



MONTANA
**Natural Heritage
Program**

<http://mtnhp.org>



**Montana's source for information on animals, plants,
and habitats, emphasizing those of conservation concern.**

2009 Annual Report

This report summarizes program activities, data products, and data delivery highlights during the 2009 calendar year.

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The [Montana Natural Heritage Program](#) was established by the 1983 Montana State Legislature as part of the [Natural Resource Information System](#) at the [Montana State Library](#) for acquisition, storage, and retrieval of data relating to the flora, fauna, and biological community types of Montana in order to make that information available to local, state, and federal agencies and the general public ([Montana Code Annotated 90-15](#)).

The program has been in existence since 1985 and currently operates under the [Office for Research and Sponsored Programs](#) at the [University of Montana](#) as a contract with the [Montana State Library](#).



Director's Report

Bryce Maxell – Interim Director / Senior Zoologist - bmaxell@mt.gov



Susan Rae Crispin (1956-2009)

The past year was a challenging one for the Montana Natural Heritage Program. On November 15th, Sue Crispin, MTNHP's Director for the past 11 years, passed away after a six-year struggle with breast cancer. On December 5th, Sue's life and 29 years of service with the Natural Heritage Network were honored in a memorial service attended by family, friends, and co-workers from across North America. Sue was a leader in the development of the Natural Heritage Network and leaves behind a rich legacy of conservation and stewardship of plant and animal species in both the United States and Canada. Some of the highlights of Sue's accomplishments during her time at the MTNHP include: (1) taking the program from a six figure budget deficit and skeleton staff to one on more stable financial footing with an expanded staff to better meet the needs of our partners; (2) greatly enhancing the program's web presence so our information can be more readily accessed by partners and the general public; (3)

overseeing the transition of the management of the program from The Nature Conservancy to the University of Montana to ensure its long-term health and expand opportunities for collaboration; and (4) hiring committed staff with expertise on databases, geographic information systems, web programming, and the flora, fauna, and biological communities of Montana. Perhaps Sue's most lasting legacy in Montana will be the people she hired. Staff tenure has steadily grown in recent years and 12 individuals now have five or more years of experience in the program: Allan Cox (9 with MTNHP and 11 with NRIS), Paul Hendricks (15), Martin Miller (13), David Stagliano (7), Susan Lenard (7), Coburn Currier (7), Karen Walker (5), Darlene Patzer (5), Scott Mincemoyer (5), Scott Blum (5), Bryce Maxell (5), and Linda Vance (5). See biographies and photos for all staff at: <http://mtnhp.org/about/staff/staff.asp>.

I have served as the Senior Zoologist with the MTNHP for the past 5 years. I will be serving as both the Interim Director and Senior Zoologist while the technical skills, expertise, and likely future turnover of MTNHP staff are evaluated over the next few months to determine the best course of action for rehiring. During this period of transition, we will rely on the collective experience of MTNHP's staff and the continued support of our partners to maintain and expand the information services we provide in the face of challenging economic times. I and other program managers at the MTNHP intend to make annual reports and quarterly email announcements a means of ensuring that our partners are aware of program activities, products, and data delivery services. I look forward to receiving feedback on the program in general, the projects we are working on, and our reports and data delivery applications as we work to make sure that we fulfill our mission to be Montana's source for information on animals, plants, and biological communities. -- Bryce

Special Thanks to Our Partners and Data Contributors in 2009

State Agency Partners

Montana Department of Agriculture
Montana Department of Environmental Quality
Montana Department of Fish, Wildlife, & Parks
Montana Department of Natural Resources and Conservation
Montana Department of Transportation
Montana University System

Tribal Partners

Blackfeet Nation
Chippewa Cree Tribe
Confederated Salish and Kootenai Tribes
Fort Peck Tribe
Northern Cheyenne Tribe

Federal Partners

Bonneville Power Administration
Bureau of Land Management
Natural Resources Conservation Service
U.S. Forest Service
U.S. Fish and Wildlife Service

Private Partners

Avian Science Center
Montana Audubon
Montana Bird Records Committee
NatureServe
Plum Creek Timber Company
The Nature Conservancy

Botany Program Report

Scott Mincemoyer, Botanist - smincemoyer@mt.gov

Montana Plant Diversity

Montana is home to approximately 2,700 documented vascular plant species and varieties; greater than 400 of which have been accidentally or purposefully introduced. In addition, although they are poorly understood relative to vascular plants, there are more than 500 bryophyte (mosses, liverworts, hornworts) and 800 lichen species documented in the state. The Botany Program gathers information on these species and makes it available via reports and web applications such as the [Montana Field Guide](#).



Montana Plant Species of Concern

An [Online Species of Concern Report](#) was created in 2009 to replace hard copy versions and allow status ranks to be updated in a more dynamic manner as new information becomes available. The online report includes an introduction, lists of the Species of Concern and Potential Species of Concern, and summaries of species added to, and removed from, the list. Lichens underwent a major review and revision in 2009 through the establishment and assistance of a Montana Lichen Committee composed of eight expert lichenologists. A major update of the bryophyte list will take place in the first half of 2010. Currently there are 353 vascular plant Species of Concern (13% of the vascular flora), 73 bryophyte Species of Concern (15% of the bryophyte flora), and 32 lichen Species of Concern (4% of the lichen flora).

New Checklist of Montana Vascular Plants

A first edition [Checklist of Montana Vascular Plants](#) is now posted on our website. This product should be a useful tool for field biologists and resource managers tracking the presence and status of Montana's vascular plants.

Botany Database

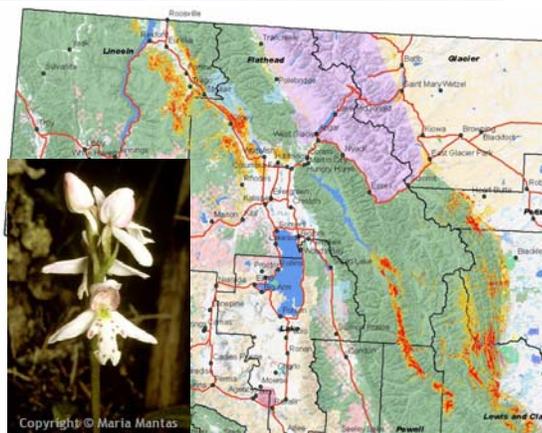
There are now over 6,500 mapped occurrences for Species of Concern supported by over 9,000 observation records. Several hundred new observation records for plant SOC were entered in 2009.

Surveys for Plant Species of Concern

The Botany Program conducts surveys for plant SOC each year with funding from partners. Surveys and monitoring for Montana's three Federally-listed plant species was undertaken with funding provided by the U.S. Fish and Wildlife Service. In 2009, the MTNHP completed a third year of surveys for [Water Howellia \(*Howellia agautilis*\)](#) which resulted in locating 54 new wetlands in the Swan Valley, a 30% increase in the number of known locations. Surveys for [Spalding's Catchfly \(*Silene spaldingii*\)](#) located several new occurrences in the Tobacco Plains and surveys for [Ute Ladies' Tresses \(*Spiranthes diluvialis*\)](#) located one new occurrence in the Upper Missouri River drainage.

Some Current and Upcoming Projects ([see full project list at http://mtnhp.org/about/projects.asp?key=0](http://mtnhp.org/about/projects.asp?key=0))

- [Predictive Models](#) of potentially suitable habitat for individual plant SOC have been completed for 90 species listed as Sensitive by the BLM and are available for download. Models are expected to be completed for approximately 80% of plant SOC by December 2010.
- In 2009, funding from the National Fish and Wildlife Fund allowed us to add significant numbers of new observation records for globally rare plants in Montana and review the global and state ranks for several dozen species.
- We are collaborating with MT-FWP to add plants into the 2011 revision of the state's Comprehensive Fish and Wildlife Conservation Strategy through funding from the Doris Duke Trust and NatureServe.



**Round-leaved Orchis (*Amerorchis rotundifolia*)
Predictive Model**

Zoology Program Report

Bryce Maxell – Interim Director / Senior Zoologist - bmaxell@mt.gov

Montana Animal Diversity

Montana is home to approximately 494 native vertebrate species (302 regularly breeding overwintering, or migrating birds, 105 mammals, 17 reptiles, 13 amphibians, and 57 fish). Another 44 exotic vertebrate species regularly occur in the state (10 birds, 4 mammals, 2 reptiles, 1 amphibian, and 27 fish). Information on Montana's invertebrates is much more limited, but we currently have at least some information in our databases for 1,326 native and 24 exotic invertebrate species. The Zoology Program is focused on gathering reliable information on the distribution, status, general biology, and conservation needs of these species and making that information easily available to resource managers and the general public via reports and web applications such as the [Montana Field Guide](#).



Montana Animal Species of Concern

An [Online Species of Concern Report](#) was created in 2009 to replace hard copy versions and allow status ranks to be updated in a more dynamic manner as new information becomes available. The online report includes an introduction, lists of the Species of Concern and Potential Species of Concern, and summaries of species added to, and removed from, the list. Birds underwent a major review using NatureServe ranking criteria in 2009; 7 species were removed from the SOC list and 11 were added. Fish and mammals will be the focus of status reviews in 2010. Currently there are 213 animal Species of Concern: 64 birds (21% of birds); 30 mammals (29% of mammals); 9 reptiles (53% of reptiles); 6 amphibians (46% of amphibians); 19 fish (33% of fish); and 85 invertebrates (unknown percent of invertebrates).

Animal Observation Database and Submission of Observation Records

Over 846,000 observation records for animal species are stored in two databases at the Montana Natural Heritage Program: (1) bird data are stored in the Montana Bird Distribution database (MBD) in partnership with MT-FWP, Montana Audubon, and the Montana Bird Records Committee; (2) non-bird data are stored in the Montana Non-bird Point Observation Database (POD). As of December 31st 2009, the MBD database contained 712,809 bird observations with 97,811 observations added in 2009 and the POD database contained 121,044 non-bird observations with 7,511 observations added in 2009. For comparison, in 2003 there were approximately 88,000 records in the MBD database and 22,000 records in the POD database. In 2010, we anticipate surpassing 1 million bird observations records in preparation for the publication of the [7th Edition of P.D. Skaar's Montana Bird Distribution](#). Animal observation records can be contributed via the [Natural Heritage TRACKER](#), [Bird Sighting Excel Spreadsheet](#), [Non-bird Animal Observation Excel Spreadsheet](#), or the [New Simple Web-based Animal Observation Form](#).

Natural Heritage TRACKER and Montana Field Guide Updates

In 2009, [The Montana Field Guide](#), a collaborative application with MT-FWP, was updated to include: maps that depict the relative density and recency of submitted observations for all species and maps depicting distribution of breeding, overwintering, and migratory records for birds; maps of the breeding, wintering, and migratory range across the western hemisphere for most vertebrate animal species; and an advanced search option that allows queries for taxonomic groups and various federal and state status ranks. Similarly, the [Natural Heritage TRACKER](#) application was updated to include: faster report and query functions that are more task oriented; observation data for plants; plant and animal species occurrence (SO) polygons and associated attribute information; range maps and structured survey data for selected species of animals; and new report filters for taxonomic Order and geographic areas such as Township, Range, and Section.

Some Current and Upcoming Projects ([see full project list at http://mtnhp.org/about/projects.asp?key=1](http://mtnhp.org/about/projects.asp?key=1))

Paul Hendricks has spent much of 2009, and will spend much of 2010, working on a Field Guide to the Terrestrial Mollusks of Montana for the U.S. Forest Service. Susan Lenard has been working on analyzing acoustic calls of bats gathered during field projects for the USFS, MT-FWP, and the BLM in order to greatly expand distribution records for bats in our databases. Coburn Currier has been working on expanding information in our databases for dragonflies, damselflies, and butterflies. Bryce Maxell led the completion of a [Montana Amphibian and Reptile Status Assessment, Literature Review, and Conservation Plan](#).

Ecology Program Report

Linda Vance, Ecology Program Manager / Spatial Analysis Lab Director - livance@mt.gov

The **Ecology Program** is focused on characterizing and mapping the distribution of aquatic, wetland, and terrestrial ecological communities across Montana. We also track the status of these communities over time in order to assist resource managers with conservation of associated plant and animal species. During 2009, the Ecology Program focused on development of four core products: 1) high-resolution mapping of wetland and riparian habitats in Montana; 2) medium-resolution classification and mapping of land cover and land use across Montana; 3) Montana-specific descriptions of all 58 natural ecological systems used in classification of land cover; and 4) classification of Montana's aquatic ecological systems.



Wetland and Riparian Mapping Center

In 2009, photointerpreters at our [Wetland and Riparian Mapping Center](#) completed mapping of wetland and riparian habitats on 271 of the 1:24,000 scale USGS quadrangle map tiles. Mapped areas in Montana now total 663 USGS quadrangle maps, 317,123 acres of wetlands, and 236,569 acres of riparian habitat. We have applied for several grants that will allow us to finish mapping these critical habitats in western Montana in the next 2 years. You can see the current status of this mapping effort at http://mtnhp.org/ecology/wetlands/NWI_Status_map.asp



Landcover Mapping and Ecological Systems Descriptions

During 2009, Ecology and Spatial Analysis Lab staff modified the Pacific Northwest ReGap landcover map developed by the University of Idaho and Sanborn to improve mapping of agricultural lands and areas with mining activity and worked on creating a field guide to the ecological systems of Montana. In the coming year, we will continue to improve landcover mapping accuracy, finalize the descriptive materials for ecological systems, and make this information broadly available via web applications.



Aquatic Ecological Systems and Aquatic Invertebrate Species of Concern

During 2009, our Aquatic Ecologist, Dave Stagliano: updated a [Key to the Aquatic Ecological Systems of Montana](#) and an associated [Aquatic Ecological System Field Guide](#); completed a report on [Aquatic Invertebrate Species of Concern on USFS Northern Region Lands](#) that summarizes the results of surveys and predicted distribution models for these rare species; and completed the third year of surveys for freshwater mussels designed to determine the distribution and status of these poorly understood species in Montana.

Other Current and Upcoming Projects ([see full project list at http://mtnhp.org/about/projects.asp](http://mtnhp.org/about/projects.asp))

In 2009, we completed several projects for multiple partners, including: Wetland and Riparian Mapping of the Yellowstone River Corridor (Army Corp of Engineers, Custer County Conservation District); Wetland Change Detection (US-EPA and MT-DEQ); Wetland, Riparian, and Vegetation Mapping of Manning Lake Tribal Refuge (Fort Peck Tribe); Establishment of a Wetland Reference Network and Wetland Mapping for the Rocky Boys Indian Reservation (Chippewa Cree Tribe); Development of National Vegetation Classification Training Materials (USGS); Identification and Assessment of Reference Wetlands (US-EPA); A Conservation Planning Geodatabase for the Ruby River Watershed (Ruby Valley Watershed Council); and Flowering Rush Distribution in Flathead Lake (Peter Rice at UM and Confederated Salish College). [Ecology reports completed in 2009](#) are listed later in this report.

Core work in 2010 will emphasize data distribution (particularly land cover and wetland maps) and ecological data aggregation and reporting. Projects in 2010 include: a rotating basin condition assessment of Montana wetlands (EPA); an assessment of riparian condition along Montana's large rivers (EPA); a vegetation restoration guidebook for Montana's northern Great Plains wetlands (EPA); development of a GIS-based decision support tool for integrated restoration planning (USFS); improved vegetation classification to support identification of critical wildlife habitat areas (FWP); and GIS training and outreach to support wetland map use at the county level (DEQ-EPA).

Data Systems and Services Report

Allan Cox, Systems and Services Manager - acox@mt.gov

The **Systems and Services** section of the MTNHP works with the Botany, Zoology, and Ecology program staff to deliver information and services to our patrons. We provide these services through our internet site and its various applications, partner training sessions, standard Species of Concern project reviews, directed digital data transfers, and direct communication with patrons.



Species of Concern Project Reviews and Data Transfers

[Species of Concern project reviews](#) involve us searching our databases for a specific geographic area to identify any known occurrences of Species of Concern for consideration in environmental reviews of projects. This service provides a map, summary report, and letter to the patron. In 2009, we conducted over 570 SOC reviews with an average of 3½ per business day. In addition, we often transfer a variety of GIS data for SOC and other species to patrons under the terms of a data use agreement. In 2009, we transferred over 280 GIS data sets.

Partner Training Sessions

We offer customized training sessions that provide an overview of our data and information, how patrons can submit information requests, and hands on instruction in using our web applications. Last year we conducted five half-day trainings for state and federal agencies at various locations around the state. Please contact us if you are interested in a customized training session in your area.

Re-designed Web Site

At the beginning of 2009, the MTNHP rolled out a [completely re-designed web site](#) that conforms to the State of Montana standards and template. The re-design process enabled us to clean up out-of-date material, add easier-to-use navigation features, and make the website easier to maintain.

New On-line Plant and Animal Species of Concern Reports

These [new on-line reports](#) replace our previous Species of Concern web search and printed reports. The new reports provide all of the narrative information found in the printed reports; up-to-date status information for SOC species; lists of species additions and deletions over time; enhanced search and filtering functions for generating custom reports; ability to save and print reports to a PDF; and information such as documented county occurrences, habitat associations for animals, and other state and federal status information.

Natural Heritage TRACKER and Montana Field Guide Enhancements

In 2009, [The Montana Field Guide](#), a collaborative application with MT-FWP, was updated to include maps that depict the relative density and recency of submitted observations for all species and maps depicting distribution of breeding, overwintering, and migratory records for birds; maps of the breeding, wintering, and migratory range across the western hemisphere for most vertebrate animal species; and an advanced search option that allows queries for taxonomic groups and various federal and state status ranks. Similarly, the [Natural Heritage TRACKER](#) application was updated to include faster report and query functions that are more task oriented; observation data for plants; plant and animal species occurrence (SO) polygons and attribute information; range maps and structured survey data for selected species of animals; and new report filters for taxonomic Order and geographic areas such as Township, Range, and Section.

Predicted Suitable Habitat Models

[Predicted suitable habitat models](#) for a variety of species are now accessible on-line, including metadata, images, and geo-referenced images that can be used in a GIS. More species models will be added in 2010.

Stewardship Update

The MTNHP maintains the [Montana Land Stewardship Mapping Database](#) and publishes a series of 1:100,000 scale PDF maps based on this data. The GIS data and the maps depict three main categories of land management: 1) public lands; 2) conservation easements; and 3) specially designated lands such as wildlife refuges, Research Natural Areas, wilderness, etc. In 2009, both the digital GIS database and the PDF maps were updated and the data were incorporated into the [Montana GIS Portal](#).

2009 and Other Recent Reports and Publications

(see all of our reports at: <http://mtnhp.org/reports.asp>)

Botany

- [Montana 2009 Plant Species of Concern Report - Online](#)
- [Checklist of Montana Vascular Plants, January 2010](#)

Zoology

- [Montana 2009 Animal Species of Concern Report - Online](#)
- [Montana Amphibian and Reptile Status Assessment, Literature Review, and Conservation Plan, June 2009](#)
- [Bat Surveys on USFS Northern Region Lands in Montana: 2007, January 2009](#)
- [Terrestrial Mollusk Surveys in Glacier National Park during 2008, including an Illustrated Key to All Documented Species, October 2009](#)
- Hendricks, P. and B. Maxell. 2009. Montana. pp. 68-69. In: D.H. Olson (coord. ed.) Herpetological conservation in northwestern North America. *Northwestern Naturalist* 90: 61-96.

Ecology

- [Preliminary Report on Aquatic Invertebrate Species of Concern: Updated Distributions, Vital Watersheds, and Predicted Sites within USFS Northern Region Lands, November 2009](#)
- [Wetlands of the Gallatin Valley: Change and Ecological Functions, December 2009](#)
- [Wetlands of the Flathead Valley: Change and Ecological Functions, January 2009](#)
- [Geographically Isolated Wetlands and Intermittent/Ephemeral Streams in Montana: Extent, Distribution, and Function, January 2009](#)
- [Assessment of the Red Rock River Subbasin and Wetlands of the Centennial Valley, June 2009](#)
- [Assessing Wetland Condition with GIS: A Landscape Integrity Model for Montana, March 2009](#)

2009 and Other Upcoming Projects

(see project descriptions at: <http://mtnhp.org/about/projects.asp>)

Botany

- Water Howellia and Spaulding's Catchfly Status Surveys (USFWS)
- Predictive Modeling of Rare Plant Species (BLM)
- Review and Update Status of Globally Rare Plant Species (National Fish and Wildlife Foundation)
- Missoula Area Plant Surveys (BLM)
- Integrating Plants into Montana's 2011 Revision of the Fish and Wildlife Conservation Strategy (Doris Duke Trust, NatureServe)

Zoology

- Surveys for Animal and Plant Species in Aquatic Communities (USFS)
- Surveys for USFS Terrestrial Wildlife Species of Concern (USFS)
- Status Surveys for Montana's Mollusks (USFS, NPS)
- Field Guide to Terrestrial Mollusks of Montana (USFS)
- Northern Region Bat Status Surveys and Bat Call Analyses (USFS)
- Animal Distribution Modeling for ReGap Project (USGS)
- Statewide Amphibian and Aquatic Reptile Inventory (MT-FWP, BLM, USFS, USGS, MT-DEQ, USEPA)
- Grassland Bird Response to Grazing and Cropland Practices in Northeastern Montana (BLM)
- Wildlife Diversity Monitoring (MT-FWP)
- Status of Freshwater Mussels in Montana (MT-FWP)
- Digital Mapping of Prairie Dog Towns (MT-FWP and BLM)
- Non-Game Wildlife Data Management and Status Ranking (MT-FWP)
- Bat and Bird Surveys in the Upper Clark Fork Watershed (MT-FWP)
- Flagged Display of Impacted Wetlands (MT-DEQ)
- Bat, Reptile, and Amphibian Surveys on Lands within the Dillon BLM Field Office (BLM)
- Surveys for Reptiles and Amphibians within the Tongue and Powder River Watersheds (BLM, USFS, USGS)
- American Bullfrog Surveys and Mitigation Strategies for the Yellowstone River Watershed (BLM, MT-FWP)
- Riparian Bird Surveys on the Helena National Forest (USFS)

Ecology

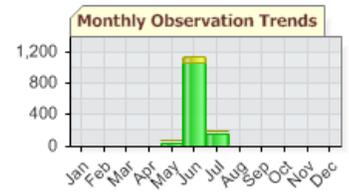
- Statewide Wetland and Riparian Mapping (MT-DEQ, MT-FWP, Custer NF, BLM, USFS Region 1, US EPA, Chippewa Cree Tribe, Fort Peck Tribes, USFWS, ACOE, Custer County Conservation District, Montana Land Information Act Council)
- Wetland Change Detection in Bitterroot, Flathead, and Gallatin Valleys (US EPA, DEQ)
- Montana Reference Wetlands (US EPA)
- Rocky Mountain REMAP Project (US EPA, ORD)
- Statewide Watershed Assessments of Montana Wetlands (US EPA, BLM)
- National Vegetation Classification Training (USGS)
- Range Wetland Enhancement (NRCS)
- SW Montana Resource Planning and Management Geodatabases (USEPA, Ruby Valley Conservation District)
- Scoping of Statewide Weed Distribution Database (Montana Weed Control Association, MT Dept. of Agriculture)
- State Land Cover Mapping (MT- Department of Administration, MT-FWP)
- Ecosystem Sustainability Decision-Support Tool (USFS)
- Sagebrush Mapping in the Thunder Basin and Powder River Basin (USFS, BLM)
- Flowering Rush Distribution and Invasion (Center for Invasives, Flathead Lake Biological Station)
- Land Cover Mapping in the Upper Clark Fork Watershed (MT-FWP)

Key Products and Web Applications

Online Field Guide

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

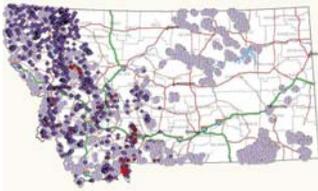
This field guide is a collaborative effort with the Montana Department of Fish, Wildlife, and Parks. It makes information on the distribution, status, identification, biology, and management of all of Montana's species readily available.



Natural Heritage TRACKER

<http://mtnhp.org/Tracker>

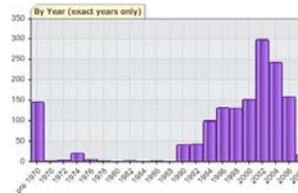
This application provides access to spatial and tabular information on surveys, animal and plant observations, conservation worthy occurrences of species, range maps, and georeferenced photographs of survey locations.



OBSERVATION DATE		LOCATION				Spatial Precision (Meters)	TYPE	PENDING
MONTH	DAY	Notes	LL QLL	COUNTY	Comments			
Jul	13		28A3	Lewis and Clark	7.5 Miles WSW of Hedges Mountain	0		Pending
2008								

Species Observation Notes: 05mm SVL, female seen on trail between parking area and rope swing.

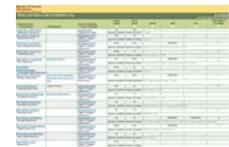
Habitat Observation Notes: Tall grasses/vegetation downslope toward lake. Dry, rocky, mostly open ponderosa pine forest upslope.



Plant and Animal Species of Concern Reports

<http://mtnhp.org/SpeciesOfConcern/>

This application replaces the periodic animal and plant Species of Concern reports so that status ranks can be updated whenever new information becomes available. The report, or portions of it, can easily be printed to a PDF.



Land Stewardship Mapping

<http://mtnhp.org/stew.asp>

This web page links to data and sets of maps constructed from the Land Stewardship Mapping database and indexed by 1:100,000 scale topographic map name. The maps depict three main categories of land management: (1) Public Lands; (2) Conservation Easements; and (3) Special designated lands such as wildlife refuges and wilderness areas.



Wetland and Riparian Mapping Center

<http://mtnhp.org/ecology/wetlands>

The Montana Wetland and Riparian Mapping Center provides detailed digital wetland and riparian map products that depict both wetland type and functions such as nutrient retention and wildlife habitat. Our goal is to create statewide digital wetland and riparian mapping as a resource for management, planning, and restoration efforts.



Contact Information

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