



# **Roadkill Observation and Data System (ROaDS)**

Installing the ROaDS Survey on an ArcGIS Online Account



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## Important Key Terms

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**Application (App):** refers to the Survey123 for ArcGIS software program owned by Environmental Systems Research Institute (ESRI). The App can be designed and written to fulfill a particular purpose of the user.

**Survey:** a programmed questionnaire (ROaDS) that fulfills this project's purpose, which is primarily to identify wildlife-vehicle collisions.

**WVC:** wildlife-vehicle collision

## Purpose and Usage of this Manual

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This manual explains how to create a ROaDS user group on the ArcGIS website and how to customize a ROaDS survey on an agency's or organization's personal ERSI account for your ROaDS user group. Agencies can use these functions to:

- Personalize group access to the ROaDS survey,
- Create a customized species list for your park/refuge's regional survey needs, and
- Add questions to a survey.

This manual is primarily intended for agency staff members who are implementing and managing the use of ROaDS surveys for the collection of wildlife data. A complimentary User's Guide is also available for field data collectors, and an Analysis Manual is also available to guide system managers.

## What is the ROaDS survey?

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The National Park Service and US Fish and Wildlife Service have partnered with the Western Transportation Institute at Montana State University (WTI) to develop a wildlife-vehicle collision (WVC) data collection system for federal land management agencies (FLMAs) and their partners. Called the Roadkill Observation and Data System (ROaDS), it is designed to facilitate several key data collection needs:

- collect information (date, time, location, species) on large animal-vehicle crashes to address motorist safety concerns on FLMA roads,
- collect carcass data of medium- and smaller-sized animals relevant to FLMA's conservation missions, and
- identify existing highway sites where animals are being hit/killed by vehicles as well as where animals may be safely crossing by tracking live animals observed near or on/crossing a road.

Unlike a crowd-sourcing application, ROaDS is a user-friendly tool to accurately collect, manage, and evaluate data specific to the needs of NPS and FWS. The agencies can use the ROaDS data collected to identify road segments where countermeasures or other actions may be used to reduce WVCs and maintain safe wildlife movement across the road.

## User Types and Data Flow

### Types of Users for ROaDS

The ROaDS survey has been developed on the Survey123 App, part of ESRI's ArcGIS platform. Prior to creating or using a survey, it is important to understand user types and roles within ArcGIS and within the ROaDS survey itself.

**ArcGIS.** All users must have access to an ArcGIS account with the proper credentials to create a new survey for a national park, national wildlife refuge, non-government organization (NGO), or other associated agencies and organizations. ArcGIS Online account users are assigned different roles, including viewer, user, editor, publisher, or administrator. Only users, publishers, and administrators can create new groups and/or content on ArcGIS Online. For further information:

- A full description of the different roles within ArcGIS Online can be found at <https://doc.arcgis.com/en/arcgis-online/reference/roles.htm>.
- Users can look up their assigned role on their profile page at [www.arcgis.com](http://www.arcgis.com).

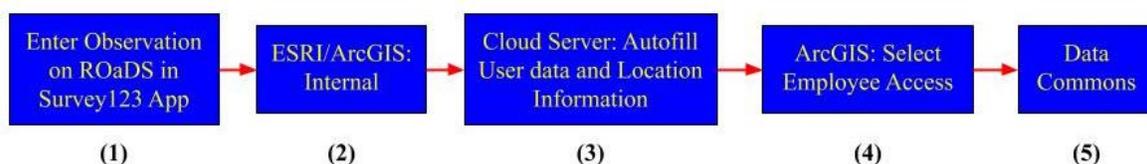
**ROaDS Survey.** The ArcGIS roles previously described are used to establish what access a user has within the ROaDS survey. There are three important types of users: owners, managers, and collectors.

- **Owners:** The owner is the individual who creates the Group and Content on arcgis.com. They must have the ArcGIS role of Administrator or Publisher. There can only be one owner per group. The owner of the survey is the only person who can make changes to the survey questions. This person also sets the rules for the group members which, in part, determines who can access and view the data that is collected by everyone. The collected data is stored in the ESRI cloud and can be viewed via the ArcGIS Map Viewer by those managers and collectors permitted by the owner of the survey.
- **Managers:** They are assigned by the owner of the group and are given privileges to edit group details and data point observations that have been collected using ROaDS. Managers within the Group can have the ArcGIS role of Administrator, Publisher, User, or Data Editor. Owners and managers are responsible for the quality control of the data that is collected within their management units.
- **Collectors:** Collectors should have the ArcGIS role of User if their account is only for collecting data. This will limit their ability to edit and download data from the ArcGIS website. They are able to collect data, but they are only allowed to view the data in ArcGIS Map Viewer if they are given access to it.

If you have questions about user types or roles within the ROaDS Survey, contact the ROaDS project manager at your agency (see Contact List on last page).

### Flow of Data through ROaDS

The following schematic shows how data collected by the ROaDS survey flows through the data server.



1. Data is collected on a mobile device using the ROaDS survey on the Survey123 App.
2. Uploaded observations are sent to an internal ESRI cloud server.
3. Observations are then automatically sent to an external cloud server where user data and location information are further processed to create additional information about the observations (i.e., the state the observation is located in, the National Park or national wildlife refuge the observation is located in).
4. After post-collection processing, the data is then sent back to the owner's ESRI cloud server. Employees with access (i.e., managers, as permitted by the Group owner) can view the data on the ArcGIS Map Viewer. At this point, managers can filter the data to select which information is viewable by employees and/or the public (e.g., managers can restrict access to information about threatened and endangered species).
5. Data that is viewable by all employees and/or the public is posted to the map on ArcGIS Online.

## Creating a ROaDS Group and Survey

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The Owner who creates the group is the only one who will have the ability to adapt and customize data fields and questions in the ROaDS survey standardized template (such as adding a species to the drop-down list). It is not necessary to create a new group if there is already a group established within the agency that has the associated users (see Add a New Survey to a Group).

### Create a ROaDS Group

There are a number of different reasons to create groups and is based off the acting agency needs. One organization can create multiple groups for different departments, or an NGO can start a single group for all its members.

1. Go to [arcgis.com](https://arcgis.com) and login.
2. Click on “Groups” at the top of the page.
3. Click on the  button near the upper-left corner of the page.
4. Fill out Group Details to fit agency's or organization's needs and security requirements.
  - a. Group Name: Members will need the Group Name to request to join the group to collect observations.
  - b. Summary: short explanation of the group's purpose and data collection methods (e.g., if collecting data opportunistically, or systematically only collecting data on specific stretches of road, or if focused on certain species, or if only collecting carcasses that may be removed from the roads) to ensure accurate interpretation of data, when analyzed for patterns and hot-spots.
  - c. Tags: key words so others can find the group if needed (examples: WVC, data collection, road safety, etc).
  - d. Who can view this group: this defines which group members can see content and observations collected by the group.
  - e. Who can join this group: this sets restrictions on how people join the group. It is best to select “Only those invited by group manager,” so only the group manager can select which employees or volunteers can collect data.

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- f. Who can contribute content to this group: this should be set to “Group members.” Note that managers can restrict access to view the data if necessary.
    - g. Select “Create Group.”
  5. Group members can now be added to the group so they can collect data.

## Customizing ROaDS Survey

To add and edit a ROaDS survey, owners of the group need to download Survey123 Connect at: <http://doc.arcgis.com/en/survey123/download/#>

Owners will need a copy of the survey template, which should have been received in advance by the host agency (currently WTI).



1. Open Survey123. Connect and login using your ArcGIS account information using the menu in the top, right corner of the application
2. Click “New Survey.” Note: you will not be creating a new survey starting from scratch but will be able to modify and customize the survey template to meet your specific research or monitoring needs.
3. On the left side, click on the “File” button, and browse for the ROaDS template saved on your computer and then select “Create.”
  - a. Edits can be made to the survey at this time, or the .xlsx file can be closed and edited later. More information about the coding needed for making edits to the survey can be found at: <https://doc.arcgis.com/en/survey123/desktop/create-surveys/xlsformessentials.htm>
  - b. The data fields in the ROaDS survey template include a streamlined, standardized set of variables that will enable basic local assessments, as well as regional and national compilations of ROaDS data that inform performance measures indicating how effectively agencies are meeting goals to reduce wildlife-vehicle collisions on federal lands roads, where such data are collected. Adapting species lists and adding new fields to the survey form template may be needed to address diverse regional differences or more in-depth research/monitoring questions, but managers and owners are strongly encouraged to maintain the core variables as presented in the template whenever possible.
4. Select “Form Preview” to view what the ROaDS survey will look like on the Survey 123 App when collecting data.
5. Click on “Settings” at the top of the Survey123 Connect page.
  - a. Add a thumbnail image to identify the survey visually. The ROaDS logo should have been provided with the survey template.
  - b. Enter a title, summary, and description for the survey. Please include details about methods that are key to the underlying assumptions that need to be considered when analyzing and interpreting patterns in the ROaDS WVC data (e.g., if opportunistic data collection or systematic monitoring, if focused on particular sections of roads but not others, if focused on particular species, or if being used to document maintenance carcass

removals only, or if law enforcement may be documenting locations of reported WVCs only)

6. Click the “Publish” button on the left side of the screen. Click “Okay” to publish survey; edits can still be made later.
7. Select the back arrow  to go back to the main page. The new survey should now be visible.

## Add a ROaDS Survey to a Group

1. Go to [arcgis.com](https://arcgis.com) and login.
2. Click on “Groups” at the top of the page and select the group to which the new survey will be added.
3. Click on the “Content” button at the top-right of the screen in the blue bar.
4. Click the  button to add content to this group.
  - a. Add the Web Map and Form content with the name created for the ROaDS survey and exit out of the screen.
5. The survey and map will now be viewable in the group.

## Contact List

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