Montana State Library – Natural Resource Information System (NRIS)
Core Report – 2nd Quarter FY 2006

Clearinghouse – maintaining and growing the data collection

For the most part, NRIS uses special-project funds for the implementation of new datasets in the clearinghouse. NRIS uses core funds to maintain the data after it has been incorporated into the clearinghouse. This includes a great deal of time spent problem-solving and making improvements to websites and back-end processes.

NRIS uses core funds to process regular updates to many of the datasets in the clearinghouse. Some data are received daily, such as stream gauge and reservoir data for the Sun River Watershed. Many are received weekly, such as the Water Rights and DEQ Remediation data. Other datasets are updated quarterly or on an as needed basis, depending on source agency preference and the rate of change within the dataset. At this time most of the data update routines require some level of staff intervention on both ends. We work with partners to automate data transfers to the extent possible. This quarter, we improved the update routine for the Water Quality Tracker.

NRIS eagerly awaits the January arrival of the 2005 NAIP Color Ortho-photography for the entire state. This data has countless applications including wetlands delineation, agriculture, natural resource management, economic development and homeland security. NRIS staff will spend several weeks processing the data into manageable files to post on the website. In addition, these photos will be used for an up-to-date base layer in our online mapping applications. Most of this work is being funded by a DEQ wetlands grant. A small portion will be funded with NRIS core funds as match.

Natural Heritage Program (NHP) databases have been undergoing major updates over the past 6 months, as we process a backlog of new information. We have now finished processing/updating 40 animal species, including 20 which previously had no occurrences records in the database. In addition, over 25,000 records have been added or updated in the animal Point Observation Database (POD), which now includes precise observation data for birds (replacing the more general Bird Distribution database).

NHP databases on plant species of concern are now fully up to date with all existing information, and hundreds of occurrences have been remapped with much more precise spatial accuracy. In addition, thousands of plant occurrence records have now been ranked (A-D or U), adding an enormous amount of valuable qualitative information.

As a result of this focus on database development, the total number of occurrence records in the NHP data system has increased by 100% in the past year – from about 6000 to 12,000 records. This enables us to provide much better information for environmental reviews and resource management. There is still a large volume of animal data to be processed, so the size and accuracy of NHP databases will continue to improve over the coming months.

Staff – the knowledge and expertise that underlies NRIS and NHP

By now, many of you have had a chance to meet and work with Sibyl Govan, the NRIS Projects Manager since April 2005. Sibyl supervises the NRIS staff and coordinates projects with our partners. Sibyl has become very active in the GIS/natural resources community since coming aboard, learning who does what and how NRIS can better support their business processes. Other recent staff changes include the addition of Tim Metcalfe to help manage our SQL Server/SDE environment, and Scott Straessler, who works closely with DPHHS on the Environmental Public Health Tracking project.

The NHP is now fully staffed, with the hire of Bryce Maxell as Senior Zoologist last January. Other relatively new staff include Linda Vance, hired last spring as an Ecologist managing wetland and watershed inventory projects, and Matt Gates, who coordinates the Amphibian & Reptile monitoring project. This has rounded out a truly "all-star" team of biologists and information management experts, which is at the heart of the program's success and the great progress that has been made over the past year.

Core funds are used as partial funding for the Library's network administrator and web manager positions. The Library has historically overworked and underpaid our network administrators, and as a result, we've seen a few come and go (the last one lasting only six months). We are in the process of rewriting the PD to more accurately reflect the job duties and justify the appropriate pay, and we'll be recruiting once again in the very near future. On a much happier note, Tom Marino came on board this fall as MSL's Web Systems Manager. Tom has been working on implementing the state web template, which involves addition of the requisite header and footer, but more importantly, includes a long-overdue restructuring of some of the NRIS web.

Service – providing access to information

The NRIS website, maintained primarily using core funds, averaged about 2900 visitor sessions per day during November and December. 13516 GIS files were downloaded in November and 10619 in December. Unfortunately we don't have statistics on our popular web feature and web raster services, to which many users connect directly using desktop GIS software. We also can't be certain how much of our traffic comes from core contributing agencies.

NRIS/NHP staff filled 233 online data requests and responded to numerous questions and problems via telephone and e-mail.

The NRIS "core" web applications consist of:

- Digital Atlas/Thematic Mapper: Create custom maps from over 80 GIS layers. Also presents related tabular information and reports.
- TopoFinder: Scan and download USGS quad maps and DOQQs.
- Data List: Download files from a comprehensive catalog of GIS datasets.
- Data Bundler: Quickly select and download multiple GIS data layers conforming to an area of interest within the state

- Montana Maps: A growing collection of preformatted maps.
- Raster Service: Allows GIS software to connect directly to the server and display images without requiring the user to download them.

All NRIS staff help keep these applications up and running, which involves checking on them and troubleshooting as necessary. We do this for partner applications that are located on our servers as well. NRIS recently implemented software that constantly monitors the health of the data center and notifies staff when things go awry.

The NHP website was remodeled this past fall, making it easier to navigate and to "headline" the most important tools and resources accessed by our users. We also added a major new Species of Concern Search Tool that enables searches by species, status rank or designation, and geographic area – including statewide, county, watershed or TRS. The resulting "lists" can be readily printed, and include links to additional information in the NHP Field Guides and NatureServe's Explorer website covering all of North America.

NHP biologists completed 9 project reports in the first half of FY06, providing new information on the distribution and status of Montana bats, plant species of concern (including two that are federally-listed), aquatic ecosystems, as well as some specific study areas in the Helena National Forest (Snow-Talon burn) and the Cottonwood & Whitewater watersheds (on the central high-line). Work is currently underway on a Plant Species of Concern update for 2006.

Participation

NRIS staff and management participate in many meetings in order to maintain knowledge of the natural resource and GIS world, to learn what NRIS can do to support partner agencies and to let others know about NRIS services. This quarter, NRIS personnel attended the Montana Land Information Advisory Council, the EPHT Advisory Council, the Ground Water Assessment Steering Committee, the Governor's Drought Committee, the Homeland Security GIS Subcommittee, the Montana Wetlands Council and the Montana Watershed Coordination Council.

Sibyl attended the American Water Resources Association, Montana Chapter conference held in Bozeman in October. MSL hosted a GIS Day event for fifth graders from Smith School in November. In December, Sibyl presented at the Montana Independent Telecommunications Systems conference in Helena. Both Sibyl and Jim attended the State Information Technology Conference held in Helena in December.

Jim served on a MLIAC committee charged with developing rules to implement the Montana Land Information Fund resulting from passage of the Montana Land Information Act during the recent legislative session. Jim and Sibyl have also taken part in planning efforts leading to the eventual development of a Montana GIS Enterprise Plan.

NHP Senior Ecologist Greg Kudray has assisted DEQ and ITSD in obtaining the new NAIP Color Ortho-photography, and will be using this imagery to map wetland and riparian areas to USFWS national standards. Greg and other NHP ecologists have also been developing and testing improved vegetation mapping techniques based on satellite imagery, environmental data, and field inventory that result in more detailed and current maps than the GAP vegetation maps (these are now available for the Centennial Valley and Rocky Mountain Front).

Senior Zoologist Bryce Maxell and NHP Database Coordinator Karen Walker have been working closely with FWP staff to coordinate zoological database development and data processing. Program Botanist Scott Mincemoyer has been working with the Montana Native Plant Society to organize a Plant Conservation Conference for February 2006. These and many other NHP staff have worked with various state and federal agencies to provide consultation as well as technical and planning assistance on numerous committees, working groups and projects.

Infrastructure

Emphasis for the past year has been on redundancy and fail-over within our data center to ensure high availability of information in the collection. All clearinghouse data have been migrated from various storage media to our storage area network (SAN). A recently installed UPS unit provides redundant battery backup and will sustain the data center for approximately one hour in the event of a power failure. In preparation for the eventual installation of a back-up generator (funded by the legislature last session; awaiting ITSD approval), we installed a new electrical box that combines all the data center circuitry into a single point of access.

NRIS staff have spent significant time planning and testing for migrating our web applications, spatial applications and databases to a new blade server array. Full migration and testing will be completed this quarter; barring unforeseen problems, all applications will be operational in the more robust blade server environment by March 31.

As an additional precaution, the contents of the data center are backed up and moved offsite for safekeeping. Duane spent considerable time this quarter fine-tuning our back-up procedures and testing our back-up and restore capabilities.

We renewed our ESRI software licenses for ArcSDE, ArcIMS and ArcGIS Desktop.

Program Administration

The Natural Heritage Program convened the first meeting of a new NHP Partners Committee, which endorsed a new 4-year strategic plan for the program as well as the prospective transition of the NHP contract from The Nature Conservancy to the University of Montana. The next meeting of this group is scheduled for early March.

The State Library's contract for operation of the Natural Heritage Program, which has been held for the past 20 years by The Nature Conservancy, is scheduled to transfer to the University of Montana in the spring of 2006. This option was selected after an information-gathering, input and analysis process that began in the fall of 2004. The key benefit of this decision is that it will minimize change for both partners and staff, by keeping the program in Helena at the State Library and maintaining all existing functions and services. University administrators and faculty – led by the VP for Research & Development, Dan Dwyer – are excited by this opportunity for partnership and service to the many NHP users, and to further the development and success of the NHP.