

APPENDIX 1: SCOPE OF WORK

THE UNIVERSITY OF MONTANA

for operation of the

Montana Natural Heritage Program FY2006 - 2007

The Natural Heritage Program is funded from a variety of sources in addition to this contract (hereinafter referenced as “core” funding). Because current core funding is not adequate to support the staffing required to perform essential functions as well as related services desired by partner agencies, the following scope of work incorporates work that the University believes can be accomplished with additional funding.

“Supplemental core” funding includes support from other partners for essential functions of the NHP – continued database development and maintenance, and basic information services. “Project funding” includes support from partners for specific additional activities or projects (e.g., field surveys or developing new types of data) that fall within the overall mandate and contribute to the mission of the NHP.

Both supplemental core funding and project funding are conveyed to The University of Montana through separate and independent grants and contracts. The University cannot guarantee the receipt of supplemental or project funds, nor the completion of work items noted as reliant on those funds. Where not otherwise noted, work items will be accomplished with core funding provided through this contract.

- A. **Administer the development, maintenance and operation of the Montana Natural Heritage Program (NHP)** as established by Chapter 650, Laws of 1983, and Chapter 395, Laws of 1985, and codified under Title 90, Chapter 15, MCA. The Heritage Program is comprised of complex relational databases, hard-copy documentation and expertise on Montana’s flora, fauna and biological communities, emphasizing vulnerable species and habitats, and also includes related information on land stewardship, bibliographic/source references, and related data files.
1. **Maintain the Natural Heritage Program office, databases and resource center** at the Montana State Library, as part of the Natural Resource Information System and the Montana State Digital Library.
 2. **Program staffing and expertise.** Maintain a staff with expertise in ecology, zoology, botany, and information management and dissemination systems, and specific knowledge of Montana’s natural communities and species of concern. (Core staffing consists of a Director, specialists in the areas of Terrestrial and Aquatic Ecology, Zoology and Botany, Information Systems/Services Manager, Databases Coordinator, Web Developer, Data Entry Technician and Administrative Coordinator; (note: the staff positions serving these functions are maintained 60% with core funding and 40% with supplemental core and project funds)
 - **Respond to questions and information requests** related to the identification, assessment, status and management of Montana’s flora, fauna and natural communities, emphasizing species and habitats of conservation concern. (core

and supplemental core funding)

- **Consult with and provide additional support** to partner agencies on specific issues/needs, programs and projects, *to the extent that funding allows or as provided for through supplemental or project funding from the partners.*

B. Information exchange and coordination. Maintain a central repository for multi-agency data on Montana's flora, fauna and biological communities, and actively solicit and exchange information and expertise with state and federal agencies, academic and non-government institutions, and other producers of biological data about Montana.

1. Data coordination and sharing.

- Establish and lead, through the NHP Coordinating Committee, a biological data management work group for Montana; (core and supplemental core funding)
- Through the working group, establish and promote the use of consistent data standards and formats to promote and facilitate data sharing with the NHP and among agencies. (core and supplemental core funding)
- Develop cooperative agreements with state and federal agencies and other major partners to facilitate regular and efficient data transfer, integration and delivery and to help support the costs of database development/maintenance and information services. (project funding)
- Engage more agencies in using and providing financial support for the development and maintenance of customized web services for data visualization and analysis.
- Establish electronic links to other major data sources on the distribution and characteristics of Montana plants and animals. (core and supplemental core funding)

2. Data exchange with Heritage Network. Maintain compatibility with Natural Heritage programs in other states and provinces, and conduct an annual exchange/updating of state and national/global element data with NatureServe. Cooperate with NatureServe and other heritage programs to ensure that Montana has access to the most current and complete rangewide data available, and that the Montana component of regional and national data synthesis and analysis projects is current and accurate.

- Perform annual data exchange with NatureServe to obtain updated Global information for Montana species and to update Montana information in NatureServe's multi-jurisdictional dataset. (core and supplemental core funding)
- Participate in multi-jurisdictional data development or analysis projects, to the extent that funding allows. (project funding)
- Participate in regional and national network coordination meetings and monthly conference calls to ensure continued compatibility and to take advantage of opportunities and advocate for initiatives that would benefit Montana. (core and supplemental core funding)

C. Database Development and Maintenance. Continue to maintain, revise, update with available information, and further develop all databases managed by the NHP, including:

1. Distributional data on species. Compile, validate and integrate observation records for native animal species and detailed occurrence data for plant and animal Species of Concern.

- Conduct a systematic review and clean-up of animal data currently in POD and process the backlog of POD records into Biotics. (core, supplemental core and project funding)

- Develop occurrences, inferred extent, management extent (predicted habitat) and updated state range maps for high-priority species (globally significant, federally listed-proposed-candidate and selected state-level priorities identified in consultation with partners).
- Develop up-to-date occurrence and inferred extent records for at least half of the remaining animal Species of Concern.
- Develop automated procedures that facilitate updating and integration of new data of POD into Biotics, with assistance from NatureServe. (core funding with technical assistance from NatureServe)
- Conduct clean-up of plant records in Biotics to improve the accuracy, quality and completeness of existing occurrence records, focusing on globally significant and S1 taxa. (core and supplemental core funding)
- Maintain POD and Biotics on an ongoing basis by incorporating readily available data on plant and animal Species of Concern and other nongame vertebrates (in POD). Available data includes data that is provided in standardized formats for Species of Concern and Potential Concern and data of reliable accuracy provided in standardized electronic format for other animal species. (core and supplemental core funding)
- Tap Montana museums and herbaria to acquire any additional records for Species of Concern. (supplemental core and project funding)
- Revise on-line entry of observation data on animals to include better mapping capabilities, precise locality information, additional attribute and descriptive information, and to input directly into temporary POD database. (core and supplemental core funding)

2. Distributional data on ecological communities and habitats.

- Build and document a classification hierarchy that links vegetation communities to higher level habitat types that are useful for mapping and management. (core and supplemental core funding)
- Implement habitat mapping in selected priority landscapes where information is needed by partners for conservation and management activities (project funding)
- Chair the statewide land cover I-team, with the goal of developing a more accurate and useful vegetation land cover layer for Montana. (core and supplemental core funding)
- Establish a central repository for Montana vegetation plot (training) data for land cover mapping. (initiate with core funding; will require project funding to compete)
- Build consistent and cost-effective NWI mapping capability in Montana and integrate NWI with vegetation and hydrogeomorphic classifications (project funding)
- Develop a more extensive database of community element occurrence and site records that document areas of high quality habitat. (project funding)
- Complete the classification and documentation for aquatic stream habitats in the Missouri River watershed to facilitate identification, understanding, and management. (project funding)
- Integrate the aquatic ecosystem database into the NHP information management system and provide greater access to users. (core and supplemental core funding)

3. Work with partners to identify priority information gaps on the distribution, status and ecology of species and habitats and develop coordinated, multi-partner

strategies to address those needs (contingent upon supplementary funding through cooperative agreements with other partners).

- Begin developing statewide inventory and monitoring plans, in coordination with partners, for reptiles, bats, amphibians, selected birds and small mammals, and selected terrestrial invertebrate groups. (core and supplemental core; project funding required to complete and implement plans for all groups identified)
 - Work with partners to develop and begin implementing, with partner support, a statewide inventory plan for Plant Species of Concern.
 - Identify habitat types with priority management needs and develop status assessment plans in coordination with partners. (project funding)
 - Develop and seek funding for a program of cooperative biological inventory work with private landowners (emphasizing conservation easement lands). (initiate with core; requires project funding for implementation)
 - Partner with a Tribal government to begin conducting biological inventory of tribal lands, addressing whether precise locational data should be managed by NHP or by the Tribe. (initiate contacts with core funding; requires project funding for implementation)
4. **Status rank documentation.** Status ranks and documenting of ranks for Species of Concern* and natural communities tracked in the NHP data system; status ranks are assigned both for global status and state status, and are based on the system developed by The Nature Conservancy and utilized by over 80 heritage programs throughout the United States, Canada and Latin America;
- Chair and lead expert working groups in conducting status reviews on a specified regular basis (or when significant new data is obtained), using standardized, documented procedures. (core and supplemental core funding)
 - Document the basis for all re-evaluated or revised status ranks within the data system, in reportable formats. (core and supplemental core funding)
 - Publish and distribute updated Species of Concern reports on a regular basis; post updated ranks on the NHP website. (core and supplemental core funding)
5. **Management-related information on species, habitats and lands.** Documentation characterizing the biology and management of species and habitats, and the stewardship status of public lands and conservation easements.
- Expand and update field guides
 - Complete and update field guide information for globally significant and S1 plants (core and supplemental core funding) and other species as possible through project funding.
 - Begin a field guide for aquatic habitats/communities with information on Missouri River types. (core and supplemental core funding)
 - Update and expand animal field guide in the course of project work for other species and groups, emphasizing Species of Concern; (project funding)
 - Revise on-line Community guide application so it links dynamically to the NHP databases and delivers all available information (core and supplemental core funding).

* Species of Concern are defined as having a rank of S1-S3 (animals) and S1-S2 (plants) in the natural heritage ranking system, or designation as Endangered, Threatened, Candidate or Proposed under the US. Endangered Species Act.

- Work with partners to identify key ecological knowledge gaps for the management of species and habitats and develop studies to address them, where appropriate. (project funding)
- Annually update all Stewardship data with data from public land management agencies and land trusts. Work with the State of Montana to integrate Stewardship data with Montana's Cadastral database. (core and supplemental core funding)
- Systematically document and report weed observations encountered during NHP field inventories to enable tracking and eventual analysis and reporting of invasives threats to priority species and landscapes. (core and supplemental core funding)

D. Data and Information Dissemination. Develop, produce and distribute reports and electronic information (via the web) to disseminate NHP data at appropriate levels of detail and with adequate support and interpretation to users in state, federal and local agencies, the private sector, and the public.

- 1. Mediated request services.** Respond to requests for information from private citizens, government agencies, businesses, universities, and other users. If requests do not correspond to NHP data and expertise, refer requesters, whenever possible, to appropriate information sources; (core and supplemental core funding)
 - Respond to requests for information from private citizens, government agencies, businesses, universities, and other users. If requests do not correspond to NHP data and expertise, refer requesters, whenever possible, to appropriate information sources.
 - Conduct Species of Concern reviews for specific geographic areas and the generation of maps, reports, and letters for each search review.
 - Fill requests for digital transfers of SOC data and other types of information managed in NHP databases.
- 2. Web Services.** Develop delivery formats and mechanisms that are easy to use and effectively disseminate information to key users.
 - Add historic NHP reports on the web and develop effective search/indexing tools. Integrate publications with MSdL catalog system and spatially enable searching of publications. (core and supplemental core funding)
 - Continue to develop customized internet applications that enable public agencies to search and view data for the lands and resources they manage; requires funding from participating partner agencies. (supplemental and project funding)
 - Add landscape/site information to web applications in spatially searchable formats. (core and supplemental core funding)
- 3. User training and support**
 - Regularly gather information from users about their information needs, format/access preferences, and the effectiveness of our delivery systems and tools. Involve users in applications development and testing to ensure that the tools produced meet user needs as effectively as possible. (core and supplemental core funding)
 - Give presentations and workshops at key user meetings to describe resources available and demonstrate data access methods. (core and supplemental core funding)
 - Conduct on-site training with partner agencies in use of specialized applications for accessing data on lands and resources that they manage (supplemental and partner

- funding).
 - Provide regular updates (at least quarterly) on the website and through emails as new resources become available (including reports, web tools, field guide enhancements, etc.) (core and supplemental core funding)
4. **Database administration and maintenance.** System upgrading, operations and quality control. (core and supplemental core funding)
- Test and update Oracle and Biotics as updates become available.
 - Ensure regular back-ups of all files and databases
 - Conduct regular data integrity checks and fix any identified problems.
 - Develop a GIS geodatabase of NHP information to compliment and support the NHP BIOTICS database. The geodatabase will include and spatially integrate:
 - original observation data,
 - species occurrences per tracking unit,
 - species inferred extent,
 - species conservation management units,
 - species range extent (current and historic).

E. **Publications.** Make available four copies of all published reports for inclusion in the Montana State Library's State Publications Center and assist in supplying appropriate information concerning all published reports so that correct citations may be entered into the OCLC library catalog network (project funding).

F. **Administration of user fee system.** Assist in the administration of a user fee policy for private for-profit users of the NHP data and services, as enacted by the Montana State Library Commission; assist in the process of receiving and accounting for funds received from user fees, and submitting such funds to the appropriate depository (core and supplemental core funding).

G. **Marketing and promotion of services.** Market and promote the use of the NHP information and services (core funding):

1. Maintain descriptive program information, coordinated with the State Library (brochures, fact sheets, etc.);
2. Present and publish technical and non-technical information about NHP resources, activities and accomplishments as time and resources permit;
3. Collaborate with the Library and the NRIS program to effectively represent the mandate, activities and products of the NHP in reports, brochures, displays, maps, etc. that are developed for NRIS, MSdL and the State Library;

H. **Agency reporting and participation.** Evaluate the NHP on an ongoing basis and provide status reports as requested and required but not more frequently than bi-monthly; participate in relevant MSL/MSdL/and NRIS planning and coordination initiatives and work groups (core funding):

1. Participate in meetings of the Natural Resource Data Management System Advisory Committee; establish and provide staff support to an NHP Coordinating Committee that engage a more complete range of partner organizations and groups to provide guidance on act appropriately on advice and guidance offered.
2. Produce progress updates for the bimonthly MSL Commission reports, as well as

- contributions to NRIS annual reports, synthesizing the various efforts and accomplishments of the NHP.
3. Meet with NRIS Director on a semi-annual basis to report and assess progress toward objectives and to identify any changes in circumstances or partner funding, challenges, opportunities, additional resources needed, etc. Report overall progress in writing on an annual basis.
 4. Provide quarterly progress reports on selected measurable activities related to database development (by species and record types), and information services (mediated requests and data transfers)
 5. Participate in regular and special staff meetings of the Montana Natural Resource Information System and the Montana State Library;
 6. Participate in strategic planning efforts of the Montana Natural Resource Information System and the Montana State Library, as appropriate.