

Montana State Digital Library
December 2011 and January 2012

Prepared for the February 8, 2012 Commission meeting

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This report represents accomplishments of
Library Information Services (LIS),
Natural Resource Information System (NRIS),
The 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.

The State of Montana has official representation on the Northwest Power and Conservation Council and other multi-state, regional governmental organizations. LIS continues to run test crawls on their websites to identify and acquire just digital state publications pertaining to Montana in accordance with statute and the MSL collection development policy.

MSL is expecting the delivery of the 2011 National Aerial Imagery Program (NAIP) 1m resolution air photos for the state of Montana. This project was coordinated by the US Department of Interior Aerial Photography Field Office (USDA/APFO). Due to significant federal funding this year, the State was able to acquire this imagery for just \$16,000, a small fraction of the \$350,000(+) spent on the acquisition of this imagery in 2009. This is always a valuable dataset and this year it will provide an even greater resource to water managers because of the abnormal moisture last year during the time of data collection.

In response to a patron request, GIS Analyst Gerry Daumiller calculated the population center of Montana based on the 2010 census data. He also decided to generate the same information based on 1990 and 2000 census data for comparison. This data is now available on a map that can be found here -

<http://nris.mt.gov/new/displayRelease.asp?relNum=320&referrer=whatsnew.asp>.

Base Map Services continued integration and maintenance of the Cadastral, Transportation, Structures/Addresses, Administrative Boundaries, Imagery and Geodetic Control Frameworks.

- GIS Analyst Michael Fashoway continued to work with 16 rural counties and 7 tribal governments to develop data sharing agreements for address data. MSL, through interagency agreement with the Department of Administration's Broadband Program has approximately \$100,000 in pass-through funding to assist these entities with addressing efforts.

- At the request of many users, Cartographer Keith Blount modified the digital base map for the cadastral application, adding in hundreds of roads, road names, streams and stream names at an intermediate scale to better enable users to orient themselves.

MTNHP Information Systems and Services generated a large number of new range maps to include in the Montana Field Guides, and have made additional refinements to the new reference management system announced in December.

MTNHP Biologist Coburn Currier, working with Botanist Scott Mincemoyer added several hundred lichen species to the MTNHP databases as part of an effort to maintain a comprehensive list of lichens occurring in Montana. Scott also reviewed and updated the status ranks for fifty species of plants.

MTNHP staff members, including Linda Vance, Karen Newlon, Cat McIntyre and Scott Mincemoyer completed work on the National Wetland Condition Survey, conducted by the Environmental Protection Agency (EPA) with state, tribal and local partners across the US in 2011. All field sampling and plant identification in Montana was contracted to the MTNHP by the EPA, the Montana Department of Environmental Quality (DEQ), Tetra Tech, Fort Peck Tribes, and the Confederated Salish and Kootenai.

Ecologists with the MTNHP, as of January 2012, have mapped 1,068,566 acres of wetlands and 416,907 acres of riparian areas across Montana. MTNHP submitted several large wetland and riparian mapping projects to the National Wetlands Inventory for approval, covering large portions of southeast Montana, Missoula and Flathead Counties, and the Custer National Forest-Beartooth Ranger District.

The MTNHP Zoology Program acquired over 120 images of Montana animals from Nathan DeBoer, a photographer from Stevensville. The images are of exceptional quality and have greatly improved accounts for nearly 100 species in the Montana Field Guide, by allowing users to easily see identifying features or differences between males and females of the same species. For example, see images in the species accounts for Rough-legged Hawk http://fieldguide.mt.gov/detail_ABNKC19130.aspx or Hooded Merganser http://fieldguide.mt.gov/detail_ABNJB20010.aspx. Mr. DeBoer has communicated his desire to help MTNHP to continually improve the quality of images for animal species accounts on the Montana Field Guide.

Coburn Currier, Zoologist Susan, Lenard, and Information Specialist Scott Blum added or reviewed 23,336 animal observations to the animal point observation databases; they also added 7,670 structured animal survey locations (e.g., bird point count or small mammal trapping station) to the structured survey database. Animal point observation databases now have 1,092,640 point observation records (793,527 bird records and 322,449 records of other animal species) and a total of 138,204 structured animal survey locations have been documented. These observation records and structured surveys are viewable in Tracker <http://mtnhp.org/Tracker/NHTMap.aspx> and generalized observations are viewable on the

Montana Field Guide <http://fieldguide.mt.gov/> and the MapViewer web application <http://mtnhp.org/mapviewer/>.

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.

MSL is working to keep IT services current and relevant through updates to IT infrastructure. Grant Austin, GIS Web Programmer recently began to update the NRIS application server to the latest GIS server software from ESRI, and he is working to upgrade the Montana GIS Portal to that same level. This will be a minor update to that application that we hope will be seamless to Portal users, but is critical in helping us better manage our systems. We have also been working hard to prepare the hardware environment necessary to support a spatial data archive. This was capped off at the end of the year with several network hardware upgrades that will pave the way to upgrading to a 10 Gigabit connection between the library data center and the State of Montana Data Center which is important for us to be able to manage the archive effectively.

Base Map Services transitioned the hosting of the 2009 NAIP imagery from the Department of Administration's SITSD to MSL. The image service that provides our partners and patrons access to 2009 natural color and infrared imagery is still hosted at SITSD however it now accesses data hosted at MSL via network. This has resulted in no reduction in quality of the image service however it has resulted in substantial savings for MSL in data hosting costs.

GIS Analyst, Erin Fashoway consolidated boundary web services for counties, municipal boundaries, school districts, tribal reservations, tax increment financing districts and census administrative boundaries into a single web service. This resulted in a more convenient way to access multiple boundary layers and saves approximately \$2000 in service hosting costs for FY12.

State GIS Coordinator, Stu Kirkpatrick attended an ESRI workshop for ArcGIS Online training. Subsequently MSL has been accepted as a Beta tester for ArcGIS Online Subscription services. Staff is investigating opportunities using a customized ArcGIS application to broaden our ability to provide data and web services to our partners and patrons.

MTNHP Systems and Services staff, Senior Zoologist Bryce Maxell, and Scott Mincemoyer are collaborating to modify the display of species conservation status ranking criteria on the Animal and Plant Species of Concern web pages <http://mtnhp.org/SpeciesOfConcern/?AorP=a>, and for individual species accounts in the Montana Field Guide <http://fieldguide.mt.gov/>. This information will include the rationale for conservation status ranks and information about why individual species are included or excluded from the Species of Concern list for Montana.

LIS worked with the MSL web oversight committee to add a new web page history link to the footer of all msl.mt.gov web pages. This addition brings attention to the Archive Montana and provides a model for other state agencies to link their own websites to Archive Montana.

LIS replaced four out-of-warranty public access computers with six new computers compliments of the Broadband Technologies Opportunities Program. The additional two computers relieves the wait time for users during periodic rush periods. Also, LIS worked with the network administrator to configure PC Reservation software on the new machines that allows users to self-login with an MSL library card. This new software relieves users from having to find and ask LIS staff to login them in for 60 minute sessions. PC Reservation also has reduced the interruptions for LIS staff monitoring the computers.

LIS recently created and sent a list of 1,002 persistent uniform resource locators (PURLs) to OCLC to be added to WorldCat records for the over 2,200 state publications digitized by the Internet Archive in fiscal year 2011. Next LIS will coordinate with MSC staff to overlay the local bibliographic records with the newly updated OCLC records to provide users with direct access to digital state publications hosted at the Internet Archive.

Goal Three, Consultation and Leadership: MSL provides consultation and leadership to enable its patrons and partners to reach their goals.

MSL organized and chaired the Montana Land Information Advisory Council (MLIAC) meeting on December 6. The meeting was well attended and we received several positive comments on the new direction of the Council under MSL leadership. During the meeting new members received an overall council orientation and the annual Land Information Plan was passed. This plan contains the recommendation that MSL oversee a budget of \$510,000 to conduct work on the Montana Spatial Data Infrastructure (MSDI) and another \$240,000 for general GIS coordination and outreach.

Stu Kirkpatrick mapped the annual Montana Land Information Account collections per county over a six year time period. The results were distributed to the MLIAC as both PowerPoint slides and an interactive ArcGIS Online map. This information is also included with Commission meeting materials.

In December Stu Kirkpatrick chaired the state agency Esri Enterprise License Agreement User's group meeting regarding budget matters and training. He also handled and filled three ELA license requests from state agencies.

MSL hosted a meeting of MSDI theme stewards and theme leads, which included most of the Base Map Services and NRIS staff as well as representatives from MTNHP. The objective was to start developing the FY13 MSDI work plan. Each theme lead has been asked to estimate base hours for theme coordination and maintenance as well as resources required for theme enhancement projects. A draft plan will be completed by the end of March.

Stu Kirkpatrick revised and published the annual MLIA grant criteria for grant applicants. These grant criteria are based largely on the requirements of the MLIA Land Plan approved in December. Applications for FY13 MLIA grants are due back to MSL by February 13th.

MTNHP aquatic ecologist Dave Stagliano is completing macroinvertebrate identification projects with Trout Unlimited, the Greater Gallatin Watershed Council, Westtech, and the Bureau of Land Management (BLM). Dave also presented his mussel research at the Montana Chapter of the Society for Conservation Biology in November. He is currently collaborating with Salish & Kootenai College and the University of Montana to develop a work plan for next summer's study of invasive flowering rush in Flathead Lake.

MTNHP staff members Paul Hendricks, Susan Lenard and Linda Vance submitted a manuscript to *Natural Areas Journal* comparing bat activity in riparian forests dominated by native cottonwood or the invasive Russian Olive, which concluded that bat activity was greatly reduced in riparian forests invaded by Russian Olive.

MTNHP ecologists Karen Newlon and Maya Daurio completed a pilot project for the Yellowstone River Conservation district; the project focuses on change over time in riparian areas along the river, using both historic and contemporary aerial photographs. Additionally, Karen Newlon and Ute Langner also completed a project for PPL Montana evaluating the feasibility of using satellite imagery to predict water quality characteristics on Hebgen Lake.

Karen Newlon and Cat McIntyre are completing an EPA-funded project to assess wetland condition across several southwest Montana watersheds.

Karen Newlon is working with the Northern Cheyenne Tribe to develop a work plan to enhance their capacity to understand wetland conditions and improve wetland protection efforts on the Northern Cheyenne Indian Reservation.

Bryce Maxell and Lauri Hanauska-Brown of MT Fish, Wildlife and Parks (FWP), are coordinating the deployment of bat acoustic detectors/recorders powered by solar panels and deep cycle batteries for several agencies involved with this statewide effort. Significant efforts have been directed towards training agency biologists and volunteers to check and download data from detectors so that many working across Montana have proficiency with this relatively new technology.

MTNHP Zoology staff answered approximately 50 requests regarding zoological information from Montana that required over 30 hours of time to respond by phone or email. Most clients requested information on the distribution, status, and identification of individual species, but many also requested feedback on installation of bat detector/recorders for long-term monitoring of bats in Montana by state and federal biologists and private consultants.

Linda Vance, Claudine Tobalske, and Melissa Hart collaborated with colleagues from the US Forest Service, Montana State University and the US Geological Survey to submit a proposal to NASA to map white bark pine forests in Montana. Vance and Tobalske also partnered with consultant Ken Wall and the City of Missoula to submit a proposal to the US Forest Service to continue mapping of urban forests in Montana. Both proposals are pending.

LIS Systems Programmer Chris Stockwell posted code at <http://build.mt.gov> for state agency web developers to add page history to their sites. This code may be added to individual pages or globally to the page footer. This code refers users to captured web pages at Archive Montana. This blog post also included an initial invitation for state web developers to add an Archive Montana search portal to their website.

NRIS staff was busy in December working to close out the Geospatial Multistate Archives and Preservation Partnership (GeoMAPP) spatial data archiving project. The project produced several documents in the final months, and much of NRIS staff time was spent developing and editing documents describing Montana participation as well as larger project contributions. Among those are the Montana contribution to the GeoMAPP final report and the Montana Data Transfer Demonstration document. These documents are available from the GeoMAPP web site - <http://www.geomapp.net/>.

Based on the experience gained through this grant project, NRIS now has a preliminary archival plan in place that includes creating an archival copy any new data received. Staff is now reviewing our existing GIS data collection to create archival copies of that data as appropriate. Future efforts will focus on creating archives plans for all MSDI data.

NRIS Manager Evan Hammer and Jennie Stapp also presented a talk titled "Developing GIS Archives in Montana" at the Montana State IT Conference. The presentation included an overview of the larger GeoMAPP project, the Montana role within that project, and a discussion of our early plans for how a spatial data archiving program in Montana will be implemented.

Gerry Daumiller is working with the Department of Agriculture to develop materials that will support a grant project focused on understanding the agricultural and food processing systems in Montana. The Department has collected data about food production, processing, distribution, and sales within the state, and approached MSL for guidance on how to bring this information together to help visualize the current status and possible improvements to the state's food system infrastructure.

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

Bryce Maxell attended a Golden Eagle Working Group conference call meeting on November 29th, a Great Northern Landscape Conservation Cooperative webinar on Understanding the

Impacts of Wind Energy on Birds and Bats on December 14th, and a Western Bat Working Group Meeting webinar on winter acoustic surveys for bats on January 19th.

MTNHP Zoology staff continues working with FWP, Montana Audubon, the Montana Bird Records Committee, individuals, and other organizations for the 7th Edition of the P.D. Skaar's Montana Bird Distribution. Remarkably, over 700,000 observation records have been added since the last published edition in 2003.

Bryce Maxell, Paul Hendricks, and Dave Stagliano worked on draft reviews of conservation status scoring criteria for over 90 species, in partnership with staff from FWP and other agencies. Status ranks from these reviews will be finalized by a joint committee with MTNHP and FWP staff with input from the Montana chapters of the American Fisheries Society and Wildlife Society. State conservation status ranks are used by a variety of state and federal agencies to prioritize data acquisition needs and management efforts.

Susan Lenard and Paul Hendricks continued collaborations with the US Army Corps of Engineers and US Forest Service to assess the status of bats at Libby Dam and provide consultation on management of roost habitats at the dam.

LIS had a teleconference with scan center coordinator at the Internet Archive to agree on the size and date for the initial shipment of historic state publications to be digitized for fiscal year 2012. LIS staff is preparing items to be shipped by the end of January 2012.

Michael Fashoway and Stu Kirkpatrick met with the State E-911 Office to discuss next generation 9-1-1 and opportunities to collaborate on addressing needs.

Stu Kirkpatrick, Evan Hammer and Jennie Stapp met with DPHHS and Carroll College to discuss collaborative opportunities for a GIS internship related to Public Health. Stu Kirkpatrick attended a follow-up meeting on January 19th.

Erin Fashoway worked with the Governor's Office, analyzing demographic data in Park County resulting in a hard copy map that may be used to corroborate a legal position.

Goal Five, 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.

Digital Library Director/CIO, Jennie Stapp, assumed the State Librarian position on January 2 leaving the MSDL Director position vacant. Because Jennie has a protected position, this position will remain vacant until she successfully completes her trial period as State Librarian. Existing staff will continue to assume additional responsibilities until the position is filled.

LIS has again re-posted the vacant metadata/cataloger position. The salary range offered was raised and the job is being posted on several librarian listservs to attract more new applicants. Deadline for applications is January 27th. Screening ends February 3rd and interviews will be February 13-17th. LIS also finished interviewing candidates for the digital service technician position which should be filled by mid-February.

Work on a common vision for organization of GIS services within MSL and the integration of the Base Map Service Center and the NRIS program has continued with joint staff meeting on January 10th. Staff will embark with work in two common areas of data management with Evan Hammer taking the lead and Data Content with Stu Kirkpatrick leading. Work on Data access will be forthcoming. All staff members are being encouraged to participate where there subject matter expertise is best utilized. From this point forward the programs plan to meet as a larger group, rather than separately, for weekly staff meetings.

Bob Holliday and Evan Hammer worked to develop a common, consolidated GIS system architecture that will accommodate the system needs of the MSL Geographic Information program. That planning will continue over the next few months as MSL researches its options for the next biennium.

Sara Owen began work as an MTNHP photointerpreter, whereas photointerpreter Maya Daurio was promoted to the position of Landscape Ecologist.

In December MTNHP Director Neil Snow attended a three-day leadership training workshop hosted by the American Management Association in Arlington, Virginia.