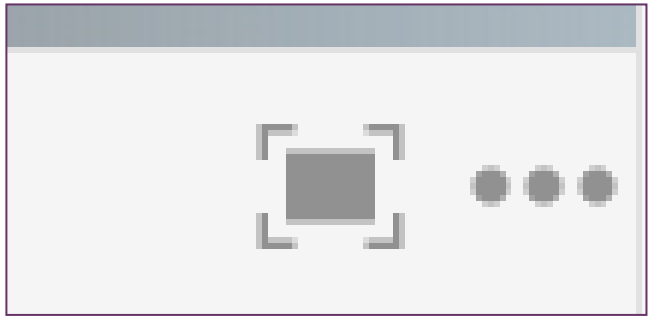
National Center for Rural Road Safety

Roadkill Observation and Data System

Presented by:

- Rob Ament, Road Ecology Program Manager, WTI
- Matthew Bell, Research Engineer, WTI

Webinar Logistics



- Duration is 11:00 AM - 12:30 PM Mountain
- Webinar – recorded and archived on website. For quality of recording, phone will be muted during presentation
- If listening on the phone, please mute your computer
- To maximize the presentation on your screen click the "window box" in the top right of the presentation
- At the end of each section, there will be time for Q&A
- There is a handout pod at the bottom of the screen
- Please complete follow-up surveys; they are vital to assessing the webinar quality

Certificates of Completion/CEUs

Survey Link –

http://survey.constantcontact.com/survey/a07ehua06feknerdwia/start

- Survey closes 2 weeks after webinar
- Expect certificate/CEU form approx. 4-6 weeks after webinar
- Return CEU form to ContinuingEd@montana.edu **NOT** Safety Center
- Request a verification of completion form


National Center for Rural Road Safety

Certificate of Completion

is hereby granted to

XXX

to certify that he/she has completed to satisfaction the course

Pedestrian Treatments for Uncontrolled Locations

Granted: January 18, 2018 11:00 AM - 12:30 PM MST
Instructors: Yan Qi and Kyle Armstrong

Jaime L Sullivan

Safety Center Manager

Certificates of Completion/CEUs

MONTANA STATE UNIVERSITY
EXTENDED UNIVERSITY

Course Registration Form

Please PRINT in INK

Extended University
Office of Continuing Education
128 Barnard Hall/PO Box 173860
Bozeman, MT 59717-3860
Phone: (406) 994-6550/Fax: (406) 994-7856
Email: ContinuingEd@montana.edu
Web: http://eu.montana.edu

Course *cex 280717 Pedestrian Treatments for Uncontrolled Locations - Live* Location *Online*

Date *01/18/18 - 01/18/18* REGISTRATION FEE *$0.00* # OF CEU's *0.150* GENDER: M / F

Name _____ (Last) _____ (First) _____ (Middle Initial) _____ (Maiden/Former Name)

Address _____ (Street or PO Box) _____ (City) _____ (State) _____ (Zip)

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HAVE YOU EVER BEEN ADMITTED TO MSU-BOZEMAN AS A STUDENT? Yes ____ No ____ When? _____

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_____ (Student Signature) _____ (Date) _____ (Instructor Signature)

Student information to be removed and shredded once entered into system

*Required SOCIAL SECURITY # or MSU STUDENT ID #: _____ *Required BIRTHDATE: _____

AMOUNT PAID $_____ CREDIT CARD # _____

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NOTE: If triplicate hard copy - The PINK copy is the student's official receipt. Please return the WHITE & YELLOW copies to Extended University
If single sheet - Submit form to Extended University (make copy for your records)

MONTANA STATE UNIVERSITY
Academic Technology & Outreach

Academic Technology and Outreach
Montana State University
128 Barnard Hall
PO Box 173860
Bozeman, MT 59717-3860

VERIFICATION OF COMPLETION

February 2, 2018

REGISTRANT: First Last
123 Main St
Town, ST 59123

ID #:		CEU	Hours
18SCEX280717	Pedestrian Treatments for Uncontrolled Locations - Live January 18, 2018	0.150	1.50
18SCEX280720	Primer on the Joint Use of the HSM and the HFG for February 13, 2018 - February 13, 2019	0.150	1.50
TOTAL:		**0.300** CEU's	**9.00** Hours

Today's Presenter

Rob Ament,
Road Ecology Manager,
WTI

Matthew Bell,
Research Engineer,
WTI

Goals of this Webinar

Once you have completed this webinar, you will have:

an understanding of the recently completed Phase 3 of an animal-vehicle collision (AVC) data collection system called ROaDS (Roadkill Observation and Data System).

Learning Outcomes

To achieve the webinar goal, you will learn to:

- Characterize the need for a DOI-wide AVC data collection system.
- Describe the 3 phases of the project.
- Identify how simple it is to use the ROaDS survey on a mobile device and the information that is gathered.
- Demonstrate how the data collected through the ROaDS system can be analyzed and presented in reports.
- Discover ways to get involved in efforts to co-develop national AVC data collection standards.

Rob Ament
Road Ecology Manager
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National Center for Rural Road Safety

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National AVC Study

Credit: Neil Hetherington/WTI

- **1-2 million collisions with large mammals**
- 29,000 human injuries
- 200 human fatalities
- 89% on 2-lane roads

Huijser et al. 2007

National Park Service Study

Credit: Marcel Huijser

WVCs account for over 10 percent of all crashes in the NPS's management units analyzed

<u>Twice</u> the national average

(Cherry et al. 2019)

National LRTPs: The Need for Good AVC Data

NPS' National LRTP (2017)

"[f]rom 1990 to 2005, wildlife–vehicle collisions were the leading cause of single-vehicle crashes in the NPS system and accounted for 10 percent of total vehicle crashes".

"Wildlife–vehicle collisions were the most common crash type in the Intermountain, Northeast and Southeast regions."

FWS's National LRTP (2016)

Under its Safety Goal,

Objective 1: *"[i]dentify safety issue 'hot-spots' within the Service's transportation system…."*

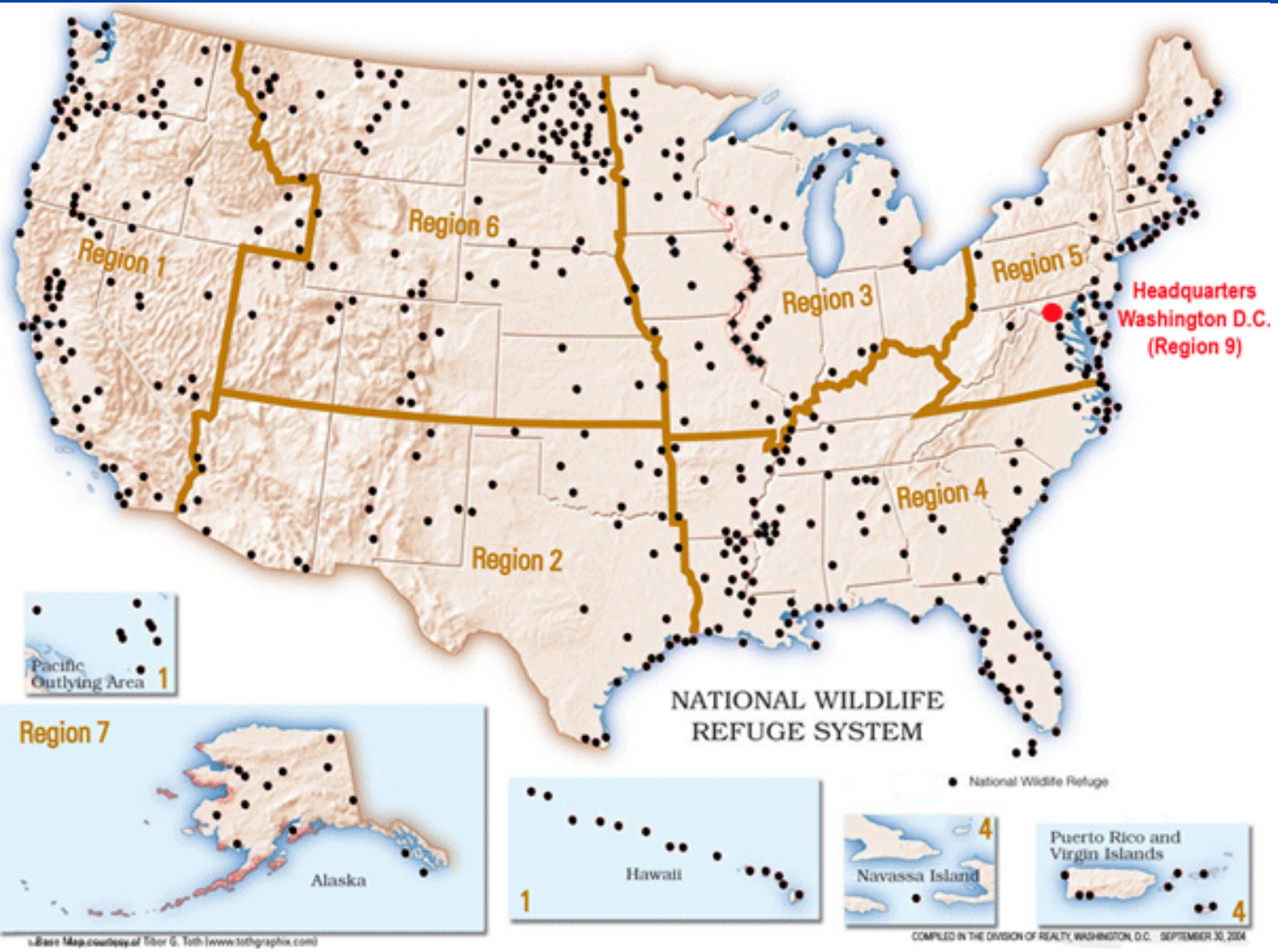
Objective 3: "*[a]ddress wildlife-vehicle collisions with design solutions…*"

National Park System

417 management units covering more than 84 million acres

Source: https://www.nps.gov/aboutus/faqs.htm

Fish and Wildlife Service Refuge System



More than 560 national wildlife refuges and **38** wetland management districts covering 850 million acres of lands and waters

Source: https://www.fws.gov/refuges/refugelocatormaps/

BRILLIANT!

ROaDS

Potential Ways to Use AVC and Live Wildlife Data

- Identify important mitigation sites
- Support transportation planning, programming, and budgeting decisions
- Support research
- Monitor wildlife movement
- Quantify mortality rates of species of special concern
- Inform regional cooperative conservation and driver safety initiatives

ROaDS: Phase 1 and 2

Explore platforms to host ROaDS – selected ESRI's ArcGIS

Create ROaDS survey (data form)and beta-test

Incorporate beta-test feedback to improve ROaDS survey

Initiate the development of national WVC data standards

Explore Potential Platforms – Phase 1

Table 1. Various wildlife vehicle collision data systems and their capabilities reviewed for this project.

Name	Website	Mobile site	Mobile App	Date & Time	Location	Habitat	Species	Confidence of recognition	Sex	Age	Number	Collar/tag #	Dead/alive	Picture	Weather	Road condition	Road type	Carcass placement	Description/comments	Observer	Frequency of travel	Mode of Travel
Road Kill Survey	1			1	1	1	1		1		1			0	1							
Utah Wildlife-Vehicle Collision (WVC) Reporter	1	1			1		1		1	1		1		0				1				
observation.org	1				1		1							1								
RoadKill.at	1			1			1				1			1				1			1	1
Road Watch BC	1		1		1		1						1	0				1	1			
California Roadkill Observation System	1			1	1		1							1				1		1		
Maine Audubon Wildlife Road Watch	1			1	1		1				1			0								
natuurpunt	1			1	1		1		1		1			1					1			
Animal Vehicle Collisions	1		1	1	1	1	1						1	0				1				
Deer Crash	1																					
Project Splatter	1		1	1	1		1				1			0			1		1			
Endangered Wildlife Trust	1													0								
iNaturalist	1		1	1	1		1							1					1	1		
Roadkill Observation Collection System (ROCS)	1			1	1		1		1				1					1	1	1		
GrizzTracker	1		1	1	1	1	1	1			1			1								1
USMP	1		1	1	1									1	1	1	1		1	1		
SUM	16	1	6	11	13	3	13	1	4	1	6	1	3	7	2	1	2	4	8	4	1	2
	Platform			Placement			Animal								Metadata					Observer		

ROaDS Platform and Structure

- **ESRI: Environmental Systems Research Institute**
- **ArcGIS: Platform developed by ESRI to create, manage, share, and analyze spatial data**
- **Survey123: A mobile device application (app) that uses the ArcGIS Platform**
- **ROaDS Survey: A programmed questionnaire to collect roadside observations of wildlife and related site attributes that is placed on the Survey 123 app**

Once collected on the app, the data for each observation is then sent to ESRI's cloud-based server for storage and retrieval

ROaDS: Phase 3

Co-develop national AVC data collection standards

Explore other platforms to host ROaDS

Beta-test and update the ROaDS survey

Create Users Manual

Determine DOI's partners interest in using ROaDS

Final report and webinar

Directing Your Questions via the Chat Pod

1. Chat pod is on left side of screen between attendees pod & closed caption pod

3. Answers will appear here unless addressed verbally

2. Type your question or comment here

Mat Bell
Research Engineer
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National Center for Rural Road Safety

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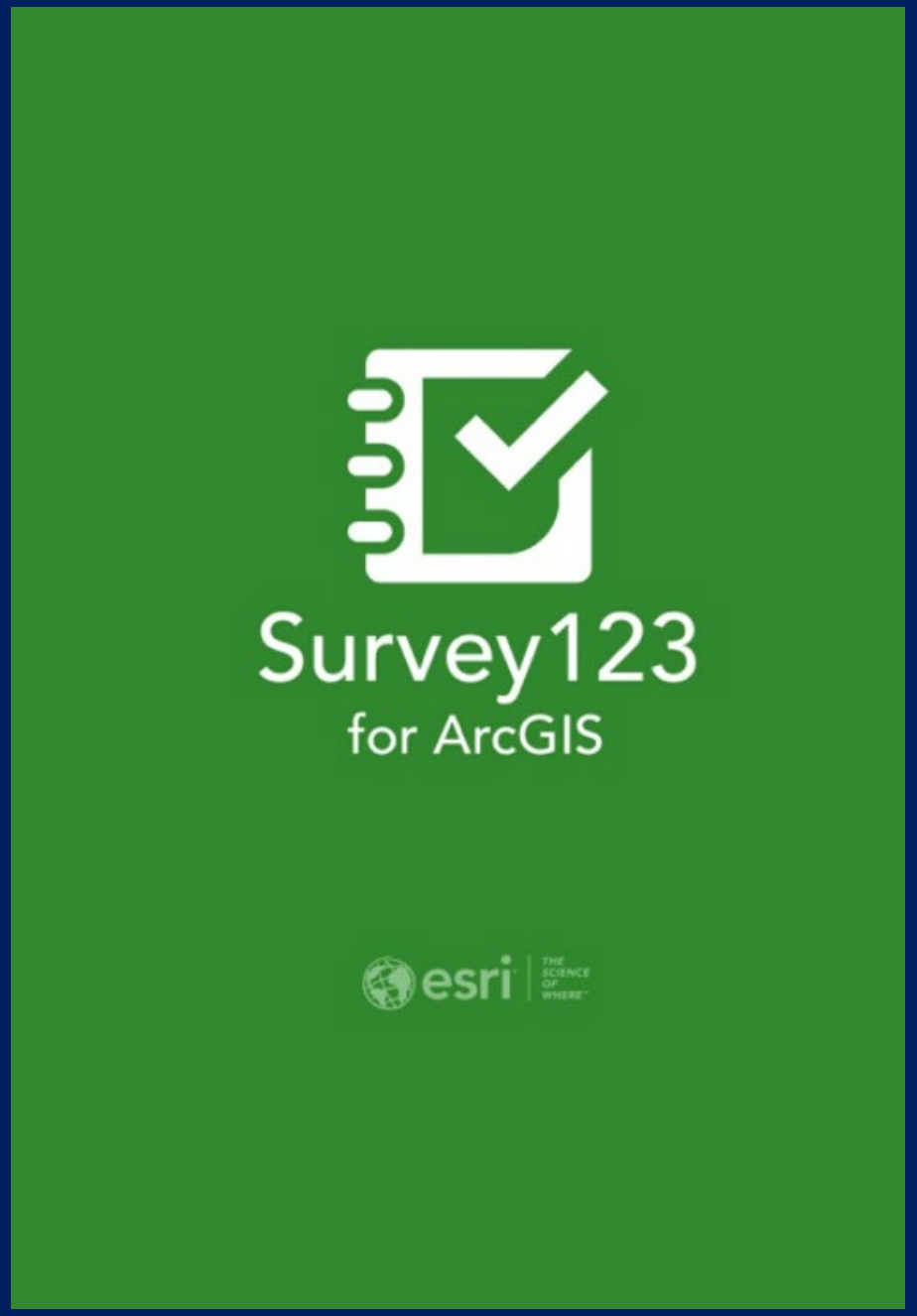
Features of the ROaDS Survey and Database

ESRI Survey123 for ArcGIS

Used to create the data form (ROaDS survey) to collect AVC information and wildlife activity along the roadway

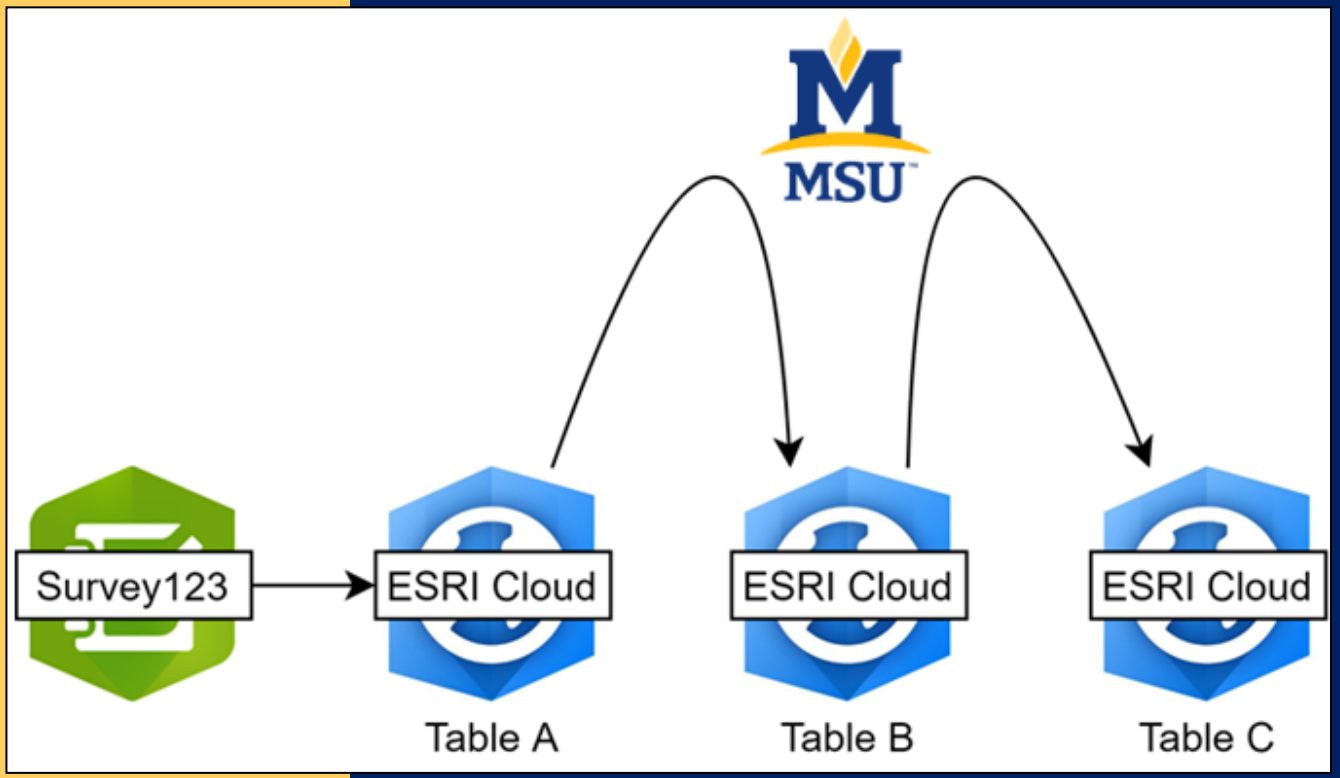


ESRI Cloud Database

NOT JUST FOR STORAGE & RETRIEVAL!

Data Processing

- Allows for expert review of species ID with geo-synched photo
- Adds 11 additional observation site attributes (e.g., state, FLMA, road functional class, etc.)



ROaDS SURVEY: A BRIEF OVERVIEW

11 DATA FIELDS – QUICK AND EASY

8 MANDATORY

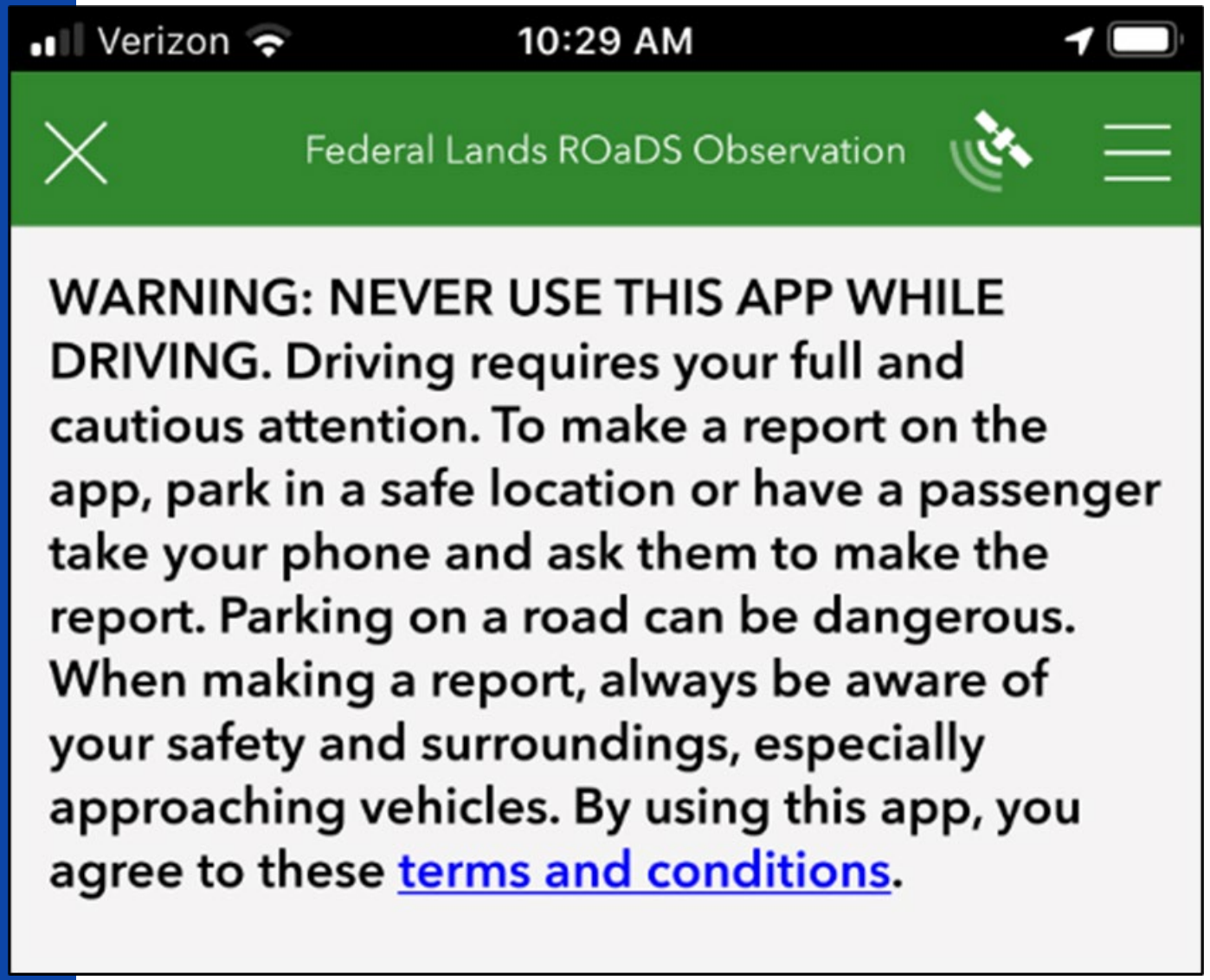
1 AUTOMATIC – DATE & TIME

2 OPTIONAL – GEOSYNCHED PHOTO, COMMENTS

SAFETY FIRST

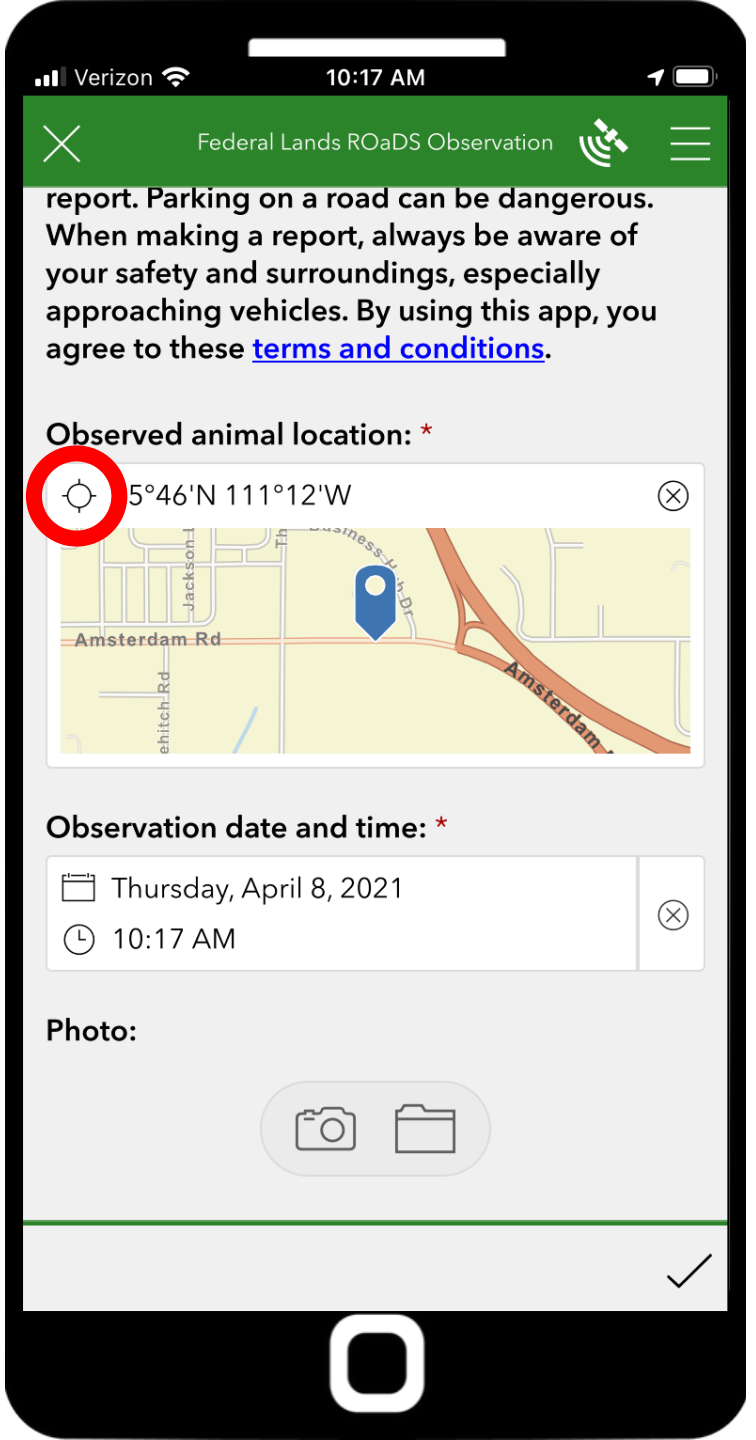
ROaDS Safety

Warning appears at the top of the survey every time it is opened



DATA FIELD

Observed animal location

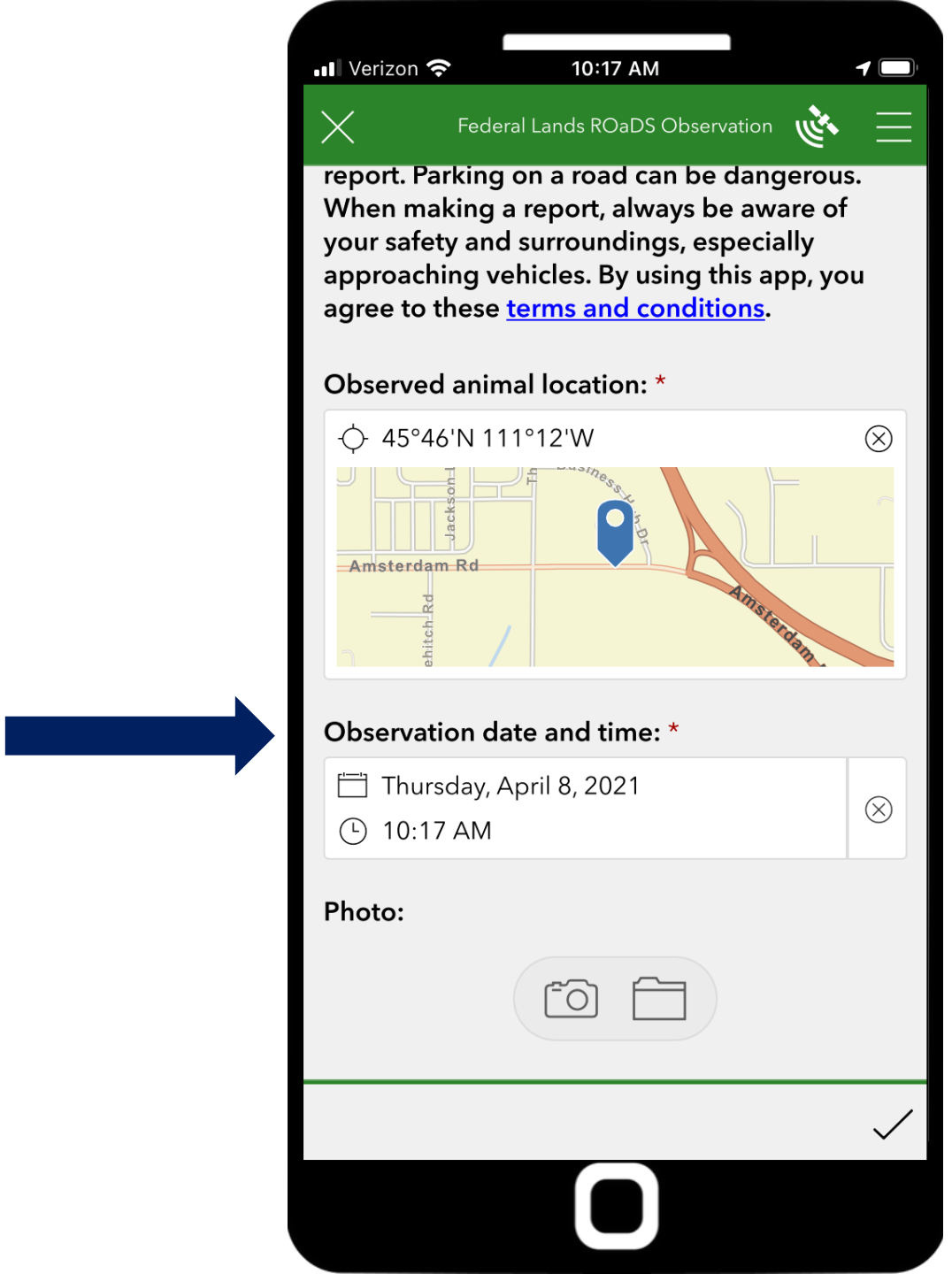


SAFETY FIRST

DATA FIELD

2

Observation date and time



DATA FIELD

3

Photo

DATA FIELD

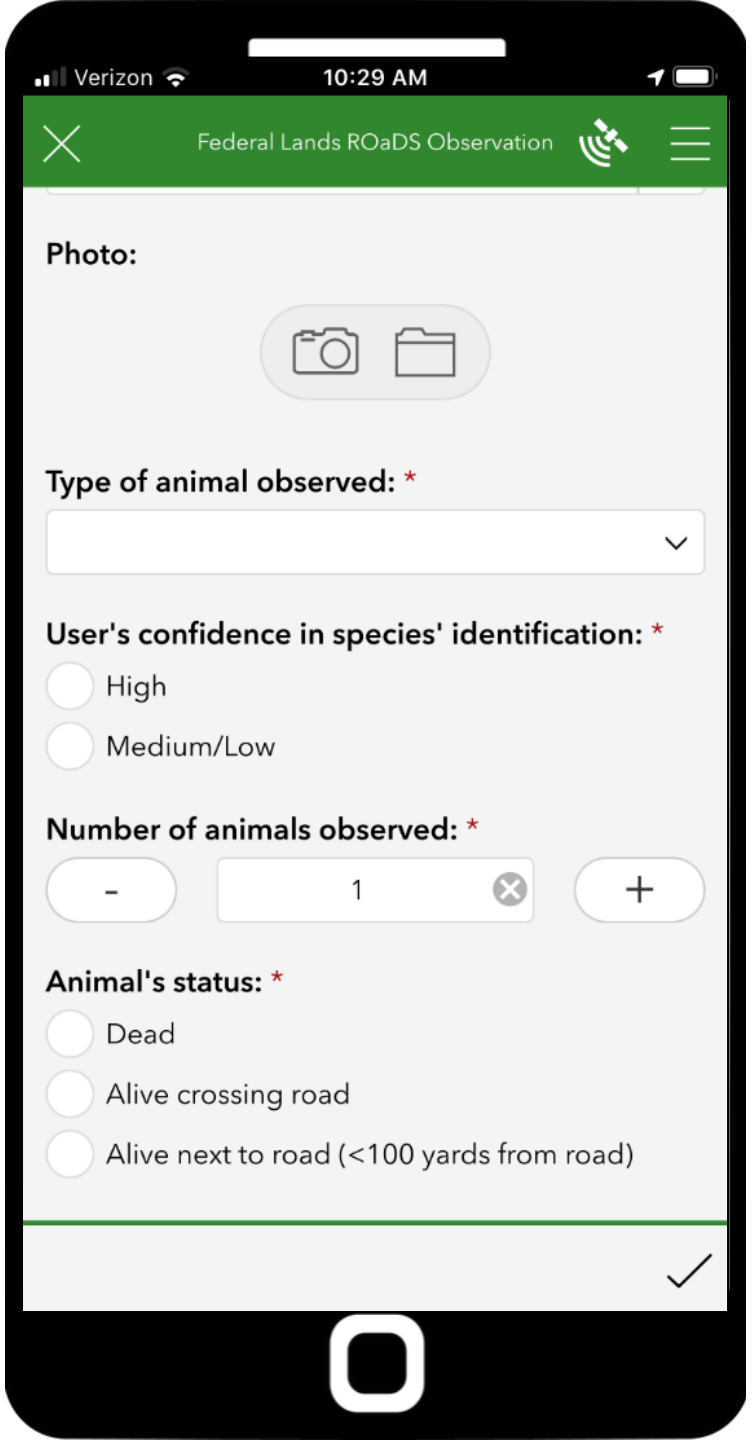
Type of animal observed

- Species list
  - Whitetail deer
  - Mule deer
  - Unknown deer
  - Moose
  - Elk
  - Pronghorn antelope
  - Bighorn sheep
  - Bison
  - Raccoon
  - Striped skunk
  - Opossum
  - Armadillo
  - Black bear
  - Grizzly bear
  - Wolf
  - Mountain lion
  - Coyote
  - Red fox
  - Feral pig
  - Domestic cat
  - Domestic dog
  - Other livestock
  - Other mammal
  - Other reptile or amphibian
  - Other bird

DATA FIELD

5

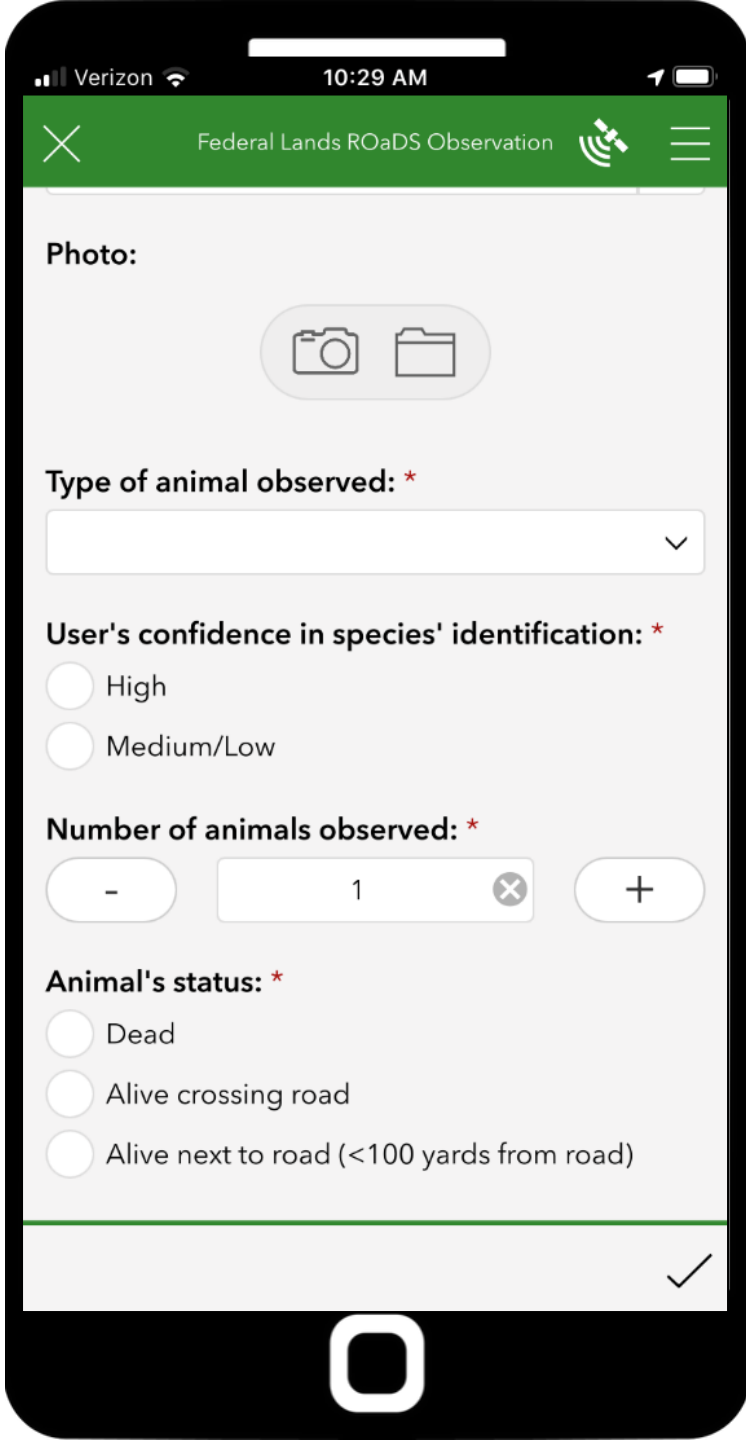
User’s confidence in species’ identification



DATA FIELD

6

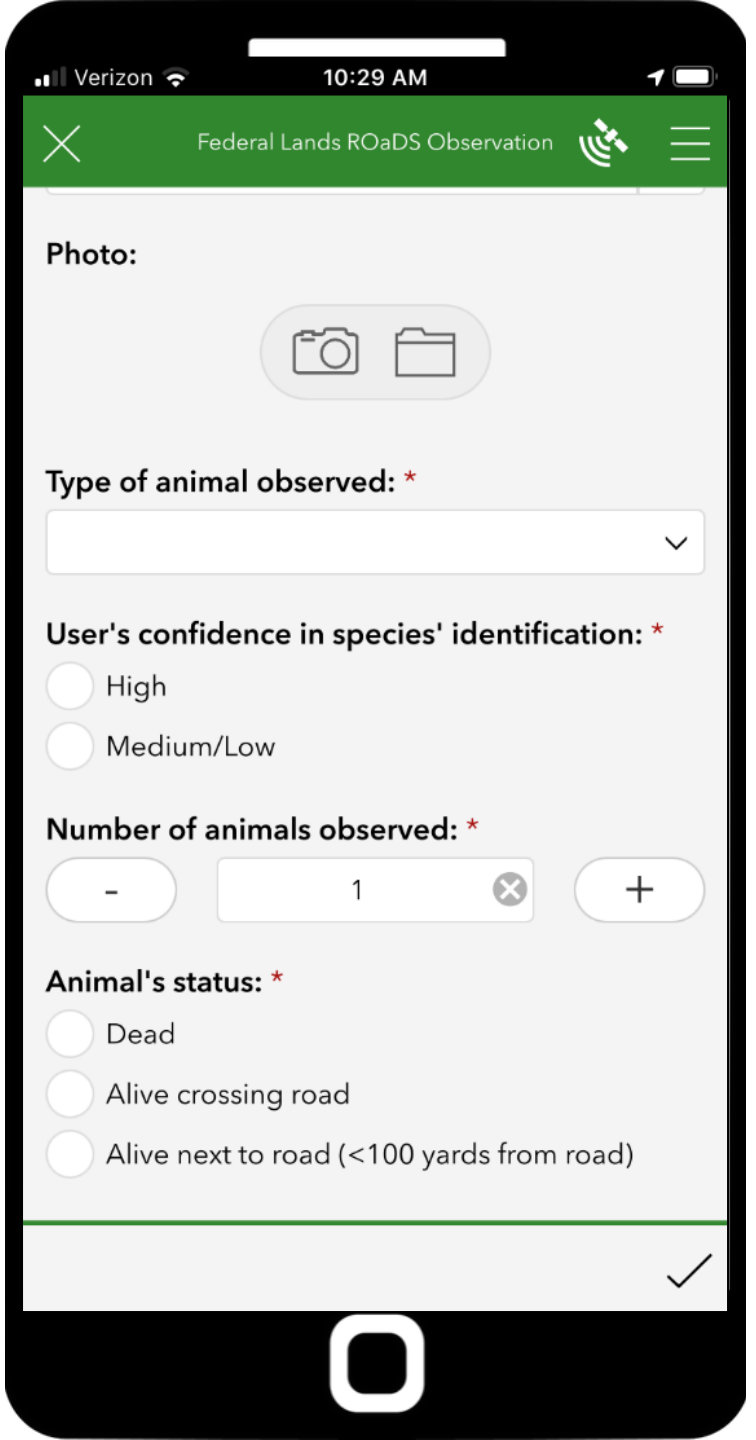
Number of animals observed



DATA FIELD

7

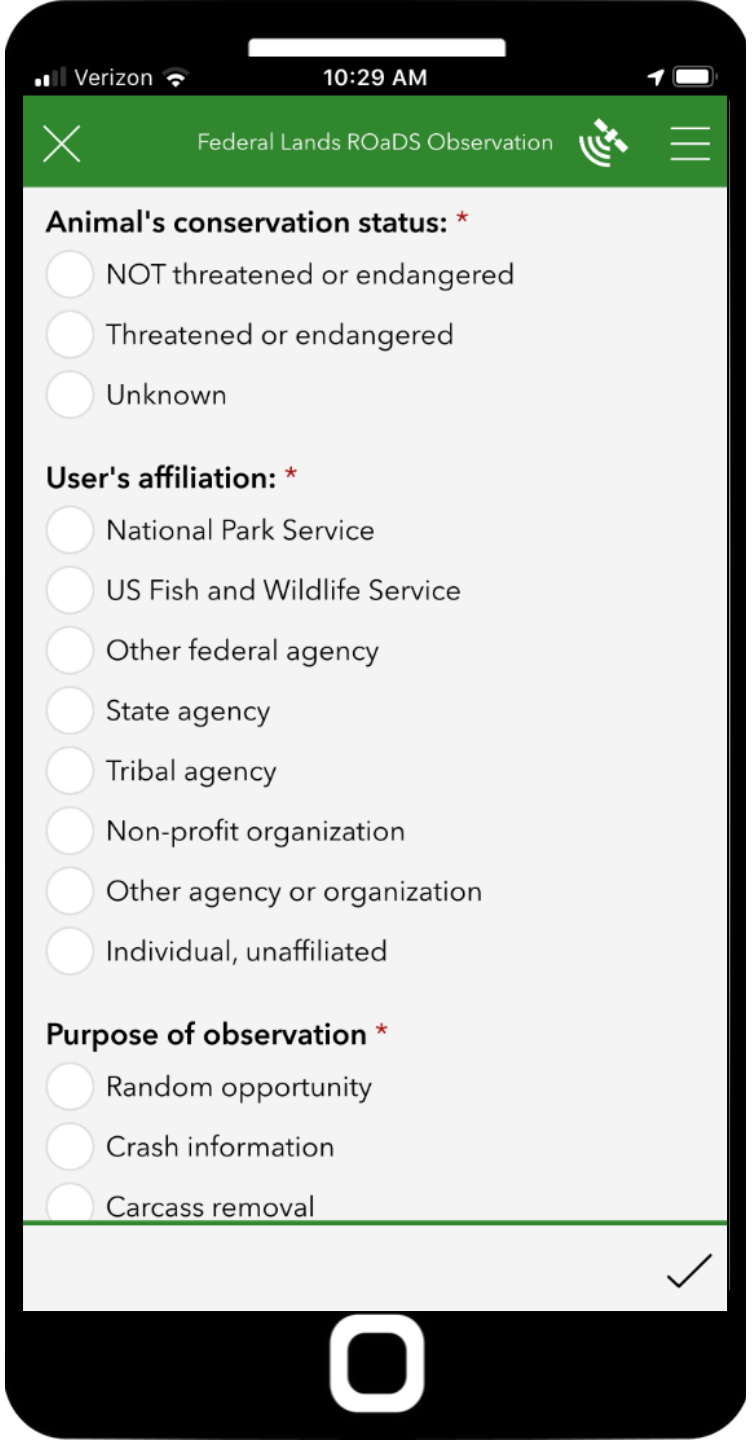
Animal’s status



DATA FIELD

8

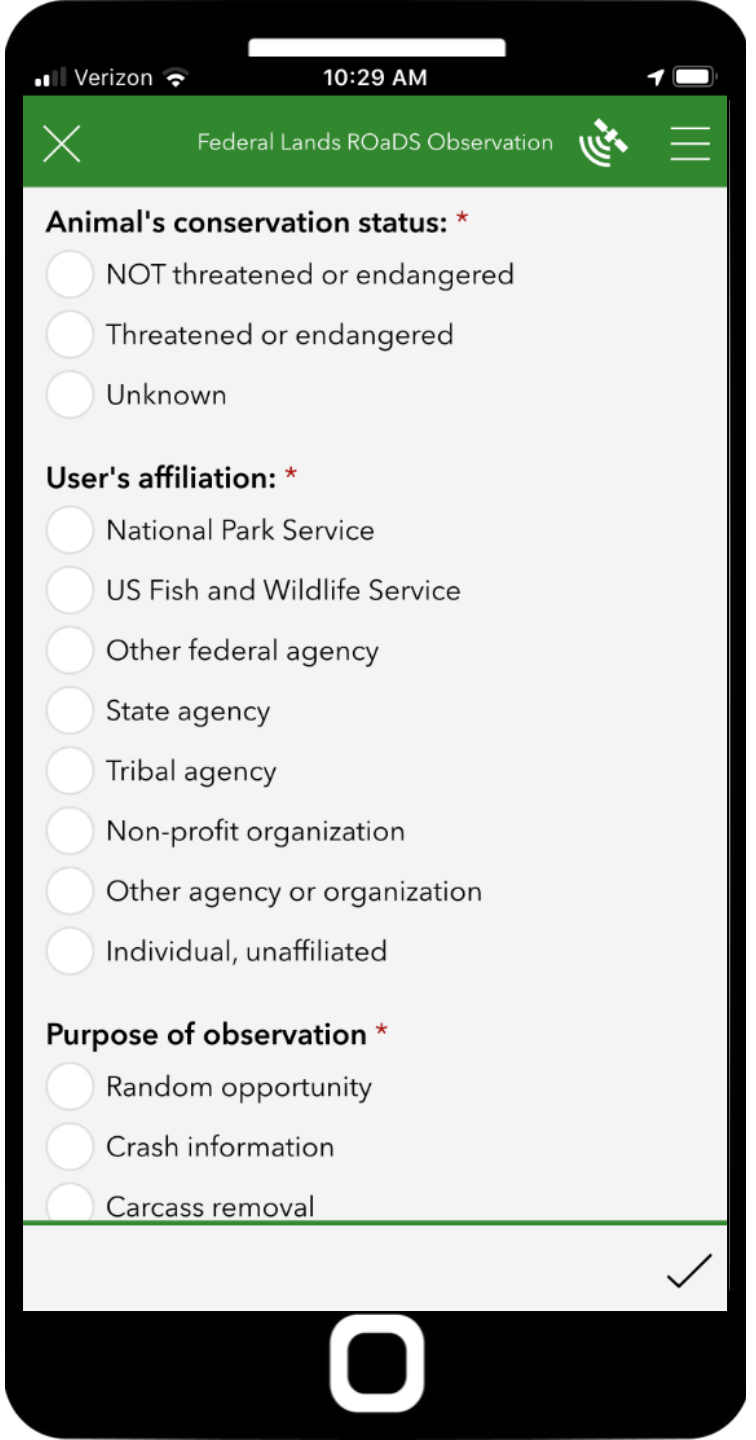
Animal’s conservation status



DATA FIELD

9

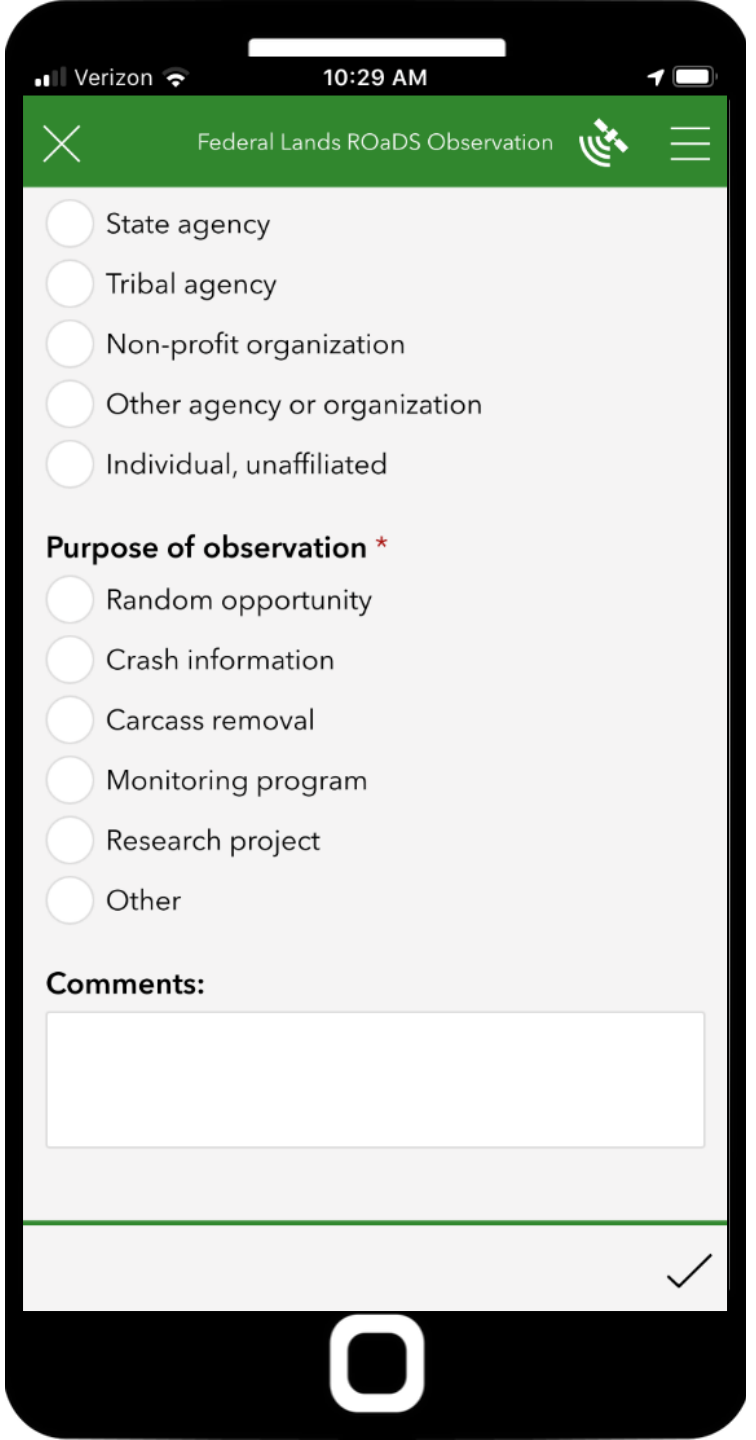
User’s affiliation



DATA FIELD

10

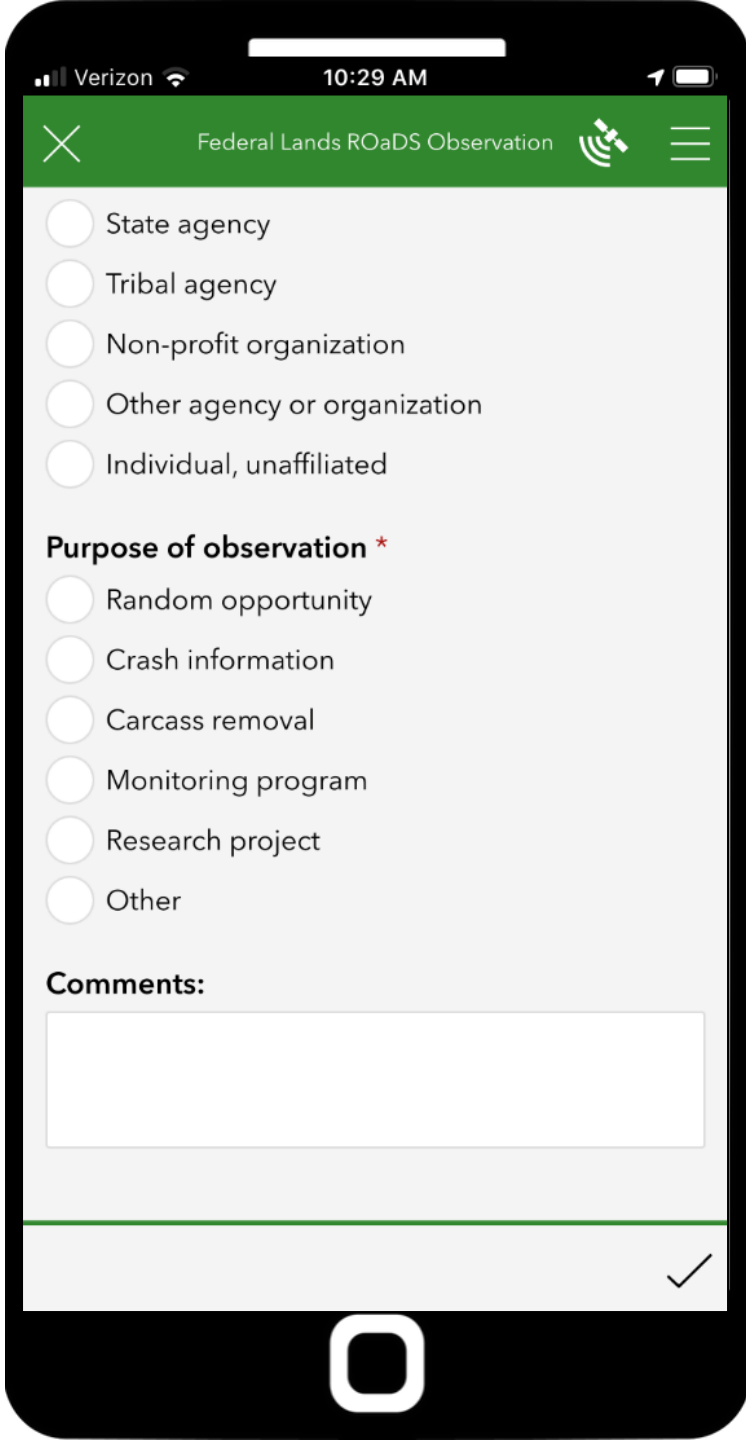
Purpose of observation



DATA FIELD

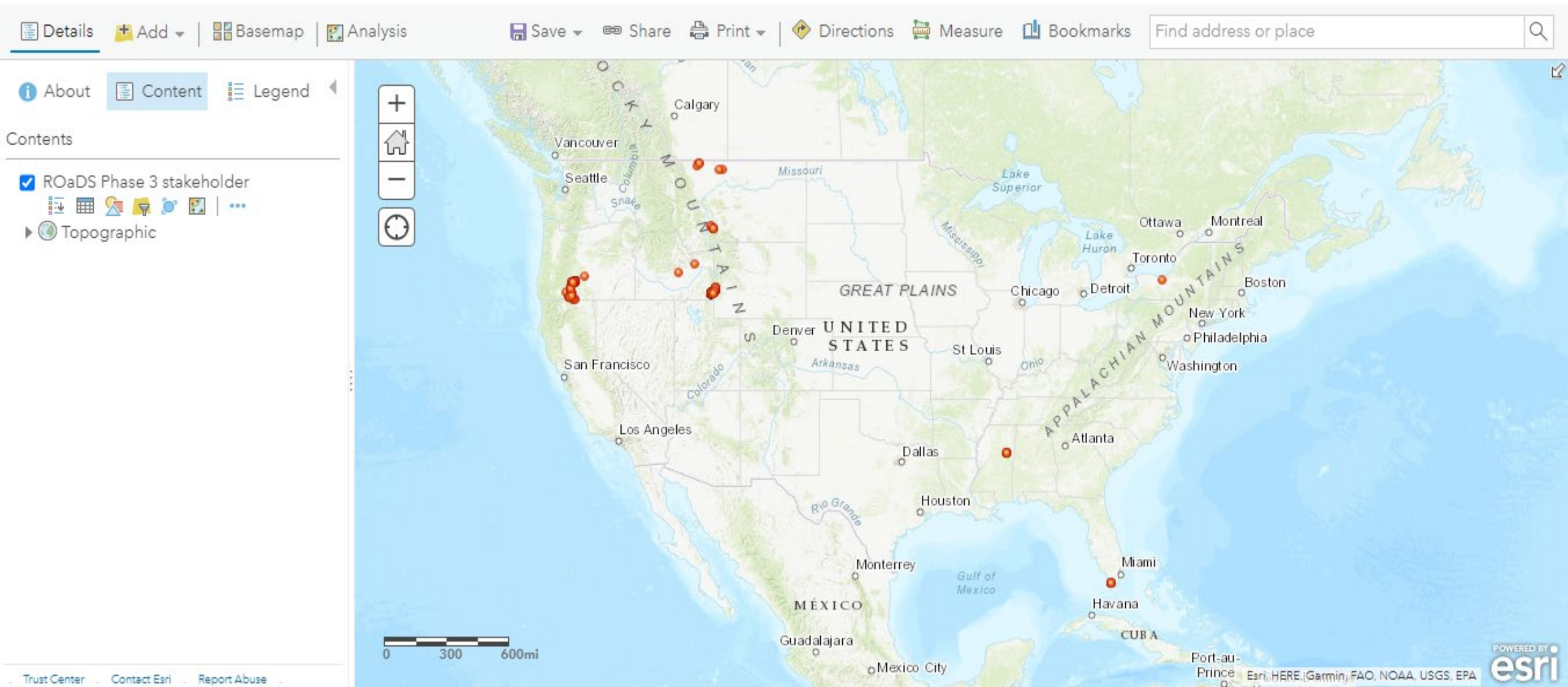
11

Comments

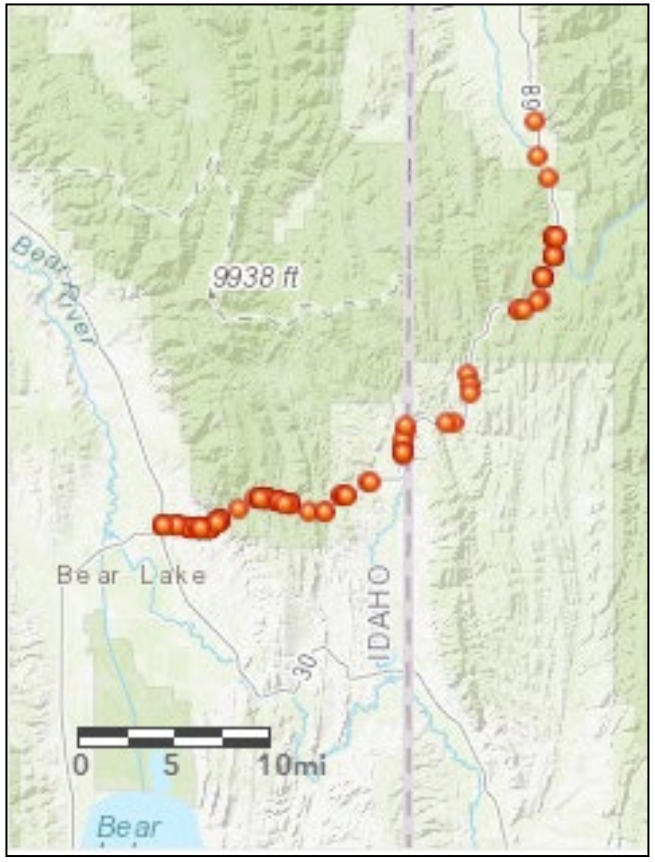


View Collected Data on ArcGIS Online

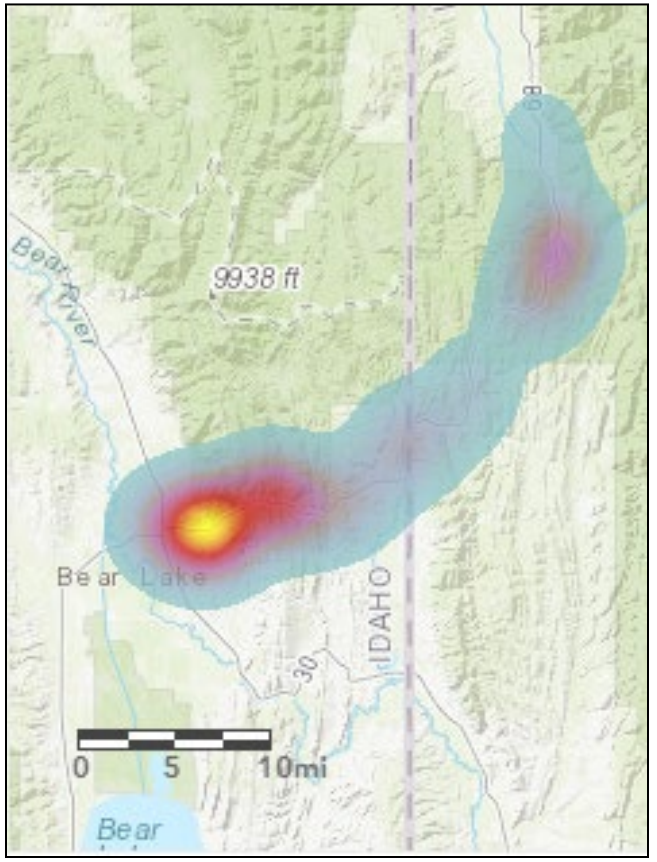
ArcGIS Map Viewer



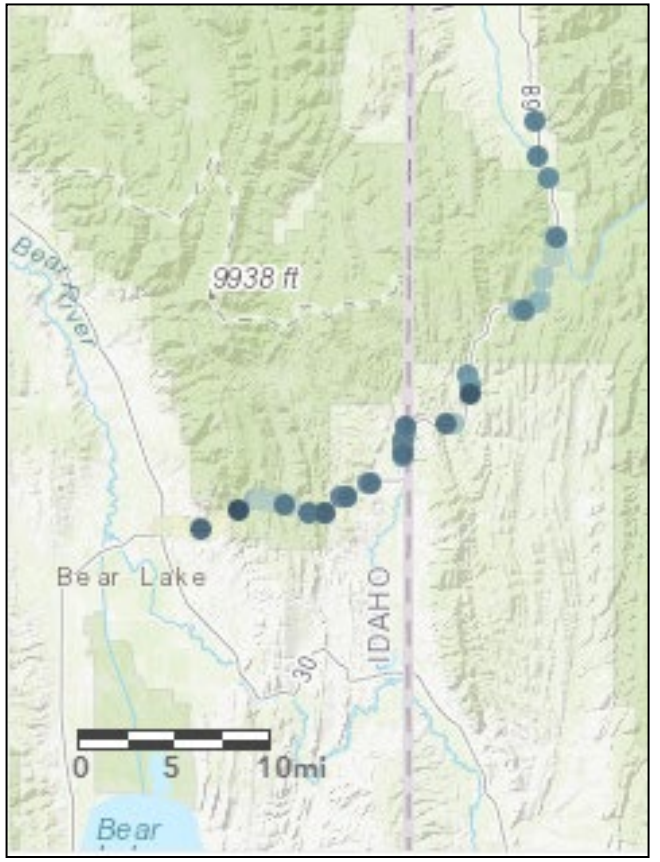
Map Features: Change Styles



Normal

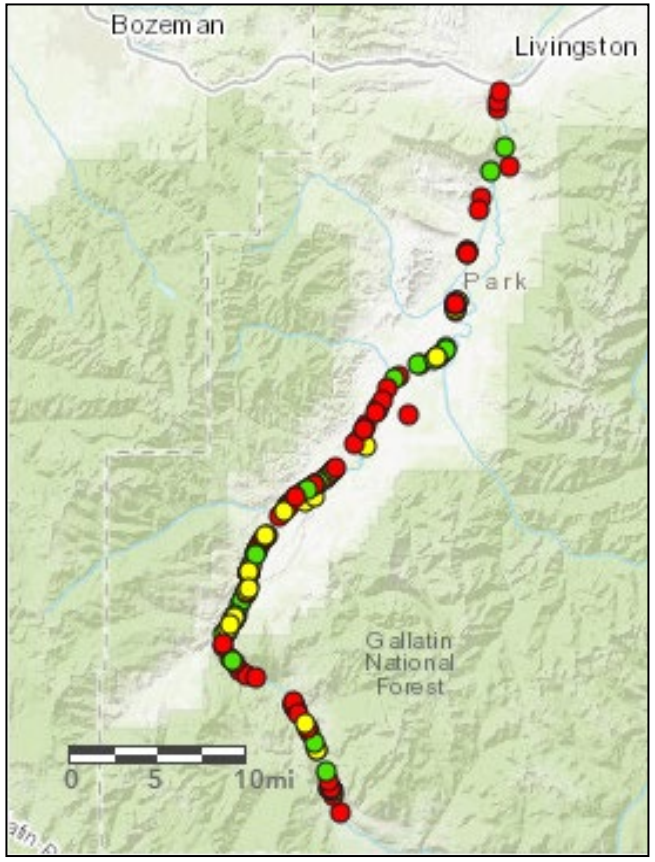


Density

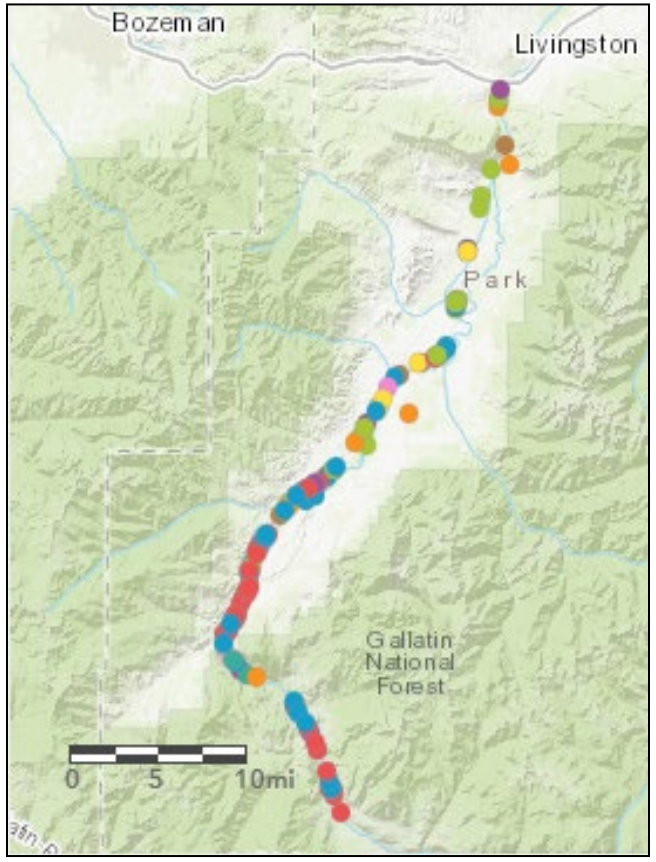


Temporal

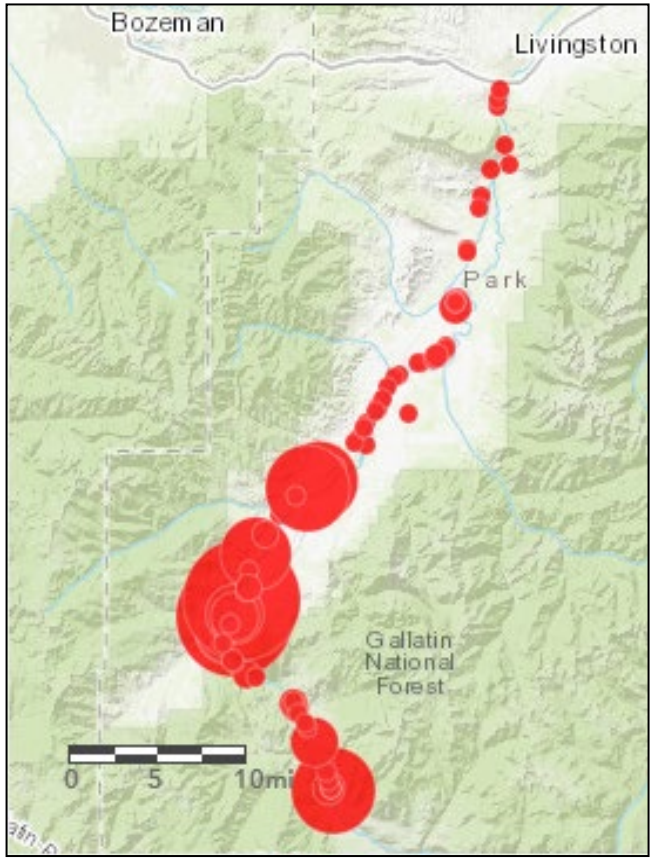
Map Features: Change Styles



Animal status



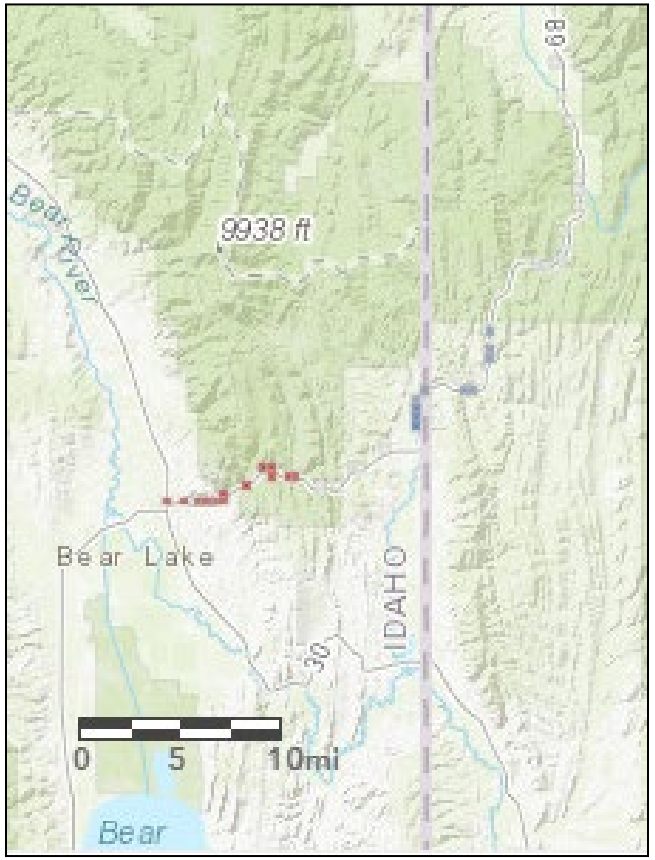
Species



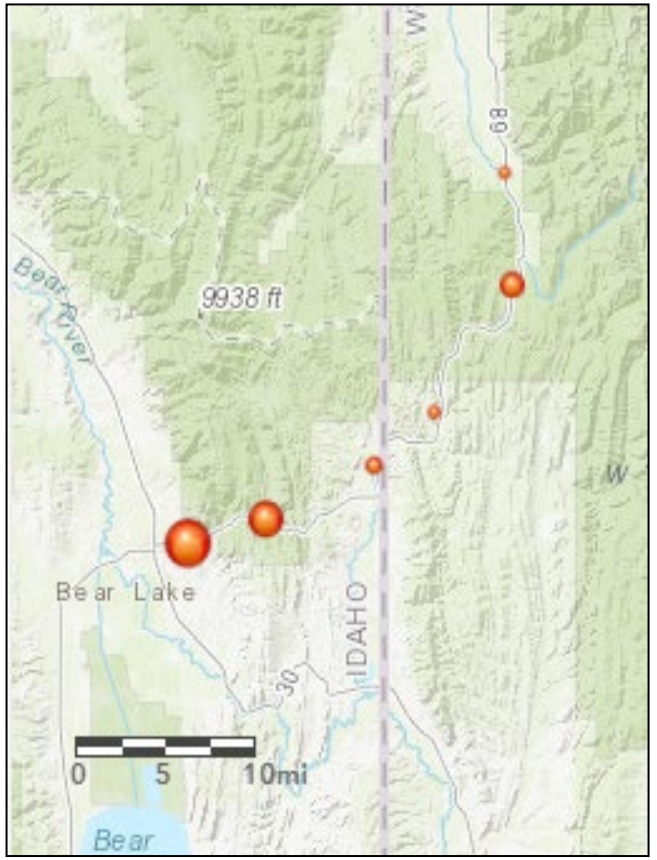
# of animals observed

Additional Map Features

Basemap and layers



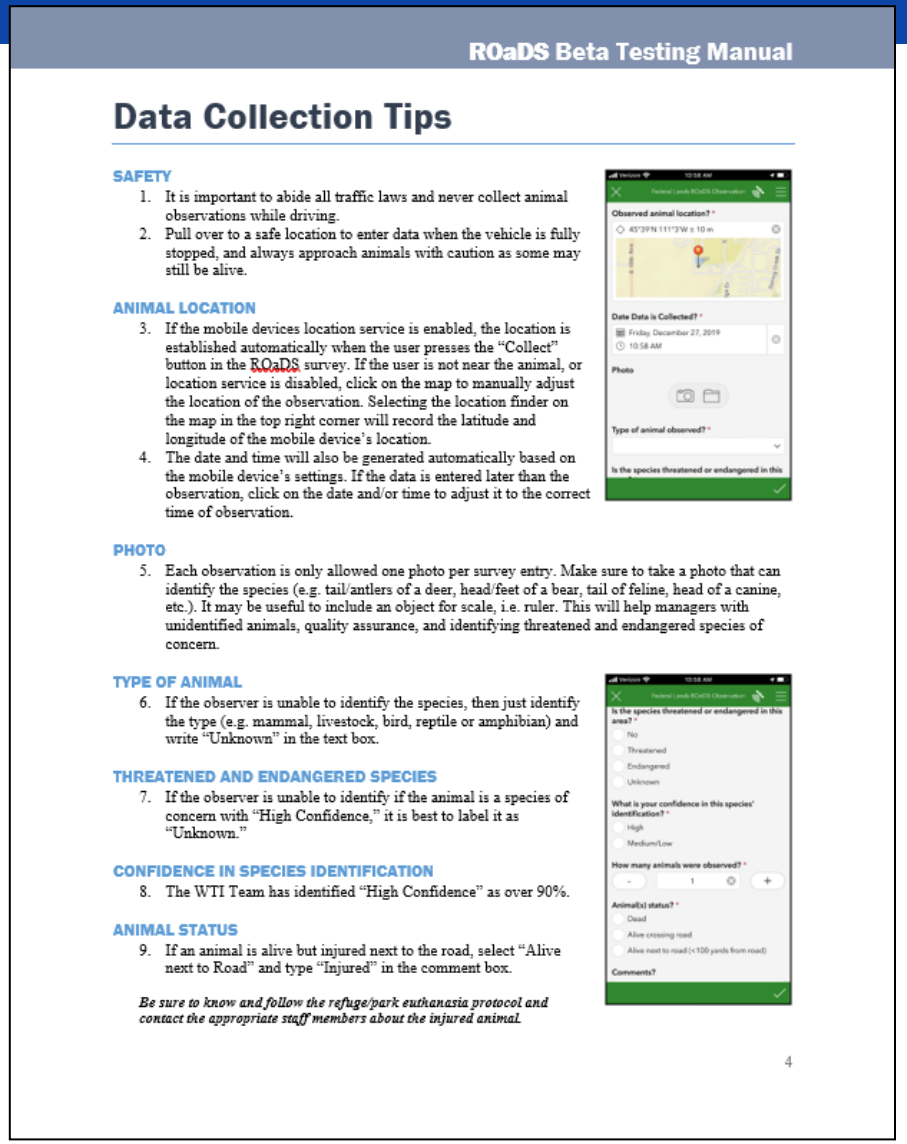
Spatial analyses



Cluster

SUPPORT: ROaDS Phase 3 User's Manual

- Show how to create groups and edit the survey
- Support ROaDS installation and use on mobile devices
- Demonstrate simple data analyses and reporting functions



ROaDS Beta Testing Manual

Data Collection Tips

SAFETY

1. It is important to abide all traffic laws and never collect animal observations while driving.
2. Pull over to a safe location to enter data when the vehicle is fully stopped, and always approach animals with caution as some may still be alive.

ANIMAL LOCATION

3. If the mobile devices location service is enabled, the location is established automatically when the user presses the "Collect" button in the ROaDS survey. If the user is not near the animal, or location service is disabled, click on the map to manually adjust the location of the observation. Selecting the location finder on the map in the top right corner will record the latitude and longitude of the mobile device's location.
4. The date and time will also be generated automatically based on the mobile device's settings. If the data is entered later than the observation, click on the date and/or time to adjust it to the correct time of observation.

PHOTO

5. Each observation is only allowed one photo per survey entry. Make sure to take a photo that can identify the species (e.g. tail/antlers of a deer, head/feet of a bear, tail of feline, head of a canine, etc.). It may be useful to include an object for scale, i.e. ruler. This will help managers with unidentified animals, quality assurance, and identifying threatened and endangered species of concern.

TYPE OF ANIMAL

6. If the observer is unable to identify the species, then just identify the type (e.g. mammal, livestock, bird, reptile or amphibian) and write "Unknown" in the text box.

THREATENED AND ENDANGERED SPECIES

7. If the observer is unable to identify if the animal is a species of concern with "High Confidence," it is best to label it as "Unknown."

CONFIDENCE IN SPECIES IDENTIFICATION

8. The WTI Team has identified "High Confidence" as over 90%.

ANIMAL STATUS

9. If an animal is alive but injured next to the road, select "Alive next to Road" and type "Injured" in the comment box.

Be sure to know and follow the refuge/park euthanasia protocol and contact the appropriate staff members about the injured animal.

4

Directing Your Questions via the Chat Pod

1. Chat pod is on left side of screen between attendees pod & closed caption pod

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2. Type your question or comment here

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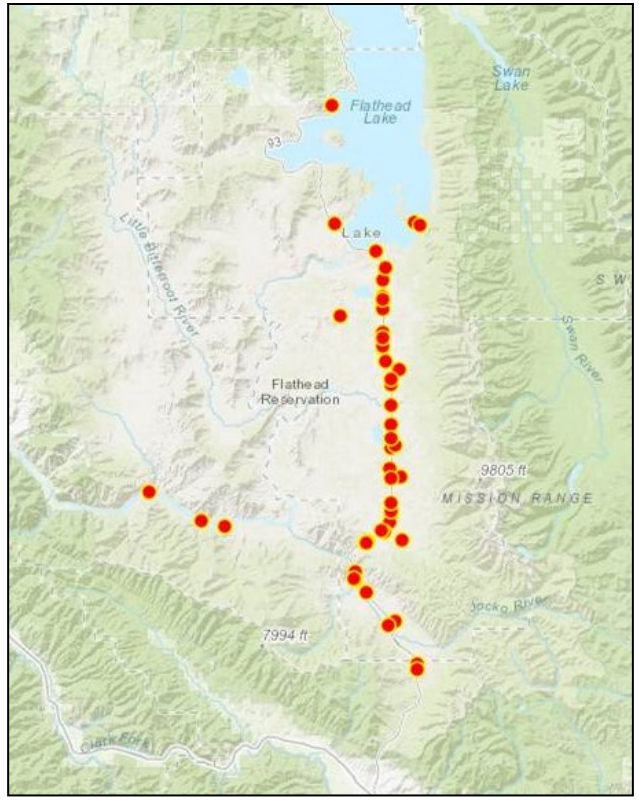
Parallel use of ROaDS and National Standards

FWS-NPS PARTNERS

CONFEDERATED SALISH & KOOTENAI TRIBES
UPPER YELLOWSTONE VALLEY NGOS (US HWY 89)
GALLATIN VALLEY NGOS (US HWY 191)
NEVADA NGO: DESERT TORTOISE “ROAD WARRIORS”

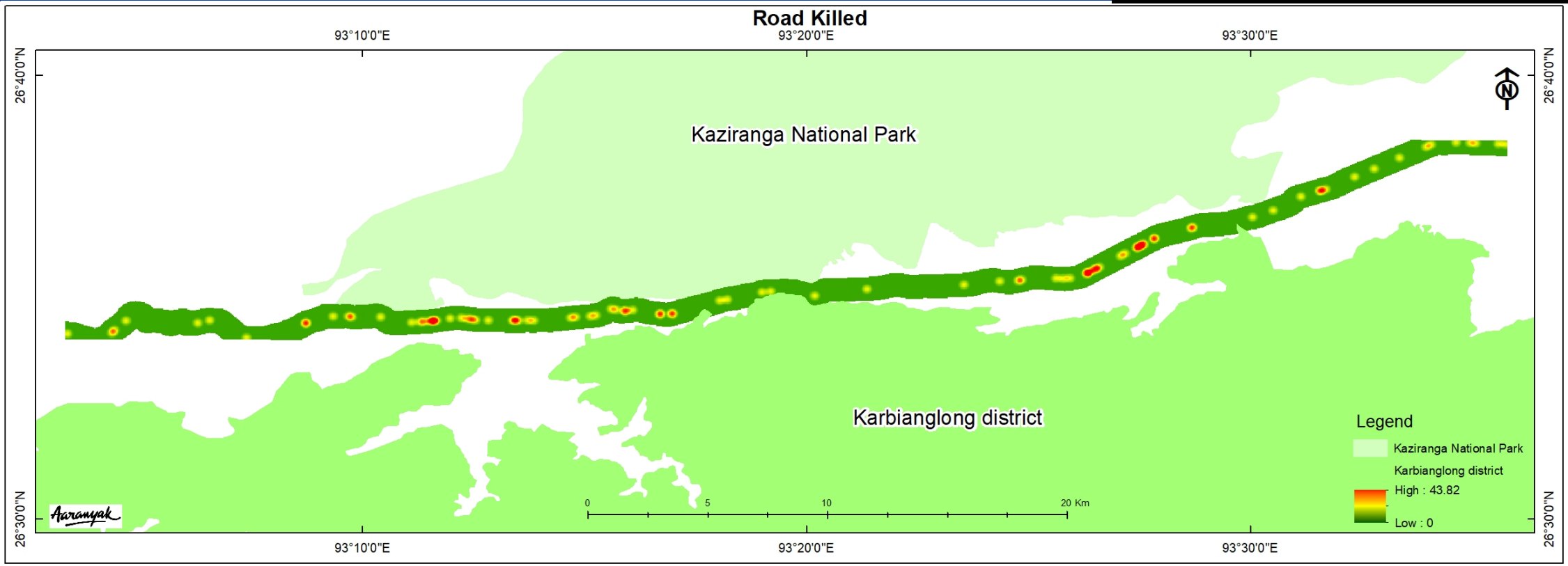


Species	Number	Fate
Bald Eagle	1	Dead
Black Bear	6	Dead
Coyote	1	Dead
Grizzly bear	2	1 dead/1 alive
Great horned owl	3	Dead
Mule Deer	5	dead
Other Mammal-bobcat	1	dead
Unknown deer	1	dead
White tailed deer	65	dead

FWS-NPS PARTNERS

AARANYAK (NGO): ASSAM, INDIA (NH 37)

ROaDS India



FWS-NPS PARTNERS

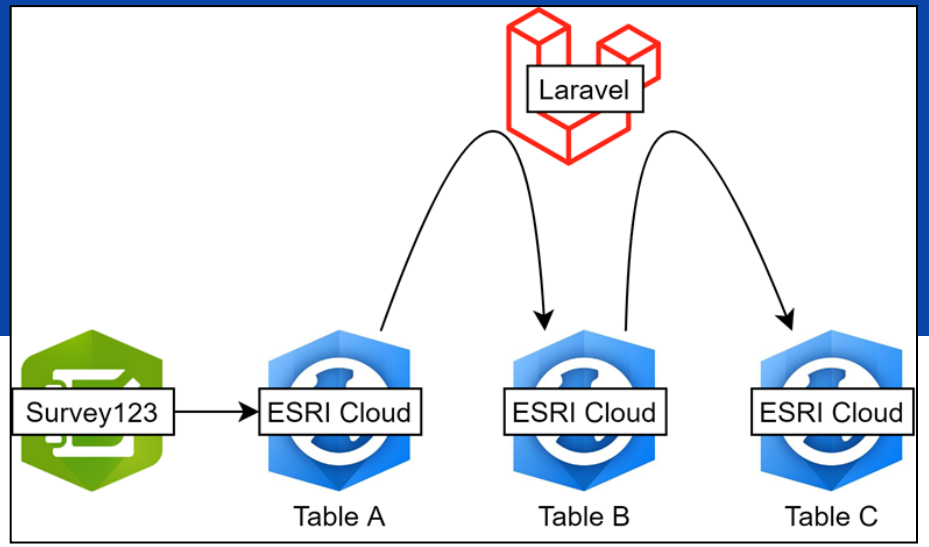
CO-DEVELOPMENT OF NATIONAL WVC DATA STANDARDS

A pathway to collect the same or similar data on different platforms.

14 different organizations planned and presented in the 2021 TRB workshop with
120+ Participants

From Research to Implementation

Next steps



Move ROaDS from MSU server to a DOI platform that is secure and will host ROaDS for its long-term use

Provide IT support, update User's Manual and provide training and user support for DOI employees

…Continue with FWS and NPS partners to co-develop national AVC standards

ROaDS was developed by the Western Transportation Institute – Montana State University in collaboration with the United States Fish and Wildlife Service and National Park Service.

Directing Your Questions via the Chat Pod

1. Chat pod is on left side of screen between attendees pod & closed caption pod

3. Answers will appear here unless addressed verbally

2. Type your question or comment here

Learning Outcomes

To achieve the webinar goal, you will learn to:

- Characterize the need for a DOI-wide AVC data collection system.
- Describe the 3 phases of the project.
- Identify how simple it is to use the ROaDS survey on a mobile device and the information that is gathered.
- Demonstrate how the data collected through the ROaDS system can be analyzed and presented in reports.
- Discover ways to get involved in efforts to co-develop national AVC data collection standards.

Upcoming 2021 Webinars

- Safe System for Rural Areas Webinar Series

Archived Webinars

Access the webinar archives

Contact Information

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