Montana State Digital Library
February and March 2012

Prepared for the December, 2012 Commission meeting
by Stu Kirkpatrick, State GIS Coordinator

This report represents accomplishments of:
Library Information Services (LIS),
MSL Geographic Information (comprised of the Natural Resource Information System
(NRIS) and the former Base Map Service Center (BMSC))
& the Montana Natural Heritage Program (MTNHP).

Goal One – Content: MSL acquires and manages relevant quality content that meets
the needs of Montana library partners and patrons.

To begin the FY2013 digitization contract, LIS processed and shipped in September, 5
boxes containing 369 state publications to be digitized. All 5 boxes were scanned
resulting in 18,696 newly digitized pages. All but 15 items are available online.

LIS continues to develop and document maintenance requirements for its nascent, local
repository of digital state publications. LIS staff having verified the transfer of the
entire collection of digitized state publications into the repository is now working
backwards to verify that there was no change in the hash values between the digital
files hosted at the Internet Archive and those files received on the external hard drive.
Of the 16,371 files rehashed, only 10 items were identified as needing fixing. This
represents a very small error rate of 0.06% or six one-hundredths of one percent.

Natural Heritage Program staff added new species information (general descriptions,
habitat, and distribution comments) for more than 2,000 vascular plants in the Montana
Field Guide (http://fieldguide.mt.gov/)

The Natural Heritage Botany Program added several plant observation datasets to the
main database. These new datasets included aquatic invasive species data, rare plant
data from the Pryor Mountain Desert, 2012 MTNHP field survey data and miscellaneous
data submitted by contributors.

The Natural Heritage Ecology Program received two new grants to help it expand its
content. A $250,000, five-year grant from the Bureau of Land Management will support
continued work on the Montana Spatial Data Infrastructure (MSDI) Wetlands theme.
To date, we have mapped over 1.75 million acres of wetlands and riparian areas in
Montana. A $150,000 grant from NASA will allow us to use remote sensing techniques
to update maps of whitebark pine, which has been especially hard hit by blister rust and
mountain pine bark beetle over the past 10 years. Both wetlands and land cover are
MSDI themes.

MTNHP Zoology and Information Services staff have added an additional 69,091 observations to the animal point observation databases. Animal point observation databases now have 1,334,551 point observation records (932,242 bird records and 333,218 records of other animal species). Similarly, information has been added for an additional 2,113 structured animal surveys; the central database now contains a total of 146,306 structured animal survey locations. Note that while a large number of observations have been added, 131,244 (~10%) of the observation records still need to be reviewed for final acceptance into the database. These observation records and structured surveys are viewable on the Natural Heritage Tracker http://mtnhp.org/Tracker/NHTMap.aspx and Natural Heritage MapViewer http://mtnhp.org/mapviewer/ web applications and generalized observations are viewable on the Montana Field Guide http://fieldguide.mt.gov/

Keith Blount of MSL Geographic Information worked with Flathead and Lake Counties to correct their county cadastres that had incorrectly applied the newest HARN Datum shift to their data. Those data have been repaired and integrated back into the statewide cadastre.

Goal Two – Access: MSL provides libraries, agencies, and its partners and patrons with convenient, high quality, and cost-effective access to library content and services.

LIS after considerable research and experimentation successfully overlaid its local catalog records with permanent uniform resource locators (PURLs) from WorldCat records for all the state publications digitized in FY2011 and FY2012. Incoming new staff unfamiliar with the overlay workflow had minimal or no documentation to guide them. Subsequent overlays will occur much more quickly. Users can now be assured that these resources will be continually accessible regardless of the file location of the digitized items.

MSL Geographic Information continues work on new and innovative ways to distribute maps and geographic information using ArcGIS online http://montana.maps.arcgis.com/home/. While only a prototype at this point content is building in the map gallery and staff is working on ways to categorized that content for easier patron access. Staff has also been updating the web pages associated with the Montana Spatial Data Infrastructure and the older NRIS data list. These enhancements should be ready for roll out in January.

The Montana Natural Heritage Program, working with NRIS Geographic Information staff, turned on the public version of the Wetland and Riparian Web Map Service on November 15. This Web Map Service provides access to the Montana Spatial Data Infrastructure (MSDI) Wetlands and Riparian Framework dataset. The dataset includes mapping status, historic, provisional, and final wetland and riparian data. Datasets

supporting this service are also available for download through the Montana GIS Portal at http://gisportal.mt.gov .

Goal Three – Training: MSL provides appropriate trainings and training resources so that the best use can be made of the resources offered.

Scott Mincemoyer, Natural Heritage Program Botanist, gave a presentation to the Society for Range Management International Mountain Section Annual Conference in Great Falls. The presentation provided an overview of the Natural Heritage Program, including the data we offer, web services, and projects.

State GIS Coordinator delivered a 90 minute presentation on cadastral mapping to an upper level GIS Seminar at the University of Montana in October. Diane Papineau from the MSL Geographic Information staff delivered her "What is GIS" presentation at GIS Day on November 14th.

Goal Four – Consultation and Leadership: MSL provides consultation and leadership to enable its patrons and partners to reach their goals.
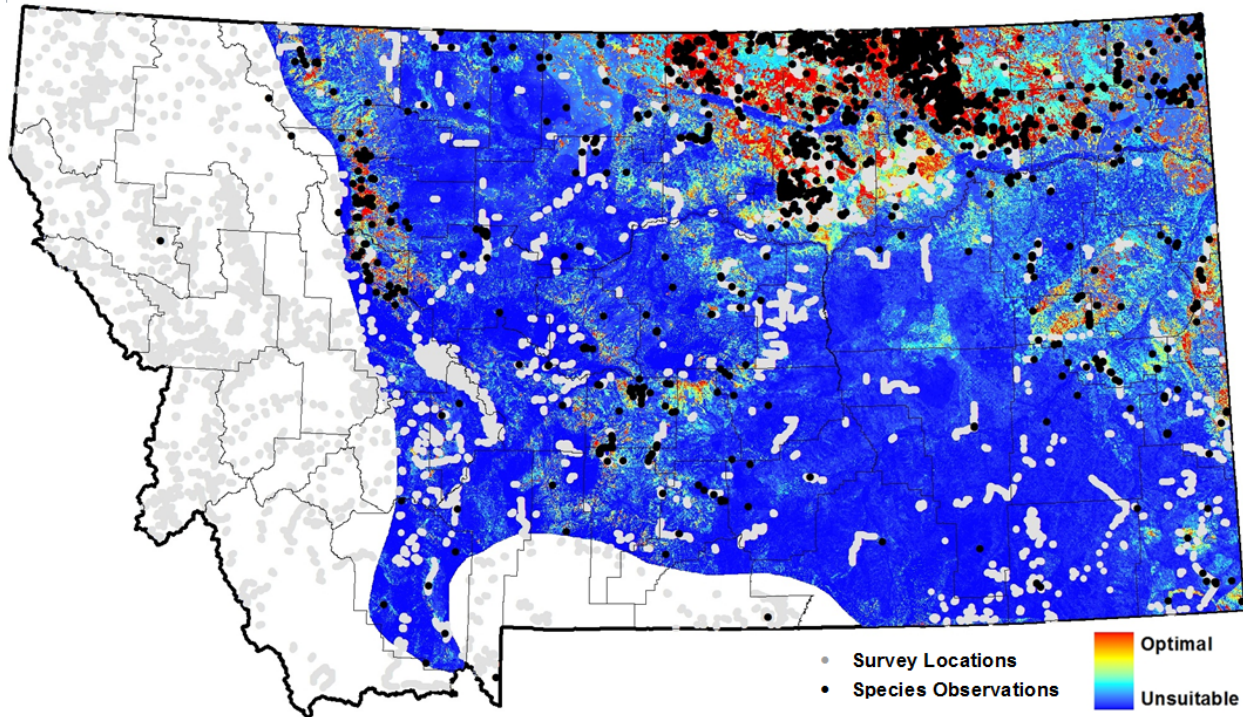
LIS and Geographic Information staff pored over hundreds of print maps accumulated and stored at MSL over a period of many years. Staff sought to determine which maps were state publications. Staff still needs to determine which are available digitally and what need to be scanned and what need to be discarded. This remains an ongoing project with the goals of better management and inventory of available maps and increased access for users.

State GIS Coordinator Stu Kirkpatrick, working with the Land Plan Subcommittee of MLIAC, completed four working and a final draft of the FY13/14 Land Information Plan. That plan is scheduled for discussion and approval at the November 29th meeting of MLIA and will be brought forward for Commission approval at the December meeting. Stu also met with eight members of the Montana Department of Transportation to discuss potential collaboration on the MSDI Transportation Framework that may better share the work load with the goal of producing more usable data.

In October and November, Zoology staff answered over 30 requests from patrons regarding zoological information for Montana that entailed more than 50 hours of staff time to create queries, run models, and otherwise provide phone and email responses.

MTNHP Zoology and Information Services staff coordinated with a variety of state, federal, tribal, and private partners to centralize information on Sprague's Pipit (*Anthus spragueii*) observations as well as surveys capable of detecting this species which is being reviewed for listing status under the Endangered Species Act by the U.S. Fish and Wildlife Service. These efforts led to an increase of 1,345 observations with a new total
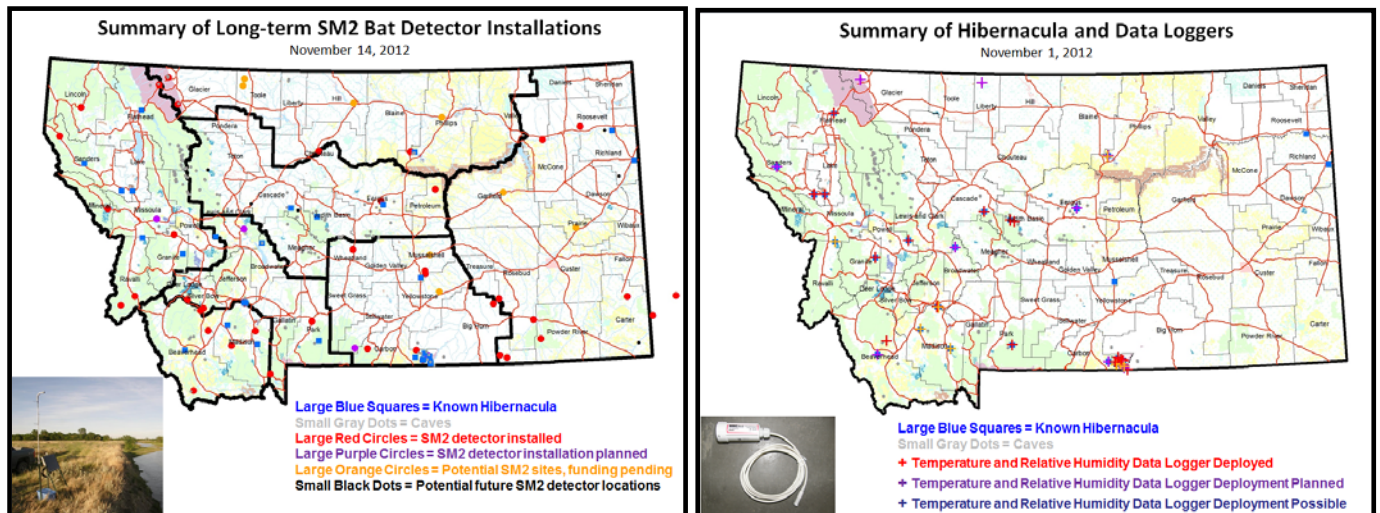
of 4,041 observations. MTNHP Zoology staff subsequently used these observations to model predicted habitat suitability for the species (figure below).

Goal Five – Collaboration: MSL promotes partnerships and encourages collaboration among its partners and patrons so that their information needs can be met.

The Montana Natural Heritage Program (MTNHP) hosted its annual partners meeting November 14th in Helena. The meeting was attended by more than 35 state, federal, business, and non-profit partners. The meeting included program highlights by MTNHP staff and presentations from the partners. The meeting is an opportunity for the program to hear from its partners as to the services that are working well; the needs and challenges the partners are facing and how the program may assist them; and fosters opportunities for developing new collaborations. MSL Geographic Information staff was invited as a partner and attended.

Zoologists Bryce Maxell, Paul Hendricks, and Susan Lenard continued to work with members from the Northern Rocky Mountain Grotto caving group and state and federal biologists to establish an array of acoustic detectors for bats across the state and to deploy temperature and relative humidity data loggers in caves and mines known to be used as overwintering areas for bats across Montana (see figures below). Both efforts are designed to help understand the potential impacts of White-Nose Syndrome, a disease caused by the deadly fungus, *Geomyces destructans* which is spreading westward from the east coast of North America where it has killed millions of bats.

Summary of Long-term SM2 Bat Detector Installations
November 14, 2012

Large Blue Squares = Known Hibernacula
Small Gray Dots = Caves
Large Red Circles = SM2 detector installed
Large Purple Circles = SM2 detector installation planned
Large Orange Circles = Potential SM2 sites, funding pending
Small Black Dots = Potential future SM2 detector locations

Summary of Hibernacula and Data Loggers
November 1, 2012

Large Blue Squares = Known Hibernacula
Small Gray Dots = Caves
+ Temperature and Relative Humidity Data Logger Deployed
+ Temperature and Relative Humidity Data Logger Deployment Planned
+ Temperature and Relative Humidity Data Logger Deployment Possible

Zoologists Paul Hendricks and Bryce Maxell attended the Montana Bird Conservation Partnership meeting in Missoula on October 30th and presented summaries of recent bird information that has been added to MTNHP databases.

Goal Six – Sustainable Success: MSL is a well-run organization and a sought-after employer; it is efficient and effective (measured against partner and patron outcomes), and successfully engaged in its ongoing mission.

Having conducted a routine weeding of the nonfiction collection and removal of all discontinued and underused print magazines, LIS shifted its collections and consolidated empty shelf space. LIS has scheduled the removal of several rows of shelves so that the reading room may be opened up for new uses. Renovation of the reading area is part of the ongoing digital library transition with increased reliance on electronic resources that are greater in both volume and currency.

Five members of the MSL Geographic Information staff attended a three day Python workshop conducted on-site by Esri. Python is a programming language that allows users to automate GIS processes to save time and efficiently manage resources.

MSL Geographic Information staff attended an on-line workshop hosted by Safe Software describing the use of their Feature Manipulation Engine (FME) Server product to deliver data by geographic query or extent to patrons. This product may be able to duplicate and in some cases improve upon the services currently provided by the data bundler, an application that is still heavily used by MSL patrons but using dated software. Michael Fashoway is working on a prototype of a new data bundler using FME Server.

NHP Senior Zoologist, Bryce Maxell, attended a Leadership Development and Teambuilding training seminar in Missoula on November 13th.