Montana State Digital Library
April and May 2012

Prepared for the June 6, 2012 Commission meeting
by Jennie Stapp, State Librarian

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.

Processing state publications for scanning is ahead of schedule as LIS staff work to complete the Fiscal Year 2012 contract with the Internet Archive. LIS is in regular communication with the vendor to insure the contract is completed on time. Extra items have been processed, if needed, to meet the contract requirements. LIS is also concurrently working to renew the digitization contract for FY13 for a minimum of $25,000 worth of scanning with the option for additional scanning depending on end of the year funds. This will be the third renewal and fourth contract with the Internet Archive.

LIS, together with a representative from the Statewide Library Resources, continues to review items for de-selection of nonfiction items that are outside the subject areas of the MSL collection development policy. Deselected items will be offered to local libraries.

Gerry Daumiller, GIS Analyst, is working with LIS to revise the MSL Collection Development Policy which will be presented to the Commission later this summer. In addition to updating this policy, the GIS inventory and archive team identified the need for a geographic information appraisal process and a geographic data transfer workflow as key elements needed to ensure consistent evaluation of new GIS data that is considered for inclusion in the MSL Collection. This team has a target date of June 30, 2012 to develop these procedures so that they can begin to evaluate the value of existing datasets for inclusion in the GIS data collection and/or archive. This is an important process for ensuring that MSL provides high quality GIS data to users in an easily accessible manner.

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

Michael Fashoway, GIS Analyst, continued to work with 16 rural counties and seven tribal governments to develop data sharing agreements for address data. MSL now has five signed data sharing agreements and another five awaiting signature at their respective local governments.

MTNHP Information Services staff added the most recent National Agriculture Imagery Program (NAIP) aerial photography to MapViewer toolsets in early April, enabling 2011 photography data to be accessed under the Map Layers tab.

MTNHP staff recently added more than 100,000 observations to its animal Point Observation Database (POD). Many of these are bird records to be used in the upcoming new edition of P.D. Skaar's Montana Bird Distribution book.   POD now includes over 1.24 million point observation records (911,337 bird records and 329,724 records of other animal species). Similarly, information has been added for 3,878 structured animal surveys (mostly for bat acoustic and mist netting surveys); the central database now contains a total of 142,731 structured animal survey locations. 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/.

MTNHP Botanist Scott Mincemoyer removed two plant species (*Juncus hallii*, *Listera borealis*) from the Species of Concern list following reviews that determined their viability in Montana was not at risk. Scott also added State Ranks for approximately two dozen species and added another 125 plant observation records to the database.

MTNHP ecologists Drs. Claudine Tobalske and Linda Vance submitted the Montana Spatial Data Infrastructure (MSDI) Landcover 2012 layer to the GIS Portal. Staff will work with Evan Hammer and Michael Fashoway to turn this data into a map service.

The MTNHP Zoology Program staff added several hundred images to the Montana Field Guide since the beginning of the 2012 calendar year, including the first representations for species, subspecies, and variations in appearance related to sex and age (e.g., see Myrtle race of the Yellow-rumped Warbler http://fieldguide.mt.gov/detail_ABPBX03062.aspx). Over 270 exceptionally high quality images have come from Nathan DeBoer, a Stevensville photographer. A photographer search option has been added to the Advanced Search option to encourage photographic contributions to the Montana Field Guide.

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.

GIS Analyst Erin Fashoway was tasked with leading a team to update and consolidate the NRIS and BMSC web pages. In addition to reviewing the existing web pages, Erin developed and distributed a survey targeted at existing and potential users of these pages to get more information about their expectations from our website.

Bob Holliday worked with the State Information Technology Services Division (SITSD) and GCS Research to implement new code for the Multi-State (formerly Montana) Control Point Database viewer. The application adds in Idaho geodetic control points. As part of this project he is also loading approximately one-thousand Idaho control points into the database. We expect the updated control point viewer and database to be in production by June 1st.

Gerry Daumiller will lead a team to develop a plan to update the request management process within MSL Geographic Information. Patrons have come to expect high quality, efficient support from both NRIS and BMSC when they have questions about geographic information and the tools that these groups offer. While this has always been a priority for both groups, staff hopes to simplify the process for our patrons by providing more direct access to staff that can answer their question and reduce the occurrence of users being sent to voicemail or being transferred multiple times before having their questions answered.

Bob Holliday and Michael Fashoway worked with staff at SITSD to test a cloud implementation of the structures and imagery web services along with the cadastral web application. This is part of a four state, two year investigation of the feasibility of cloud services for GIS. After the testing phase is completed in May, Montana expects that a multi-vendor contract will be negotiated by the Western States Contracting Alliance (WSCA) and ultimately state agencies will be able to procure cloud services in an aggregated pricing model. Staff has not determined, at this point, whether cloud services are a viable replacement for the MSDI web services presently hosted by SITSD. Potentially SITSD might simply shift their enterprise GIS service environment to the cloud.

GIS Analyst, Keith Blount started programming a new work flow for the cadastral database that cuts down monthly processing time for the individual county data we receive. Work should be completed for the June processing and is expected to cut monthly processing time (currently approximately 32 hours) by half while also providing more robust data content for county cadastral geodatabases.

MTNHP staff Bryce Maxell (Senior Zoologist), Scott Mincemoyer Karen Coleman (Biological Data System Coordinator), and Dave Ratz (Web Projects Manager) created and populated database tables to display species Conservation Status Scoring Reviews

on the Montana Field Guide (see for example the status review for the Bald Eagle at: http://fieldguide.mt.gov:81/detail_ABNKC10010.aspx). This is the first time that information such as population size, range extent, area of occupancy, long- and short-term trends, threats, intrinsic vulnerability, and environmental specificity, all of which are used to determine state conservation status ranks, are displayed to the general public. Addition of this information increases transparency to all patrons and makes it easier for individuals to identify information gaps and thus contribute information that can be used to update conservation status ranks.

In early May MTNHP released the fifth of its MapViewer Toolsets, the Wetlands and Riparian Areas data for Montana. The new toolset allows users to view the latest published and provisional wetland and riparian data for the state as well as the historical National Wetlands Inventory (NWI) data. Users may also run summary reports for watersheds of interest (http://mtnhp.org/mapviewer/).

LIS updated its RSS (really simple syndication) feeds web page. The notification method for new state agency publications received by LIS has shifted from RSS feeds to update information on the collections page at MT.GOV Connect which gives users access to the most comprehensive online source for preserved Montana state government information. LIS has retained the RSS feeds for new professional library development items and natural resource information.

Web Programmer, Chris Stockwell, developed and shared code with the Archive-It partner community that returns a 404 error message page containing a link to the archived version of the sought, but not found, web pages. MSL incorporated this code into its own website and will soon be working with other state agencies encouraging them to similarly adopt this code.

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

Several MTNHP staff members participated in NatureServe's *Biodiversity Without Boundaries* conference in Portland, OR, in April. Presentations were given by Scott Mincemoyer on the vulnerability to climate change of globally rare plants in Montana using NatureServe's Climate Change Vulnerability Index and by ecologists Claudine Tobalske, Linda Vance and Ute Langner on assessing riparian integrity along large river corridors. MTNHP Director Dr. Neil Snow was a panel member for a discussion on the use of media, and participated in discussions on Natural Heritage Program affiliations and on the identification and consolidation of standards to assess potential sites of potential conservation significance.

Claudine Tobalske, Linda Vance and Ute Langner also presented their work assessing riparian integrity along large river corridors at the Intermountain GIS in Kalispell, and the *National Water Quality Monitoring Conference* in Portland, OR.

Linda Vance presented her work on describing the natural range of variability in minimally disturbed Rocky Mountain wetlands at the *Biodiversity Without Boundaries* conference, and at the EPA's *National Aquatic Resource Survey* meeting in Portland, where she was an invited participant. Her final report on the project, with collaborators from the Colorado Natural Heritage Program and the Wyoming Natural Diversity Database, has been completed and accepted by the Environmental Protection Agency, and is currently being formatted for publication on the MTNHP website.

Neil Snow attended a workshop in May at the University of Montana hosted by the National Science Foundation on effective communication of science to public audiences.

Bryce Maxell continued working with members from the Northern Rocky Mountain Grotto caving group and state and federal biologists to set up 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. These will help understand the potential impacts of White-Nose Syndrome, a deadly disease caused by the fungus *Geomyces destructans*, which is spreading westward from eastern North America, where it has killed millions of bats.

Neil Snow provided input to authors of an upcoming article in the *North Dakota Law Review* on the value and use of Heritage Program data and web applications with respect to the intelligent siting of energy development projects.

Scott Mincemoyer attended a US Fish and Wildlife Service (USFWS) Spalding's catchfly recovery strategy technical team meeting in Lewistown, ID, and presented an update of the species' status in Montana and the results of recent inventory work by MTNHP for the species.

Working with key staff at NatureServe, Neil Snow is discussing the potential of creating an externally supported fund, to be overseen by NatureServe that would provide annual support for field surveys in Heritage Programs to help target Program-specific priorities for which other funding sources were unavailable.

MTNHP Zoology staff answered approximately 50 requests from patrons regarding zoological information for Montana that entailed more than 40 hours of phone and email responses; requests for predictive distribution models for animals are making up a larger portion of requests.

LIS staff participated in a poster session at the Montana Library Association annual conference in Big Sky, MT April 13, 2012. The poster session featured a soft introduction to MT.GOV Connect to interested Montana librarians. Subsequent presentations on the new Archive-It interface will be given to state agency representatives and depository librarians.

Stu Kirkpatrick provided staff support for the Montana Land Information Advisory Council (MLIAC) Grant Review Subcommittee. The Subcommittee met on April 6th to review and prioritize the FY13 grants. State Librarian Jennie Stapp, as Chair of MLIAC, participated in this meeting to assist the subcommittee with any policy matters associated with the Grants. The Subcommittee compiled an initial prioritized list which was brought before the entire Council at the April 18th meeting. After discussion the following grants were recommended for funding:

Grant Application	Amount
Gallatin County - GCDB Enhancement	$10,000
Park County - GCDB Enhancement	$20,000
Lake County - Public Lands Inventory	$20,700
Stillwater County - Traffic Control	$26,813
Lincoln County - Metadata	$16,150
Columbus - Public Infrastructure	$31,369
Lewis & Clark County - Digital COS	$60,000
McCone County - Digital Rights of Way	$10,103
Seeley Swan - GIS in Rural Communities	$37,207
Missoula County Planning - Web Mapping	$20,000
Total	**$252,342**

Numerous Geographic Information and MTNHP staff attended the Intermountain GIS Conference in Kalispell in mid-April. Jennie Stapp, Stu Kirkpatrick, and Evan Hammer were asked to provide a brief update on the progress of the NRIS/BMSC consolidation during the plenary session. MLIAC had a meeting as part of the conference which was chaired by Jennie Stapp. Stu Kirkpatrick, State GIS Coordinator, provided staff support. The conference also featured an MSDI session which included presentations by Stu Kirkpatrick (the session organizer), Erin Fashoway, Evan Hammer, Michael Fashoway, and Gerry Daumiller. Diane Papineau also organized and presented several sessions including a New to GIS meet-up and a GIS Explained (Intro to GIS) talk. Allan Cox and Karen Coleman gave a presentation on the MTNHP's Land Management database. Finally, MSL registered for the event as a vendor so that staff could have a table in the exhibit area to make attendees aware of the resources offered by MSL for GIS professionals. Staff attending the conference took turns covering the booth to help answer questions visitors had.

During April and May Stu Kirkpatrick worked with state agencies to "true-up" their agency's inventory of Esri software. This is required annually by the State's enterprise license agreement with Esri. From a budgetary perspective this year's "true-up" is important because it locks in an agencies percentage of use, and thus cost, of the agreement for the FY 14/15 biennium. A meeting is scheduled for May 22nd to finalize the inventory.

Stu Kirkpatrick completed version 3 of the MSDI FY13 work plan. The plan was submitted to MLIAC at the April 18th and recommended for approval without revision.

Staff is leading an effort make metadata available for public web map services made available from the Montana State Library. Stu Kirkpatrick has been working with an internal metadata team to identify critical elements for web map service metadata and has an aggressive schedule for getting these metadata records created and available for discovery through the Montana GIS Portal. GIS Analyst, Diane Papineau will take the findings of this process to the Metadata Workgroup in hopes of providing other organizations with guidelines to help them develop metadata for their web services.

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

Evan Hammer, NRIS Manager, is leading a team of Geographic Information staff members to examine the aerial imagery holdings within MSL and to develop a strategy for making this data available to users. There are an ever increasing number of options for storing and providing access to aerial imagery including different compression tools and different web service options. Because of the demand for this type of data, the size of statewide imagery datasets (2-3TB), and the increasing frequency of data collection, it is critical that we understand specific user needs and plan our data management and distribution strategy around that. With that in mind a survey was distributed to the Montana GIS community that re-affirmed the need for consistent statewide imagery available as web mapping services. It also identified historic imagery of something that patrons are very interested in. A follow up meeting for this group has been scheduled to determine how to move forward with this information.
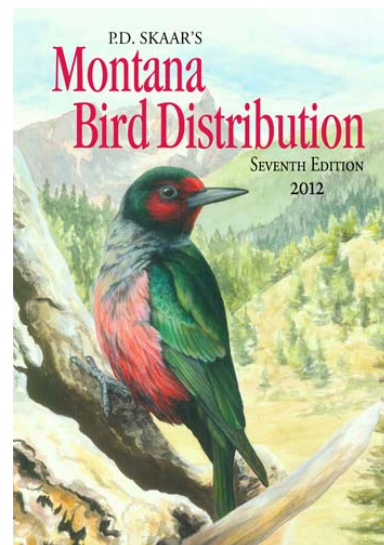
Erin Fashoway and Stu Kirkpatrick met with Dept. of Commerce Census and Economic Information Center (CEIC) to look for partnership opportunities. A series of two or three Boundary Annexation Survey (BAS) surveys jointly sponsored by the US Dept. of Census, CEIC and MSL are planned for this fall in Montana communities (locations to be finalized this summer).

The Montana Hydrography Workgroup has had several recent meetings following updates to the dataset and data management tools that the USGS offers for the National Hydrography Dataset. In addition to a general work group meeting held on April 11, there was a status update presented at the Intermountain GIS conference, a presentation of the new editing tools (May 3), and a discussion of naming issues in the National Hydrography Dataset (May 10).

Grant Austin, Web Programmer, worked with state agency GIS Developers, the Montana Department of Revenue, and SITSD to provide an easy to implement option for agencies that need to provide users with access to the property card information from the Montana Cadastral Mapping database. Several previous services had been

used by different agencies, but this solution should consolidate these agencies on the most up to date service available. Grant's efforts have saved these agencies several hours each that would have otherwise been required to implement the new solution.

MTNHP Zoology staff, led by Coburn Currier, Paul Hendricks, and Susan Lenard, completed its long collaboration with Montana Fish Wildlife and Parks (FWP), Montana Audubon, and the Montana Bird Records Committee on the 7th edition of the P.D. Skaar's Montana Bird Distribution book. The new edition is scheduled for printing in late May and will be available for a purchase price of $15 per copy. The number of updates from the previous edition is staggering. The Memorandum of Understanding that guides the Montana Bird Distribution Partnership was also updated and renewed for a period of 10 years by MTNHP, FWP, Montana Audubon, and the Montana Bird Records Committee.

Karen Coleman gave a presentation at the Montana Library Association conference in Big Sky on April 14 on how to use the Montana Field Guide to answer library patron questions about plants and animals.

At their request, MTNHP Senior Zoologist Bryce Maxell gave a presentation to MT Department of Environmental Quality (DEQ) on *Assessment of Bat Occupancy and Activity Levels Using Acoustic and Visual Encounter Surveys and Mitigating Impacts to Bats* to the 20th Annual Mine Design, Operations, and Closure Conference on May 1st at Fairmont Hot Springs.

Linda Vance, Kathryn Irvine of the US Geological Survey (USGS), and Wendy Velman, Montana-Dakotas Botanist of the Bureau of Land Management (BLM), are collaborating on a pilot project to build a database for all ecological data collected from sage steppe and grassland habitat in Phillips and Valley counties as part of a long term goal of establishing an ecology database capable of housing disparate data sets.

Allan Cox presented an afternoon workshop about the MTNHP and how to access its information via the web to a Landowner/Tree Farm workshop sponsored by the University of Montana's College of Forestry and Conservation in Missoula on May 3, 2012.

Susan Lenard, Paul Hendricks, and Bryce Maxell completed a report summarizing bat distribution information gathered in collaboration with the U.S. Forest Service on USFS lands across Montana. This report also includes a summary of known hibernacula in Montana, which will be used by multiple agencies to prioritize efforts to understand the potential impacts of White-Nose Syndrome.

Allan Cox gave a presentation about the MTNHP and its information and services to the annual Pyramid Lumber Contract Logger/Landowner/ Log Seller Meeting in Seeley Lake on May 4, 2012.

MTNHP ecologist Karen Newlon is working on a contract with the Northern Cheyenne Tribe for mapping, monitoring and training on the reservation this summer. Karen also has been asked by the USGS Northern Rockies Research Center to assist with field surveys for brine contamination in Prairie Potholes.

At the request of the USFWS, MTNHP Senior Zoologist Bryce Maxell gave a presentation to various state and federal partners entitled *Habitat Modeling for Sprague's Pipit in Montana: Data and Deductive and Inductive Models for Montana* at the USFWS Ecological Service's office in Helena on April 10th. Sprague's Pipit is a candidate species for listing under the Endangered Species Act. MTNHP has been asked to take the lead role by FWP and BLM to plan surveys to determine the status and distribution of the species in Montana so that that information can be used in the listing decision.

MTNHP ecologist Ute Langner is collaborating with Dr. Cathy Maynard of Natural Resources Conservation Service on a vegetation modeling project, which incorporates several MSDI GIS layers, as well as data layers recently completed by GIS Analyst, Duane Lund of NRIS.

The US Forest Service (USFS) Region 1 has asked MTNHP Senior Ecologist Linda Vance to collaborate on a Whitebark Pine Mapping project that has just been funded by the USFS National Remote Sensing Steering Committee for projects that involve remote sensing and/or analysis needs at the field level.

Karen Newlon and Linda Vance are participating in an Ecological Systems Ranking project with other western Heritage Programs. This project is being funded through a grant from the Western Governors' Association.

MTNHP aquatic ecologist Dave Stagliano contracted with DEQ to continue his studies on the impacts of sediment on aquatic macroinvertebrates. Dave will be working also with Bryce Maxell's team doing aquatic surveys on the Fort Peck Reservation.

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.

MSL purchased a Montana Association of GIS Professionals Organizational Membership. MSL and MAGIP have always worked closely to ensure that people have access to high quality spatial data for the state of Montana. We are excited about the opportunity to support MAGIP in this manner.

An MSL group led by Bob Holliday completed examining the MSL ArcServer environment, documenting use cases, requirements and potential impediments, and reported back to management in April. Due primarily to staff and training limitations the group's recommendation was to provide an ArcServer environment for internal use but for those services external in nature to use the state enterprise GIS architecture at SITSD.

Stu Kirkpatrick and Evan Hammer continue to work to consolidate the NRIS and BMSC staff by collaborating on a strategic vision for the larger group and developing a number of functional teams to work through tasks that have come up as part of the merger process. Current functional teams include the GIS architecture team, the web team, the request support team, the inventory/archive team, and the imagery data management team. This structure creates a higher level of staff participation in the merger process.

MTNHP Information Services received a $10,000 grant from the Noxious Weed Trust Fund to support data entry of Species of Concern and to help support Species of Concern reviews of weed management projects.

The Fort Peck Reservation will provide $75,000 to MTNHP to carry out holistic baseline wildlife monitoring in areas of coal extraction.

Coburn Currier gave four presentations on bats and bat biology and birds and bird migration/ecology to students at Central School and Helena High School.

Bryce Maxell attended the annual planning meeting for the Prairie Pothole Joint Venture and gave a presentation on MTNHP Data Resources and Predictive Distribution Modeling in Montana to a variety of state and federal agency and nongovernmental organization biologists and resource managers in Bozeman on April 12 and 13.

Scott Mincemoyer was awarded funding from DEQ to conduct five wetland plant species identification training sessions during the summer of 2012.

Karen Newlon and Linda Vance received a $25,000 grant from the USGS National Spatial Data Infrastructure Cooperative Agreement Program to enhance hydrogeomorphic descriptors in wetland maps.

Linda Vance and collaborators from the USGS Northern Rockies Research Center were recently funded to map sage steppe vegetation in the Charles M. Russell and UL-Bend National Wildlife Refuge using SPOT 5-meter remotely sensed imagery. MTNHP will receive $45,000 for their work on this project.

MTNHP Information Services received a renewal of grant funds ($6,000) from the Bonneville Power Administration for basic support of Species of Concern data entry and management.

Sam Suber, the new metadata/cataloger for LIS begins work on June 4, 2012.