edition of the MMUCC is being developed right now and will be completed in summer 2020.

Identify barriers/challenges for the development and use of national WVC data standards:

- The goals and benefits of creating standards has not been identified
- The funding sources to develop and implement standards has not been identified. (2 groups)
- There needs to be a consensus on a standard method of data collection.
- Incorporating standards and their funding is difficult to get into transportation legislation.
- There are technological issues that must be addressed for national standards.
- Often the availability of data collection devices is an issue (DOT staff for example)
- The use of smart mobile devices discouraged by some DOTs
- The US does not have full coverage of global positioning system (GPS) location service (satellite coverage). Often one is unable to get GPS location while moving or in some canyons and other difficult topographies, etc.
- Option to use milepost locations in lieu of GPS is an issue.
- Some existing agency systems can be out of date and unable to interface with mobile device capabilities.

- The challenge is to not get too complicated when developing national standards (2 groups).
- There may be a need for incentives, such as cash prizes or game tag entries, to encourage WVC data collection (3 groups).
- The leadership level of agencies must support this effort.

As part of the discussion, participants pointed out that there are two needs for WVC data, one is for safety purposes and the other is for the conservation of wildlife species. A Venn diagram was drawn to conceptualize how national WVC standards should be developed to address both needs (Figure 3).

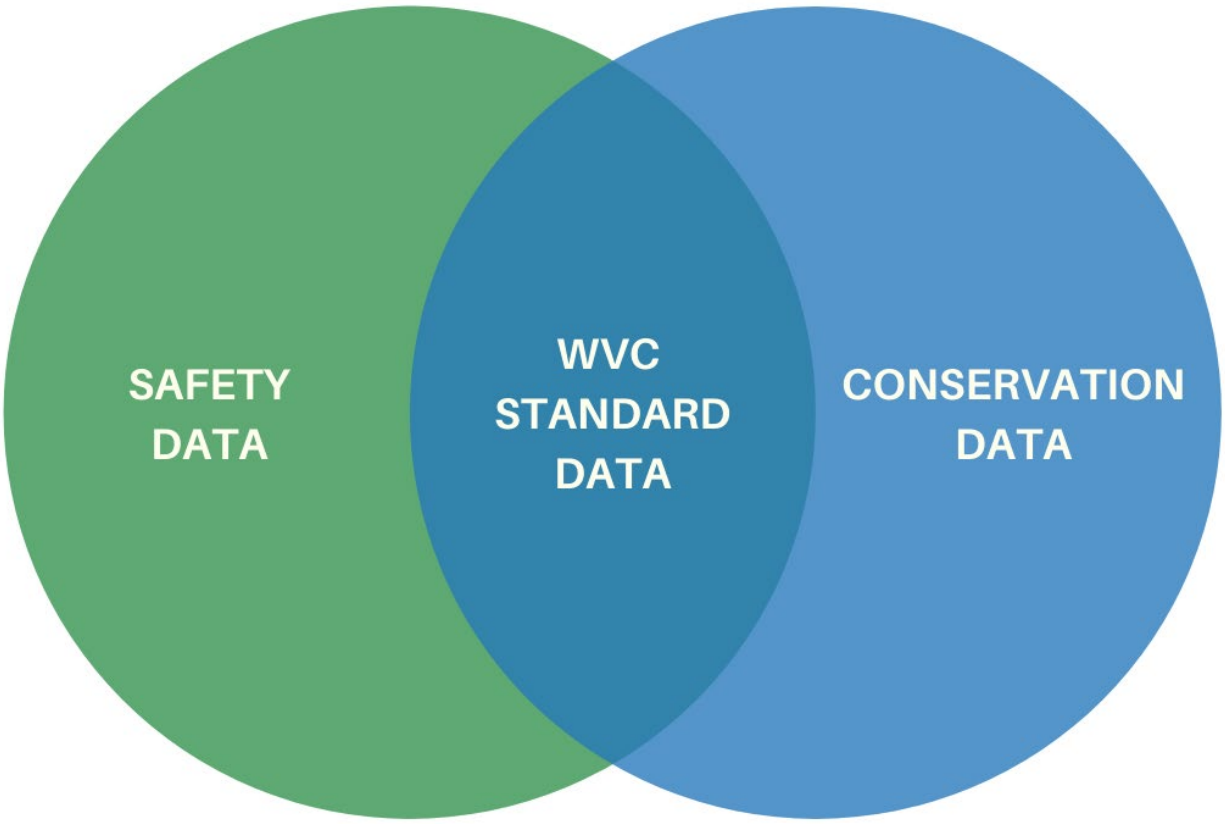

Figure 3. Venn diagram describing the necessity for national WVC standards that address the needs for both safety and conservation data.

6. FINAL GROUP DISCUSSION

The last portion of the workshop was held as a facilitated plenary discussion. The objective of this 15-minute session was, after reviewing the national WVC standards recommendations and the means of developing them as well as the potential pitfalls, what could the participants collectively do after the workshop to continue working on these issues.

6.1. Results of Final Group Discussion

Following are the list of action items that were developed by the workshop group and the individual participants who would volunteer to lead this item (in parentheses). It should be noted that to contact any of these members to volunteer to help them, please refer to the contact list, Appendix B.

1. Convene a volunteer group to develop MMUCC standards for revision (Dan Buford).
    a. This group can meet by email, but its objective is to get better data fields for wildlife incorporated into the revision process by summer 2020.
2. To follow up on this workshop, seek one of the TRB summer committee meetings host the second workshop (Rob Ament).
    a. Two summer meetings being held in 2020 are at Denver in July that is co-hosted by 5 different TRB committees to focus on sustainability or another is in Boise, entitled "Tools of the Trade Conference" which is sponsored by ADA40.
3. The lead host of this workshop, TRB ADC30 Committee, will seek to champion continuing efforts to develop national WVC standards (Alex Levy will coordinate).
4. The TRB Sub-committee, ANB 20, another workshop supporter will follow up with its members (Fraser Shilling).
    a. The objective is to get its members who were unable to attend the workshop to attend the next workshop or possibly create and host an ad hoc working group for this issue.
5. Develop a research study recommendation for NCHRP Research by June 2020 (Chris Gade).
    a. There is a possibility that a synthesis on national WVC standards would be helpful to describe the efforts needed to develop standards.
6. To refresh everyone's memories about national WVC data standards, send out the 2007 NCHRP Report, *National Cooperative Highway Research Program Synthesis 370: Animal-Vehicle Collision Data Collection* (Amanda Hardy).

7. APPENDIX A

Workshop Sign-Up Sheet (typed version)

Name	Organization	Email
Jennifer Proctor	National Park Service, Public Risk Management	jennifer_proctor@nps.gov
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Amanda Hardy	National Park Service	amanda_hardy@nps.gov
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Daniel Buford	Federal Highway Administration	daniel.buford@dot.gov
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Sean Connolly	South Carolina Department of Transportation	connollyms@scdot.org
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Brooke Stansberry	US Fish and Wildlife Service	brooke_stansberry@fws.gov
Partick Dockens	US Fish and Wildlife Service	patrick_dockens@fws.gov
David Goldstein	Massachusetts Department of Transportation	david.goldstein@state.ma.us
Melissa Lenker	Massachusetts Department of Transportation	melissa.lenker@state.ma.us
Janette Lemons	National Park Service	jan_lemons@nps.gov
Rob Ament	Western Transportation Institute - Montana State University	rament@montana.edu

8. APPENDIX B

Workshop Agenda

AGENDA

TRB WORKSHOP

Round Table Discussion:

National Standards for Wildlife-Vehicle Collision Data Collection

Date and Time: Sunday, January 12, 1:30 – 4:30 pm

Location: Convention Center, 140 A

Time Allocation: 3 hours total

Purpose: Co-develop and implement national standards for WVC data collection systems to facilitate the collection and sharing of data by federal, state, local, and tribal agencies, and non-governmental organizations.

Facilitators: Rob Ament, Western Transportation Institute, Montana State University
Alex Levy, ADC 30 Committee, VHB

1:30-1:45 Welcome & Introductions, Purpose & Expectations

1:45-2:30 Panel Discussion: Setting the Stage (8 presentations, 5 minutes each)

Panel: Provide your organization's top two or three key issues or criteria that need to be considered for National WVC Data System Standards:

a. Federal Transportation Agency

Dan Buford, Federal Highway Administration (FHWA)

Julianne Schwarzer, Volpe Center, USDOT

b. State Department of Transportation

Bridget Donaldson, Virginia Transportation Research Council

c. Federal Land Management Agency

Amanda Hardy, National Park Service

d. Federal Wildlife Agency

Nathan Beauchamp, U.S. Fish and Wildlife Service

d. State Wildlife Agency

Maggie Ernest Johnson, Association of Fish and Wildlife Agencies

e. Citizen Science Data Collection Systems

Fraser Shilling, University of California - Davis

f. National Data Manager Perspective

Sergio Mayorga, Mobile Solution for Assessment and Reporting (MSAR), FHWA

Wrap Up and Conclusions (5 Minutes)

2:30-3:15 Round Table Discussion 1: Most Important Considerations for National Data Standards

- Directions for Round Table Discussion
- What are the most important criteria for the national standards to address for your organization or constituency?
- Each table report out its recommendations to the whole group (15 minutes)

3:15-3:30 BREAK

3:30-4:15 Round Table Discussion 2: What is the best pathway to develop the standards? How can we best ensure they will be deployed and used?

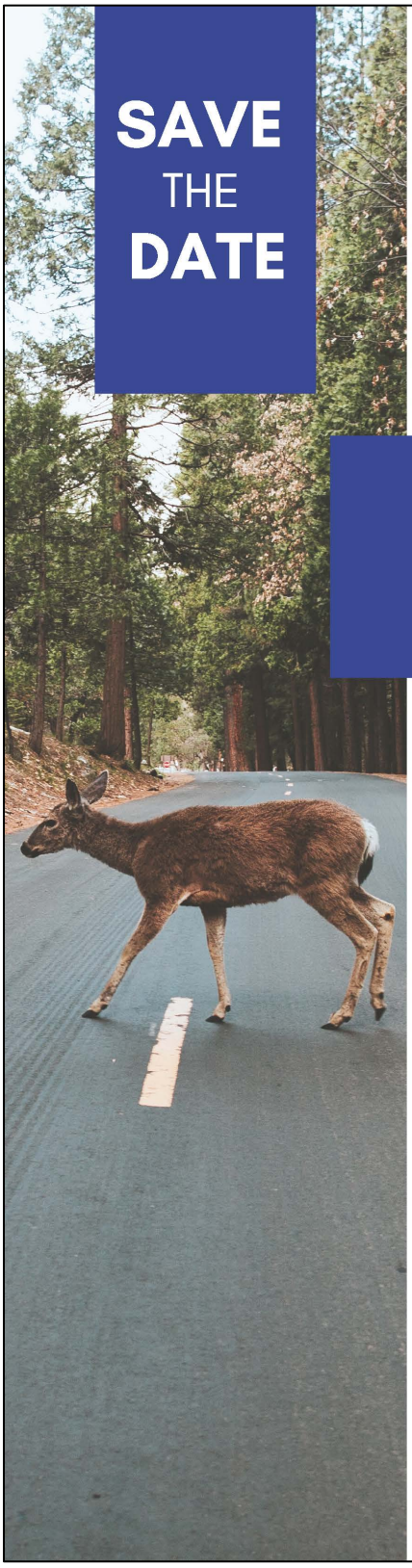
- Directions for Round Table Discussion 2
- Discuss potential pathways forward to develop national WVC standards (e.g. Ad Hoc Committee under ADC30, Volpe Center project, SHRP2 project)
- Discuss best method(s) to assure the new standards are implemented (e.g., Secretarial/Executive Order, administrative rule, legislation)?
- Each table report out their recommendations to the whole group (15 minutes)

4:15-4:30 Group Discussion: Next Steps

- ADC 30 Summer Meeting - Denver? TRB Public Lands Committee, Tools of the Trade Conference - Boise, ID? Other opportunities?

9. APPENDIX C

Workshop Marketing Flyer



WILDLIFE-VEHICLE COLLISION DATA STANDARDS WORKSHOP

Sunday, January 12, 2020
1:30 - 4:30 pm EST
Washington Convention Center
Room 140 A

Join ADC 30 members and friends in a TRB Workshop to discuss developing **national data standards for wildlife-vehicle collision (WVC) data collection**. The purpose of this Workshop is to discuss strategies to develop and implement national standards for WVC data collection to facilitate the collection and sharing of data by federal, state, tribal, and local agencies and non-governmental organizations.

For more information, please contact Dan Smith at daniel.smith@ucf.edu or Rob Ament at rament@montana.edu.