



Malheur National Wildlife Refuge Fence Mapping Project

Thank you for volunteering your time with FOMR and ONDA to help the Malheur National Wildlife Refuge with important monitoring work! Below you will find directions for the project.

Background

The Malheur National Wildlife Refuge was established in 1908 to protect the area's unique habitat, especially critical to migratory birds. Over 320 bird species and 60 mammal species are known to use the area seasonally or year round, and the 187,000 acres that comprise the Refuge provide incredibly valuable riparian and upland habitat.

Malheur National Wildlife Refuge lacks a current and accurate location and condition assessment of the boundary fence and signage. Boundary fence is important to make sure cattle are excluded from sensitive habitat and to inform visitors when they are entering refuge lands. This mapping effort will ensure the Refuge's records are up to date and will identify areas in need of repair or modification, such as retrofitting fence to make it wildlife friendly for migrating mammals. Having an accurate map of functional and obsolete fence locations will help also help plan for future fence pull projects.

This fence mapping project is a partnership between the Malheur National Wildlife Refuge, Friends of Malheur Refuge and Oregon Natural Desert Association.

The purpose of this project is to collect a complete set of point and line spatial features of fence and sign location, as well as details about fence and sign condition. You will hike along a section of fence line documenting fence location and characteristics using an app on a provided tablet. You'll document anytime the fence characteristics change as well as any boundary signs. You may be able to drive along some sections of fence.

Preparing for your trip

Plan ahead. The mapping can happen any time after August 1, so look at your calendar and set some time aside now. Fall is a nice time to be on the Refuge with cooler temperatures and fewer bugs! If you are going with a friend, coordinate your schedules. Look at the maps and figure out your camping options. Contact Janelle if you want to camp on the Refuge.

Attend the training and review the project materials. The virtual training will be on July 15 at 9am. A Zoom link will be sent out the week before the training. If you cannot attend, we will post the recording. We've put

all the project details on a project page: <https://onda.org/malheur-refuge-fence-mapping/> Password: refugefences

Download and/or print maps and materials (optional). The ipads will have the survey form and navigation information already loaded on them, and you'll pick a project binder with printed instructions, maps, and more. If you want to download or print any material for your personal use, feel free. See the ***Materials you will need*** tab on the project page

Picking up materials

You will need to go to the Crane's Nest Nature Store at the Refuge headquarters to pick up the project supplies. The Refuge headquarters are located on Sodhouse Lane, 35 miles south of Burns, about 2 hours, 45 minutes from Bend.

From Burns: Continue straight onto OR 78 East at the last stop light in town. In 1.7 miles, turn right onto OR 205 South. Continue for 24 miles on 205 and turn left onto the Narrows-Princeton Road at the RV park/cafe. Continue for 6 miles, the road turns into Sodhouse Lane, and take a left into the Refuge headquarters. Continue down the hill and park in the lot. Walk east past the Visitor's Center and turn north to reach the Nature Store (see the photo below). The store is open from 8am to 4pm, seven days a week.



You will pick up the following materials at the Crane's Nest Nature Store at Refuge headquarters

- iPad mini tablet to navigate to fence sections and record conditions. This will have the Survey123 app and GaiaGPS already on it, with the form and layers downloaded for offline use.
- Fence mapping instruction binder
- Tape measure

Please make sure to sign the volunteer service agreement. If you are making multiple trips, you only need to sign it once.

In the field

Drive to the beginning of your fence section, or as close as you can get and hike the rest of the way.

You will complete the Survey123 form at the start of each fence section. Then you will hike along the fence, completing the form again when there is a change in direction, change in fence condition/fence type/wire numbers/wildlife friendly or not), a structure (crib, bracing, or gate) is present, if you encounter an intersecting fence, pretty much ANY change.

Not all features will be present at every data point you record, the following section outlines the survey questions and when and how to answer them.

When you get to the section of fence you are mapping, open the Survey123 app. Click *Sign in with ArcGIS Online*. Use the saved login information to log in. Select the **Malheur NWR Fence Mapping** form. Click the **Collect** button at the bottom of the screen.

- Your Name - Please enter your first and last name, your responses will be cached on your device after the first time. *Enter every time.*
- Which group are you with? Select if you are with Friends of Malheur Refuge (FOMR) or Oregon Natural Desert Association (ONDA) *Enter every time.*
- Date and Time - these fields will autofill, please don't change them. *Enter every time.*
- Location – this field will autofill, please don't change the location. *Enter every time.*
- Take a picture - please take a picture of the fence at this point, try to show a post and the wires and any other feature you want to capture (like a strange situation, a rock crib, etc). *Take a picture every time.*
- Post material – fence posts will be either steel, wood. *Enter every time.*
- Post condition - the condition of the fence. *Enter every time.*
 - Good – Posts are standing and in good condition.
 - Repair– Posts need to be repaired, reset if they are leaning.
 - Replace – Posts are missing or damaged beyond repair and need to be replaced.
- Post spacing – Measure the number of feet between fence posts with the tape measure and enter the number. *Enter every time.*
- Number of wires- enter the number of fence wires. It will probably be between 3-5. *Enter every time.*
- Wire condition - the condition of the wire. *Enter every time.*
 - Good – wire is taut, attached to posts, and intact.
 - Repair– wire needs to be reattached to posts, or has broken and needs a splice or repair.
 - Replace – Wire cannot be repaired and needs replacement.
- Is the fence wildlife friendly? Use the measuring tape to check for the distances of the wires from the ground, check if the bottom wire is smooth (not barbed) wire. You can check multiple answers. *Enter every time.*
- H Brace Material – Choose rock, steel pipe, or wood. *Only enter if a feature is present*
- H Brace condition - the condition of the h brace. *Only enter if a feature is present*
 - Good – functional h brace
 - Repair– wire needs to be reattached to posts or another repair needed
 - Replace – h brace is not functional and needs to be replaced

- Gate Material – Choose wire, steel, or wood. *Only enter if a feature is present*
- Gate condition - the condition of the gate. *Only enter if a feature is present*
 - Good – functional gate
 - Repair– wire needs to be reattached to posts, post needs to be reset or another repair needed
 - Replace – gate is not functional and needs to be replaced
- Cattle Guard condition - the condition of the cattle guard. *Only enter if a feature is present*
 - Good – functional cattle guard
 - Repair– repair is needed for cattle guard to function properly
 - Replace – cattle guard is not functional and needs to be replaced
- Fence debris – if you come across fence debris like loose wire, old fences posts, please make a note. You can choose multiple answers. *Only enter if a feature is present*
- Boundary sign condition - Choose the condition of the boundary *Only enter if a feature is present*
 - Good – sign is legible and functional
 - Replace – sign is faded, bent or otherwise non functional
- Fence intersection – if another fence connects with the fence you are monitoring, select Yes. *Only enter if a feature is present*
- Other notes - *Only enter if you have something to add.*

When you complete all the relevant fields and are ready to submit the form click the checkmark in the lower right corner. Click **Save in Outbox**. This will save the completed form for you to submit when you get back to Refuge headquarters and connect to wifi.

Continue hiking until the fence characteristics – condition, materials, number of wires change or you come across a feature – h brace, gate, cattle guard, boundary sign, fence debris or intersecting fence. When you get to the next point to take a photo, you will click the **Collect** button again to start a new form.

When you get back

Data Upload

When you get back to Refuge Headquarters and connect the iPad to wifi internet, open the Survey123 app and select the Malheur NWR Fence Mapping survey form. Click Outbox.

Click on the Send button in the bottom righthand corner. A window will pop up with a progress bar on the bottom, a cloud icon on the top and some text in the middle. It will take a while to upload the data as there is a picture associated with every point. The popup box will close and the Malheur NWR Fence Mapping form screen will show a Sent field below Collect, instead of Outbox.

ONDA Volunteer Reporting

If you're an ONDA volunteer, please refer to the **Reporting and data upload** tab on the project page and use the link to access our reporting form. This will help us track your contributions to the project and you'll be entered in our monthly raffle for some ONDA swag!

Monitoring Activities Must Conform to the Non-Impairment Standard

Monitoring activities need to meet the non-impairment standard. Thus, your use of vehicles or motorized travel for monitoring purposes must follow the same rules that the general public is required to follow. In other words, please do not drive off of any established routes and be sure to follow the guidelines from the land management agency you are working in regarding vehicle access and parking or trailhead locations.

Adjust the timing of your visit to avoid negative impacts to resources. These include:

- Avoid using primitive routes when they are wet and driving would cause rutting.
- If you are taking monitoring photos of roads or routes, take the photo of a road BEFORE you drive on it.
- If driving is difficult (very rocky road, rutted, wet, etc.) and/or will impact the road in a negative way, please walk the road to do your monitoring. When in doubt, walk it out 😊
- Avoid driving on 2-track roads during fire season. If a two-track road has tall grasses that would brush the underside of your vehicle, please do not drive, instead walk the road. Tall dry grasses can easily ignite in the dry season. If you are monitoring during fire season you will need to carry a shovel, 5 gallons of water and a fire extinguisher; these items can help you put out a small fire should you encounter one during your monitoring. Please report all instances of fire you encounter while monitoring.

It is extremely important to avoid approaching other public land users under the pretense of enforcement or engage in any potentially controversial discussions. If you witness any potential illegal activity (e.g., people who are driving off-road in a WSA), avoid approaching the illegal use or engaging in potentially confrontational discussions. Your personal safety is your highest priority. Only attempt to collect identifying information (e.g., license plates and photos) if you feel it is safe to do so.

Should you have any notable interactions or conversations, please let us know.

Other important information to reference for your monitoring project

Practice Responsible Desert Travel: Leave No Trace

1. Plan Ahead and Prepare

- Know the regulations and special concerns for the area you'll visit.
- Prepare for extreme weather, hazards, and emergencies.
- Schedule your trip to avoid times of high use.
- Visit in small groups when possible. Consider splitting larger groups into smaller groups.
- Repackage food to minimize waste.
- Use a map and compass to eliminate the use of marking paint, rock cairns or flagging.

1. Travel and Camp on Durable Surfaces

- Durable surfaces include established trails and campsites, rock, gravel, dry grasses or snow.

- Protect riparian areas by camping at least 200 feet from lakes and streams.
- Good campsites are found, not made. Altering a site is not necessary.
- Keep campsites small. Focus activity in areas where vegetation is absent.
- In pristine areas:
 - i. Disperse use to prevent the creation of campsites and trails.
 - ii. Avoid places where impacts are just beginning.

2. Dispose of Waste Properly

- Pack it in, pack it out. Inspect your campsite and rest areas for trash or spilled foods. Pack out all trash, leftover food and litter.
- Deposit solid human waste in catholes dug 6 to 8 inches deep, at least 200 feet from water, camp and trails. Cover and disguise the cathole when finished.
- Pack out toilet paper and hygiene products.
- To wash yourself or your dishes, carry water 200 feet away from streams or lakes and use small amounts of biodegradable soap. Scatter strained dishwater.

3. Leave What You Find

- Preserve the past: examine, but do not touch cultural or historic structures and artifacts.
- Leave rocks, plants and other natural objects as you find them.
- Avoid introducing or transporting non-native species.
- Do not build structures, furniture, or dig trenches.

4. Minimize Campfire Impacts

- Campfires can cause lasting impacts to the backcountry. Use a lightweight stove for cooking and enjoy a candle lantern for light.
- Where fires are allowed, use established fire rings, fire pans, or mound fires.
- Keep fires small. Only use sticks from the ground that can be broken by hand.
- Burn all wood and coals to ash, put out campfires completely, then scatter cool ashes.

5. Respect Wildlife

- Observe wildlife from a distance. Do not follow or approach them.
- Never feed animals. Feeding wildlife damages their health, alters natural behaviors, and exposes them to predators and other dangers.
- Protect wildlife and your food by storing rations and trash securely.
- Control pets at all times, or leave them at home.
- Avoid wildlife during sensitive times: mating, nesting, raising young, or winter.

6. Be Considerate of Other Visitors

- Respect other visitors and protect the quality of their experience.
- Be courteous. Yield to other users on the trail.
- Step to the downhill side of the trail when encountering pack stock.
- Take breaks and camp away from trails and other visitors.
- Let nature's sounds prevail. Avoid loud voices and noises.

Practice Responsible Desert Travel: Desert Hiking Tips

- **Carry a sun umbrella.** There can be little to no shade in many areas around the high desert, so consider taking your shade along with you.
- **Carry tall gaiters.** Useful in cross-country sections with heavy vegetation; tall gaiters can also provide a peace of mind when traveling through tall grasses that may be hiding rattlesnakes.

- **Use a hiking pole or stick.** Rustle tall grasses as you hike to help alert any snakes or wildlife to your presence and give both of you a chance to move away from an encounter. Hiking poles are also useful when climbing or descending steep terrain.
- **Carry plenty of water.** Eastern Oregon is very arid, and you may need more water than you are used to in other environments. Be conservative and carry more than you need until you have a good handle on your body's needs in this environment.
- **Consume plenty of electrolytes.** Your body needs salts and sugars to help you absorb the water you are drinking. Drink mixes can be a good form of electrolytes, and can also help mask the flavor of the dirtier water sources in the desert.
- **Hike early or late.** Avoiding the heat of the day can help you make your miles; consider getting up early and hiking late. Mid-day can be a good time for a nice long siesta under your sun umbrella.
- **Use Verizon cell service.** Verizon has the best cell service throughout the high desert. The exception is in the Owyhee region where there is little to no service at all.
- **Consider a personal locator beacon.** Technology has advanced to the point that hikers can always seek assistance if needed with the use of personal locator beacons, such as the [Spot](#), and the [inReach Explorer](#). The benefit to a device like the inReach is the ability to communicate via satellite text messages even while in hard-to-reach places like the Owyhee canyon.
- **Avoid walking on Cryptobiotic soil crusts.** Several places in the high desert have Cryptobiotic soil crusts, like in the Lost Forest, and these soil types perform important ecological roles including carbon fixation, nitrogen fixation, soil stabilization, alter soil albedo and water relations, and affect germination and nutrient levels in vascular plants. Visually they look like black, knobby crusts on the soil or sand.
- **Don't follow footprints.** When hiking cross-country we want to minimize impacts of; if you see other footprints, don't follow them. Instead choose a similar bearing and walk a short distance away. Desert soils can be easily impacted, and it only takes a few hikers to start establishing tread in the desert.
- **Cross fences with caution.** You may encounter fences, and yes, fences are on public lands. Because many of the high desert landscapes are used for grazing and ranching, these fences keep the cattle where they belong. Cross these fences with care. If you encounter gates, leave them as you find them. Please respect the multiple other uses throughout in the desert.
- **Cover up.** Desert sun can be harsh on your skin, so consider covering up with lightweight long sleeves and pants for sun protection.
- **Prepare for hot days and cool nights.** Even on the hottest days in the desert, the temperatures can drop dramatically when the sun sets.
- **Avoid driving on wet roads.** Waterlogged desert soils can bog down a vehicle in inches or feet of mud and recent precipitation could make some roads impassable, even on flat terrain. Gravel roads can be a better bet when conditions are wet as the gravel can provide extra traction between your car tires and the slick mud. Help in the form of a tow-truck can be hours to days away, and prohibitively expensive in these remote locations.

Desert Driving Tips

Most roads in the high desert are best suited to a high-clearance, 4wd vehicle – especially if your monitoring project will take you off of a paved, or well-maintained gravel road. Vehicles traveling in Oregon's high desert should have the following:

- At least one full-size spare tire, with car jack, lug wrench, and a 1'x1' square of plywood (or similar—something to set the jack base on in sandy soils). Practice putting on the spare tire in a nonemergency setting is very important!
- Extra key in a magnetic hide-a-key box. It's no fun driving with a broken window because you had to break into your car to get your locked-in key.
- Extra fuel for the vehicle, extra engine coolant and extra engine oil.
- At least one gallon of extra drinking water.
- Jumper cables, Fix-A-Flat, tow-strap, and a flashlight. Consider a small DC-powered air compressor.
- After a significant rain event, desert soils/primitive roads may become too supersaturated to drive on, especially in the Owyhee and Alvord Desert region.
- Shovel and possibly a fire extinguisher. Check with local BLM, Forest Service, and National Wildlife Refuge offices for fire danger levels and whether these items are required.

Note that roads with vegetation may be closed during times of extreme fire danger due to the flammable nature of dried grasses.

Risk Management

ONDAs Independent Stewards should have a foundational understanding of outdoor safety and backcountry travel. The following table of safety recommendations should be adhered to before and during monitoring visits.

Never compromise your personal safety for the sake of monitoring. Be vigilant at all times about the weather, terrain, and personal physical condition. Be sure you have sufficient shelter, clothing, equipment, food, water (1 gal/person/day), artificial light sources, first aid, and survival gear for potential backcountry conditions. Be sure to wear bright colors (specifically orange) during hunting season.

The information below summarizes the potential hazards visitors may experience in the field, and recommended measures to manage the hazards.

Hazard: Slipping, tripping or falling on rocky or uneven terrain

Prevention: Be aware of conditions. Wear shoes/boots that are appropriate for the terrain. Walk, don't run. Side step down hills. Carry any heavy items on downhill side.

Hazard: Snakes, insect bites, bees, encounters with wild animals and poisonous plants.

Prevention: Walk slowly through brush. Be aware of surroundings. Wear long sleeved shirts, long pants, and leather boots. Avoid scented lotions. Familiarize yourself with regional hazardous species, such as insects and poisonous plants. Carry medication if you have known allergies; over-the-counter allergy medicine is recommended for all first aid kits. Avoid attracting predators and other hazardous wildlife by keeping a clean camp. Be bear aware and know how to react if encountered by bears or other wild animals. Visit the Center for Wildlife Information website for additional information.

Hazard: Sprains, strains from hiking, lifting loads, etc.

Prevention: Use caution crossing uneven terrain. Use proper lifting techniques.

Hazard: Weather related illness or injury; extreme heat or cold

Prevention: Check weather forecast prior to going to the field and avoid traveling in inclement weather.

Monitor weather closely. Wear clothing suited to weather. Carry and drink plenty of water. Research signs of heat stroke, heat exhaustion, frostbite, hypothermia and understand initial treatment options. First aid training is recommended.

Hazard: Lightning or thunderstorm

Prevention: Check weather forecast prior to going to the field and avoid traveling in inclement weather. Monitor weather closely and watch for approaching storms. Get to vehicle if possible, but be careful to avoid touching any bare metal portions of the vehicle and do not use the car radio. Do not seek shelter under a tree. Stay away metal objects, and high ground. First aid training is recommended.

Hazard: Flash flood

Prevention: Check weather forecast prior to going to the field and avoid traveling in inclement weather. Monitor weather closely when travelling in slot canyons as flash flood danger can be high and roads become impassable when wet. Watch flow in streams and washes, do not enter or cross if water is rising.

Hazard: Confrontation with verbal and/or abusive public

Prevention: Maintain a calm demeanor. Do not engage in confrontation. Walk away and retreat to a safe position. Contact BLM or law enforcement when necessary.

Hazard: Lost, missing, or overdue hiker

Prevention: Travel in a small group or in pairs if possible. Leave a trip itinerary and your return time with friends, and/or family. Plan routes in advance and minimize deviation. Carry both hard copy maps, and GPS units. Regroup at predetermined times and locations.

Hazard: Motor vehicle breakdown or accident

Prevention: Inspect vehicle prior to departing for the monitoring visit. Ensure that the vehicle is in proper functioning condition and that lights, brakes, and other mechanical features are working. Ensure that tire pressure is within recommended limits and always bring a spare tire, or two. Check weather forecast prior to going to the field

Liability Disclaimer

The Independent Stewards monitoring projects are developed to assist in connecting interested volunteers to their public lands. Participation in the monitoring program is completely voluntary. In order to participate in the program, volunteers must sign a volunteer agreement with. ONDA accepts no responsibility related to any potential incidents related to the monitoring work or associated visits to public lands.