Traffic Impact Study

Prepared for submittal to:

LINCOLN COUNTY MONTANA

for the project:

Wilderness Escalante Preserve



on behalf of:

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Cover photo by 406 Traffic & Transportation Consulting

1 INTRODUCTION

This report documents the Traffic Impact Study (TIS) conducted for additional residential lots to be platted in an existing resort community northwest of the city of Eureka, as required by Lincoln County Subdivision Regulations, Section IV.K.7. This TIS report has been prepared in support of the project permit application process for review by Lincoln County.

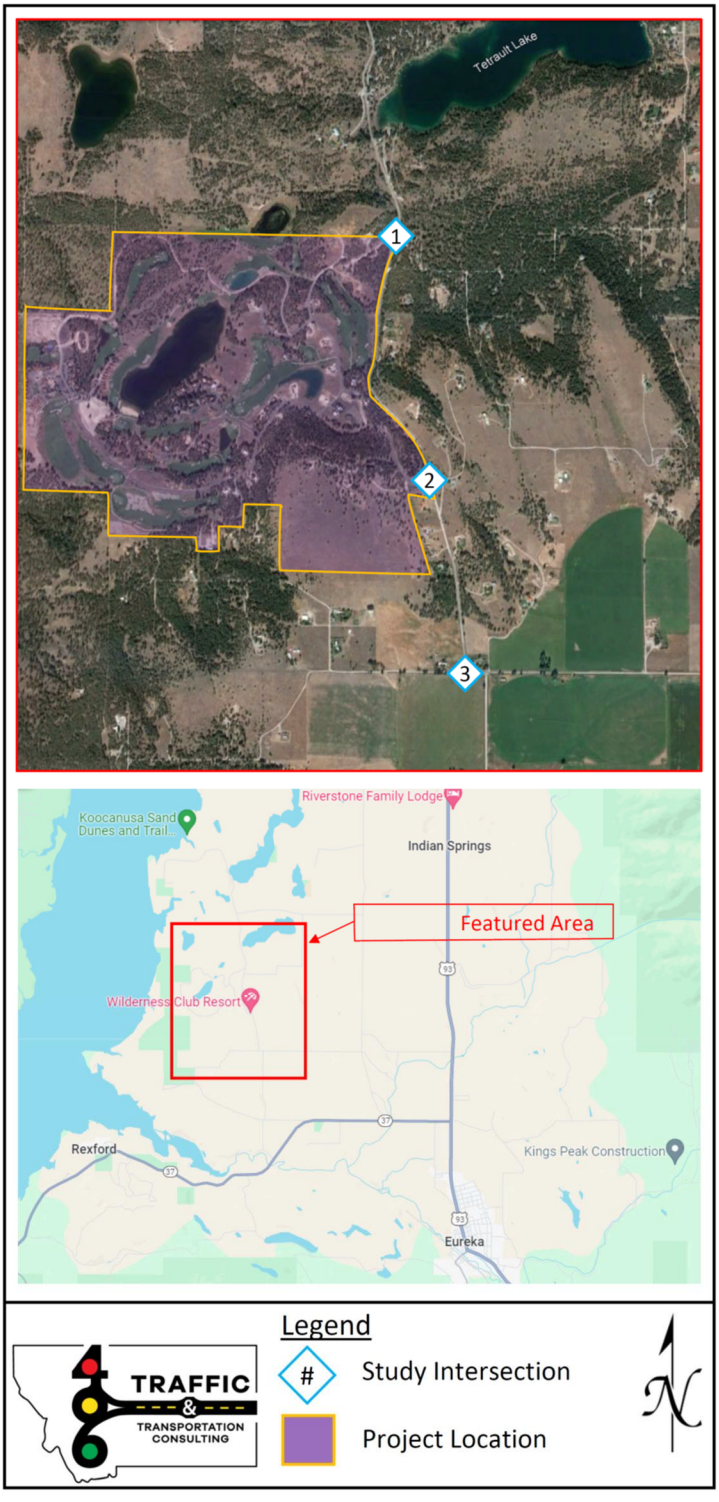
1.1 PROJECT LOCATION AND STUDY AREA

The overall subdivision site location is shown in **Exhibit 1** at right, along with a map of the intersections studied. The study intersections are:

1. Sophie Lake Rd at Glacier Peaks Rd
2. Sophie Lake Rd at Wilderness Club Dr
3. Sophie Lake Rd at Iowa Flats Rd

From here forward in the body of this report, existing intersections are generally referred to only by their distinguishing street names (e.g., "Sophie Lake at Wilderness Club") for the sake of brevity.

Exhibit 1. Overall Site Location and Study Intersections



1.2 PROJECT DESCRIPTION

The proposed development phases will include a total of 234 housing units. While the final mix between single-family detached and attached units (condominiums/townhomes) will be finalized later, no more than 204 of the former will be included. The areas where these home sites will be located in Wilderness Escalante Preserve are currently empty and are contained entirely within the Wilderness Club Montana's 550-acre property. No zoning regulations apply to the project site. No new external road access points will be created as part of this project. Homes in this project will only generate traffic at the two existing access points to Sophie Lake Road, at the first two intersections indicated above. **Exhibit 2** shows the site plan for the five proposed home phases in relation to the existing site golf course, pond, lots, and streets.

1.3 ANALYSIS METHODS AND REFERENCES

Trip generation rates or equations (as applicable) are sourced from the Institute of Transportation Engineers (ITE) Trip Generation manual 11th edition. Trip generation data, when aggregated across enough varied sites, produce both simple average rates and best-fit equations, either linear or logarithmic, to help the analyst derive proper estimates for their situation.

Exhibit 2. Wilderness Escalante Preserve Site Plan



Source: Excerpted from 406 Engineering drawing provided 3/14/2025

Equations are generally preferred over rates, especially for larger sites where trip generation per unit of land use can diminish with increasing project size. General ITE guidance calls for the use of the fitted curve equation when the data set for the land use type in question is comprised of studies from 20 or more separate sites and when the equation produces a correlation coefficient (R^2) of 0.75 or higher, with 1.0 being the best possible fit. Because they are generally preferred, and because all applicable equations have a correlation coefficient higher than 0.75, equations are used here rather than rates.

Operational performance was analyzed at the three study intersections through the use of the industry-standard methods presented in the Highway Capacity Manual (HCM), published in its modern form as Transportation Research Board Special Report 209. The Synchro software package, version 12, was employed as both a data repository and a capacity analysis tool, with reports for each intersection generated using Synchro's application of the assumptions of the HCM's 7th edition. Both Synchro 12 and HCM 7 were the most recent versions available at the time of this study.

The HCM methodology for intersection capacity analysis produces delay estimates for each turning movement (or "lane group" when multiple turning movements operate from the same lane). These delay estimates are assigned Level of Service (LOS) grades that range from A (best) to F (worst), as indicated in **Exhibit 3**. For unsignalized intersections with only side-street Stop sign control, LOS for the intersection is represented by the LOS for the worst lane group. All-way stops use a volume-weighted average delay for all lane groups and approaches to establish the LOS grade. Impact is determined according to the degree to which LOS conforms to acceptability standards. The intersections analyzed here

are subject to a standard of LOS C or better, though in some cases and places, a worse LOS can be accepted if special pre-existing physical limitations are recognized. Where LOS without the project is already worse than the standard, a project impact is often defined as any increase in delay, and a mitigation (or contribution) requirement can be negotiated so that it results in a delay at or below the pre-project level.

Exhibit 3. LOS Definitions

LOS	Delay, seconds per vehicle
A	0 - 10.0
B	10.1 - 15.0
C	15.1 - 25.0
D	25.1 - 35.0
E	35.1 - 50.0
F	50.1 or more

Source: HCM 7th Edition

2 EXISTING AND BASE CONDITIONS

After this study began, the Federal Highway Administration published a technical memorandum authored by Robert Peccia & Associates documenting existing conditions for the Sophie Lake Road Corridor Study. The information contained in this chapter was gathered independently for the purpose of this TIS, and covers a smaller area with simpler descriptions.

2.1 STREETS AND INTERSECTIONS

Sophie Lake Road is classified by the MDT as a north-south minor collector with one travel lane in each direction, but it is treated as a rural minor arterial/rural major collector in Financial District 1 in this analysis. There are no restricted turning lanes at any of its intersections. Very few motorists access the Wilderness Club without traversing any segments of it. The posted speed limit in the study area is 35 mph, and there are no multimodal facilities within its right-of-way.

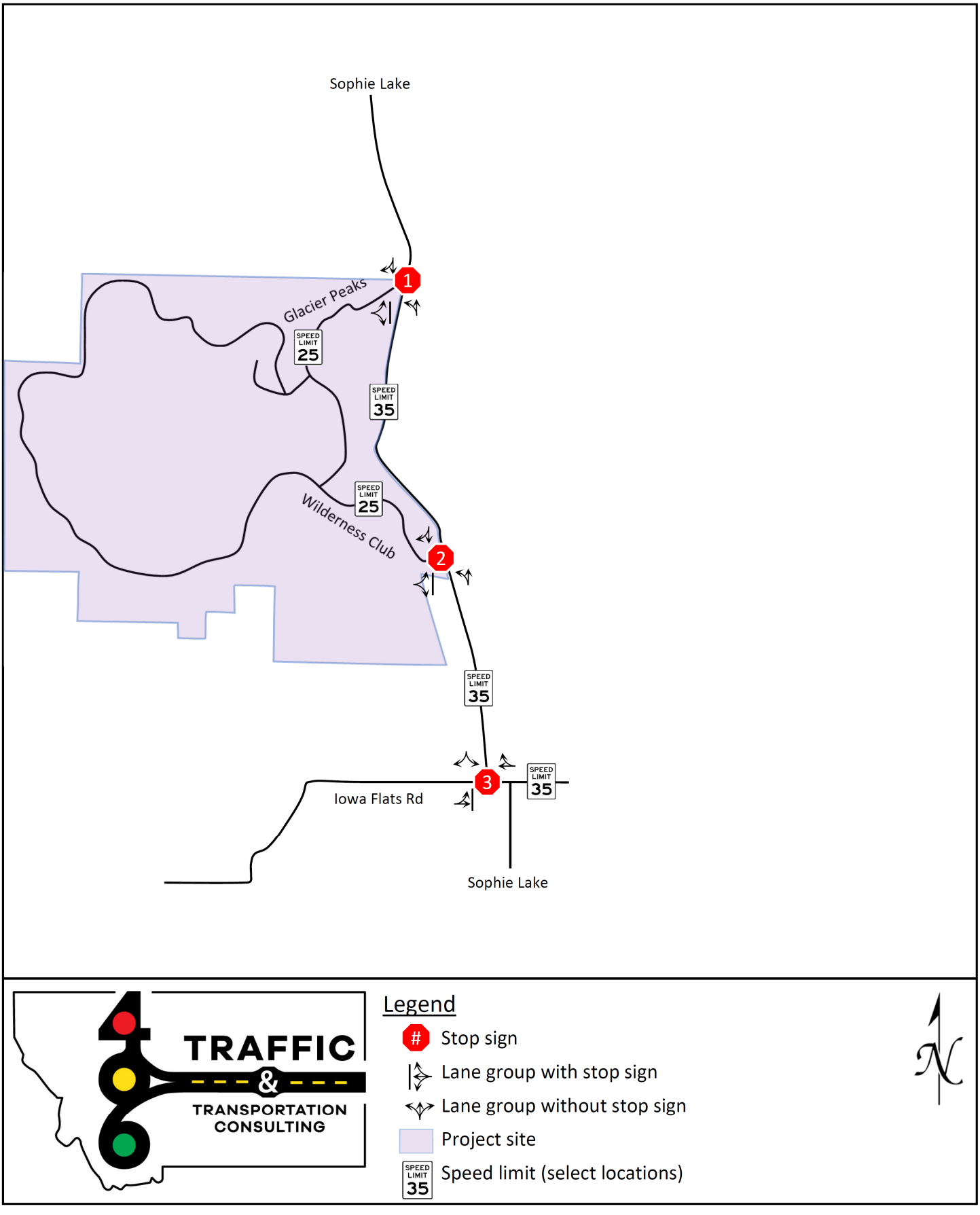
Iowa Flats Road is an east-west local road with one travel lane in each direction, but it is also treated as a rural minor arterial/rural major collector in Financial District 1 in this analysis. There are no restricted turning lanes at any of its intersections. It is unpaved to the west of its westmost intersection with Sophie Lake Road. The posted speed limit in the study area is 35 mph, and there are no multimodal facilities within its right-of-way.

All three study intersections use two-way stop control (TWSC). Note that this term, TWSC, is applied even at “T”-shaped intersections where approaching traffic on only one leg is actually stop-controlled. At intersection 2, the eastbound approach was analyzed as though there were two lanes: one for left-turning traffic and one for right-turning traffic. This assumption was made based on the considerable amount of space available for vehicles leaving the Wilderness Club at this location to position themselves at the intersection. Left turns and right turns can be made simultaneously in the space available.

Sophie Lake Road intersects Iowa Flats Road at two locations; only the western intersection is considered in this study, as Intersection 3. While main-street through movements are usually uncontrolled at “T” intersections, eastbound traffic on Iowa Flats at Intersection 3 is stop-controlled, while movements between the north and east legs of the intersection are uncontrolled as if they were through movements because the west leg is a gravel road that carries considerably less traffic than the paved east and north legs. This low volume means that it’s not considered problematic that westbound through traffic on Iowa Flats Road and southbound left-turning traffic on Sophie Lake Road both flow freely, even though the two movements cross paths.

Free-flowing turning movements like those at Intersection 3 are rare enough that the industry standard analysis software used for this project will not recognize them. To correct for this limitation and allow for the proper operation to be analyzed accurately, the free-flowing westbound Iowa Flats leg at Intersection 3 was instead coded as a northbound approach and turning movement labels were adjusted accordingly. **Exhibit 4** shows traffic control and lane arrangements schematically at each study intersection.

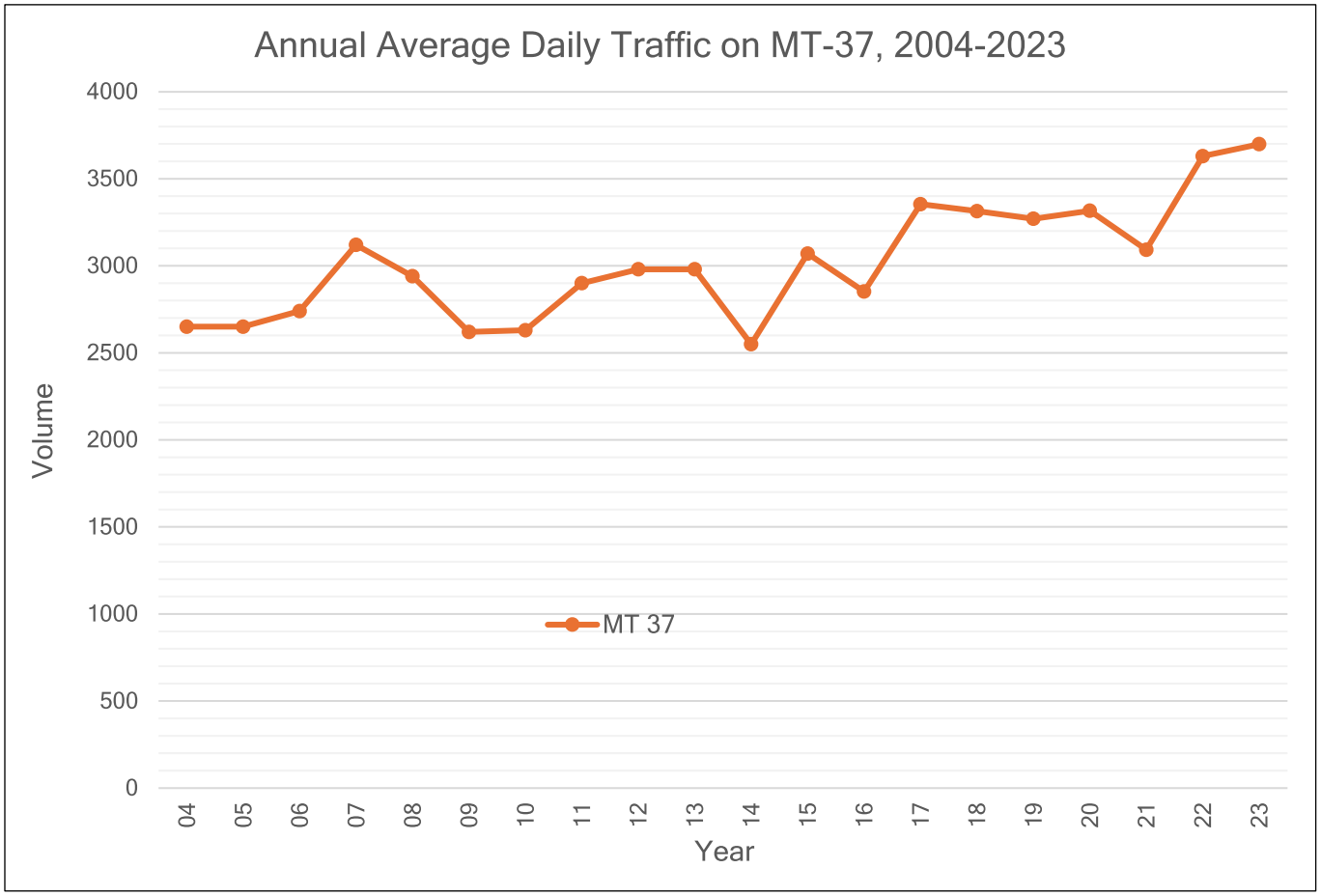
Exhibit 4. Existing Road and Intersection Basics



2.2 HISTORICAL AND EXISTING TRAFFIC VOLUMES

Of the locations where MDT currently collects (or estimates) traffic counts annually, there is only one that a sizeable portion of project traffic will pass through in the future. This traffic count station is located on MT Highway 37, 0.5 miles west of US Highway 93. Traffic volumes at this site were used to make projections of short-term growth for the project area. Daily volumes are available for years as far back as 2004 at this location. **Exhibit 5** shows historical annualized daily volumes in the project area for the past 20 years.

Exhibit 5. Historical Daily Traffic Volume



Source: MDT Transportation Data Management System: retrieved 8/12/2024

This look back at historical volumes over the past twenty years shows a fluctuating pattern of steady growth. Upcoming bridge reconstruction on MT 37 may cause a temporary decline in traffic at this location, but it is unlikely to stifle long-term traffic growth. The average background growth rate over the past five years at this location is 3.13% per year. This growth rate was utilized to model ambient growth in the study area.

Turning movement counts were collected by a third-party vendor using Miovision camera technology at all three study intersections on Thursday, August 1, 2024. The MDT seasonal adjustment factor for an August Thursday on a rural minor arterial/rural major collector in financial district 1 or 2 is 0.784. This factor would usually be used to adjust these counts down to annualized averages prior to analysis. However, site traffic during the summer months is expected to heavily exceed site traffic in the winter months. To reflect a conservative approach, raw traffic counts taken during the peak season were used in the analysis instead of annualized counts. Raw intersection count data are provided in Appendix A.

2.3 PROJECTED TRAFFIC WITHOUT THE PROPOSED DEVELOPMENT

Using the aforementioned 3.1% background growth rate, existing traffic was projected four years from when field counts were collected (to 2028). This projected traffic without the proposed development forms the basis of impact definition and is referred to as the Background condition. These peak hour volumes are presented in the next section.

3 TRIP GENERATION AND DISTRIBUTION

3.1 TRIP GENERATION

There is a wide variety of amenities at the existing Wilderness Club that generate internal trips, but this particular set of new site phases will only include the addition of two types of single-family homes. For this study, trip generation was based on the equation for 'peak hour of adjacent street traffic, one hour between 4 and 6 p.m.' even though the actual peak hour of adjacent street traffic was observed slightly earlier during field data collection.

Three types of adjustments to trip generation were evaluated for this project. First, a discount is sometimes taken to reflect internal capture where multiple uses are present in a single project site. This is generally a single-use project (residential), so no discount was taken for internal capture. Second, some land uses attract trips that were already using the adjacent or nearby road network by virtue of improved convenience over a similar site that would have been used before. These are called "pass-by" and "diverted-linked" trips. Residential land uses do not attract these types of trips. Third, a discount can be taken for a project and land use type where alternative modes could have an outsized role in site access. Because the site is not served by transit, no such discount is applied here.

The project's trip generation characteristics are indicated in **Exhibit 6**. Note that daily trip generation information is provided for illustration. Daily traffic is not subject to operations impact analysis.

Exhibit 6. Trip Generation

	Daily	Peak Hour
Single Family Detached Housing: X = 204 Dwelling Units		
ITE Land Use 210 equation:	Ln(T) = 0.92(X) + 2.68	Ln(T) = 0.94(X) + 0.27
Peak hour in/out split		*45% / 55%*
Trips	1944	87 / 107
Single Family Attached Housing: X = 30 Dwelling Units		
ITE Land Use 215 equation:	T = 7.62(X) - 50.48	T = 0.60(X) - 3.93
Peak hour in/out split		*45% / 55%*
Trips	178	6 / 8
Combined net trips, both uses:	**2,122**	**208 (93 in / 115 out)**

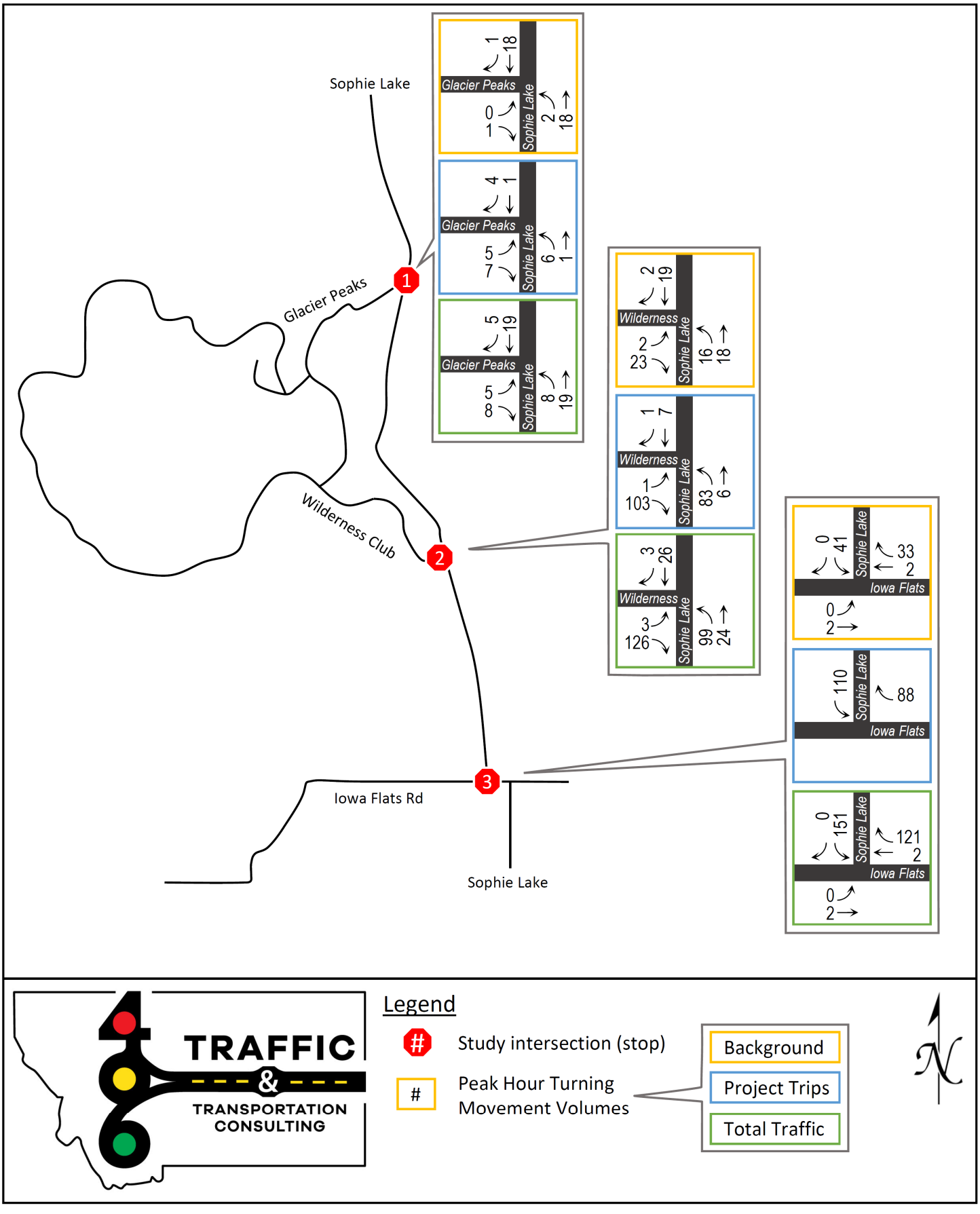
Source: Rates from ITE Trip Generation, 11th Edition; in/out splits taken from existing traffic pattern.

3.2 TRIP DISTRIBUTION AND ASSIGNMENT

Trip distribution and assignment estimates were developed by considering the site's location relative to regional roadways. All but 5% of inbound and outbound access was assumed to occur from Iowa Flats Road to the south (Intersection 3). While it is possible to enter or exit the study area via Valley View Road, it leads almost exclusively to other recreation areas and residences, and Iowa Flats Road is a better route to either US 93 or MT 37, the communities of Eureka or Rexford, and points beyond.

Exhibit 7 shows intersection turning movement volumes for the Background condition (2028 without the project), project-assigned trips, and the combined total.

Exhibit 7. Peak Hour Traffic



4 TRAFFIC ANALYSIS RESULTS

4.1 INTERSECTION LOS AND DELAY

The peak hour intersection Level of Service (LOS) and delay results with and without the project are shown in **Exhibit 8**. Directions are abbreviated where necessary. Analysis software results are provided in Appendix B.

Exhibit 8. Peak Hour Intersection LOS and Delay Summary

	LOS (delay, seconds/vehicle)		*TWSC Worst*
Intersection	**Future Background**	**Future With Project**	***Lane Group****
1. Sophie Lake at Glacier Peaks	A (9.4)	A (8.7)	Eastbound
2. Sophie Lake at Wilderness Club	A (9.1)	B (11.0)	Eastbound Left
3. Sophie Lake at Iowa Flats	A (8.5)	A (9.3)	Eastbound

* *Worst lane group is the one that determines the intersection LOS at a Two-Way Stop Controlled intersection.*

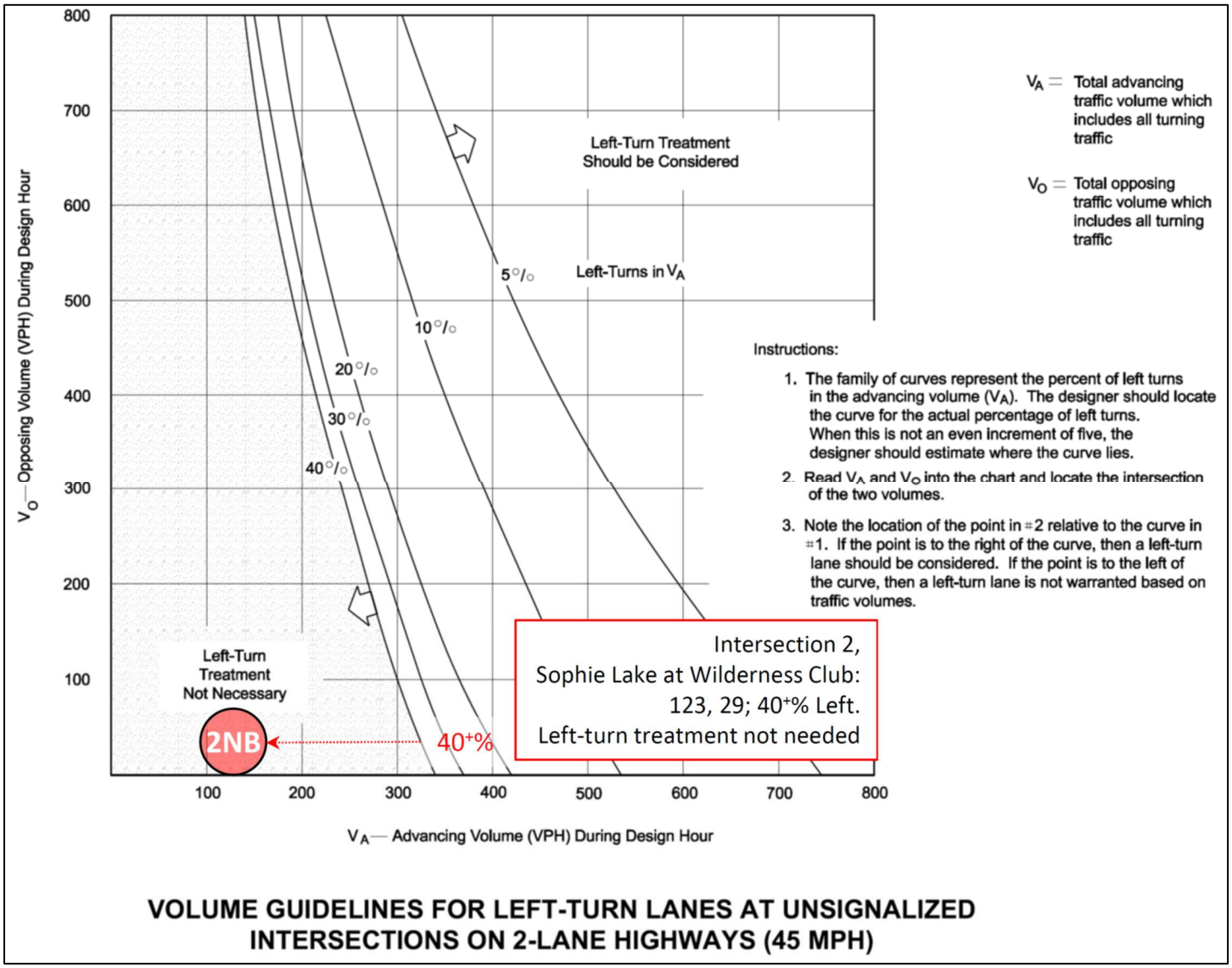
At Intersection 1, the reduction in delay as a result of the project stems from a location-specific change in truck percentage. Truck percentage affects intersection delay because heavy vehicles require larger gaps to enter the traffic stream at a stop (or yield) sign. In the background condition, one vehicle was observed on the eastbound approach, and because it was a truck, the background truck percentage was 100%. The addition of project traffic to the eastbound approach raised the peak hour volume there from 1 to 13, but because new homes tend not to generate truck traffic on a regular basis once they are built and occupied, all of the new vehicles were assumed to be non-trucks. This reduced the truck percentage from 100% to only 8%. The delay estimation methodology produces an average delay, and because 12 vehicles would have lower delay (by virtue of not being trucks), the average delay would go down.

At Intersections 2 and 3, delays would rise as expected, but LOS would still remain well within the standard of C. Even if a more conservative standard of B were to be employed by the County, presumably because the area is rural, the standard would still be met. As such, no traffic impact mitigation is required as a result of the project. Given the size and nature of this project (no prominent generation of large/heavy vehicles), no substantial additional road maintenance is expected to be necessary as a result.

4.2 AUXILIARY TURN LANE WARRANTS

Although Sophie Lake Road is not an MDT facility, the site access points were examined with respect to MDT guidelines for potential justification for the addition of auxiliary turn lanes with the project in place (the Future With Project scenario). These guidelines, which are published in the department's Traffic Engineering manual Chapter 28, indicate that such an examination should be undertaken when design hour volume from the facility equals 40 or more right turns or 20 or more left turns. Only the northbound left turn from Sophie Lake Road at Intersection 2, Wilderness Club Drive, would meet the criteria for testing this warrant. Because Sophie Lake Road has a posted speed of 35 mph, MDT's lowest-speed left turn chart was used (45 mph). This chart is shown, with the future design hour volume plotted, in **Exhibit 9**.

Exhibit 9. Auxiliary Left Turn Lane Warrant for Intersection 2



As indicated, the combination of volumes projected are not close to justifying a northbound left turn lane on Sophie Lake Road at Intersection 2.

This concludes the Wilderness Escalante Preserve TIS.

Appendix A: Raw Traffic Count Data

Intersection **1: Sophie Lake Rd -- Glacier Peaks Rd**
Start Date **8/1/2024**
Start Time **10:00 AM**
Project **Eureka Wilderness Club**

	Sophie Lake Road Southbound				n/a Westbound				Sophie Lake Road Northbound				Glacier Peaks Road Eastbound			
Start Time	Right	Thru	Left	U	Right	Thru	Left	U	Right	Thru	Left	U	Right	Thru	Left	U
10:00 AM	1	1		0						3	0	0	0		1	0
10:15 AM	0	1		0						2	0	0	0		1	0
10:30 AM	1	3		0						4	1	0	0		0	0
10:45 AM	0	2		0						0	0	0	0		0	0
11:00 AM	0	1		0						6	2	0	1		0	0
11:15 AM	0	3		0						1	1	0	0		0	0
11:30 AM	1	2		0						2	0	0	0		1	0
11:45 AM	0	4		0						4	0	0	0		0	0
12:00 PM	1	5		0						6	0	0	2		0	0
12:15 PM	0	1		0						5	1	0	0		0	0
12:30 PM	0	3		0						4	1	0	3		0	0
12:45 PM	0	1		0						3	0	0	1		1	0
1:00 PM	0	0		0						4	1	0	0		0	0
1:15 PM	0	5		0						1	0	0	1		0	0
1:30 PM	0	0		0						5	0	0	0		0	0
1:45 PM	0	4		0						4	0	0	0		0	0
2:00 PM	0	5		0						3	1	0	0		0	0
2:15 PM	0	1		0						3	0	0	1		0	0
2:30 PM	0	4		0						3	1	0	1		0	0
2:45 PM	0	6		0						8	1	0	0		0	0
3:00 PM	0	10		0						4	0	0	0		0	0
3:15 PM	0	2		0						1	1	0	0		0	0
3:30 PM	1	3		0						7	0	0	1		0	0
3:45 PM	0	2		0						4	0	0	0		0	0
4:00 PM	0	4		0						0	0	0	0		0	0
4:15 PM	0	4		0						4	0	0	0		0	0
4:30 PM	0	7		0						2	1	0	0		0	0
4:45 PM	0	3		0						3	0	0	0		1	0
5:00 PM	0	2		0						2	0	0	0		0	0
5:15 PM	0	5		0						7	0	0	0		0	0
5:30 PM	0	5		0						3	0	0	0		0	0
5:45 PM	0	5		0						1	0	0	0		0	0

Intersection **2: Sophie Lake Rd -- Purdy Dr**
Start Date **8/1/2024**
Start Time **10:00 AM**
Project **Eureka Wilderness Club**

	Sophie Lake Road Southbound				n/a Westbound				Sophie Lake Road Northbound				Purdy Dr Eastbound			
Start Time	Right	Thru	Left	U	Right	Thru	Left	U	Right	Thru	Left	U	Right	Thru	Left	U
10:00 AM	0	1	0							2	2	0	1		0	0
10:15 AM	0	2	0							2	1	0	10		0	0
10:30 AM	0	2	0							4	2	0	3		0	0
10:45 AM	0	2	0							0	1	0	3		0	0
11:00 AM	0	2	0							8	2	0	2		1	0
11:15 AM	0	4	0							1	6	0	4		1	0
11:30 AM	0	3	0							3	0	0	5		0	0
11:45 AM	1	4	0							4	5	0	3		0	0
12:00 PM	0	6	0							5	2	0	7		0	0
12:15 PM	0	3	0							7	4	0	2		0	0
12:30 PM	0	7	0							5	3	0	7		0	0
12:45 PM	0	6	0							0	3	0	8		2	0
1:00 PM	0	0	0							6	1	0	3		1	0
1:15 PM	0	5	0							1	3	0	5		0	0
1:30 PM	0	1	0							4	2	0	4		1	0
1:45 PM	1	3	0							5	2	0	7		1	0
2:00 PM	0	4	0							5	4	0	7		2	0
2:15 PM	1	2	0							4	4	0	9		0	0
2:30 PM	0	6	0							3	1	0	9		0	0
2:45 PM	0	6	0							9	3	0	3		2	0
3:00 PM	1	8	0							4	10	0	4		0	0
3:15 PM	0	1	0							1	5	0	2		0	0
3:30 PM	0	4	0							7	3	0	4		0	0
3:45 PM	0	3	0							4	4	0	5		0	0
4:00 PM	2	2	0							1	2	0	7		0	0
4:15 PM	0	5	0							5	2	0	7		0	0
4:30 PM	0	6	0							6	3	0	2		0	0
4:45 PM	0	4	0							2	2	0	2		0	0
5:00 PM	0	4	0							4	6	0	2		0	0
5:15 PM	1	4	0							7	3	0	1		0	0
5:30 PM	1	4	0							4	1	0	4		0	0
5:45 PM	0	5	0							2	5	0	3		0	0

Intersection **3 : Sophie Lake Rd -- Iowa Flats Rd [West]**
Start Date **8/1/2024**
Start Time **10:00 AM**
Project **Eureka Wilderness Club**

	Sophie Lake Road Southbound				Iowa Flats Road Westbound				n/a Northbound				Iowa Flats Road Eastbound			
Start Time	Right	Thru	Left	U	Right	Thru	Left	U	Right	Thru	Left	U	Right	Thru	Left	U
10:00 AM	0	3	0		3	0	0						0	0	0	
10:15 AM	0	11	0		3	1	0						0	0	0	
10:30 AM	0	6	0		7	0	0						2	0	0	
10:45 AM	0	6	0		1	1	0						0	0	0	
11:00 AM	0	4	0		9	0	0						0	0	0	
11:15 AM	0	7	0		8	1	0						1	0	0	
11:30 AM	0	10	0		5	0	0						0	0	0	
11:45 AM	0	10	0		10	0	0						0	0	0	
12:00 PM	0	12	0		7	1	0						3	0	0	
12:15 PM	0	5	0		14	1	0						0	0	0	
12:30 PM	0	14	0		7	1	0						1	0	0	
12:45 PM	0	13	0		3	1	0						0	0	0	
1:00 PM	0	6	0		7	0	0						2	0	0	
1:15 PM	0	9	0		6	0	0						0	0	0	
1:30 PM	0	9	0		7	1	0						0	0	0	
1:45 PM	0	8	0		6	0	0						1	0	0	
2:00 PM	0	12	0		11	0	0						1	0	0	
2:15 PM	0	8	0		9	1	0						1	0	0	
2:30 PM	0	16	0		6	1	0						0	0	0	
2:45 PM	0	8	0		9	0	0						0	0	0	
3:00 PM	0	14	0		13	0	0						1	0	0	
3:15 PM	0	3	0		5	0	0						0	0	0	
3:30 PM	0	9	0		11	0	0						0	0	0	
3:45 PM	0	8	0		8	0	0						1	0	0	
4:00 PM	1	8	0		4	0	0						0	0	0	
4:15 PM	0	11	0		6	2	0						1	0	0	
4:30 PM	1	7	0		9	0	0						2	0	0	
4:45 PM	0	7	0		5	1	0						1	0	0	
5:00 PM	0	3	0		8	1	0						1	0	0	
5:15 PM	0	7	0		10	0	0						1	1	0	
5:30 PM	0	9	0		4	1	0						0	0	0	
5:45 PM	1	8	0		7	1	0						0	0	0	

Appendix B: Intersection Analysis Software Output

Note: Intersection 3 has a non-traditional right of way assignment. It has a “T” configuration where one of the cross approaches (eastbound Iowa Flats Road, which is unpaved) stops rather than the stem approach (southbound Sophie Lake Road). This configuration is not accounted for in the data that were used to develop the standard, industry-accepted analysis methodology for stop-controlled intersections. Because volumes are very low even after project traffic is added, Intersection 3 was coded with a traditional configuration so the standard methodology could be applied. On the analysis output pages for Intersection 3, the coding here shows the westbound Iowa Flats approach labeled as “northbound”, turning movement arrows reflect the hypothetical configuration modeled rather than the actual physical configuration of the intersection approaches.

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	2	18	18	1
Future Vol, veh/h	0	1	2	18	18	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	100	9	9	0	0
Mvmt Flow	0	1	3	24	24	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	54	25	25	0	-	0
Stage 1	25	-	-	-	-	-
Stage 2	29	-	-	-	-	-
Critical Hdwy	6.4	7.2	4.19	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	4.2	2.281	-	-	-
Pot Cap-1 Maneuver	959	828	1545	-	-	-
Stage 1	1003	-	-	-	-	-
Stage 2	998	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	957	828	1545	-	-	-
Mov Cap-2 Maneuver	957	-	-	-	-	-
Stage 1	1001	-	-	-	-	-
Stage 2	998	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	9.36	0.73	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	180	-	828	-	-
HCM Lane V/C Ratio	0.002	-	0.002	-	-
HCM Ctrl Dly (s/v)	7.3	0	9.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	23	16	18	19	2
Future Vol, veh/h	2	23	16	18	19	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	50	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	11	11	5	5	4	4
Mvmt Flow	2	28	20	22	23	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	85	24	26	0	-	0
Stage 1	24	-	-	-	-	-
Stage 2	61	-	-	-	-	-
Critical Hdwy	6.51	6.31	4.15	-	-	-
Critical Hdwy Stg 1	5.51	-	-	-	-	-
Critical Hdwy Stg 2	5.51	-	-	-	-	-
Follow-up Hdwy	3.599	3.399	2.245	-	-	-
Pot Cap-1 Maneuver	894	1027	1569	-	-	-
Stage 1	975	-	-	-	-	-
Stage 2	939	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	883	1027	1569	-	-	-
Mov Cap-2 Maneuver	883	-	-	-	-	-
Stage 1	963	-	-	-	-	-
Stage 2	939	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	8.64	3.45	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	847	-	883	1027	-	-
HCM Lane V/C Ratio	0.012	-	0.003	0.027	-	-
HCM Ctrl Dly (s/v)	7.3	0	9.1	8.6	-	-
HCM Lane LOS	A	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	0.1	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	2	33	41	0
Future Vol, veh/h	0	2	2	33	41	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	0	0	3	3	9	9
Mvmt Flow	0	3	3	42	53	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	100	53	53	0	-	0
Stage 1	53	-	-	-	-	-
Stage 2	47	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.13	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.227	-	-	-
Pot Cap-1 Maneuver	904	1021	1547	-	-	-
Stage 1	975	-	-	-	-	-
Stage 2	980	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	902	1021	1547	-	-	-
Mov Cap-2 Maneuver	902	-	-	-	-	-
Stage 1	973	-	-	-	-	-
Stage 2	980	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	8.54	0.42	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	103	-	1021	-	-
HCM Lane V/C Ratio	0.002	-	0.003	-	-
HCM Ctrl Dly (s/v)	7.3	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	8	8	19	19	5
Future Vol, veh/h	5	8	8	19	19	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	8	8	9	9	0	0
Mvmt Flow	7	11	11	25	25	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	75	29	32	0	-	0
Stage 1	29	-	-	-	-	-
Stage 2	47	-	-	-	-	-
Critical Hdwy	6.48	6.28	4.19	-	-	-
Critical Hdwy Stg 1	5.48	-	-	-	-	-
Critical Hdwy Stg 2	5.48	-	-	-	-	-
Follow-up Hdwy	3.572	3.372	2.281	-	-	-
Pot Cap-1 Maneuver	913	1029	1536	-	-	-
Stage 1	979	-	-	-	-	-
Stage 2	961	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	907	1029	1536	-	-	-
Mov Cap-2 Maneuver	907	-	-	-	-	-
Stage 1	972	-	-	-	-	-
Stage 2	961	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	8.75	2.18	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	533	-	978	-	-
HCM Lane V/C Ratio	0.007	-	0.018	-	-
HCM Ctrl Dly (s/v)	7.4	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	133	104	24	26	3
Future Vol, veh/h	3	133	104	24	26	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	50	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	11	11	5	5	4	4
Mvmt Flow	4	162	127	29	32	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	316	34	35	0	-	0
Stage 1	34	-	-	-	-	-
Stage 2	283	-	-	-	-	-
Critical Hdwy	6.51	6.31	4.15	-	-	-
Critical Hdwy Stg 1	5.51	-	-	-	-	-
Critical Hdwy Stg 2	5.51	-	-	-	-	-
Follow-up Hdwy	3.599	3.399	2.245	-	-	-
Pot Cap-1 Maneuver	658	1015	1557	-	-	-
Stage 1	966	-	-	-	-	-
Stage 2	745	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	604	1015	1557	-	-	-
Mov Cap-2 Maneuver	604	-	-	-	-	-
Stage 1	886	-	-	-	-	-
Stage 2	745	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	9.26	6.11	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1462	-	604	1015	-	-
HCM Lane V/C Ratio	0.081	-	0.006	0.16	-	-
HCM Ctrl Dly (s/v)	7.5	0	11	9.2	-	-
HCM Lane LOS	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0.3	-	0	0.6	-	-

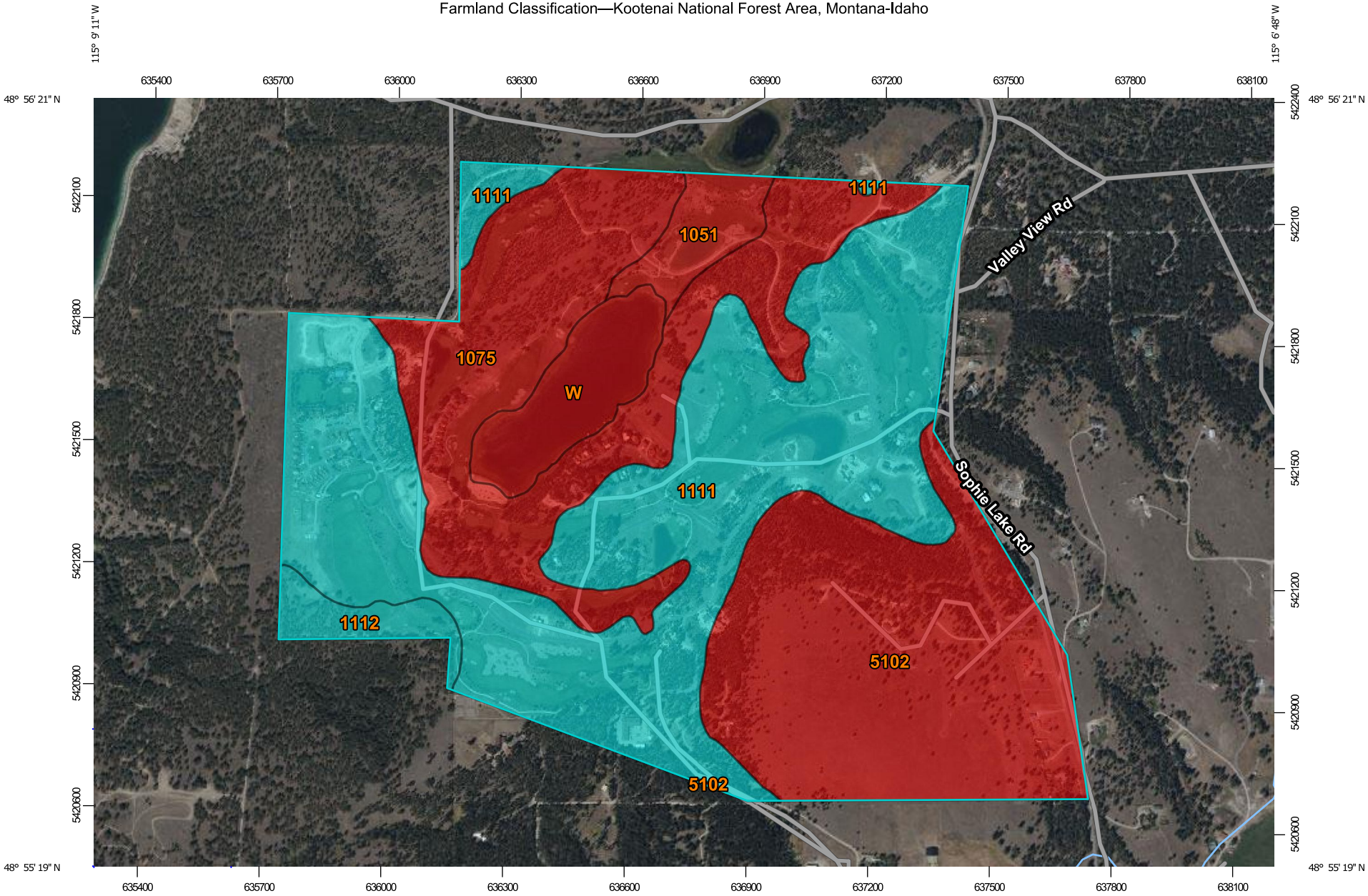
Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	2	127	158	0
Future Vol, veh/h	0	2	2	127	158	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	0	3	3	163	203	0

Major/Minor	Minor2			Major2	
Conflicting Flow All	203	203		-	0
Stage 1	203	-		-	-
Stage 2	0	-		-	-
Critical Hdwy	6.41	6.21		-	-
Critical Hdwy Stg 1	5.41	-		-	-
Critical Hdwy Stg 2	-	-		-	-
Follow-up Hdwy	3.509	3.309		-	-
Pot Cap-1 Maneuver	788	841		-	-
Stage 1	834	-		-	-
Stage 2	-	-		-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	788	841		-	-
Mov Cap-2 Maneuver	788	-		-	-
Stage 1	834	-		-	-
Stage 2	-	-		-	-

Approach	EB	SB
HCM Ctrl Dly, s/v	9.3	0
HCM LOS	A	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	841	-	-
HCM Lane V/C Ratio	0.003	-	-
HCM Ctrl Dly (s/v)	9.3	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-


115° 9' 11" W
115° 6' 48" W
48° 56' 21" N
48° 55' 19" N
635400
635700
636000
636300
636600
636900
637200
637500
637800
638100
5422400
5422100
5421800
5421500
5421200
5420900
5420600
1111
1111
1051
1075
W
1111
1112
5102
5102
Valley View Rd
Sophie Lake Rd
Map Scale: 1:13,300 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0 150 300 600 900
Feet
0 500 1000 2000 3000
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

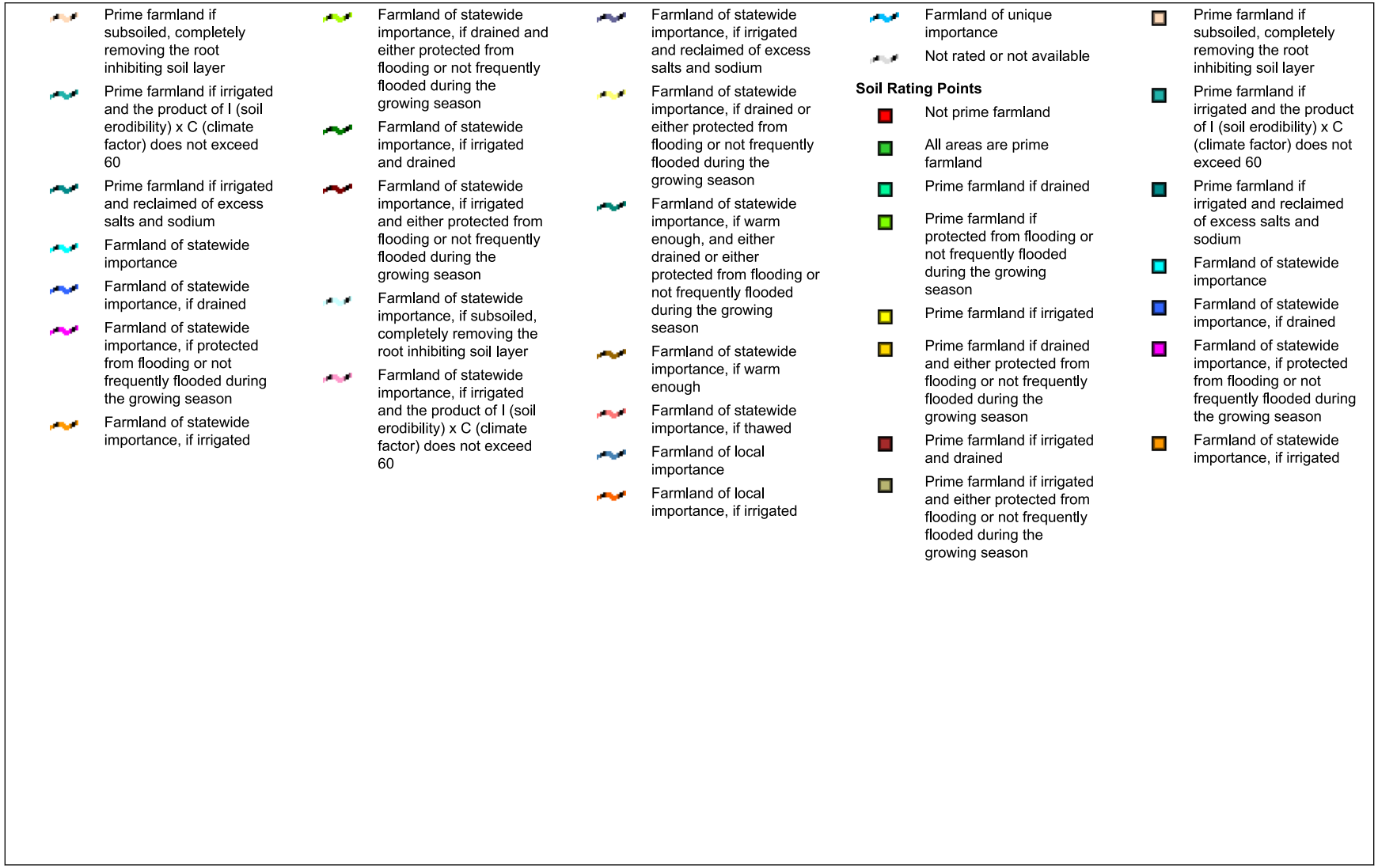
Soils

Soil Rating Polygons

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of statewide importance, if drained
- Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated
- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Soil Rating Lines

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season


Prime farmland if subsoiled, completely removing the root inhibiting soil layer
Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Prime farmland if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance
Farmland of statewide importance, if drained
Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated
Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated and drained
Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if warm enough
Farmland of statewide importance, if thawed
Farmland of local importance
Farmland of local importance, if irrigated
Farmland of unique importance
Not rated or not available
Soil Rating Points
Not prime farmland
All areas are prime farmland
Prime farmland if drained
Prime farmland if protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated
Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated and drained
Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
Prime farmland if subsoiled, completely removing the root inhibiting soil layer
Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Prime farmland if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance
Farmland of statewide importance, if drained
Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated

- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Kootenai National Forest Area, Montana-Idaho
Survey Area Data: Version 24, Sep 16, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 14, 2023—Aug 13, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Farmland Classification

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1051	Bohnly-Seelovers-Newbar family complex, 0 to 15 percent slopes	Not prime farmland	15.9	2.8%
1075	Tetrault-Canusa-Jocko complex, 1 to 20 percent slopes	Not prime farmland	132.4	23.2%
1111	Canusa-Felt family complex, 0 to 15 percent slopes	Farmland of statewide importance	239.1	42.0%
1112	Canusa sandy loam, 1 to 20 percent slopes	Farmland of statewide importance	12.0	2.1%
5102	Niarada-Niarada, greater slopes-Roosville complex, 2 to 30 percent slopes	Not prime farmland	142.5	25.0%
W	Water	Not prime farmland	27.8	4.9%
Totals for Area of Interest			**569.8**	**100.0%**

Description

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

Rating Options

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

Kootenai National Forest Area, Montana-Idaho

1051—Bohnly-Seelovers-Newbar family complex, 0 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2v5vq
Elevation: 2,710 to 3,890 feet
Mean annual precipitation: 15 to 25 inches
Mean annual air temperature: 39 to 44 degrees F
Frost-free period: 64 to 102 days
Farmland classification: Not prime farmland

Map Unit Composition

Bohnly and similar soils: 30 percent
Seelovers and similar soils: 25 percent
Newbar and similar soils: 20 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bohnly

Setting

Landform: Valley flats
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Alluvium

Typical profile

Ap - 0 to 10 inches: silt loam
Bw - 10 to 18 inches: silt loam
Cg1 - 18 to 46 inches: silt loam
Cg2 - 46 to 60 inches: fine sandy loam

Properties and qualities

Slope: 0 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.71 to 2.13 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: High (about 10.0 inches)

Interpretive groups

Land capability classification (irrigated): 5w
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: R044AP806MT - Subirrigated Grassland Group

Hydric soil rating: Yes

Description of Seelovers

Setting

Landform: Valley flats
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Alluvium

Typical profile

A - 0 to 10 inches: silt loam
Bg - 10 to 27 inches: silt loam
Cg - 27 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.71 to 2.13 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: High (about 11.4 inches)

Interpretive groups

Land capability classification (irrigated): 5w
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: R044AP806MT - Subirrigated Grassland Group
Hydric soil rating: Yes

Description of Newbar

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

A - 0 to 7 inches: very gravelly sandy loam
C1 - 7 to 20 inches: very gravelly loamy sand
C2 - 20 to 37 inches: extremely gravelly loamy sand
C3 - 37 to 60 inches: very gravelly loamy sand

Properties and qualities

Slope: 0 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.13 to 7.09 in/hr)
Depth to water table: About 24 to 42 inches

Frequency of flooding: Occasional
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.2 inches)

Interpretive groups
Land capability classification (irrigated): 6w
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: B
Ecological site: R044AH134MT - Shallow to Gravel Seeley, Swan, Flathead and Tobacco Valleys
Hydric soil rating: No

Minor Components

Heiseton
Percent of map unit: 10 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R044AH036MT - Droughty Seeley, Swan, Flathead and Tobacco Valleys
Hydric soil rating: No

Fortine
Percent of map unit: 10 percent
Landform: Outwash terraces
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R044AH032MT - Loamy Seeley, Swan, Flathead and Tobacco Valleys
Hydric soil rating: No

Water
Percent of map unit: 3 percent
Hydric soil rating: Unranked

Barzee
Percent of map unit: 2 percent
Landform: Valley flats
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R044AH004MT - Montane Rich to Intermediate Basin Plate Type Fen Seeley, Swan, Flathead and Tobacco Valleys
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Kootenai National Forest Area, Montana-Idaho
Survey Area Data: Version 24, Sep 16, 2024

Kootenai National Forest Area, Montana-Idaho

1075—Tetrault-Canusa-Jocko complex, 1 to 20 percent slopes

Map Unit Setting

National map unit symbol: 2v5vv
Elevation: 2,530 to 2,720 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 43 to 45 degrees F
Frost-free period: 108 to 115 days
Farmland classification: Not prime farmland

Map Unit Composition

Tetrault and similar soils: 50 percent
Canusa and similar soils: 30 percent
Jocko and similar soils: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tetrault

Setting

Landform: Outwash terraces
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and gravelly glaciofluvial deposits

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 9 inches: sandy loam
2BCk - 9 to 25 inches: very gravelly coarse sand
2C - 25 to 60 inches: coarse sand

Properties and qualities

Slope: 3 to 20 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.13 to 7.09 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: F044AH001MT - Montane Warm Dry Coniferous Seeley, Swan, Flathead and Tobacco Valleys

Other vegetative classification: ponderosa pine/Idaho fescue-rough fescue phase (PK142)
Hydric soil rating: No

Description of Canusa

Setting

Landform: Dune fields
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Eolian sands over sandy and gravelly glaciofluvial deposits

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 4 inches: sandy loam
Bk1 - 4 to 16 inches: sandy loam
Bk2 - 16 to 38 inches: sandy loam
2BCk - 38 to 60 inches: sand

Properties and qualities

Slope: 1 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.13 to 7.09 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 5.9 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: F044AH001MT - Montane Warm Dry Coniferous Seeley, Swan, Flathead and Tobacco Valleys
Other vegetative classification: ponderosa pine/Idaho fescue-rough fescue phase (PK142)
Hydric soil rating: No

Description of Jocko

Setting

Landform: Outwash terraces
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Outwash

Typical profile

A - 0 to 5 inches: very gravelly loam
Bw - 5 to 13 inches: very gravelly loam
Bk1 - 13 to 20 inches: extremely gravelly coarse sandy loam

Bk2 - 20 to 60 inches: extremely gravelly loamy coarse sand

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.71 to 2.13 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: R044AH038MT - Droughty Steep Seeley, Swan, Flathead and Tobacco Valleys
Hydric soil rating: No

Data Source Information

Soil Survey Area: Kootenai National Forest Area, Montana-Idaho
Survey Area Data: Version 24, Sep 16, 2024

Kootenai National Forest Area, Montana-Idaho

1111—Canusa-Felt family complex, 0 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2v5vy
Elevation: 2,510 to 2,660 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 43 to 45 degrees F
Frost-free period: 106 to 115 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Canusa and similar soils: 75 percent
Felt and similar soils: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canusa

Setting

Landform: Dune fields
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Eolian sands

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 4 inches: sandy loam
Bk1 - 4 to 16 inches: sandy loam
Bk2 - 16 to 38 inches: sandy loam
2BCk - 38 to 60 inches: sand

Properties and qualities

Slope: 1 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.13 to 7.09 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 5.9 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: F044AH001MT - Montane Warm Dry Coniferous Seeley, Swan, Flathead and Tobacco Valleys

Other vegetative classification: ponderosa pine/Idaho fescue-rough fescue phase (PK142)
Hydric soil rating: No

Description of Felt

Setting

Landform: Outwash terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian deposits over outwash

Typical profile

A - 0 to 7 inches: silt loam
Bk1 - 7 to 20 inches: fine sandy loam
2Bk2 - 20 to 34 inches: sand
2Bkq - 34 to 60 inches: extremely gravelly coarse sand

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.71 to 2.13 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 28 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F044AH003MT - Montane Moderately Warm Dry Coniferous Seeley, Swan, Flathead and Tobacco Valleys
Other vegetative classification: ponderosa pine/Idaho fescue-rough fescue phase (PK142)
Hydric soil rating: No

Data Source Information

Soil Survey Area: Kootenai National Forest Area, Montana-Idaho
Survey Area Data: Version 24, Sep 16, 2024

Kootenai National Forest Area, Montana-Idaho

1112—Canusa sandy loam, 1 to 20 percent slopes

Map Unit Setting

National map unit symbol: 2v5vz
Elevation: 2,460 to 2,610 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 43 to 45 degrees F
Frost-free period: 107 to 116 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Canusa and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canusa

Setting

Landform: Dune fields
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Eolian sands

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 4 inches: sandy loam
Bk1 - 4 to 16 inches: sandy loam
Bk2 - 16 to 38 inches: sandy loam
2BCk - 38 to 60 inches: sand

Properties and qualities

Slope: 1 to 20 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.13 to 7.09 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 5.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: F044AH001MT - Montane Warm Dry Coniferous Seeley, Swan, Flathead and Tobacco Valleys
Other vegetative classification: ponderosa pine/Idaho fescue-rough fescue phase (PK142)

Hydric soil rating: No

Data Source Information

Soil Survey Area: Kootenai National Forest Area, Montana-Idaho
Survey Area Data: Version 24, Sep 16, 2024

Kootenai National Forest Area, Montana-Idaho

5102—Niarada-Niarada, greater slopes-Roosville complex, 2 to 30 percent slopes

Map Unit Setting

National map unit symbol: 2v5w5
Elevation: 2,640 to 3,120 feet
Mean annual precipitation: 15 to 19 inches
Mean annual air temperature: 42 to 45 degrees F
Frost-free period: 101 to 111 days
Farmland classification: Not prime farmland

Map Unit Composition

Niarada and similar soils: 55 percent
Niarada, greater slopes, and similar soils: 20 percent
Roosville and similar soils: 15 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Niarada

Setting

Landform: Drumlins
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave, linear
Across-slope shape: Linear
Parent material: Till

Typical profile

A - 0 to 9 inches: gravelly loam
Bw - 9 to 14 inches: gravelly loam
Bk1 - 14 to 22 inches: very gravelly loam
Bk2 - 22 to 60 inches: very gravelly loam

Properties and qualities

Slope: 6 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.71 to 2.13 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: R044AH036MT - Droughty Seeley, Swan, Flathead and Tobacco Valleys
Hydric soil rating: No

Description of Niarada, Greater Slopes

Setting

Landform: Drumlins
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Linear
Parent material: Till

Typical profile

A - 0 to 9 inches: gravelly loam
Bw - 9 to 14 inches: gravelly loam
Bk1 - 14 to 22 inches: very gravelly loam
Bk2 - 22 to 60 inches: very gravelly loam

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.71 to 2.13 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: R044AH038MT - Droughty Steep Seeley, Swan, Flathead and Tobacco Valleys
Hydric soil rating: No

Description of Roosville

Setting

Landform: Drumlins
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Side slope

Down-slope shape: Concave, linear
Across-slope shape: Linear
Parent material: Till

Typical profile

A - 0 to 11 inches: gravelly silt loam
Bt - 11 to 18 inches: gravelly sandy clay loam
Btk - 18 to 35 inches: very gravelly sandy clay loam
Bk - 35 to 60 inches: very gravelly sandy clay loam

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.21 to 0.71 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.4 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R044AH032MT - Loamy Seeley, Swan, Flathead and Tobacco Valleys
Hydric soil rating: No

Minor Components

Roosville, greater slopes

Percent of map unit: 10 percent
Landform: Drumlins
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex, linear
Ecological site: R044AH040MT - Loamy Steep Seeley, Swan, Flathead and Tobacco Valleys
Hydric soil rating: No

Data Source Information

Soil Survey Area: Kootenai National Forest Area, Montana-Idaho
Survey Area Data: Version 24, Sep 16, 2024

Note to Reviewer:

For brevity's sake, included is an excerpt from the 'Kootenai National Forest Land Management Plan 2015 Revision' solely addressing 'MA7 – Primary Recreation Areas' (pages 66-69). If you would like to view the entire document which contains 189 pages, please follow the link here: https://www.fs.usda.gov/r01/kootenai/planning

USDA

United States Department of Agriculture

Forest Service

Northern Region

2015

Land Management Plan

2015 Revision

Kootenai National Forest



AUTHENTICATED
U.S. GOVERNMENT
INFORMATION
GPO

MA6-GDL-AR-03. Road construction is allowed.

MA6-GDL-AR-04. Reconstruction of roads is allowed.

MA6-GDL-AR-05. Management activities should be consistent with the Scenic Integrity Objective of Low to High.

Minerals

MA6-GDL-MIN-01. Mineral leasing is available.

MA6-GDL-MIN-02. Removal of mineral materials is allowed.

Grazing

MA6-GDL-GRZ-01. Grazing is allowed.

Special Forest Products and Firewood

MA6-GDL-SFP-01. Use for commercial purposes is allowed.

MA6-GDL-SFP-02. Use for personal purposes is allowed.

MA7—Primary Recreation Areas

Description

This MA applies to two areas on the KNF: the Turner Mountain Ski Area and the area around Lake Koocanusa (table 13). Turner Mountain is a lift-served downhill ski area with approximately a four month operating season. Lake Koocanusa, on the other hand, offers year-round recreation opportunities on 60 miles of the 90 mile long lake as the main attraction. A variety of campgrounds and boat ramps provide an array of recreational opportunities and water related experiences in a forested environment. The lake is flanked on the east and west sides by the 67 mile long Lake Koocanusa Scenic Byway.

Some lands adjacent to Lake Koocanusa are managed in conjunction with the Bonneville Power Administration (BPA) Wildlife Mitigation program and provide habitat for mule deer, bighorn sheep (Ural Tweed herd), and other big game.

Recreation use in these areas is high. The sounds of people are common and interaction between visitors is frequent. Past management activities both inside and outside these areas are easily noticeable to visitors.

Table 13. Primary Recreation Areas

Primary Recreation Areas	District	Acres
Lake Koocanusa Area	Libby and Rexford	14,907
Turner Mountain Ski Area	Libby	852
Total Acres[1]		**15,759**

[1] The total acres are more than those shown in table 8 because of overlapping management areas. As noted with table 8, several management areas are higher in the hierarchy than MA7. There are 100 acres in MA2, 2,500 acres in MA3 and 200 acres in MA4a.

Desired Condition

Vegetation

MA7-DC-VEG-01. Vegetation alterations are made while considering the natural-appearing landscape and timber may be harvested to enhance recreational values, mitigate safety concerns (e.g., hazardous tree removal), or for fuel reduction.

MA7-DC-VEG-02. Vegetative manipulation provides for safety and accommodates both existing and new facilities. Vegetative manipulation within ski areas maintains and creates ski runs.

Access and Recreation

MA7-DC-AR-01. These recreation areas and sites are maintained or improved to serve the forest visitor and provide a specific recreation experience. Major site modifications and facility installations (both private and public) are present in some of these areas. These installations and improvements appear individually or in a combination within recreational complexes.

MA7-DC-AR-02. Summer and winter recreation opportunities and experiences are consistent with the ROS classification of roaded natural and rural.

MA7-DC-AR-03. Trails are developed and maintained to a high standard.

MA7-DC-AR-04. Natural environments within these areas are modified to provide specific recreation experiences.

MA7-DC-AR-05. Many facilities are designed for specific activities used by large numbers of people and are fully accessible. These facilities blend in with the forest surroundings and provide the necessary services for forest visitors. Buildings and structures serve administrative and historic preservation purposes.

MA7-DC-AR-06. Signage increases user safety and provides relevant information. Interpretive information is provided where appropriate.

Cultural Resources

MA7-DC-CR-01. Areas with cultural resource values are protected from vandalism and looting.

Standards

Timber

MA7-STD-TBR-01. Timber harvest is allowed to maintain or restore the resource values of the recreational area. Timber harvest is not scheduled and does not contribute toward the allowable sale quantity.

Minerals

MA7-STD-MIN-01. Removal of mineral materials is not allowed at Turner Mountain Ski Area.

Guidelines

Fire

MA7-GDL-FIRE-01. Natural, unplanned ignitions, as well as planned ignitions, may be used to meet resource objectives.

Access and Recreation

MA7-GDL-AR-01. Motor vehicle use is allowed.

MA7-GDL-AR-02. Mechanized use is allowed (e.g., mountain bikes and other wheeled equipment).

MA7-GDL-AR-03. Road construction is allowed.

MA7-GDL-AR-04. Reconstruction of roads is allowed.

MA7-GDL-AR-05. Management activities should be consistent with the Scenic Integrity Objective of Low to High.

MA7-GDL-AR-06. Management activities in the Lake Koocanusa Area should be consistent with the Scenic Integrity Objective of Moderate.

Minerals

MA7-GDL-MIN-01. Mineral leasing is available.

MA7-GDL-MIN-02. Removal of mineral materials is allowed in the Lake Koocanusa Area.

Grazing

MA7-GDL-GRZ-01. Grazing may continue to occur within the West Kootenai allotment.

Special Forest Products and Firewood

MA7-GDL-SFP-01. Use for commercial purposes is allowed.

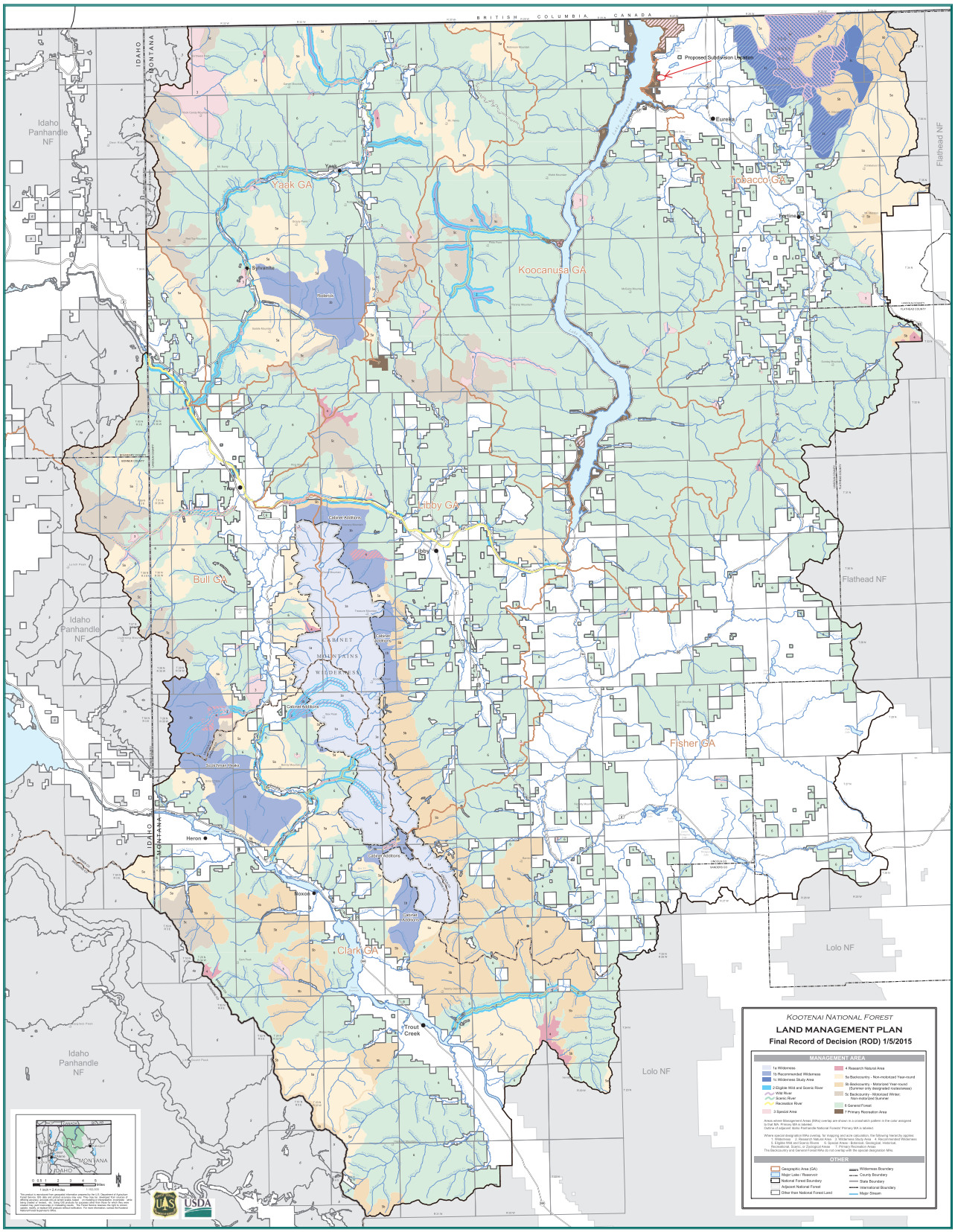
MA7-GDL-SFP-02. Use for personal purposes is allowed.

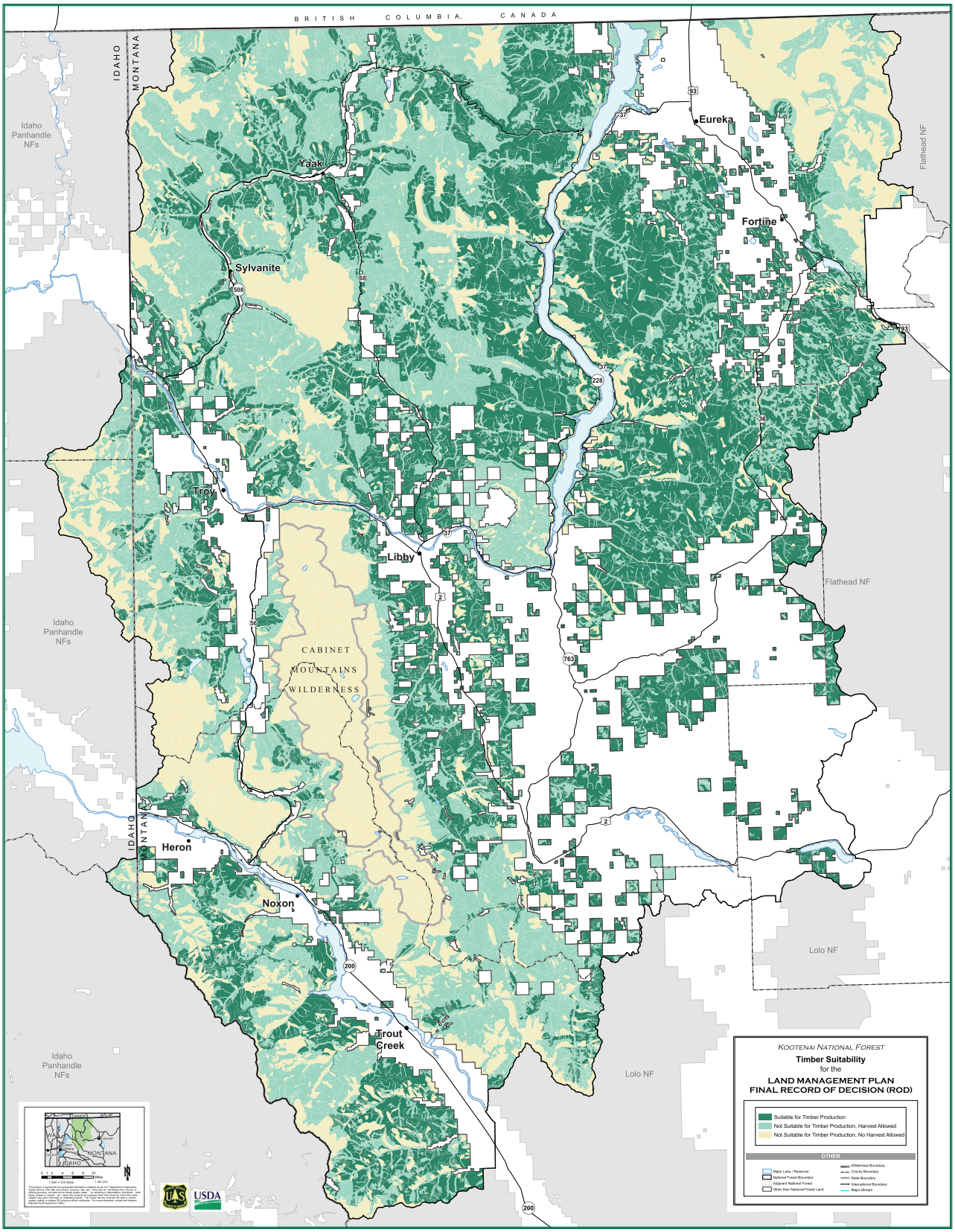
Summary of Uses by Management Area

Table 14 displays a summary of the activities allowed or desired by MA. This chart is not intended as a substitute for the actual desired conditions, standards, and guidelines found in each MA. It is intended as a summary and a reference for the reader to see what activities are generally allowed within different MAs. Please refer to the direction for each MA for specific direction.

Table 14. Summary of Generally Allowable or Desired Activities and Uses by Management Area

Management Areas	Timber Harvest	Timber Production (scheduled on rotation basis)	Commercial Use – Special Forest Products & Firewood	Personal Use – Special Forest Products & Firewood	Planned Fire ignitions	Natural Unplanned Fire Ignitions to meet Resource Objectives	Grazing	Motor Vehicle (excluding over-snow)	Over-snow Motor Vehicle	Mechanized (e.g., mountain bike)	Road Construction (permanent or temporary)	Road Reconstruction	Minerals - Leasable	Minerals - Mineral Materials
1a – Wilderness	N	N	N	Y	Y	Y	N	N	N	N	N	N	N	N
1b – Recommended Wilderness	N	N	N	Y	Y	Y	N	N	N	N	N	N	Y	N
1c – Wilderness Study Area (WSA)	N	N	N	Y	Y	Y	N	N	Y	Y	N	N	N	N
2 – Eligible Wild and Scenic Rivers (Wild)	N	N	N	Y	Y	Y	N	N	N	Y	N	Y	Y	N
2 – Eligible Wild and Scenic Rivers (Scenic and Recreational)	Y	N	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y
3 – Special Areas (Botanical and Zoological)	Y	N	N	N	Y	N	N	N	N	Y	N	Y	Y	N
3 – Special Areas (Historic)	Y	N	N	N	Y	N	N	N	N	Y	N	Y	Y	N
3 – Special Areas (Recreational and Geological)	Y	N	N	Y	Y	N	N	Y	Y	Y	Y	Y	Y	N
3 – Special Areas (Scenic)	Y	N	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N
4 – Research Natural Areas (RNA)	Y	N	N	N	Y	Y	N	N	N	Y	N	Y	Y	N
5a – Backcountry (Non-motorized Year-round)	Y	N	Y	Y	Y	Y	Y	N	N	Y	N	N	Y	N
5b – Backcountry (Motorized Year-round (Summer only on designated routes/areas))	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N
5c – Backcountry (Motorized Winter, Non-motorized Summer)	Y	N	Y	Y	Y	Y	Y	N	Y	Y	N	N	Y	N
6 – General Forest	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
7 – Primary Recreation Areas	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y


BRITISH COLUMBIA, CANADA
Proposed Subdivision Location
Eureka
Yaak GA
Tobacco GA
Koocanusa GA
Libby GA
Bull GA
Fisher GA
Clark GA
Flathead NF
Lolo NF
Idaho Panhandle NF
IDAHO
MONTANA
Kootenai National Forest
LAND MANAGEMENT PLAN
Final Record of Decision (ROD) 1/5/2015
MANAGEMENT AREA
1a Wilderness
1b Recommended Wilderness
1c Wilderness Study Area
2 Eligible Wild and Scenic River
Wild River
Scenic River
Recreation River
3 Special Area
4 Research Natural Area
5a Backcountry - Non-motorized Year-round
5b Backcountry - Motorized Year-round (Summer only designated routes/areas)
5c Backcountry - Motorized Winter, Non-motorized Summer
6 General Forest
7 Primary Recreation Area
OTHER
Geographic Area (GA)
Major Lake / Reservoir
National Forest Boundary
Adjacent National Forest
Other than National Forest Land
Wilderness Boundary
County Boundary
State Boundary
International Boundary
Major Stream


BRITISH COLUMBIA, CANADA
IDAHO
MONTANA
Idaho Panhandle NFs
Yaak
Sylvanite
Troy
Libby
Eureka
Fortine
Flathead NF
CABINET MOUNTAINS WILDERNESS
Heron
Noxon
Trout Creek
Lolo NF
KOOTENAI NATIONAL FOREST
Timber Suitability
for the
LAND MANAGEMENT PLAN
FINAL RECORD OF DECISION (ROD)
Suitable for Timber Production
Not Suitable for Timber Production, Harvest Allowed
Not Suitable for Timber Production, No Harvest Allowed
OTHER
Major Lake / Reservoir
National Forest Boundary
Adjacent National Forest
Other than National Forest Land
Wilderness Boundary
County Boundary
State Boundary
International Boundary
Major Streams
USDA

U.S. Fish and Wildlife Service
National Wetlands Inventory

Wetlands



September 25, 2025

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

IPaC U.S. Fish & Wildlife Service

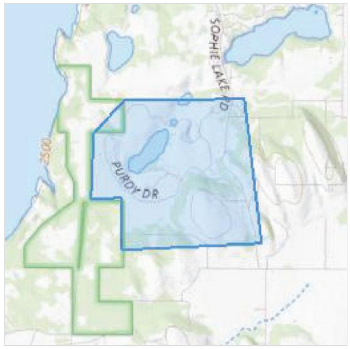
IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Lincoln County, Montana



Local office

Montana Ecological Services Field Office

(406) 449-5225
(406) 449-5339

585 Shephard Way, Suite 1
Helena, MT 59601-6287

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Canada Lynx Lynx canadensis There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/3652	Threatened
Grizzly Bear Ursus arctos horribilis There is **proposed** critical habitat for this species. https://ecos.fws.gov/ecp/species/7642	Threatened
North American Wolverine Gulo gulo luscus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5123	Threatened

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/9743	Proposed Threatened

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Suckley's Cuckoo Bumble Bee Bombus suckleyi No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/10885	Proposed Endangered

Flowering Plants

NAME	STATUS
Spalding's Catchfly Silene spaldingii Wherever found There is **proposed** critical habitat for this species. https://ecos.fws.gov/ecp/species/3681	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act [2] and the Migratory Bird Treaty Act (MBTA) [1]. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

There are Bald Eagles and/or Golden Eagles in your project area.

Measures for Proactively Minimizing Eagle Impacts
For information on how to best avoid and minimize disturbance to nesting bald eagles, please review the National Bald Eagle Management Guidelines. You may employ the timing and activity-specific distance recommendations in this document when designing your project/activity to avoid and minimize eagle impacts. For bald eagle information specific to Alaska, please refer to Bald Eagle Nesting and Sensitivity to Human Activity.

The FWS does not currently have guidelines for avoiding and minimizing disturbance to nesting Golden Eagles. For site-specific recommendations regarding nesting Golden Eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

If disturbance or take of eagles cannot be avoided, an incidental take permit may be available to authorize any take that results from, but is not the purpose of, an otherwise lawful activity. For assistance making this determination for Bald Eagles, visit the Do I Need A Permit Tool. For assistance making this determination for golden eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

Ensure Your Eagle List is Accurate and Complete
If your project area is in a poorly surveyed area in IPaC, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information on Migratory Birds and Eagles, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to bald or golden eagles on your list, see the "Probability of Presence Summary" below to see when these bald or golden eagles are most likely to be present and breeding in your project area.

Review the FAQs

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The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

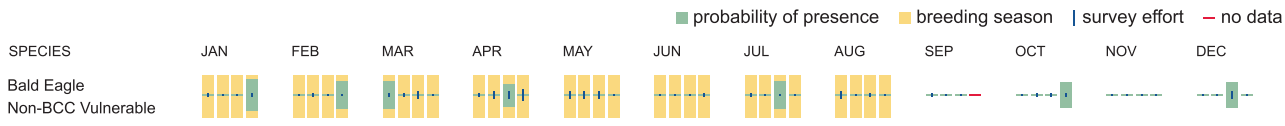
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Bald & Golden Eagles FAQs

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are an eagle (Bald and Golden Eagle Protection Act requirements may apply).

Proper interpretation and use of your eagle report
On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort line or no data line (red horizontal) means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds have the potential to be in your project area, when they might be there,

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and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide you in knowing when to implement avoidance and minimization measures to eliminate or reduce potential impacts from your project activities or get the appropriate permits should presence be confirmed.

How do I know if eagles are breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If an eagle on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your "IPaC PROBABILITY OF PRESENCE SUMMARY" at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:
The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Migratory birds

The Migratory Bird Treaty Act (MBTA) [1] prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service).

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

Measures for Proactively Minimizing Migratory Bird Impacts

Your IPaC Migratory Bird list showcases birds of concern, including Birds of Conservation Concern (BCC), in your project location. This is not a comprehensive list of all birds found in your project area. However, you can help proactively minimize significant impacts to all birds at your project location by implementing the measures in the Nationwide avoidance and minimization measures for birds document, and any other project-specific avoidance and minimization measures suggested at the link Measures for avoiding and minimizing impacts to birds for the birds of concern on your list below.

Ensure Your Migratory Bird List is Accurate and Complete

If your project area is in a poorly surveyed area, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information on Migratory Birds and Eagles document, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

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For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

Review the FAQs

The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Aug 31
Bobolink Dolichonyx oryzivorus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Calliope Hummingbird Selasphorus calliope This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9526	Breeds May 1 to Aug 15
Cassin's Finch Haemorhous cassinii This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9462	Breeds May 15 to Jul 15
Evening Grosbeak Coccothraustes vespertinus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 15 to Aug 10
Lesser Yellowlegs Tringa flavipes This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Rufous Hummingbird Selasphorus rufus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8002	Breeds Apr 15 to Jul 15
Western Grebe aechmophorus occidentalis This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/6743	Breeds Jun 1 to Aug 31

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Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in

week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

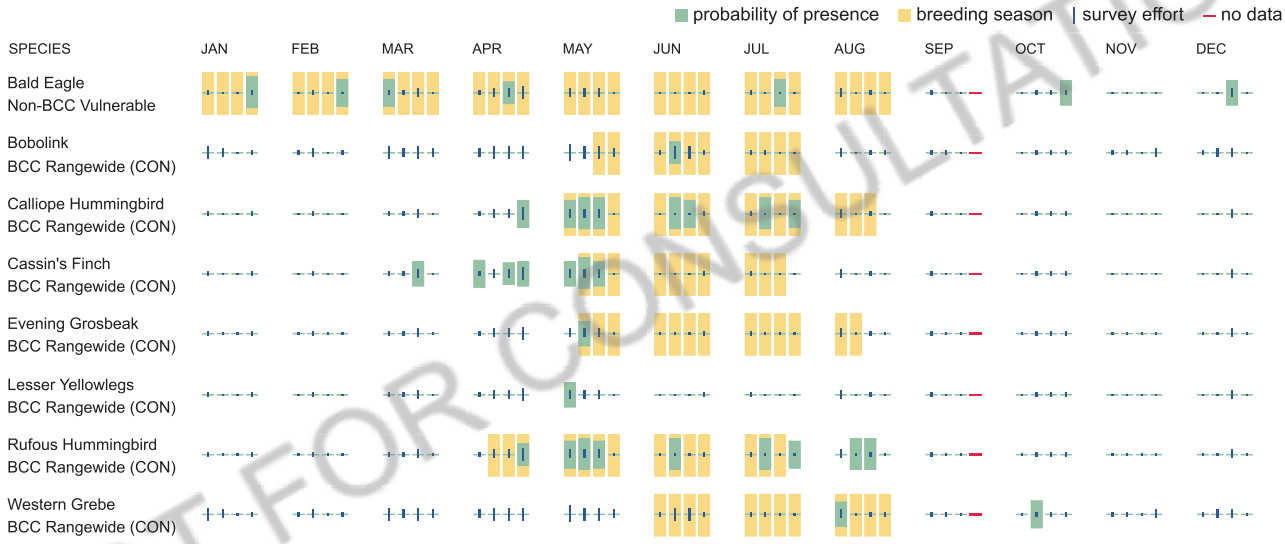
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



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Migratory Bird FAQs

Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Avoidance & Minimization Measures for Birds describes measures that can help avoid and minimize impacts to all birds at any location year-round. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is one of the most effective ways to minimize impacts. To see when birds are most likely to occur and breed in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location, such as those listed under the Endangered Species Act or the Bald and Golden Eagle Protection Act and those species marked as “Vulnerable”. See the FAQ “What are the levels of concern for migratory birds?” for more information on the levels of concern covered in the IPaC migratory bird species list.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) with which your project intersects. These species have been identified as warranting special attention because they are BCC species in that area, an eagle (Bald and Golden Eagle Protection Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, and to verify survey effort when no results present, please visit the Rapid Avian Information Locator (RAIL) Tool.

Why are subspecies showing up on my list?

Subspecies profiles are included on the list of species present in your project area because observations in the AKN for **the species** are being detected. If the species are present, that means that the subspecies may also be present. If a subspecies shows up on your list, you may need to rely on other resources to determine if that subspecies may be present (e.g. your local FWS field office, state surveys, your own surveys).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your “IPaC PROBABILITY OF PRESENCE SUMMARY” at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Bald and Golden Eagle Protection Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially BCC species. For more information on avoidance and minimization measures you can implement to help avoid and minimize migratory bird impacts, please see the FAQ “Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds”.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Proper interpretation and use of your migratory bird report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list does not represent all birds present in your project area. It is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide implementation of avoidance and minimization measures to eliminate or reduce potential impacts from your project activities, should presence be confirmed. To learn more about avoidance and minimization measures, visit the FAQ "Tell me about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Interpreting the Probability of Presence Graphs
Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:
The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()

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Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER POND
PABFx

LAKE
L2ABFx

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

NOT FOR CONSULTATION

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

Elk (*Cervus canadensis*)
Predicted Suitable Habitat Modeling

Distribution Status: Resident Year Round
State Rank: S5
Global Rank: G5



Modeling Overview

Data Source Last Updated: August 17, 2017
Model Produced On: August 18, 2017

Deductive Modeling

Modeling Process, Outputs, and Suggested Uses

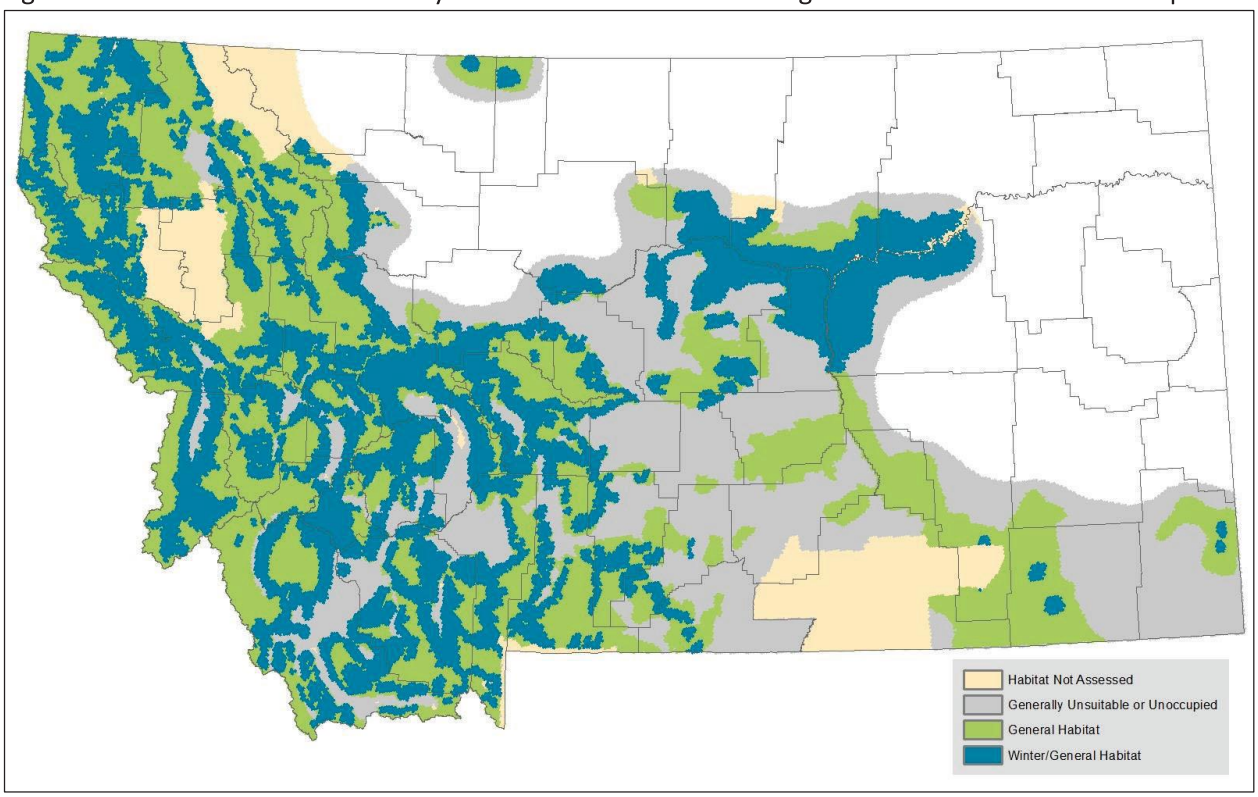
This is a simple rule-based model using general range and winter/general range mapping that the Montana Department of Fish, Wildlife, and Parks has compiled for Big Game species. See the Montana Distribution section under species accounts in the Montana Field Guide and Big Game species distribution, management unit, and hunting district information from the Montana Department of Fish, Wildlife, and Parks at: http://data-mtfwp.opendata.arcgis.com/ For compatibility with other predictive distribution models the Montana Natural Heritage Program produces, we have intersected the Big Game general range and winter/general range information with a uniform grid of hexagons that have been used for planning efforts across the western United States (e.g. Western Association of Fish and Wildlife Agencies - Crucial Habitat Assessment Tool). Each hexagon is one square mile in area and approximately one kilometer in length on each side. Any hexagon that had at least one quarter of its area intersecting with general or winter/general range was coded as such with a default to winter range if it was present. National parks and tribal reservations were not evaluated by Montana Fish, Wildlife, and Parks and these hexagons are classified as not assessed. Model outputs are not evaluated and we suggest they be used to generate potential lists of species that may occupy lands within each hexagon for the purposes of landscape-level planning. Model outputs should not be used in place of on-the-ground surveys for species and wildlife and land management agency biologists should be consulted about the value of using model output to guide habitat management decisions for regional planning efforts or local projects. See Suggested Contacts for State and Federal Natural Resource Agencies attached to this document.

Suggested Citation: Montana Natural Heritage Program. 2017. Elk (*Cervus canadensis*) predicted suitable habitat models developed on August 18, 2017. Montana Natural Heritage Program, Helena, MT. 4 pp.

Montana Field Guide Species Account: http://fieldguide.mt.gov/speciesDetail.aspx?elcode=AMALC01010

Deductive Model Map Output

Figure 1. Deductive habitat suitability model summarized into hexagons at a scale of 259 hectares per hexagon.

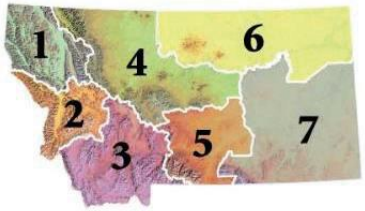


Suggested Contacts for State and Federal Natural Resource Agencies

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Grizzly Bear Greater Sage Grouse Trumpeter Swan Big Game Upland Game Birds Furbearers	John Vore jvore@mt.gov (406) 444-5209
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Wildlife and Fisheries Scientific Collector's Permits	http://fwp.mt.gov/doingBusiness/licenses/scientificWildlife/default.html Merissa Hayes for Wildlife (406) 444-7321 merhayes@mt.gov Beth Giddings for Fisheries (406) 444-7319 begiddings@mt.gov
Fish and Wildlife Recommendations for Subdivision Development	Renee Lemon RLemon@mt.gov (406) 444-3738) See also: http://fwp.mt.gov/fishAndWildlife/livingWithWildlife/buildingWithWildlife/subdivisionRecommendations/
Regional Contacts  	Region 1 (Kalispell) (406) 752-5501 Region 2 (Missoula) (406) 542-5500 Region 3 (Bozeman) (406) 994-4042 Region 4 (Great Falls) (406) 454-5840 Region 5 (Billings) (406) 247-2940 Region 6 (Glasgow) (406) 228-3700 Region 7 (Miles City) (406) 234-0900

U.S. Fish and Wildlife Service

Information Planning and Conservation (IPAC) website: http://ecos.fws.gov/ipac/
Montana Ecological Services Field Office: http://www.fws.gov/montanafieldoffice/ (406) 449-5225

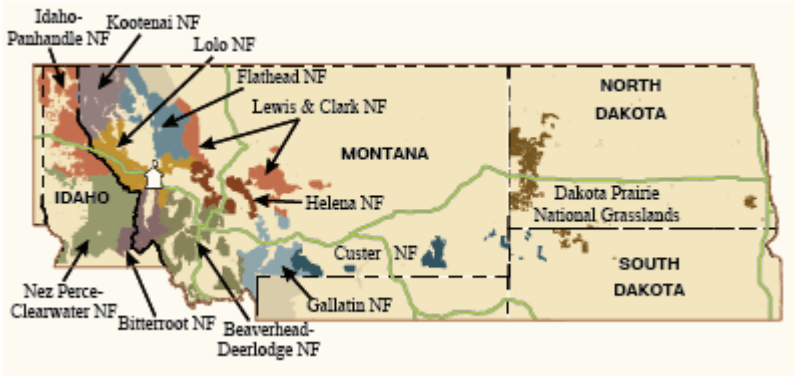
Bureau of Land Management

Montana Field Office Contacts:



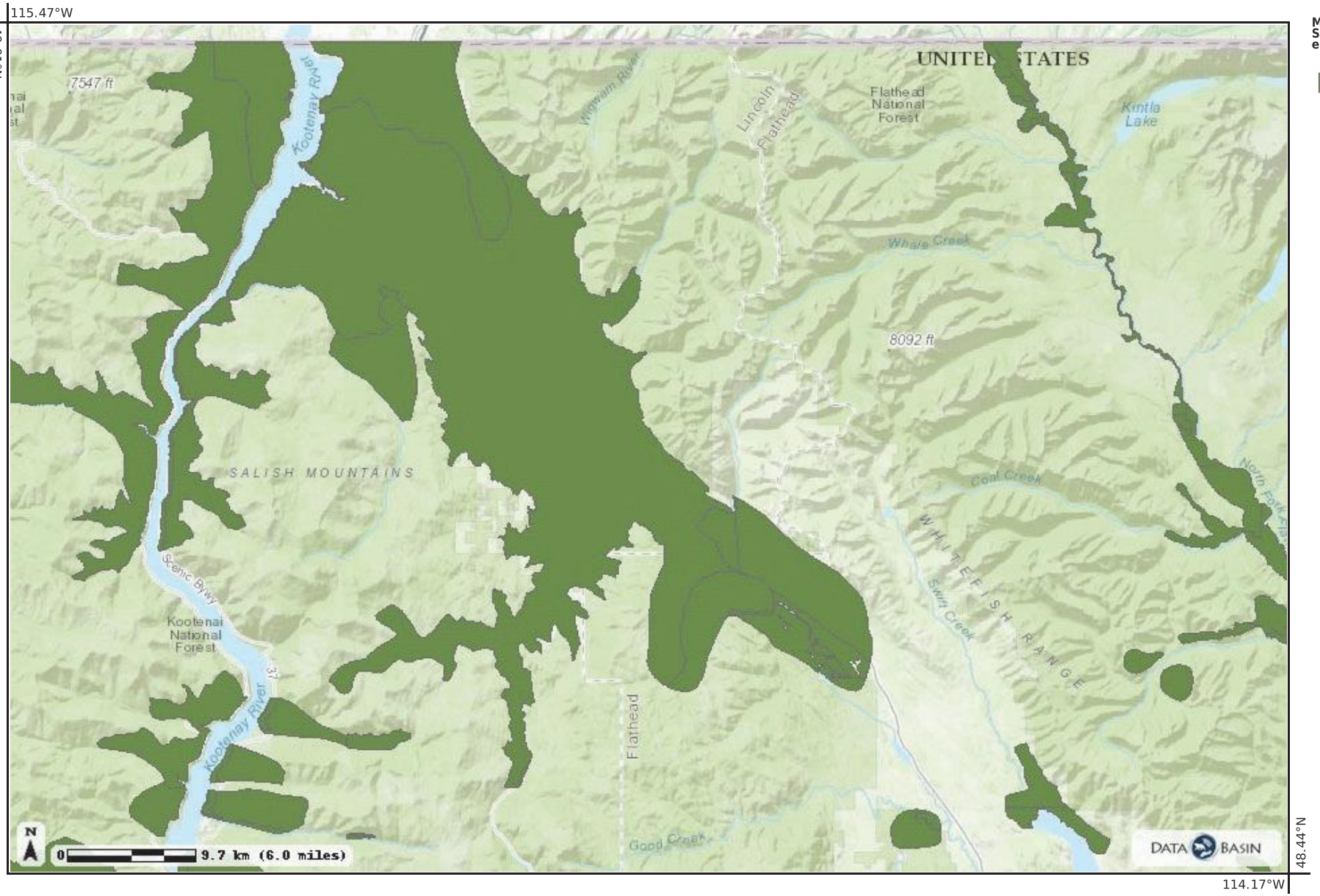
Billings:	(406) 896-5013
Butte:	(406) 533-7600
Dillon:	(406) 683-8000
Glasgow:	(406) 228-3750
Havre:	(406) 262-2820
Lewistown:	(406) 538-1900
Malta:	(406) 654-5100
Miles City:	(406) 233-2800
Missoula:	(406) 329-3914

United States Forest Service



Regional Office – Missoula, Montana Contacts

Wildlife Program Leader:	Tammy Fletcher	tammyfletcher@fs.fed.us	(406) 329-3588
Wildlife Ecologist:	Cara Staab	cstaab@fs.fed.us	(406) 329-3677
Fish Program Leader:	Scott Spaulding	scottspaulding@fs.fed.us	(406) 329-3287
Fish Ecologist:	Cameron Thomas	cathomas@fs.fed.us	(406) 329-3087
TES Program:	Lydia Allen	lrallen@fs.fed.us	(406) 329-3558
Interagency Grizzly Bear Coordinator:	Scott Jackson	sjackson03@fs.fed.us	(406) 329-3664
Regional Botanist:	Steve Shelly	sshelly@fs.fed.us	(406) 329-3041

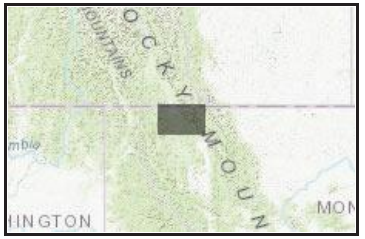


Legend

Montana Elk Winter Ranges, Summer Ranges, Calving Areas, and Migration Areas

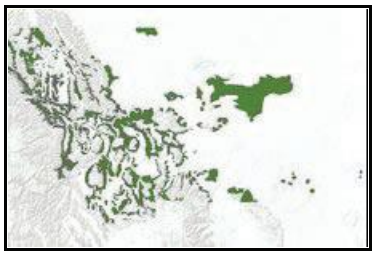
Displaying: **WINHAB**

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Map Details

Datasets



Montana Elk Winter Ranges, Summer Ranges, Calving Areas, and Migration Areas

https://nalcc.databasin.org/datasets/0eca4ea8f9b34555870599b815946d6e/

Credits: Montana Fish,Wildlife & Parks

Layers:

- elk99

Mule Deer (*Odocoileus hemionus*)
Predicted Suitable Habitat Modeling

Distribution Status: Resident Year Round
State Rank: S5
Global Rank: G5



Modeling Overview

Data Source Last Updated: August 17, 2017
Model Produced On: August 18, 2017

Deductive Modeling

Modeling Process, Outputs, and Suggested Uses

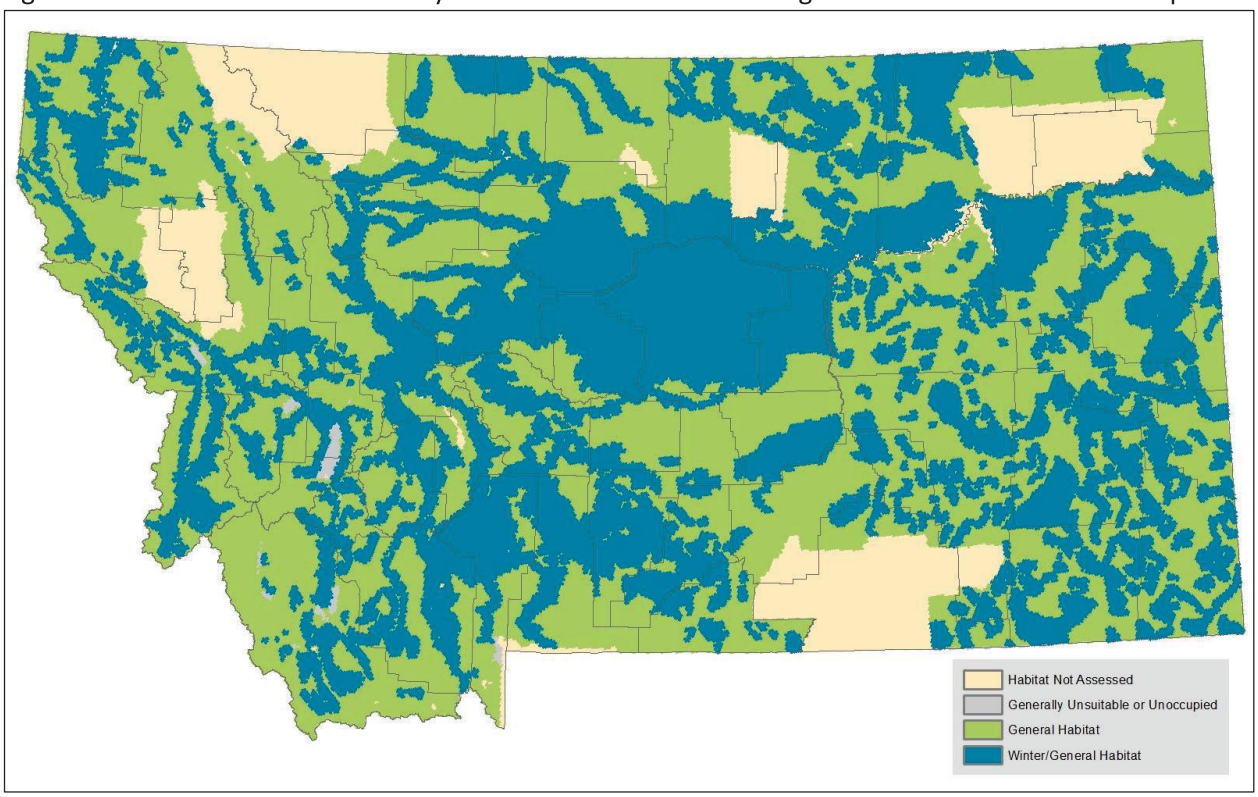
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Suggested Citation: Montana Natural Heritage Program. 2017. Mule Deer (*Odocoileus hemionus*) predicted suitable habitat models developed on August 18, 2017. Montana Natural Heritage Program, Helena, MT. 4 pp.

Montana Field Guide Species Account: http://fieldguide.mt.gov/speciesDetail.aspx?elcode=AMALC02010

Deductive Model Map Output

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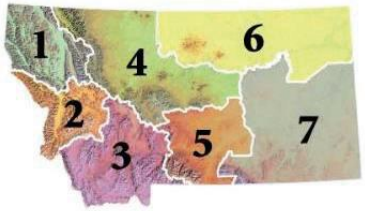


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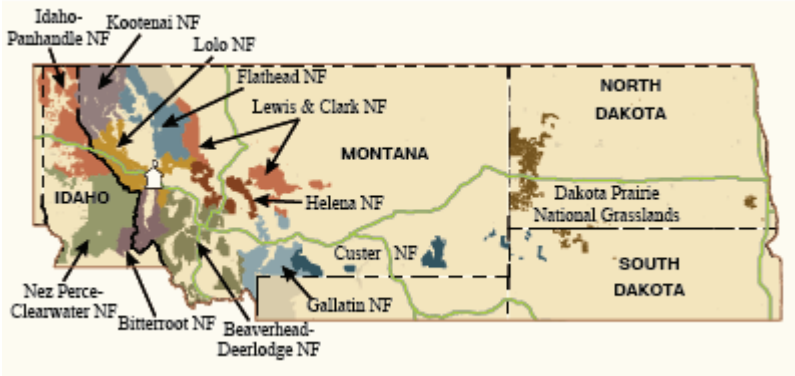
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Regional Botanist:	Steve Shelly	sshelly@fs.fed.us	(406) 329-3041

MONTANA STATE LIBRARY
NATURAL HERITAGE PROGRAM
A program of the **Montana State Library's Natural Resource Information System.**

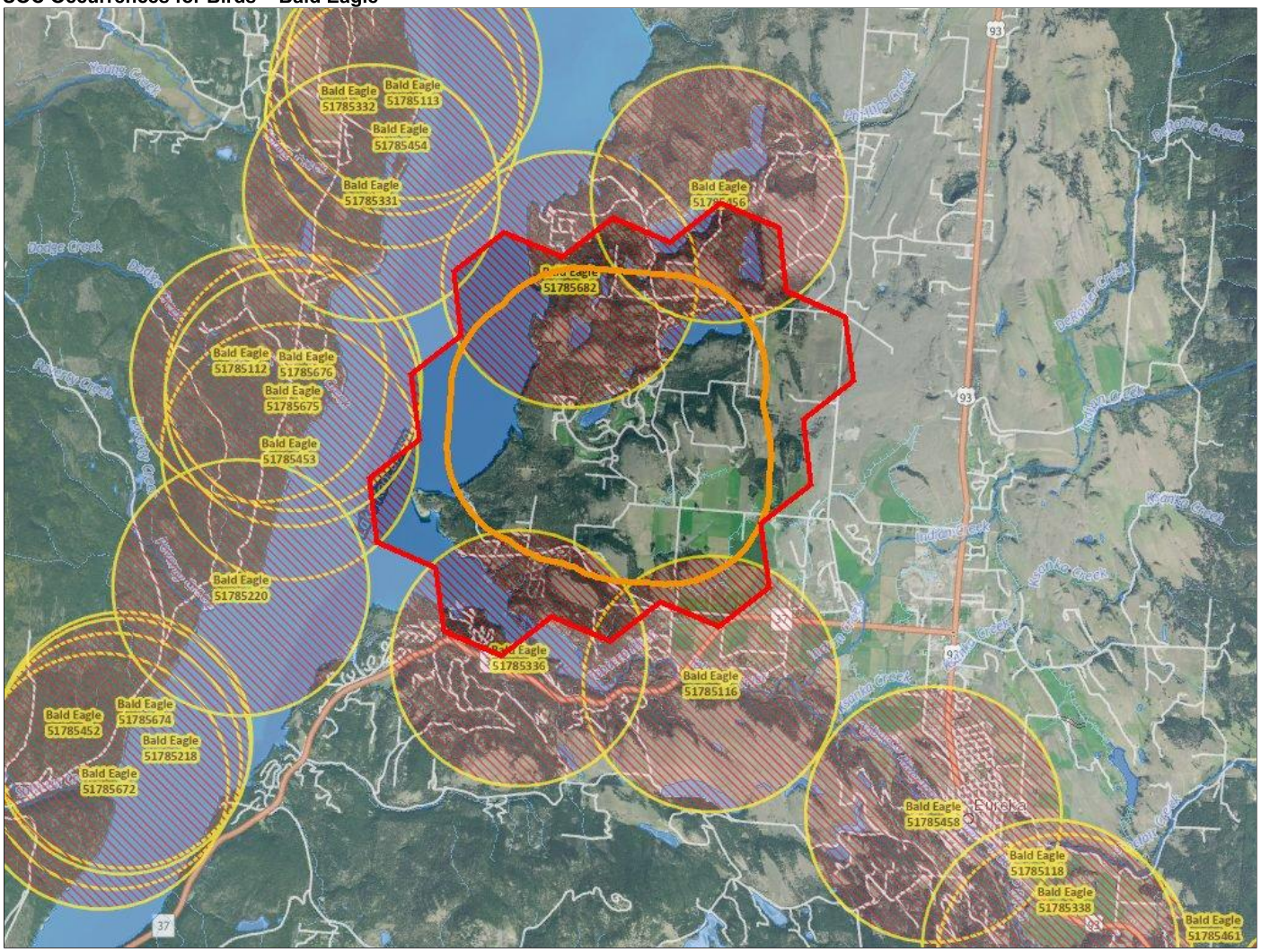
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48.98603	-115.29521



Montana SOC Occurrences Report

SOC Occurrences for Birds = Bald Eagle

Report generated 5/15/2026 3:06:43 PM



Birds - Bald Eagle *(Haliaeetus leucocephalus)*

SO Count: 20 **Obs Count**: 160 **Earliest Obs**: 1966 **Recent Obs**: 2024

Special Status Species
Native Species
Global Rank: G5
State Rank: S4

Agency Status
USFWS: BGEPA; MBTA
USFS: Sensitive - Known in Forests (LOLO)
BLM: SENSITIVE
FWP SWAP:
PIF: 2

Delineation Criteria
Confirmed nesting area buffered by a minimum distance of 2,000 meters in order to be conservative about encompassing the breeding territory and area commonly used for renesting. Only nesting observations with a locational uncertainty of 1,000 meters or less will be used to delineate a nesting area.

Last Updated
Mar 19, 2026

SO ID: 51785112	**Acres**: 3,095	**Obs Count**: 13	**Earliest Obs**: 1990	**Recent Obs**: 2003
SO ID: 51785113	**Acres**: 3,105	**Obs Count**: 3	**Earliest Obs**: 2012	**Recent Obs**: 2014
SO ID: 51785116	**Acres**: 3,095	**Obs Count**: 15	**Earliest Obs**: 2010	**Recent Obs**: 2018
SO ID: 51785118	**Acres**: 3,095	**Obs Count**: 11	**Earliest Obs**: 2003	**Recent Obs**: 2014
SO ID: 51785218	**Acres**: 3,105	**Obs Count**: 1	**Earliest Obs**: 1997	**Recent Obs**: 1997
SO ID: 51785220	**Acres**: 3,105	**Obs Count**: 1	**Earliest Obs**: 2012	**Recent Obs**: 2012
SO ID: 51785331	**Acres**: 3,105	**Obs Count**: 3	**Earliest Obs**: 2012	**Recent Obs**: 2014
SO ID: 51785332	**Acres**: 3,095	**Obs Count**: 2	**Earliest Obs**: 1983	**Recent Obs**: 1984
SO ID: 51785336	**Acres**: 3,095	**Obs Count**: 8	**Earliest Obs**: 2012	**Recent Obs**: 2022
SO ID: 51785338	**Acres**: 3,105	**Obs Count**: 3	**Earliest Obs**: 2009	**Recent Obs**: 2012
SO ID: 51785452	**Acres**: 3,095	**Obs Count**: 18	**Earliest Obs**: 2004	**Recent Obs**: 2009
SO ID: 51785453	**Acres**: 3,105	**Obs Count**: 2	**Earliest Obs**: 2012	**Recent Obs**: 2013
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SO ID: 51785672	**Acres**: 3,095	**Obs Count**: 43	**Earliest Obs**: 1998	**Recent Obs**: 2014
SO ID: 51785674	**Acres**: 3,105	**Obs Count**: 1	**Earliest Obs**: 1995	**Recent Obs**: 1995
SO ID: 51785675	**Acres**: 3,105	**Obs Count**: 2	**Earliest Obs**: 2013	**Recent Obs**: 2014
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SO ID: 51785682	**Acres**: 3,095	**Obs Count**: 4	**Earliest Obs**: 2010	**Recent Obs**: 2014

Citation for this report:
Montana SOC Occurrences Report
SOC Occurrences for Birds = Bald Eagle
Within Lat/Long: (48.86099,-114.96193) to (48.98603,-115.29521)
Natural Heritage Map Viewer. Montana Natural Heritage Program.
Retrieved on May 15, 2026, from https://mtnhp.org/MapViewer/SOReport.aspx

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1201 11th Ave ▫ P.O. Box 201800 ▫ Helena, MT 59620-1800 ▫ fax 406-444-0266 ▫ phone 406-444-3989

Montana Field Guide

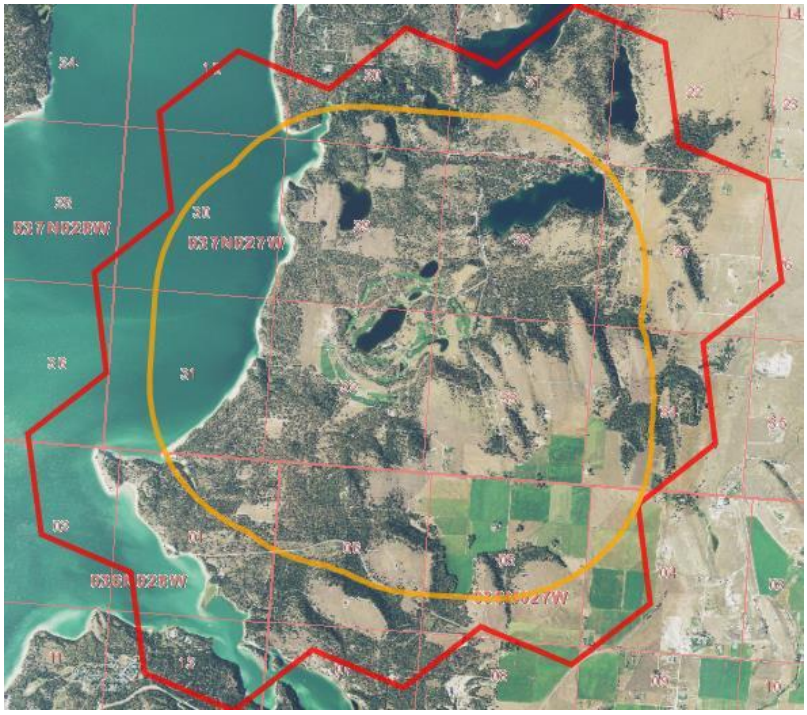
Species Occurrences

from Environmental Summary



Latitude	Longitude
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48.96448	-115.18172

Summarized by: CS0858264 (Custom Area of Interest)
Filtered by: Species with MT Status = Species of Concern, Special Status, Important Animal Habitat, Potential SOC



Suggested Citation: Montana Natural Heritage Program. Environmental Summary Report. Custom Field Guide. Summarized by: CS0858264 (Custom Area of Interest). Filtered by: Species with MT Status = Species of Concern, Special Status, Important Animal Habitat, Potential SOC. Retrieved on 5/15/2026.

Note: This PDF version of the Montana Field Guide is intended to assist in offline identification and field work. It is not intended to replace the online Field Guide, as that version contains more information and is updated daily. For the most up-to-date information on Montana species, please visit **FieldGuide.mt.gov**

The Montana Natural Heritage Program is part of the Montana State Library's Natural Resource Information System. Since 1985, it has served as a neutral and non-regulatory provider of easily accessible information on Montana's species and biological communities to inform all stakeholders in environmental review, permitting, and planning processes. The program is part of the NatureServe network that is composed of over 60 member programs across North America that work to provide current and comprehensive distribution and status information on species and biological communities.

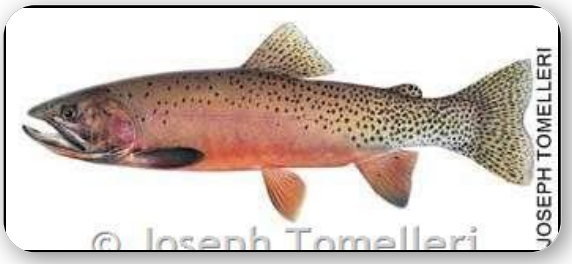
MONTANA STATE LIBRARY NATURAL HERITAGE PROGRAM

NATURESERVE

Westslope Cutthroat Trout

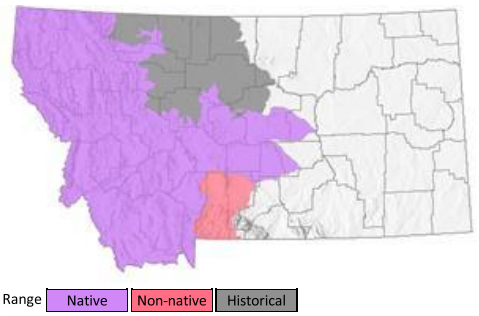
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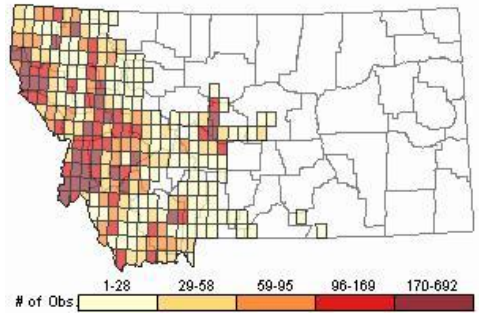
View in Field Guide



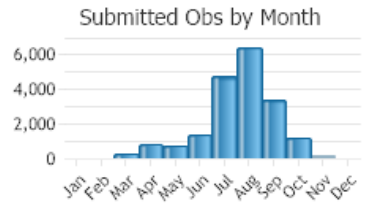
Species of Concern
Native/Non-native Species
(depends on location or taxa)
Global Rank: G4
State Rank: S2

Agency Status
USFWS:
USFS: Sensitive - Known in Forests (BD, BRT, KOOT, LOLO) Species of Conservation Concern in Forests (CG, HLC)
BLM: SENSITIVE
FWP SWAP: SGCN





 # Observations: 19287



General Description

The Westslope Cutthroat Trout is one of two species of native cutthroat found in the state. Together they have been designated Montana's state fish, the Blackspotted Cutthroat Trout. Cutthroat trout are so named for the red slashes near the lower jaws. The Westslope Cutthroat Trout's historical range was all of Montana west of the Continental Divide as well as the upper Missouri River drainage. This fish has been seriously reduced in its range by two primary factors: hybridization with Rainbow and/or Rocky Mountain Cutthroat Trout, and habitat loss and degradation. Since the Westslope is recognized as a very important part of our native fish fauna it has been designated a Montana Fish of Special Concern in Montana. Pure Westslope Cutthroat Trout have been identified by genetic analysis and form the broodstock maintained by the Montana Department of Fish, Wildlife, and Parks at its Anaconda hatchery. The average size of these fish is 6 to 16 inches, depending on habitat, but they rarely exceed 18 inches in length.

Westslope Cutthroat Trout are common in both headwaters lake and stream environments. They feed primarily on aquatic insect life and zooplankton. Cutthroat spawn in the spring in running water, burying their eggs in a nest called a redd. The eggs hatch in a few weeks to a couple of months. The newborn fry frequently migrate back to lakes to rear after 1 to 2 years in their native stream. Westslope Cutthroat Trout is a trout with small, non-rounded spots, with few spots on the anterior body below the lateral line. Coloration varies, but generally is silver with yellowish hints, though bright yellow, orange, and especially red colors can be expressed to a much greater extent than on coastal or Rocky Mountain Cutthroat Trout (Behnke 1992). Hybridization between Westslope and Yellowstone Cutthroat Trout can produce a spectrum of spotting and coloration ranging between the typical patterns of each subspecies. Some populations that have been affected by hybridization show little or no phenotypic signs of hybridization (Behnke 1992). Hybridization with Rainbow Trout can be detected by the appearance of spots on the top of the head and on the anterior body below the lateral line, as well as by reduced scale counts, increased caecal counts, and loss of basibranchial teeth (Behnke 1992).

For a comprehensive review of the ecology, conservation status, threats, and management of this and other Montana fish species of concern, please see Montana Chapter of the American Fisheries Society Species of Concern Status Reviews.

Diagnostic Characteristics

Tiny teeth are usually present on the floor of the mouth behind the tongue. The lower sides are red during spawning season (Montana Fish, Wildlife, and Parks). In Montana both pure and moderately hybridized populations of Westslope Cutthroat Trout have a high incidence of basibranchial teeth, whereas pure Rainbow Trout lack these teeth. The presence of basibranchial teeth in some individuals of a Rainbow Trout population indicates hybridization with Westslope Cutthroat Trout (Leary et al. 1996).

It can be difficult to visually distinguish Westslope from other cutthroat trout subspecies, but the Westslope Cutthroat Trout tends to have more small spots by the tail and none by the pectoral fin and the fish is more of a silvery or greenish color. The only way to be certain about identification of this subspecies is by genetic testing (Montana AFS Species Status Account).

Habitat

Spawning and rearing streams tend to be cold and nutrient poor. Westslope Cutthroat Trout seek out gravel substrate in riffles and pool crests for spawning habitat. Cutthroat trout have long been regarded as sensitive to fine sediment (generally defined as 6.3 millimeters or less). Although studies have documented negative survival as fine sediment increases (Weaver and Fraley 1991), it is difficult to predict their response in the wild (McIntyre and Rieman 1995). This is due to the complexity of stream environments and the ability of fish to adapt somewhat to changes in micro-habitat (Everest et al. 1987, Montana AFS Species Status Account).

Westslope Cutthroat Trout also require cold water, although it has proven elusive to define exact temperature requirements or tolerances. Likewise, cutthroat trout tend to thrive in streams with more pool habitat and cover than uniform, simple habitat (Shepard et al. 1984). Juvenile cutthroat trout overwinter in the interstitial spaces of large stream substrate. Adult cutthroat trout need deep, slow moving pools that do not fill with anchor ice in order to survive the winter (Brown and Mackay 1995, Montana AFS Species Status Account).

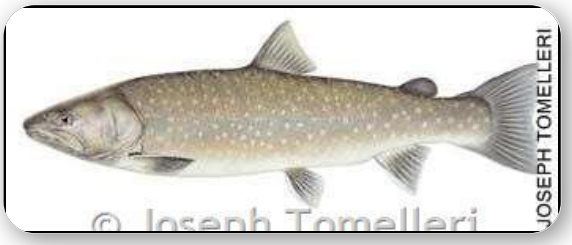
Management

The management of this and other native and non-native fish species and their habitats is outlined in Montana Fish, Wildlife and Parks' 2023-2026 Statewide Fisheries Management Plan

Management of this species involves protecting the population strongholds and making tough decisions on restoration priorities for the depressed populations. The State of Montana has altered fishing regulations to reduce fishing mortality. Montana has also developed a Conservation Agreement signed by nine government agencies and conservation groups (Montana Department of Fish, Wildlife and Parks 1999). This agreement prioritizes protecting genetically pure populations first, then slightly introgressed populations. Recovering depressed populations will involve habitat restoration and removing non-native species. Research suggests that it is not a good idea to bolster populations with stocked fish from other watersheds due to considerable genetic variation between watersheds (Leary et al. 1998). It will be especially challenging to recover migratory life forms. Governmental agencies will need to work together to share expertise, pool financial resources and monitor progress toward restoration of this species (Montana AFS Species Status Account).

Bull Trout
Salvelinus confluentus

View in Field Guide

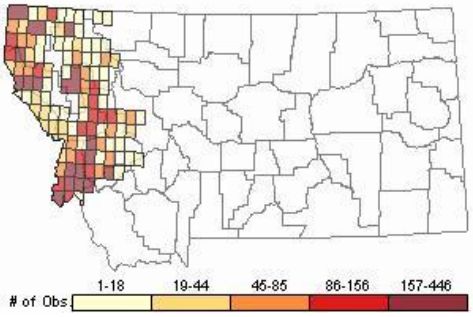


Species of Concern
Native Species
Global Rank: G3
State Rank: S2

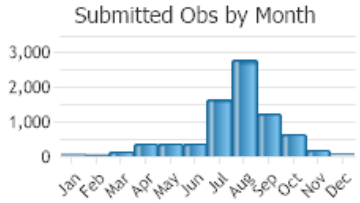
Agency Status
USFWS: LT; CH
USFS:
BLM: THREATENED
FWP SWAP: SGCN



Range Native



 # Observations: 8129



General Description

The native Bull Trout has been determined to be a separate species from the coastal Dolly Varden. Bull Trout are found in the Clark Fork and Flathead drainages of western Montana, and their slowly declining trend has led to their designation as a threatened species. Bull Trout are a sensitive species that do not tolerate high sediment levels in their spawning streams. Sediment can suffocate the developing embryos before they hatch. In Flathead Lake, where they achieve trophy sizes of up to 25 pounds, the Bull Trout life cycle has been studied extensively. Adult Bull Trout ascend the North and Middle forks of the Flathead River to spawn in small tributary streams; in some cases traveling well over 100 miles in a few months. They spawn in the fall and the adults return to the lake. Young fish may spend up to three years in the tributaries before returning to mature in Flathead Lake. In other river systems, Bull Trout may be a resident stream fish.

Often, native Bull Trout have been displaced through competitive interaction with introduced Brook Trout. Bull Trout and Brook Trout will interbreed, resulting in sterile hybrids, which leads to a further decrease in Bull Trout populations. The Bull Trout may be considered the Grizzly Bear of the fish world in relationship to its need for unaltered habitat. Young Bull Trout feed primarily on aquatic invertebrates but adults eat mostly other fish (Montana Fish, Wildlife, and Parks). Resident adults are 15 to 30 centimeters in length whereas migratory adults commonly exceed 60 centimeters (Rieman and McIntyre 1993).

For a comprehensive review of the ecology, conservation status, threats, and management of this and other Montana fish species of concern, please see Montana Chapter of the American Fisheries Society Species of Concern Status Reviews.

Habitat

Sub-adult and adult fluvial Bull Trout reside in larger streams and rivers and spawn in smaller tributary streams, whereas adfluvial Bull Trout reside in lakes and spawn in tributaries (Montana AFS Species Status Account). They spawn in headwater streams with clear gravel or rubble bottom (Brown 1971, Holton 1981).

Torrent Sculpin
Cottus rhotheus

View in Field Guide

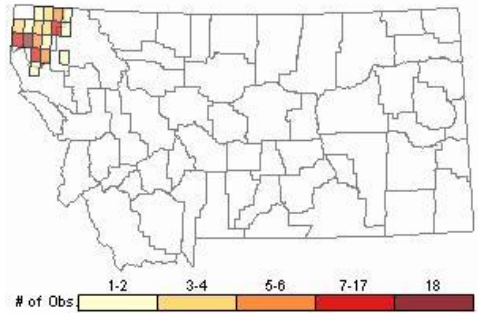


Species of Concern
Native Species
Global Rank: G5
State Rank: S3

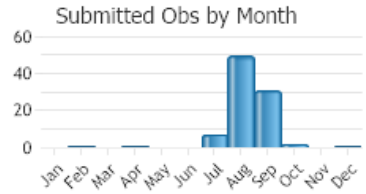
Agency Status
USFWS:
USFS:
BLM:
FWP SWAP: SGCN



Range Native



 # Observations: 93



General Description

In Montana, the Torrent Sculpin is found only in the fast headwater streams of the Kootenai River drainage in the northwest portion of the state. As with all sculpins, it presents a somewhat grotesque appearance with its large head, huge pectoral fins, and bulging eyes. Sculpins have a very flattened hydrodynamic shape, which serves them well as they dart along the bottom between the cracks and crevices of rocks (Montana AFS Species Status Account).

For a comprehensive review of the ecology, conservation status, threats, and management of this and other Montana fish species of concern, please see Montana Chapter of the American Fisheries Society Species of Concern Status Reviews.

Diagnostic Characteristics

This species is gray-brown with black speckling. The underside is light and the chin strongly mottled. The first dorsal fin is fringed with orange on spawning males. Palatine teeth are usually present. The body is robust. They usually have coarse prickles on the back, sides, and sometimes on the caudal peduncle.

Habitat

These fish are typically found in the riffles of cold, clear streams, but are also reported in the rocky shores of lakes. They hide among the boulders and cobbles on the bottom.

Douglas Bladderpod

Physaria douglasii

View in Field Guide

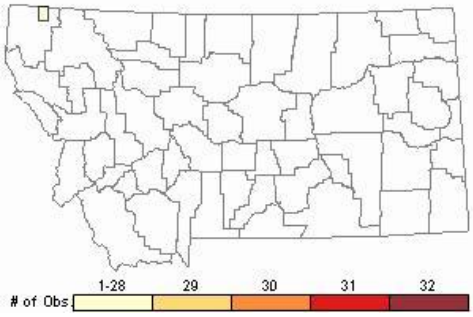


Species of Concern
Native Species
Global Rank: G5
State Rank: S1

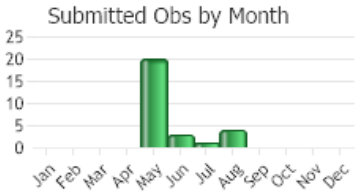
Agency Status
USFWS:
USFS: Sensitive - Known in Forests (KOOT)
BLM:
State Threat Score: Medium
CCVI: Extremely Vulnerable
C-value:
FWP SWAP: SGCN



Range Native



 # Observations: 28



General Description

Stems erect, 10–30 cm from a simple caudex. Basal leaves 2–9 cm long; the blade oblanceolate to obovate with entire to weakly dentate margins. Stem leaves numerous, narrowly oblanceolate, entire. Vestiture of 4- to 6-rayed sessile hairs. Petals 6–9 mm long. Fruit globose, inflated, 3–4 mm high style 3–4 mm long; seeds 2 to 4 per locule; pedicels ascending, straight to sigmoid, 6–20 mm long (Lesica et al. 2012. Manual of Montana Vascular Plants. BRIT Press. Fort Worth, TX).

Habitat

Sandy soils in open, ponderosa pine woodlands

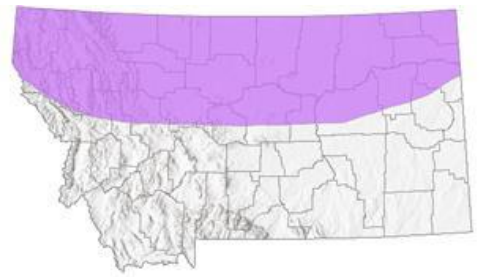
Many-headed Sedge
Carex sychnocephala

View in Field Guide

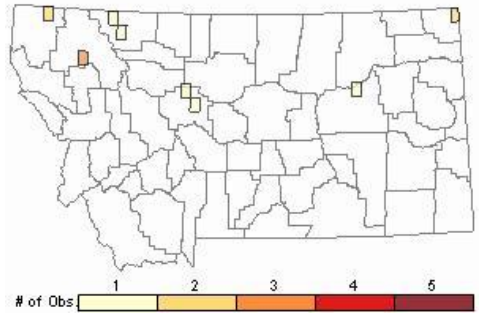


Species of Concern
Native Species
Global Rank: G5
State Rank: S1S2

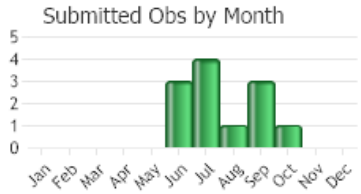
Agency Status
USFWS:
USFS:
BLM:
State Threat Score: High - Medium
CCVI:
C-value: 8
FWP SWAP: SGCN



Range Native



 # Observations: 12



General Description

Caespitose. Stems erect, 5–50 cm. Leaves basal and cauline; blades 1–3 mm wide. Inflorescence of 4 to 12 sessile spikes in a dense head; lower bracts erect, much longer than the inflorescence. Spikes 4–8 mm long, all similar; female flowers above few male. Perigynia erect, linear-lanceolate, green to tan, wing- and serrulate-margined, 3–6.5 × 0.8–1 mm, tapered to the serrulate beak, 3–5 mm long; stigmas 2. Female scales lanceolate, acuminate, tan-hyaline with a green midvein, shorter or longer than the perigynia. Achene 2-sided, smaller than the perigynium (Lesica et al. 2012. Manual of Montana Vascular Plants. BRIT Press. Fort Worth, TX).

Phenology

Fruit mature in July-August.

Diagnostic Characteristics

The combination of long, leaf-like lower bracts, and long, narrow perigynia is distinctive.

Habitat

Moist soil of meadows along streams and ponds in the valleys and on the plains.

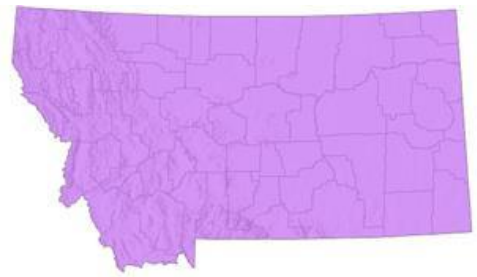
Bald Eagle
Haliaeetus leucocephalus

View in Field Guide

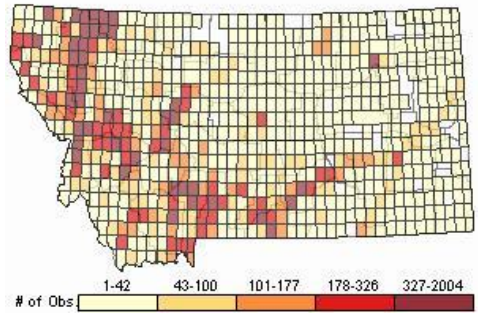


Special Status Species
Native Species
Global Rank: G5
State Rank: S4

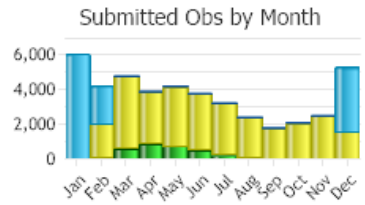
Agency Status
USFWS: BGEPA; MBTA
USFS: Sensitive - Known in Forests (LOLO)
BLM: SENSITIVE
PIF: 2



Range Year-round



 # Observations: 58026



General Description

With a white head and tail contrasting with a dark brown body and wings, the adult plumage of the Bald Eagle, attained at approximately 5 years of age, is unmistakable. In addition to the obvious white head and tail, other distinguishing features include the yellow bill, cere, iris, legs and feet. Second in size of North American birds of prey only to the California Condor (*Gymnogyps californianus*), the Bald Eagle ranges in total length from 71 to 96 cm, with an average wingspan of 168 to 244 cm and a body mass ranging from 3.0 to 6.3 kg (Buehler 2000). In general appearance the sexes are similar with females approximately 25 percent larger than males. The plumage of the juvenile birds is much less distinct, being dark brown overall. The head, body, wings, and tail are dark brown with limited mottling on the underside of the wings and on the belly. While the legs and feet of the young bird are yellow like those of adults, the bill and cere are dark gray and the iris is dark brown.

The voice of the Bald Eagle is a weak series of chirps. The vocalization is described as flat chirping, stuttering whistles, given in a halting fashion, with the immature calls generally harsher and more shrill than those of the adults (Buehler 2000, Sibley 2000).

For a comprehensive review of the conservation status, habitat use, and ecology of this and other Montana bird species, please see Marks et al. 2016, Birds of Montana.

Diagnostic Characteristics

In adult plumage, the Bald Eagle is unlikely to be confused with any other species. Juvenile Bald Eagles may be confused with Golden Eagles (*Aquila chrysaetos*), especially with adult Goldens. A few characteristics differentiate these two species. The Bald Eagle has unfeathered legs, while those of the Golden Eagle are feathered. During flight, the head and neck of the Bald Eagle extend to about half the length of the tail, while the Golden Eagle is considerably less. This distinction is true for all age classes of both species. The terminal tail band on the Golden Eagle is dark and well defined, especially on the juveniles. In addition, the underwing and belly of the Bald Eagle show a greater amount of white compared to the Golden Eagle, whose white feathering is restricted to the base of the flight feathers (Buehler 2000).

Habitat

In Montana, as elsewhere, the Bald Eagle is primarily a species of riparian and lacustrine habitats (forested areas along rivers and lakes), especially during the breeding season. Important year-round habitat includes wetlands, major water bodies, spring spawning streams, ungulate winter ranges and open water areas (Bureau of Land Management 1986). Wintering habitat may include upland sites. Nesting sites are generally located within larger

forested areas near large lakes and rivers where nests are usually built in the tallest, oldest, large diameter trees. Nesting site selection is dependent upon maximum local food availability and minimum disturbance from human activity (Montana Bald Eagle Working Group 1994). See the Montana Bald Eagle Management Plan (1994) for further details including home range sizes and habitat requirements of fledgling birds.

Yuma Myotis

Myotis yumanensis

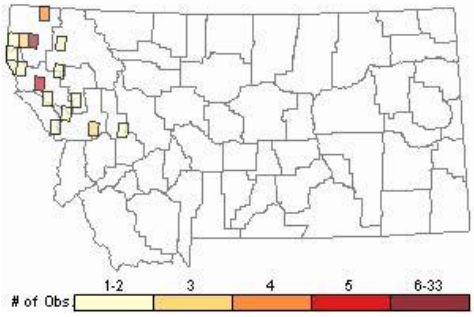
View in Field Guide



Species of Concern
Native Species
Global Rank: G5
State Rank: S3

Agency Status
USFWS:
USFS:
BLM:
FWP SWAP: SGCN





 # Observations: 60



General Description

The Yuma Myotis is a small bat typical in appearance for its genus and easily confused with the Little Brown Myotis (*Myotis lucifugus*). The species has short ears, brown fur, and dark membranes. To date it has only been observed in the northwest region of the state.

Diagnostic Characteristics

Similar in appearance to the Little Brown Myotis (*Myotis lucifugus*), these species can be difficult to distinguish from each other. Detailed examination of morphological attributes and characteristic call frequency can be used in some cases to separate these species where their ranges overlap. In most cases genetic identification is the only method to reliably identify this species. Yuma Myotis can be separated from other Myotis species by the absence of a well developed keel on the calcar, and ears of less than 14 mm.

Habitat

Found near water in dry coniferous forests and arid shrublands. Summer day roosts include buildings, bridges, mines, and bat houses, sometimes caves and trees. Hibernacula not described.

Wood Lily
Lilium philadelphicum

View in Field Guide

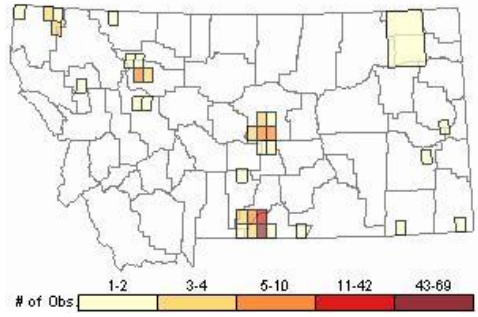


Species of Concern
Native Species
Global Rank: G5
State Rank: S3

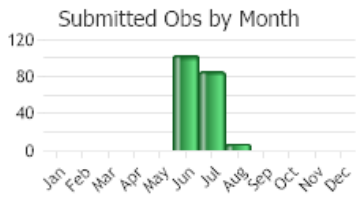
Agency Status
USFWS:
USFS:
BLM:
State Threat Score: Low
CCVI: Less Vulnerable
C-value: 9



Range Native



 # Observations: 197



General Description

Stems 20–60 cm. Leaves linear-lanceolate, 3–7 cm long. Flowers 1 to 3; tepals reddish with yellowish and black-spotted bases, elliptic, long-clawed, 5–7 cm long, spreading; stamens barely included. Capsule narrowly ovoid, 2–4 cm long (Lesica et al. 2012. Manual of Montana Vascular Plants. BRIT Press. Fort Worth, TX).

Habitat

Moist, usually calcareous meadows, grasslands, fens, woodlands; valleys (Lesica et al. 2012. Manual of Montana Vascular Plants. BRIT Press. Fort Worth, TX).

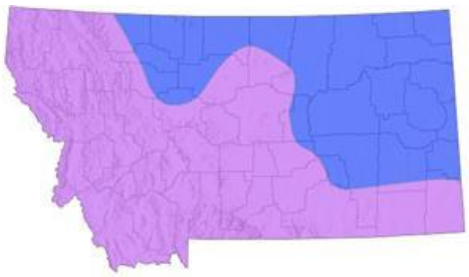
Evening Grosbeak
Coccothraustes vespertinus

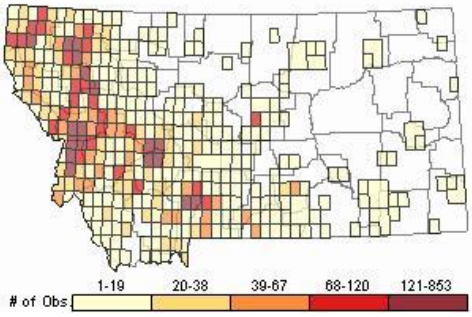
View in Field Guide



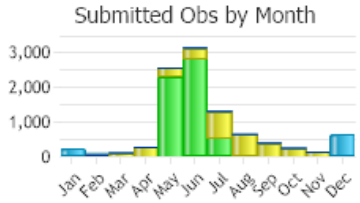
Species of Concern
Native Species
Global Rank: G5
State Rank: S3

Agency Status
USFWS: MBTA; BCC10
USFS:
BLM:
FWP SWAP: SGCN
PIF:





 # Observations: 11763



General Description

The Evening Grosbeak is a large, robust finch with a massive, conical bill. This species forms large, irruptive feeding flocks in winter, announcing its arrival with a loud "*clee-ip*" or "*peeer*" call. Although gregarious in winter, this species is secretive during the breeding season and little is known about its breeding biology (Gillihan and Byers 2001).

For a comprehensive review of the conservation status, habitat use, and ecology of this and other Montana bird species, please see Marks et al. 2016, Birds of Montana.

Phenology

Adults observed feeding young from late-May through August. Feeding flocks are irruptive and have been observed September-early May, with the largest flock size occurring during the winter months of December-February (Montana Natural Heritage Program Point Observation Database 2014).

Diagnostic Characteristics

A large, stocky finch with a heavy, greenish-yellow bill. Adult male has a brownish-black head with a black crown, and a yellow forehead and eyebrow. The neck and back are brown contrasting with yellow shoulders and rump. Tail and wings are black with large white patches. Throat is brown and underparts are brownish-yellow. Adult female is mostly grayish brown with a thin moustache and yellowish wash on the sides of the neck. Wings and tail are black with white spotting. Throat and underparts are pale grayish-brown. Juvenile resembles adult female (Gillihan and Byers 2001).

Habitat

In Montana, the Evening Grosbeak breeds in mixed coniferous and spruce-fir forests of western Montana. Winter habitat is much more varied, including coniferous forest as well as urban and suburban areas statewide (Gillihan and Byers 2001, Montana Natural Heritage Program Point Observation Database 2014).

Pileated Woodpecker

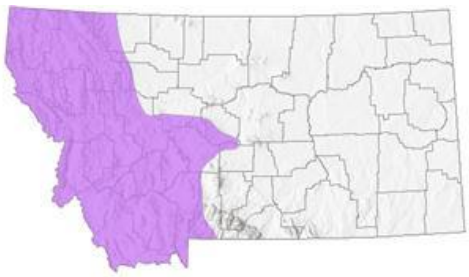
Dryocopus pileatus

View in Field Guide

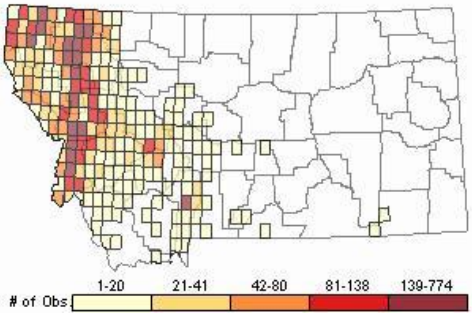


Species of Concern
Native Species
Global Rank: G5
State Rank: S3

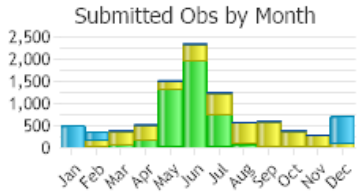
Agency Status
USFWS: MBTA
USFS:
BLM:
FWP SWAP: SGCN
PIF: 2



Range Year-round



 # Observations: 10986



General Description

A crested, black woodpecker with wing span of about 70 cm. More or less uniformly black body with a white line extending down the neck from the bill to underwing area; white throat and line above the eye; black through the eye. Male with a vivid red crest extending from the bill to the nape and a red moustache mark extending from the bill. Female slightly smaller than male and with gray to brown forehead, red crest, and no red moustache mark. In all sex and age groups, a few gray-white bars can be found on the flanks. In flight, wings show black leading and trailing edges and white near the center of the wing close to the body. Juveniles have duller, more loosely textured feathers; primary 10 is longer, broader, and less pointed. Voice a loud, characteristic "*kuk-kuk-kuk-kuk*" drumming a deep resonant roll that carries a kilometer or more (Bull and Jackson 1995).

For a comprehensive review of the conservation status, habitat use, and ecology of this and other Montana bird species, please see Marks et al. 2016, Birds of Montana.

Diagnostic Characteristics

Except for the probably extinct Ivory-billed Woodpecker (*Campephilus principalis*) of the southeastern United States and Imperial Woodpecker (*C. imperialis*) of montane western Mexico, the Pileated Woodpecker is the largest woodpecker in North America. Large size and prominent red crest distinguish this woodpecker from all other woodpecker species in Montana.

Habitat

Late successional stages of coniferous or deciduous forest preferred, but also younger forests that have scattered, large dead trees (Bull and Jackson 1995). In forests of northwestern Montana dominated by western larch and Douglas-fir, Pileated Woodpecker nests (113 in 97 trees) were in western larch (52), ponderosa pine (18) black cottonwood (15), trembling aspen (7), western white pine (3), grand fir (1), and Douglas-fir (1). Nest-tree diameter at breast height (DBH) averaged 73 cm (29 in) and height averaged 29 m (95 ft). Roost trees were similar to nest trees; both typically were snags (81% and 78%, respectively) with broken tops (77% in both categories). Old-growth stands containing western larch were common nesting sites; old-growth ponderosa pine, black cottonwood and trembling aspen were locally important but more restricted in distribution (McClelland and McClelland 1999).

Lewis's Woodpecker

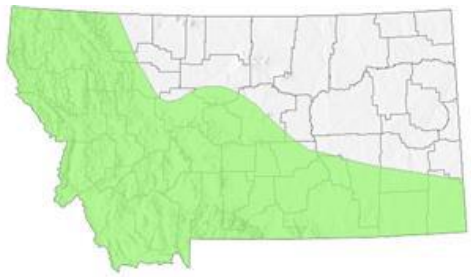
Melanerpes lewis

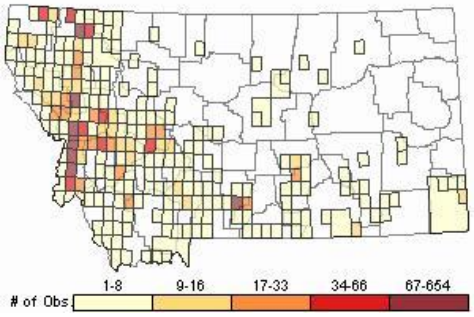
View in Field Guide



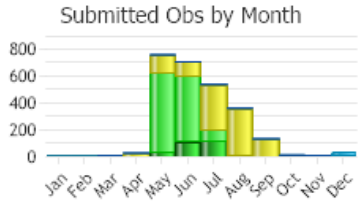
Species of Concern
Native Species
Global Rank: G4
State Rank: S2B

Agency Status
USFWS: MBTA; BCC10; BCC17
USFS: Species of Conservation Concern in Forests (HLC)
BLM: SENSITIVE
FWP SWAP: SGCN
PIF: 2





 # Observations: 3162



General Description

The Lewis's Woodpecker is a medium sized woodpecker, approximately 10 to 11 inches in length. They weigh about 115 grams. Their wings and tail are relatively long (Sibley 2000). The head, back, wings and tail are greenish-black. They have a silver-pale collar and upper breast. The face is dark red and the belly and lower breast is pinkish or salmon-red. The sexes are similar in appearance, but males are usually larger than females (Tobalske 1997). Juvenile birds are distinct from adults, having an overall dark appearance with more brownish-black on the back. They usually lack the silver color of the neck, the pinkish belly color, as well as the red on the face (Tobalske 1997).

Lewis's Woodpeckers are quieter than other woodpeckers. They commonly call during the breeding season only. During breeding male Lewis's Woodpeckers will give a harsh "*CHURR*" call which is repeated 3 to 8 times. Males will also give a chatter call throughout the year and commonly during the breeding season (Tobalske 1997).

For a comprehensive review of the conservation status, habitat use, and ecology of this and other Montana bird species, please see Marks et al. 2016, Birds of Montana.

Diagnostic Characteristics

The plumage of the Lewis's Woodpecker will easily distinguish it from any other woodpecker species. Also the flight pattern is unique for woodpeckers. Lewis's Woodpecker flight is slow and direct and will often include long glides and aerial maneuvers (Tobalske 1997). From long distances, Lewis's Woodpeckers may be mistaken for a American Crow or jay, but closer observation of the plumage and form will eliminate any confusion.

Habitat

In the Bozeman area, Lewis's Woodpeckers are known to occur in river bottom woods and forest edge habitats (Skarr 1969). Habitat information from other Lewis's Woodpecker sources state that the breeding habitat is open forest and woodland, often logged or burned, including oak and coniferous forest; primarily ponderosa pine (*Pinus ponderosa*), riparian woodland and orchards, and less commonly in pinyon-juniper *Pinus* spp.-*Juniperus* spp.) (American Ornithologists' Union 1983). Lewis's Woodpecker distribution is closely associated with open ponderosa pine forest in western North America, and is strongly associated with fire-maintained old-growth ponderosa pine (Diem and Zeveloff 1980, Tobalske 1997, Saab and Dudley 1998).

Important habitat features include an open tree canopy, a brushy understory with ground cover, dead trees for nest cavities, dead or downed woody debris, perch sites, and abundant insects. Lewis's Woodpeckers use open ponderosa pine forests, open riparian woodlands dominated by cottonwood (*Populus* spp.), and logged or burned pine. They also use oak (*Quercus* spp.) woodlands, orchards, pinyon-juniper woodlands, other open coniferous forests, and agricultural lands. Apparently the species prefers open ponderosa pine at high elevations and open riparian forests at lower elevations (Bock 1970, Tobalske 1997). In the Blue Mountains of Oregon, they showed a

preference for open stands near water (Thomas et al. 1979). Because the species catches insects from the air, perches near openings or in open canopy are important for foraging habitat (Bock 1970, Tobalske 1997).

Lewis's Woodpeckers often use burned pine forests, although suitability of post-fire habitats varies with the age, size, and intensity of the burn, density of remaining snags, and the geographic region. Birds may move to unburned stands once the young fledge (Block and Brennan 1987, Tobalske 1997, Saab and Dudley 1998). They have been generally considered a species of older burns rather than new ones, moving in several years post-fire once dead trees begin to fall and brush develops, five to thirty years after fire (Bock 1970, Block and Brennan 1987, Caton 1996, Linder and Anderson 1998). However, on a two- to four-year-old burn in Idaho they were the most common cavity-nester, and occurred in the highest nesting densities ever recorded for the species (Saab and Dudley 1998). As habitat suitability declines, however, numbers decline. For example, in Wyoming, the species was more common in a seven-year-old burn than in a twenty-year-old burn (Linder and Anderson 1998). Overall, suitable conditions include an open canopy, availability of nest cavities and perches, abundant arthropod prey, and a shrubby understory (Linder and Anderson 1998, Saab and Dudley 1998).

Unlike other woodpeckers, Lewis's Woodpeckers are not morphologically well adapted to excavate cavities in hard wood. They tend to nest in a natural cavity, abandoned Northern Flicker (*Colaptes auratus*) hole, or previously used cavity, 1 to 52 meters above ground. Sometimes they will excavate a new cavity in a soft snag (standing dead tree), dead branch of a living tree, or rotting utility pole (Harrison 1979, Tobalske 1997). The mated pair may return to the same nest site in successive years. On partially logged burns with high nesting densities in Idaho, nest sites were characterized by the presence of large, soft snags and an average of 62 snags per hectare that had more than 23-centimeter diameter at breast height (dbh) (Saab and Dudley 1998).

In late summer, wandering flocks move from valleys into mountains or from breeding habitat to orchards. In winter, they use oak woodlands and nut and fruit orchards. An important habitat feature in many wintering areas is the availability of storage sites for grains or mast, such as tree bark (e.g. bark of mature cottonwood trees) or power poles with desiccation cracks (Bock 1970, Tobalske 1997). In southwestern Arizona and southeastern California, Lewis's Woodpeckers may use scrub oak, pecan orchards, and cottonwoods, but more study is needed in this area (Bock 1970). In Mexico, they use open and semi-open woodlands, especially those with oaks (Howell and Webb 1995).

Spalding's Catchfly
Silene spaldingii

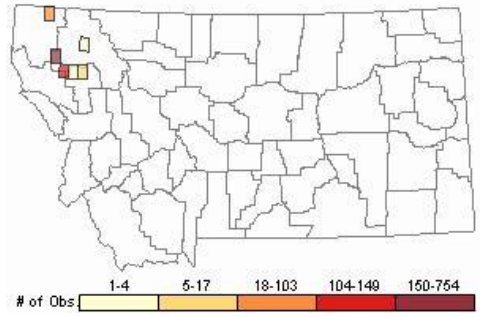
View in Field Guide



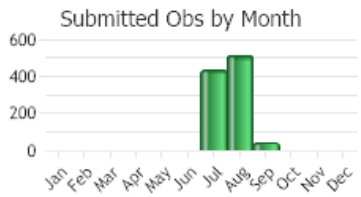
Species of Concern
Native Species
Global Rank: G2G3
State Rank: S2

Agency Status
USFWS: LT
USFS:
BLM:
State Threat Score: Very High
CCVI: Extremely Vulnerable
C-value:
FWP SWAP: SGCN





 # Observations: 1028



General Description

Spalding's Catchfly is a perennial with a simple or branched rootcrown. There are 4-7 pairs of sessile, broadly lance-shaped leaves that are 6-7 cm long below and gradually reduced in size upward. Herbage is long-hairy and very sticky. There are few to many flowers in a leafy, somewhat open inflorescence. The tubular calyx is ca. 15 mm long, has 10 nerves on its surface, and is very sticky. The corolla has 5 separate, white petals, each composed of a narrow claw that is ca. 15 mm long expanding into a broadened blade above. Only the entire or shallowly-lobed blade with 4 tiny wings at the base protrudes beyond the mouth of the calyx. The fruit is a capsule that is 10-15 mm long and filled with numerous tiny seeds.

Phenology

Flowering in July and usually continuing through August. Dried flower/fruiting stalks are often visible into the Fall.

Diagnostic Characteristics

This species can be distinguished from other perennial *Silene* spp. by its very sticky foliage and by its petals that are entire or only shallowly lobed.

Habitat

Open, mesic grasslands in the valleys and foothills usually with rough fescue, Nelson's needlegrass, Richardson's needlegrass and Idaho fescue. Occasionally with scattered ponderosa pine or broadleaf shrubs. Soils are usually deep and loamy. *S. spaldingii* typically occurs on northerly aspects and along draws and swales.

Long-eared Myotis

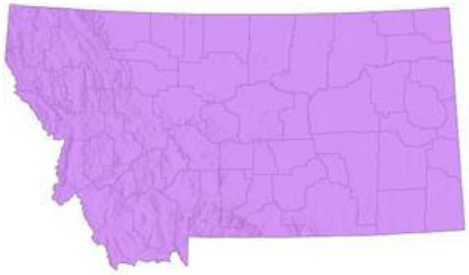
Myotis evotis

View in Field Guide

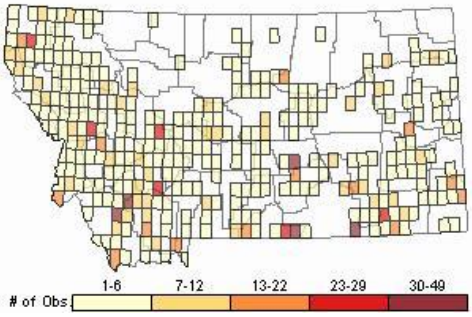


Species of Concern
Native Species
Global Rank: G5
State Rank: S3

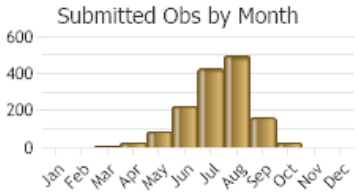
Agency Status
USFWS:
USFS:
BLM:
FWP SWAP: SGCN



Range Native



 # Observations: 1518



General Description

Ears are black and the longest of any other North American bat in the genus Myotis; > 0.84 inches (>21 millimeters). When bent forward, ears extend > 5 millimeters beyond the tip of the nose. Wingspan of 10-12 inches (25-30 centimeters) and weighs 0.2-0.3 inches (5-8 grams). Coat color is dull brown to straw-colored with individual hairs black at the base (Adams 2003).

Habitat

Occupy a wide range of rocky and forested habitats over a broad elevation gradient (Jones et al. 1973). Summer day roosts include abandoned buildings, bridges, hollow trees, stumps, under loose bark, and rock fissures. Hibernacula include caves and abandoned mines. The species has been located hibernating in a mine in riverbreaks habitat in northeastern Montana (Swenson and Shanks 1979).

Northern Alligator Lizard
Elgaria coerulea

View in Field Guide

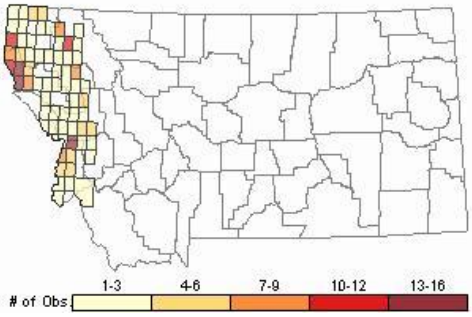


Species of Concern
Native Species
Global Rank: G5
State Rank: S3

Agency Status
USFWS:
USFS:
BLM:
FWP SWAP: SGCN



Range Native



 # Observations: 227



General Description

EGGS:
This species is viviparous and does not lay eggs. Eggs develop internally and females give birth to live young. Broods include 2-15 young (typically 3-6), averaging about four (Lewis 1946, Pimentel 1959, Vitt 1973, Nussbaum et al. 1983, St. John 2002, Stebbins 2003).

HATCHLINGS:
Newly born young are about 2.0-3.0 cm (0.8-1.2 in) snout-vent length (SVL) and 7.5 cm (3 in) total length (TL) (Pimentel 1959, Vitt 1973, Nussbaum et al. 1983, Werner et al. 2004).

JUVENILES AND ADULTS:
The body is elongated, and the legs are short. The back is brown, tan, or gray to olive, yellow, or greenish. Juveniles have a broad reddish-tan stripe running the length of the back. The dark sides of the body are often checkered with small dark patches, and there is a distinctive dark patch around the eye (Stebbins 2003). The belly scale rows are edged with a darker area, giving the white to pale gray belly a banded appearance. There is a distinctive fold of skin running along each side of the body, extending between the legs, and revealing small granular scales when spread apart. Males have larger and broader triangular-shaped heads than do females. Adults are 7.0-10.0 cm (2.8-3.9 in) SVL and up to 20.0 cm (7.9 in) TL. No size dimorphism between the sexes, although sometimes within populations, females may be larger (Stewart 1985).

Diagnostic Characteristics

Body morphology (elongate body with short legs) and presence of a longitudinal fold of skin on each side of the body separates the Northern Alligator Lizard (*Elgaria coerulea*) from other native lizard species to Montana. Western Skink (*Plestiodon skiltonianus*) have a shiny appearance, distinct longitudinal stripes of brown, black, and golden-yellow, and a blue tail in juveniles and young adults. Greater Short-horned Lizard (*Phrynosoma hernandesi*) are flattened, widened through the body, and "prickly" in appearance. The pale bellies of Common Sagebrush Lizard (*Sceloporus graciosus*) and Western Fence Lizard (*S. occidentalis*) lack darkened edging that gives the belly a banded appearance, they sometimes have blue patches on the belly and throat. Both species feel rough when handled, due to the keeled scales (St. John 2002, Stebbins 2003). Only the Western Skink is broadly sympatric with the Northern Alligator Lizard in western Montana. The Western Fence Lizard is present at one locality (Sanders County) within the range of *E. coerulea* in Montana (Werner et al. 2004).

Habitat

The Northern Alligator Lizard occurs in areas cooler and more humid than tolerated by other lizards (Tevs and Lowe 2025). It is found in coastal stand communities of stabilized dunes, mixed coniferous forest, often in grassy grown-over areas at margins of woodlands and in clear cuts. They can also use areas near streams with riparian strips of Aspen (*Populus tremuloides*) or other tree and shrub species that can be dense, and in juniper-sagebrush and rabbitbrush habitats (Svihla 1942, Lais 1976, Stewart 1979, Nussbaum et al. 1983, Vindum and Arnold 1997, St. John 2002, Stebbins 2003). In these habitats it occurs on the ground often under downed wood

and rocks, and in leaf and needle litter.

In western Montana, Tevs and Lowe (2025) found Northern Alligator Lizards under non-embedded rocks with visible access points, suggesting cover use in this species is dependent on cover structure. Other observations in Montana have often been in or at the margins of fine to coarse talus. Sometimes these sites have had little canopy cover, but more often there has been some cover of Douglas-fir (*Pseudotsuga menziesii*) and Ponderosa Pine (*Pinus ponderosa*). The understory contains a variety of shrubby species including Serviceberry (*Amelanchier sp.*), Ninebark (*Physocarpus sp.*), and Mock Orange (*Philadelphus sp.*) with a litter layer of dried leaves and conifer needles, and can be fairly close to streams (Place 1989, Werner and Reichel 1994, Hendricks and Reichel 1996a, Werner et al. 1998, Boundy 2001, Tevs and Lowe 2025).

Least Moonwort
Botrychium simplex

View in Field Guide

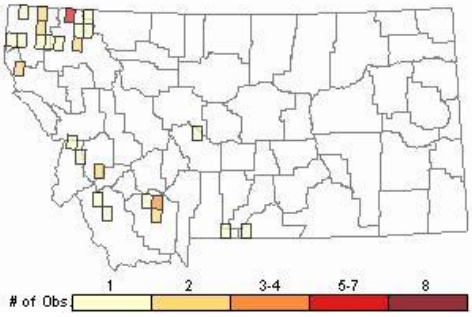


Species of Concern
Native Species
Global Rank: G5
State Rank: S2

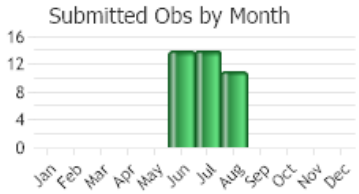
Agency Status
USFWS:
USFS: Sensitive - Known in Forests (BD, BRT, KOOT)
BLM:
State Threat Score:
CCVI: Less Vulnerable
C-value: 6



Range Native



 # Observations: 40



General Description

Trophophore light green, lanceolate, to 5 cm long with up to 7 pairs of ascending, fan-shaped pinnae with wavy margins; the lowest often deeply divided and overlapping the ones above. Sporophore 1 to 2 times pinnate, 1 to 8 times length of trophophore (Lesica et al. 2012. Manual of Montana Vascular Plants. BRIT Press. Fort Worth, TX).

Phenology

Leaves appearing in midspring to early fall.

Habitat

Various mesic sites from low to moderate elevations, including roadsides and other disturbed habitats. Sites are generally open with montane meadows and grasslands being the most common habitats occupied by the species.

Cassin's Finch

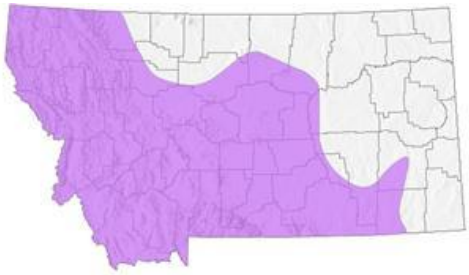
Haemorhous cassinii

View in Field Guide

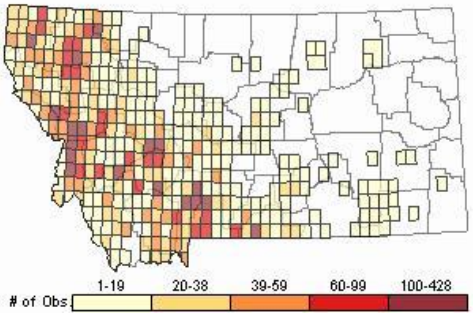


Species of Potential Concern
Native Species
Global Rank: G5
State Rank: S4B

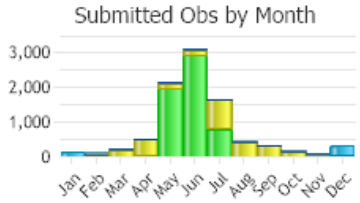
Agency Status
USFWS: MBTA; BCC10
USFS:
BLM:
FWP SWAP: SGCN
PIF: 3



Range Year-round



 # Observations: 10515



General Description

Cassin's Finch is the largest of the North American *Carpodacus* finches (includes Purple Finch and House Finch); length is 14.5-15.5 cm (5.7-6.1 inches). Adults are sexually dimorphic in plumate traits. Adult males have rose-red coloration on the head throat and upper breast, the crown is bright pinkish-red contrasting with the paler nape and back; rump and upper tail coverts are dull rose-pink and streaked with brown. The lower breast and belly appear generally whitish, the undertail coverts with fine brown streaks. Females have an overall brownsih plumage; the head has supercillium and submoustacial regions with fine brown streaks, back and rump dusky and streaked with brown, the throat, breast and flanks whitish with crisp brown streaks. Juneniles and immatures resemble females.

For a comprehensive review of the conservation status, habitat use, and ecology of this and other Montana bird species, please see Marks et al. 2016, Birds of Montana.

Diagnostic Characteristics

Male Cassin's Finch has fine streaking on the undertail coverts and flanks, in contrast to pure white of the Purple Finch. In females and immature males, breast and flanks more cleanly white and more finely streaked in Cassin’s Finch than in Purple Finch. Larger and more chunky than the House Finch. Red on male House Finch is usually brighter and oranger, not rose-red. Male Cassin's Finch is much less streaked on the lower breast and belly than male House Finch; female Cassin's Finch with a noticable supercilliary stripe lacking in female House Finches, and the breast streaking more distinct and less diffuse. Cassin's Finch the only of the three *Carpodacus* finches routinely encountered higher in the mountains.

Habitat

Cassin’s Finches occur in every major forest type and timber-harvest regime in Montana, including riparian cottonwood, but are especially common in ponderosa pine and postfire forests; they occur less often in lodgepole pine, sagebrush, and grassland (Manuwal 1983, Hutto and Young 1999). They often visit bird feeders and occasionally venture into alpine terrain (Johnson 1966, Pattie and Verbeek 1966).

Silver-haired Bat

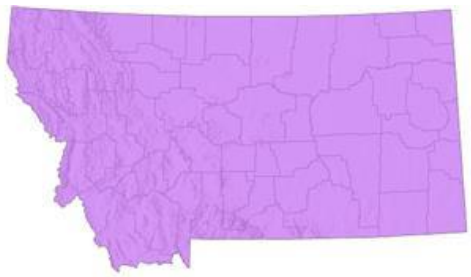
Lasionycteris noctivagans

View in Field Guide

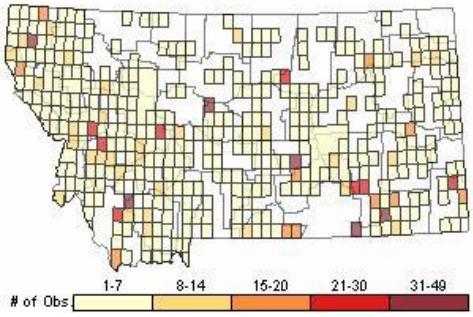


Species of Concern
Native Species
Global Rank: G4
State Rank: S3

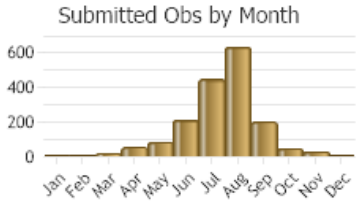
Agency Status
USFWS:
USFS:
BLM:
FWP SWAP: SGCN



Range Native



 # Observations: 1810



General Description

A mostly black bat with back hairs having silvery-white tips. Flight membranes are black. The tail membrane has fur on the dorsal side to the tip of the tail. Ears are bare, short, and rounded with a lighter patch at the front base of the ear.

Habitat

Occupy mature conifer and deciduous forests, riparian woodlands and aspen. Summer day roosts include tree cavities, under loose bark, also bird nests, sheds, and barns. Hibernacula include tree cavities, rock crevices, and buildings.

Northern Hoary Bat

Lasiurus cinereus

View in Field Guide

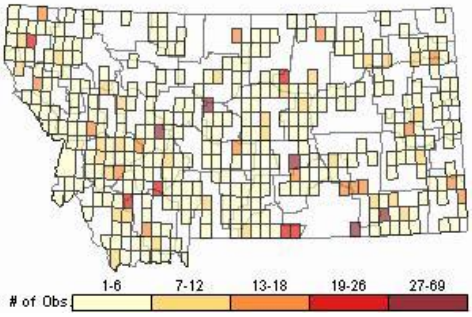


Species of Concern
Native Species
Global Rank: G3G4
State Rank: S3B

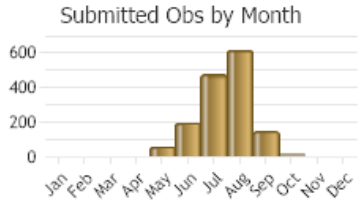
Agency Status
USFWS:
USFS:
BLM: SENSITIVE
FWP SWAP: SGCN



Range Summer Migratory



 # Observations: 1550



General Description

The Hoary Bat is a large lasurine (20 to 35 g) with long pointed wings and heavily-furred interfemoral membrane. Pelage overall is frosted or hoary (mixed brownish and grayish with white-tipped hairs, wrist and shoulder patches whitish), yellowish on the throat, forearm length about 46 to 55 mm. Ears are short and rounded, rimmed in dark brown or black, tragus short and broad. It has large teeth; dental formula I 1/3, C 1/1, P 2/2, M 3/3 (Shump and Shump 1982, Adams 2003).

Diagnostic Characteristics

Hoary Bat is the largest bat species found in Montana, and only one of two with an interfemoral membrane completely furred on the dorsal surface, the other being the Eastern Red Bat. The Hoary Bat has a distinctive appearance along with its large size (35 g in weight, to about 140 mm in total length): dorsal pelage in is a mixture of browns and grays, tinges with white, giving the bat a frosted or hoary appearance (Shump and Shump 1982), unlike the reddish dorsal pelage of the smaller Eastern Red Bat. Definitive Hoary Bat calls are also of lower characteristic frequency and appearance: < 23 kHz lasting up to 20 milliseconds for Hoary versus 38-50 kHz lasting > 10 milliseconds for Eastern Red.

Habitat

During the summer, Hoary Bats occupy forested areas. A female with two naked pups was found in mid-July using a wooden bridge in Stillwater County as a temporary day roost (Hendricks et al. 2005) but no other Montana roosts have been reported. Often captured foraging over water sources embedded within forested terrain, both conifer and hardwood, as well as along riparian corridors. Reported in Montana over a broad elevation range (579 to 2774 m; 1900 to 9100 ft) during August, the highest record from treeline along the Gravelly Range road (Madison County), the lowest from the Yellowstone River near Sidney (Richland County); probably most common throughout summer in Montana at lower elevations.

Little Brown Myotis

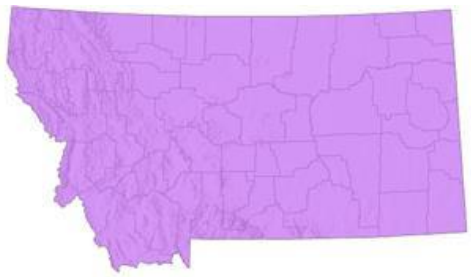
Myotis lucifugus

View in Field Guide

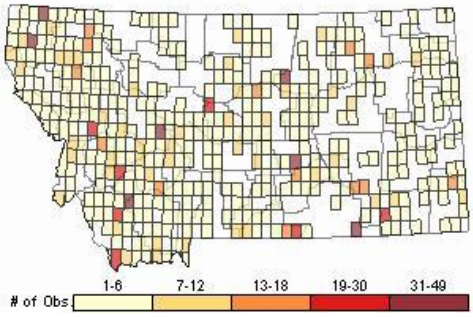


Species of Concern
Native Species
Global Rank: G3G4
State Rank: S2S3

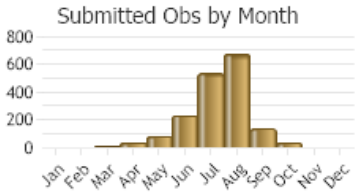
Agency Status
USFWS:
USFS: Sensitive - Known in Forests (BD, BRT, KOOT)
BLM:
FWP SWAP: SGCN



Range Native



 # Observations: 1852



General Description

The most common bat species in Montana (Foresman 2012). Cinnamon-buff to dark brown above, buffy to pale gray below; hairs on back have long glossy tips; ears, when laid forward, reach approximately to the nostril; tragus about half as high as ear; calcar without keel; length of head and body 41 to 54 mm, ear 11.0 to 15.5 mm, forearm 33 to 41 mm; braincase rises gradually from rostrum; greatest length of skull 14 to 16 mm; length of upper toothrow 5.0 to 6.6 mm (Hall 1981).

Diagnostic Characteristics

Can be distinguished from all but one of the seven *Myotis* species in Montana by the absence of a fringe of hair around the uropatagium and the absence of a keeled calcar. Can be distinguished from Yuma myotis by the glossy appearance of the dorsal hair and dark brown ear color. (Foresman 2012)

Habitat

Found in a variety of habitats across a large elevation gradient. Commonly forages over water. Summer day roosts include attics, barns, bridges, snags, loose bark, and bat houses. Known maternity roosts in Montana are primarily buildings. Hibernacula include caves and mines.

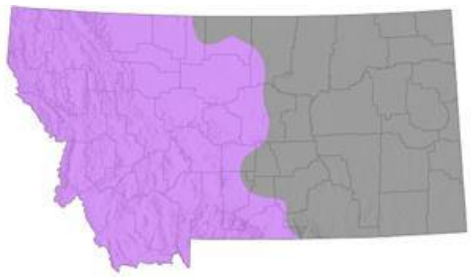
Grizzly Bear
Ursus arctos

View in Field Guide

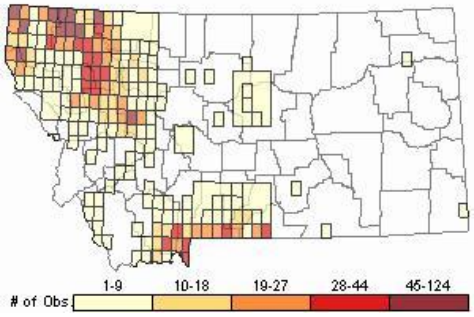


Species of Concern
Native Species
Global Rank: G4
State Rank: S3

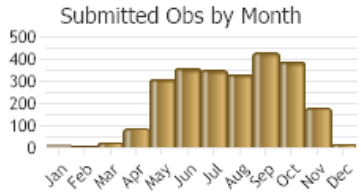
Agency Status
USFWS: LT
USFS:
BLM: THREATENED



Range Native Historical



 # Observations: 2631



General Description

Grizzly Bears have a massive head with a prominent nose, rounded inconspicuous ears, small eyes, short tail and a large, powerful body (Pasitschnaik-Arts 1993). The facial profile is concave and there is a noticeable hump above the shoulders. The claws on the front feet of adults are about 4 inches long and slightly curved. Grizzly Bears range widely in color and size. The most prevalent coloration of Grizzly Bears in Montana is medium to dark brown underfur, brown legs, hump and underparts, with light to medium grizzling on the head and back and a light patch behind the front legs. Other forms, lighter or darker with varying levels of grizzled hair patches, occur in lesser numbers. Although extremely variable depending on the season, adults are around 185 centimeters long (Foresman 2012) and weigh around 200 kilograms in males and 130 kilograms in females (Kasworm and Manley 1988).

Diagnostic Characteristics

Adult Grizzly Bears differ from American Black Bears (*Ursus americanus*) in being larger and by having a hump above the shoulders, a concave (rather than straight or convex) facial profile, shorter and more rounded ears, a rump lower than the shoulder hump, and longer, less curved claws usually evident in the tracks. Identification can be difficult at times and Montana Fish, Wildlife and Parks has developed an Online Bear ID Test to help people better distinguish between American Black Bears and Grizzly Bears.

Habitat

In Montana, Grizzly Bears primarily use meadows, seeps, riparian zones, mixed shrub fields, closed timber, open timber, sidehill parks, snow chutes, and alpine slabrock habitats. Habitat use is highly variable between areas, seasons, local populations, and individuals (Servheen 1983, Craighead and Mitchell 1982, Aune et al. 1984). Historically, the Grizzly Bear was primarily a plains species occurring in higher densities throughout most of eastern Montana.

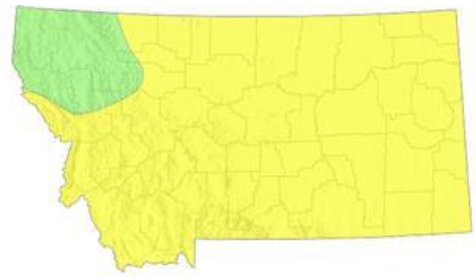
Tennessee Warbler
Leiothlypis peregrina

View in Field Guide

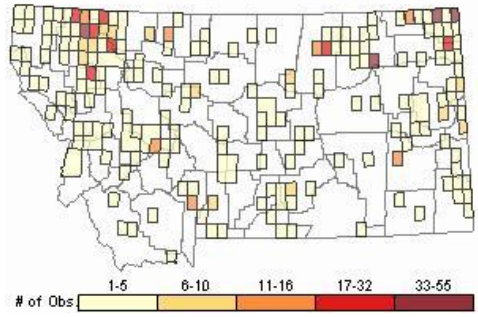


Species of Potential Concern
Native Species
Global Rank: G5
State Rank: S3S4B

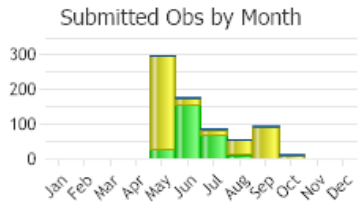
Agency Status
USFWS: MBTA
USFS:
BLM:
FWP SWAP: SGCN
PIF:



Range: Summer | Migratory



 # Observations: 805



General Description

Small to medium-sized warbler (10-13 cm in length). Male in alternate plumage is plain and lacks distinctive markings; the crown and nape are grayish, contrasting with bright olive green upperparts and whitish underparts. Distinct blackish eye-stripe and narrow white supercilium. Female in alternate plumage is similar but duller, with less contrast between the head and remaining upperparts, a less-defined eye-stripe and supercilium, and a yellowish wash across the breast and flanks. Basic-plumaged adults and immatures are similar: gray green above and underparts tinged yellow. Females are generally duller and more yellowish below than males. Immatures have more strongly washed yellow underparts than adults. (Rimmer and McFarland 2012)

For a comprehensive review of the conservation status, habitat use, and ecology of this and other Montana bird species, please see Marks et al. 2016, Birds of Montana.

Diagnostic Characteristics

Distinguished from all other warbler species except Orange-crowned Warbler by overall plain plumage characterized by unmarked white to yellowish underparts, unmarked olive green upperparts, lack of distinct wing-bars or tail-spots, and dark eye-stripe below yellowish to whitish supercilium. Distinguished from Orange-crowned Warbler by white rather than yellow undertail-coverts; by lack of faint, blurred streaks on sides of breast; by richer, brighter green on mantle and scapulars; and by significantly shorter tail and generally longer supercilium. (Rimmer and McFarland 2012)

Habitat

Breeds in the boreal zone in deciduous, mixed, and coniferous forests; found in a variety of successional stages. Associated with open areas with grasses, dense shrubs, and scattered clumps of young deciduous trees; strongly associated with shrubs. (Rimmer and McFarland 2012)

Common Loon
Gavia immer

View in Field Guide

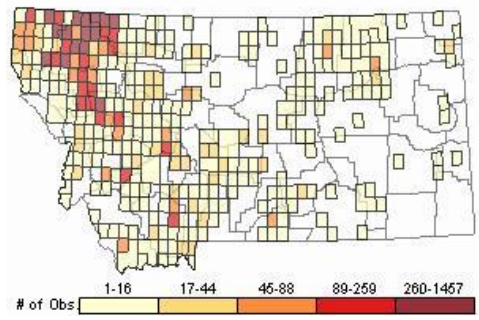


Species of Concern
Native Species
Global Rank: G5
State Rank: S3B

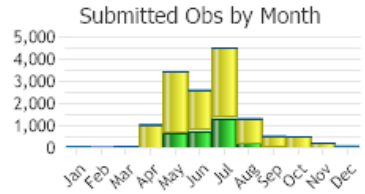
Agency Status
USFWS: MBTA
USFS: Sensitive - Known in Forests (LOLO)
BLM:
FWP SWAP: SGCN
PIF: 1



Range Summer Migratory



 # Observations: 15613



General Description

The Common Loon is a large and mainly aquatic bird. Males are generally larger than females. Adult body length ranges from 71 to 92 cm (28 to 36 inches) with wingspans to 147 cm (58 inches). Weight varies ranging from 1.6 to 8 kg (3.5 to 17.6 lb.) with an average of about 3 to 4 kg (6.6 to 8.8 lb.) (McIntyre 1988, McIntyre and Barr 1997). The feet are located far back on the body and are large, webbed, and sweep to the side rather than forward under the belly. This trait makes it difficult for Common Loons to walk on land but allows more efficient swimming underwater.

Sexes are indistinguishable based on plumage. The head and neck of breeding adults are black with a green gloss. The back, wings and sides are also black. Scapulars and wing-coverts have large white markings, which is a distinctive field mark. The eye is red. Common Loons have a broad patch of vertical white stripes on the side of the neck and a smaller patch on the upper foreneck. The breast and belly are white and the bill is straight, heavy and black (McIntyre and Barr 1997). In the non-breeding plumage, the head, neck and upper parts are dark gray to dark brown. The cheeks, throat, and underparts are white. The bill is brownish-gray to pale bluish-gray or horn colored. The iris is brown. The tail is dark brown, tipped with white (Bent 1919, Johnsgard 1987, McIntyre 1986, 1988). Juvenile plumage is similar to the adult non-breeding plumage, although the upperparts have the most pale and more conspicuous feather margins than those of adults, and the throat and sides of the neck are more finely streaked with brown. This plumage is worn until the following summer when the birds molt into more adult-like basic plumage (Palmer 1962, McIntyre 1988).

Common Loons are known for their distinctive calls, three of which are heard on summer breeding lakes. The wail, a long almost mournful cry, the tremolo, a high pitched, rapid, five-beat call, and probably the best known is the yodel which is given only by males during territorial confrontations. Common Loons generally lay 2 subelliptical to ovoid shaped eggs which vary from deep olive to light brown in color, with irregular dark brown or black spots.

For a comprehensive review of the conservation status, habitat use, and ecology of this and other Montana bird species, please see Marks et al. 2016, Birds of Montana.

Diagnostic Characteristics

The Common Loon is a large loon with a heavy, black bill and an easily recognizable breeding plumage. The large size of the Common Loon distinguishes it from the Pacific Loon (*G. pacifica*) and the Red-throated Loon (*G. stellata*), as well as the Arctic Loon (*G. arctica*), which has never occurred in Montana. Only the Yellow-billed Loon (*G. adamsii*) is comparable in size. It, however, has a distinctive yellow bill as well as subtle differences in plumage (McIntyre and Barr 1997).

Habitat

In Montana, Common Loons will not generally nest on lakes less than about 13 acres in size or over 5000 feet in

elevation (Skaar 1990). Successful nesting requires both nesting sites and nursery areas. Small islands are preferred for nesting, but herbaceous shoreline areas, especially promontories, are also selected. Nursery areas are very often sheltered, shallow coves with abundant small fish and insects (Skaar 1990). Most Montana lakes inhabited by Common Loons are relatively oligotrophic and have not experienced significant siltation or other hydrological changes.

The quantity and quality of nesting habitat limits the Common Loon population of northwest Montana. Skaar (1990) estimated the state's "carrying capacity" at 185 potential nesting territories, based on the size and number of lakes within the species' breeding distribution. He assumed 100 ha of surface area per pair. Kelly (1992) documented a density of 72.2 surface ha of water per adult Common Loon for the Tobacco, Stillwater, Clearwater, and Swan River drainages.

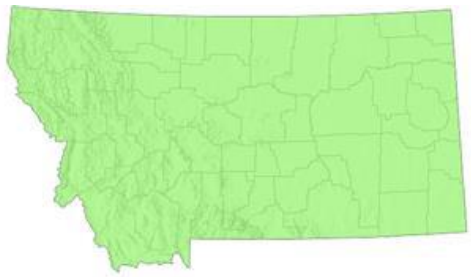
Long-billed Curlew
Numenius americanus

View in Field Guide

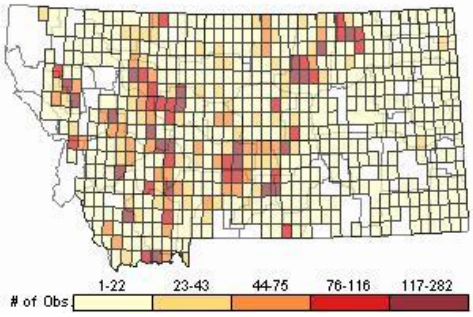


Species of Concern
Native Species
Global Rank: G4
State Rank: S3B

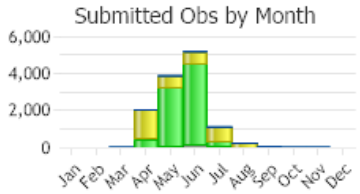
Agency Status
USFWS: MBTA; BCC11
USFS:
BLM: SENSITIVE
FWP SWAP: SGCN
PIF: 2



Range Summer Migratory



 # Observations: 13392



General Description

The Long-billed Curlew is the largest shorebird in North America. It is considered an endemic to the Great Plains. The Long-billed Curlew's long, decurved bill is adapted for capturing invertebrates living in mudflats on its wintering grounds (Dugger and Dugger 2002). Its familiar "*curlew*" call can be heard throughout the mixedgrass prairie of Montana during the spring and summer.

For a comprehensive review of the conservation status, habitat use, and ecology of this and other Montana bird species, please see Marks et al. 2016, Birds of Montana.

Phenology

Migrants arrive in Montana late March to mid-April. Adults observed on nests with eggs in mid- to late-May. Adults with young birds observed in early June to early July. Females leave breeding grounds before males; tagged females left around June 28 and tagged males left July 28 (see Migration, below).

Diagnostic Characteristics

The large size, long decurved bill, and cinnamon color is diagnostic of this species. Sexes are similar in appearance, but females average slightly larger than males. Plumages are similar throughout the year. Body is a rich buff tinged with cinnamon or pink. Upperparts are streaked with dark brown. Juveniles are similar to adults except the bill is much shorter (Dugger and Dugger 2002).

Habitat

The Long-billed Curlew breeds in mixedgrass prairie habitats and moist meadows throughout Montana. It prefers to nest in open, short-statured grasslands and avoids areas with trees, dense shrubs, or tall, dense grasses (Dugger and Dugger 2002).

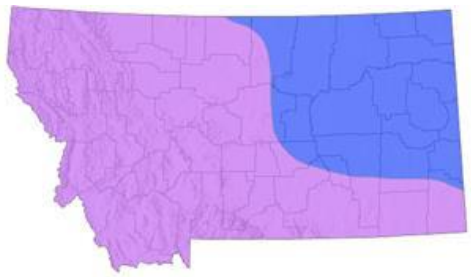
American Goshawk
Astur atricapillus

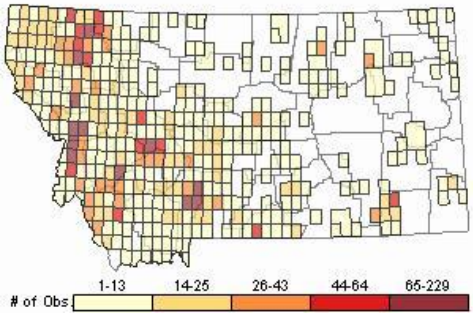
View in Field Guide



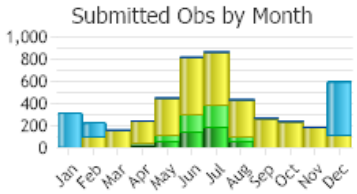
Species of Concern
Native Species
Global Rank: G5
State Rank: S3

Agency Status
USFWS: MBTA
USFS:
BLM:
FWP SWAP: SGCN
PIF: 2





 # Observations: 5471



General Description

The Northern Goshawk is a fairly large hawk with a long tail having a broad, dark sub-terminal band and three to four narrower dark bands, rounded wing tips, and a conspicuous pale eyebrow. The sexes are similar with adults having a dark crown, blue-gray back, white underparts with fine, dense gray barring and conspicuous white undertail coverts. The eyes of adults are deep ruby-red and the feet are yellow. Immature Northern Goshawks are brown above, buffy below, with dense, blurry streaking. The undertail coverts are dark-streaked and the tail has wavy dark bands bordered with white and a thin white tip. The eyes of immature Northern Goshawks are yellowish, deepening in color to red as they mature. The total length is 53 to 66 cm, with females averaging larger than males (Squires and Reynolds 1997).

For a comprehensive review of the conservation status, habitat use, and ecology of this and other Montana bird species, please see Marks et al. 2016, Birds of Montana.

Diagnostic Characteristics

The Northern Goshawk is the largest and heaviest bodied of the three North American accipiters. Goshawks are clearly larger than Sharp-shinned Hawks (*Accipiter striatus*). Male Northern Goshawks can be of similar size to female Cooper's Hawks (*Accipiter cooperi*), but Northern Goshawks have broader wings and a relatively short tail compared to Cooper's Hawks (Squires and Reynolds 1997). Their ventral surface is pale rather than rust-colored as well. They can be distinguished from both Sharp-shinned and Cooper's Hawks by their whiteish underside as well as a boldly patterned head with a strong, white superciliary line above the eye (Sibley 2000). Juvenile Northern Goshawks can be distinguished from juvenile Cooper's Hawks by their conspicuous pale superciliary line (Squires and Reynolds 1997), overall buffy wash appearance on the breast and belly (Sibley 2000), uneven tail-bands creating a zig-zag pattern when the tail is spread (Squires and Reynolds 1997) and overall paler and more patterned upperside (Sibley 2000). Northern Goshawks can be discerned from falcons by their shorter, more rounded wings, and alternating flap-and-glide flight pattern.

Habitat

Goshawks nest in a variety of forest types in Montana, including Douglas-fir and Western Larch west of the Continental Divide, Lodgepole Pine in Beaverhead County, and Ponderosa Pine in Powder River and Carter counties. They prefer mature and old-growth forests with a preponderance of large trees, a dense canopy, and a relatively open understory (Hayward and Escano 1989, Squires and Reynolds 1997, Clough 2000). An exception to this generality is in Beaverhead County, where nests commonly occur in Lodgepole Pine stands with an average tree diameter of only 13 cm, although the birds usually place their nests in larger trees within these stands (Kirkley 1996). The nest is a bulky platform of sticks placed near the main trunk of a large tree from 6-20

m off the ground, usually in the lower part of the canopy. Forest stands where Northern Goshawks nest in Montana tend to be mature large-tract conifer forests with a high canopy cover (69%), relatively steep slope (21%), and little to sparse undergrowth (Kirkley 1996). Hayward and Escano (1989) examined nest-site characteristics at 17 territories in western Montana and northern Idaho in 1983. The birds nested preferentially in mature and old-growth stands of conifers that had a closed canopy (75-85% canopy cover) and a large forest opening within 1 km of the nest. Nest heights ranged from 7-17 m, and most nests were placed next to the main trunk in the lower one-third of the canopy. All Northern Goshawk nest trees reported by Kirkley (1996) were either Lodgepole Pine or Douglas-fir with an average DBH (diameter at breast height) of 33.6 cm and average height of 21.9 meters. In another study conducted in Montana, Douglas-fir, Ponderosa Pine and Grand Fir were the trees selected most often for nest building (State of Idaho HCA/CS Dev. Team 1995). Nests were constructed an average 10.9 meters above the ground and were usually located near water (232 m) or a clearing (85 m) (Kirkley 1996). Range-wide nest site characteristics are similar. Almost no information is available regarding Northern Goshawk foraging strategies in Montana. It is known they hunt in closed canopy habitats as well as more open landscapes and over 50 species of identified prey indicate they are generalists in terms of prey selection. Little information exists concerning Northern Goshawk non-breeding or wintering habitat in the state. However, in the Bozeman area, birds coming into the valley are found in forested or thickety areas. Multiple observations of wintering Northern Goshawks are documented in the north-central and northeastern areas of Montana (Montana Bird Distribution Committee 2012), possibly indicating movement toward areas of higher prey availability.

Bobolink
Dolichonyx oryzivorus

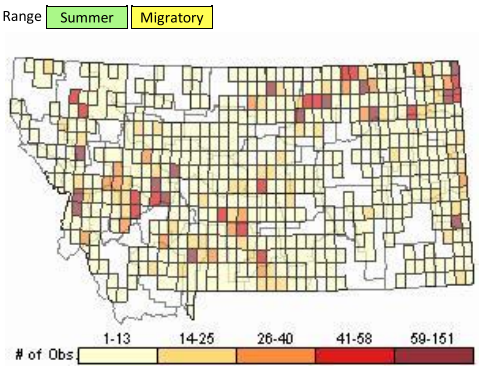
View in Field Guide



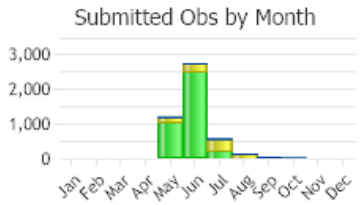
Species of Concern
Native Species
Global Rank: G5
State Rank: S3B

Agency Status
USFWS: MBTA; BCC10; BCC11; BCC17
USFS:
BLM:
FWP SWAP: SGCN
PIF: 3





 # Observations: 5069



General Description

The Bobolink is approximately 18 centimeters long with a stout, relatively short, pointed bill and sharply pointed tail feathers. The breeding male is black below, with a buff to whitish hind-neck, white scapulars, and white rump; early in spring the male has pale feather edgings. The breeding female is buffy with dark streaks on the back, rump, sides, and head. The juvenile resembles the breeding female but lacks streaks below. Fall adults and immatures resemble breeding female but are darker above and richer buff below. (Renfrew et al. 2015)

For a comprehensive review of the conservation status, habitat use, and ecology of this and other Montana bird species, please see Marks et al. 2016, Birds of Montana.

Diagnostic Characteristics

Breeding males are unique among North American passerines in being entirely black underneath and lighter above (Renfrew et al. 2015).

Habitat

Nests built in tall grass and mixed-grass prairies. Prefers "old" hay fields with high grass-to-legume ratios.

Bat Roost (Non-Cave)

Bat Roost (Non-Cave)

View in Field Guide

Important Animal Habitat
Native Species
Global Rank: GNR
State Rank: SNR

 # Observations: 1657

No photos are currently available

Agency Status
USFWS:
USFS:
BLM:

General Description

Information on this species is incomplete.

Environmental Summary

MONTANA STATE LIBRARY

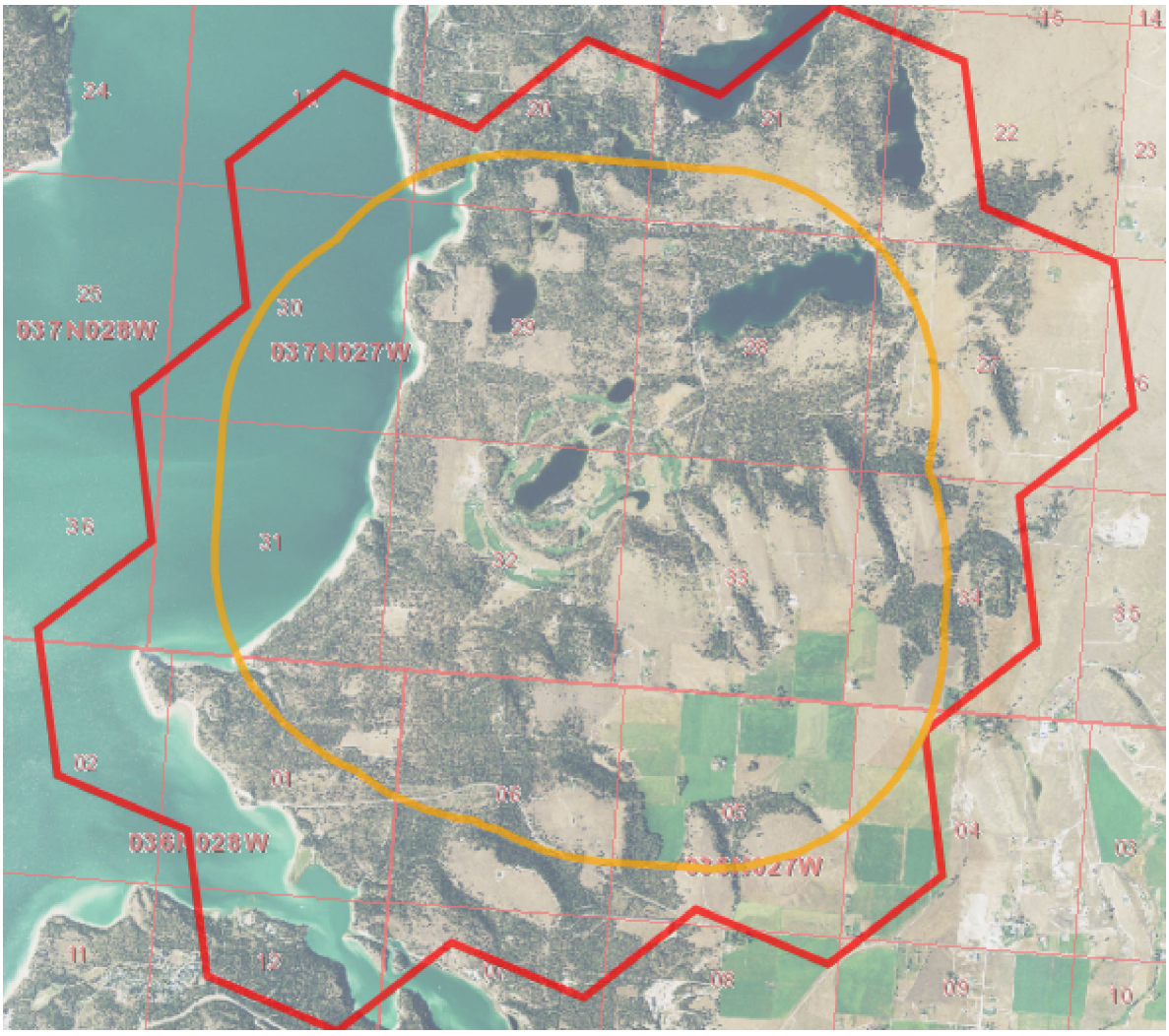
NATURAL HERITAGE PROGRAM mtnhp.mt.gov

1201 11th Ave ▫ P.O. Box 201800 ▫ Helena, MT 59620-1800 ▫ fax 406-444-0266 ▫ phone 406-444-3989



Latitude	Longitude
48.89606	-115.08571
48.96448	-115.18172

Summarized by:
CS0858264
(Custom Area of Interest)



Suggested Citation
Montana Natural Heritage Program. Environmental Summary Report.
for Latitude 48.89606 to 48.96448 and Longitude -115.08571 to -115.18172. Retrieved on 5/15/2026.

The Montana Natural Heritage Program is part of the Montana State Library's Natural Resource Information System. Since 1985, it has served as a neutral and non-regulatory provider of easily accessible information on Montana's species and biological communities to inform all stakeholders in environmental review, permitting, and planning processes. The program is part of the NatureServe network that is composed of over 60 member programs across North America that work to provide current and comprehensive distribution and status information on species and biological communities.

MONTANA STATE LIBRARY NATURAL HERITAGE PROGRAM

NATURESERVE

Table of Contents

- Species Report
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- Wetland and Riparian
- Land Management
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- Data Use Terms and Conditions
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- Additional Information Resources

Introduction to Environmental Summary Report

Environmental Summary Reports from the Montana Natural Heritage Program (MTNHP) provide information on species and biological communities to inform all stakeholders in environmental review, permitting, and planning processes. For information on environmental permits in Montana, please see permitting overviews by the Montana Department of Environmental Quality, the Montana Department of Natural Resources and Conservation, the Index of Environmental Permits for Montana and our Suggested Contacts for Natural Resource Management Agencies. The report for your area of interest consists of introductory and related materials in this PDF and an Excel workbook with worksheets summarizing information managed in the MTNHP databases for: (1) species occurrences; (2) other observed species without species occurrences; (3) other species potentially present based on their range, presence of associated habitats, or predictive distribution model output if available; (4) structured surveys that follow a protocol capable of detecting one or more species; (5) land cover mapped as ecological systems; (6) wetland and riparian mapping; (7) land management categories; and (8) biological reports associated with plant and animal observations. If your area of interest corresponds to a statewide polygon layer (e.g., watersheds, counties, or public land survey sections) information summaries in your report will exactly match those boundaries. However, if your report is for a custom area, users should be aware that summaries do not correspond to the exact boundaries of the polygon they have specified, but instead are a summary across a layer of hexagons intersected by the polygon they specified as shown on the report cover. Summarizing by these hexagons which are one square mile in area and approximately one kilometer in length on each side allows for consistent and rapid delivery of summaries based on a uniform grid that has been used for planning efforts across North America.

In presenting this information, MTNHP is working towards assisting the user with rapidly assessing the known or potential species and biological communities, land management categories, and biological reports associated with the report area. Users are reminded that this information is likely incomplete and may be inaccurate as surveys to document species are lacking in many areas of the state, species' range polygons often include regions of unsuitable habitat, methods of predicting the presence of species or communities are constantly improving, and information is constantly being added and updated in our databases. **Field verification by professional biologists of the absence or presence of species and biological communities in a report area will always be an important obligation of users of our data. Users are encouraged to only use this environmental summary report as a starting point for more in depth analyses and are encouraged to contact state, federal, and tribal resource management agencies for additional data or management guidelines relevant to your efforts. Please see the Appendix for introductory materials to each section of the report, additional information resources, and a list of relevant agency contacts.**

MONTANA STATE LIBRARY
NATURAL HERITAGE PROGRAM
A program of the **Montana State Library's Natural Resource Information System**

Legend

Model Icons
- N Suitable (native range)
- O Optimal Suitability
- M Moderate Suitability
- L Low Suitability
- I Suitable (introduced range)

Habitat Icons
- C Common
- O Occasional

Range Icons
- Y Native / Year-round
- S Summer
- W Winter
- M Migratory
- N Non-native
- H Historical

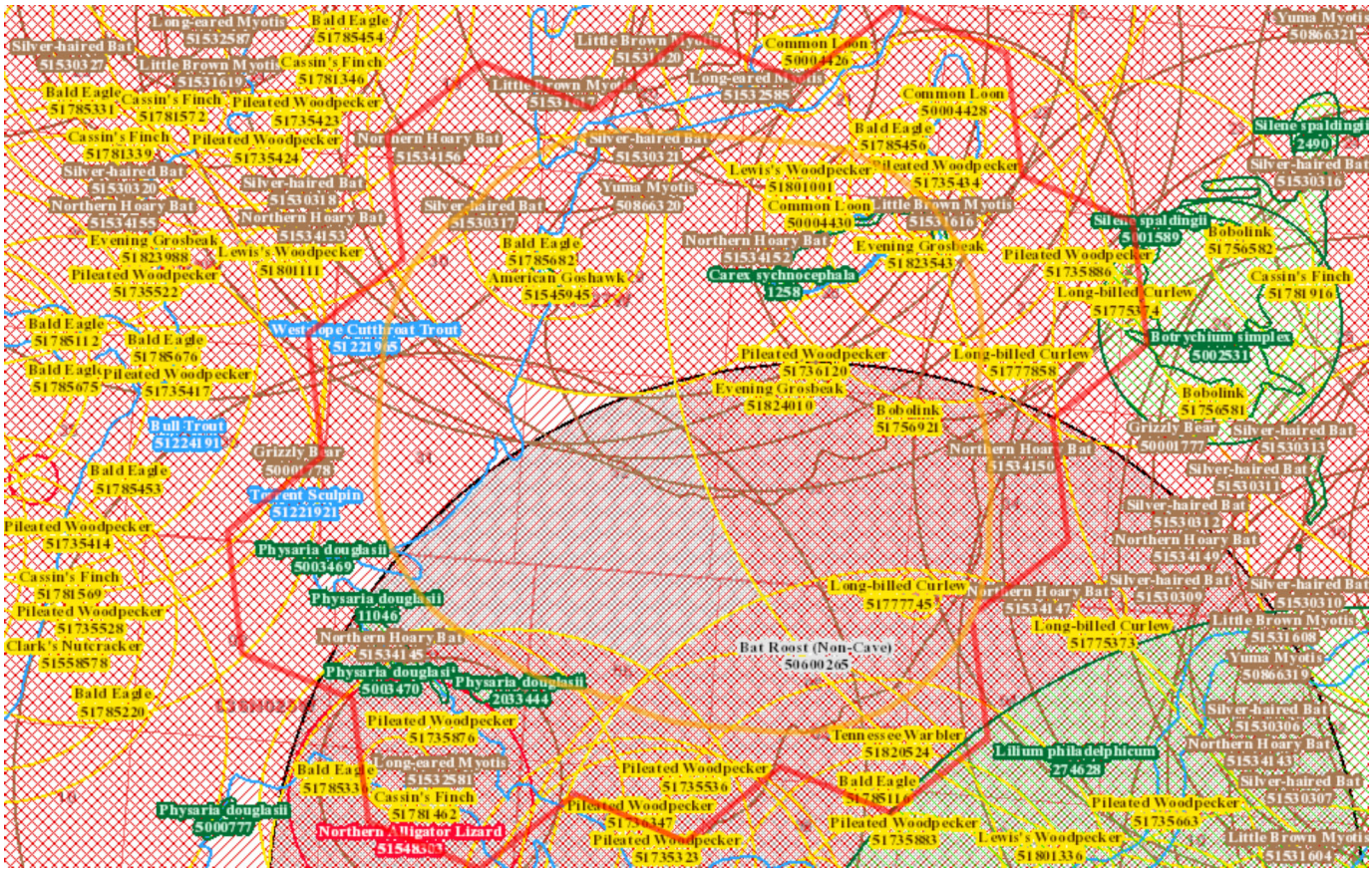
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+ indicates additional 'poor precision' obs (1001m-10,000m)



Latitude	Longitude
48.89606	-115.08571
48.96448	-115.18172

Native Species

Summarized by: **CS0858264** *(Custom Area of Interest)*
Filtered by:
Native Species reports are filtered for Species with MT Status = Species of Concern, Special Status, Important Animal Habitat, Potential SOC



Species Occurrences

	USFWS Sec7	# SO	# Obs	Predicted Model	Range
F - Westslope Cutthroat Trout *(Oncorhynchus lewisi)* SOC		1	3		Y

View in Field Guide **View Predicted Models** **View Range Maps**

Species of Concern - Native/Non-native Species - (depends on location or taxa) Global: **G4** State: **S2**
USFS: **Sensitive - Known in Forests (BD, BRT, KOOT, LOLO)**
Species of Conservation Concern in Forests (CG, HLC) BLM: **SENSITIVE** FWP SWAP: **SGCN**

Delineation Criteria Stream reaches and standing water bodies where the species presence has been confirmed through direct capture or where they are believed to be present based on the professional judgement of a fisheries biologist due to confirmed presence in adjacent areas. In order to reflect the importance of adjacent terrestrial habitats to survival, stream reaches are buffered 100 meters, standing water bodies greater than 1 acre are buffered 50 meters, and standing water bodies less than 1 acre are buffered 30 meters into the terrestrial habitat based on PACFISH/INFISH Riparian Conservation Area standards. (Last Updated: May 14, 2026)

Predicted Models: N 71% Suitable (native range) (deductive)

F - Bull Trout *(Salvelinus confluentus)* SOC	7	1	3		Y

View in Field Guide **View Predicted Models** **View Range Maps**

Species of Concern - Native Species Global: **G3** State: **S2** USFWS: **LT; CH** BLM: **THREATENED** FWP SWAP: **SGCN**

Delineation Criteria Stream reaches and standing water bodies where the species is believed to be present based on the professional judgement of a fisheries biologist, potentially supported by habitat assessment, direct capture, or confirmed presence in adjacent areas. In order to reflect the importance of adjacent terrestrial habitats to survival, stream reaches are buffered 100 meters, standing water bodies greater than 1 acre are buffered 50 meters, and standing water bodies less than 1 acre are buffered 30 meters into the terrestrial habitat based on PACFISH/INFISH Riparian Conservation Area standards. (Last Updated: May 14, 2026)

Predicted Models: N 57% Suitable (native range) (deductive)

F - Torrent Sculpin *(Cottus rhotheus)* SOC		1	1		Y

View in Field Guide **View Predicted Models** **View Range Maps**

Species of Concern - Native Species Global: **G5** State: **S3** FWP SWAP: **SGCN**

Delineation Criteria Stream reaches and standing water bodies where the species presence has been confirmed through direct capture or where they are believed to be present based on the professional judgement of a fisheries biologist due to confirmed presence in adjacent areas. In order to reflect the importance of adjacent terrestrial habitats to survival, stream reaches are buffered 100 meters, standing water bodies greater than 1 acre are buffered 50 meters, and standing water bodies less than 1 acre are buffered 30 meters into the terrestrial habitat based on PACFISH/INFISH Riparian Conservation Area standards. (Last Updated: Mar 19, 2024)

Predicted Models: N 50% Suitable (native range) (deductive)

V - Physaria douglasii *(Douglas Bladderpod)* SOC

11 25 Y

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S1** USFS: **Sensitive - Known in Forests (KOOT)** Plant Threat Score: **Medium** CCVI: **Extremely Vulnerable** FWP SWAP: **SGCN**

Delineation Criteria Individual occurrences are generally based upon a discretely mapped area provided by an observer and are not separated by any pre-defined distance. Individual clusters of plants mapped at fine spatial scales (separated by less than approximately 25-50 meters) may be grouped together into one occurrence if they are not separated by distinct areas of habitat or terrain features. Point observations are buffered to encompass any locational uncertainty associated with the observation. (Last Updated: Apr 23, 2026)

Predicted Models: N 29% Suitable (native range) (deductive)

V - Carex sychnocephala *(Many-headed Sedge)* SOC

1 1 Y

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S1S2** Plant Threat Score: **High - Medium** FWP SWAP: **SGCN**

Delineation Criteria Individual occurrences are generally based upon a discretely mapped area provided by an observer and are not separated by any pre-defined distance. Individual clusters of plants mapped at fine spatial scales (separated by less than approximately 25-50 meters) may be grouped together into one occurrence if they are not separated by distinct areas of habitat or terrain features. Point observations are buffered to encompass any locational uncertainty associated with the observation. (Last Updated: Apr 26, 2018)

Predicted Models: N 21% Suitable (native range) (deductive)

B - Bald Eagle *(Haliaeetus leucocephalus)* SSS

8 58 Y

View in Field Guide | View Predicted Models | View Range Maps

Special Status Species - Native Species Global: **G5** State: **S4** USFWS: **BGEPA; MBTA** USFS: **Sensitive - Known in Forests (LOLO)** BLM: **SENSITIVE** PIF: **2**

Delineation Criteria Confirmed nesting area buffered by a minimum distance of 2,000 meters in order to be conservative about encompassing the breeding territory and area commonly used for renesting. Only nesting observations with a locational uncertainty of 1,000 meters or less will be used to delineate a nesting area. (Last Updated: Mar 19, 2026)

Predicted Models: O 43% Optimal (inductive), M 36% Moderate (inductive), L 21% Low (inductive)

M - Yuma Myotis *(Myotis yumanensis)* SOC

1 Y

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** FWP SWAP: **SGCN**

Delineation Criteria Confirmed area of occupancy within the genetically confirmed range of the species in Montana based on the documented presence (captures with subsequent genetic confirmation, feces with genetic confirmation, or definitively identified acoustic recordings). Point observation location is buffered by a minimum distance of 4,000 meters based on a measured distance between roosting and foraging areas documented in British Columbia and otherwise by the locational uncertainty associated with the observation up to a maximum distance of 5,000 meters. (Last Updated: Jul 19, 2022)

Predicted Models: O 21% Optimal (inductive), M 71% Moderate (inductive), L 7% Low (inductive)

V - Lilium philadelphicum *(Wood Lily)* SOC

1 Y

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** Plant Threat Score: **Low** CCVI: **Less Vulnerable**

Predicted Models: O 21% Optimal (inductive), M 36% Moderate (inductive), L 36% Low (inductive)

B - Evening Grosbeak *(Coccothraustes vespertinus)* SOC

2 6 Y WM

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **MBTA; BCC10** FWP SWAP: **SGCN**

Delineation Criteria Confirmed breeding area based on the presence of a nest, chicks, or territorial adults during the breeding season. Point observation location is buffered by a minimum distance of 1,000 meters in order to encompass the maximum foraging distance from nests reported for the species and otherwise is buffered by the locational uncertainty associated with the observation up to a maximum distance of 5,000 meters. (Last Updated: May 06, 2026)

Predicted Models: M 71% Moderate (inductive), L 29% Low (inductive)

B - Pileated Woodpecker *(Dryocopus pileatus)* SOC

9 11 Y

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **MBTA** FWP SWAP: **SGCN** PIF: **2**

Delineation Criteria Observations with evidence of breeding activity buffered by a minimum distance of 1,500 meters in order to be conservative about encompassing home ranges and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 5,000 meters. (Last Updated: Mar 18, 2026)

Predicted Models: M 71% Moderate (inductive), L 29% Low (inductive)

B - Lewis's Woodpecker *(Melanerpes lewis)* SOC

1 1 S M

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S2B** USFWS: **MBTA; BCC10; BCC17** USFS: **Species of Conservation Concern in Forests (HLC)** BLM: **SENSITIVE** FWP SWAP: **SGCN** PIF: **2**

Delineation Criteria Confirmed breeding area based on the presence of a nest, chicks, or territorial adults during the breeding season. Point observation location is buffered by a minimum distance of 300 meters in order to encompass the likely foraging area used by breeding adults around the nest tree and otherwise is buffered by the locational uncertainty associated with the observation up to a maximum distance of 5,000 meters. (Last Updated: Mar 31, 2026)

Predicted Models: M 50% Moderate (inductive), L 50% Low (inductive)

V - Silene spaldingii *(Spalding's Catchfly)* SOC

7 1 Y

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G2G3** State: **S2** USFWS: **LT** Plant Threat Score: **Very High** CCVI: **Extremely Vulnerable** FWP SWAP: **SGCN**

Delineation Criteria Individual occurrences are generally based upon a discretely mapped area provided by an observer and are not separated by any pre-defined distance. Individual clusters of plants mapped at fine spatial scales (separated by less than approximately 25-50 meters) may be grouped together into one occurrence if they are not separated by distinct areas of habitat or terrain features. Point observations are buffered to encompass any locational uncertainty associated with the observation. (Last Updated: May 21, 2020)

Predicted Models: M 50% Moderate (inductive), L 29% Low (inductive)

M - Long-eared Myotis *(Myotis evotis)* SOC

2 2 Y

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** FWP SWAP: **SGCN**

Delineation Criteria Confirmed area of occupancy based on the documented presence (mistnet captures, definitively identified acoustic recordings, and definitively identified roosting individuals) of adults or juveniles. Point observation location is buffered by a minimum distance of 1,000 meters in order to encompass the average distances traveled from capture locations to roosts and between roosts in western Montana, Alberta, and Oregon and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 5,000 meters. When cave locations are involved, point observations are mapped in the center of a one-square mile hexagon to protect the exact location of the cave entrance as per the Federal Cave Resource Protection Act and associated regulations (U.S. Code Title 16 Chapter 63, Code of Federal Regulations Title 43 Subtitle A Part 37). The outer edges of the hexagon are then buffered by a distance of 1,000 meters and otherwise by the locational uncertainty associated with the observation up to a maximum distance of 5,000 meters. All of the one-square mile hexagons intersecting this buffered area are presented as the Species Occurrence record. (Last Updated: Sep 24, 2025)

Predicted Models: M 43% Moderate (inductive), L 57% Low (inductive)

R - Northern Alligator Lizard *(Elgaria coerulea)* **SOC** 1 1 Y

View in Field Guide **View Predicted Models** **View Range Maps**

Species of Concern - Native Species Global: **G5** State: **S3** FWP SWAP: **SGCN**

Delineation Criteria Confirmed breeding area based on the presence of a resident animal of any age. Point observation location is buffered by a minimum distance of 200 meters in order to encompass habitats supporting other individuals and probable maximum home range sizes. Otherwise the point observation is buffered by the locational uncertainty associated with the observation up to a maximum distance of 5,000 meters. (Last Updated: Jan 30, 2026)

Predicted Models: M 43% Moderate (inductive), L 57% Low (inductive)

V - Botrychium simplex *(Least Moonwort)* **SOC** 1 2 Y

View in Field Guide **View Predicted Models** **View Range Maps**

Species of Concern - Native Species Global: **G5** State: **S2** USFS: **Sensitive - Known in Forests (BD, BRT, KOOT)** CCVI: **Less Vulnerable**

Delineation Criteria Individual occurrences are generally based upon a discretely mapped area provided by an observer and are not separated by any pre-defined distance. Individual clusters of plants mapped at fine spatial scales (separated by less than approximately 25-50 meters) may be grouped together into one occurrence if they are not separated by distinct areas of habitat or terrain features. Point observations are buffered to encompass any locational uncertainty associated with the observation. (Last Updated: May 28, 2025)

Predicted Models: M 43% Moderate (inductive), L 50% Low (inductive)

B - Cassin's Finch *(Haemorhous cassinii)* **PSOC** 2 14 Y

View in Field Guide **View Predicted Models** **View Range Maps**

Species of Potential Concern - Native Species Global: **G5** State: **S4B** USFWS: **MBTA; BCC10** FWP SWAP: **SGCN** PIF: **3**

Predicted Models: M 36% Moderate (inductive), L 64% Low (inductive)

M - Silver-haired Bat *(Lasionycteris noctivagans)* **SOC** 6 1 Y

View in Field Guide **View Predicted Models** **View Range Maps**

Species of Concern - Native Species Global: **G4** State: **S3** FWP SWAP: **SGCN**

Delineation Criteria Confirmed area of occupancy based on the documented presence (mistnet captures, definitively identified acoustic recordings, and definitively identified roosting individuals) of adults or juveniles during the active season. Point observation location is buffered by a minimum distance of 3,500 meters in order to be conservative about encompassing the maximum reported foraging distance and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 5,000 meters. (Last Updated: Sep 24, 2025)

Predicted Models: M 29% Moderate (inductive), L 71% Low (inductive)

M - Northern Hoary Bat *(Lasiurus cinereus)* **SOC** 8 2 S M

View in Field Guide **View Predicted Models** **View Range Maps**

Species of Concern - Native Species Global: **G3G4** State: **S3B** BLM: **SENSITIVE** FWP SWAP: **SGCN**

Delineation Criteria Confirmed area of occupancy based on the documented presence (mistnet captures, definitively identified acoustic recordings, and definitively identified roosting individuals) of adults or juveniles during the active season. Point observation location is buffered by a minimum distance of 3,500 meters in order to be conservative about encompassing the maximum reported foraging distance for the congeneric Lasiurus borealis and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 5,000 meters. (Last Updated: Sep 24, 2025)

Predicted Models: M 29% Moderate (inductive), L 71% Low (inductive)

M - Little Brown Myotis *(Myotis lucifugus)* **SOC** 3 15 Y

View in Field Guide **View Predicted Models** **View Range Maps**

Species of Concern - Native Species Global: **G3G4** State: **S2S3** USFS: **Sensitive - Known in Forests (BD, BRT, KOOT)** FWP SWAP: **SGCN**

Delineation Criteria Confirmed area of occupancy based on the documented presence (mistnet captures, definitively identified acoustic recordings, or definitively identified roosting individuals) of adults or juveniles. Point observation location is buffered by a distance of 1,600 meters in order to encompass the greater than 1,500 meters foraging distance reported for the species in New Brunswick, Canada and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 5,000 meters. When cave locations are involved, point observations are mapped in the center of a one-square mile hexagon to protect the exact location of the cave entrance as per the Federal Cave Resource Protection Act and associated regulations (U.S. Code Title 16 Chapter 63, Code of Federal Regulations Title 43 Subtitle A Part 37). The outer edges of the hexagon are then buffered by a distance of 1,600 meters and otherwise by the locational uncertainty associated with the observation up to a maximum distance of 5,000 meters. All of the one-square mile hexagons intersecting this buffered area are presented as the Species Occurrence record. (Last Updated: Sep 24, 2025)

Predicted Models: M 7% Moderate (inductive), L 93% Low (inductive)

M - Grizzly Bear *(Ursus arctos)* **SOC** 7 2 Y H

View in Field Guide **View Predicted Models** **View Range Maps**

Species of Concern - Native Species Global: **G4** State: **S3** USFWS: **LT** BLM: **THREATENED**

Delineation Criteria Species Occurrence polygons represent areas delineated by the U.S. Fish and Wildlife Service (USFWS) that encompass both home ranges and potential transitory movements based on verified sightings. Within these areas, the USFWS wants project proponents to consider whether the species "may be present" when evaluating the potential impacts of a project and to work with the USFWS to develop and implement best management practices to minimize or eliminate project effects on the species. (Last Updated: Mar 11, 2026)

Predicted Models: L 93% Low (inductive)

B - Tennessee Warbler *(Leiothlypis peregrina)* **PSOC** 1 S M

View in Field Guide **View Predicted Models** **View Range Maps**

Species of Potential Concern - Native Species Global: **G5** State: **S3S4B** USFWS: **MBTA** FWP SWAP: **SGCN**

Predicted Models: L 86% Low (inductive)

B - Common Loon *(Gavia immer)* **SOC** 3 120 S M

View in Field Guide **View Predicted Models** **View Range Maps**

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** USFS: **Sensitive - Known in Forests (LOLO)** FWP SWAP: **SGCN** PIF: **1**

Delineation Criteria Standing water bodies with confirmed nesting and brood rearing buffered by 100 meters in order to reflect importance of adjacent terrestrial habitats to breeding success. Where breeding has been documented on extremely large water bodies, only the portion of the water body with territorial activity is delineated. (Last Updated: Feb 05, 2026)

Predicted Models: L 71% Low (inductive)

B - Long-billed Curlew *(Numenius americanus)* **SOC** 4 9 S M

View in Field Guide **View Predicted Models** **View Range Maps**

Species of Concern - Native Species Global: **G4** State: **S3B** USFWS: **MBTA; BCC11** BLM: **SENSITIVE** FWP SWAP: **SGCN** PIF: **2**

Delineation Criteria Confirmed breeding area based on the presence of a nest, chicks, or territorial adults during the breeding season. Point observation location is buffered by a minimum distance of 200 meters in order to approximate the breeding territory size reported for the species in Idaho and otherwise is buffered by the locational uncertainty associated with the observation up to a maximum distance of 5,000 meters. (Last Updated: Mar 18, 2026)

Predicted Models: L 57% Low (inductive)

B - American Goshawk *(Astur atricapillus)* **SOC** 1 5 Y W M

View in Field Guide **View Predicted Models** **View Range Maps**

Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **MBTA** FWP SWAP: **SGCN** PIF: **2**

Delineation Criteria Confirmed nesting area buffered by a minimum distance of 750 meters in order to encompass the area around the nest known to be defended by adults and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 5,000 meters. (Last Updated: Jan 27, 2026)

Predicted Models: L 50% Low (inductive)

B - Bobolink *(Dolichonyx oryzivorus)* **SOC** 3 S M

View in Field Guide **View Predicted Models** **View Range Maps**

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA; BCC10; BCC11; BCC17** FWP SWAP: **SGCN** PIF: **3**

Delineation Criteria Confirmed breeding area based on the presence of a nest, chicks, or territorial adults during the breeding season. Point observation location is buffered by a minimum distance of 150 meters in order to conservatively encompass male territory size reported for the species and otherwise is buffered by the locational uncertainty associated with the observation up to a maximum distance of 5,000 meters. (Last Updated: Mar 18, 2026)

Predicted Models: L 29% Low (inductive)

O - Bat Roost (Non-Cave) *(Bat Roost (Non-Cave))* **IAH** 1 Not Assessed

View in Field Guide

Important Animal Habitat - Native Species Global: **GNR** State: **SNR**

Delineation Criteria Confirmed area of occupancy based on the documented presence of adults or juveniles of any bat species at non-cave natural roost sites (e.g. rock outcrops, trees), below ground human created roost sites (e.g. mines), and above ground human created roost sites (e.g., bridges, buildings). Point observation locations are buffered by a distance of 4,500 meters in order to encompass the 95% confidence interval for nightly foraging distance reported for Townsend's Big-eared Bat (a resident Montana bat Species of Concern) and otherwise by the locational uncertainty associated with the observation up to a maximum distance of 5,000 meters. (Last Updated: Oct 22, 2019)

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NATURAL HERITAGE PROGRAM
A program of the **Montana State Library's Natural Resource Information System**

Legend

Model Icons
- N Suitable (native range)
- O Optimal Suitability
- M Moderate Suitability
- L Low Suitability
- I Suitable (introduced range)

Habitat Icons
- C Common
- O Occasional

Range Icons
- Y Native / Year-round
- S Summer
- W Winter
- M Migratory
- N Non-native
- H Historical

Num Obs
Count of obs with 'good precision' (<=1000m)
+ indicates additional 'poor precision' obs (1001m-10,000m)



Latitude	Longitude
48.89606	-115.08571
48.96448	-115.18172

Native Species

Summarized by: **CS0858264** *(Custom Area of Interest)*
Filtered by:
Native Species reports are filtered for Species with MT Status = Species of Concern, Special Status, Important Animal Habitat, Potential SOC

Other Observed Species

	USFWS Sec7	# Obs	Predicted Model	Range
F - Northern Pikeminnow *(Ptychocheilus oregonensis)* SOC		1		Y
View in Field Guide · View Predicted Models · View Range Maps Species of Concern - Native Species Global: **G5** State: **S3** FWP SWAP: **SGCN** **Predicted Models:** N 57% Suitable (native range) (deductive)				
F - Burbot *(Lota lota)* PSOC		2		Y
View in Field Guide · View Predicted Models · View Range Maps Species of Potential Concern - Native Species Global: **G5** State: **S4** FWP SWAP: **SGIN** **Predicted Models:** N 50% Suitable (native range) (deductive)				
B - Hooded Merganser *(Lophodytes cucullatus)* PSOC		9		Y M
View in Field Guide · View Predicted Models · View Range Maps Species of Potential Concern - Native Species Global: **G5** State: **S4** USFWS: **MBTA** PIF: **2** **Predicted Models:** O 14% Optimal (inductive), M 50% Moderate (inductive), L 36% Low (inductive)				
B - Rufous Hummingbird *(Selasphorus rufus)* PSOC		13		S M
View in Field Guide · View Predicted Models · View Range Maps Species of Potential Concern - Native Species Global: **G4** State: **S4B** USFWS: **MBTA; BCC10** FWP SWAP: **SGIN** PIF: **3** **Predicted Models:** M 93% Moderate (inductive), L 7% Low (inductive)				
B - Barrow's Goldeneye *(Bucephala islandica)* PSOC		2		Y W M
View in Field Guide · View Predicted Models · View Range Maps Species of Potential Concern - Native Species Global: **G5** State: **S4** USFWS: **MBTA** PIF: **2** **Predicted Models:** M 36% Moderate (inductive), L 64% Low (inductive)				
B - Black-backed Woodpecker *(Picoides arcticus)* SOC		4		Y
View in Field Guide · View Predicted Models · View Range Maps Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **MBTA** USFS: **Sensitive - Known in Forests (LOLO)** BLM: **SENSITIVE** FWP SWAP: **SGCN** PIF: **1** **Predicted Models:** M 36% Moderate (inductive), L 50% Low (inductive)				
B - Horned Grebe *(Podiceps auritus)* SOC		5		S M
View in Field Guide · View Predicted Models · View Range Maps Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN** PIF: **2** **Predicted Models:** M 29% Moderate (inductive), L 71% Low (inductive)				
B - Clark's Nutcracker *(Nucifraga columbiana)* SOC		16		Y
View in Field Guide · View Predicted Models · View Range Maps Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **MBTA** USFS: **Species of Conservation Concern in Forests (FLAT)** FWP SWAP: **SGCN** PIF: **3** **Predicted Models:** M 29% Moderate (inductive), L 64% Low (inductive)				
B - Trumpeter Swan *(Cygnus buccinator)* SOC		7		Y M
View in Field Guide · View Predicted Models · View Range Maps Species of Concern - Native Species Global: **G4** State: **S3** USFWS: **MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN** PIF: **1** **Predicted Models:** M 21% Moderate (inductive), L 64% Low (inductive)				
B - Great Blue Heron *(Ardea herodias)* SOC		13		Y S M
View in Field Guide · View Predicted Models · View Range Maps Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **MBTA** FWP SWAP: **SGCN** **Predicted Models:** L 100% Low (inductive)				
A - Western Toad *(Anaxyrus boreas)* SOC		1		Y
View in Field Guide · View Predicted Models · View Range Maps Species of Concern - Native Species Global: **G4** State: **S2** USFS: **Sensitive - Known in Forests (BD, BRT, KOOT, LOLO)** BLM: **SENSITIVE** FWP SWAP: **SGCN** **Predicted Models:** L 86% Low (inductive)				
B - Great Gray Owl *(Strix nebulosa)* PSOC		1		Y
View in Field Guide · View Predicted Models · View Range Maps Species of Potential Concern - Native Species Global: **G5** State: **S3S4** USFWS: **MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN** PIF: **3** **Predicted Models:** L 71% Low (inductive)				

B - Brown Creeper *(Certhia americana)* SOC — 9 — Y

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **MBTA** FWP SWAP: **SGCN** PIF: **1**

Predicted Models: L 36% Low (inductive)

B - Varied Thrush *(Ixoreus naevius)* SOC — 3 — S M

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** FWP SWAP: **SGCN** PIF: **3**

Predicted Models: L 14% Low (inductive)

B - Golden Eagle *(Aquila chrysaetos)* SOC — 1 — Not Assessed — Y

View in Field Guide | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **BGEPA; MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN**

B - Gray-crowned Rosy-Finch *(Leucosticte tephrocotis)* SOC — 1 — Not Assessed — Y WM

View in Field Guide | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S2** USFWS: **MBTA** FWP SWAP: **SGCN**

A - Northern Leopard Frog *(Lithobates pipiens)* SOC — 1 — Not Assessed — Y H

View in Field Guide | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3S4** USFS: **Sensitive - Suspected in Forests (KOOT, LOLO)** BLM: **SENSITIVE** FWP SWAP: **SGCN**

B - Black-necked Stilt *(Himantopus mexicanus)* SOC — 2 — Not Assessed — M

View in Field Guide | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** FWP SWAP: **SGCN** PIF: **3**

B - Franklin's Gull *(Leucophaeus pipixcan)* SOC — 1 — Not Assessed — M

View in Field Guide | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA; BCC10; BCC11; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN** PIF: **2**

B - Sharp-tailed Grouse *(Tympanuchus phasianellus)* SOC — 16 — Not Assessed — H

View in Field Guide | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3S4** FWP SWAP: **SGCN** PIF: **2**

B - Dickcissel *(Spiza americana)* PSOC — 1 — Not Assessed

View in Field Guide

Species of Potential Concern - Native Species Global: **G5** State: **S4B** USFWS: **MBTA**

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Legend

Model Icons	Habitat Icons	Range Icons	Num Obs
N Suitable (native range)	C Common	Y Native / Year-round	Count of obs with 'good precision' (<=1000m)
O Optimal Suitability	O Occasional	S Summer	+ indicates additional 'poor precision' obs (1001m-10,000m)
M Moderate Suitability		W Winter	
L Low Suitability		M Migratory	
I Suitable (introduced range)		N Non-native	
		H Historical	



Latitude	Longitude
48.89606	-115.08571
48.96448	-115.18172

Native Species

Summarized by: **CS0858264** *(Custom Area of Interest)*
Filtered by:
Native Species reports are filtered for Species with MT Status = Species of Concern, Special Status, Important Animal Habitat, Potential SOC

Other Potential Species

	USFWS Sec7	Predicted Model	Range
F - Peamouth *(Mylocheilus caurinus)* SOC			Y
V - Carex scoparia *(Pointed Broom Sedge)* SOC			Y
V - Dichanthelium acuminatum *(Panic Grass)* SOC			Y
V - Isoetes echinospora *(Spiny-spore Quillwort)* SOC			Y
V - Dichanthelium oligosanthes var. scribnerianum *(Scribner's Panic Grass)* SOC			Y
V - Allium acuminatum *(Tapertip Onion)* SOC			Y
B - American Bittern *(Botaurus lentiginosus)* SOC			S M
B - Black Tern *(Chlidonias niger)* SOC			S M
R - Western Skink *(Plestiodon skiltonianus)* SOC			Y
V - Psilocarphus brevissimus *(Dwarf woolly-heads)* SOC			Y
V - Utricularia intermedia *(Flatleaf Bladderwort)* SOC			Y
B - Yellow-billed Cuckoo *(Coccyzus americanus)* SOC	7		S M

F - Peamouth *(Mylocheilus caurinus)* SOC

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S3** FWP SWAP: **SGCN**
Predicted Models: N 50% Suitable (native range) (deductive)

V - Carex scoparia *(Pointed Broom Sedge)* SOC

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S1S2** USFS: **Sensitive - Known in Forests (BD, BRT)** Plant Threat Score: **No Known Threats**
Predicted Models: O 79% Optimal (inductive), M 21% Moderate (inductive)

V - Dichanthelium acuminatum *(Panic Grass)* SOC

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S2S3** Plant Threat Score: **Unknown** FWP SWAP: **SGCN**
Predicted Models: O 29% Optimal (inductive), M 57% Moderate (inductive), L 14% Low (inductive)

V - Isoetes echinospora *(Spiny-spore Quillwort)* SOC

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S3** Plant Threat Score: **No Known Threats** CCVI: **Less Vulnerable**
Predicted Models: O 21% Optimal (inductive), M 14% Moderate (inductive), L 43% Low (inductive)

V - Dichanthelium oligosanthes var. scribnerianum *(Scribner's Panic Grass)* SOC

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G5T5** State: **S1S2** Plant Threat Score: **Low** FWP SWAP: **SGCN**
Predicted Models: O 14% Optimal (inductive), M 86% Moderate (inductive)

V - Allium acuminatum *(Tapertip Onion)* SOC

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S2S3** USFS: **Sensitive - Known in Forests (BRT, KOOT, LOLO)** **Sensitive - Suspected in Forests (BD)** Plant Threat Score: **High - Medium** CCVI: **Moderately Vulnerable**
Predicted Models: O 14% Optimal (inductive), M 43% Moderate (inductive), L 29% Low (inductive)

B - American Bittern *(Botaurus lentiginosus)* SOC

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN** PIF: **3**
Predicted Models: O 14% Optimal (inductive), M 7% Moderate (inductive), L 79% Low (inductive)

B - Black Tern *(Chlidonias niger)* SOC

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G4G5** State: **S3B** USFWS: **MBTA; BCC10; BCC11; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN** PIF: **2**
Predicted Models: O 7% Optimal (inductive), M 21% Moderate (inductive), L 36% Low (inductive)

R - Western Skink *(Plestiodon skiltonianus)* SOC

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S3** FWP SWAP: **SGCN**
Predicted Models: M 100% Moderate (inductive)

V - Psilocarphus brevissimus *(Dwarf woolly-heads)* SOC

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G4** State: **S3** Plant Threat Score: **No Known Threats**
Predicted Models: M 100% Moderate (inductive)

V - Utricularia intermedia *(Flatleaf Bladderwort)* SOC

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S2** USFS: **Sensitive - Known in Forests (KOOT)** Plant Threat Score: **No Known Threats** FWP SWAP: **SGCN**
Predicted Models: M 100% Moderate (inductive)

B - Yellow-billed Cuckoo *(Coccyzus americanus)* SOC

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **PS: LT; MBTA** BLM: **THREATENED** FWP SWAP: **SGCN** PIF: **2**
Predicted Models: M 100% Moderate (inductive)

V - Eleocharis rostellata *(Beaked Spikerush)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** USFS: **Species of Conservation Concern in Forests (CG, FLAT, HLC)** Plant Threat Score: **Unknown**
CCVI: **Less Vulnerable** FWP SWAP: **SGCN**

Predicted Models: M 93% Moderate (inductive), L 7% Low (inductive)

V - Erythranthe breviflora *(Short-flowered Monkeyflower)* SOC

View in Field Guide | View Predicted Models | View Range Maps

USFS: **Sensitive - Known in Forests (KOOT)**
Species of Concern - Native Species Global: **G4** State: **S1S2** **Species of Conservation Concern in Forests (FLAT)** Plant Threat Score: **Unknown**
CCVI: **Moderately Vulnerable** FWP SWAP: **SGCN**

Predicted Models: M 93% Moderate (inductive), L 7% Low (inductive)

V - Impatiens aurella *(Pale-yellow Jewel-weed)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3** Plant Threat Score: **No Known Threats**

Predicted Models: M 93% Moderate (inductive), L 7% Low (inductive)

V - Erythranthe floribunda *(Floriferous Monkeyflower)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **SH** Plant Threat Score: **No Known Threats** CCVI: **Highly Vulnerable**

Predicted Models: M 86% Moderate (inductive), L 14% Low (inductive)

B - Western Screech-Owl *(Megascops kennicottii)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G4G5** State: **S3** USFWS: **MBTA** FWP SWAP: **SGCN** PIF: **3**

Predicted Models: M 79% Moderate (inductive), L 21% Low (inductive)

M - Western Pygmy Shrew *(Sorex eximius)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3** FWP SWAP: **SGCN**

Predicted Models: M 57% Moderate (inductive), L 43% Low (inductive)

I - Bombus suckleyi *(Suckley's Cuckoo Bumble Bee)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G2G3** State: **S1** USFWS: **P** FWP SWAP: **SGCN**

Predicted Models: M 57% Moderate (inductive), L 36% Low (inductive)

V - Madia minima *(Small-headed Tarweed)* PSOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Potential Concern - Native Species Global: **G4** State: **S3S4** Plant Threat Score: **No Known Threats**

Predicted Models: M 57% Moderate (inductive), L 21% Low (inductive)

V - Potamogeton obtusifolius *(Blunt-leaved Pondweed)* SOC

View in Field Guide | View Predicted Models | View Range Maps

USFS: **Sensitive - Suspected in Forests (LOLO)**
Species of Concern - Native Species Global: **G5** State: **S3** **Species of Conservation Concern in Forests (HLC)** Plant Threat Score: **Low**

Predicted Models: M 43% Moderate (inductive), L 57% Low (inductive)

V - Lobelia kalmii *(Kalm's Lobelia)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** Plant Threat Score: **No Known Threats** FWP SWAP: **SGCN**

Predicted Models: M 43% Moderate (inductive), L 50% Low (inductive)

I - Bombus occidentalis *(Western Bumble Bee)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G3** State: **S2** USFS: **Sensitive - Known in Forests (BD, BRT, KOOT)** BLM: **SENSITIVE** FWP SWAP: **SGCN**

Predicted Models: M 36% Moderate (inductive), L 57% Low (inductive)

V - Carex lacustris *(Lake-bank Sedge)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S1S2** USFS: **Species of Conservation Concern in Forests (FLAT)** Plant Threat Score: **Low**
CCVI: **Moderately Vulnerable**

Predicted Models: M 36% Moderate (inductive), L 43% Low (inductive)

M - Townsend's Big-eared Bat *(Corynorhinus townsendii)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3** USFS: **Sensitive - Known in Forests (LOLO)** BLM: **SENSITIVE** FWP SWAP: **SGCN**

Predicted Models: M 29% Moderate (inductive), L 71% Low (inductive)

M - Meesia triquetra *(Meesia Moss)* SOC

View in Field Guide | View Predicted Models | View Range Maps

USFS: **Sensitive - Known in Forests (BD, BRT, KOOT)**
Sensitive - Suspected in Forests (LOLO)
Species of Concern - Native Species Global: **G5** State: **S2** **Species of Conservation Concern in Forests (CG, FLAT)**

Predicted Models: M 21% Moderate (inductive), L 79% Low (inductive)

I - Margaritifera falcata *(Western Pearlshell)* SOC

View in Field Guide | View Predicted Models | View Range Maps

USFS: **Sensitive - Known in Forests (BD, BRT, KOOT, LOLO)**
Species of Concern - Native Species Global: **G3G4** State: **S2** **Species of Conservation Concern in Forests (CG, HLC)** BLM: **SENSITIVE** FWP SWAP: **SGCN**

Predicted Models: M 21% Moderate (inductive), L 64% Low (inductive)

V - Brasenia schreberi *(Watershield)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** USFS: **Sensitive - Known in Forests (KOOT, LOLO)** Plant Threat Score: **Unknown** CCVI: **Less Vulnerable**

Predicted Models: M 21% Moderate (inductive), L 43% Low (inductive)

V - Schoenoplectus subterminalis *(Water Bulrush)* SOC

View in Field Guide | View Predicted Models | View Range Maps

USFS: **Sensitive - Known in Forests (LOLO)**

Species of Concern - Native Species Global: **G5** State: **S3** **Species of Conservation Concern in Forests (HLC)** Plant Threat Score: **Unknown**

Predicted Models: M 21% Moderate (inductive), L 43% Low (inductive)

V - Heterocodon rariflorum *(Western Pearl-flower)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S2** USFS: **Sensitive - Known in Forests (BRT, KOOT, LOLO)** Plant Threat Score: **Medium - Low**
CCVI: **Moderately Vulnerable** FWP SWAP: **SGCN**

Predicted Models: M 21% Moderate (inductive), L 36% Low (inductive)

V - Dryopteris cristata *(Crested Shieldfern)* SOC

View in Field Guide | View Predicted Models | View Range Maps

USFS: **Sensitive - Known in Forests (BRT, KOOT, LOLO)**

Species of Concern - Native Species Global: **G5** State: **S3** **Species of Conservation Concern in Forests (FLAT)** Plant Threat Score: **Low**
CCVI: **Moderately Vulnerable**

Predicted Models: M 21% Moderate (inductive)

M - Fringed Myotis *(Myotis thysanodes)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3** BLM: **SENSITIVE** FWP SWAP: **SGCN**

Predicted Models: M 14% Moderate (inductive), L 86% Low (inductive)

V - Botrychium hesperium *(Western Moonwort)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3** CCVI: **Less Vulnerable**

Predicted Models: M 14% Moderate (inductive), L 79% Low (inductive)

V - Trichophorum cespitosum *(Tufted Club-rush)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S2** USFS: **Species of Conservation Concern in Forests (FLAT)** Plant Threat Score: **No Known Threats**
CCVI: **Moderately Vulnerable** FWP SWAP: **SGCN**

Predicted Models: M 14% Moderate (inductive), L 43% Low (inductive)

V - Botrychium lineare *(Linearleaf Moonwort)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G3** State: **S1S2** USFS: **Sensitive - Known in Forests (KOOT)** CCVI: **Less Vulnerable**

Predicted Models: M 14% Moderate (inductive), L 36% Low (inductive)

V - Erythranthe ampliata *(Stalk-leaved Monkeyflower)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G3** State: **S3** USFS: **Sensitive - Known in Forests (BD, BRT, KOOT)** Plant Threat Score: **No Known Threats**
CCVI: **Highly Vulnerable**

Predicted Models: M 14% Moderate (inductive), L 21% Low (inductive)

V - Carex crawei *(Crawe's Sedge)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S2S3** Plant Threat Score: **Low**

Predicted Models: M 7% Moderate (inductive), L 79% Low (inductive)

V - Epipactis gigantea *(Giant Helleborine)* SOC

View in Field Guide | View Predicted Models | View Range Maps

USFS: **Sensitive - Known in Forests (BD, BRT, KOOT, LOLO)**

Species of Concern - Native Species Global: **G4** State: **S2S3** **Species of Conservation Concern in Forests (FLAT, HLC)** Plant Threat Score: **Low**
CCVI: **Moderately Vulnerable** FWP SWAP: **SGCN**

Predicted Models: M 7% Moderate (inductive), L 79% Low (inductive)

V - Idahoa scapigera *(Scalepod)* SOC

View in Field Guide | View Predicted Models | View Range Maps

USFS: **Sensitive - Known in Forests (BRT)**
Sensitive - Suspected in Forests (LOLO)

Species of Concern - Native Species Global: **G5** State: **S1S2** **Species of Conservation Concern in Forests (FLAT)** Plant Threat Score: **High - Medium**
CCVI: **Moderately Vulnerable** FWP SWAP: **SGCN**

Predicted Models: M 7% Moderate (inductive), L 79% Low (inductive)

B - Harlequin Duck *(Histrionicus histrionicus)* SOC S M

View in Field Guide | View Predicted Models | View Range Maps

USFS: **Sensitive - Known in Forests (BD, KOOT, LOLO)**

Species of Concern - Native Species Global: **G4** State: **S2B** USFWS: **MBTA** **Sensitive - Migratory in Forests (BRT)** FWP SWAP: **SGCN** PIF: **1**

Predicted Models: M 7% Moderate (inductive), L 79% Low (inductive)

V - Petasites frigidus var. frigidus *(Arctic Sweet Coltsfoot)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5T5** State: **S2** USFS: **Species of Conservation Concern in Forests (FLAT)** Plant Threat Score: **Medium**
CCVI: **Moderately Vulnerable** FWP SWAP: **SGCN**

Predicted Models: M 7% Moderate (inductive), L 50% Low (inductive)

V - Ophioglossum pusillum *(Adder's Tongue)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3** CCVI: **Moderately Vulnerable** FWP SWAP: **SGCN**

Predicted Models: M 7% Moderate (inductive), L 36% Low (inductive)

M - Long-legged Myotis *(Myotis volans)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G4G5** State: **S3** FWP SWAP: **SGCN**

Predicted Models: L 100% Low (inductive)

M - North American Porcupine *(Erethizon dorsatum)* PSOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Potential Concern - Native Species Global: **G5** State: **S3S4** FWP SWAP: **SGCN**

Predicted Models: L 100% Low (inductive)

V - Cypripedium parviflorum *(Small Yellow Lady's-slipper)* PSOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Potential Concern - Native Species Global: **G5** State: **S3S4** USFS: **Sensitive - Known in Forests (LOLO)** **Species of Conservation Concern in Forests (CG, HLC)**

Predicted Models: L 100% Low (inductive)

B - Veery *(Catharus fuscescens)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN** PIF: **2**

Predicted Models: L 100% Low (inductive)

I - Bombus insularis *(Indiscriminate Cuckoo Bumble Bee)* PSOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Potential Concern - Native Species Global: **G3** State: **S3S4**

Predicted Models: L 93% Low (inductive)

I - Danaus plexippus *(Monarch)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S2S3** USFWS: **P** USFS: **Sensitive - Migratory in Forests (BD, BRT, KOOT)** FWP SWAP: **SGCN**

Predicted Models: L 93% Low (inductive)

B - American White Pelican *(Pelecanus erythrorhynchos)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3B** USFWS: **MBTA** FWP SWAP: **SGCN** PIF: **3**

Predicted Models: L 86% Low (inductive)

M - Wolverine *(Gulo gulo)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3** USFWS: **LT** USFS: **Sensitive - Known in Forests (LOLO)** BLM: **THREATENED** FWP SWAP: **SGCN**

Predicted Models: L 79% Low (inductive)

M - Scorpidium scorpioides *(A Scorpidium Moss)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S2** USFS: **Sensitive - Known in Forests (KOOT, LOLO)** **Species of Conservation Concern in Forests (FLAT, HLC)**

Predicted Models: L 79% Low (inductive)

B - Common Poorwill *(Phalaenoptilus nuttallii)* PSOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Potential Concern - Native Species Global: **G5** State: **S4B** USFWS: **MBTA** FWP SWAP: **SGIN** PIF: **3**

Predicted Models: L 79% Low (inductive)

M - Fisher *(Pekania pennanti)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** USFS: **Sensitive - Known in Forests (LOLO)** BLM: **SENSITIVE** FWP SWAP: **SGCN**

Predicted Models: L 64% Low (inductive)

V - Botrychium paradoxum *(Peculiar Moonwort)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G3G4** State: **S3** USFS: **Sensitive - Known in Forests (BD, KOOT)** **Sensitive - Suspected in Forests (LOLO)** **Species of Conservation Concern in Forests (CG, FLAT, HLC)** BLM: **SENSITIVE** CCVI: **Moderately Vulnerable**

Predicted Models: L 64% Low (inductive)

V - Lycopodium inundatum *(Northern Bog Clubmoss)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S2** USFS: **Sensitive - Suspected in Forests (KOOT)** **Species of Conservation Concern in Forests (FLAT)** Plant Threat Score: **Unknown** CCVI: **Highly Vulnerable**

Predicted Models: L 64% Low (inductive)

A - Rocky Mountain Tailed Frog *(Ascaphus montanus)* PSOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Potential Concern - Native Species Global: **G4** State: **S3S4** FWP SWAP: **SGCN**

Predicted Models: L 57% Low (inductive)

V - Centunculus minimus *(Chaffweed)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S2S3** Plant Threat Score: **No Known Threats**

Predicted Models: L 50% Low (inductive)

V - Rubus arcticus *(Nagoonberry)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S2** CCVI: **Moderately Vulnerable**

Predicted Models: L 50% Low (inductive)

V - Botrychium ascendens *(Upward-lobed Moonwort)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3** USFS: **Sensitive - Known in Forests (BD, KOOT)** CCVI: **Less Vulnerable**

Predicted Models: L 43% Low (inductive)

V - Geocaulon lividum *(Northern Toadflax)* PSOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Potential Concern - Native Species Global: **G5** State: **S3S4** Plant Threat Score: **No Known Threats**

Predicted Models: L 43% Low (inductive)

V - Botrychium crenulatum *(Wavy Moonwort)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3** USFS: **Sensitive - Known in Forests (BD, KOOT, LOLO)** **Species of Conservation Concern in Forests (HLC)** CCVI: **Less Vulnerable**

Predicted Models: L 36% Low (inductive)

V - Scheuchzeria palustris *(Pod Grass)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** USFS: **Sensitive - Known in Forests (LOLO)** Plant Threat Score: **Medium - Low** CCVI: **Moderately Vulnerable** FWP SWAP: **SGCN**

Predicted Models: L 36% Low (inductive)

B - Ovenbird *(Seiurus aurocapilla)* PSOC S M

View in Field Guide | View Predicted Models | View Range Maps

Species of Potential Concern - Native Species Global: **G5** State: **S4B** USFWS: **MBTA** PIF: **3**

Predicted Models: L 36% Low (inductive)

V - Botrychium pedunculosum *(Stalked Moonwort)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G3G4** State: **S2** USFS: **Sensitive - Known in Forests (BD, KOOT)** **Species of Conservation Concern in Forests (FLAT)** CCVI: **Less Vulnerable**

Predicted Models: L 29% Low (inductive)

V - Drosera rotundifolia *(Roundleaf Sundew)* PSOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Potential Concern - Native Species Global: **G5** State: **S3S4** Plant Threat Score: **Unknown**

Predicted Models: L 29% Low (inductive)

V - Eriophorum gracile *(Slender Cottongrass)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** USFS: **Species of Conservation Concern in Forests (FLAT)** Plant Threat Score: **Unknown** CCVI: **Moderately Vulnerable**

Predicted Models: L 29% Low (inductive)

V - Gaultheria ovatifolia *(Slender Wintergreen)* PSOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Potential Concern - Native Species Global: **G5** State: **S3S4** Plant Threat Score: **No Known Threats**

Predicted Models: L 29% Low (inductive)

M - Canada Lynx *(Lynx canadensis)* SOC 7

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **LT; CH** BLM: **THREATENED** FWP SWAP: **SGCN**

Predicted Models: L 21% Low (inductive)

M - Preble's Shrew *(Sorex preblei)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3** FWP SWAP: **SGCN**

Predicted Models: L 21% Low (inductive)

I - Soyedina potteri *(Rocky Mountain Forestfly)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G2** State: **S2** FWP SWAP: **SGCN**

Predicted Models: L 21% Low (inductive)

V - Stellaria crassifolia *(Fleshy Stitchwort)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S2** Plant Threat Score: **No Known Threats**

Predicted Models: L 21% Low (inductive)

MONTANA STATE LIBRARY
NATURAL HERITAGE PROGRAM
A program of the **Montana State Library's**
Natural Resource Information System



Latitude	Longitude
48.89606	-115.08571
48.96448	-115.18172

Structured Surveys

Summarized by: **CS0858264** *(Custom Area of Interest)*

The Montana Natural Heritage Program (MTNHP) records information on the locations where more than 80 different types of well-defined repeatable survey protocols capable of detecting an animal species or suite of animal species have been conducted by state, federal, tribal, university, or private consulting biologists. Examples of structured survey protocols tracked by MTNHP include: visual encounter and dip net surveys for pond breeding amphibians, point counts for birds, call playback surveys for selected bird species, visual surveys of migrating raptors, kick net stream reach surveys for macroinvertebrates, visual encounter cover object surveys for terrestrial mollusks, bat acoustic or mist net surveys, pitfall and/or snap trap surveys for small terrestrial mammals, track or camera trap surveys for large mammals, and trap surveys for turtles. Whenever possible, photographs of survey locations are stored in MTNHP databases.

MTNHP does not typically manage information on structured surveys for plants; surveys for invasive species may be a future exception.

Within the report area you have requested, structured surveys are summarized by the number of each type of structured survey protocol that has been conducted, the number of species detections/observations resulting from these surveys, and the most recent year a survey has been conducted.

B-Bald Eagle Nest *(Bald Eagle Nest Survey)*	**Survey Count**: 4	**Obs Count**: 4	**Recent Survey**: 2014
B-Common Loon Lake *(Common Loon Lake Survey)*	**Survey Count**: 123	**Obs Count**: 80	**Recent Survey**: 2024
B-Long-billed Curlew *(Long-billed Curlew, Road-based, Point Count)*	**Survey Count**: 2	**Obs Count**:	**Recent Survey**: 2012
E-Eastern Heath Snail *(Eastern Heath Snail Survey)*	**Survey Count**: 2	**Obs Count**:	**Recent Survey**: 2020
E-Eurasian Water-milfoil eDNA *(eDNA for Eurasian Water-milfoil)*	**Survey Count**: 2	**Obs Count**:	**Recent Survey**: 2015
E-Eurasian Water-milfoil Rake *(Rake tows/pulls for Eurasian Water-milfoil)*	**Survey Count**: 46	**Obs Count**: 15	**Recent Survey**: 2024
E-Invasive Mussel eDNA *(eDNA for Invasive Mussels)*	**Survey Count**: 2	**Obs Count**:	**Recent Survey**: 2015
E-Invasive Mussel Plankton Tow *(Plankton tows for veligers of Invasive Mussels)*	**Survey Count**: 117	**Obs Count**:	**Recent Survey**: 2024
E-Kicknet *(Kicknet Collection Survey for Invasive Mussels and Snails)*	**Survey Count**: 28	**Obs Count**: 3	**Recent Survey**: 2024
E-Noxious Weed, Road-based *(Noxious Weed Road-based Visual Surveys)*	**Survey Count**: 4	**Obs Count**: 5	**Recent Survey**: 2004
E-Noxious Weed, Visual *(Noxious Weed Visual Surveys)*	**Survey Count**: 2	**Obs Count**: 32	**Recent Survey**: 2007
E-Visual Aquatic Invasives *(Visual Encounter Surveys for Aquatic Invasives on Shorelines or Underwater)*	**Survey Count**: 45	**Obs Count**: 20	**Recent Survey**: 2024
F-Fish Other Survey *(Fish Other Survey (FWP Survey Type))*	**Survey Count**: 6	**Obs Count**: 16	**Recent Survey**: 1984
F-Fish Trapping/Netting *(Fish Trapping or Netting Surveys)*	**Survey Count**: 3	**Obs Count**: 14	**Recent Survey**: 2000
I-Aquatic Invert Lotic Dipnet *(Invertebrate Lotic Site Dipnet and Visual Encounter Survey)*	**Survey Count**: 1	**Obs Count**: 1	**Recent Survey**: 1997
I-Odonates/Butterfly VES *(Visual Encounter Survey for Damselfly/Dragonfly/Butterfly)*	**Survey Count**: 1	**Obs Count**: 1	**Recent Survey**: 1997
M-Bat Acoustic *(Bat Acoustic Survey)*	**Survey Count**: 2	**Obs Count**: 6	**Recent Survey**: 2010
P-USFS ECODATA Plot *(USFS ECODATA Ecological Inventory Survey Plot)*	**Survey Count**: 12	**Obs Count**: 209	**Recent Survey**: 2002

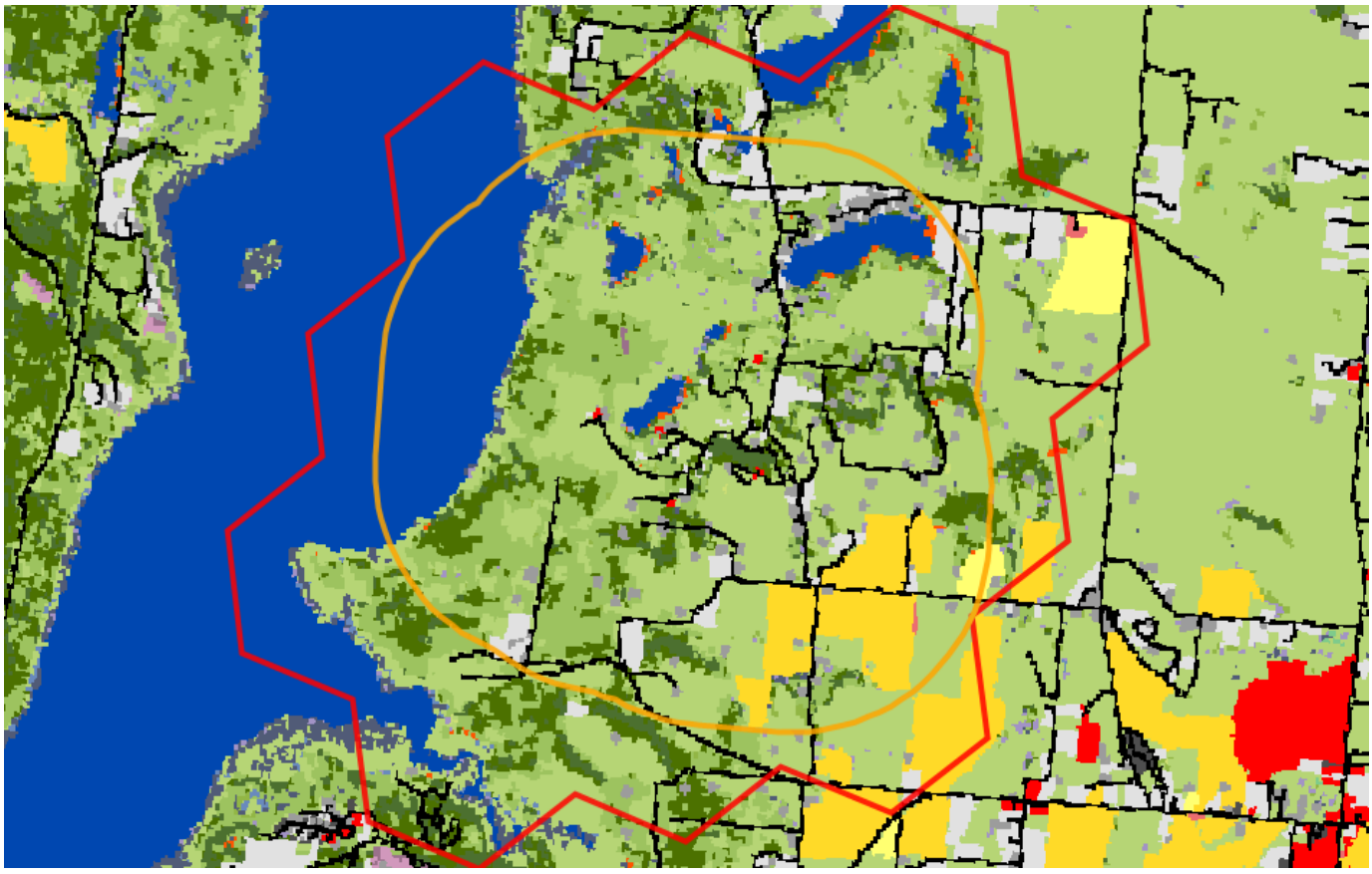
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Latitude	Longitude
48.89606	-115.08571
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Land Cover

Summarized by: **CS0858264** *(Custom Area of Interest)*





34% (*3,076 Acres*)

Grassland Systems

Montane Grassland

Rocky Mountain Lower Montane, Foothill, and Valley Grassland

This grassland system of the northern Rocky Mountains is found at lower montane to foothill elevations in mountains and valleys throughout Montana. These grasslands are floristically similar to Big Sagebrush Steppe but are defined by shorter summers, colder winters, and young soils derived from recent glacial and alluvial material. They are found at elevations from 548 - 1,650 meters (1,800-5,413 feet). In the lower montane zone, they range from small meadows to large open parks surrounded by conifers; below the lower treeline, they occur as extensive foothill and valley grasslands. Soils are relatively deep, fine-textured, often with coarse fragments, and non-saline. Microphytic crust may be present in high-quality occurrences. This system is typified by cool-season perennial bunch grasses and forbs (>25%) cover, with a sparse shrub cover (<10%). Rough fescue (*Festuca campestris*) is dominant in the northwestern portion of the state and Idaho fescue (*Festuca idahoensis*) is dominant or co-dominant throughout the range of the system. Bluebunch wheatgrass (*Pseudoroegneria spicata*) occurs as a co-dominant throughout the range as well, especially on xeric sites. Western wheatgrass (*Pascopyrum smithii*) is consistently present, often with appreciable coverage (>10%) in lower elevation occurrences in western Montana and virtually always present, with relatively high coverages (>25%), on the edge of the Northwestern Great Plains region. Species diversity ranges from a high of more than 50 per 400 square meter plot on mesic sites to 15 (or fewer) on xeric and disturbed sites. Most occurrences have at least 25 vascular species present. Farmland conversion, noxious species invasion, fire suppression, heavy grazing and oil and gas development are major threats to this system.



19% (*1,728 Acres*)

Wetland and Riparian Systems

Open Water

Open Water

All areas of open water, generally with less than 25% cover of vegetation or soil



15% (*1,364 Acres*)

Forest and Woodland Systems
Conifer-dominated forest and woodland (xeric-mesic)

Rocky Mountain Ponderosa Pine Woodland and Savanna

This system occurs on warm, dry, exposed sites in the foothills of the Rocky Mountains in west-central and central Montana, at the ecotone between grasslands or shrublands and more mesic coniferous forests. Elevations range from 1,066 to 1,676 meters (3,500-5,500 feet), with higher elevation examples mostly confined to central Montana. Occurrences are found on all slopes and aspects; however, moderately steep to very steep slopes or ridgetops are most common. True savanna types are infrequent; the system is more characteristically an open forest with a grassy understory. In the western part of the state, this system is seen mostly on dry slopes in the rainshadow of the Bitterroot Mountains. East of the Continental Divide, it is most widespread around Helena and Lewistown, although it occurs throughout mountain ranges as far east as the Little Rocky and Bearpaw Mountains. Ponderosa pine (*Pinus ponderosa*) is the dominant conifer. Douglas-fir (*Pseudotsuga menziesii*) and western larch (*Larix occidentalis*) may be present in the tree canopy in the more western areas, but are usually absent. In central Montana, limber pine (*Pinus flexilis*) and horizontal juniper (*Juniperus horizontalis*) are frequently components. Although the understory of ponderosa pine forests is often shrubby in other states, in Montana, habitats are mostly dominated by graminoids, although bitterbrush (*Purshia tridentata*), white snowberry (*Symphoricarpos albus*), and skunkrush (*Rhus trilobata*) occur in forests on benchlands and rocky slopes in the central portion of the state. Understory vegetation is more typically grasses and forbs that resprout following low to moderate intensity surface fires. Prolonged drought, beetle kill and exotic invasion are rapidly changing the dynamics of this system.



7% (*630 Acres*)

Forest and Woodland Systems
Conifer-dominated forest and woodland (xeric-mesic)

Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest

This ecological system, composed of highly variable montane conifer forests, is found throughout Montana. It is associated with a submesic climate regime with annual precipitation ranging from 250 to 1,000 millimeters (10-39 inches), with most precipitation occurring during winter, and April through June. Winter snowpacks typically melt off in early spring at lower elevations. Elevations range from valley bottoms to 1,676 meters (5,500 feet) in northwestern Montana and up to 2,286 meters (7,500 feet) on warm aspects in southern Montana. In northwestern and west-central Montana, this ecosystem forms a forest belt on warm, dry to slightly moist sites. It generally occurs on gravelly soils with good aeration and drainage and a neutral to slightly acidic pH. In the western part of the state, it is seen mostly on well drained mountain slopes and valleys from lower treeline to up to 1,676 meters (5,500 feet). Immediately east of the Continental Divide, in north-central Montana, it occurs at montane elevations. Douglas-fir (*Pseudotsuga menziesii*) is the dominant conifer both as a seral and climax species. West of the Continental Divide, occurrences can be dominated by any combination of Douglas-fir and long-lived, seral western larch (*Larix occidentalis*), grand fir (*Abies grandis*), ponderosa pine (*Pinus ponderosa*) and lodgepole pine (*Pinus contorta*). Aspen (*Populus tremuloides*) and western white pine (*Pinus monticola*) have a minor status, with western white pine only in extreme western Montana. East of the Continental Divide, larch is absent and lodgepole pine is the co-dominant. Engelmann spruce (*Picea engelmannii*), white spruce, (*Picea glauca*)or their hybrid, become increasingly common towards the eastern edge of the Douglas-fir forest belt.



5% (*438 Acres*)

Human Land Use
Agriculture

Cultivated Crops

These areas used for the production of crops, such as corn, soybeans, small grains, sunflowers, vegetables, and cotton, typically on an annual cycle. Agricultural plant cover is variable depending on season and type of farming. Other areas include more stable land cover of orchards and vineyards.

No Image

4% (*399 Acres*)

Human Land Use
Developed

Other Roads

County, city and or rural roads generally open to motor vehicles.



4% (*373 Acres*)

Forest and Woodland Systems
Conifer-dominated forest and woodland (mesic-wet)

Rocky Mountain Mesic Montane Mixed Conifer Forest

These forests are generally dominated by western hemlock (*Tsuga heterophylla*), western red cedar (*Thuja plicata*), and grand fir (*Abies grandis*). They are found in areas influenced by incursions of mild, wet, Pacific maritime air masses west of the Continental Divide in Montana. Occurrences are found on all slopes and aspects but grow best on sites with high soil moisture, such as toeslopes and bottomlands. At the periphery of its distribution, this system is confined to moist canyons and cooler, moister aspects. Generally, these are moist, non-flooded or upland forest sites that are not saturated yearlong. In northwestern Montana, western hemlock and western red cedarforests occur on bottomland and northerly exposures between 609-1,585 meters (2,000-5,200 feet) on sites with an average annual precipitation of 635 millimeters (25 inches). These forests are common in extreme northwestern Montana, and extend eastward to the Continental Divide in the Lake McDonald drainage of Glacier National Park. Isolated stands of western hemlock occur in the Swan Valley, but are found most commonly in the Libby and Thompson Falls vicinities, west to the Idaho border. Western red cedaroccurs extensively in the Mission Mountain ranges south to Missoula, and on lower flanks of the Swan Range north of Lion Creek. It is confined to the riparian zone of major streams on the east face of the Bitterroot Mountain Range. Grand fir, being less moisture dependent, occurs in more southerly and easterly sites than western red cedar and western hemlock. This system is similar to Rocky Mountain Dry-Mesic Mixed Montane Conifer Forest, which can be described as a seral phase of this system on appropriate sites west of the Continental Divide.



3% (*290 Acres*)

Human Land Use
Developed

Developed, Open Space

Vegetation (primarily grasses) planted in developed settings for recreation, erosion control, or aesthetic purposes. Impervious surfaces account for less than 20% of total cover. This category often includes highway and railway rights of way and graveled rural roads.



2% (*192 Acres*)

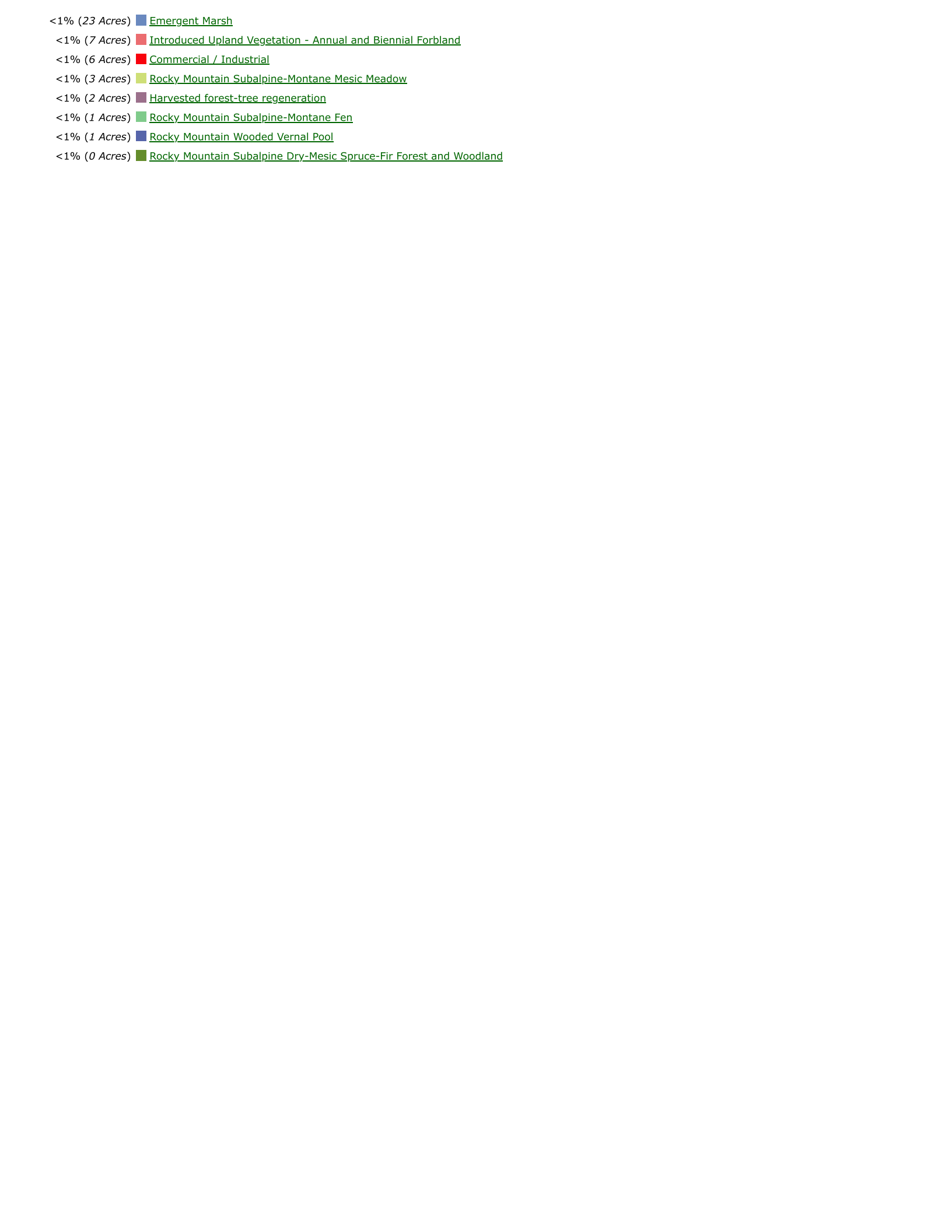
Human Land Use
Developed

Low Intensity Residential

Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20-50% of total cover. These areas most commonly include single-family housing units in rural and suburban areas. Paved roadways may be classified into this category.

Additional Limited Land Cover

1% (*130 Acres*) Pasture/Hay
1% (*124 Acres*) Northern Rocky Mountain Lower Montane Riparian Woodland and Shrubland
1% (*82 Acres*) Rocky Mountain Montane-Foothill Deciduous Shrubland
1% (*56 Acres*) Alpine-Montane Wet Meadow
<1% (*35 Acres*) Insect-Killed Forest


<1% (23 Acres) Emergent Marsh
<1% (7 Acres) Introduced Upland Vegetation - Annual and Biennial Forbland
<1% (6 Acres) Commercial / Industrial
<1% (3 Acres) Rocky Mountain Subalpine-Montane Mesic Meadow
<1% (2 Acres) Harvested forest-tree regeneration
<1% (1 Acres) Rocky Mountain Subalpine-Montane Fen
<1% (1 Acres) Rocky Mountain Wooded Vernal Pool
<1% (0 Acres) Rocky Mountain Subalpine Dry-Mesic Spruce-Fir Forest and Woodland

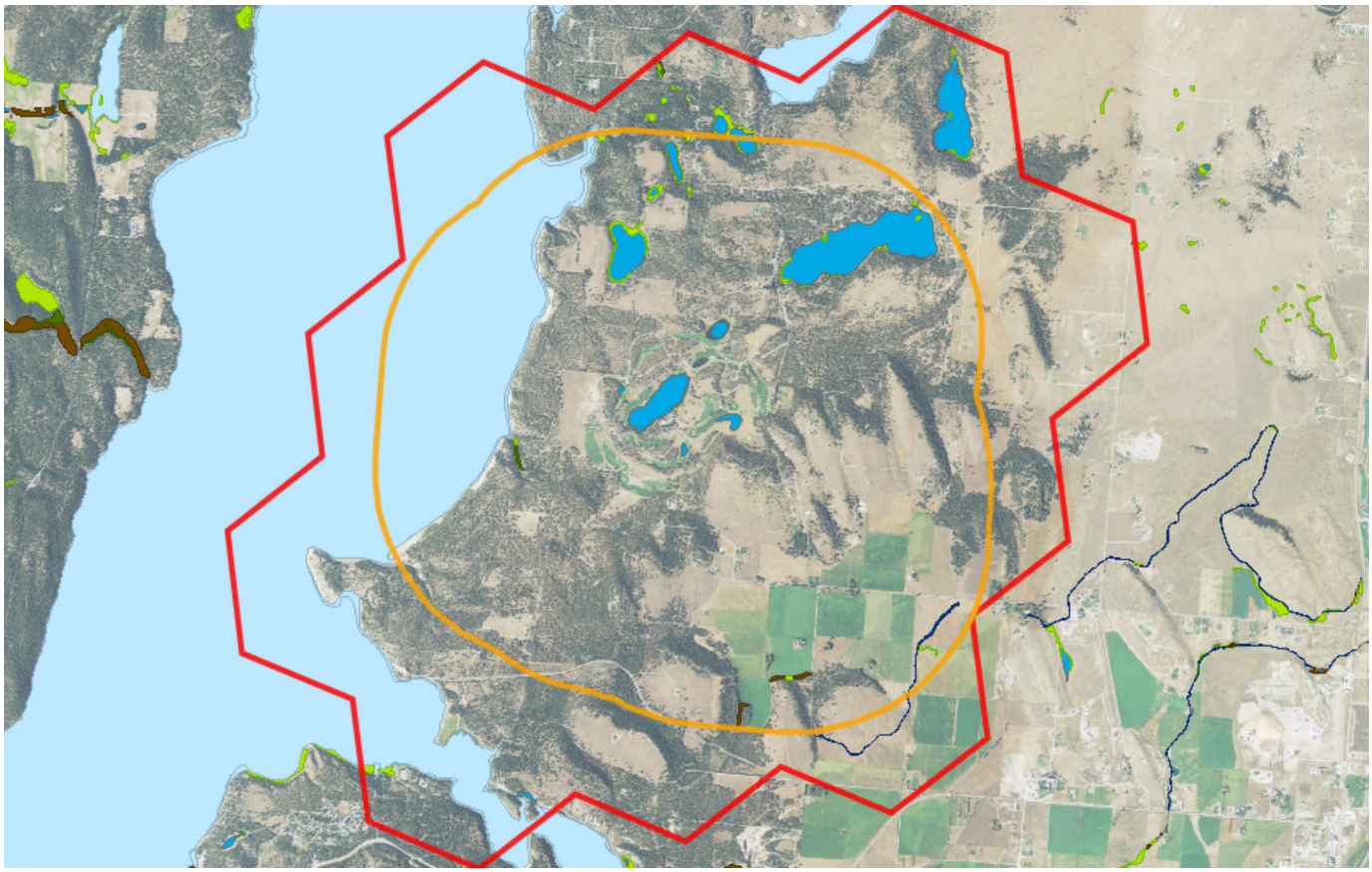
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Wetland and Riparian

Summarized by: **CS0858264** *(Custom Area of Interest)*



Wetland and Riparian Mapping

P - Palustrine

AB - Aquatic Bed

F - Semipermanently Flooded	206 Acres	
(no modifier)	**173 Acres**	**PABF**
x - Excavated	**33 Acres**	**PABFx**

P - Palustrine, AB - Aquatic Bed
Wetlands with vegetation growing on or below the water surface for most of the growing season.

US - Unconsolidated Shore

A - Temporarily Flooded	5 Acres	
(no modifier)	**5 Acres**	**PUSA**

P - Palustrine, US - Unconsolidated Shore
Wetlands with less than 75% areal cover of stones, boulders, or bedrock. AND with less than 30% vegetative cover AND the wetland is irregularly exposed due to seasonal or irregular flooding and subsequent drying.

EM - Emergent

A - Temporarily Flooded	17 Acres	
(no modifier)	**7 Acres**	**PEMA**
h - Diked/Impounded	**10 Acres**	**PEMAh**
B - Saturated	6 Acres	
(no modifier)	**6 Acres**	**PEMB**
C - Seasonally Flooded	4 Acres	
(no modifier)	**4 Acres**	**PEMC**

P - Palustrine, EM - Emergent
Wetlands with erect, rooted herbaceous vegetation present during most of the growing season.

SS - Scrub-Shrub

A - Temporarily Flooded	1 Acres	
(no modifier)	**1 Acres**	**PSSA**

P - Palustrine, SS - Scrub-Shrub
Wetlands dominated by woody vegetation less than 6 meters (20 feet) tall. Woody vegetation includes tree saplings and trees that are stunted due to environmental conditions.

FO - Forested

A - Temporarily Flooded	1 Acres	
(no modifier)	**1 Acres**	**PFOA**

P - Palustrine, FO - Forested
Wetlands dominated by woody vegetation greater than 6 meters (20 feet) tall.

L - Lacustrine (Lakes)

1 - Limnetic

UB - Unconsolidated Bottom

L - Lacustrine (Lakes), 1 - Limnetic, UB - Unconsolidated Bottom

H - Permanently Flooded 1,854 Acres

h - Diked/Impounded **1,854 Acres** **L1UBHh**

Deep waterbodies with mud or silt covering at least 25% of the bottom.

2 - Littoral

US - Unconsolidated Shore

A - Temporarily Flooded 53 Acres

h - Diked/Impounded **53 Acres** **L2USAh**

L - Lacustrine (Lakes), 2 - Littoral, US - Unconsolidated Shore

Shorelines where there is less than 75% areal cover of stones, boulders, or bedrock, and less than 30% vegetation cover. The area is also irregularly exposed due to seasonal or irregular flooding and subsequent drying.

R - Riverine (Rivers)

4 - Intermittent

SB - Stream Bed

R - Riverine (Rivers), 4 - Intermittent, SB - Stream Bed

Active channel that contains periodic water flow.

A - Temporarily Flooded 4 Acres

x - Excavated **4 Acres** **R4SBAx**

Rp - Riparian

1 - Lotic

FO - Forested

(no modifier) **3 Acres** **Rp1FO**

Rp - Riparian, 1 - Lotic, FO - Forested

This riparian class has woody vegetation that is greater than 6 meters (20 feet) tall.

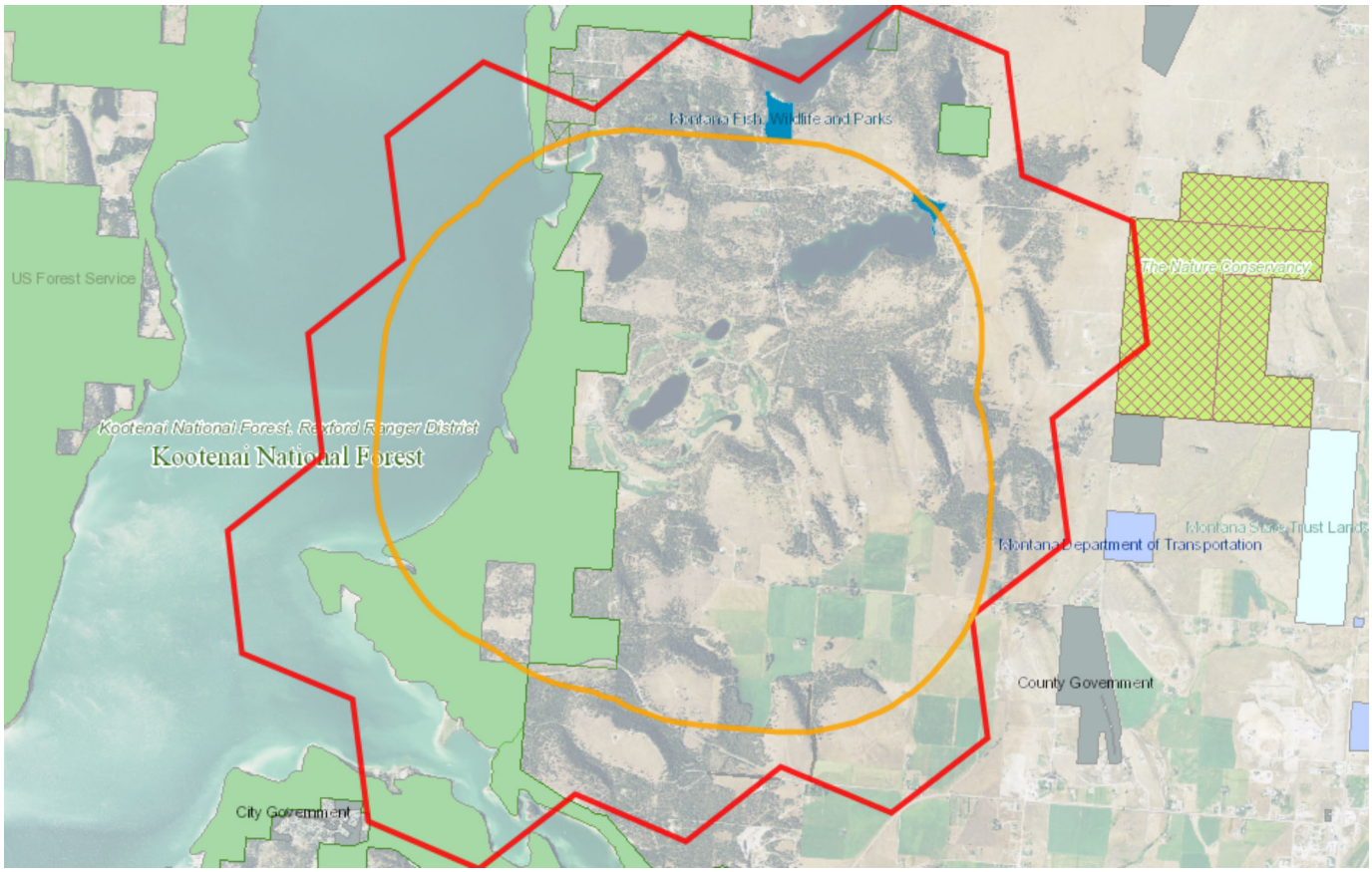
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Land Management

Summarized by: **CS0858264** *(Custom Area of Interest)*



Land Management Summary

	Ownership	Tribal	Easements	Other Boundaries (possible overlap)
Public Lands	**1,288 Acres (14%)**			
Federal	**1,259 Acres (14%)**			
US Forest Service	**1,259 Acres (14%)**			
USFS Owned	**1,259 Acres (14%)**			
USFS Ranger Districts				**3,205 Acres**
Kootenai National Forest, Rexford Ranger District				3,205 Acres
USFS National Forest Boundaries				**3,205 Acres**
Kootenai National Forest				3,205 Acres
USFS Special Interest Areas				**42 Acres**
Rexford Hoodoos Geologic Area				42 Acres
US Army Corps of Engineers				
USACE Water Projects				**1,808 Acres**
Libby Dam/Lake Koocanusa				1,808 Acres
State	**26 Acres (<1%)**			
Montana Fish, Wildlife and Parks	**26 Acres (<1%)**			
MTFWP Owned	**26 Acres (<1%)**			
MTFWP Fishing Access Sites				**26 Acres**
Sophie Lake Fishing Access Site				18 Acres
Tetrault Lake Fishing Access Site				8 Acres
Local	**3 Acres (<1%)**			
Local Government	**3 Acres (<1%)**			
Local Government Owned	**3 Acres (<1%)**			
Private Conservation Lands	**33 Acres (<1%)**			
TNC Owned	**33 Acres (<1%)**			
TNC - Dancing Prairie Preserve				**33 Acres**
Conservation Easements			**33 Acres (<1%)**	
State & Local			**33 Acres (<1%)**	
Montana Fish, Wildlife and Parks			**33 Acres (<1%)**	

Land Management Summary				
	Ownership	Tribal	Easements	Other Boundaries (possible overlap)
Private Lands or Unknown Ownership	7,605 Acres (85%)			

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Biological Reports

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Within the report area you have requested, citations for all reports and publications associated with plant or animal observations in Montana Natural Heritage Program (MTNHP) databases are listed and, where possible, links to the documents are included.

The MTNHP plans to include reports associated with terrestrial and aquatic communities in the future as allowed for by staff resources. If you know of reports or publications associated with species or biological communities within the report area that are not shown in this report, please let us know: mtnhp@mt.gov

- Amish, S.J., J. Schabacker, and Gordon Luikart. 2013. ***Water Sample Testing for Dreissenid Mussels: Usefulness of eDNA and Plankton Tow Sampling for Detection of Aquatic Invasive Species***. Appendix C of Northwest Montana Lakes Volunteer Monitoring Network 2016 Summary Report. NMLN - FWP - Whitefish Lake Institute.
- Amish, S.J., J. Schabacker, and Gordon Luikart. 2013. ***Water Sample Testing for Eurasian Watermilfoil: Usefulness of eDNA and Plankton Tow Sampling for Detection of Aquatic Invasive Species***. Appendix C of Northwest Montana Lakes Volunteer Monitoring Network 2016 Summary Report. NMLN - FWP - Whitefish Lake Institute.
- Black, J.H. 1969a. ***The frog genus Rana in Montana***. Northwest Science 43(4): 191-195.
- Hendricks, P., K.A. Jurist, D.L. Genter, and J.D. Reichel. 1995. ***Bat survey of the Kootenai National Forest, Montana: 1994***. MTNHP report.
- Schabacker, J., S.J. Amish, and G. Luikart. 2015. ***Water Sample Testing for Dreissenid Mussels: Environmental DNA for the Detection of Aquatic Invasive Species***. Appendix C of Northwest Montana Lakes Volunteer Monitoring Network 2016 Summary Report. NMLN - FWP - Whitefish Lake Institute.
- Schabacker, J., S.J. Amish, and G. Luikart. 2015. ***Water Sample Testing for Eurasian Watermilfoil: Environmental DNA for the Detection of Aquatic Invasive Species***. Appendix C of Northwest Montana Lakes Volunteer Monitoring Network 2016 Summary Report. NMLN - FWP - Whitefish Lake Institute.
- Skaar, D. 1990. Montana Common Loon management plan. U.S. Forest Service, Kalispell, Montana.

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Legend

Model Icons
- N Suitable (native range)
- O Optimal Suitability
- M Moderate Suitability
- L Low Suitability
- I Suitable (introduced range)

Habitat Icons
- C Common
- O Occasional

Range Icons
- N Non-native

Num Obs
Count of obs with 'good precision' (<=1000m)
+ indicates additional 'poor precision' obs (1001m-10,000m)



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Invasive and Pest Species

Summarized by: **CS0858264** *(Custom Area of Interest)*

	# Obs	Predicted Model	Range
Aquatic Invasive Species			
V - Iris pseudacorus *(Yellowflag Iris)* **N2A/AIS**			N
View in Field Guide **View Predicted Models** **View Range Maps**			
Noxious Weed: Priority 2A - Aquatic Invasive Species - Non-native Species Global: **GNR** State: **SNA**			
Predicted Models: O 36% Optimal (inductive), M 50% Moderate (inductive), L 14% Low (inductive)			
V - Butomus umbellatus *(Flowering-rush)* **N2A/AIS**			N
View in Field Guide **View Predicted Models** **View Range Maps**			
Noxious Weed: Priority 2A - Aquatic Invasive Species - Non-native Species Global: **G5** State: **SNA**			
Predicted Models: M 36% Moderate (inductive), L 29% Low (inductive)			
V - Myriophyllum spicatum *(Eurasian Water-milfoil)* **N2A/AIS**			N
View in Field Guide **View Predicted Models** **View Range Maps**			
Noxious Weed: Priority 2A - Aquatic Invasive Species - Non-native Species Global: **GNR** State: **SNA**			
Predicted Models: L 64% Low (inductive)			
V - Nymphaea odorata *(American Water-lily)* **AIS**			N
View in Field Guide **View Predicted Models** **View Range Maps**			
Aquatic Invasive Species - Non-native Species Global: **G5** State: **SNA**			
Predicted Models: I 79% Suitable (introduced range) (deductive)			
V - Nymphoides peltata *(Yellow Floating Heart)* **AIS**			N
View in Field Guide **View Predicted Models** **View Range Maps**			
Aquatic Invasive Species - Non-native Species Global: **G5** State: **SNA**			
Predicted Models: I 79% Suitable (introduced range) (deductive)			
I - Faxonius virilis *(Virile Crayfish)* **AIS**	8	Not Assessed	N
View in Field Guide **View Range Maps**			
Aquatic Invasive Species - Native/Non-native Species - (depends on location or taxa) Global: **G5** State: **S5**			
Noxious Weeds: Priority 1A			
V - Centaurea solstitialis *(Yellow Starthistle)* **N1A**			N
View in Field Guide **View Predicted Models** **View Range Maps**			
Noxious Weed: Priority 1A - Non-native Species Global: **GNR** State: **SNA**			
Predicted Models: O 21% Optimal (inductive), M 71% Moderate (inductive)			
V - Phragmites australis ssp. australis *(European Common Reed)* **N1A**			N
View in Field Guide **View Predicted Models** **View Range Maps**			
Noxious Weed: Priority 1A - Non-native Species Global: **G5T5** State: **SNA**			
Predicted Models: M 7% Moderate (inductive), L 14% Low (inductive)			
V - Taeniatherum caput-medusae *(Medusahead)* **N1A**			N
View in Field Guide **View Predicted Models** **View Range Maps**			
Noxious Weed: Priority 1A - Non-native Species Global: **G4G5** State: **SNA**			
Predicted Models: L 93% Low (inductive)			
V - Isatis tinctoria *(Dyer's Woad)* **N1A**			N
View in Field Guide **View Predicted Models** **View Range Maps**			
Noxious Weed: Priority 1A - Non-native Species Global: **GNR** State: **SNA**			
Predicted Models: L 86% Low (inductive)			
Noxious Weeds: Priority 1B			
V - Cytisus scoparius *(Scotch Broom)* **N1B**			N
View in Field Guide **View Predicted Models** **View Range Maps**			
Noxious Weed: Priority 1B - Non-native Species Global: **GNR** State: **SNA**			
Predicted Models: O 79% Optimal (inductive), M 7% Moderate (inductive), L 7% Low (inductive)			
V - Chondrilla juncea *(Rush Skeletonweed)* **N1B**			N
View in Field Guide **View Predicted Models** **View Range Maps**			
Noxious Weed: Priority 1B - Non-native Species Global: **GNR** State: **SNA**			
Predicted Models: O 43% Optimal (inductive), M 50% Moderate (inductive)			
V - Echium vulgare *(Blueweed)* **N1B**			N
View in Field Guide **View Predicted Models** **View Range Maps**			
Noxious Weed: Priority 1B - Non-native Species Global: **GNR** State: **SNA**			
Predicted Models: O 7% Optimal (inductive), M 79% Moderate (inductive), L 7% Low (inductive)			

V - Lythrum salicaria *(Purple Loosestrife)* N1B

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 1B - Non-native Species Global: **G5** State: **SNA**

Predicted Models: M 50% Moderate (inductive), L 43% Low (inductive)

V - Polygonum cuspidatum *(Japanese Knotweed)* N1B

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 1B - Non-native Species Global: **GNRTNR** State: **SNA**

Predicted Models: M 21% Moderate (inductive), L 57% Low (inductive)

V - Polygonum x bohemicum *(Bohemian Knotweed)* N1B

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 1B - Non-native Species Global: **GNA** State: **SNA**

Predicted Models: M 21% Moderate (inductive), L 43% Low (inductive)

Noxious Weeds: Priority 2A

V - Hieracium praealtum *(Kingdevil Hawkweed)* N2A

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2A - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: O 36% Optimal (inductive), M 57% Moderate (inductive), L 7% Low (inductive)

V - Iris pseudacorus *(Yellowflag Iris)* N2A/AIS

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2A - Aquatic Invasive Species - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: O 36% Optimal (inductive), M 50% Moderate (inductive), L 14% Low (inductive)

V - Hieracium piloselloides *(Tall Hawkweed)* N2A

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2A - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: O 21% Optimal (inductive), M 71% Moderate (inductive)

V - Rhamnus cathartica *(Common Buckthorn)* N2A

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2A - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: O 21% Optimal (inductive), M 57% Moderate (inductive), L 14% Low (inductive)

V - Ventenata dubia *(Ventenata)* N2A

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2A - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: O 7% Optimal (inductive), M 86% Moderate (inductive)

V - Hieracium caespitosum *(Meadow Hawkweed)* N2A

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2A - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: M 50% Moderate (inductive), L 50% Low (inductive)

V - Ranunculus acris *(Tall Buttercup)* N2A

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2A - Non-native Species Global: **G5** State: **SNA**

Predicted Models: M 43% Moderate (inductive), L 50% Low (inductive)

V - Butomus umbellatus *(Flowering-rush)* N2A/AIS

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2A - Aquatic Invasive Species - Non-native Species Global: **G5** State: **SNA**

Predicted Models: M 36% Moderate (inductive), L 29% Low (inductive)

V - Hieracium aurantiacum *(Orange Hawkweed)* N2A

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2A - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: M 29% Moderate (inductive), L 71% Low (inductive)

V - Lepidium latifolium *(Perennial Pepperweed)* N2A

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2A - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: L 64% Low (inductive)

V - Myriophyllum spicatum *(Eurasian Water-milfoil)* N2A/AIS

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2A - Aquatic Invasive Species - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: L 64% Low (inductive)

V - Senecio jacobaea *(Tansy Ragwort)* N2A

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2A - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: L 29% Low (inductive)

Noxious Weeds: Priority 2B

V - Linaria dalmatica *(Dalmatian Toadflax)* N2B

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2B - Non-native Species Global: **G5** State: **SNA**

Predicted Models: O 36% Optimal (inductive), M 57% Moderate (inductive), L 7% Low (inductive)

V - Hypericum perforatum *(Common St. John's-wort)* N2B

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: O 14% Optimal (inductive), M 86% Moderate (inductive)

V - Tanacetum vulgare *(Common Tansy)* N2B

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: M 100% Moderate (inductive)

V - Centaurea stoebe *(Spotted Knapweed)* N2B

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: M 93% Moderate (inductive), L 7% Low (inductive)

V - Potentilla recta *(Sulphur Cinquefoil)* N2B

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: M 93% Moderate (inductive), L 7% Low (inductive)

V - Leucanthemum vulgare *(Oxeye Daisy)* N2B

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: M 86% Moderate (inductive), L 14% Low (inductive)

V - Linaria vulgaris *(Yellow Toadflax)* N2B

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: M 64% Moderate (inductive), L 36% Low (inductive)

V - Acroptilon repens *(Russian Knapweed)* N2B

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: M 57% Moderate (inductive), L 43% Low (inductive)

V - Cynoglossum officinale *(Common Hound's-tongue)* N2B

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: M 43% Moderate (inductive), L 57% Low (inductive)

V - Berteroa incana *(Hoary False-alyssum)* N2B

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: M 14% Moderate (inductive), L 79% Low (inductive)

V - Lepidium draba *(Whitetop)* N2B

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: M 7% Moderate (inductive), L 64% Low (inductive)

V - Cirsium arvense *(Canada Thistle)* N2B

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2B - Non-native Species Global: **G5** State: **SNA**

Predicted Models: L 100% Low (inductive)

V - Euphorbia virgata *(Leafy Spurge)* N2B

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: L 100% Low (inductive)

V - Centaurea diffusa *(Diffuse Knapweed)* N2B

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: L 93% Low (inductive)

V - Tamarix ramosissima *(Salt Cedar)* N2B

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: L 64% Low (inductive)

V - Convolvulus arvensis *(Field Bindweed)* N2B

View in Field Guide | View Predicted Models | View Range Maps

Noxious Weed: Priority 2B - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: L 29% Low (inductive)

Regulated Weeds: Priority 3

V - Bromus tectorum *(Cheatgrass)* R3

View in Field Guide | View Predicted Models | View Range Maps

Regulated Weed: Priority 3 - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: M 71% Moderate (inductive), L 29% Low (inductive)

V - Elaeagnus angustifolia *(Russian Olive)* R3

View in Field Guide | View Predicted Models | View Range Maps

Regulated Weed: Priority 3 - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: L 64% Low (inductive)

Biocontrol Species

I - Cyphocleonus achates *(Knapweed Root Weevil)* BIOCNTRL

View in Field Guide | View Predicted Models | View Range Maps

Biocontrol Species - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: O 64% Optimal (inductive), M 36% Moderate (inductive)

I - Mecinus janthinus *(Yellow Toadflax Stem-boring Weevil)* BIOCNTRL

View in Field Guide | View Predicted Models | View Range Maps

Biocontrol Species - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: O 43% Optimal (inductive), M 43% Moderate (inductive), L 14% Low (inductive)

I - Oberea erythrocephala *(Red-headed Leafy Spurge Stem Borer)* BIOCNTRL

View in Field Guide | View Predicted Models | View Range Maps

Biocontrol Species - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: M 50% Moderate (inductive), L 50% Low (inductive)

I - Mecinus janthiniformis *(Dalmatian Toadflax Stem-boring Weevil)* BIOCNTRL

View in Field Guide | View Predicted Models | View Range Maps

Biocontrol Species - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: L 100% Low (inductive)

I - Aphthona lacertosa *(Brown-legged Leafy Spurge Flea Beetle)* BIOCNTRL

View in Field Guide | View Predicted Models | View Range Maps

Biocontrol Species - Non-native Species Global: **GNR** State: **SNA**

Predicted Models: L 43% Low (inductive)

I - Larinus obtusus *(Blunt Knapweed Flower Weevil)* BIOCNTRL 1 Not Assessed

View in Field Guide

Biocontrol Species - Non-native Species Global: **GNR** State: **SNA**

Introduction to Montana Natural Heritage Program

PO Box 201800 • 1201 11th Avenue • Helena, MT 59620-1800 • fax 406.444.0266 • phone 406.444.3989 • mtnhp.mt.gov

Introduction

The Montana Natural Heritage Program (MTNHP) is Montana's source for reliable and objective information on Montana's native species and habitats, emphasizing those of conservation concern. MTNHP was created by the Montana legislature in 1983 as part of the Natural Resource Information System (NRIS) at the Montana State Library (MSL). MTNHP is "a program of information acquisition, storage, and retrieval for data relating to the flora, fauna, and biological community types of Montana" (MCA 90-15-102). MTNHP's activities are guided by statute as well as through ongoing interaction with, and feedback from, principal data source agencies such as Montana Fish, Wildlife, and Parks, the Montana Department of Environmental Quality, the Montana Department of Natural Resources and Conservation, the Montana University System, the US Forest Service, and the US Bureau of Land Management. Since the first staff was hired in 1985, the Program has logged a long record of success, and developed into a highly respected, service-oriented program. MTNHP is widely recognized as one of the most advanced and effective of over 60 natural heritage programs that are distributed across North America.

Vision

Our vision is that public agencies, the private sector, the education sector, and the general public will trust and rely upon MTNHP as the source for information and expertise on Montana's species and habitats, especially those of conservation concern. We strive to provide easy access to our information to allow users to save time and money, speed environmental reviews, and make informed decisions.

Core Values

- We endeavor to be a single statewide source of accurate and up-to-date information on Montana's plants, animals, and aquatic and terrestrial biological communities.
- We actively listen to our data users and work responsively to meet their information and training needs.
- We strive to provide neutral, trusted, timely, and equitable service to all of our information users.
- We make every effort to be transparent to our data users in setting work priorities and providing data products.

Confidentiality

All information requests made to the Montana Natural Heritage Program are considered library records and are protected from disclosure by the Montana Library Records Confidentiality Act (MCA 22-1-11).

Information Managed

Information managed at the Montana Natural Heritage Program is botanical, zoological, and ecological information that describes the distribution (e.g., observations, structured surveys, range polygons, predicted habitat suitability models), conservation status (e.g., global and state conservation status ranks, including threats), and other supporting information (e.g., accounts and references) on the biology and ecology of species and biological communities.

Data Use Terms and Conditions

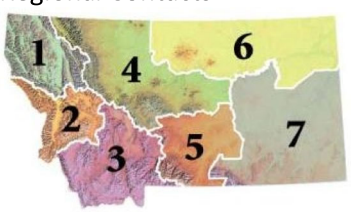
- Montana Natural Heritage Program (MTNHP) products and services are based on biological data and the objective interpretation of those data by professional scientists. MTNHP does not advocate any particular philosophy of natural resource protection, management, development, or public policy.
- MTNHP has no natural resource management or regulatory authority. Products, statements, and services from MTNHP are intended to inform parties as to the state of scientific knowledge about certain natural resources, and to further develop that knowledge. The information is not intended as natural resource management guidelines or prescriptions or a determination of environmental impacts. MTNHP recommends consultation with appropriate state, federal, and tribal resource management agencies and authorities in the area where your project is located.
- Information on the status and spatial distribution of biological resources produced by MTNHP are intended to inform parties of the state-wide status, known occurrence, or the likelihood of the presence of those resources. **These products are not intended to substitute for field-collected data, nor are they intended to be the sole basis for natural resource management decisions.**
- MTNHP does not portray its data as exhaustive or comprehensive inventories of rare species or biological communities. **Field verification of the absence or presence of sensitive species and biological communities will always be an important obligation of users of our data.**
- MTNHP responds equally to all requests for products and services, regardless of the purpose or identity of the requester.
- Because MTNHP constantly updates and revises its databases with new data and information, products will become outdated over time. Interested parties are encouraged to obtain the most current information possible from MTNHP, rather than using older products. We add, review, update, and delete records on a daily basis. Consequently, we strongly advise that you update your MTNHP data sets at a minimum of every four months for most applications of our information.
- MTNHP data require a certain degree of biological expertise for proper analysis, interpretation, and application. Our staff is available to advise you on questions regarding the interpretation or appropriate use of the data that we provide. See Contact Information for MTNHP Staff
- The information provided to you by MTNHP may include sensitive data that if publicly released might jeopardize the welfare of threatened, endangered, or sensitive species or biological communities. This information is intended for distribution or use only within your department, agency, or business. Subcontractors may have access to the data during the course of any given project, but should not be given a copy for their use on subsequent, unrelated work.
- MTNHP data are made freely available. Duplication of hard-copy or digital MTNHP products with the intent to sell is prohibited without written consent by MTNHP. Should you be asked by individuals outside your organization for the type of data that we provide, please refer them to MTNHP.
- MTNHP and appropriate staff members should be appropriately acknowledged as an information source in any third-party product involving MTNHP data, reports, papers, publications, or in maps that incorporate MTNHP graphic elements.
- Sources of our data include museum specimens, published and unpublished scientific literature, field surveys by state and federal agencies and private contractors, and reports from knowledgeable individuals. MTNHP actively solicits and encourages additions, corrections and updates, new observations or collections, and comments on any of the data we provide.
- MTNHP staff and contractors do not enter or cross privately-owned lands without express permission from the landowner. However, the program cannot guarantee that information provided to us by others was obtained under adherence to this policy.

Suggested Contacts for Natural Resource Management Agencies

As required by Montana statute (MCA 90-15), the Montana Natural Heritage Program works with state, federal, tribal, nongovernmental organizations, and private partners to ensure that the latest animal and plant distribution and status information is incorporated into our databases so that it can be used to inform a variety of permitting and planning processes and management decisions. We encourage you to contact state, federal, and tribal resource management agencies in the area where your project is located and review the permitting overviews by the Montana Department of Environmental Quality, the Montana Department of Natural Resources and Conservation and the Index of Environmental Permits for Montana for guidelines relevant to your efforts. In particular, we encourage you to contact the Montana Department of Fish, Wildlife, and Parks for the latest data and management information regarding hunted and high-profile management species and to use the U.S. Fish and Wildlife Service's Information Planning and Consultation (IPAC) website regarding U.S. Endangered Species Act listed Threatened, Endangered, or Candidate species.

For your convenience, we have compiled a list of relevant agency contacts and links below:

Montana Fish, Wildlife, and Parks

Fish Species	Zachary Shattuck zshattuck@mt.gov (406) 444-1231
Aquatic Invasive Species	Tom Woolf thomas.woolf@mt.gov (406) 444-1230
American Bison Black-footed Ferret Black-tailed Prairie Dog Bald Eagle Golden Eagle Common Loon Least Tern Piping Plover Whooping Crane	Kristina Smucker ksmucker@mt.gov (406) 444-5209
Grizzly Bear Greater Sage Grouse Trumpeter Swan Big Game Upland Game Birds Furbearers	Brian Wakeling brian.wakeling@mt.gov (406) 444-3940
Managed Terrestrial Game Data	Adam Messer – MFWP GIS Coordinator amesser@mt.gov (406) 444-0095
Fisheries Data and Nongame Animal Data	Adam Messer – MFWP GIS Coordinator amesser@mt.gov (406) 444-0095
Wildlife and Fisheries Scientific Collector's Permits	https://fwp.mt.gov/buyandapply/commercialwildlifeandscientificpermits/scientific Kristina Smucker for Wildlife ksmucker@mt.gov (406) 444-5209 Dave Schmetterling for Fisheries dschmetterling@mt.gov (406) 542-5514
Fish and Wildlife Recommendations for Subdivision Development	Stevie Burton stevie.burton@mt.gov (406) 594-7354 See https://fwp.mt.gov/conservation/living-with-wildlife/subdivision-recommendations
Regional Contacts  	Region 1 (Kalispell) (406) 752-5501 fwprg12@mt.gov Region 2 (Missoula) (406) 542-5500 fwprg22@mt.gov Region 3 (Bozeman) (406) 577-7900 fwprg3@mt.gov Region 4 (Great Falls) (406) 454-5840 fwprg42@mt.gov Region 5 (Billings) (406) 247-2940 fwprg52@mt.gov Region 6 (Glasgow) (406) 228-3700 fwprg62@mt.gov Region 7 (Miles City) (406) 234-0900 fwprg72@mt.gov

Montana Conservation Districts
Clickable map for contact information across Montana: https://macdnet.org/conservation-district-map/
Montana Association of Conservation Districts Resources Directory: https://macdnet.org/resources

Montana Department of Agriculture
General Contact Information: https://agr.mt.gov/About/Office-Locations/Office-Locations-and-Field-Offices
Noxious Weeds: https://agr.mt.gov/Noxious-Weeds

Montana Department of Environmental Quality
Permitting and Operator Assistance for all Environmental Permits: https://deq.mt.gov/Permitting
Opencut Mining Web Mapping Application for review of opencut mining applications
https://gis.mtdeq.us/portal/apps/webappviewer/index.html?id=7b60084bc4c444a19c9a7a0867e7635a

Montana Department of Natural Resources and Conservation
Montana Sage Grouse Habitat Conservation Program: https://sagegrouse.mt.gov/ (406) 444-6340

Permits and Services: https://dnrc.mt.gov/Permits-Services

Stream Permitting (310, 404, Section 10, SPA 124, floodplain, 318, Navigable Water, and other stream permits)
https://dnrc.mt.gov/licenses-and-permits/stream-permitting/

Montana Floodplains Program https://dnrc.mt.gov/Water-Resources/Floodplains/

Wildfire Resources: https://dnrc.mt.gov/Forestry/Wildfire

Regional Office Contacts: https://dnrc.mt.gov/TrustLand/About/Regional-Offices

Bureau of Land Management

Montana Field Office Contacts:



Billings	(406) 896-5013	Lewistown	(406) 538-1900
Butte	(406) 533-7600	Malta	(406) 654-5100
Dillon	(406) 683-8000	Miles City	(406) 233-2800
Glasgow	(406) 228-3750	Missoula	(406) 329-3914
Havre	(406) 262-2820		

Natural Resources Conservation Service
Montana Home Page https://www.nrcs.usda.gov/state-offices/montana
State Office and Employee Directories
https://www.nrcs.usda.gov/contact/state-office-contacts/montana-employee-directory-state-office

United States Army Corps of Engineers
Montana Regulatory Office for federal permits related to construction in water and wetlands
https://www.nwo.usace.army.mil/Missions/Regulatory-Program/Montana/
Direct Link to Regulatory Request System: https://rrs.usace.army.mil/rrs/home
Email for questions: Montana.Reg@usace.army.mil
Phone for questions: (406) 441-1375

United States Environmental Protection Agency
Environmental information, notices, permitting, and contacts https://www.epa.gov/mt
Gateway to state resource locators https://www.envcap.org/srl/index.php

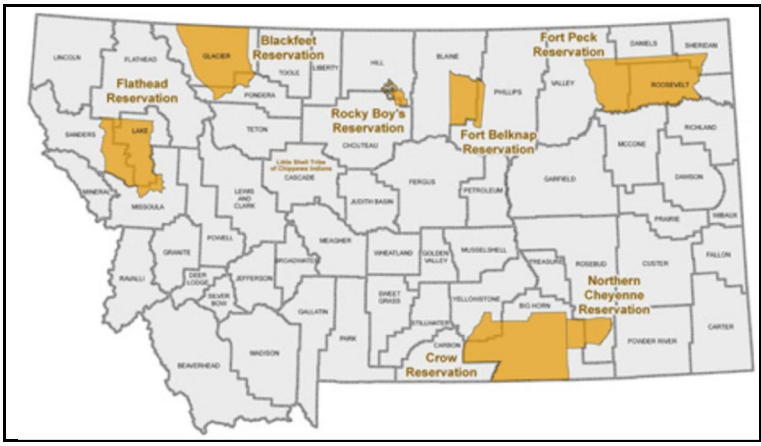
United States Fish and Wildlife Service
Information Planning and Conservation (IPAC) website: https://ipac.ecosphere.fws.gov
Montana Ecological Services Field Office: https://www.fws.gov/office/montana-ecological-services (406) 449-5225
Migratory Bird Joint Ventures: https://www.fws.gov/partner/migratory-bird-joint-ventures

United States Forest Service

Regional Office – Missoula, Montana Contacts

Assistant Regional TES PM	Diane Probasco	diane.probasco@usda.gov	(307) 709-2292
Regional Botanist	Amanda Hendrix	amanda.hendrix@usda.gov	(651) 447-3016
Invasive Species Program Manager	Michelle Cox	michelle.cox2@usda.gov	(406) 329-3669
Regional Hydrologist	Andy Efta	james.efta@usda.gov	(406) 329-3447

Tribal Nations – General Websites



Assiniboine & Gros Ventre Tribes – Fort Belknap Reservation
Assiniboine & Sioux Tribes – Fort Peck Reservation
Blackfeet Tribe - Blackfeet Reservation
Chippewa Creek Tribe - Rocky Boy's Reservation
Crow Tribe – Crow Reservation
Little Shell Chippewa Tribe
Northern Cheyenne Tribe – Northern Cheyenne Reservation
Salish & Kootenai Tribes - Flathead Reservation

Tribal Nations – Specific Contacts

Confederated Salish & Kootenai Tribes (Flathead Reservation)-Division of Wildlife, Recreation, & Conservation

Whisper Camel-Means – Division Manager	Whisper.Means@cskt.org	(406) 675-2700
Kari Kingery – Wildlife Program Manager	Kari.Kingery@cskt.org	(406) 675-2700

Natural Heritage Programs and Conservation Data Centers in Surrounding States and Provinces
Alberta Conservation Information Management System
British Columbia Conservation Data Centre
Idaho Natural Heritage Program
North Dakota Natural Heritage Program
Saskatchewan Conservation Data Centre
South Dakota Natural Heritage Program
Wyoming Natural Diversity Database

Invasive Species Management Contacts and Information
General
Montana Invasive Species Council (MISC)
Central and Eastern Montana Invasive Species Team (CEMIST)
Montana State University Integrated Pest Management Extension

Aquatic Invasive Species

Montana Fish, Wildlife, and Parks Aquatic Invasive Species staff
Montana Department of Natural Resources and Conservation's Aquatic Invasive Species Grant Program
Western Montana Conservation Commission

Noxious Weeds

Montana Weed Control Association Contacts Webpage
Montana Biological Weed Control Coordination Project
Montana Department of Agriculture - Noxious Weeds
Montana Weed Control Association
Montana Fish, Wildlife, and Parks - Noxious Weeds
Integrated Noxious Weed Management after Wildfires
Fire Management and Invasive Plants

Introduction to Native Species

Within the report area you have requested, separate summaries are provided for: (1) Species Occurrences (SO) for plant and animal Species of Concern, Special Status Species (SSS), Important Animal Habitat (IAH) and some Potential Plant Species of Concern; (2) other observed non-Species of Concern filtered or requested as "Additional Species" or Species of Concern without suitable documentation to create Species Occurrence polygons; and (3) other non-documented Species of Concern or additionally filtered or requested that are potentially present based on their range, predicted suitable habitat model output, or presence of associated habitats. Each of these summaries provides the following information when present for a species: (1) the number of Species Occurrences and associated delineation criteria for construction of these polygons that have long been used for considerations of documented Species of Concern in environmental reviews; (2) the number of observations of each species; (3) the geographic range polygons for each species that the report area overlaps; (4) predicted habitat suitability classes that are present if a predicted suitable habitat model has been created; (5) the percent of the report area that is mapped as commonly associated or occasionally associated habitat as listed for each species in the Montana Field Guide; and (6) a variety of conservation status ranks and links to species accounts in the Montana Field Guide. Details on each of these information categories are included under relevant section headers below or are defined on our Species Status Codes page. In presenting this information, the Montana Natural Heritage Program (MTNHP) is working towards assisting the user with rapidly determining what species have been documented and what species are potentially present in the report area. We remind users that this information is likely incomplete as surveys to document native and introduced species are lacking in many areas of the state, the MTNHP's staff and resources are restricted by budgets, and information is constantly being added and updated in our databases. **Thus, field verification by professional biologists of the absence or presence of species and biological communities will always be an important obligation of users of our data.**

If you are aware of observation datasets that the MTNHP is missing, please report them to the Program Botanist apipp@mt.gov or Senior Zoologist dbachen@mt.gov If you have animal or plant observations that you would like to contribute, you can also submit them via Excel spreadsheets, geodatabases, iNaturalist, or a Survey123 form. Various methods of data submission are reviewed in this playlist of videos: https://www.youtube.com/playlist?list=PLRaydtZpHu2qOHPoSPq9cnM9uXGmEXACx

Observations

An observation is a visual, audio, specimen, genetic, or other documentation of a particular species at a location with an assigned spatial precision on a given date. Most observations are submitted in digital format from standardized databases associated with research or monitoring efforts and spreadsheets of incidental observations submitted by professional biologists and amateur naturalists. At a minimum, accepted observation records must contain a credible species identification (i.e. appropriate geographic range, date, and habitat and, if species are difficult to identify, a photograph and/or notes on key identifying features), a date or date range, observer name, locational information (ideally with latitude and longitude in decimal degrees), notes on numbers observed, and species behavior or habitat use (e.g., is the observation likely associated with reproduction). Bird records are also required to have information associated with date-appropriate breeding or overwintering status of the species observed. MTNHP reviews observation records to ensure that they are mapped correctly, occur within date ranges when the species is known to be present or detectable, occur within the known seasonal geographic range of the species, and occur in appropriate habitats. MTNHP also assigns each record a locational uncertainty value in meters to indicate the spatial precision associated with the record's mapped coordinates. Only records with locational uncertainty values of 5,000 meters or less are included in environmental summary reports and number summaries are only provided for records with locational uncertainty values of 1,000 meters or less.

Species Occurrences

The MTNHP evaluates plant and animal observation records for Species of Concern, Potential Species of Concern, and Special Status Species to determine whether they are worthy of inclusion in the Species Occurrence (SO) (also known as an "element occurrence" or EO) layer for use in environmental reviews; observations not worthy of inclusion in this layer include long distance dispersal events, migrants observed away from key migratory stopover habitats, and winter observations. An SO is a polygon depicting what is known about a species occupancy from direct observation with a defined level of locational uncertainty and any inference that can be made about adjacent habitat use from the latest peer-reviewed science. If an observation can be associated with a map feature that can be tracked (e.g., a wetland boundary) then this polygon feature is used to represent the SO. Areas that can be inferred as probable occupied habitat based on direct observation of a species location and what is known about the foraging area or home range size of the species may be incorporated into the SO. Species Occurrences generally belong to one of the following categories:

Botanical Species

A documented location of a specimen collection or observed plant, lichen, or fungi population. In some instances, adjacent, spatially separated clusters are considered subpopulations and are grouped as one occurrence (e.g., the subpopulations occur in ecologically similar habitats, and their spatial proximity likely allows them to interbreed). Tabular information for multiple observations at the same SO location is generally linked to a single polygon.

Animal Species

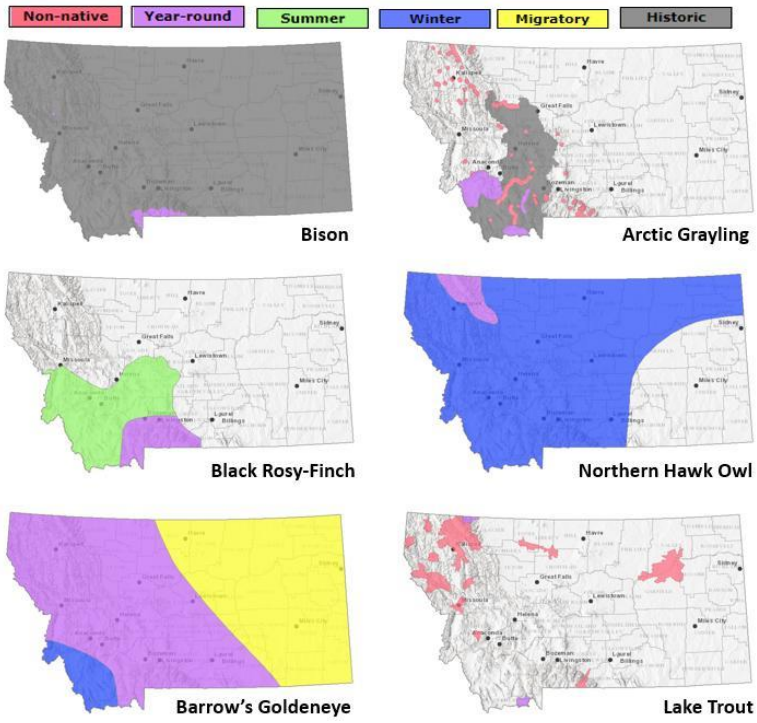
The location of a verified observation or specimen record typically known or assumed to represent a breeding population or a portion of a breeding population. Animal SO's are generally: (1) buffers of terrestrial point observations based on documented species' home range sizes; (2) buffers of stream segments to encompass occupied streams and immediate adjacent riparian habitats; (3) polygonal features encompassing known or likely breeding populations (e.g., a wetland for some amphibians or a forested portion of a mountain range for some wide-ranging carnivores); or (4) combinations of the above. Tabular information for multiple observations at the same SO location is generally linked to a single polygon. Species Occurrence polygons may encompass some unsuitable habitat in some instances in order to avoid heavy data processing associated with clipping out habitats that are readily assessed as unsuitable by the data user (e.g., a point buffer of a terrestrial species may overlap into a portion of a lake that is obviously inappropriate habitat for the species).

Other

Significant biological features not included in the above categories, such as Important Animal Habitats like bird rookeries and bat roosts, and peatlands or other wetland and riparian communities that support diverse plant and animal communities.

Geographic Range Polygons

Range polygons have been created for native vascular plants and vertebrate animal species with sufficient data and are being created for other taxa as staff time is available. Range polygons are refined over time with assistance of additional survey and observation data and predicted habitat suitability models. Range polygons are classified as native year-round, summer, winter, migratory, historical, and non-native year-round (see examples to the left). Range polygons for native species and non-native aquatic species typically bound the extent of known or likely occupied habitats for non-migratory and relatively sedentary species and the regular extent of known or likely occupied habitats for migratory and long-distance dispersing species; polygons may include unsuitable intervening habitats. Unless predicted invasion risk models indicate unsuitable habitat for large portions of Montana, range polygons for non-native vascular plant species are typically mapped as statewide to reflect their possible invasion across Montana; please see relative density maps for reported distributions of these species. For most species, a single polygon can represent the year-round or seasonal range, but breeding ranges of some colonial nesting water birds and some non-native species are represented more patchily when supported by data. Some ranges are mapped more broadly than actual distributions to be visible on statewide maps (e.g., streams with fish are buffered for visibility)



Predicted Suitable Habitat Models

Predicted habitat suitability models have been created for plant and animal Species of Concern and are undergoing development for non-Species of Concern. For species for which models have been completed, the environmental summary report includes simple rule-based associations with streams for aquatic species and seasonal habitats for game species as well as mathematically complex Maximum Entropy models (Phillips et al. 2006, Ecological Modeling 190:231-259) constructed from a variety of statewide biotic and abiotic layers and presence only data for individual species for most terrestrial species. For the Maximum Entropy models, we reclassified 90 x 90-meter continuous model output into suitability classes (unsuitable, low, moderate, and optimal) then aggregated that into the one square mile hexagons used in the environmental summary report; this is the finest spatial scale we suggest using this information in management decisions and survey planning. Full model write ups for individual species that discuss model goals, inputs, outputs, and evaluation in much greater detail are posted on the MTNHP's Predicted Suitable Habitat Models webpage. Evaluations of predictive accuracy and specific limitations are included with the metadata for models of individual species. **Model outputs should not be used in place of on-the-ground surveys for species. Instead model outputs should be used in conjunction with habitat evaluations to determine the need for on-the-ground surveys for species.** We suggest that the percentage of predicted optimal and moderate suitable habitat within the report area be used in conjunction with geographic range polygons and the percentage of commonly associated habitats to generate lists of potential species that may occupy broader landscapes for the purposes of landscape-level planning.

Other Habitat Information for Species

1. The excel spreadsheet accompanying this report contains a field labeled “Habitat” in all the species related worksheets that contains brief text describing the predominant habitat or habitats each species is dependent on. This field can be useful for quickly determining whether a species needs considerations in environmental permitting and planning. For example, if the report area includes a large area of forest and grassland habitat and the project is only affecting a small portion of the grassland habitat without any disturbance to the forest habitat, the Habitat field can be useful for removing the forest dependent species from further consideration.
2. Species accounts in the Montana Field Guide each contain a section on Ecological Communities Associated with this Species that lists and links to accounts for associated natural habitats.
3. Accounts for natural habitats in the Ecological Communities portion of the Montana Field Guide each contain a section on Species Associated with this Community that lists and links to accounts for associated species. This is divided between: (1) Species of Concern Associated with this Community; (2) Diagnostic, Dominant, or Codominant Plant Species for this Community; and (3) Other Native Species Commonly Associated with this Community.

Introduction to Land Cover

Land Use/Land Cover is one of 15 Montana Spatial Data Infrastructure framework layers considered vital for making statewide maps of Montana and understanding its geography. The layer records all Montana natural vegetation, land cover and land use, classified from satellite and aerial imagery, mapped at a scale of 1:100,000, and interpreted with supporting ground-level data. The baseline map is adapted from the Northwest ReGAP (NWGAP) project land cover classification, which used 30m resolution multi-spectral Landsat imagery acquired between 1999 and 2001. Vegetation classes were drawn from the Ecological System Classification developed by NatureServe (Comer et al. 2003). The land cover classes were developed by Anderson et al. (1976). The NWGAP effort encompasses 12 map zones. Montana overlaps seven of these zones. The two NWGAP teams responsible for the initial land cover mapping effort in Montana were Sanborn and NWGAP at the University of Idaho. Both Sanborn and NWGAP employed a similar modeling approach in which Classification and Regression Tree (CART) models were applied to Landsat ETM+ scenes. The Spatial Analysis Lab within the Montana Natural Heritage Program was responsible for developing a seamless Montana land cover map with a consistent statewide legend from these two separate products. Additionally, the Montana land cover layer incorporates several other land cover and land use products (e.g., MSDI Structures and Transportation themes and the Montana Department of Revenue Final Land Unit classification) and reclassifications based on plot-level data and the latest NAIP imagery to improve accuracy and enhance the usability of the theme. Updates are done as partner support and funding allow, or when other MSDI datasets can be incorporated. Recent updates include fire perimeters and agricultural land use (annually), energy developments such as wind, oil and gas installations (2014), roads, structures and other impervious surfaces (various years): and local updates/improvements to specific ecological systems (e.g., central Montana grassland and sagebrush ecosystems). Current and previous versions of the Land Use/Land Cover layer with full metadata are available for download from the Montana State Library's GIS Data List More information on the land cover layer is available at: https://msl.mt.gov/geoinfo/msdi/land_use_land_cover/

Within the report area you have requested, land cover is summarized by acres of Level 1, Level 2, and Level 3 Ecological Systems.

Literature Cited

Anderson, J.R. E.E. Hardy, J.T. Roach, and R.E. Witmer. 1976. A land use and land cover classification system for use with remote sensor data. U.S. Geological Survey Professional Paper 964.

Comer, P., D. Faber-Langendoen, R. Evans, S. Gawler, C. Josse, G. Kittel, S. Menard, M. Pyne, M. Reid, K. Schulz, K. Snow, and J. Teague. 2003. Ecological systems of the United States: A working classification of U.S. terrestrial systems. NatureServe, Arlington, VA.

Introduction to Wetland and Riparian

Within the report area you have requested, wetland and riparian mapping is summarized by acres of each classification present. Summaries are only provided for modern MTNHP wetland and riparian mapping and not for outdated (NWI Legacy) or incomplete (NWI Scalable) mapping efforts; described here. MTNHP has made all three of these datasets and associated metadata available for separate download on the Montana Wetland and Riparian Framework web page.

Wetland and Riparian mapping is one of 15 Montana Spatial Data Infrastructure framework layers considered vital for making statewide maps of Montana and understanding its geography. The wetland and riparian framework layer consists of spatial data representing the extent, type, and approximate location of wetlands, riparian areas, and deep water habitats in Montana.

Wetland and riparian mapping is completed through photointerpretation of 1-m resolution color infrared aerial imagery acquired from 2005 or later. A coding convention using letters and numbers is assigned to each mapped wetland. These letters and numbers describe the broad landscape context of the wetland, its vegetation type, its water regime, and the kind of alterations that may have occurred. Ancillary data layers such as topographic maps, digital elevation models, soils data, and other aerial imagery sources are also used to improve mapping accuracy. Wetland mapping follows the federal Wetland Mapping Standard and classifies wetlands according to the Cowardin classification system of the National Wetlands Inventory (NWI) (Cowardin et al. 1979, FGDC Wetlands Subcommittee 2013). Federal, State, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands differently than the NWI. Similar coding, based on U.S. Fish and Wildlife Service conventions, is applied to riparian areas (U.S. Fish and Wildlife Service 2009). These are mapped areas where vegetation composition and growth is influenced by nearby water bodies, but where soils, plant communities, and hydrology do not display true wetland characteristics. **These data are intended for use at a scale of 1:12,000 or smaller. Mapped wetland and riparian areas do not represent precise boundaries and digital wetland data cannot substitute for an on-site determination of jurisdictional wetlands.**

See detailed overviews, with examples, of both wetland and riparian classification systems and associated codes as a storymap and companion guide

Literature Cited

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Fish and Wildlife Service, FWS/OBS-79/31. Washington, D.C. 103pp.

Federal Geographic Data Committee. 2013. Classification of wetlands and deepwater habitats of the United States. FGDC-STD-004-2013. Second Edition. Wetlands Subcommittee, Federal Geographic Data Committee and U.S. Fish and Wildlife Service, Washington, D.C.

U.S. Fish and Wildlife Services. 2009. A system for mapping riparian areas in the western United States. Division of Habitat and Resource Conservation, Branch of Resource and Mapping Support, Arlington, Virginia.

Introduction to Land Management

Within the report area you have requested, land management information is summarized by acres of federal, state, and local government lands, tribal reservation boundaries, private conservation lands, and federal, state, local, and private conservation easements. Acreage for "Owned", "Tribal", or "Easement" categories represents non-overlapping areas that may be totaled. However, "Other Boundaries" represents managed areas such as National Forest boundaries containing private inholdings and other mixed ownership which may cause boundaries to overlap (e.g. a wilderness area within a forest). Therefore, acreages may not total in a straight-forward manner.

Because information on land stewardship is critical to effective land management, the Montana Natural Heritage Program (MTNHP) began compiling ownership and management data in 1997. The goal of the Montana Land Management Database is to manage a single, statewide digital data set that incorporates information from both public and private entities. The database assembles information on public lands, private conservation lands, and conservation easements held by state and federal agencies and land trusts and is updated on a regular basis. Since 2011, the Information Management group in the Montana State Library's Digital Library Division has led the Montana Land Management Database in partnership with the MTNHP.

Public and private conservation land polygons are attributed with the name of the entity that owns it. The data are derived from the statewide Montana Cadastral Parcel layer Conservation easement data shows land parcels on which a public agency or qualified land trust has placed a conservation easement in cooperation with the landowner. The dataset contains no information about ownership or status of the mineral estate. For questions about the dataset or to report errors, please contact the Montana Natural Heritage Program at (406) 444-5363 or mtnhp@mt.gov. You can download various components of the Land Management Database and view associated metadata at the Montana State Library's GIS Data List at the following links:

Public Lands
Conservation Easements
Private Conservation Lands
Managed Areas

Map features in the Montana Land Management Database or summaries provided in this report are not intended as a legal depiction of public or private surface land ownership boundaries and should not be used in place of a survey conducted by a licensed land surveyor. Similarly, map features do not imply public access to any lands. The Montana Natural Heritage Program makes no representations or warranties whatsoever with respect to the accuracy or completeness of this data and assumes no responsibility for the suitability of the data for a particular purpose. The Montana Natural Heritage Program will not be liable for any damages incurred as a result of errors displayed here. Consumers of this information should review or consult the primary data and information sources to ascertain the viability of the information for their purposes.

Introduction to Invasive and Pest Species

Within the report area you have requested, separate summaries are provided for: Aquatic Invasive Species, Noxious Weeds, Agricultural Pests, Forest Pests, and Biocontrol species that have been documented or potentially occur there based on the predicted suitability of habitat. Definitions for each of these invasive and pest species categories can be found on our Species Status Codes page.

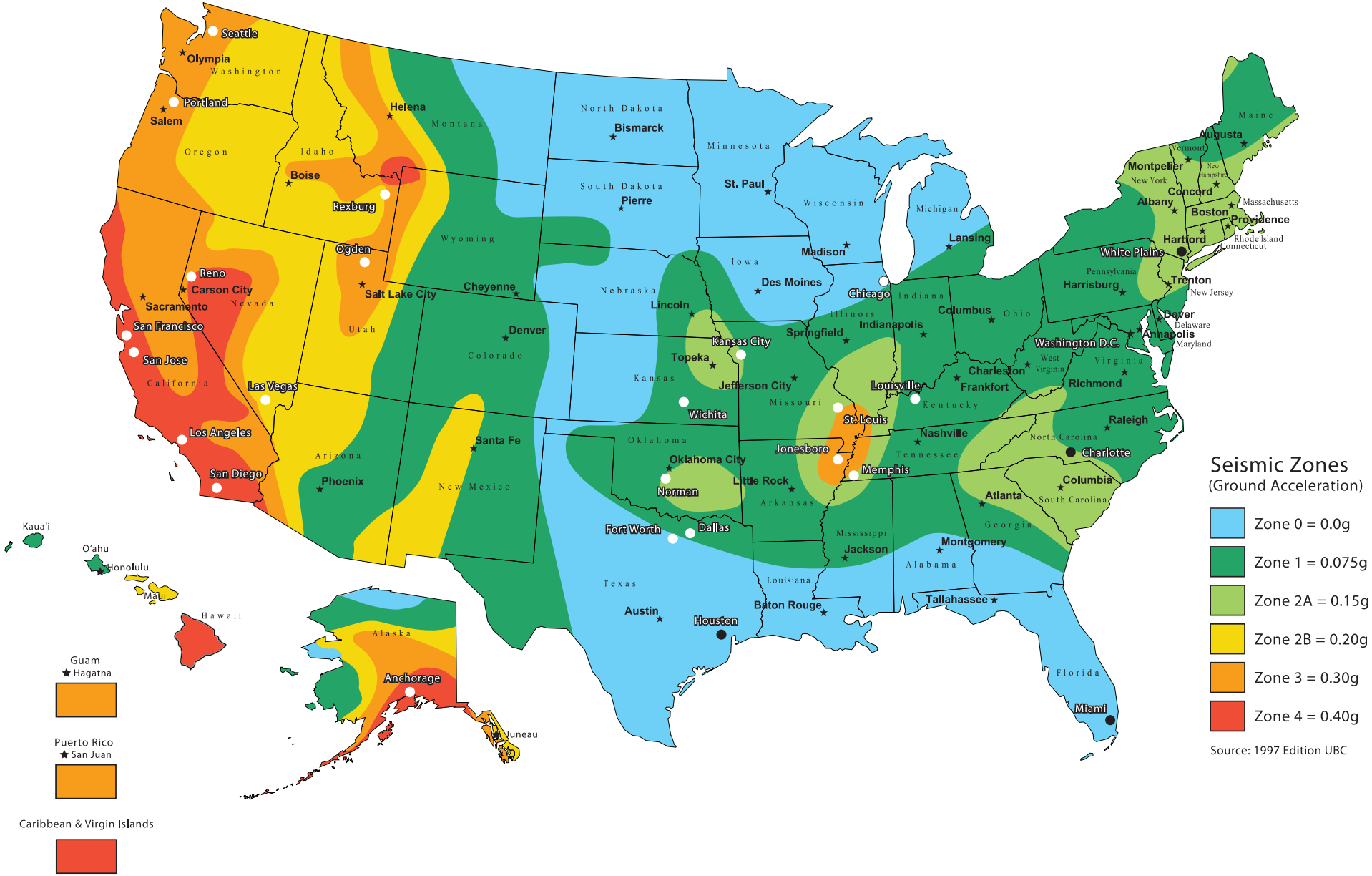
Each of these summaries provides the following information when present for a species: (1) the number of observations of each species; (2) the geographic range polygons for each species, if developed, that the report area overlaps; (3) predicted relative habitat suitability classes that are present if a predicted suitable habitat model has been created; (4) the percent of the report area that is mapped as commonly associated or occasionally associated habitat as listed for each species in the Montana Field Guide; and (5) links to species accounts in the Montana Field Guide. Details on each of these information categories are included under relevant section headers under the Introduction to Native Species above or are defined on our Species Status Codes page. In presenting this information, the Montana Natural Heritage Program (MTNHP) is working towards assisting the user with rapidly determining what invasive and pest species have been documented and what species are potentially present in the report area. We remind users that this information is likely incomplete as surveys to document introduced species are lacking in many areas of the state, information on introduced species has only been tracked relatively recently, the MTNHP's staff and resources are limited, and information is constantly being added and updated in our databases. **Thus, field verification by professional biologists of the absence or presence of species will always be an important obligation of users of our data.**

If you are aware of observation or survey datasets for invasive or pest species that the MTNHP is missing, please report them to the Program Coordinator bmaxell@mt.gov Program Botanist apipp@mt.gov or Senior Zoologist dbachen@mt.gov If you have animal or plant observations that you would like to contribute, you can also submit them via Excel spreadsheets, geodatabases, iNaturalist, or a Survey123 form. Various methods of data submission are reviewed in this playlist of videos:
https://www.youtube.com/playlist?list=PLRaydtZpHu2qOHPoSPq9cnM9uXGmEXACx

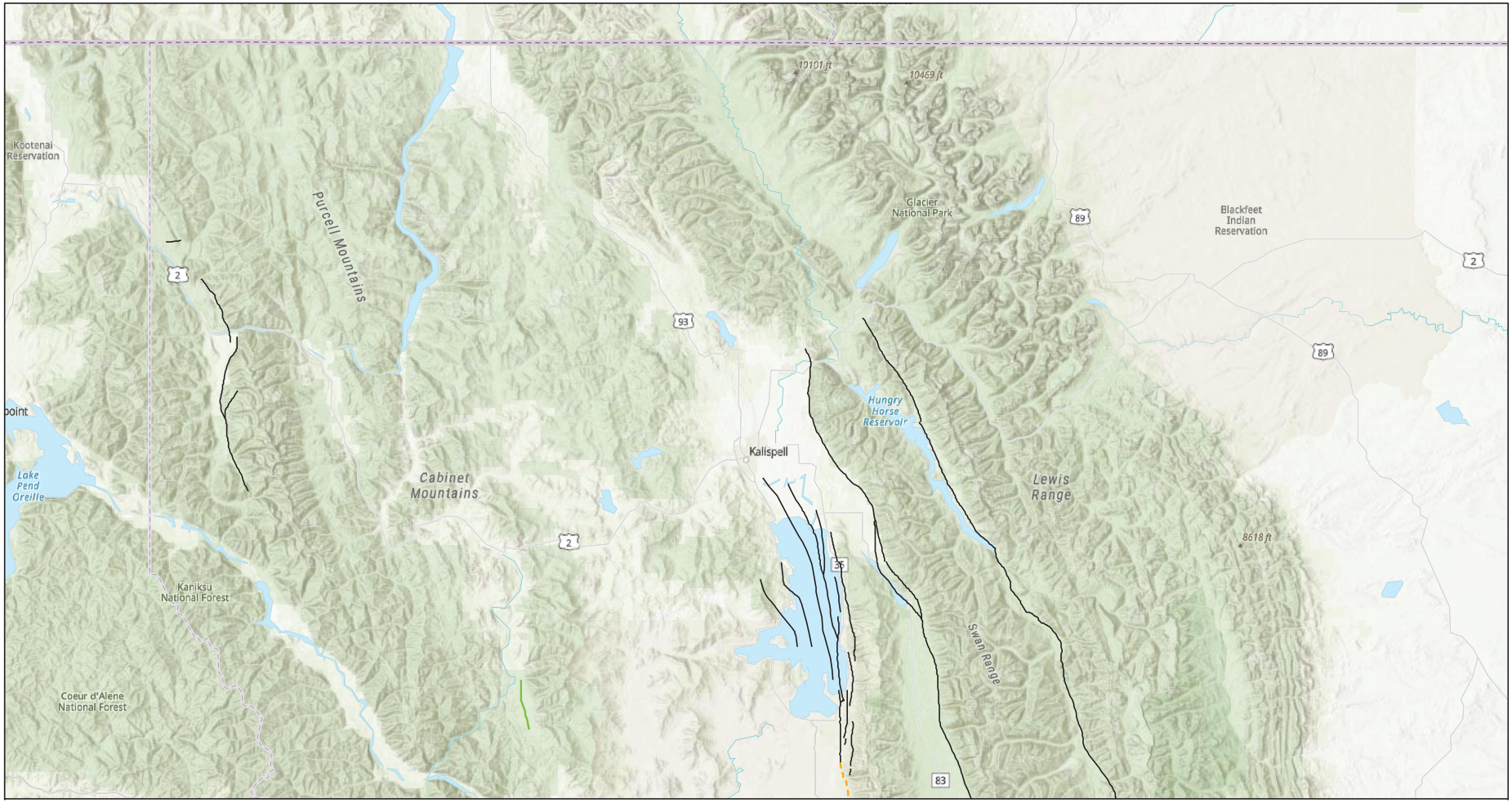
Additional Information Resources

- Effects of Recreation on Rocky Mountain Wildlife
- FEMA Flood Insurance Study Data
- Fire Effects Information System (species reviews, fire regimes, fire studies)
- Gilly – tool for simplifying stream, wetland, and floodplain permitting applications
- Identification Resources for Montana Species and Citizen Science
- Laws, Treaties, Regulations, and Agreements on Animals and Plants
- Managing the Ecological Impacts of Extreme Heat in the Northwest
- Migratory Bird Joint Ventures and Associated Resources
  - Intermountain West Joint Venture
  - Northern Great Plains Joint Venture
  - Prairie Pothole Joint Venture
- MTNHP Staff Contact Information
- MTNHP Species of Concern Report - Animals and Plants
- MTNHP Species Status Codes - Explanation
- MTNHP Predicted Suitable Habitat Models (for select Animals and Plants)
- MTNHP Request Information page
- Montana Cadastral
- Montana Climate Office
- Montana Code Annotated
- Montana Field Guide
- Montana Fisheries Information System
- Montana Fish, Wildlife, and Parks Subdivision Recommendations
- Montana Forestry Best Management Practices
- Montana GIS Data Layers
- Montana GIS Data Bundler
- Montana Guide to Streamside Management Zone Law and Rules
- Montana Ground Water Information Center
- Montana Index of Environmental Permits, 21st Edition (2018)
- Montana Environmental Policy Act (MEPA)
- Montana Environmental Policy Act Analysis Resource List
- Montana Sage Grouse Project Submittal Site
- Montana Native Plant Conservation Strategy
- Montana Spatial Data Infrastructure Layers
- Montana State Historic Preservation Office Review and Compliance
- Montana Statewide Fisheries Management Plan 2023-2026
- Montana Stream Permitting: a guide for conservation district supervisors and others
- Montana Water Information System
- Montana Web Map Services
- Montana's 2025 State Wildlife Action Plan
- Montana's Statewide Comprehensive Outdoor Recreation Plan (SCORP)
- National Environmental Policy Act
- Penalties for Misuse of Fish and Wildlife Location Data (MCA 87-6-222)
- Rangeland Analysis Platform
- U.S. Fish and Wildlife Service Information for Planning and Consultation (Section 7 Consultation)
- Uses of Information from the Montana Natural Heritage Program
- Vegetation Futures Tool
- Web Soil Survey Tool
- Wildfire Risk to Communities
- Xerces Society for Invertebrate Conservation Resources

United States Seismic Zones Map



U.S. Geological Survey Quaternary Faults



9/12/2025, 10:23:16 AM

1:1,217,573

Quaternary Fault and Fold Database

- Latest Quaternary (<15,000 years), moderately constrained location
- Latest Quaternary (<15,000 years), inferred location
- Late Quaternary (< 130,000 years), well constrained location
- Undifferentiated Quaternary (< 1.6 million years), inferred location

0 10 20 40 mi

0 15 30 60 km

Esri, CGIAR, USGS, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community

USGS
Esri, CGIAR, USGS | Montana State Library, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USFWS | USGS |

LINCOLN COUNTY WEED DEPARTMENT
INTEGRATED WEED MANAGEMENT PROGRAM
418 Mineral Avenue
Libby, MT 59923
(406) 293-7781, ext 260
FAX (406) 293-5640 <lcweed@libby.org>
Mark Petersen Peter Kitts**Samantha McCurry** Perry Stebbin's**, Chairman**Deena Shotzberger**Richard Weldon**

6/18/2025

Lincoln County Weed Department

Subdivision Report Form

Subdivision Name: Wilderness Escalante Preserve Subdivision _____
Location: _S28,29,32&33 T37N, R27W_____
Owner's Name: __Escalante Wilderness Preserve
Number of parcels 234 Total acres: _87.01___
Date inspected: _6/11/2025__
Inspected by: _Mike Bradeen_____

What was found. Canada Thistle, Knapweed, Meadow Hawkweed, Cheatgrass, St, Johnswort, Leafy Spurge, Mullen.

What needs to be done before the final plat is approved. As property is developed you will need to work better on the weeds. Leafy Spurge is the greatest concern. Treatments need started ASAP and this fall. The Existing property owners need to work on it also.

With final plat there needs to be a long term weed plan.
Your long term plan needs to reflect your goals for this property while you own it and after you sell it. We all know a piece of property that is covered with weed and bare scares that drive down the property value in the neighborhood. It's important to make a weed plan that you and the next owner can live with and be good stewards of the land.
Here are some helpful ideas;
Disturbed areas: reseeding with weed free seed in a timely manner.
Monitoring and treatment of noxious weeds: Spring and early summer is the best, fall treatment is affective for some weeds.
Hand pulling and tilling: For small patches hand pulling works well and it is always good to give people that is sensitive to chemicals an option.
Bio-control: Insects is an option for large acreages that is **HARD** to get to, it takes time and some weed containment measures will be needed to keep down the spread until the insects get established.

If you need help feel free to call me. 406-283-2420

Mike Bradeen
Program Manager

May 29, 2025

Wildland Urban Interface
Fire Prevention Control and Fuel Reduction Plan
Wilderness Escalante Preserve Subdivision

1. **Subdivision:** Wilderness Escalante Preserve Subdivision
2. **Location:** 1885 Sophie Lake Road, Eureka Montana 59917

SEC. 28, 29, 32 & 33 T37N, R 27W within Lincoln County, Montana

3. **Number of Lots:** 234 lots in Phases 11-15 (total acres for all lots 87.01)
4. **Access:** Primary access from Eureka left on Hwy 37, right on Airport Rd., Left on Iowa Flats Rd., Right on Sophie Lake Rd., left into Wilderness Club.
5. **Primary Road:** Wilderness Club Road a paved 2 lane road is the main connector for ingress/egress for all phases mentioned in this report. Wilderness Club Road feeds into Sophie Lake Road and provides good access to 2 routes into Eureka.
6. **Wildfire Hazards Conditions:** Wilderness Escalante Preserve Subdivision is 87.01 acres and lies within the larger area known as Wilderness Club roughly 585 acres. Wilderness Escalante Preserve Subdivision consists of mostly mature thinned (naturally or selective) Ponderosa Pine trees. There is a few Douglas Fir in the stand, but the majority of the conifers present are Ponderosa Pine, a fire resistant species especially when thinned. The trees have self-pruned meaning the lower limbs have been removed lessening the ladder fuel potential for fire transferring from ground to crown within in the stand. The trees are nicely spaced, and the understory is in good condition posing less risk for ground to crown transfer. Maintaining this spacing (roughly 10' between crowns with occasional groups of trees closer together) allows for emergency personal to use a direct attack strategy or point protection on the steeper slopes. The understory consists of grass and sage and if kept maintained as seen in many areas by mowing for the purposes of the golf course the risk is further reduced. There are ponds/lakes present which have enough water to be used as a draft site and the grounds are well watered. Also present are fire hydrants. There does not appear to be wildfire present in recent times.

   Topography: The proposed subdivision varies in slope depending on the phase of the subdivision. Phase 11 has the steepest slope with a significant rise adjacent to all homesites. At the time of evaluation, the road into Phase 11 was dirt and steep/rough. The Southern border of Phase 11 is paved county road Douglas Hill and to the N and NE Wilderness Club Road is also paved. Phase 12 is mostly level with adjacent small ponds on either side. Phase 13 is located right off the main road Wilderness Club Road and is mostly level. Phase 14 is situated in rolling hills, also adjacent to a small pond/lake currently the road is dirt single lane and access is slow/limited for emergency personal vehicles. Phase 15 is on ground with limited slope. Adjacent topography is like that listed above with varied slope and aspect.

May 29, 2025

Wildland Urban Interface
Fire Prevention Control and Fuel Reduction Plan
Wilderness Escalante Preserve Subdivision

Fuel Type: There are 3 fuel types present on site. The first open grass meadows and sage which could and do provide for intense and very rapid rates of spread in wildland fire. The grass component burns with extreme intensity and very quickly, advising the residents to keep grass heights reduced during times of wildfire season in NW Montana. Deciduous trees (live not dead) offer an opportunity to slow fire and its rates of spread. These larger deciduous trees appear healthy and are present closer to homes located in the subdivision. These deciduous trees are likely all planted and watered allowing them to maintain health and act as a fuel buffer and shade for the structures in the area. The third fuel type is the mixed conifer component. Several conifers mostly thinned and pruned Ponderosa Pine are near homesites, those of which appear to be healthy.

7. **Map:** Please see attached plat map for specific detail for ingress/egress and safety zones. Ingress/egress from a spur road (allowing access to different phases of homes) to main Wilderness Club Road to Sophie Lake and Airport Road to Highway 37 connecting to Highway 93. Safety zones for the area would be out and away in either direction on Sophie Lake Road. Areas near the ponds/lakes and those grasses maintained for golfing would provide an opportunity for respite from fire fronts, the last resort burning the taller grass to create a safety zone.
8. **Access:** Access to the Wilderness Escalante Preserve is on a well-traveled road, however there are a significant number of roads that access different phases and buildings within the Wilderness Club. Advise having a solid ingress/egress plan for all residents and emergency services that might respond to the area. Proper signage would also help direct traffic (those familiar, unfamiliar or in times of stressful incident) allowing residents to maintain more rapid rates of evacuation.
9. **Fire Mitigation Strategy:** Due to the nature of the property, the current mix of grass, conifers and deciduous trees continued fuel mitigation and watering and mowing of grasses significantly reduces the risk of wildland fire in the Wilderness Escalante Preserve Subdivision. The largest city in proximity is Eureka which services a fully staffed county fire department with a rapid response time. As well the U.S. Forest Service has a station in Eureka and staffed wildland fire engines available for response. Mitigation efforts that would directly affect the landowners is keeping the grass component to a short and maintaining dead and down woody debris to a minimum.
10. **Fire Prevention Plan for Wilderness Escalante Preserve Subdivision:** Conducted by Carrie Johnson

Qualification: 25 years of wildland fire suppression work including working for Flathead Hotshots, Missoula Smokejumpers, Superintendent Great Northern Crew and Program Manager for MWED Forestry Assistance Program.

May 29, 2025

Wildland Urban Interface
Fire Prevention Control and Fuel Reduction Plan
Wilderness Escalante Preserve Subdivision

Note to Reviewer:

The following pages focus on the Tobacco Geographic Area as seen in the 2023 Lincoln County Community Wildfire Protection Plan (CWPP). For the full CWPP document please follow this link:

https://dnrc.mt.gov/forestry/Community-Local-Government/CWPP_Final_04_21_23-signed1.pdf

Tobacco GA Most Recent Large Fire

2000 Lydia Mountain (5,214 acres)
2000 Stone Hill (11,115 acres)
2015 Marston (7,552 acres)
2017 Gibralter Ridge (12,938 acres)
2017 Weasel (3,856 acres)
2018 Tenmile Sterling Complex (3 fires totaling 2,099 acres)
2022 Weasel (5,043 acres)

Tobacco GA Fire Organizations with Jurisdictional Responsibility

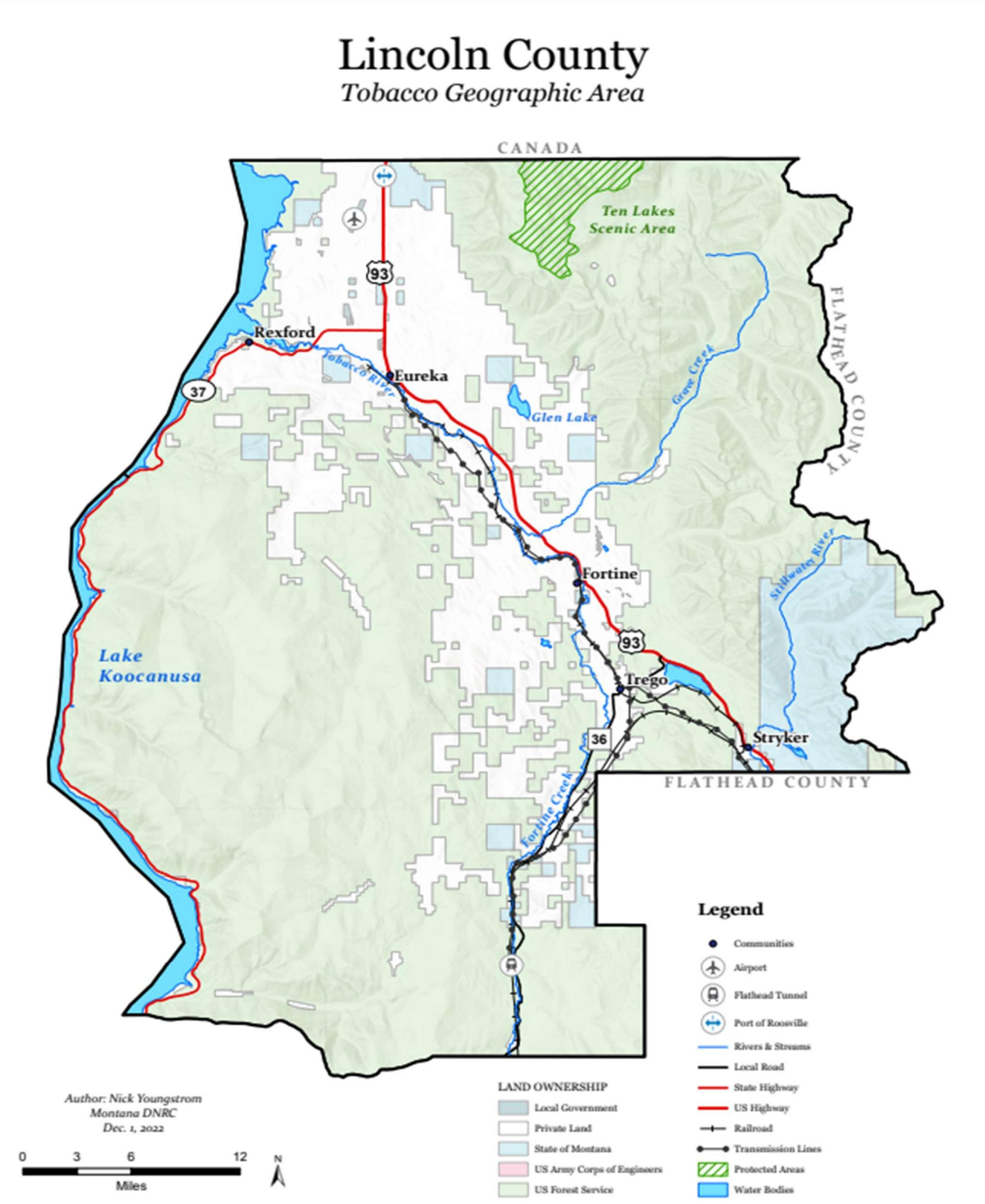
U.S. Forest Service
Eureka Volunteer Fire Department
Trego-Fortine-Stryker FSA
MT-DNRC
Eureka FSA



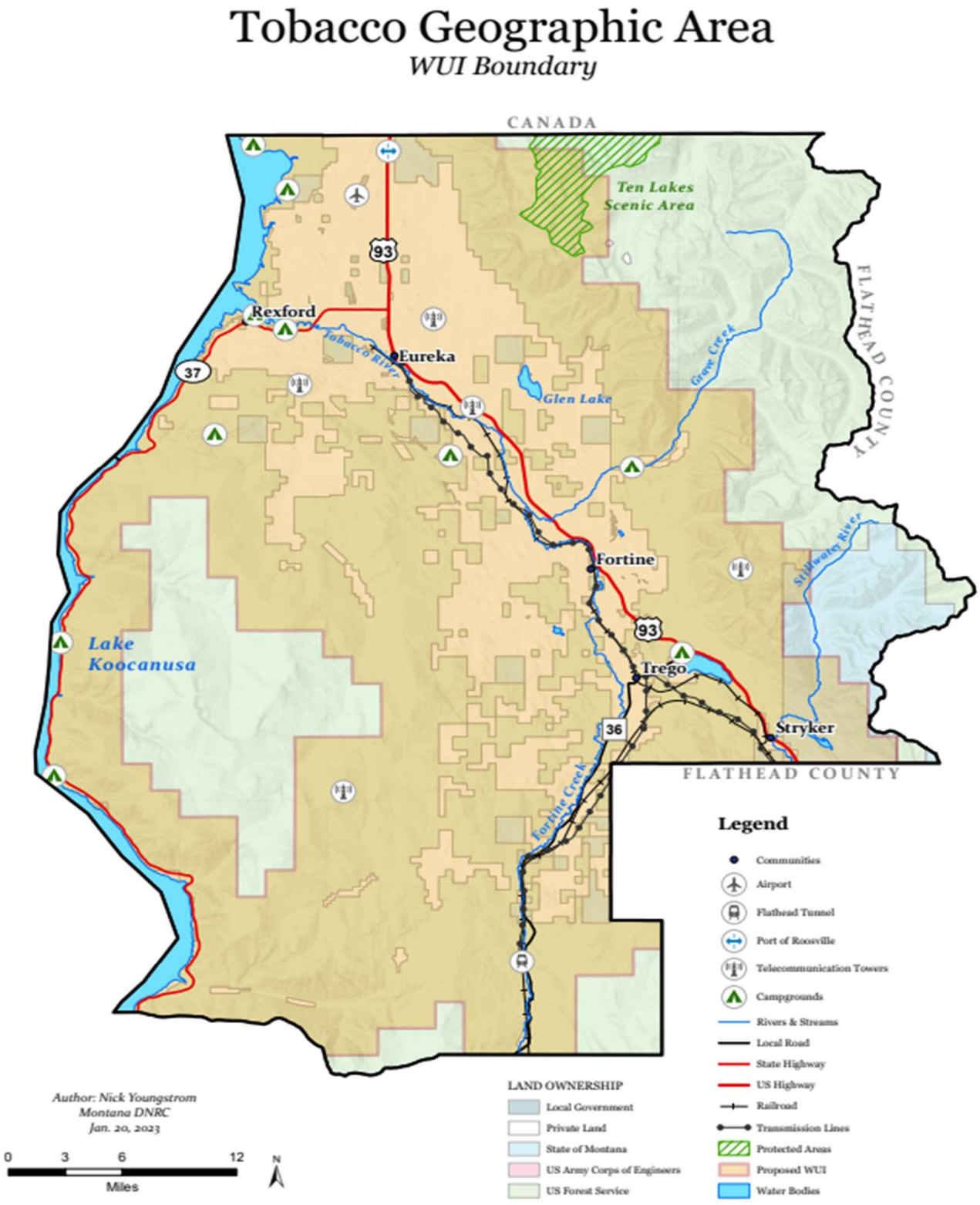
Ten Lakes Scenic Area Photo: Marianne Evanuis



2015 Marston Fire near Fortine



Map 21: Tobacco Geographic Area (GA) with Ownership



Map 22: Tobacco Geographic Area (GA) with Proposed WUI

Tobacco GA

MWRA - HVRA Model - Risk to Property and Infrastructure – Map 23

HVRA modeling from the MWRA analysis showed most of the highly valued resources in the Tobacco GA are concentrated along US Hwy 93 from Fortine to Eureka and the Canadian border. To a lesser extent those resources are also located to the south along MT Hwy 37 to just south of Rexford, Forest Route 36 to Trego and Fortine Creek, and into Pinkham Creek (Forest Route 856). But there are also numerous homes scattered along the foothills and into the drainages and mountains north and south of US Hwy 93.

The MWRA model displayed areas of extreme risk to the towns of Eureka, Rexford, Fortine, and Trego, along Tobacco Road, the Carpenter and Glen Lake areas, Mariners Haven, Pine Bay, Lakeview Estates, Barnaby Lake and Crystal Lakes subdivisions, and many locations in the foothills of the Galton and Whitefish Ranges. Properties and infrastructure in the Pinkham, Meadow, Edna, and Fortine Creek areas south of US Hwy 93 and near Rexford display as very high risk, along with other areas including much of the area around Douglas Hill and Sophie Lake and into the foothills north of Eureka.

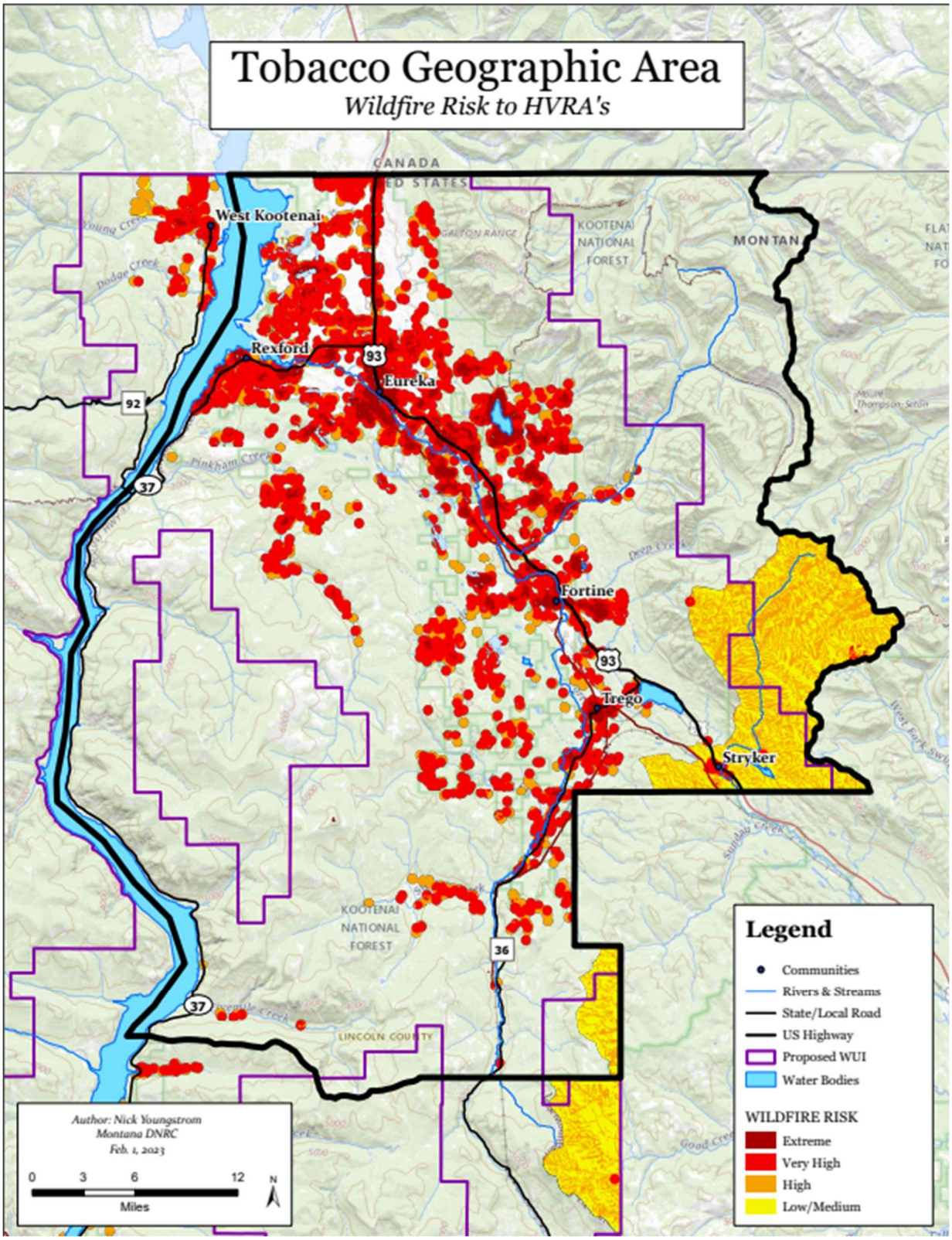
MWRA – Flame Length Model – Map 24

The Flame Length modeling displays generally low to moderate flame lengths from 0 to 8 feet across the Tobacco Plains until the grasslands meet forestlands at the Tobacco River and Sinclair Creek. Then the model displays a flame length increase up to 12 to 40 feet. Flame lengths of 40 feet or more are displayed in the higher elevations and steep slopes of the Galton and Whitefish Ranges and along the steep, rocky slopes above MT Hwy 37 along the Koocanusa Reservoir. Where recent, mixed severity wildfires burned, including the Ten Mile Sterling Complex (2018), Gibralter Ridge (2017), and the NE Kootenai Complex (2015), the model displays low flame lengths (0-4 feet).

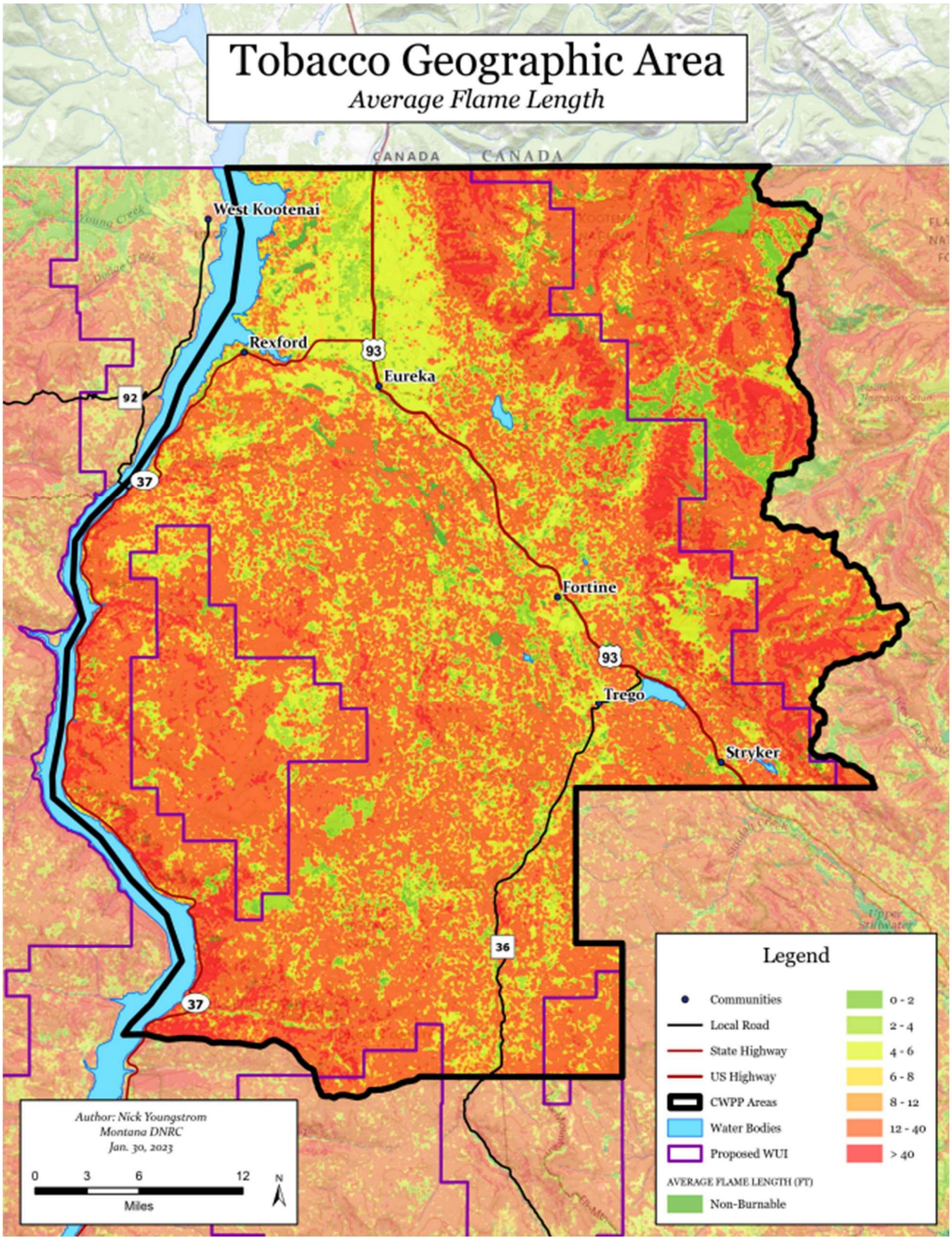
MFAP – Priority Areas for Treatment Model - Map 25

The MFAP model of the Tobacco GA shows extensive areas along US Hwy 93 and Forest Route 36 as Priority Areas for Treatment. A large area in the foothills of the Galton and Whitefish Ranges, including the Glen Lake area, is shown as Priority Areas for Treatment to abate fire risk and some overlapping forest health issues. But the largest area showing a need for treatment is south of US Hwy 93 and along Fortine Creek, including the watersheds of Pinkham, Meadow, Edna, Lake, Stewart, and Jim Creeks. Here the MFAP model shows substantial acreage in those areas for Priority Areas for Treatment to address fire risk primarily.

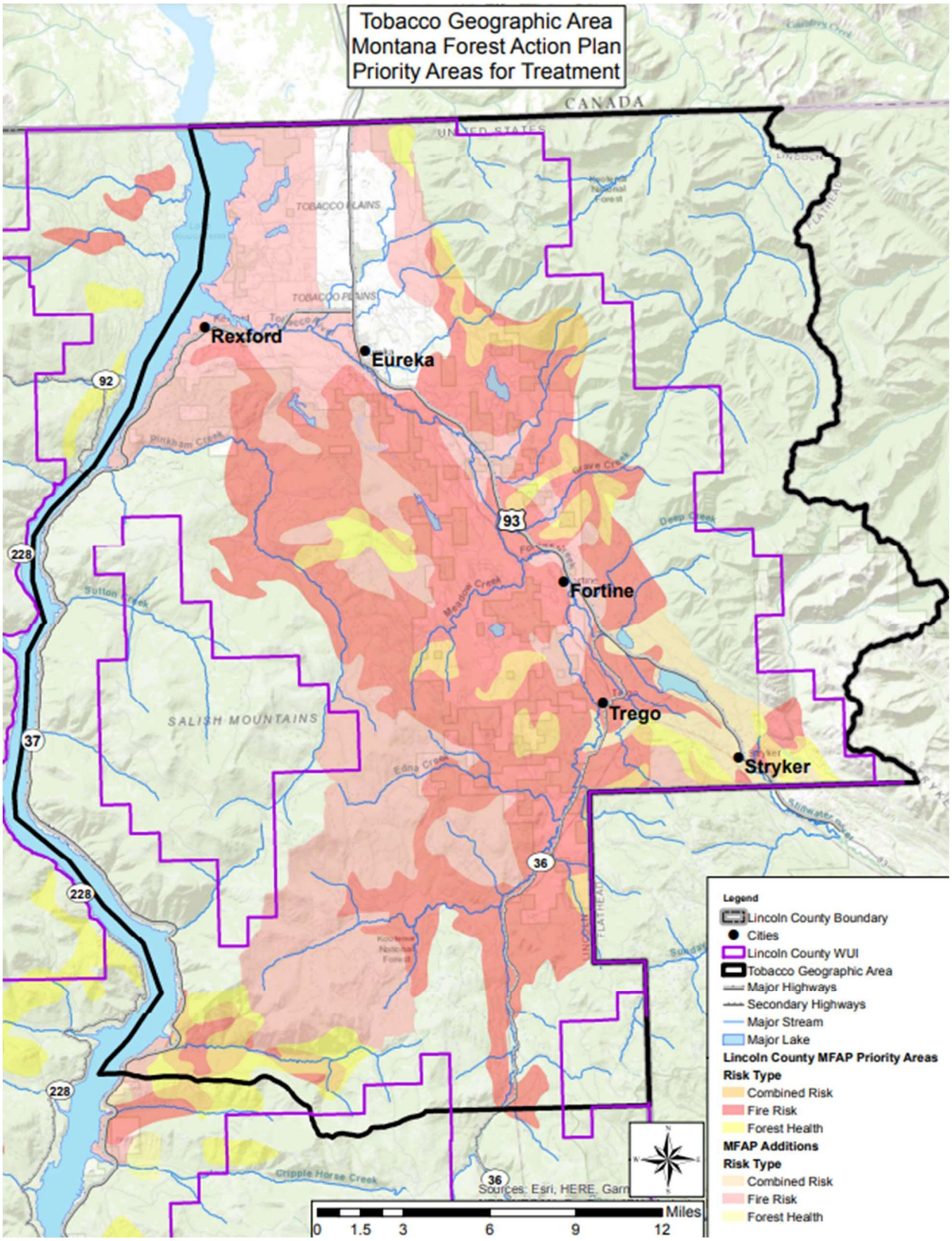
Discussions during the modeling validation process with local fire professionals resulted in substantial additional acres being added as Priority Areas for Treatment south of US Hwy 93 to include Rexford and lands further into the drainages of Pinkham, Edna, Beaver, and Lake Creeks. Additional acres were added between Airport Road and Lake Koocanusa, in the Douglas Hill area.



MAP 23: Tobacco GA Risk to Highly Valued Resources or Assets (HVRA) Model



Map 24: Tobacco GA Average Flame Length Model



Map 25: Tobacco GA Areas for Treatment per MFAP and Fire Organizations

Summary

Unlike other GAs where highly valued resources are concentrated in the river, creek, and valley bottoms or along highways and roads, in the Tobacco GA homes are found scattered across foothills, in the Mountains, and often deep into the forest. Access to many homes and properties have marginal road conditions and some are impassible to fire engines. Many areas can only be accessed by a single road, and driveways often lack addressing information. These factors present a challenge for fire protection agencies.

Overwhelmingly, fire starts are human-caused in this GA, though lightning-caused starts are the primary source of ignition on the high ridges of the Whitefish and Galton Ranges to the northeast and the Salish Mountains to the southwest.

Although the flame length model for the Tobacco GA doesn't reflect the extreme flame lengths shown in other GAs, the MFAP model matched with the HVRA model displays the need for treatments across boundaries in this GA.

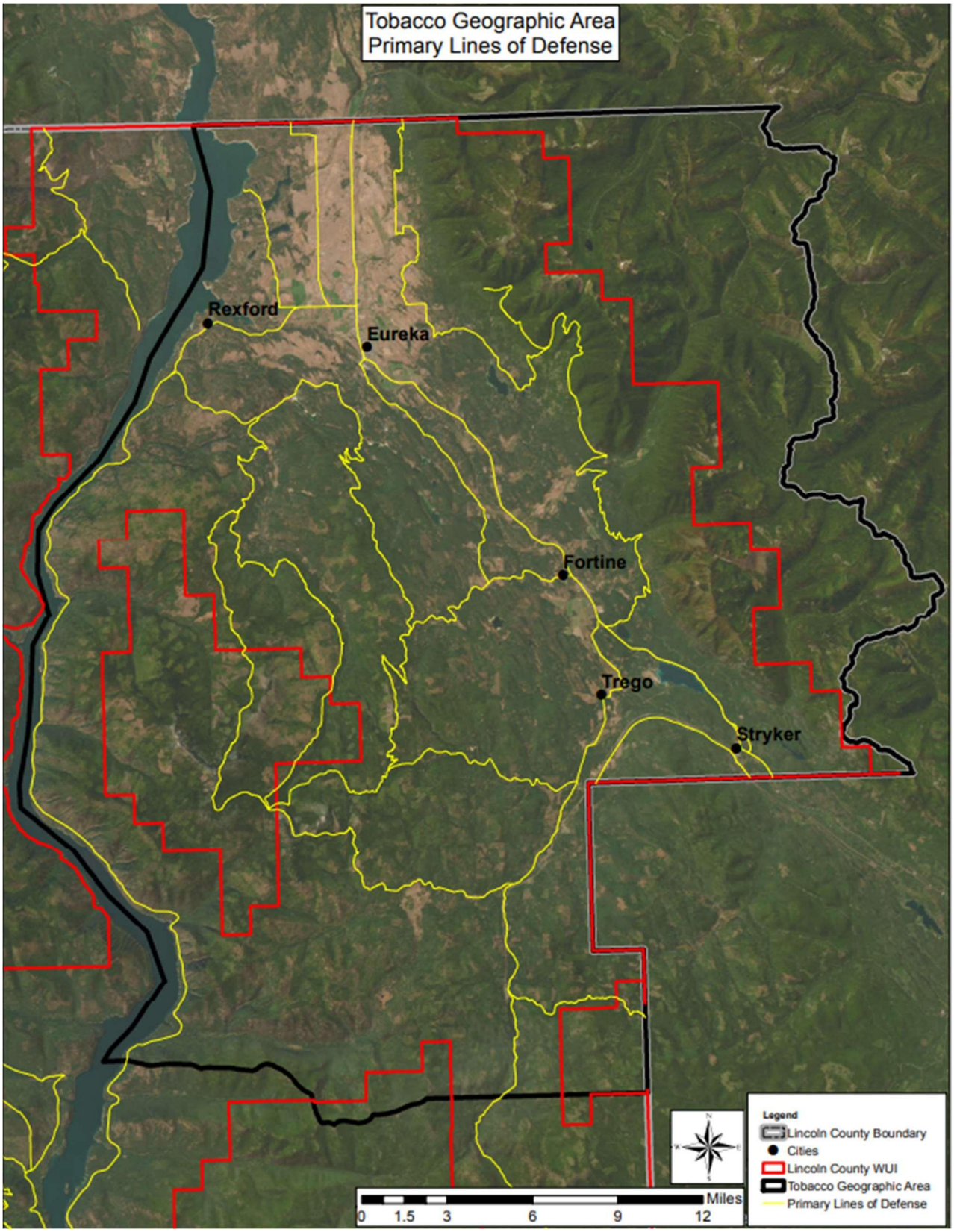
Important Information for Landowners in the Tobacco GA

Response times to landowner properties for fires and other emergencies to remote areas in this GA are some of the longest in the county, particularly in the Salish Mountains south of the Tobacco Valley. The Eureka FSA and the Trego-Fortine-Stryker FSA have quick response times to properties in the valleys and foothills where roads are good and homes are accessible, but where roads are narrow, winding, and/or in poor condition, response times can be long. Response to wildfires from the USFS Rexford-Fortine Ranger District, Libby Ranger District and the DNRC can be slow for the same reasons.

If you live surrounded by dense forests with high fire risk and forest health issues, and/or in the remote areas of Tobacco GA where response times are long, landowners need to invest additional time and energy into managing their properties to prepare for wildfire and reduce wildfire risk. Creating defensible space around your home and making sure that your egress is open and clear of fuels can help responders control fire on your property and/or get your family out and to safety. Multiple forms of egress are a good plan, as are shaded fuel breaks along all access routes to your property.

Making sure that a fire engine can find your home and get into your property is another important factor that you can address as a homeowner. Is your house number or address posted and visible to emergency vehicles? Is the address up to date? Is it reflective and visible in the dark? Or if it is smoky? Is your driveway wide enough for a fire engine to get into your property and turn around? Are there locked gates? Is there a bridge that must be crossed to access your property? If so, make sure that it is properly posted for weight limits. Emergency responders are not going to put themselves in danger to protect your property, so it is your job to make it safer for them to enter your property.

For more landowner information go to www.fireadaptedkootenai.org



Map 26: Tobacco GA Primary Lines of Defense (PLODS)

Tobacco GA -Treatment Focus Areas Map 27

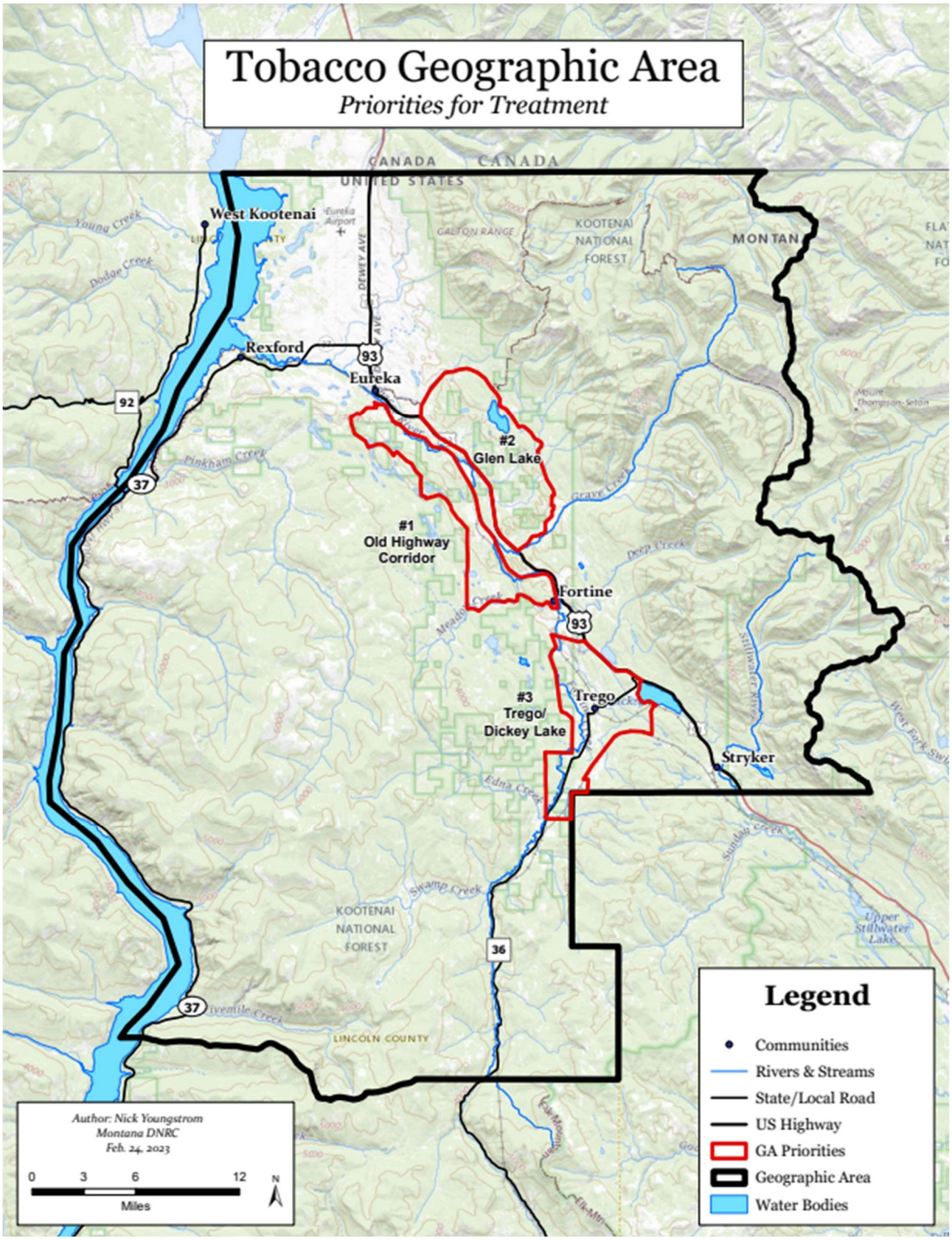
Tobacco GA-Priority 1	**Location:** South of the Town of Eureka, Tobacco Road (Old Hwy corridor, south of the Tobacco River), Fortine, Barnaby Lake - 8,400 acres
Area Description and Rational: The area is part valley floor and part foothills with concentrations of properties, both large and small. Many of the larger properties have dense forests with heavy fuels. Christmas tree plantations from the 1950's and '60's in the area have been left to grow, adding to high tree densities and bushy conditions. Wind-driven crown fires are a concern. The area includes the Town of Fortine, and the subdivisions of Tobacco Valley View, Eureka Hills, Gibralter View, Lost Rock, River Ranch Estates, Starlight Meadows, Barnaby Lake and Barnaby Heights, among others. This area is a corridor for the railroad and a major low voltage transmission line. Most fire starts in this area are human-caused. Tobacco Road (Old Hwy 93) is a major evacuation route.	
Cross-boundary Partners: Forest Service, Montana DNRC, Private landowners	
Other Partners: Eureka FSA, Trego-Fortine-Stryker FSA, Lincoln Electric, Lincoln County Sheriff's Office, HOAs and POAs.	
Project Work: Fuel reduction, establish and develop primary lines of defense, create shaded fuel breaks, treat in the Home Ignition Zone around homes and driveways, improve addressing and access to private land, provide home assessments, provide wildfire educational materials regarding prevention, wildfire readiness and information on how to reduce structure ignitability, develop an evacuation plan, and identify safety zones.	
Project Coordinators: Lincoln County FireSafe Council Rexford-Fortine Ranger District – USDA FS MT DNRC Libby Unit	Implementation Date:

Tobacco GA-Priority 2	**Location:** Sinclair Creek, Glen Lake, Grave Creek, north of US Hwy 93 - 10,700 acres
Area Description and Rational: The area is mostly valley floor and some foothill terrain with concentrations of properties, both large and small. Many of the larger properties have dense forests with heavy fuels. Subdivisions include Woodcrest, Coffee, St. Clair Homesites, Emerald Overlook, all Glen Lake subdivisions, Southern Exposure, Stonegate, Aspen Glen, Nesbitt, Krinklehorn View and others. Overwhelmingly, fire starts in this area are human-caused, although lightning-caused fire start on the high ridges of the Galton and Whitefish Ranges and can be a threat to properties in this area.	
Cross-boundary Partners: Forest Service, Montana DNRC, Private landowners	
Other Partners: Eureka FSA, Trego-Fortine-Stryker FSA, Lincoln Electric, Lincoln County Sheriff's Office, HOAs and POAs	
Project Work: Fuel reduction, establish and develop primary lines of defense, create shaded fuel breaks, treat in the Home Ignition Zone around homes and driveways, improve addressing and access to private land, provide home assessments, provide wildfire educational materials regarding prevention, wildfire readiness and information on how to reduce structure ignitability, develop an evacuation plan, and identify safety zones.	
Project Coordinators: Lincoln County FireSafe Council Rexford-Fortine Ranger District – USDA FS MT DNRC Libby Unit	Implementation Date:

Tobacco GA - Priority 3	**Location:** South of US Hwy 93, Ant Flats Road, Trego, Dickey Lake (west end), Rattlebone, Brimstone Ranch, Edna Creek, Meadow Creek, - 9,100 acres
Area Description and Rational: The area is part valley floor and part foothills with concentrations of properties, both large and small. Many of the larger properties have dense forests with heavy fuels. This area includes the Town of Trego, Dickey Lake Lots, Dickey Lake Lagoon, Dickey Lake Campground, Parkway Meadows, Alder Springs, and other small subdivisions. This area is a corridor for the railroad and a major low voltage transmission line. Most fire starts in this area are human-caused.	
Cross-boundary Partners: Forest Service, Private landowners	
Other Partners: Trego-Fortine-Stryker FSA, Lincoln Electric, Lincoln County Sheriff's Office	
Project Work: Fuel reduction, establish and develop primary lines of defense, create shaded fuel breaks, treat in the Home Ignition Zone around homes and driveways, improve addressing and access to private land, provide home assessments, provide wildfire educational materials regarding prevention, wildfire readiness and information on how to reduce structure ignitability, develop an evacuation plan, and identify safety zones.	
Project Coordinators: Lincoln County FireSafe Council Rexford-Fortine Ranger District -USDA FS	Implementation Date:



Downtown Eureka looking south toward the Old Highway corridor.



Map 27: Tobacco GA Priority Treatment Areas 1, 2, and 3

Outlook

RE: ESCALANTE WILDERNESS PRESERVE SUBDIVISION, LINCOLN COUNTY

From Murdo, Damon <dmurdo@mt.gov>
Date Tue 2/17/2026 4:11 PM
To Larissa VanRiet <larissav@406eng.com>

Hi Larissa,

Thanks for the follow up email.

Since all the sites were recorded on land that is owned by the Kootenai NF, we are unable to release that information to you. The Kootenai NF will also not be able to release the information to you based on the restrictive nature of archaeological site location information. Only individuals who meet the Secretary of the Interior's Standards for Archaeology can review those documents.

I'm happy to give you basic information regarding the types of sites that are located within the Tobacco Plains area.

It looks like there were a few lithic material concentrations in your search results., which are pieces of rock that have been knapped off of a main rock core. Concentrations of lithic materials are found due to an individual knapping stone in an area to make it useable as a tool. We know that the Tobacco Plains area was used by native peoples for thousands of years as an area of occupation. Other sites that may be found in the area are hearth sites, with fire cracked rock. Stones that were heated up and used to boil meats and plant materials in roasting pits. These rocks would break apart when heated or put in the water. There are likely lots of areas with fire cracked rock concentrations on the surface.

A few trash dumps were also located. These usually consist of dumped historic materials like cans, ceramics, bottles, glass, etc…

The one "historic site" was also a collection of random historic artifacts but was not labeled as a dump site. Likely this should be labeled a historic material concentration instead. I will review that document to better classify it in our database.

Please let me know If you have any further questions.

Sincerely,

Damon Murdo
Cultural Records/Data Manager
State Historic Preservation Office

MONTANA HISTORICAL SOCIETY

406-444-7767 | mths.mt.gov
PO Box 201201, 225 North Roberts Street
Helena, MT 59620-1201

From: Larissa VanRiet <larissav@406eng.com>
Sent: Tuesday, February 17, 2026 2:27 PM

To: Murdo, Damon <dmurdo@mt.gov>
Subject: [EXTERNAL] Re: ESCALANTE WILDERNESS PRESERVE SUBDIVISION, LINCOLN COUNTY

Hi Damon,
We were able to discuss with Lincoln County how they want us to move forward regarding your letter you sent per my request in December. They will not be requiring a cultural resource inventory, however, they would like us to make an effort to find out as much information as we can about the listed sites/reports in the vicinity. As you mention in your letter, would you be able to provide me with more information on the listed sites? Or point me in the right direction of where I can request that information? I was going to start with the Kootenai Nat'l Forest Service and see if I could get anywhere there.
Hope you have a good rest of your day!
Thank you,

Larissa Van Riet
Land Use Planner
406 ENGINEERING [406engineeringinc.com]
(406) 257-0679 (Office)
35 8th Street E.
Kalispell, MT 59901
406engineeringinc.com [406engineeringinc.com]

From: Larissa VanRiet <larissav@406eng.com>
Sent: Friday, December 5, 2025 9:21 AM
To: Murdo, Damon <dmurdo@mt.gov>
Subject: Re: ESCALANTE WILDERNESS PRESERVE SUBDIVISION, LINCOLN COUNTY

Amazing! I'll give you a ring around 2:30 then.
Talk to you later.
Thanks,
Larissa

From: Murdo, Damon <dmurdo@mt.gov>
Sent: Friday, December 5, 2025 8:32:58 AM
To: Larissa VanRiet <larissav@406eng.com>
Subject: RE: ESCALANTE WILDERNESS PRESERVE SUBDIVISION, LINCOLN COUNTY

Hi Larissa,

Yes, I am available at 2:30. I have an apt. at 3pm that I'll have to make sure I get to though, but I'm sure our conversation won't go that long.

Damon Murdo
Cultural Records/Data Manager
State Historic Preservation Office
MONTANA HISTORICAL SOCIETY
406-444-7767 | mths.mt.gov
PO Box 201201, 225 North Roberts Street

Helena, MT 59620-1201

From: Larissa VanRiet <larissav@406eng.com>
Sent: Thursday, December 4, 2025 5:15 PM
To: Murdo, Damon <dmurdo@mt.gov>
Subject: [EXTERNAL] RE: ESCALANTE WILDERNESS PRESERVE SUBDIVISION, LINCOLN COUNTY

Hi Damon,
I appreciate how quickly you sent that over. Would you be available around 2:30 pm tomorrow, Friday Dec 5th for me to call you to chat about your search results? I was a Planner at Flathead County for 3 years and never in my time saw a letter recommending a cultural inventory be conducted, so very interested to hear more about the process and these search results!
Have a good evening and thanks again,

Larissa Van Riet
Land Use Planner
406 ENGINEERING [406engineeringinc.com]
(406) 257-0679 (Office)
35 8th Street E.
Kalispell, MT 59901
406engineeringinc.com [406engineeringinc.com]

From: Murdo, Damon <dmurdo@mt.gov>
Sent: Thursday, December 4, 2025 4:25 PM
To: Larissa VanRiet <larissav@406eng.com>
Subject: ESCALANTE WILDERNESS PRESERVE SUBDIVISION, LINCOLN COUNTY

MONTANA HISTORICAL SOCIETY

December 4, 2025

Larissa Van Riet
406 Engineering Inc
35 8th Street East
Kalispell MT 59901

RE: ESCALANTE WILDERNESS PRESERVE SUBDIVISION, LINCOLN COUNTY. SHPO Project #: 20251204004

Dear Larissa:

I have conducted a cultural resource file search for the above-cited project located in Sections 29, 32, 33, T37N R27W. According to our records there have been a few previously recorded sites within the designated search locales. In addition to the sites there have been a few previously conducted cultural resource inventories done in the area. I've attached a list of the sites and reports. If you would like any further information regarding the sites or reports, you may contact me at the number listed below.

It is SHPO's position that any structure over fifty years of age is considered historic and is potentially eligible for listing on the National Register of Historic Places. If any structures are within the Area of Potential Effect, and are over fifty years old, we would recommend that they be recorded, and a determination of their eligibility be made prior to any disturbance taking place.

Based on archaeological sites in the vicinity, the lack of previous inventory, and the ground disturbance required by this undertaking we feel that this project has the potential to impact cultural properties. We, therefore, recommend that a cultural resource inventory be conducted in order to determine whether or not sites exist and if they will be impacted.

If you have any further questions or comments, you may contact me at (406) 444-7767 or by e-mail at dmurdo@mt.gov. I have attached an invoice for the file search. Thank you for consulting with us.

Sincerely,

Damon Murdo
Cultural Records/Data Manager
State Historic Preservation Office

MONTANA
HISTORICAL SOCIETY

406-444-7767 | mths.mt.gov
PO Box 201201, 225 North Roberts Street
Helena, MT 59620-1201

STATE HISTORIC PRESERVATION OFFICE Montana Cultural Resource Database

Township, Range, Section Report

Report Date:12/4/2025

Site #	Twp	Rng	Sec	Qs	Site Type 1	Site Type 2	Time Period	Owner	NR Status
24LN0397	37N	27W	29	NW	Historic Site		No Indication of Time	Forest Service	Ineligible
24LN1556	37N	27W	32	Comb	Precontact Lithic Material Concentration		No Indication of Time	Forest Service	Eligible
24LN1557	37N	27W	29	SW	Historic Trash Dump		Historic Period	Forest Service	Ineligible
24LN1558	37N	27W	32	NW	Precontact Lithic Material Concentration		No Indication of Time	Forest Service	Eligible
24LN1559	37N	27W	32	Comb	Precontact Lithic Material Concentration		No Indication of Time	Forest Service	Eligible
24LN2126	37N	27W	29	SW	Historic Trash Dump		Historic More Than One Decade	Forest Service	Ineligible
24LN2328	37N	27W	32	NW	Combo Precontact/Historic		No Data	Forest Service	Undetermined*

Township:37 N Range:27 W Section: 32

HAUGE KRISTEN A.

1/31/1994 DOUGLAS HILL FUELS AMENDED PROJECT

Report Document Number: LN 1 15617 Agency Document Number: 94-KO-1-1

Township:37 N Range:27 W Section: 29

HAUGE KRISTEN A.

5/17/1994 TOBACCO FUELS PROJECT, UNIT J

Report Document Number: LN 1 16657 Agency Document Number: 93-KO-1-12

Township:37 N Range:27 W Section: 32

HAUGE KRISTEN A.

5/17/1994 TOBACCO FUELS PROJECT, UNIT J

Report Document Number: LN 1 16657 Agency Document Number: 93-KO-1-12

Township:37 N Range:27 W Section: 29

TIMMONS REBECCA S.

2/1/2004 KOOTENAI NATIONAL FOREST 2003 ANNUAL PA REPORT IN LINCOLN COUNTY MONTANA - KOOTENAI NATIONAL FOREST

Report Document Number: LN 1 27073 Agency Document Number: 03-KO-1/7-30

Township:37 N Range:27 W Section: 32

TIMMONS REBECCA S.

2/1/2004 KOOTENAI NATIONAL FOREST 2003 ANNUAL PA REPORT IN LINCOLN COUNTY MONTANA - KOOTENAI NATIONAL FOREST

Report Document Number: LN 1 27073 Agency Document Number: 03-KO-1/7-30

Township:37 N Range:27 W Section: 29

TIMMONS REBECCA S.

2/1/2004 YEAR 2003 ANNUAL HERITAGE REPORT IN THE KOOTENAI NATIONAL FOREST, VOLUME 2, IN KOOTENAI NATIONAL FOREST, LINCOLN COUNTY, MONTANA

Report Document Number: LN 1 27072 Agency Document Number:

Township:37 N Range:27 W Section: 32

TIMMONS REBECCA S.

2/1/2004 YEAR 2003 ANNUAL HERITAGE REPORT IN THE KOOTENAI NATIONAL FOREST, VOLUME 2, IN KOOTENAI NATIONAL FOREST, LINCOLN COUNTY, MONTANA

Report Document Number: LN 1 27072 Agency Document Number:

Township:37 N Range:27 W Section: 32

TIMMONS REBECCA S..& CINDY HEMRY

2/20/2008 KOOTENAI NATIONAL FOREST 2007 ANNUAL PA REPORT

Report Document Number: LN 1 30333 Agency Document Number: 07-KO-1/7-04

Township:37 N Range:27 W Section: 29

HEMRY CINDY

10/1/2003 KOOCANUSA EAST SHORE HAZARDOUS FUELS REDUCTION

Report Document Number: LN 1 34789 Agency Document Number: 03-KO-1-08

Township:37 N Range:27 W Section: 32

HEMRY CINDY

10/1/2003 KOOCANUSA EAST SHORE HAZARDOUS FUELS REDUCTION

Report Document Number: LN 1 34789 Agency Document Number: 03-KO-1-08

Township:37 N Range:27 W Section: 29

HEMRY CINDY AND ENTERPRISE HERITAGE

2/1/2021 LIBBY DAM - LAKE KOOCANUSA RESERVOIR CULTURAL RESOURCE REPORT. SUMMARY OF THE KOOTENAI NATIONAL FOREST 2020 ACCOMPLISHMENTS ON THE NATIONAL REGISTER ELIGIBILITY CONDITION ASSESSMENTS WITHIN THE MIDDLE KOOTENAI RIVER ARCHAEOLOGICAL DISTRICT, LINCOLN COUNTY, MONTANA.

Report Document Number: LN 1 41095 Agency Document Number: R2020011415001

Township:37 N Range:27 W Section: 29

OLTROGGE AUDREY A.

2/23/2024 DOUGLAS HILL OFF HIGHWAY VEHICLE AREA AND CAMPGROUND IMPROVEMENT PROJECT

Report Document Number: LN 1 43313 Agency Document Number: R2024011401001

Township:37 N Range:27 W Section: 32

OLTROGGE AUDREY A.

2/23/2024 DOUGLAS HILL OFF HIGHWAY VEHICLE AREA AND CAMPGROUND IMPROVEMENT PROJECT

Report Document Number: LN 1 43313 Agency Document Number: R2024011401001

Township:37 N Range:27 W Section: 32

MULHOLLAND MEGHAN

4/1/2024 2023 LIBBY DAM-LAKE KOOCANUSA MONITORING AND ACCOMPLISHMENT REPORT

Report Document Number: LN 1 43690 Agency Document Number: R2024011401003

Township:37 N Range:27 W Section: 32

MULHOLLAND MEGHAN

9/1/2024 2024 LIBBY DAM-LAKE KOOCANUSA MONITORING AND ACCOMPLISHMENT REPORT

Report Document Number: LN 1 43691 Agency Document Number: R2024011401004

SLOPE STABILITY REPORT

Wilderness Escalante Preserve

On property located at Sophie Lake Road
in S28, 29, 32 & 33, T37N, R27W PMM, Flathead County.

Published: September 15, 2026

Prepared For:
Escalante Wilderness
Preserve US LLC
PO Box 2092
Eureka, MT 59917

Prepared By:
406 Engineering, Inc.
35 8th Street East
Kalispell, MT 59901

1.0 INTRODUCTION

Escalante Wilderness Preserve US LLC owns the above referenced property. The applicants propose to divide the property over five phases into a total of 198 single-family residential lots and 36 residential condominium lots. Residential lots range from 0.15 to 2.5 acres and condominium lots are approximately 0.1 acres. The development will utilize existing internal subdivision and new internal road networks. Utilities will be extended underground for each phase. The existing Wilderness Club public water supply system will be expanded to serve each proposed phase and new, proposed multi-user wastewater treatment systems will be developed with each phase.

Pursuant to Section IV(K)(1) of the Lincoln County Subdivision Regulations and as requested during a pre-application meeting on January 22, 2026, the intent of this report is to evaluate existing slope conditions within the proposed development area where slopes exceed 30%.

406 Engineering has completed a surface and subsurface investigation for specific areas within the planned development of the Escalante Wilderness Preserve Subdivision in Eureka, MT. A total of 14 test holes were completed during the site evaluation to investigate the slope stability within the planned development areas adjacent to slopes exceeding 30%. These areas include Phase 11, 12, and 13. The purpose of this report is to describe the conditions encountered during the site investigation, present soil data, and provide assurance related to the slope stability where development is planned close to steep slopes. This is not a Geotechnical investigation Report and recommendations for building foundations, floor slab, below-grade walls, utility trenches, and pavement are not being provided within this report.

2.0 USDA SOIL CLASSIFICATION

The USDA Web Soil Survey lists three soil types for the three areas of investigation. Please see the attached USDA Soil Map for more information regarding the soil USDA soil classification along with the map unit descriptions for each of the soil types in the areas of interest.

- Tetrault-Canusa-Jocko complex, 1 to 20 percent slopes is present within Phase 12 and 13. The typical soil profile for this soil type consists of sandy loam, coarse sand and gravelly loam. These soil types are excessively drained. The hydrologic soil group for this soil type is group A. Group A soils have high infiltration rates and low runoff potential, even when thoroughly wet. These deep, well-drained sands and gravels have high transmission rates.
- Canusa-Felt family complex, 0 to 15 percent slopes is present within Phase 11. The typical soil profile for this soil type consist of sandy loam and sand/coarse sand. These soil types are well drained. The hydrologic soil group for this soil type is listed as group A.
- Niarada-Niarada, greater slopes - Roosville complex, 2 to 30 percent slopes is dominant in Phase 11. These soil types consist of gravelly loam and sandy clay loam. These soils are well drained. The hydrologic soil group this soil type is classified as group B. Group B soils have moderate infiltration rates when thoroughly wet. These moderately deep and moderately well-drained soils have a similarly moderate rate of water transmission.

The USDA listed two other soil types for the overall property; Bohnly-Seelovers-Newbar family complex, 0 to 15 percent slopes and Canusa sandy loam 1 to 20 percent slopes which have similar soil properties as described above with well drained soils and typical soil profiles consisting of silt loam, gravelly loamy sand, and sandy loam. Please see the attached USDA Soil Map for more information regarding the soil USDA soil classification.

Given the consistent nature of the soil types throughout the property, it was expected to encounter extremely well drained soils from loamy sand to coarse sand during the site evaluations.

3.0 SOIL PROFILE CLASSIFICATION

The site Investigations took place on April 29, 2026 and included 14 test holes within or adjacent to Phases 11, 12, and 13 of the proposed development of the Escalante Wilderness Preserve Subdivision where slopes exceed 30%. A map of the site evaluation locations has been included in the attachments of this report.

The test holes were completed using a mini-excavator operated by Earthworks Construction. Depths of the test holes ranged from 56” to 120” below the natural ground surface. Field logs of the soil profiles were conducted by 406 Engineering utilizing the requirements outlined by DEQ-4 Appendix B – Soils and Site Characterization. These logs included visual classifications of the subsurface materials encountered during the site evaluation and determination of soil utilizing soil texture, particle size distribution, rock fragments, soil color, soil structure, shape, size, grade, compound structure, and concentrations. Based on the field classification, a soil type was then determined as shown on each of the logs. Detailed soil profile analysis for each test pit can be found in the appendices.

The soil profiles did not indicate bedrock or groundwater within 56”-120” of the surface. Hard rock was encountered in Phase 11, where soil profiles indicate a shallower test pit. The mini excavator used for this analysis was not optimal to continue digging through the hard rock, but a larger machine would’ve been able to dig deeper. Loamy Sand was encountered in majority of the test pits during the site evaluation. This soil type allows for an adequate infiltration rate indicating that storm events will not erode the surface which was consistent with what was determined through the USDA soil classification.

Refer to Table 1 which summarizes the determined soil classification compared to the USDA soil classification for each site.

Table 1. USDA Soil Survey and 406 Engineering Test Pit Classification

	USDA Classification	406 Eng Classification (from Test Pit)
Phase 11		
TP 9	Canusa-Felt Family Complex	Sandy Loam and Coarse Sand
TP 10	Niarada-Roosville Complex	Loamy Sand
TP 11	Niarada-Roosville Complex	Gravelly Sand
TP 12	Niarada-Roosville Complex	Gravelly Sand
TP 13	Niarada-Roosville Complex	Loamy Sand
TP 14	Niarada-Roosville Complex	Loamy Sand
Phase 12		
TP 1	Tetrault-Canusa-Jocko Complex	Loamy Sand
TP 2	Tetrault-Canusa-Jocko Complex	Loamy Sand
TP 3	Tetrault-Canusa-Jocko Complex	Loamy Sand
TP 4	Tetrault-Canusa-Jocko Complex	Loamy Sand
TP 5	Tetrault-Canusa-Jocko Complex	Loamy Sand and Coarse Sand
Phase 13		
TP 6	Tetrault-Canusa-Jocko Complex	Loamy Sand
TP 7	Tetrault-Canusa-Jocko Complex	Loamy Sand
TP 8	Tetrault-Canusa-Jocko Complex	Loamy Sand

4.0 HILLSIDE INSTABILITY OBSERVATIONS

Hillside stability refers to the ability of slope to resist movement or failure under the influence of natural and human induced forces. To analyze for hillside stability at each test hole location, visual observations were made to look for the following features associated with hillside instability. There were no signs of hillside instability at any of the test holes locations. Refer to the site evaluation forms for more information.

Below is a list of the analyzed features associated with hillside instability along with the significance of the feature and an example of each.

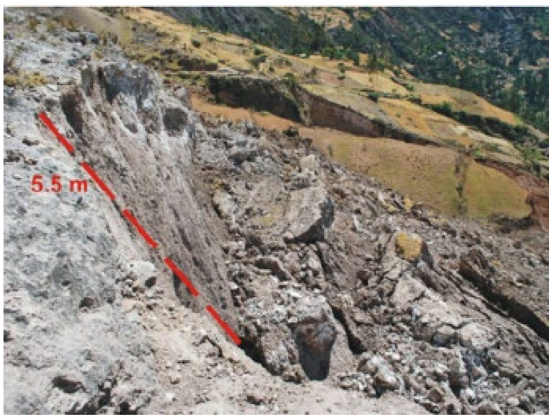
- **Hummocky, dissected topo:**
  This terrain is highly unstable and is characterized by irregular, rolling mounds, hollows and deeply incised valleys often from ancient landslides or glacier moraines. These landforms are highly susceptible to progressive slope failure, slumping and slides. This could be due to trapped water from undrained depressions, low shear strength due to past slides, or dissected toe erosion at the base of the slope triggering instability.



- **Abrupt Changes in Slope:**
  Abrupt change in slope like slope breaks, sharp inclines and cut faces, heavily impact slope stability by concentrating shear force. Areas transitioning from gentle to steep grades experience localized stresses as the weight of the soil above pushes downward exceeding the shear strength of the steeper zones below. Additionally, abrupt changes in slope at the toe of the slope are more susceptible to erosion causing gullying or undercuts. Seepage can also be encountered at transition points due to a disruption in natural groundwater flow effectively decreasing the soil cohesion and weakening the slope.



- **Scarps and Cracks**
  Tension cracks are an early warning sign of slope failure or landslide. It indicates that the soil is being pulling apart by gravitational or seismic forces. Scarps are steep/long cliff with an abrupt change in slope indicating a past landslide. In areas where cracks and scarps exist, the land is considered unstable.



- **Stair Step Topo**
  Stair stepped or terraced topography generally develops when alternating layers weather at different rates which creates a natural series of flat benches and steep cliffs. This points to underlying geologic structures prone to slope instability and is indicative of progressive slope failure.



- **Lobate Slope Forms**
  Lobate slope forms are geological features generally formed on an inclined terrain indicating a former earth flow or landslide. These features are characterized by rounded, tongue-shaped surface expression and suggest previous movement of soils downslope. Land is generally considered unstable in these areas.



- **Hillside Ponds**
  Hillside ponds are depressions and ponded areas located on sloping terrain. Hillside ponds indicate poor drainage, groundwater seepage, or past landslide activity. Hillside ponds can often accelerate slope failure due to water saturating the surrounding soil, increasing its weight and reducing the shear strength. Land with hillside ponds can be evidence of unstable ground conditions.



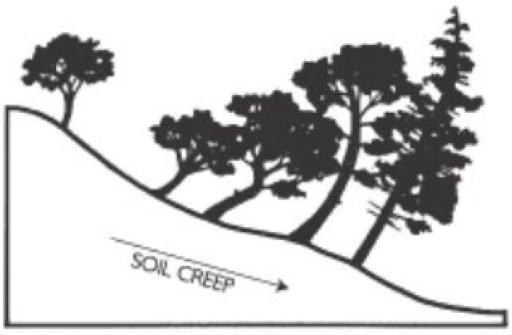
- **Hillside Seeps**
  Hillside seeps develop where groundwater emerges at or near the ground surface on a slope. Seepage is common in landslide areas, and can be identified by wet soils, lush vegetation, or heavily saturated soil on the ground during portions of the year where groundwater can be at its highest. Areas affected by hillside seeps have slope instability due to reduced soil strength and increased erosion opportunities.



- **Incongruent Vegetation**
  Incongruent vegetation refers to areas on a slope where vegetation differs noticeably from the surrounding landscape and vegetation. This typically occurs due to variations in soil moisture and disturbance that has been caused by poor drainage, groundwater seepage, or past slope movement. The presence of incongruent vegetation can be evidence of poor slope stability and unstable building grounds.



- **Jack-sawed Trees**
  Jack-sawed trees are trees that are tilted, bent, or leaning in different directions compared to surrounding trees. Jack-sawed trees are commonly caused by ground movement or soil creep and can be an indicator of slope instability.



CREEP CAUSES DISTINCTIVE CURVED FORM OF TREE TRUNKS OVER TIME.

Summary of Observations

Based on the visual assessment conducted at each test hole location, there is no evidence to suggest the presence of hillside instability across the project site. None of the features listed above were encountered at any of the site evaluation locations. Specifically, there was no hummocky, dissected topo encountered on the site and there was no evidence of past landslides, trapped water, and erosion at the base of slopes. Although there are undulations and small rolling hills throughout the site, the topography is uniform with no abrupt changes in slope. Vegetation conditions remain consistent across

the site with no occurrences of incongruent vegetation or jack-sawed trees indicative of ground movement or soil creep. Attachments include photographs and descriptions of each test pit, along with a summary table comparing observed site conditions to the recognized indicators of hillside instability listed above. Based on the site analysis, no evidence of hillside instability was identified at the Wilderness Club.

5.0 TYPICAL CONSTRUCTION APPLICATIONS FOR SAND

Loamy sand, sand and coarse sand offer excellent drainage and moderate to high load bearing strength. It is coarse textured soil comprised predominantly of sand with minor amounts of silt and clay. Due to its high bearing capacity and permeability, it is frequently used in general grading and building sub-bases.

Bearing capacity is the ability of soil to support the foundation loads without shear failure. Settlement is the tendency of soils to deform under applied loads. Since structures can tolerate only a limited amount of settlement, foundation designs are often controlled by settlement criteria as soils will often deform significantly before it fails in shear. Although, both parameters are essential in foundation designs. Typically, sand makes a good foundation material as it is strong, and it drains quickly. Sand will have minimal settling upon first loading, but that settlement is typically complete before foundation elements are placed. However, sand lacks cohesion which means when it is loose and saturated, it can lose its strength which is why compaction of the material is essential during construction. Given the high bearing capacity and minimal settling when compacted properly, sand can be an excellent material for general grading and building sub-bases.

Given that the material encountered on-site consists of loamy sand to coarse sand, there is minimal concern with respect to construction activities within the development provided that standard building practices are followed. When properly compacted, these soils can provide reliable support for structural loads and perform effectively as grading and base materials.

6.0 WILDERNESS CLUB – CONSTRUCTION HISTORY

The Wilderness Club has been under ongoing development since 2006. The areas of development have been adjacent to toes and tops of steep slopes. The owners of the property have reported no issues in regards to slope stability when construction has been adjacent to steep slopes. Since 2021, 406 Engineering Inc. has been involved in multiple phases of development throughout the property, including Phases 6, 7, and 9 which includes roads and building sites adjacent to steep slopes that are greater than 30%. To date, there have been no observed issues related to slope instability, including landslides, erosion, slope movement, or structural impacts associated with the developed areas. This construction history indicates that there is minimal concern in regard to slope stability throughout the property even in areas adjacent to steep slopes for the continued development of the property.

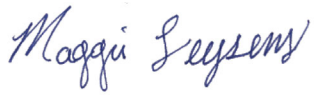
7.0 CONCLUSIONS

Based on the site investigation that was conducted in and adjacent to Escalante Wilderness Preserve proposed Phases 11, 12, and 13, the proposed development will be adjacent to steep slopes that were evaluated and found to be stable. The proposed development complies with Lincoln County Subdivision Regulations by avoiding building sites on slopes exceeding 30%. The slopes investigated exhibited no evidence of past or active slope instability.

The subsurface material encountered during the site evaluation consisted primarily of loamy sand. These soils are considered excellent for construction and development due to their moderate to high load bearing strength and drainage capabilities. Additionally, development has been ongoing within the

Wilderness Club since 2006 including construction adjacent to slopes greater than 30% without any documented slope stability issues. Based on the site conditions, soil characteristics, and construction history, the investigated slopes are considered stable and suitable for the proposed development.

Prepared by:
406 Engineering, Inc.

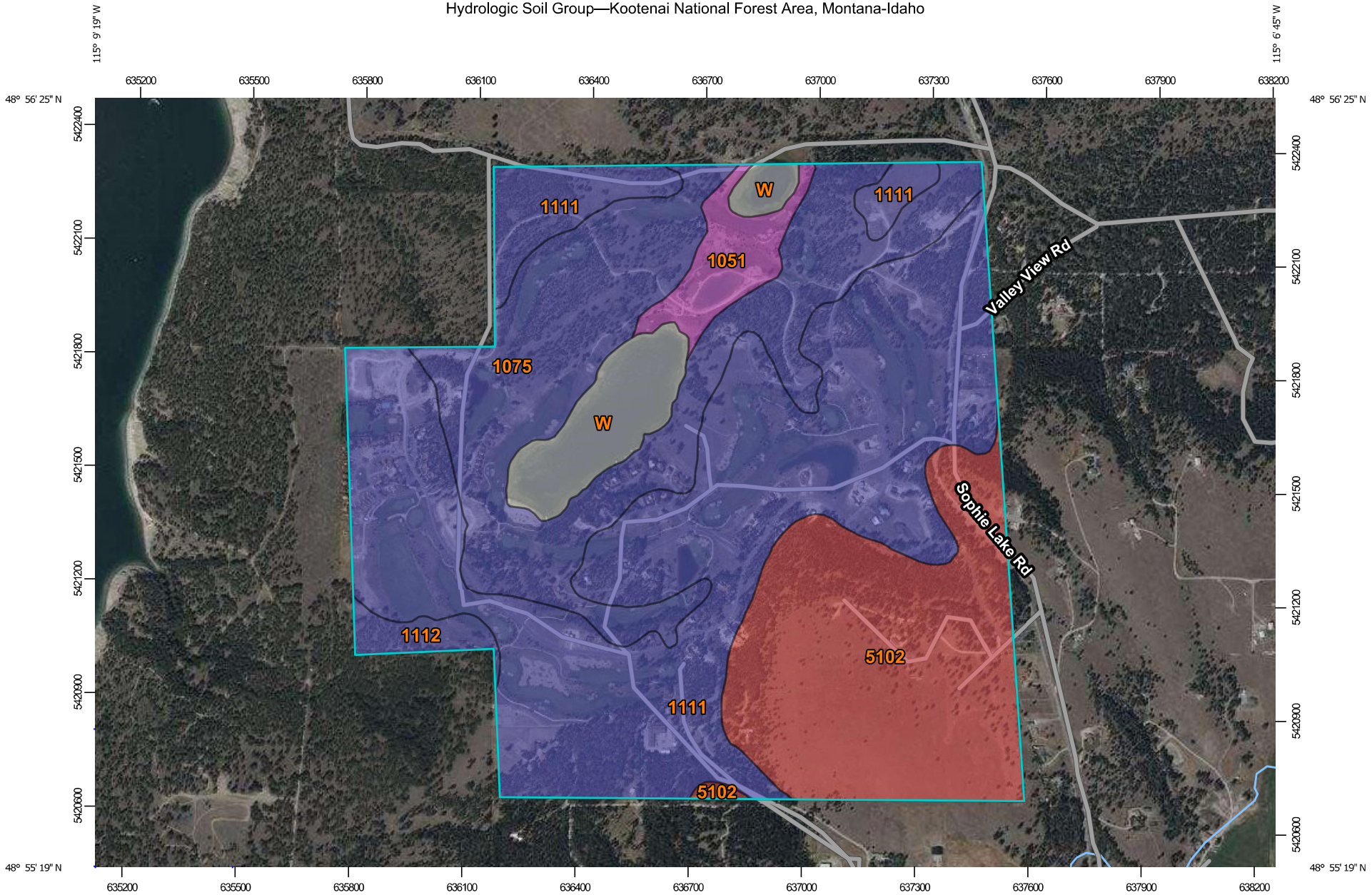


Maggie Leysens, PE

ATTACHMENTS

- **USDA Soil Map**
- **USDA Soil Descriptions**
- **Site Evaluation Map**
- **Site Evaluations**

https://406engineeringinc.sharepoint.com/Shared Documents/406 Work/1_Projects/2021 Projects/21-007K Escalante Wilderness Preserve/3_DESIGN & PERMITTING/Slope-Stability/Slope Stability Report.docx
Tuesday, September 15, 2026, 9:32 AM


115° 9' 19" W
115° 6' 45" W
48° 56' 25" N
48° 55' 19" N
635200
635500
635800
636100
636400
636700
637000
637300
637600
637900
638200
5422400
5422100
5421800
5421500
5421200
5420900
5420600
1111
W
1111
1051
Valley View Rd
1075
W
Sophie Lake Rd
1112
5102
1111
5102
Map Scale: 1:14,300 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0
200
400
800
1200
Feet
0
500
1000
2000
3000
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Kootenai National Forest Area, Montana-Idaho
Survey Area Data: Version 25, Aug 30, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 14, 2023—Aug 13, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1051	Bohnly-Seelovers-Newbar family complex, 0 to 15 percent slopes	B/D	19.7	3.1%
1075	Tetrault-Canusa-Jocko complex, 1 to 20 percent slopes	A	152.3	23.9%
1111	Canusa-Felt family complex, 0 to 15 percent slopes	A	288.2	45.3%
1112	Canusa sandy loam, 1 to 20 percent slopes	A	8.7	1.4%
5102	Niarada-Niarada, greater slopes-Roosville complex, 2 to 30 percent slopes	B	134.8	21.2%
W	Water		32.8	5.1%
Totals for Area of Interest			**636.5**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Kootenai National Forest Area, Montana-Idaho

1111—Canusa-Felt family complex, 0 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2v5vy
Landscape: Glacial valleys
Elevation: 2,510 to 2,660 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 43 to 45 degrees F
Frost-free period: 106 to 115 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Canusa and similar soils: 75 percent
Felt and similar soils: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canusa

Setting

Landscape: Glacial valleys
Landform: Dune fields
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Eolian sands

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 4 inches: sandy loam
Bk1 - 4 to 16 inches: sandy loam
Bk2 - 16 to 38 inches: sandy loam
2BCk - 38 to 60 inches: sand

Properties and qualities

Slope: 1 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.13 to 7.09 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 5.9 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A

Ecological site: F044AH001MT - Montane Warm Dry Coniferous Seeley, Swan, Flathead and Tobacco Valleys
Other vegetative classification: ponderosa pine/Idaho fescue-rough fescue phase (PK142)
Hydric soil rating: No

Description of Felt

Setting

Landscape: Glacial valleys
Landform: Outwash terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian deposits over outwash

Typical profile

A - 0 to 7 inches: silt loam
Bk1 - 7 to 20 inches: fine sandy loam
2Bk2 - 20 to 34 inches: sand
2Bkq - 34 to 60 inches: extremely gravelly coarse sand

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.71 to 2.13 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 28 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F044AH003MT - Montane Moderately Warm Dry Coniferous Seeley, Swan, Flathead and Tobacco Valleys
Other vegetative classification: ponderosa pine/Idaho fescue-rough fescue phase (PK142)
Hydric soil rating: No

Data Source Information

Soil Survey Area: Kootenai National Forest Area, Montana-Idaho
Survey Area Data: Version 25, Aug 30, 2025

Kootenai National Forest Area, Montana-Idaho

5102—Niarada-Niarada, greater slopes-Roosville complex, 2 to 30 percent slopes

Map Unit Setting

National map unit symbol: 2v5w5
Landscape: Glacial valleys
Elevation: 2,640 to 3,120 feet
Mean annual precipitation: 15 to 19 inches
Mean annual air temperature: 42 to 45 degrees F
Frost-free period: 101 to 111 days
Farmland classification: Not prime farmland

Map Unit Composition

Niarada and similar soils: 55 percent
Niarada, greater slopes, and similar soils: 20 percent
Roosville and similar soils: 15 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Niarada

Setting

Landscape: Glacial valleys
Landform: Drumlins
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave, linear
Across-slope shape: Linear
Parent material: Till

Typical profile

A - 0 to 9 inches: gravelly loam
Bw - 9 to 14 inches: gravelly loam
Bk1 - 14 to 22 inches: very gravelly loam
Bk2 - 22 to 60 inches: very gravelly loam

Properties and qualities

Slope: 6 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.71 to 2.13 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: R044AH036MT - Droughty Seeley, Swan, Flathead and Tobacco Valleys
Hydric soil rating: No

Description of Niarada, Greater Slopes

Setting

Landscape: Glacial valleys
Landform: Drumlins
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Linear
Parent material: Till

Typical profile

A - 0 to 9 inches: gravelly loam
Bw - 9 to 14 inches: gravelly loam
Bk1 - 14 to 22 inches: very gravelly loam
Bk2 - 22 to 60 inches: very gravelly loam

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.71 to 2.13 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: R044AH038MT - Droughty Steep Seeley, Swan, Flathead and Tobacco Valleys
Hydric soil rating: No

Description of Roosville

Setting

Landscape: Glacial valleys
Landform: Drumlins
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave, linear
Across-slope shape: Linear
Parent material: Till

Typical profile

A - 0 to 11 inches: gravelly silt loam
Bt - 11 to 18 inches: gravelly sandy clay loam
Btk - 18 to 35 inches: very gravelly sandy clay loam
Bk - 35 to 60 inches: very gravelly sandy clay loam

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.21 to 0.71 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.4 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R044AH032MT - Loamy Seeley, Swan, Flathead and Tobacco Valleys
Hydric soil rating: No

Minor Components

Roosville, greater slopes

Percent of map unit: 10 percent
Landscape: Glacial valleys
Landform: Drumlins
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex, linear
Ecological site: R044AH040MT - Loamy Steep Seeley, Swan, Flathead and Tobacco Valleys

Hydric soil rating: No

Data Source Information

Soil Survey Area: Kootenai National Forest Area, Montana-Idaho
Survey Area Data: Version 25, Aug 30, 2025

Kootenai National Forest Area, Montana-Idaho

1075—Tetrault-Canusa-Jocko complex, 1 to 20 percent slopes

Map Unit Setting

National map unit symbol: 2v5vv
Landscape: Glacial valleys
Elevation: 2,530 to 2,720 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 43 to 45 degrees F
Frost-free period: 108 to 115 days
Farmland classification: Not prime farmland

Map Unit Composition

Tetrault and similar soils: 50 percent
Canusa and similar soils: 30 percent
Jocko and similar soils: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tetrault

Setting

Landscape: Glacial valleys
Landform: Eroded outwash terraces
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and gravelly glaciofluvial deposits

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 9 inches: sandy loam
2BCk - 9 to 25 inches: very gravelly coarse sand
2C - 25 to 60 inches: coarse sand

Properties and qualities

Slope: 3 to 20 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.13 to 7.09 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A

Ecological site: F044AH001MT - Montane Warm Dry Coniferous Seeley, Swan, Flathead and Tobacco Valleys
Other vegetative classification: ponderosa pine/Idaho fescue-rough fescue phase (PK142)
Hydric soil rating: No

Description of Canusa

Setting

Landscape: Glacial valleys
Landform: Dune fields
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Eolian sands over sandy and gravelly glaciofluvial deposits

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 4 inches: sandy loam
Bk1 - 4 to 16 inches: sandy loam
Bk2 - 16 to 38 inches: sandy loam
2BCk - 38 to 60 inches: sand

Properties and qualities

Slope: 1 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.13 to 7.09 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 5.9 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: F044AH001MT - Montane Warm Dry Coniferous Seeley, Swan, Flathead and Tobacco Valleys
Other vegetative classification: ponderosa pine/Idaho fescue-rough fescue phase (PK142)
Hydric soil rating: No

Description of Jocko

Setting

Landscape: Glacial valleys
Landform: Eroded outwash terraces
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Outwash

Typical profile

A - 0 to 5 inches: very gravelly loam
Bw - 5 to 13 inches: very gravelly loam
Bk1 - 13 to 20 inches: extremely gravelly coarse sandy loam
Bk2 - 20 to 60 inches: extremely gravelly loamy coarse sand

Properties and qualities

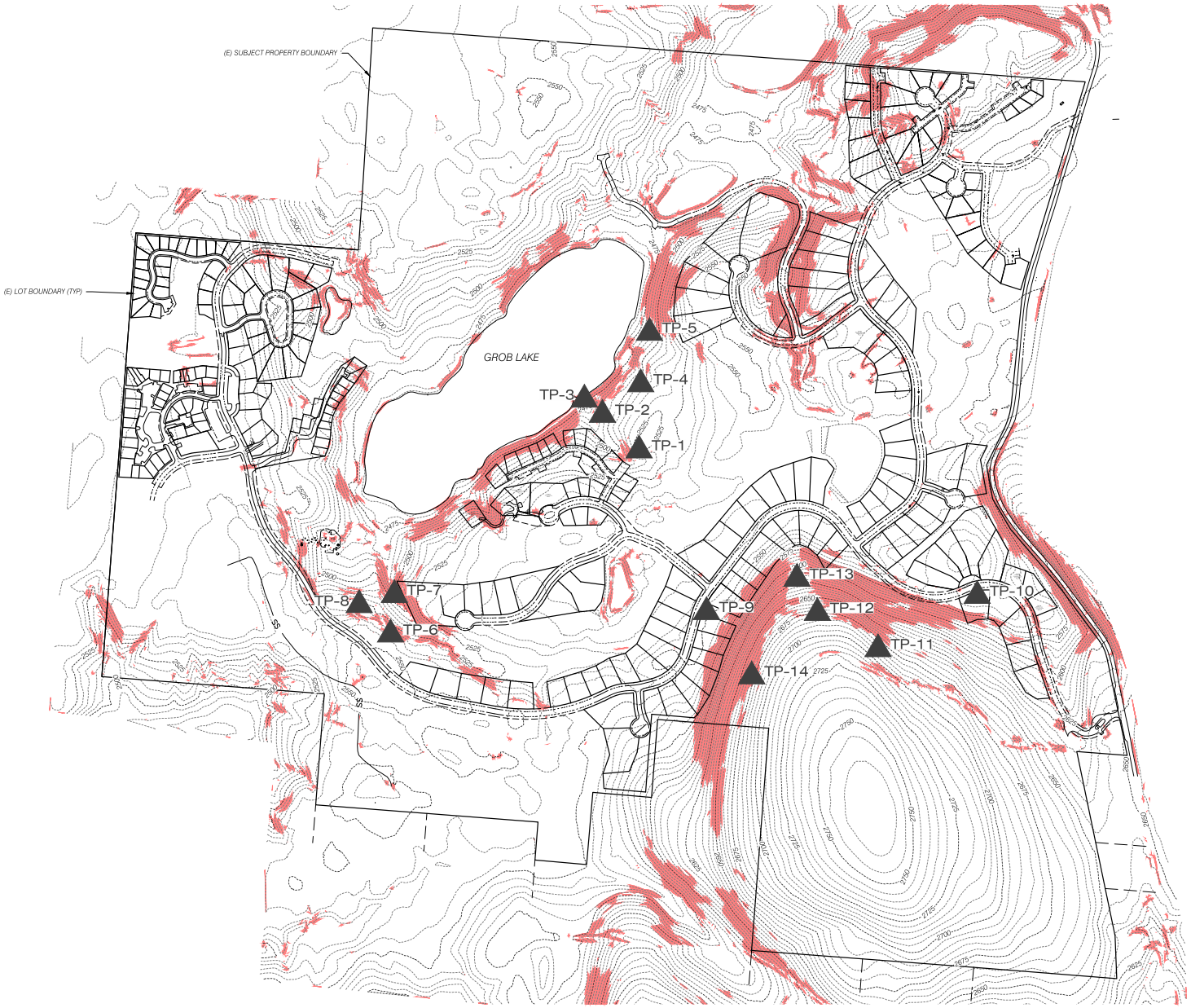
Slope: 2 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.71 to 2.13 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: R044AH038MT - Droughty Steep Seeley, Swan, Flathead and Tobacco Valleys
Hydric soil rating: No

Data Source Information

Soil Survey Area: Kootenai National Forest Area, Montana-Idaho
Survey Area Data: Version 25, Aug 30, 2025



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(406) 257-0679
www.406engineeringinc.com

PLOT DATE: 6/29/2026 2:13 PM BY HALLEY JONES

DESIGNED: HJ
DRAFTED: HJ
CHECKED: ML
DATE: JUNE 2026

REVISIONS	DATE

LOCATION: SOPHIE LAKE ROAD
COS 4389
SEC. 28, 29, 32 & 33, T37N, R27W, PMM
LINCOLN COUNTY, MONTANA

PREPARED FOR: WILDERNESS PRESERVE US LP

PROJECT NAME: ESCALANTE WILDERNESS PRESERVE

SHEET TITLE: SITE EVALUATION MAP

406 PROJECT NO.: 21-007K

SHEET: 1 OF 1

R:\406 LOCAL DATA\ESCALANTE WILDERNESS PRESERVE\1. DOCUMENTS\AUTOCAD\SHEET\ PROJECTS\2021 PROJECTS\21-007K ESCALANTE WILDERNESS PRESERVE\1. DESIGN & PERMITTING\BLOCK 07\ABILITY\21-007K-BLOCK 7.MXP.DWG

Site Evaluation

406 ENGINEERING

General

Project Name	Escalante Wilderness Preserve	**Phase #**	11
Location	Wilderness Club Resort	**Project #**	21-007K
Site Evaluator	Hailley J.	**County** Lincoln	**Date** 4/29/2026

Site Conditions

USDA Classification	Niarada-Niarada greater slopes-Roosville complex			**Vegetation**	grass
Land Slope (%) & Direction	23.7% N	**Slope Type**	Planar	**Flooding Risk**	None

Soil Profile Description

Test Pit # **14**

Depth (in)	Thick (in)	Soil Texture	Rock Fragments	Soil Structure	Soil Color	Moisture	Length of Ribbon	Other Comments*
0 - 12	12	Loamy Sand	None	Granular	10 YR 4/3	dry	0"	Top Soil, roots, and grass present. No signs of erosion.
12 - 60	48	Loamy Sand	35% Pebbles 4% Cobbles	Granular	10 YR 4/4	dry	0"	No signs of groundwater, hit hard rock and could not dig farther with mini excavator
-	0							
-	0							
-	0							
	0							

Depth to gw, bedrock, or limiting layer >60"

Application Rate **0.8** gpd/sf

Site Evaluation

406 ENGINEERING

Hillside Instability Observations

Hillside Feature	Observed on-site	
	Yes	No
Hummocky, dissected topo	☐	☑
Abrupt changes in slope	☐	☑
Scarps and cracks	☐	☑
Stair step topo	☐	☑
Lobate slope forms	☐	☑
Hillside ponds	☐	☑
Hillside seeps	☐	☑
Incongruent vegetation	☐	☑
Jack-sawed trees	☐	☑

Additional Comments: No signs of hillside instability observed on-site.

Site Picture



Site Evaluation

406 ENGINEERING

General

Project Name	Escalante Wilderness Preserve			**Phase #**	11
Location	Wilderness Club Resort			**Project #**	21-007K
Site Evaluator	Hailley J.	**County**	Lincoln	**Date**	4/29/2026

Site Conditions

USDA Classification	Niarada-Niarada greater slopes-Roosville complex			**Vegetation**	grass
Land Slope (%) & Direction	12.4 % N	**Slope Type**	Planar	**Flooding Risk**	None

Soil Profile Description

Test Pit # **13**

Depth (in)	Thick (in)	Soil Texture	Rock Fragments	Soil Structure	Soil Color	Moisture	Length of Ribbon	Other Comments*
0 - 20	20	Loamy Sand	None	Granular	10 YR 4/3	dry	0"	Top Soil, roots, and grass present. No signs of erosion.
20 - 70	50	Loamy Sand	25% Pebbles 2% Cobbles	Granular	10 YR 4/4	dry	0"	No signs of groundwater, hit hard rock and could not dig farther with mini excavator
-	0							
-	0							
-	0							
	0							

Depth to gw, bedrock, or limiting layer >70"

Application Rate **0.8** gpd/sf

Site Evaluation

406 ENGINEERING

Hillside Instability Observations

Hillside Feature	Observed on-site	
	Yes	No
Hummocky, dissected topo	☐	☑
Abrupt changes in slope	☐	☑
Scarps and cracks	☐	☑
Stair step topo	☐	☑
Lobate slope forms	☐	☑
Hillside ponds	☐	☑
Hillside seeps	☐	☑
Incongruent vegetation	☐	☑
Jack-sawed trees	☐	☑

Additional Comments: No signs of hillside instability observed on-site.

Site Picture



Site Evaluation

406 ENGINEERING

General

Project Name	Escalante Wilderness Preserve	**Phase #**	11
Location	Wilderness Club Resort	**Project #**	21-007K
Site Evaluator	Hailley J.	**County** Lincoln	**Date** 4/29/2026

Site Conditions

USDA Classification	Niarada-Niarada greater slopes-Roosville complex			**Vegetation**	grass
Land Slope (%) & Direction	27.8 % N	**Slope Type**	Planar	**Flooding Risk**	None

Soil Profile Description

Test Pit # **12**

Depth (in)	Thick (in)	Soil Texture	Rock Fragments	Soil Structure	Soil Color	Moisture	Length of Ribbon	Other Comments*
0 - 12	12	Loamy Sand	None	Granular	10 YR 3/2	dry	0"	Top Soil, roots, and grass present. No signs of erosion. Steep hillside
12 - 56	44	Gravelly Sand	30% Pebbles 2% Cobbles	Granular	10 YR 5/3	dry	0"	No signs of groundwater, hit hard rock and could not dig farther with mini excavator
-	0							
-	0							
-	0							
	0							

Depth to gw, bedrock, or limiting layer >56"

Application Rate **0.8** gpd/sf

Site Evaluation

406 ENGINEERING

Hillside Instability Observations

Hillside Feature	Observed on-site	
	Yes	No
Hummocky, dissected topo	☐	☑
Abrupt changes in slope	☐	☑
Scarps and cracks	☐	☑
Stair step topo	☐	☑
Lobate slope forms	☐	☑
Hillside ponds	☐	☑
Hillside seeps	☐	☑
Incongruent vegetation	☐	☑
Jack-sawed trees	☐	☑

Additional Comments: No signs of hillside instability observed on-site.

Site Picture



Site Evaluation

406 ENGINEERING

General

Project Name	Escalante Wilderness Preserve	**Phase #**	11
Location	Wilderness Club Resort	**Project #**	21-007K
Site Evaluator	Hailley J.	**County** Lincoln	**Date** 4/29/2026

Site Conditions

USDA Classification	Niarada-Niarada greater slopes-Roosville complex			**Vegetation**	grass
Land Slope (%) & Direction	26.4 % N	**Slope Type**	Planar	**Flooding Risk**	None

Soil Profile Description

Test Pit # **11**

Depth (in)	Thick (in)	Soil Texture	Rock Fragments	Soil Structure	Soil Color	Moisture	Length of Ribbon	Other Comments*
0 - 15	15	Loam	None	Granular	10 YR 3/2	dry	0"	Top Soil, roots, and grass present. No signs of erosion. Steep hillside
15 - 70	55	Gravelly Sand	40% Pebbles 5% Cobbles	Granular	10 YR 5/3	dry	0"	No signs of groundwater, hit hard rock and oculd not dig farther with mini excavator
-	0							
-	0							
-	0							
	0							

Depth to gw, bedrock, or limiting layer >70"

Application Rate **0.8** gpd/sf

Site Evaluation

406 ENGINEERING

Hillside Instability Observations

Hillside Feature	Observed on-site	
	Yes	No
Hummocky, dissected topo	☐	☑
Abrupt changes in slope	☐	☑
Scarps and cracks	☐	☑
Stair step topo	☐	☑
Lobate slope forms	☐	☑
Hillside ponds	☐	☑
Hillside seeps	☐	☑
Incongruent vegetation	☐	☑
Jack-sawed trees	☐	☑

Additional Comments: No signs of hillside instability observed on-site.

Site Picture



Site Evaluation

406 ENGINEERING

General

Project Name	Escalante Wilderness Preserve			**Phase #**	11
Location	Wilderness Club Resort			**Project #**	21-007K
Site Evaluator	Hailley J.	**County**	Lincoln	**Date**	4/29/2026

Site Conditions

USDA Classification	Niarada-Niarada greater slopes-Roosville complex			**Vegetation**	grass
Land Slope (%) & Direction	4.3 % N	**Slope Type**	Planar	**Flooding Risk**	None

Soil Profile Description

Test Pit # **10**

Depth (in)	Thick (in)	Soil Texture	Rock Fragments	Soil Structure	Soil Color	Moisture	Length of Ribbon	Other Comments*
0 - 24	24	Loam	None	Granular	10 YR 3/2	dry	0"	Top Soil, roots, and grass present. No signs of erosion.
24 - 102	78	Loamy Sand	none	Granular	10 YR 4/2	dry	0"	No signs of groundwater or bedrock
-	0							
-	0							
-	0							
	0							

Depth to gw, bedrock, or limiting layer >102"

Application Rate **0.8** gpd/sf

Site Evaluation

406 ENGINEERING

Hillside Instability Observations

Hillside Feature	Observed on-site	
	Yes	No
Hummocky, dissected topo	☐	☑
Abrupt changes in slope	☐	☑
Scarps and cracks	☐	☑
Stair step topo	☐	☑
Lobate slope forms	☐	☑
Hillside ponds	☐	☑
Hillside seeps	☐	☑
Incongruent vegetation	☐	☑
Jack-sawed trees	☐	☑

Additional Comments: No signs of hillside instability observed on-site.

Site Picture



Site Evaluation

406 ENGINEERING

General

Project Name	Escalante Wilderness Preserve			**Phase #**	11
Location	Wilderness Club Resort			**Project #**	21-007K
Site Evaluator	Hailley J.	**County**	Lincoln	**Date**	4/29/2026

Site Conditions

USDA Classification	Canusa-Felt Family Complex			**Vegetation**	grass
Land Slope (%) & Direction	9.2 % NW	**Slope Type**	Planar	**Flooding Risk**	None

Soil Profile Description

Test Pit # **9**

Depth (in)	Thick (in)	Soil Texture	Rock Fragments	Soil Structure	Soil Color	Moisture	Length of Ribbon	Other Comments*
0 - 8	8	Loamy Sand	None	Granular	10 YR 2/2	dry	0"	Top Soil, roots, and grass present. No signs of erosion. Located at bottom of steep hillside
8 - 46	38	Sandy Loam	None	Granular	10 YR 4/4	dry	0"	
46 100	54	Coarse Sand	None	Granular	10 YR 6/2	dry	0"	No signs of groundwater or bedrock
-	0							
-	0							
	0							

Depth to gw, bedrock, or limiting layer >100"

Application Rate **0.8** gpd/sf

Site Evaluation

406 ENGINEERING

Hillside Instability Observations

Hillside Feature	Observed on-site	
	Yes	No
Hummocky, dissected topo	☐	☑
Abrupt changes in slope	☐	☑
Scarps and cracks	☐	☑
Stair step topo	☐	☑
Lobate slope forms	☐	☑
Hillside ponds	☐	☑
Hillside seeps	☐	☑
Incongruent vegetation	☐	☑
Jack-sawed trees	☐	☑

Additional Comments: No signs of hillside instability observed on-site.

Site Picture



Site Evaluation

406 ENGINEERING

General

Project Name	Escalante Wilderness Preserve	**Phase #**	13
Location	Wilderness Club Resort	**Project #**	21-007K
Site Evaluator	Hailley J.	**County** Lincoln	**Date** 4/29/2026

Site Conditions

USDA Classification	Tetrault-Canusa-Jcoko Complex			**Vegetation**	grass
Land Slope (%) & Direction	8.3% N	**Slope Type**	Planar	**Flooding Risk**	None

Soil Profile Description

Test Pit # **8**

Depth (in)	Thick (in)	Soil Texture	Rock Fragments	Soil Structure	Soil Color	Moisture	Length of Ribbon	Other Comments*
0 - 16	16	Loamy Sand	None	Granular	10 YR 3/3	dry	0"	Top Soil, roots, and grass present. No signs of erosion.
16 - 104	88	Loamy Sand	none	Granular	10 YR 5/3	dry	0"	No signs of groundwater or bedrock
-	0							
-	0							
-	0							
	0							

Depth to gw, bedrock, or limiting layer >104"

Application Rate **0.8** gpd/sf

Site Evaluation

406 ENGINEERING

Hillside Instability Observations

Hillside Feature	Observed on-site	
	Yes	No
Hummocky, dissected topo	☐	☑
Abrupt changes in slope	☐	☑
Scarps and cracks	☐	☑
Stair step topo	☐	☑
Lobate slope forms	☐	☑
Hillside ponds	☐	☑
Hillside seeps	☐	☑
Incongruent vegetation	☐	☑
Jack-sawed trees	☐	☑

Additional Comments: No signs of hillside instability observed on-site.

Site Picture



Site Evaluation

406 ENGINEERING

General

Project Name	Escalante Wilderness Preserve	**Phase #**	13
Location	Wilderness Club Resort	**Project #**	21-007K
Site Evaluator	Hailley J.	**County** Lincoln	**Date** 4/29/2026

Site Conditions

USDA Classification	Tetrault-Canusa-Jocko Complex			**Vegetation**	grass
Land Slope (%) & Direction	3.9 % NW	**Slope Type**	Planar	**Flooding Risk**	None

Soil Profile Description

Test Pit # **7**

Depth (in)	Thick (in)	Soil Texture	Rock Fragments	Soil Structure	Soil Color	Moisture	Length of Ribbon	Other Comments*
0 - 10	10	Loamy Sand	None	Granular	10 YR 3/4	dry	0"	Top Soil, roots, and grass present. No signs of erosion. Located at bottom of drainage basin
10 - 45	35	Gravelly Loamy Sand	40% pebbles	Granular	10 YR 3/2	dry	0"	
45 102	57	Loamy Sand	10% cobbles 5% pebbles	Granular	10 YR 5/3	dry		No signs of groundwater or bedrock
-	0							
-	0							
	0							

Depth to gw, bedrock, or limiting layer >102"

Application Rate **0.8** gpd/sf

Site Evaluation

406 ENGINEERING

Hillside Instability Observations

Hillside Feature	Observed on-site	
	Yes	No
Hummocky, dissected topo	☐	☑
Abrupt changes in slope	☐	☑
Scarps and cracks	☐	☑
Stair step topo	☐	☑
Lobate slope forms	☐	☑
Hillside ponds	☐	☑
Hillside seeps	☐	☑
Incongruent vegetation	☐	☑
Jack-sawed trees	☐	☑

Additional Comments: No signs of hillside instability observed on-site.

Site Picture



Site Evaluation

406 ENGINEERING

General

Project Name	Escalante Wilderness Preserve			**Phase #**	13
Location	Wilderness Club Resort			**Project #**	21-007K
Site Evaluator	Hailley J.	**County**	Lincoln	**Date**	4/29/2026

Site Conditions

USDA Classification	Tetrault-Canusa-Jocko Complex			**Vegetation**	grass
Land Slope (%) & Direction	8.4% N	**Slope Type**	Planar	**Flooding Risk**	None

Soil Profile Description

Test Pit # **6**

Depth (in)	Thick (in)	Soil Texture	Rock Fragments	Soil Structure	Soil Color	Moisture	Length of Ribbon	Other Comments*
0 - 28	28	Loamy Sand	None	Granular	10 YR 3/4	dry	0"	Top Soil, roots, and grass present. No signs of erosion. Sitting on a shelf
28 - 108	80	Loamy Sand	none	Granular	2.5 YR 5/3	dry	0"	No signs of groundwater or bedrock
-	0							
-	0							
-	0							
	0							

Depth to gw, bedrock, or limiting layer >108"

Application Rate **0.8** gpd/sf

Site Evaluation

406 ENGINEERING

Hillside Instability Observations

Hillside Feature	Observed on-site	
	Yes	No
Hummocky, dissected topo	☐	☑
Abrupt changes in slope	☐	☑
Scarps and cracks	☐	☑
Stair step topo	☐	☑
Lobate slope forms	☐	☑
Hillside ponds	☐	☑
Hillside seeps	☐	☑
Incongruent vegetation	☐	☑
Jack-sawed trees	☐	☑

Additional Comments: No signs of hillside instability observed on-site.

Site Picture



Site Evaluation

406 ENGINEERING

General

Project Name	Escalante Wilderness Preserve	**Phase #**	12
Location	Wilderness Club Resort	**Project #**	21-007K
Site Evaluator	Hailley J.	**County** Lincoln	**Date** 4/29/2026

Site Conditions

USDA Classification	Tetrault-Canusa-Jocko Complex			**Vegetation**	grass
Land Slope (%) & Direction	28.3% W	**Slope Type**	Planar	**Flooding Risk**	None

Soil Profile Description

Test Pit # **5**

Depth (in)	Thick (in)	Soil Texture	Rock Fragments	Soil Structure	Soil Color	Moisture	Length of Ribbon	Other Comments*
0 - 10	10	Loamy Sand	None	Granular	10 YR 4/3	dry	0"	Top Soil, roots, and grass present. No signs of erosion.
10 - 44	34	Loamy Sand	none	Granular	10 YR 5/3	dry	0"	
44 - 98	54	Coarse Sand	none	Granular	10 YR 6/2	dry	0"	No signs of groundwater or bedrock
-	0							
-	0							
	0							

Depth to gw, bedrock, or limiting layer >98"

Application Rate **0.8** gpd/sf

Site Evaluation

406 ENGINEERING

Hillside Instability Observations

Hillside Feature	Observed on-site	
	Yes	No
Hummocky, dissected topo	☐	☑
Abrupt changes in slope	☐	☑
Scarps and cracks	☐	☑
Stair step topo	☐	☑
Lobate slope forms	☐	☑
Hillside ponds	☐	☑
Hillside seeps	☐	☑
Incongruent vegetation	☐	☑
Jack-sawed trees	☐	☑

Additional Comments: No signs of hillside instability observed on-site.

Site Picture



Site Evaluation

406 ENGINEERING

General

Project Name	Escalante Wilderness Preserve	**Phase #**	12
Location	Wilderness Club Resort	**Project #**	21-007K
Site Evaluator	Hailley J.	**County** Lincoln	**Date** 4/29/2026

Site Conditions

USDA Classification	Tetrault-Canusa-Jocko Complex			**Vegetation**	grass
Land Slope (%) & Direction	15.5% W	**Slope Type**	Planar	**Flooding Risk**	None

Soil Profile Description

Test Pit # **4**

Depth (in)	Thick (in)	Soil Texture	Rock Fragments	Soil Structure	Soil Color	Moisture	Length of Ribbon	Other Comments*
0 - 20	20	Loamy Sand	None	Granular	7.5 YR 2.5/3	dry	0"	Top Soil, roots, and grass present. No signs of erosion.
20 - 108	88	Loamy Sand	none	Granular	10 YR 5/3	dry	0"	No signs of groundwater or bedrock
-	0							
-	0							
-	0							
	0							

Depth to gw, bedrock, or limiting layer >108"

Application Rate **0.8** gpd/sf

Site Evaluation

406 ENGINEERING

Hillside Instability Observations

Hillside Feature	Observed on-site	
	Yes	No
Hummocky, dissected topo	☐	☑
Abrupt changes in slope	☐	☑
Scarps and cracks	☐	☑
Stair step topo	☐	☑
Lobate slope forms	☐	☑
Hillside ponds	☐	☑
Hillside seeps	☐	☑
Incongruent vegetation	☐	☑
Jack-sawed trees	☐	☑

Additional Comments: No signs of hillside instability observed on-site.

Site Picture



Site Evaluation

406 ENGINEERING

General

Project Name	Escalante Wilderness Preserve			**Phase #**	12
Location	Wilderness Club Resort			**Project #**	21-007K
Site Evaluator	Hailley J.	**County**	Lincoln	**Date**	4/29/2026

Site Conditions

USDA Classification	Tetrault-Canusa-Jocko Complex			**Vegetation**	grass
Land Slope (%) & Direction	26.0% W	**Slope Type**	Planar	**Flooding Risk**	None

Soil Profile Description

Test Pit # **3**

Depth (in)	Thick (in)	Soil Texture	Rock Fragments	Soil Structure	Soil Color	Moisture	Length of Ribbon	Other Comments*
0 - 12	12	Loamy Sand	None	Granular	10 YR 3/3	minimum	0"	Top Soil, roots, and grass present. No signs of erosion. Near edge of lake
12 - 48	36	Loamy Sand	2% Cobbles 1% Pebbles	Granular	10 YR 4/3	dry	0"	
48 - 102	54	Loamy Sand	10% Cobbles	Granular	10 YR 4/3	dry	0"	No signs of groundwater or bedrock
-	0							
-	0							
	0							

Depth to gw, bedrock, or limiting layer >102"

Application Rate **0.8** gpd/sf

Site Evaluation

406 ENGINEERING

Hillside Instability Observations

Hillside Feature	Observed on-site	
	Yes	No
Hummocky, dissected topo	☐	☑
Abrupt changes in slope	☐	☑
Scarps and cracks	☐	☑
Stair step topo	☐	☑
Lobate slope forms	☐	☑
Hillside ponds	☐	☑
Hillside seeps	☐	☑
Incongruent vegetation	☐	☑
Jack-sawed trees	☐	☑

Additional Comments: No signs of hillside instability observed on-site.

Site Picture



Site Evaluation

406 ENGINEERING

General

Project Name	Escalante Wilderness Preserve			**Phase #**	12
Location	Wilderness Club Resort			**Project #**	21-007K
Site Evaluator	Hailley J.	**County**	Lincoln	**Date**	4/29/2026

Site Conditions

USDA Classification	Tetrault-Canusa-Jocko Complex			**Vegetation**	grass
Land Slope (%) & Direction	17.0% W	**Slope Type**	Planar	**Flooding Risk**	None

Soil Profile Description

Test Pit # **2**

Depth (in)	Thick (in)	Soil Texture	Rock Fragments	Soil Structure	Soil Color	Moisture	Length of Ribbon	Other Comments*
0 - 13	13	Loamy	None	Granular	10 YR 3/4	minimum	0.25"	Top Soil, roots, and grass present. No signs of erosion
13 - 120	107	Loamy Sand	None	Granular	10 YR 4/3	dry	0"	Uniform soil profile. No signs of groundwater or bedrock
-	0							
-	0							
-	0							
	0							

Depth to gw, bedrock, or limiting layer >120"

Application Rate **0.8** gpd/sf

Site Evaluation

406 ENGINEERING

Hillside Instability Observations

Hillside Feature	Observed on-site	
	Yes	No
Hummocky, dissected topo	☐	☑
Abrupt changes in slope	☐	☑
Scarps and cracks	☐	☑
Stair step topo	☐	☑
Lobate slope forms	☐	☑
Hillside ponds	☐	☑
Hillside seeps	☐	☑
Incongruent vegetation	☐	☑
Jack-sawed trees	☐	☑

Additional Comments: No signs of hillside instability observed on-site.

Site Picture



Site Evaluation

406 ENGINEERING

General

Project Name	Escalante Wilderness Preserve			**Phase #**	12
Location	Wilderness Club Resort			**Project #**	21-007K
Site Evaluator	Hailley J.	**County**	Lincoln	**Date**	4/29/2026

Site Conditions

USDA Classification	Tetrault-Canusa-Jocko Complex			**Vegetation**	grass
Land Slope (%) & Direction	18.9% S	**Slope Type**	Planar	**Flooding Risk**	None

Soil Profile Description

Test Pit # **1**

Depth (in)	Thick (in)	Soil Texture	Rock Fragments	Soil Structure	Soil Color	Moisture	Length of Ribbon	Other Comments*
0 - 24	24	Loamy Sand	None	Granular	10 YR 3/4	minimum	0"	Top Soil, roots, and grass present. No signs of erosion
24 - 120	96	Loamy Sand	None	Granular	10 YR 4/4	dry	0"	Uniform soil profile. No signs of groundwater or bedrock
-	0							
-	0							
-	0							
	0							

Depth to gw, bedrock, or limiting layer >120"

Application Rate **0.8** gpd/sf

Site Evaluation

406 ENGINEERING

Hillside Instability Observations

Hillside Feature	Observed on-site	
	Yes	No
Hummocky, dissected topo	☐	☑
Abrupt changes in slope	☐	☑
Scarps and cracks	☐	☑
Stair step topo	☐	☑
Lobate slope forms	☐	☑
Hillside ponds	☐	☑
Hillside seeps	☐	☑
Incongruent vegetation	☐	☑
Jack-sawed trees	☐	☑

Additional Comments: No signs of hillside instability observed on-site.

Site Picture



Outlook

Re: Wilderness Club Escalante

From Joel Graves <jgraves@teameureka.net>
Date Wed 10/2/2024 12:25 PM
To Christine Griffin <chrissyg@406eng.com>

Chrissy,

A 250 unit subdivision could potentially put significant strain on our school district. We have attempted to pass a bond for a new middle school 4 times, failing each time. We are currently close to the limit we can house in our elementary district. It would likely have less of a negative impact on the high school. If you need further information, don't hesitate to call.

Joel Graves
Superintendent
Eureka Public Schools
Eureka, MT

On Wed, Oct 2, 2024 at 11:38 AM Christine Griffin <chrissyg@406eng.com> wrote:

> Hello Joel,
>
> We have started working on a new subdivision located in the Wilderness Club property. The subdivision would be a max of 250 lots. I wanted to see if the school district could accommodate this subdivision.
>
> Please let me know if you have any questions.
>
> Thank you,
>
> ***Chrissy Griffin***
> ***Project Coordinator***
> 406 ENGINEERING
> (406) 257-0679 (Main Office)
> (406) 261-9865 (Cell)
> 35 8th Street East
> Kalispell, MT 59901
> 406engineeringinc.com