

# Montana Natural Heritage Program

Informing Natural Resource Management and  
Environmental Review, Permitting, and Planning Processes

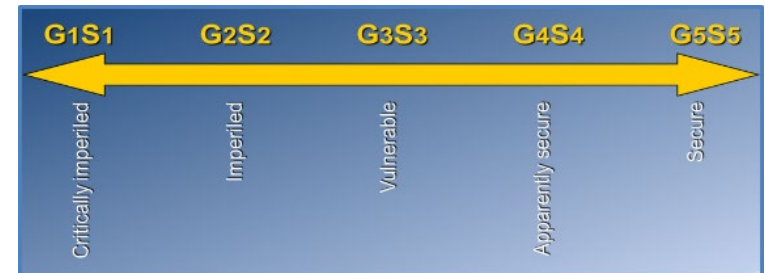
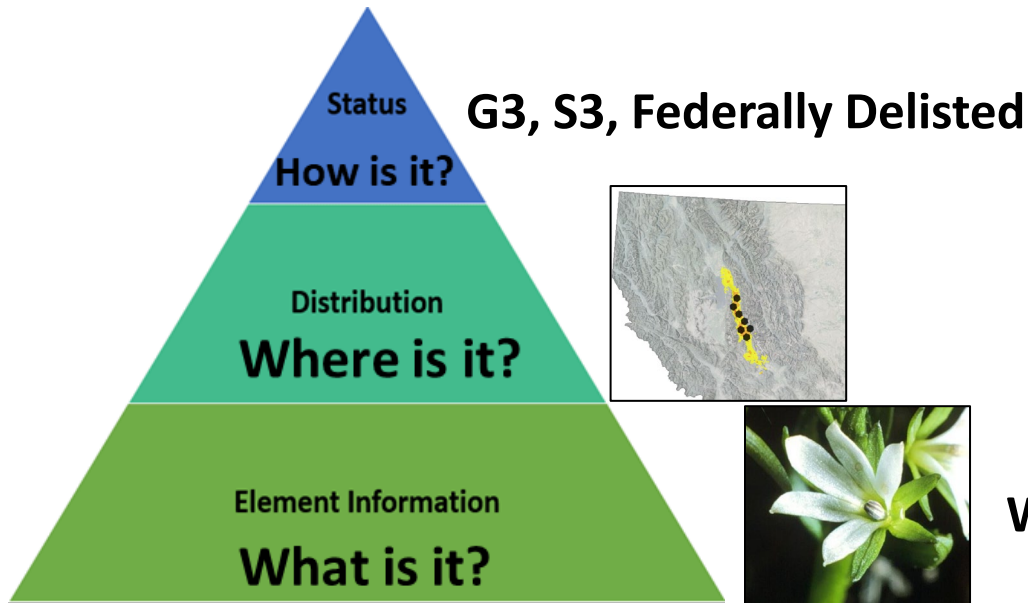
Bryce Maxell, Program Coordinator [bmaxell@mt.gov](mailto:bmaxell@mt.gov)



- Information Managed
- Information Delivery & Use
- Challenges
- Support Needed

# Why have a Natural Heritage Program?

- Common set of information available to everyone
- Inform species and habitat management decisions
- Inform environmental review, permitting, and planning processes
- Inform disaster response
- Make informed decisions quickly
- Avoid litigation
- Maintain local authority over species management
- Save time and money



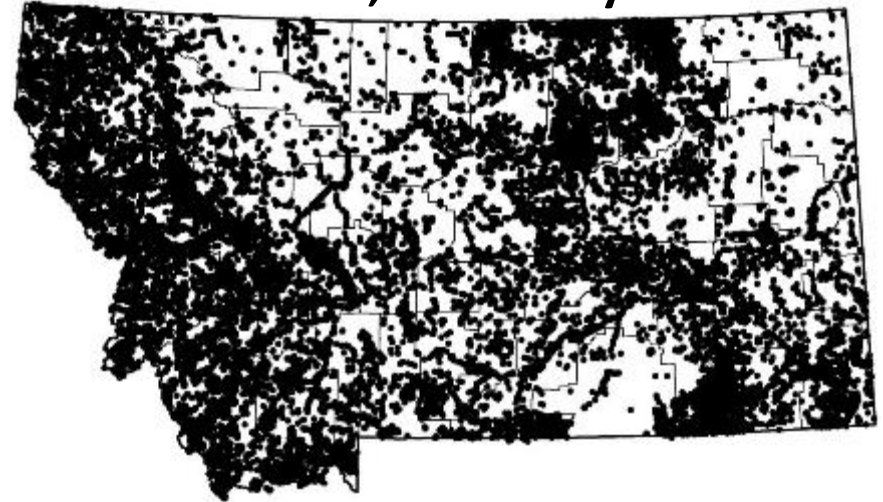
Water Howellia (*Howellia aquatilis*)

# Spatial Information Managed for 16,200+ Species

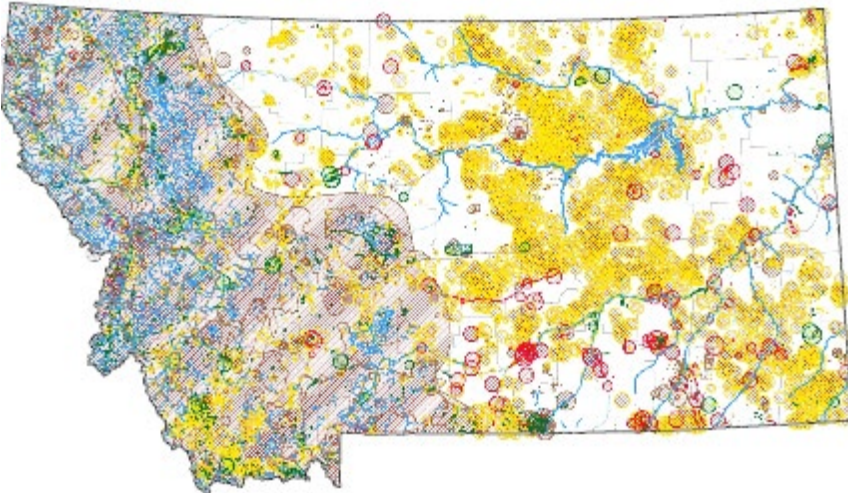
~5.2 Million Observations



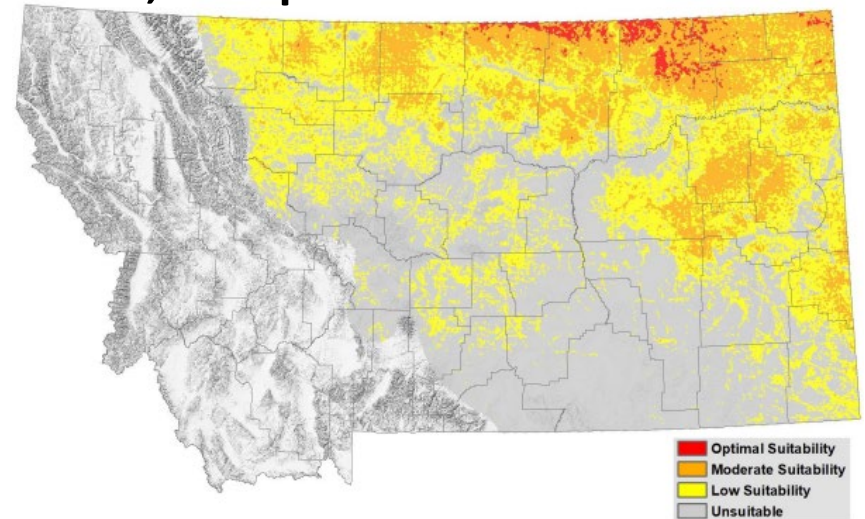
~471,000 Surveys



~95,000 Species of Concern Occurrences

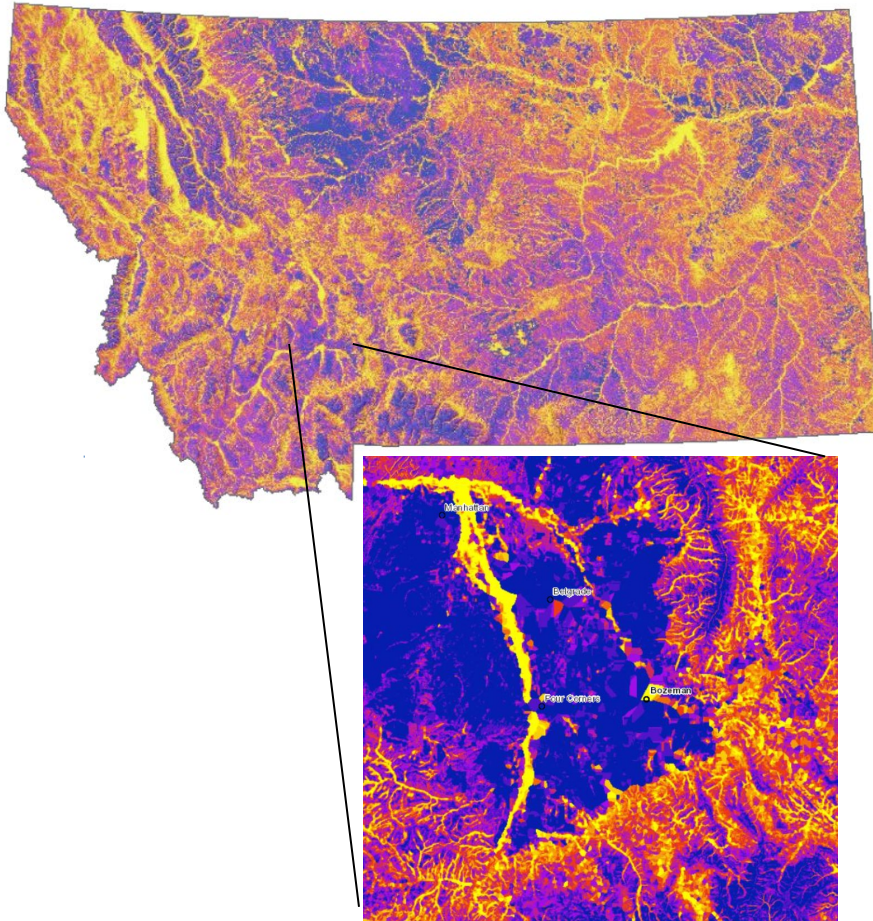


~1,100 Species Habitat Models

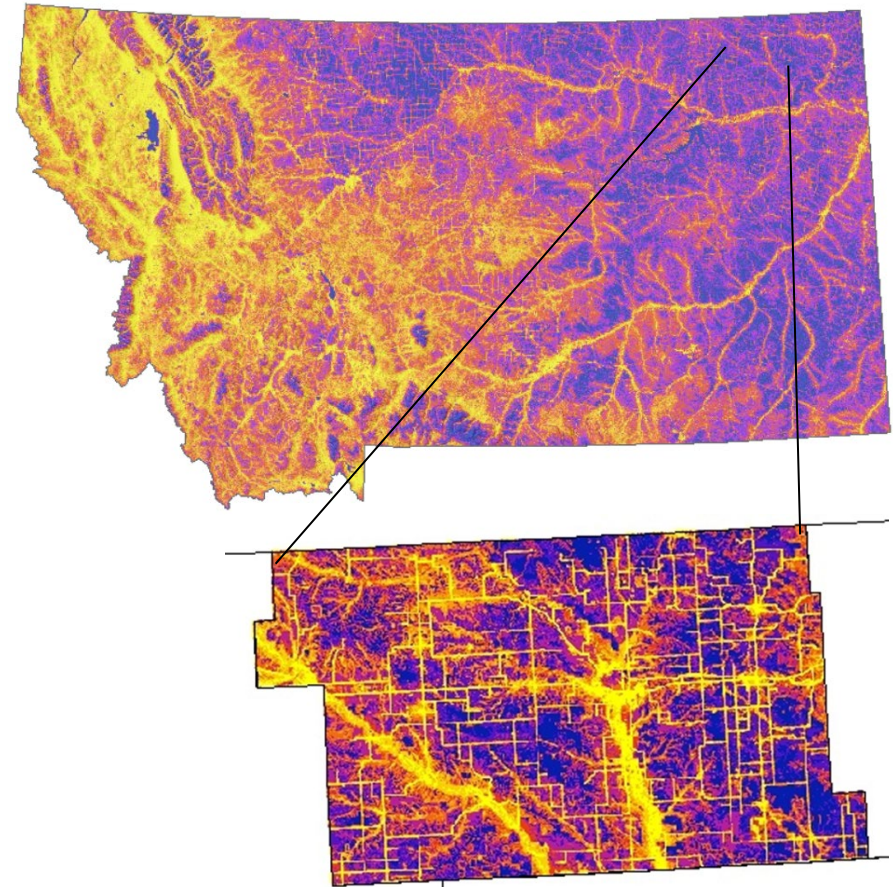


# Predicted Biodiversity Models

- Montana Land Use Planning Act
- Prioritize weed survey & control
- State Wildlife Action Plan
- Forest Plan Revisions
- BLM Resource Management Plans
- Tribal Management Plans



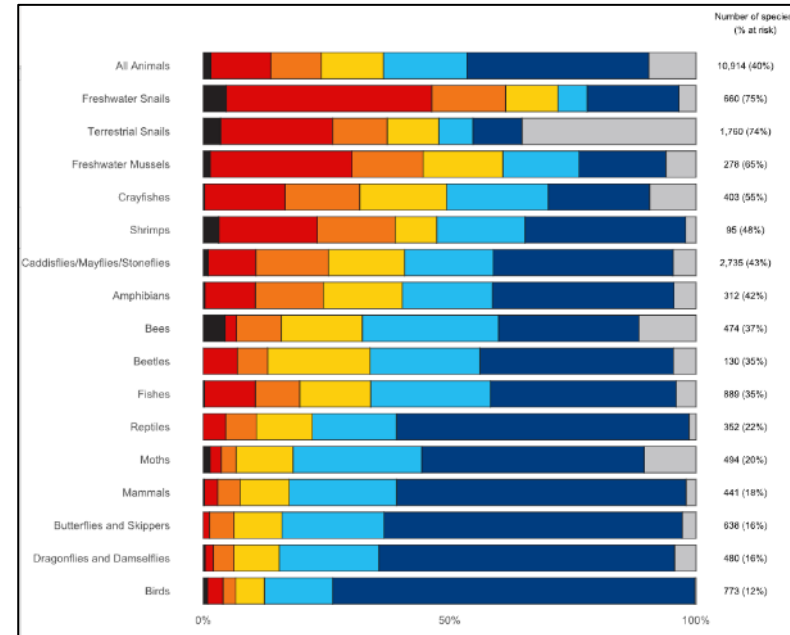
**Native Vertebrate Biodiversity (N = 462)**



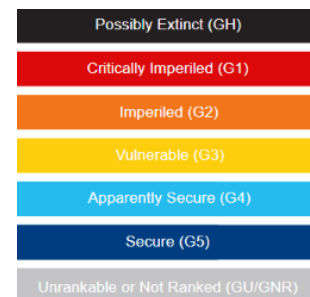
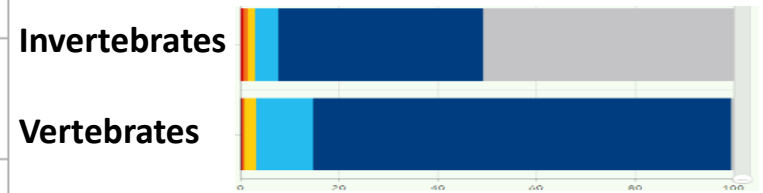
**Cumulative Risk of Invasion  
by State-listed Noxious Weeds**

# Conservation Status Ranks

## Global Ranks for U.S. Animals



## State Ranks for MT Animals



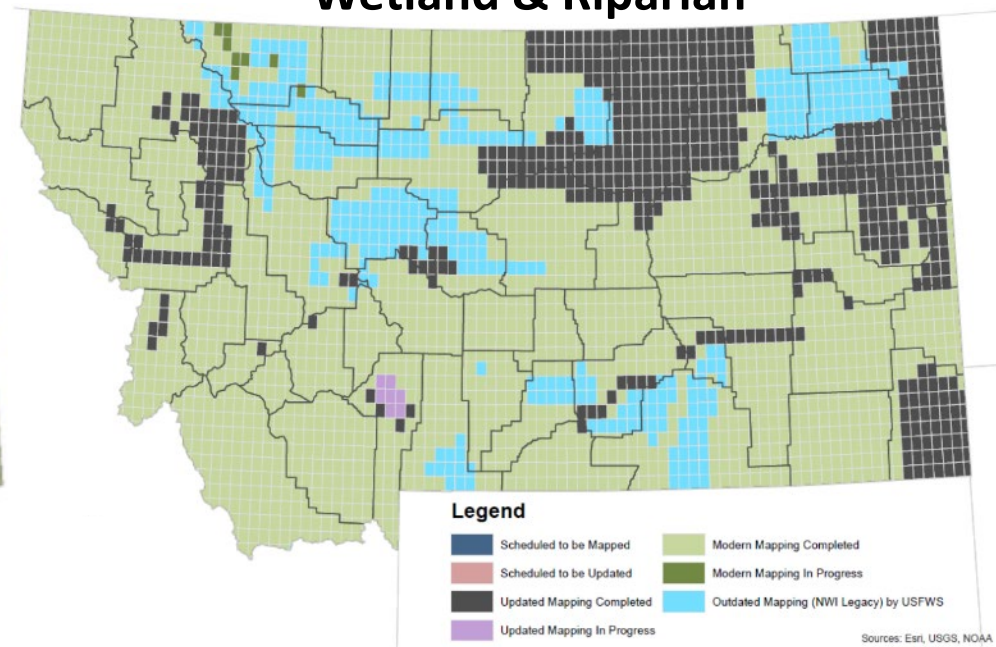
Rank		Definition
G1	S1	At high risk because of <b>extremely limited</b> and/or <b>rapidly declining</b> population numbers, range and/or habitat, making it highly vulnerable to global extinction or extirpation in the state.
G2	S2	At risk because of <b>very limited</b> and/or <b>potentially declining</b> population numbers, range and/or habitat, making it vulnerable to global extinction or extirpation in the state.
G3	S3	Potentially at risk because of <b>limited</b> and/or <b>declining</b> numbers, range and/or habitat, even though it may be abundant in some areas.
G4	S4	Apparently secure, though it may be quite rare in parts of its range, and/or suspected to be declining.
G5	S5	Common, widespread, and abundant (although it may be rare in parts of its range). Not vulnerable in most of its range.
GX	SX	Presumed Extinct or Extirpated - Species is believed to be extinct throughout its range or extirpated in Montana. Not located despite intensive searches of historical sites and other appropriate habitat, and small likelihood that it will ever be rediscovered.
GH	SH	Historical, known only from records usually 40 or more years old; may be rediscovered.
GNR	SNR	Not Ranked as of yet.
GU	SU	Unrankable - Species currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
GNA	SNA	A conservation status rank is not applicable because the species or ecosystem is not a suitable target for conservation activities as a result of being: 1) not confidently present in the state; 2) non-native or introduced; 3) a long distance migrant with accidental or irregular stopovers; or 4) a hybrid without conservation value.

# Habitat Data Products

## Land Cover



## Wetland & Riparian



\* Moving toward NVC for July of 2024

\* Spatial Data Infrastructure Homepage

[https://msl.mt.gov/geoinfo/msdi/land\\_use\\_land\\_cover/](https://msl.mt.gov/geoinfo/msdi/land_use_land_cover/)

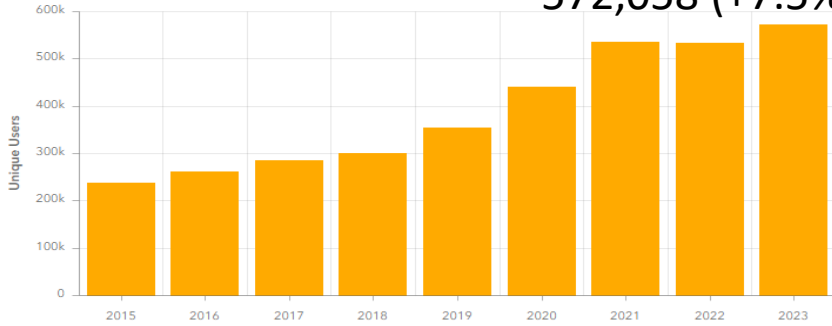
- Story Map
- Downloads and Web Service
- Ecological Site Reviewer
- Land Cover Validation Tool Kit

- \* 3.2 million + acres mapped
- \* 87% of state is mapped
- \* 385 quads at ~\$3,000/quad
- \* Funding ready for ~15 quads

# Field Guide Information Use

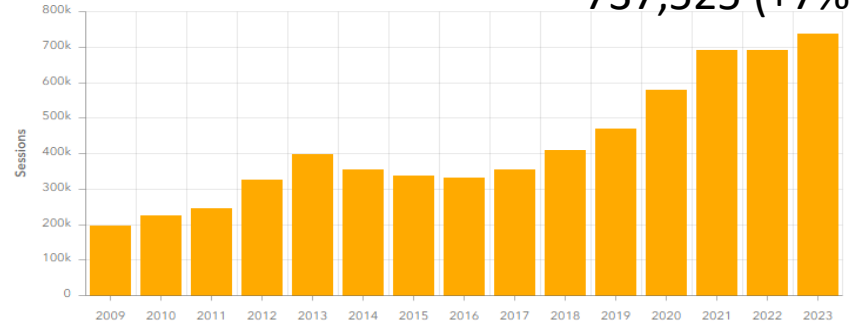
## No. Users

572,058 (+7.5%)



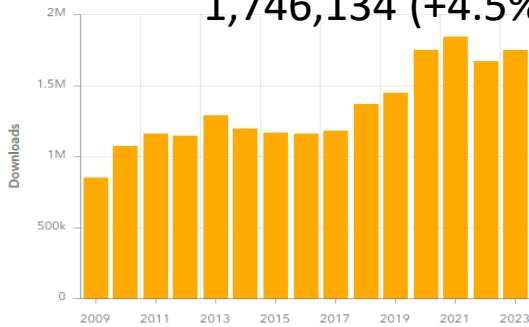
## No. Sessions

737,525 (+7%)



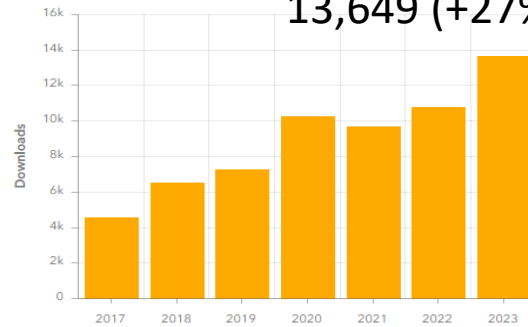
## No. Page Views

1,746,134 (+4.5%)



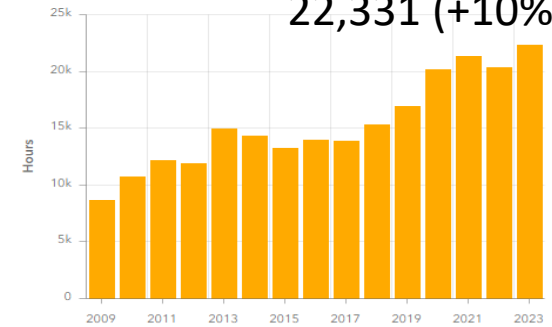
## No. PDF Downloads

13,649 (+27%)



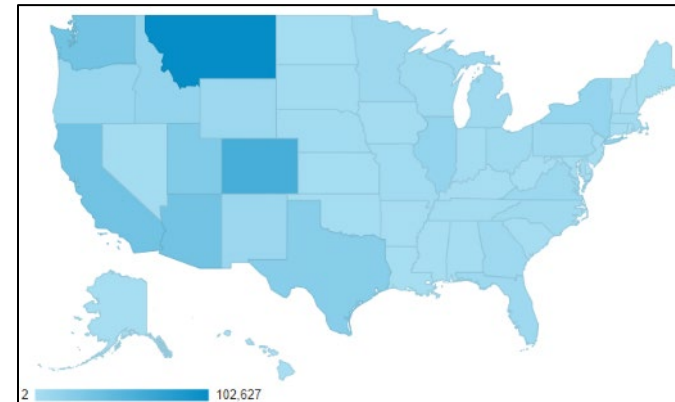
## Hours of Use

22,331 (+10%)



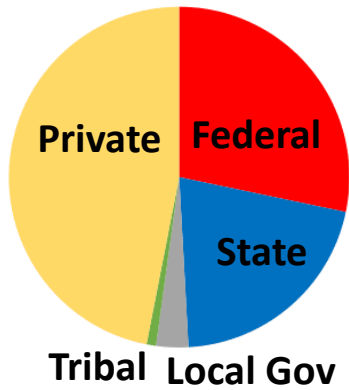
1.  United States	495,141 (86.13%)
2.  Canada	36,420 (6.34%)
3.  India	5,965 (1.04%)
4.  United Kingdom	5,082 (0.88%)
5.  Philippines	3,486 (0.61%)
6.  Nigeria	2,043 (0.36%)
7.  Australia	1,872 (0.33%)
8.  Germany	1,508 (0.26%)
9.  France	1,390 (0.24%)
10.  Mexico	1,178 (0.20%)

1. Montana	102,627 (19.71%)
2. Colorado	61,448 (11.80%)
3. California	35,036 (6.73%)
4. Arizona	34,519 (6.63%)
5. Washington	34,212 (6.57%)
6. Utah	25,583 (4.91%)
7. Texas	20,950 (4.02%)
8. Illinois	14,198 (2.73%)
9. Idaho	13,398 (2.57%)
10. New York	12,811 (2.46%)

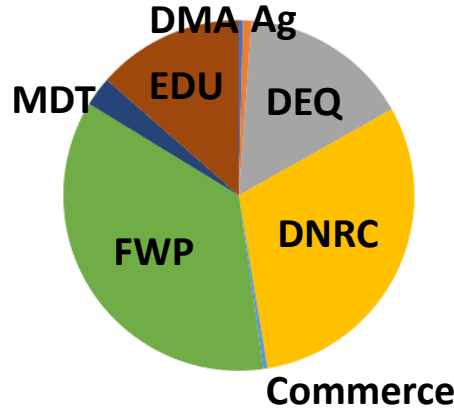


# Map Viewer Information Use

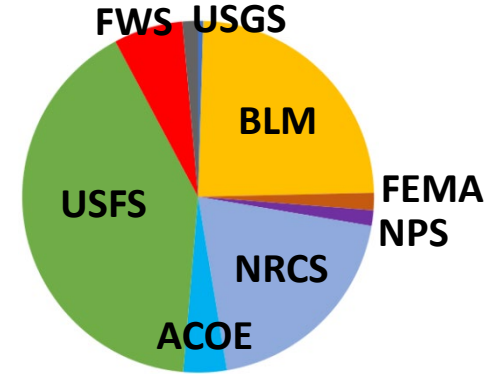
## Overall Users



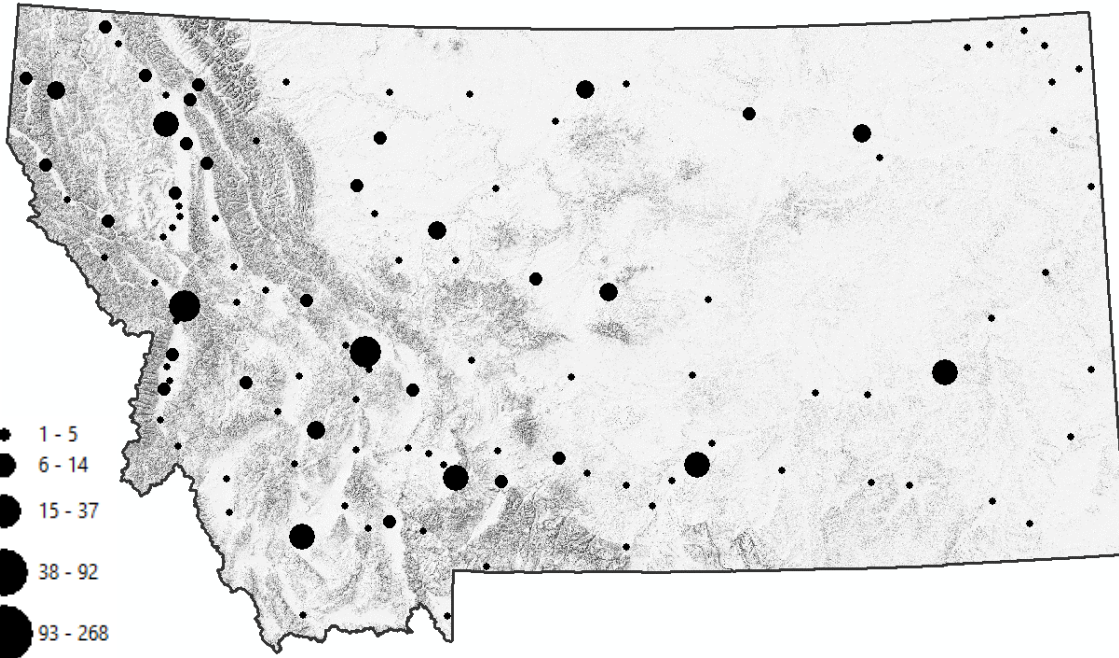
## State Users



## Federal Users



## Spatial Distribution & No. of Agency Accounts














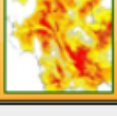
Agency	No. of Accounts
USFS	257
FWP	186
DNRC	158
BLM	152
NRCS	124
DEQ	81
University	70
County/Weed/CDs	61
USFWS	40
USACOE	25
MSL	20
Tribal/BIA	20
MDT	14
FEMA	10
NPS	9
USGS	9
City	7
Dept of Ag	4
APHIS	3
Dept Military Affairs	2
DOC	2



# Map Viewer Training Videos

Which Task would you like?

New to Map Viewer? [Watch this video](#) You can find more videos under the Help menu on the main toolbar

Primary Tasks	Species Related	Ecological Information	Misc
 <b>Environmental Summary</b> ?	 <b>Species of Concern Occurrences</b> ?	 <b>Land Cover</b> ?	 <b>Land Management</b> ?
	 <b>Point Observations</b> ?	 <b>Wetland and Riparian Mapping</b> ?	 <b>Reports and Documents</b> ?
	 <b>Single Species Overview</b> ?		 <b>Photos</b> ?
	 <b>Structured Surveys</b> ?		
	 <b>Generalized Observations</b> ?		
	 <b>Habitat Suitability for Biodiversity</b> ?		

Task Description

**Environmental Summary** ▶ Intro Video ? Step by Step (PDF)

This tool provides a host of information based on your custom project area. Draw a polygon and get summaries of all the data we have for your area of interest.

Reports include:

- Native species summary
- Structured surveys
- Land cover summary
- Wetland and riparian summary
- Land management summary
- Biological reports
- Invasive and pest species summary

## Youtube Playlist of Training Videos

<https://youtube.com/playlist?list=PLRaydtZpHu2rAl8P7VJUIoV4zoTu7eQFG>

## New Video on How to Interpret and Use Environmental Summary Reports

<https://www.youtube.com/watch?v=fbzUCGxrPD0&list=PLRaydtZpHu2rAl8P7VJUIoV4zoTu7eQFG&index=3>



# New Brochure to Support Timber Sourcing that Meets Sustainable Forestry Initiative Certification Requirements

## Accessing and Using Information on Forest Species and Habitats

### G1-G2 Species Location Tool

Supporting SFI Certified Timber Sourcing

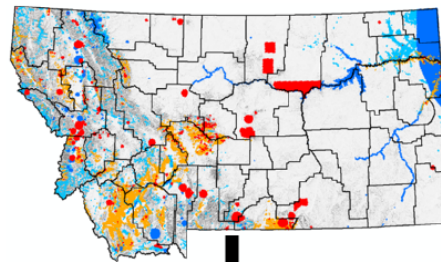


<https://arcg.is/0Wv1ui>

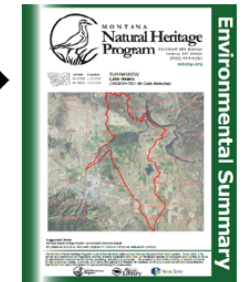
The Montana Natural Heritage Program developed this tool to support timber sourcing which meets Sustainable Forestry Initiative (SFI) certification requirements in not impacting species with global conservation status ranks of G1 (critically imperiled) or G2 (imperiled) as assigned by NatureServe. This mapping application displays both the documented presence of G1-G2 species as well as areas they are possibly present. Species are split into one

### Suggested Information Workflow for G1-G2 Species

Use G1-G2 Species Location Tool



**Terrestrial G1-G2 in Landscape**  
Request Environmental Summary Report



**No G1-G2 in Landscape OR Aquatic G1-G2 in Landscape**  
Move forward follow SMZ setbacks



**G1-G2 in local area**

**G1-G2 not in local area**  
Move Forward

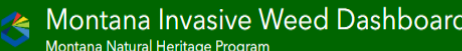
**Overlap Present**  
1. Alter timing  
2. Modify project area extent  
3. Consult biologist on mitigation

**Identify habitat and timing overlap with project activities**  
Field Guide & Biologist

**No Overlap**  
Move Forward

# Montana Weed Dashboard

<http://tinyurl.com/2krv3w9r>

 Montana Invasive Weed Dashboard Montana Natural Heritage Program	County None	USFS Boundary None	USFS Ranger District None	BLM Office None	Tribal Boundary None	Scientific Name None	Common Name None	State-listed Nox Weeds None	County-listed Nox Weeds None
--	----------------	-----------------------	------------------------------	--------------------	-------------------------	-------------------------	---------------------	--------------------------------	---------------------------------

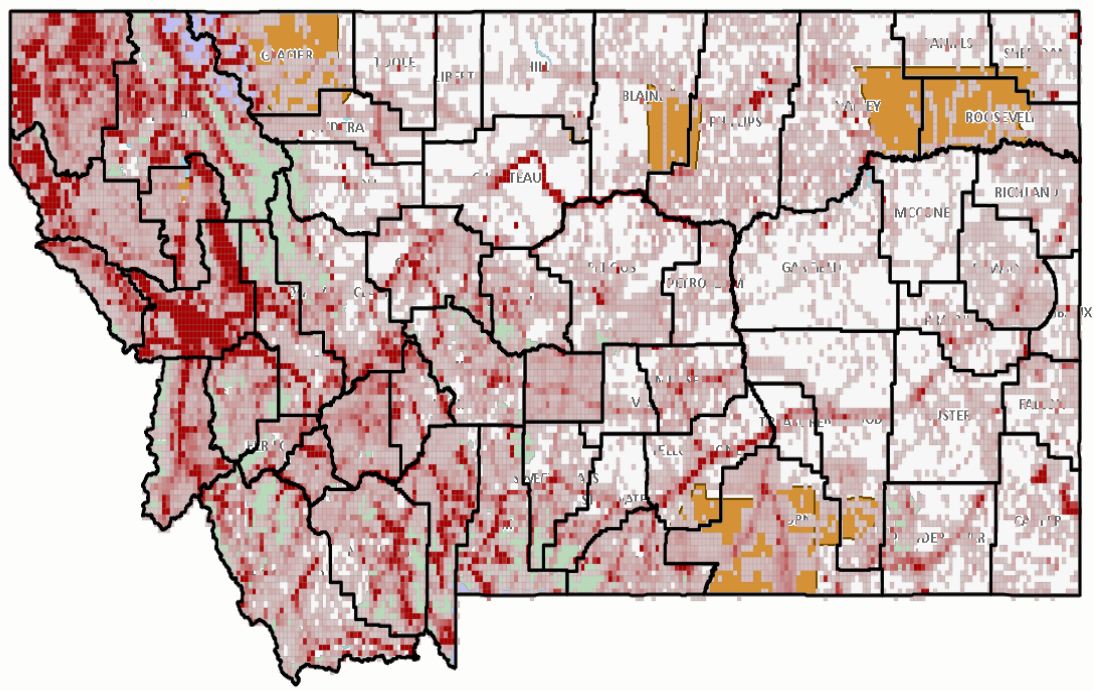
County

Montana Invasive Weed Observations

aggregateCount

- > 100
- 50
- < 0

Obs Density Map: displays the relative density of observations as recorded in MTNHP databases. At the upper right of the map screen you can turn on a legend, turn on and off overlaying map layers, and select from a variety of base maps. The home button will zoom the map to the statewide view. To see details associated with observations use the MTNHP's Map Viewer web application.



100 km  
50 mi

Montana State Library

Obs Density Map | Nox Weed Risk Map | Species Obs Summary | Reported Obs by Year: | Data Source by Year

Powered by Esri

Total Observations

# 608,820

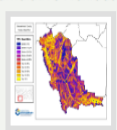
Last update: 2 minutes ago

Total Species

# 491

Last update: 2 minutes ago

- Field Guide
- Map Viewer
- Species Snapshot
- Predicted Habitat Suitability Models
- County Dashboard
- Statewide Cumulative Noxious Weed Risk
- County-scaled Cumulative Noxious Weed Risk Image



About

# Audit Reports eMailed Directly to Agency Staff



## New Weed Observations - by USFS Ranger District

These noxious weed observations were added to the MTNHP database in the last quarter. Observations are organized by USFS Ranger District. **Actual observation dates may be before this period.** See these and other records in <https://mtnhp.org/mapviewer/>

Rerun this report: <http://intranet.nhp.mt.gov/SQLPRDNightlyAuditRunOne.asp?i=178>

250 records in this report This report runs every **First of Quarter** morning

RANGER_DISTRICT	MT_Weed_Status	Field_Guide_Link	MapViewLink	S_Com_Name	Num_Obs_Last_Quarter_in_USFS_RD	Tot_Obs_For_USFS_RD	Tot_Obs_For_State
Beaverhead-Deerlodge National Forest, Butte Ranger District	State Listed Weed: N2B	<a href="#">PDAST2E090</a>	<a href="#">Cirsium arvense</a>	Canada Thistle	4	229	54018
Beaverhead-Deerlodge National Forest, Butte Ranger District	County Listed Only	<a href="#">PDAST1S040</a>	<a href="#">Carduus nutans</a>	Musk Thistle	3	73	10738
Beaverhead-Deerlodge National Forest, Butte Ranger District	State Listed Weed: N2B	<a href="#">PDAST1Y140</a>	<a href="#">Centaurea stoebe</a>	Spotted Knapweed	1	1282	144060

## New Invasive Species - Quarterly Report

These non-native species observations were added to the MTNHP database in the last quarter. Observations are organized by County.

See these and other records in <https://mtnhp.org/mapviewer/>

Rerun this report: <http://intranet.nhp.mt.gov/SQLPRDNightlyAuditRunOne.asp?i=57>

1278 records in this report This report runs every **First of Quarter** morning

County	MT_Status	Field_Guide_Link	S_Com_Name	Num_Obs_Last_Quarter	Tot_Obs_For_County	Tot_Obs_For_State
Beaverhead	R3	<a href="#">PMPOA151H0</a>	Cheatgrass	3	450	10203
Beaverhead	N2B	<a href="#">PDAST1Y140</a>	Spotted Knapweed	3	6232	144587
Beaverhead	N2B	<a href="#">PDAST2E090</a>	Canada Thistle	23	2971	54589

## New Weeds Observations >2km from Existing Obs

These noxious weed observations were added to the MTNHP database in the last week and are >2km from all previous observations (if mapped precisely). **Actual observation dates may be before this period.**

See these and other records in <https://mtnhp.org/mapviewer/>

Rerun this report: <http://intranet.nhp.mt.gov/SQLPRDNightlyAuditRunOne.asp?i=172>

1 records in this report This report runs every **Sun** morning

Field_Guide_Link	S_Com_Name	MT_Status	Obs_ID	Location	Latitude	Longitude	Distance_fromOldObs_km	Date_Added	Date_Observed
<a href="#">PMPOT03060</a>	Curly-leaf Pondweed	N2B/AIS	2314213	Flathead Lake   FWP WaterbodyID: 39716   FWP SectionID: 42345848	47.86318	-114.27468	5.4	2024-01-25	2023-10-10

# Challenges Meeting Partner Info Needs

## State Authority, SB382, & Habitat/Weed Information



1. Please describe your organizations need for up-to-date and accurate information on the distribution and status of invertebrate species in Montana

(Single Choice)

58/60 (97)% answered

Not important to us 7/58 (12)%

This information is necessary for us, but is not as important as information on vertebrate and vascular plant species 22/58 (38)%

This information is as important, or more important, to us as information on vertebrate and vascular plant species 29/58 (50)%

2. Please describe your organizations need for up-to-date and accurate information on the distribution and status of vegetation communities in

Montana (Single Choice)

57/60 (95)% answered

Not important to us 2/57 (4)%

This information is necessary for us, but is not as important as information on individual species 17/57 (30)%

This information is as important, or more important, to us as information on individual species 38/57 (67)%

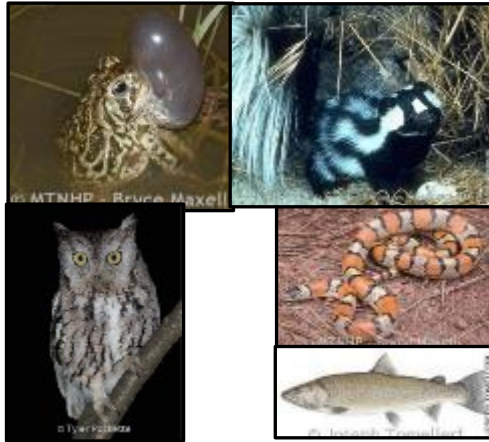
4. To meet your organization's information needs, would you encourage the MTNHP to hold a summit of key funding partners to discuss how to collaboratively fund Invertebrate Zoologist and Vegetation Ecologist positions to focus on maintaining up-to-date and accurate information on the distribution and status of invertebrate species and habitats in Montana? (Single Choice)

53/60 (88)% answered

Yes 50/53 (94)%

No 3/53 (6)%

# Major Void for Invertebrate Information



**652 VERTEBRATES**



**191 Molluscs**



**6,858 Arthropods → 12-15,000??**



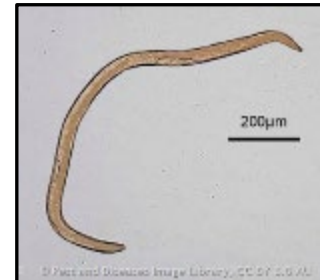
**Pollinators!**



**36 Annelids**



**12 PLATYHELMINTHES**



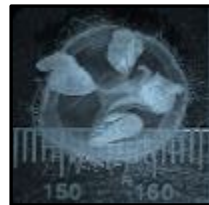
**31 Nematodes**



**4 PORIFERANS**



**9 ROTIFERS**



**2 CNIDARIA**



**23 Tardigrades**

**NEMATOPHORA?  
BRYOZOA?  
NEMERTEA?**

**ENTOPROCTA?  
GASTROTRICHA?**

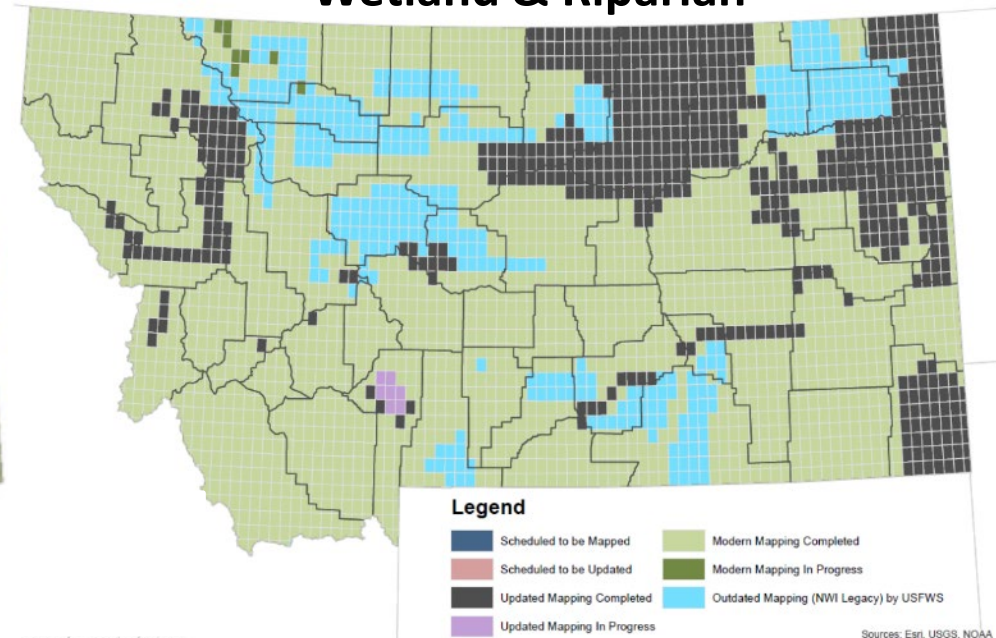
**~8,000 SPECIES...A LONG WAY TO GO!**

# Maintaining Habitat & Weed Products with a Vegetation Ecologist

Land Cover



Wetland & Riparian

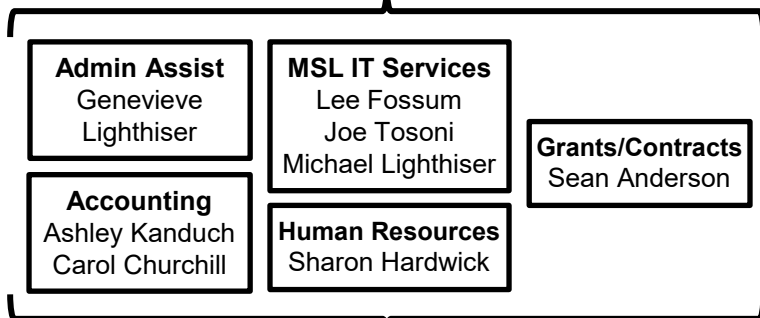


- Changes are coming fast and we aren't keeping up
- We need to map habitats in real time
- We need to predict what future habitats will be to facilitate adaptation and use the Resist – Adapt – Direct framework for future habitats
- Wetlands still need to be mapped in 13% of Montana
- Weed information products are completely dependent on annual grant funding applications

# Montana Natural Heritage Program Organization Chart



## MSL HR, IT, Business, Administrative Support



Montana State Library Commission

Jennie Stapp  
State Librarian

Evan Hammer  
Digital Info Administrator

Bryce Maxell  
Program Coordinator

Contracted Services

Land Cover  
UM Spatial Analysis Lab



Wetland Mapping  
UM O'Connor Center RMW



Avian Specialist  
MT Audubon Bo Crees



Transition to NVC & Botanical Species Modeling  
Scott Mincemoyer

## Information Services Program

Braden Burkholder  
Data Systems & Sciences Lead

Dave Ratz  
Web Projects Manager

Scott Blum  
Biologist / Info Specialist

Kyle Kaskie  
Biological Data Scientist

Sherry Berrin  
Biological Data Assistant

## Zoology Program

Dan Bachen  
Senior Zoologist

Alexis McEwan  
Asst Zoologist / Bat Acoustic Data Analyst

Empty  
Invertebrate Zoologist

## Botany Program

Andrea Pipp  
Program Botanist

Kenda Herman  
Botany Data Assistant

## Ecology Program

Empty  
Vegetation Ecologist



# Questions?

**Bryce Maxell**

**[bmaxell@mt.gov](mailto:bmaxell@mt.gov)**

**(406) 444-3989**

