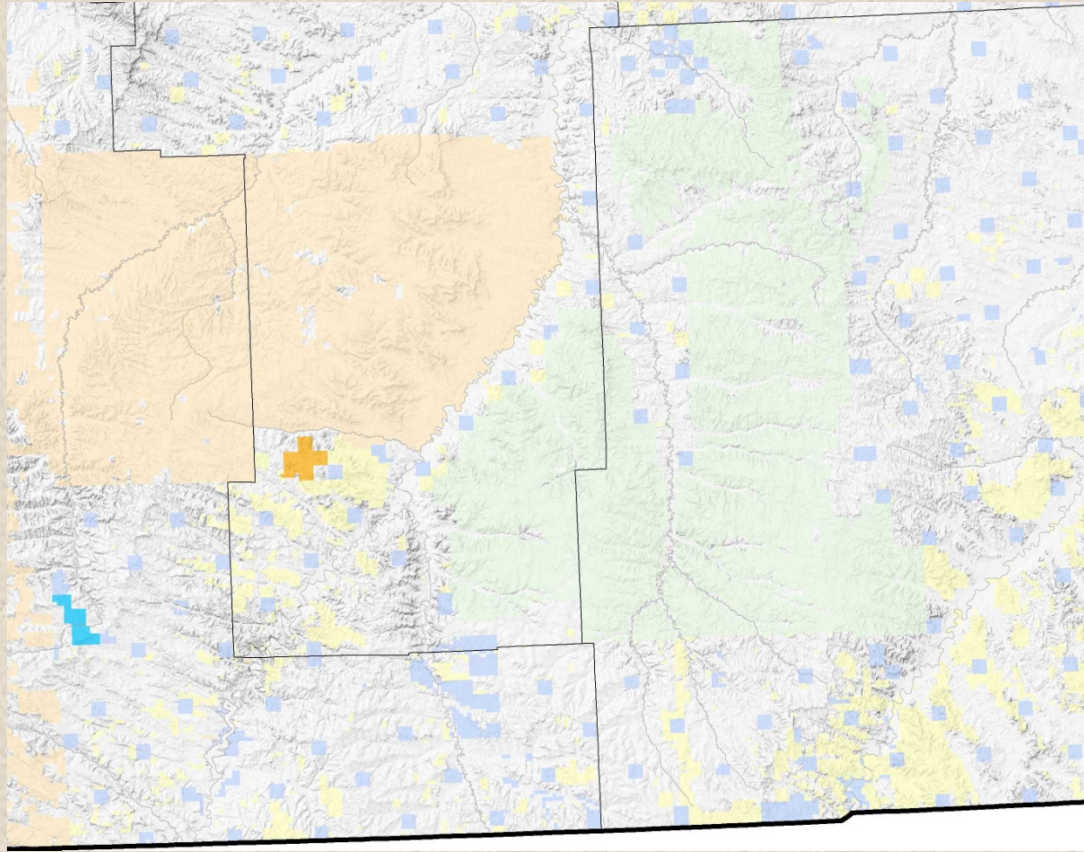


# Overview of Plan for Herpetological Surveys within Area of High Potential for CBNG Development



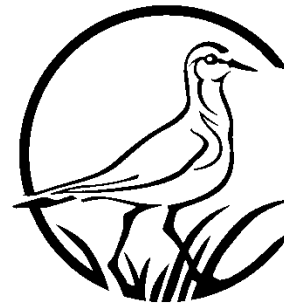
**Bryce A. Maxell**

**Senior Zoologist**

**Montana Natural Heritage Program**

**(406) 444-3655**

**bmaxell@mt.gov**



MONTANA  
**Natural Heritage  
Program**

<http://mtnhp.org>



# Amphibians in Project Area

**Tiger Salamander**



Montana Species of Concern = **SOC**

**Plains Spadefoot**



**Great Plains Toad**



**Woodhouse's Toad**



**Boreal Chorus Frog**



**Northern Leopard Frog**



**American Bullfrog**



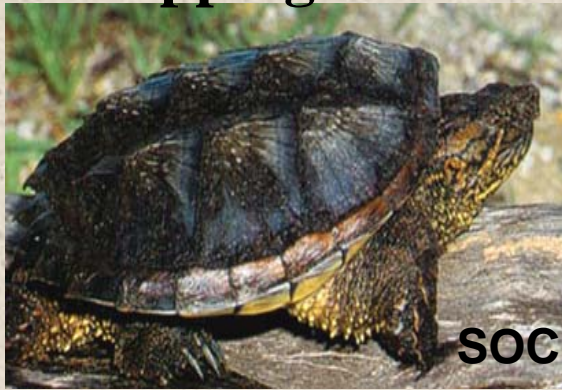
**Exotic!**  
Introduced at  
at least one  
location in  
region.  
Potential for  
CBNG to  
enhance  
spread.



# Turtles and Lizards In Project Area

Montana Species of Concern = **SOC**

**Snapping Turtle**



**Painted Turtle**



**Spiny Softshell**



**Greater Short-horned Lizard**



**Common Sagebrush Lizard**





# Snakes in the Project Area

Western Hog-nosed Snake



Eastern Racer



MT Species of Concern = **SOC**

Gophersnake



Milksnake



Terrestrial Gartersnake



Plains Gartersnake



Common Gartersnake

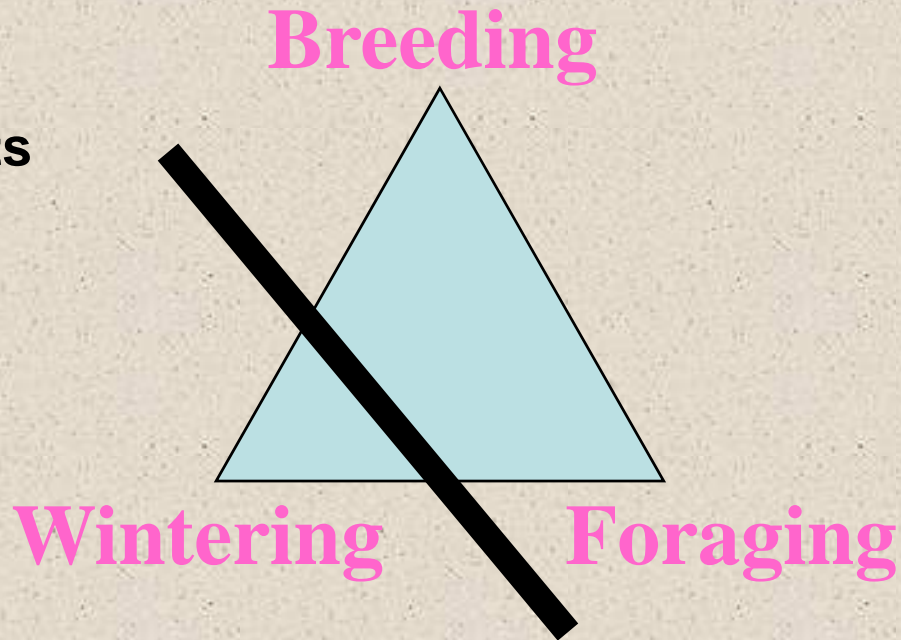


Western Rattlesnake



# Managers Need To Consider

## 1. Use of Seasonal Habitats



## 2. Potentially Long Distance Migrations Between Seasonal Habitats

Ex 1. Some toads travel 12 km between breeding and overwintering areas

Ex 2. Some snakes travel 17 km between summer foraging and overwintering areas.

## 3. Effects of Roads, Vehicle Traffic, Powerlines, etc. that Bisect Seasonal Habitats

## 4. Baseline Information on Distribution and Status – currently have for Ashland District of Custer Forest, but generally lacking elsewhere in region.



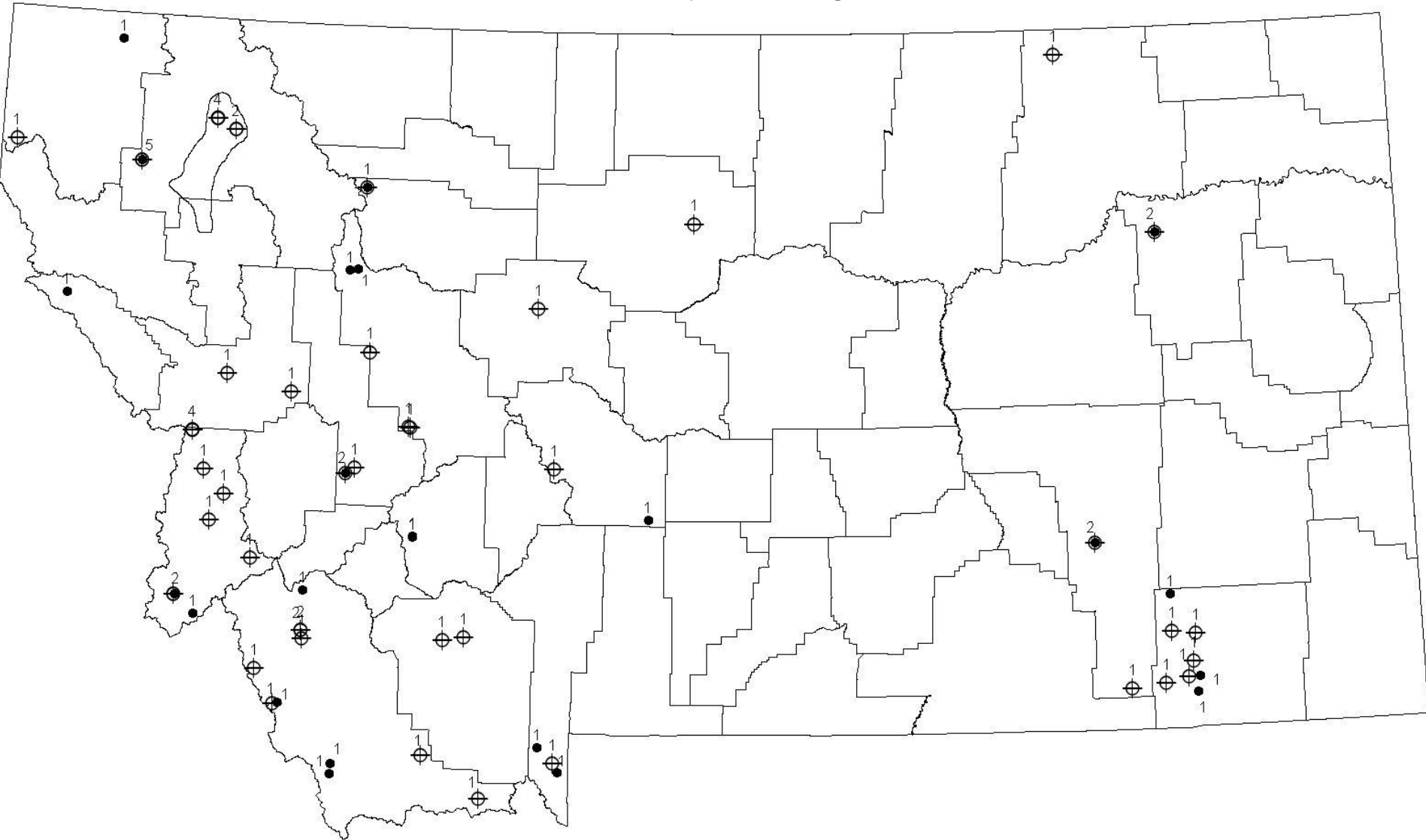
# Chytrid Fungus is Present and Iridovirus is Likely Present in Area

Positive = ●

Negative = ⊕

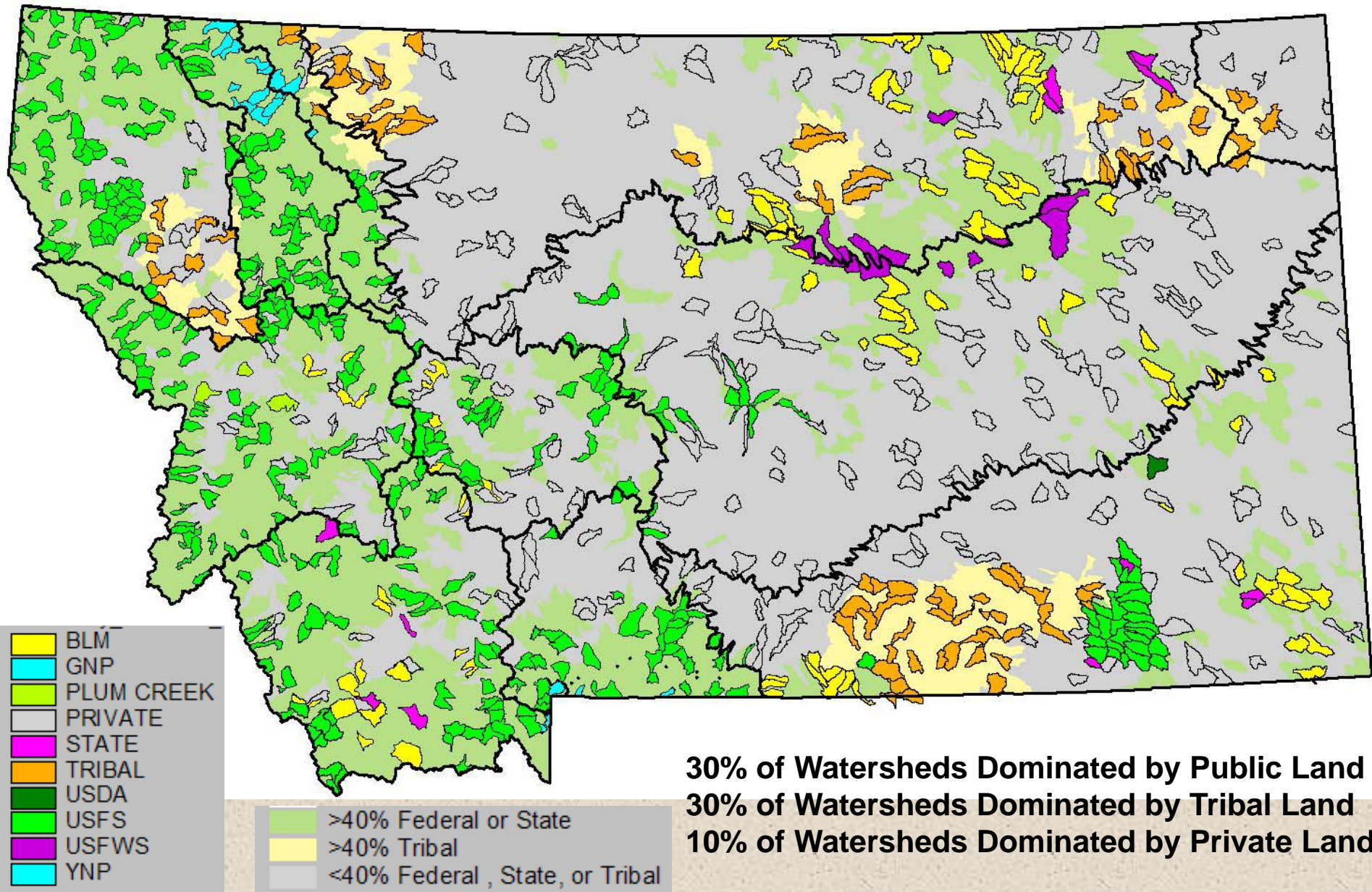
Sample sizes are listed above symbols

## Known Distribution of Chytrid Fungus in Montana



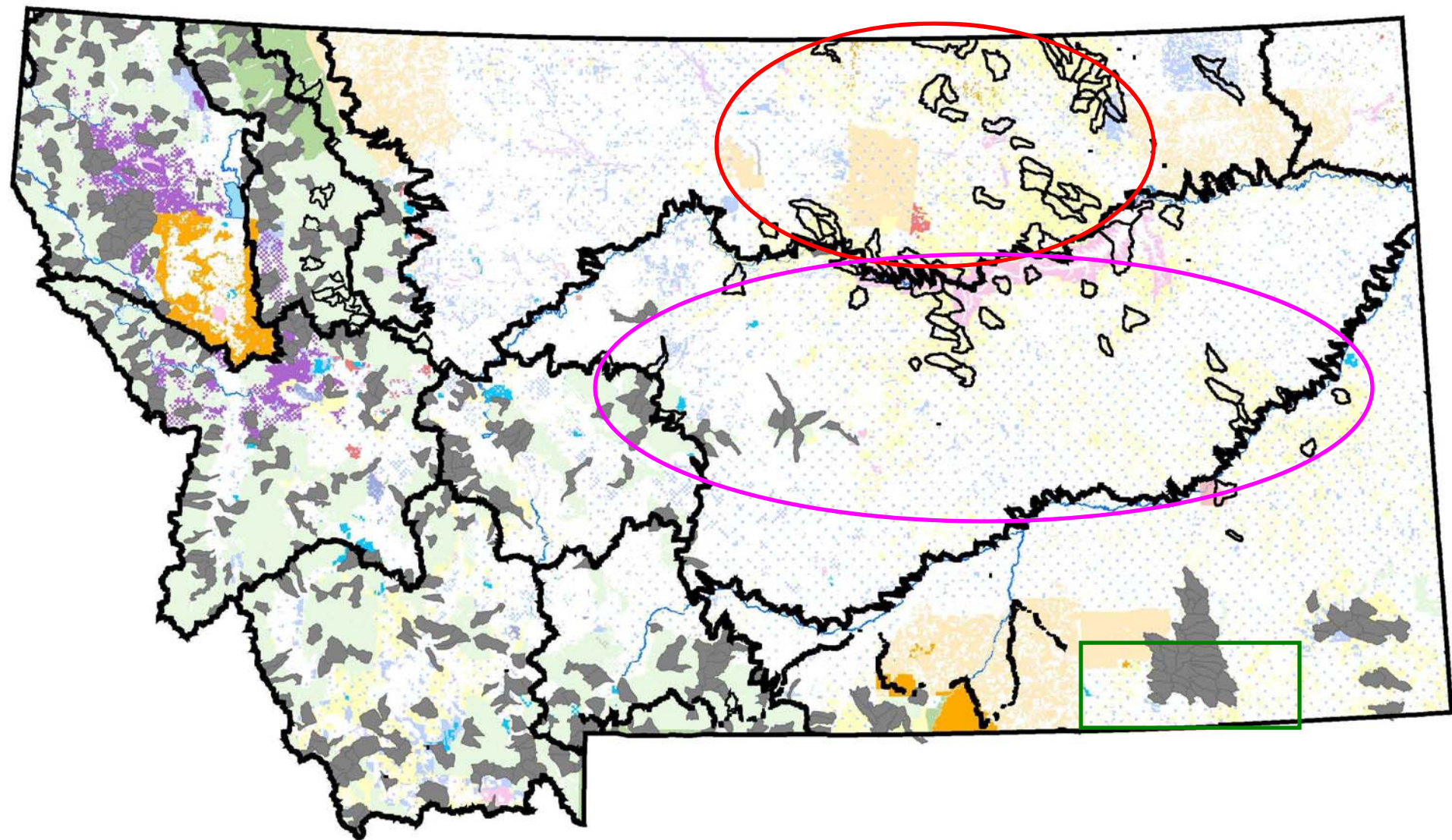
# Montana Amphibian Inventory Sampling Scheme

Geographic Strata – Ownership Strata – Randomly Selected Watersheds





# Montana Amphibian Inventory Status

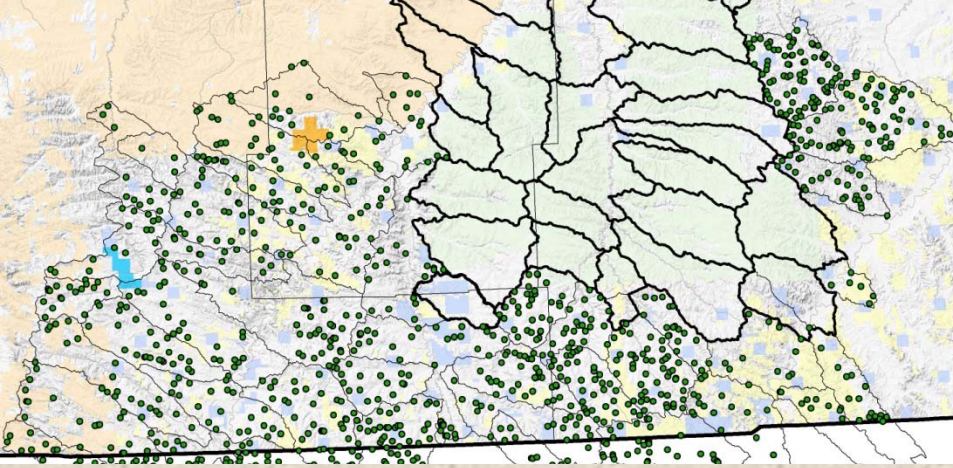


- 9,000 standing water bodies surveyed
- 8,500 species records
- 1 year of surveys remain in eastern MT

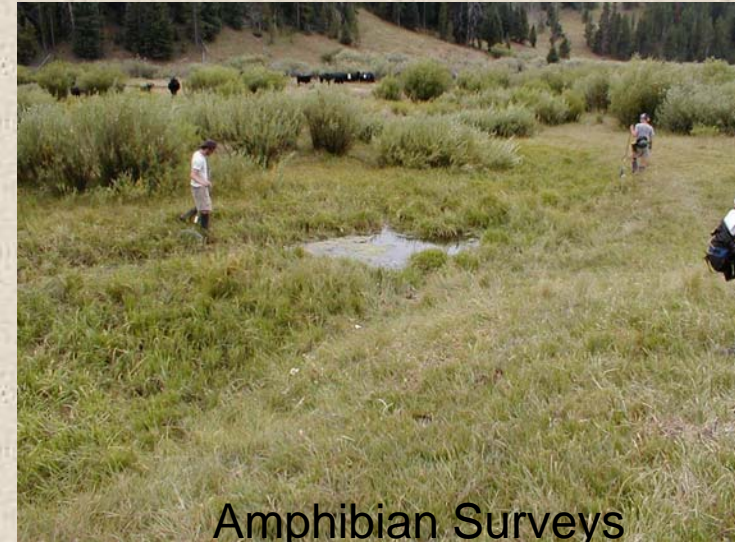
- Grey watersheds and those in red circle = completed
- Green = Focus of surveys in 2008 (Sites already mapped)
- Pink = Focus of surveys in 2009



# Survey Approach



- Map all lentic sites (see above)
- Survey all (or as many as possible) lentic sites in each watershed (both public and private).
- Timed visual encounter and dipnet surveys of shallow water lentic habitats to yield site occupancy rates and relative abundance per unit time estimates
- Basic water quality measures at sites
- Spring nocturnal calling surveys



Amphibian Surveys



Reptile Surveys

- Timed visual encounter surveys of rock outcrops and south facing slopes to yield site occupancy rates and relative abundance per unit time estimates
- Road surveys in spring and fall



# **Example Products For Managers**



# Information on Apparent Occupancy and Breeding Rates for Regional Status

Species	Number and Percent of Watersheds That Were Occupied <sup>3</sup> (N = 21)	Number and Percent of Watersheds Where Breeding Was Detected <sup>3</sup> (N = 19)	Number and Percent of Sites Containing Water That Were Occupied <sup>4</sup> (N = 205)	Number and Percent of Sites Containing Water Where Breeding Was Detected <sup>4</sup> (N = 205)
Long-Toed Salamander ( <i>Ambystoma macrodactylum</i> )	15 71% (95% CI = 55% - 88%)	15 79% (95% CI = 63% - 95%)	59 29% (95% CI = 23% - 35%)	59 29% (95% CI = 23% - 35%)
Rocky Mountain Tailed Frog <sup>5</sup> ( <i>Ascaphus montanus</i> )	5 24% (95% CI = 8% - 40%)	4 21% (95% CI = 5% - 37%)	10 4.9% (95% CI = 1.9% - 7.8%)	6 3% (95% CI = 0.6% - 5.2%)
<b>Western Toad</b> ( <i>Bufo boreas</i> )	8 38% (95% CI = 20% - 56%)	2 10.5% (95% CI = 0% - 23%)	8 3.9% (95% CI = 1.3% - 6.6%)	3 1.5% <u>(95% CI = 0% - 3.1%)</u>
Pacific Treefrog <sup>6</sup> ( <i>Pseudacris regilla</i> )	2 9.5% (95% CI = 0% - 20%)	2 10.5% (95% CI = 0% - 23%)	2 1% (95% CI = 0% - 2.3%)	2 1% (95% CI = 0% - 2.3%)
Columbia Spotted Frog ( <i>Rana luteiventris</i> )	18 86% (95% CI = 73% - 99%)	15 79% (95% CI = 63% - 95%)	96 47% (95% CI = 40% - 54%)	52 25% (95% CI = 19% - 31%)
Terrestrial Gartersnake <sup>7</sup> ( <i>Thamnophis elegans</i> )	11 52% (95% CI = 34% - 71%)	NA	27 13% (95% CI = 9% - 18%)	NA
Common Gartersnake <sup>7</sup> ( <i>Thamnophis sirtalis</i> )	7 33% (95% CI = 16% - 51%)	NA	33 16% (95% CI = 11% - 21%)	NA
Non-indigenous <sup>7</sup> Salmonid Fishes	13 68% (95% CI = 51% - 86%)	NA	39 19% (95% CI = 14% - 24%)	NA



# Watershed Reports

## Carpp Creek - (HUC ID = 4\_028 & ICBEMP HUC ID =170102021002)

### Map Legend

Black Cross = Potential lentic sites surveyed, but providing no breeding or overwintering habitat and not worth future survey due to reasons indicated in notes.

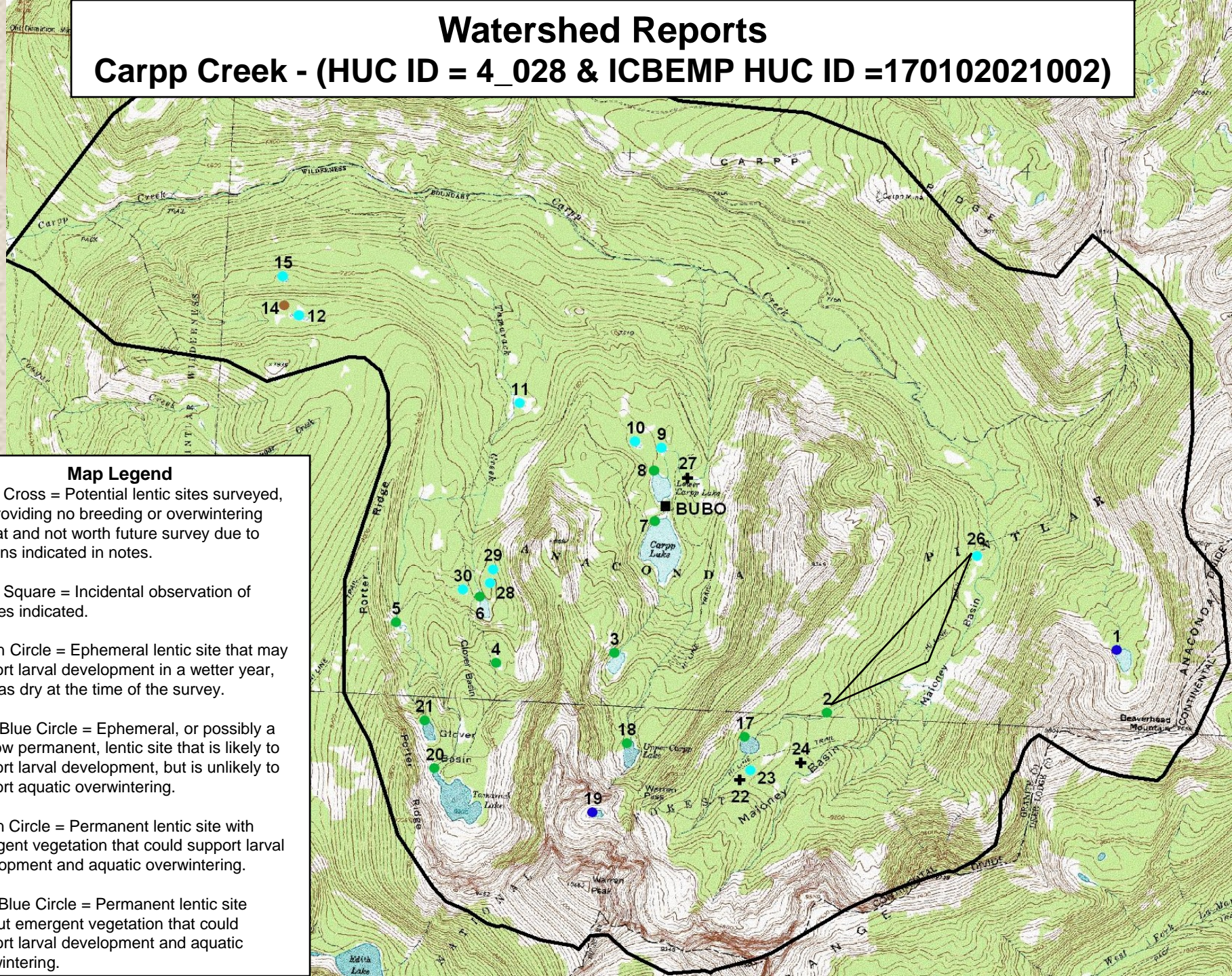
Black Square = Incidental observation of species indicated.

Brown Circle = Ephemeral lentic site that may support larval development in a wetter year, but was dry at the time of the survey.

Light Blue Circle = Ephemeral, or possibly a shallow permanent, lentic site that is likely to support larval development, but is unlikely to support aquatic overwintering.

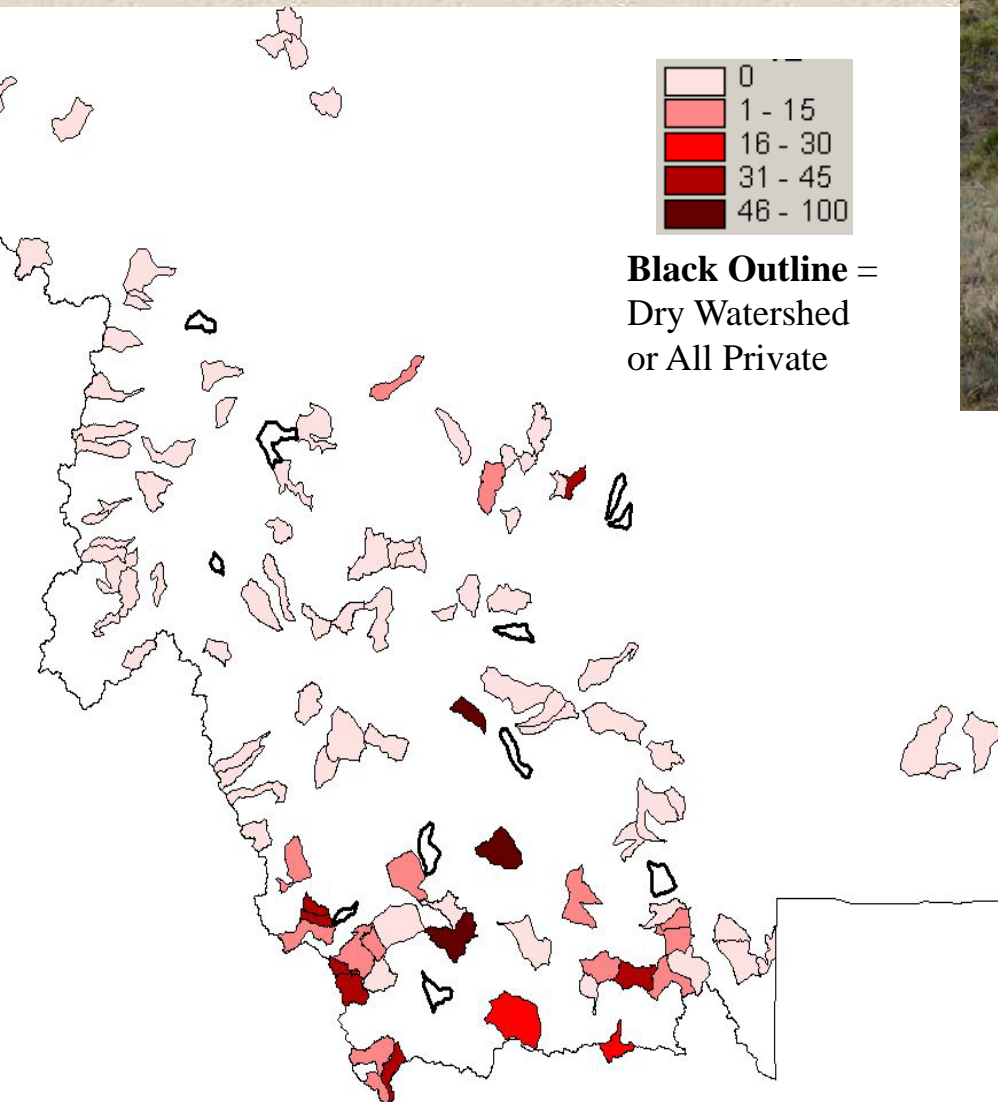
Green Circle = Permanent lentic site with emergent vegetation that could support larval development and aquatic overwintering.

Dark Blue Circle = Permanent lentic site without emergent vegetation that could support larval development and aquatic overwintering.





# Percent of Lentic Sites Capable of Supporting Amphibian Reproduction Heavily Impacted by Cattle





**Observations and Site Photos are  
Viewable on MNHP  
TRACKER Website**

<http://nhp.nris.state.mt.us/Tracker/NHTMap.aspx>

**Species Accounts Accessible on  
MNHP and MT FWP's  
Montana Field Guide**

<http://fieldguide.mt.gov/>

# View Tabular Data, Summary Graphs, & Different Map Layers

NATURAL HERITAGE TRACKER
Home File Edit View Tools Help Sign Out
Maxell, Bryce

**Query / Reports**

Search by Animals

- Mammals
- Birds
  - Northern Flicker (Red-sha...
  - Northern Flicker (Yellow...
  - Northern Goshawk**
  - Northern Harrier
  - Northern Hawk Owl
- Reptiles
- Amphibians
- Fish
- Invertebrates

Search by Species Status

search reset

**Add Observations**

**Photo Viewer**

**Map Layers**

- Map Layers
  - Towns
  - County
  - LL / QLL / QLL
  - Highways
  - Township and Range
  - Lakes/Streams
  - Public Lands
    - BLM
    - BOR (BuRec)
    - USFWS
    - NPS
    - USFS
    - Other USDA
    - CoE & DoD
    - State Trust
    - DFWP
    - Univ & Inst
    - County & City
    - BIA Trust
    - Tribal
    - Plum Creek
    - Other Private
    - Priv Conservn
- Base Map
  - Air Photos (color 2005)
  - Air Photos (b/w)
  - Topographic (hillshade)

Expand All Collapse All

Fade NoFade

## Northern Goshawk - Points

**Legend / Report Selector**

- General Distribution
- Breeding Direct
- Breeding Indirect
- Transient
- Overwintering Confirmed
- Overwintering Not Confirmed
- Bird Points
- Pending Points

**Tabular Report**

### Northern Goshawk summary for selected extent

[Link to Field Guide](#)

Verified Sightings		QLL
Earliest:	Feb 12	14B
Latest:	Nov 25	28D
<b>B</b>	<b>b</b>	<b>t</b>
<b>W</b>	<b>w</b>	<b>?</b>
12	36	15
60	52	0
		180

**Observation Records**

**Survey Records**

Latitude = 46.90063 to 47.83670  
Longitude = -113.30164 to -112.03094

Group Header		sub header					
TYPE	Hilite	SCIENTIFIC NAME	COMMON NAME	ECO RANK	OBS. DATE	FIELDA	FIELDB
Bird	Hilite	Habeas corpus	Bobolink	G4 S2B	02/04/2007	blah	blah
Bird	Hilite	Habeas corpus	Bobolink	G4 S2B	02/04/2007	blah	blah
Bird	Hilite	Habeas corpus	Bobolink	G4 S2B	02/04/2007	blah	blah
Bird	Hilite	Habeas corpus	Bobolink	G4 S2B	02/04/2007	blah	blah
Bird	Hilite	Habeas corpus	Bobolink	G4 S2B	02/04/2007	blah	blah
Bird	Hilite	Habeas corpus	Bobolink	G4 S2B	02/04/2007	blah	blah



# Viewing Georeferenced Digital Photos in Context of Animal Observations and Aerial Photos

The screenshot displays the 'NATURAL HERITAGE TRACKER' web application. The interface includes a top navigation bar with 'Home', 'File', 'Edit', 'View', 'Tools', 'Help', and 'Sign In'. A left sidebar contains menu items: 'Query / Reports', 'Add Observations', 'Photo Viewer', 'Photosets' (with 'Amphibian Inventory Photos' checked), 'Map Layers', and 'Search for Location'. The main area features a satellite map with four georeferenced photo locations marked with yellow camera icons and IDs: 7038064, 7038065, 7038018, and 7038066. A large inset photo on the right shows a landscape with a pond, green grass, and trees, corresponding to the location of photo 7038018. Below the map is a 'Tabular Report' window titled 'PHOTOS' with the following data:

Photo ID	Description	Photo Date	View Photo
7038018	Pond, 3.3 miles NE of Monument Peak	8/10/2005	<a href="#">View Photo: 7_038_018.jpg</a>
7038064	Pond, 2.6 miles NE of Haystack Peak	8/10/2005	<a href="#">View Photo: 7_038_064.jpg</a>
7038065	Pond, 2.4 miles NE of Haystack Peak	8/10/2005	<a href="#">View Photo: 7_038_065.jpg</a>
7038066	Pond, 2.6 miles NE of Haystack Peak	8/10/2005	<a href="#">View Photo: 7_038_066.jpg</a>

Coordinates are shown in the bottom right: Lat: 45.22395, Long: -110.17578. The bottom of the screen shows a Windows taskbar with an 'Internet' browser icon.

# Greater Short-horned Lizard - *Phrynosoma hernandesi*

Short-horned Lizard, Dorsal View - *Phrynosoma hernandesi*



***Species of Concern***

Global Rank: [G5](#)

State Rank: [S3](#)

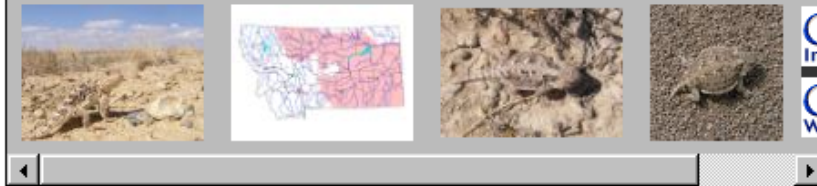
**Agency Status**

USFWS: [none](#)

USFS: [SENSITIVE](#)

BLM: [SENSITIVE](#)

CFWCS Tier: [2](#)



## General Description

The short-horned lizard body is broad and flattened. The back is spiny, with an especially noticeable single row of scales fringing each side of the body. The spines at the back of the head are about as long as wide at the base. The coloration of the back usually blends cryptically with the soil and can vary somewhat from region to region and at single localities. The maximum total length is about 15 centimeters. In males, there is a swelling at the base of the tail, and the tail is proportionally longer than in females. Newborn young have the broad and flattened body shape, and are about 2.0 to 2.5 centimeters snout-vent length and up to 3.8 centimeters by the time of first hibernation.

## Diagnostic Characteristics

The broad, flattened body separates this lizard from the other three lizard species regularly documented in Montana, and the range overlaps only with the sagebrush lizard. The pigmy short-horned lizard has been reported from extreme southwestern Montana, in the Centennial Valley, Beaverhead County (Maxell et al. 2003), but adults of this species are much smaller than short-horned lizards, the small horns on the back of the head project almost vertically rather than horizontally, and they lack the wide notch between the horns on the back of the head that gives the head of short-horned lizards a "heart-shaped" appearance when viewed from above (St. John 2002).

## Migration

No information currently exists regarding the migration patterns of short-horned lizards in Montana.