

Northern Great Plains Network

Inventory and Monitoring Monthly Report

November 2000

Greetings to the Network! It has been a very busy month working on revisions of the Study Plan that was submitted to the I&M Washington office at the beginning of October. The new Regional I&M Coordinator, Phyllis Adams, is on board in Omaha and has been working with me to make those revisions. This report includes the revised proposal for FY01 and updates on issues raised for last month's report.

Update on Network Meetings: The votes were split just about evenly between meeting as a network twice a year and once a year. As a compromise, I would suggest that we have a minimum of one meeting each year in the spring to review data from the previous year and assess the overall program and perhaps have a second meeting each year in the fall to discuss logistics and inventory details for those parks with inventories coming up the next year. Additional meetings could be held if necessary.

While most parks agreed it would be great to have an opportunity to see different parks in our network by rotating our meeting place, there were concerns that not meeting in a central location would mean a very long drive (9-10hrs) for some people. I would suggest that our annual, network-wide meeting still be held in a central location, but other meetings to plan for upcoming inventories may involve fewer parks and would perhaps be an opportunity to meet in different places.

Study plan and revised proposal: At the beginning of the month the network received comments on the inventory study plan that had been submitted. The review panel recognized that our network did not have enough time to prepare a full proposal and has set a deadline of October 1, 2001 to submit a revised, fully detailed study plan for inventories in FY02-04. I have worked with the Regional Coordinator to submit a proposal for FY01 which can be found at the end of this report.

Part of preparing for the revised study plan involves completing data mining and management activities this winter. For example, the network needs to develop lists of vascular plant and vertebrate species *expected* to occur in each park and lists of species *documented* to occur by references and voucher specimens. The network has a good start on this through the efforts of the park staff (thank you), but I will be working with intermittent employees at THRO and BADL, as well as agreements with researchers, to complete this work. I will also be setting up agreements with researchers to complete voucher searches of off-site collections and literature searches. The process of hiring our data management technician (or information specialist) will get started immediately so that they can be hired as soon as possible. This person will help complete the I&M databases such as NPSpecies, NRBib and the Dataset Catalog as well as convert previous data to GIS layers. The review panel supported additional data mining over the next year and suggested that the network request additional funding for this phase. Accordingly, our proposal includes a request for \$10,000 in additional funds for data mining.

The review panel requested some revisions for the fish inventory and plant inventory protocols. The fish inventory protocol has been revised to address the panel's concerns and field work is scheduled to begin in August 2001. Through the revision process, it became clear the amount of work necessary to do a high quality job of data mining and management over the winter meant that there would not be enough time to also do a high-quality job of initiating and planning for the plant inventory. I proposed postponing the plant inventories at Theodore Roosevelt, Fort Laramie NHS and Fort Union Trading Post NHS until FY02 to the Regional Coordinator and the Network Steering Committee. There was agreement that we should postpone this inventory to insure that we get the highest quality products possible. If you have any questions on this, please give me a call.

Again, a copy of the revised proposal is at the end of this report. I left out the maps for the fish inventories so that the document would be small enough to e-mail.

Upcoming for December:

- Look for a Memo on Network Coordination outlining the role of the steering committee and group of park representatives as well as supervision of the network coordinator
- Begin hiring process for data management technician/information specialist
- Setting up cooperative agreements or inter-agency agreements to assist with data mining and management
- Plan well ahead of time for a network meeting in late April/early May to review data mining results and priorities for new inventories

Revised Inventory Funding Proposal for FY2001

Northern Great Plains Network

December 1, 2000

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Section 1. Introduction

This proposal addresses the review panel's recommendations that the Northern Great Plains (NGP) Network focus on identifying and evaluating existing information and data gaps during FY01 and preparing a detailed study plan for vascular plant and vertebrate inventories in NGP network parks. In addition, the network is submitting a revised project description for completing a fish inventory at five parks. The NGP network decided to postpone the plant inventory originally proposed for FY2001 to allow for more thorough planning and consideration of sampling design.

The NGP network received funding in FY2000 to develop a plan for vascular plant and vertebrate inventories in its thirteen parks. The network initiated this process by compiling reports and datasets on significant inventories previously conducted within the parks. This preliminary information was then reviewed by park staff and subject matter experts during a scoping meeting held in April of 2000. Subject matter experts reviewed the quality of previous inventories, recommended areas where additional data mining would be needed and made suggestions for future inventory work. Based on this information, the park staff set preliminary priorities for additional inventory work. During the past year, park staff also hired an Inventory and Monitoring Coordinator and began populating the NPSpecies and NRBib databases, as well as initiating voucher searches.

The network requests funding for FY2001 to complete preliminary data mining and develop a detailed study plan that outlines the strategy for completing all inventories for the NGP network. Specific goals for FY2001 include:

1. Assess completeness of existing inventory data by comparing lists of species expected to occur in each of the parks with lists of species verified to occur in parks by published reports, references and voucher specimens.
2. Develop a detailed study plan for vascular plant and vertebrate inventories in NGP network parks.
3. Conduct fish inventories at Scotts Bluff NM, Devils Tower NM, Fort Laramie NHS, Wind Cave NP and Mount Rushmore NM.

A schedule and budget for the work proposed in FY2001 is also included.

Section 2. Assessment of Existing Inventory Information

Expected Species Occurrences

To identify data gaps and inventory completeness we will compare a list of species expected to occur in each park with a list of species verified to occur on park lands either by written reference or voucher specimens. The NGP network has nearly completed the compilation of master lists for each vertebrate taxa from county and state records, knowledge of local experts and range maps. Table 1 shows the current status of efforts to complete these lists. The lists for vertebrates will be completed in the next couple of months.

PARKS	PLANTS	FISH	HERPS	BIRDS	MAMMALS
Agate Fossil Beds NM (AGFO)			X	X	X
Badlands NP (BADL)			X		
Devils Tower NM (DETO)		X	X	X	X
Fort Laramie NHS (FOLA)		X	X	X	X
Fort Union Trading Post NHS (FOUS)			X	X	X
Jewel Cave NM (JECA)		NA			X
Knife River Indian Villages NHS (KNRI)			X	X	X
Missouri National Recreation River (MNRR)					
Mount Rushmore NM (MORU)		X		X	
Niobrara National Scenic River (NIOB)					
Scotts Bluff NM (SCBL)		X	X		X
Theodore Roosevelt NP (THRO)			X		X
Wind Cave NP (WICA)		X	X		X

Table 1. Status of compilation of lists of species expected to occur in each of the five taxa in each park. A gray box indicates partial list or list in progress. An 'X' indicates the list has been compiled.

Plants

A similar strategy is being used to compile lists of plant species expected to occur at each park. The I&M WASO office provided species lists from the BONAP database for nine of the thirteen parks in the NGP network. Additionally, an assessment of park floras

completed by Dr. Jim Bennet (USGS-BRD) for the Midwest region in 1995 will provide lists for Scotts Bluff and Agate Fossil Beds National Monuments. The scope of work needed to complete the vascular plant lists will require additional outside expertise. The network will set up a cooperative agreement or contract with regional plant experts to complete this step of the process (see schedule and budget sections).

Species of special concern

The NGP network will use information on the occurrence of rare species, species of special concern and state and federally listed species maintained by the state Natural Heritage Programs to augment the master lists. This list will be used to assess the need to describe the distribution and relative abundance of species of species concern in network parks, the second objective of the inventories program.

Existing Park Inventory Information

A preliminary bibliography of written references and archived datasets that document vascular plant and vertebrate species occurrences in the parks was compiled by the network in FY2000. Other sources of information, such as published journal articles and reports, GIS layers, data sets etc. from other agencies still need to be thoroughly searched. Steps that will be taken to locate these records include (a) examining the Investigator's Annual Report (IAR) records for each park for studies that have been initiated and/or completed within park boundaries (b) searching databases of scientific literature (for example Biological Abstracts) for relevant reports and (c) directly contacting nearby local, state and federal agencies. The NGP network will seek to establish a cooperative agreement to complete this work through the newly established Cooperative Ecological Services Unit for the Midwest Region.

In addition, the Niobrara and Missouri River parks have funding for a thorough search of all information relating to natural resources in their parks. Since this kind of search would also uncover pertinent information for the vascular plant and vertebrate inventories, the network coordinator has agreed to assist in establishing a cooperative agreement or contract to complete this work.

Voucher specimens are an important means of verifying species occurrences in the network parks. Initially, records of voucher specimens from existing ANCS+ databases will be added to the NPSpecies database. Additional searches of off-site collections will begin with institutions previously identified by subject matter experts and the Midwest Region as likely to have park specimens. Searches will focus initially on repositories with searchable collections databases in order to maximize efficiency. Drawing on the experience of the Heartland Network, we expect search to take approximately 4 months. The NGP network will establish a cooperative agreement or contract to complete this work (see schedule and budget sections). Adding newly discovered records to the NPSpecies database will be part of the agreement.

Assessment of Inventory Completeness

The final step in verifying the completeness of existing inventory information and identifying data gaps is to compare the master lists of species likely to occur in the parks to the list of species that have been documented. Also, the NGP network will use two additional tools to estimate the completeness of inventories. For vertebrates, the program SPECRICH 2 (Nichols *et al.* in review) will be used to estimate total number of species for previous reports with sufficient data and new inventories. For plants, Dr. Jack Butler, currently working with the USGS-NPS Vegetation Mapping Program, is developing a model to estimate species richness using elements of species-area curves and the jackknife technique.

The NGP network plans to have the master lists compiled and compared to the list of verified species for each park prior to a spring network meeting. This meeting will be held to review the information and, if necessary, refine and revise the priorities for project inventories established at the scoping meeting. This will allow the network 3-4 months for planning inventory protocols and to prepare a revised study plan to be submitted by October 2001. Both park staff and subject matter experts will be involved in the meeting and developing the study plan to ensure that inventories are scientifically credible and support park management objectives.

Section 3. Data Management

The NGP network will use several strategies to manage data and populate I&M databases with information acquired through data mining during FY2001. Two intermittent employees at Badlands N.P. and Theodore Roosevelt N.P. have been populating the NPSpecies database with network-wide species information. The network will also hire an information specialist to update the NRBib and Dataset Catalog databases, convert inventory data into GIS layers and process data gathered through new inventories. Cooperative agreements and contracts will also be sought to assist in the completion of data mining and management.

In addition, the NGP network will develop a detailed data management plan during the development of the detailed study plan. The data management plan will be modeled on the guidelines provided by the WASO I&M office and the example provided by the Heartland Network study plan. The network will also begin development of a relational database built on the template provided by the I&M WASO.

NRBib Database

The NRBib database was current as of 1996 for all of the parks in the network and since 1996, Badlands N.P. and Theodore Roosevelt N.P. have maintained and updated their NRBib databases.

The NRBib database is being updated with references from the preliminary bibliographic search and will be updated with references discovered through additional data mining.

NPSpecies Database

During FY2000, the I&M WASO assisted our network by entering species lists from existing databases (NPFlora and NPFauna), published and un-published reports and references submitted by the network. In the last two months, the network has made significant progress in building on this database (Table 2). Species lists from additional reports have been added to the database and references have been added for many species that were converted into NPSpecies from previous databases without evidence records. We estimate that the NPSpecies database will be fully updated with existing information by January 2001.

PARKS	PLANTS	ref	FISH	ref	HERPS	ref	BIRDS	ref	MAMMALS	ref
AGFO	X		X		X		X		X	
BADL	X	X			X		X			
DETO	X		X		X		X			
FOLA	X		X	X	X	X	X	X	X	X
FOUS					X		X			
JECA			NA		X	X	X	X	X	X
KNRI	X	X			X	X	X	X	X	X
MNRR					-----				-----	
MORU			-----		-----		-----		-----	
NIOB										
SCBL	X	X	X		X	X	X	X	X	X
THRO										
WICA			X	X	X	X				

Table 2. Status of the NPSpecies database as of December 2000. An 'X' in the reference column indicates where evidence for species records has been entered. Dashed lines indicate areas for which there are no previous studies to enter.

Dataset Catalog

All new records of data sets uncovered through information searches will be recorded in the Dataset Catalog. The updates will either be done through the cooperative agreements and contracts to locate the information or by the data management technician.

Data Verification and Validation

For all records entered into NRBib, NPSpecies and the Dataset Catalog, the digital records will be compared to the original sources by someone who did not enter the data. This will improve data quality by identifying and correcting transcription errors, spelling mistakes, erroneous names and synonymy problems. Completed species lists in NPSpecies will also be sent out to the parks and subject matter experts for review.

GIS and Spatial Data

Adding spatial information to the species inventory data is a high priority for the NGP network in order to improve the usefulness and accessibility of the information to park management. Fortunately, the parks in the NGP network have at least a minimum level of GIS capability and in most cases, someone on staff who is knowledgeable in ArcView or ArcInfo. There is a permanent, GIS specialist based at Theodore Roosevelt N.P. who serves the North Dakota parks and a GIS specialist at Wind Cave N.P who assists Jewel Cave N.M. and Mount Rushmore N.M. In addition, several other parks have staff who work with GIS as a significant portion of their duties.

Once the initial data mining activities described above are completed, emphasis will shift to compiling the spatial information for the network. A list of currently available data layers was compiled for the study plan and has been updated since October. These data layers will be added to the dataset catalog and metadata completed. Minimum FGDC compliant metadata standards will be developed by the network during FY2001 as part of the data management plan. In addition, information from previous inventories will be converted to shape files in ArcView wherever possible. All GIS products will be compatible with the I&M Theme Manager and have FGDC compliant metadata. The NGP network will consider funding an additional, temporary GIS specialist in FY2002 if the planning during this year indicates that will be beneficial.

References:

Nichols, J.D., T. Boulinier, J.E. Hines, K.H. Pollock, and J.R. Sauer. 1996. Inference Procedures for Animal Community Dynamics: Changes in Species Richness Over Time and Space. In Review

Section 4. Fish inventories for Devils Tower National Monument, Fort Laramie National Historic Site, Mount Rushmore National Memorial, Scotts Bluff National Monument

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Project Statement: During the scoping workshop held in April 2000, subject matter experts and park staff identified five parks where the fish species inventories were not complete. There were no records of any previous fish inventories at Mount Rushmore N.M., Devils Tower N.M., and Scotts Bluff N.M. There had been at least one previous fish inventory at Fort Laramie N.H.S. and Wind Cave N.P. (Armstrong and Adams 1988, South Dakota Game, Fish and Parks 1997), but experts indicated that these inventories were incomplete.

A list of fish species likely to occur at each park has been compiled since the workshop (Table 3). The list confirms that only 8 of 17 species have been documented at Ft. Laramie N.H.S. At Wind Cave N.P., all of the regularly occurring species were documented in an inventory in 1997, but the plains topminnow (*Fundulus sciadicus*), a species of concern for South Dakota and at the global level, has not been documented in the park, although records from the surrounding area suggest that it may occur there (Backlund *pers. comm.*).

This inventory project was chosen in part for FY2001 because the stream systems at each of these parks are relatively simple, making completion of this project feasible while the network completes planning for additional priorities during FY2001. If the data mining and planning during FY2001 reveals that other parks need fish inventories, those will be incorporated into the projects to be completed in FY2002-2004.

The streams to be inventoried at each of the parks are depicted in Figures 1a-e:

- At Mount Rushmore NM there are two stream segments that total approximately 1.5 miles
- Approximately one mile of the Belle Fourche River runs through Devils Tower NM
- The North Platte River and Laramie River run through portions of Fort Laramie NHS, total stream length is approximately 3 miles
- At Wind Cave NP there are four stream segments totaling approximately 4 miles
- Approximately 1.5 miles of the North Platte River forms the northern border of Scotts Bluff NM

The NGP network will ensure that all actions as a result of this inventory that could affect natural or cultural resources will be preceded by proper assessment and documentation of

potential impacts. This means that the compliance process will be completed prior to the initiation of any inventory projects. The process for assuring compliance and documenting the process will follow those guidelines provided by the I&M WASO office and Director's Orders-12 (see Appendix A).

OBJECTIVES: This study will address each of the following objectives:

- Document 90% of the fish species at Fort Laramie N.H.S., Devils Tower N.M., Mount Rushmore N.M. and Scotts Bluff N.M. and record relative abundance.
- Determine if the plains topminnow, a state and global species of concern, occurs at Wind Cave N.P.
- Create voucher specimens for all species that are new or do not have voucher specimens
- Update the National Park Service databases: NRBib, NPSpecies and the Dataset Catalog with the results of the inventory
- Create GIS layers showing location of inventories and species found

METHODS: Objective 1: The first objective of this fish inventory is to document 90% of the fish species at Fort Laramie N.H.S., Devils Tower N.M., Mount Rushmore N.M. and Scotts Bluff N.M. In order to do this, the stream segments within each park first will be classified based on stream order (Strahler 1957). Within a stream segment, there also may be important differences in mesohabitats, such as pool-run, pool-riffle-run, etc. This determination will be made by the investigators during a visual survey of the streams prior to sampling. Streams within each of the parks then will be stratified either by stream order alone, or by stream order and mesohabitat. Any areas that cannot be accessed with the equipment necessary for sampling will be excluded and no inferences will be made to those sections.

Within each stratum in each park, three 100m sampling units will be chosen randomly (Patton *et al.* 2000). If the streams are stratified by mesohabitat, it may be necessary to reduce the sampling unit to 50-75m, but a total of 300m will be chosen randomly for each habitat. Sampling locations will be documented with a GPS unit as well as notes on any landmarks or a photograph if necessary. The length of the section sampled will be measured along the thalweg in meters, using a metric tape. Sampling will be conducted during periods of base flow by seine (1/4 inch mesh) where possible, with backpack electrofishing as an alternate technique. Sampling will cease in each stratum when 90% of the species have been captured or when 300m have been sampled (Patton *et al.* 2000).

In order to determine whether or not 90% of the species have been sampled, the species captured will be compared to a list of species likely to occur in the streams to be surveyed. A list of species likely to occur has been compiled and is being reviewed by the investigators and other experts (see Appendix 1). A recent study of Great Plains streams found that for a given stream segment, sampling 100m by sein may be sufficient to capture 90% of the species, but sampling 200m of stream always captured 90% of the species and 300m always captured 100% (Patton *et al.* 2000) of the species present. Therefore, in each stratum if it is unclear whether or not 90% of the species have been

captured after sampling the first 100m, one or two additional sampling units should insure a complete species list.

All fish sampled will be identified to species and relative abundance of each species within the sample documented. All fish captured will be released at the sample site except those for retained as vouchers (see Objective 2).

Objective 2: In order to determine if the plains topminnow occurs at Wind Cave N.P., habitat likely to contain the fish will be targeted for sampling. The plains topminnow generally occurs in larger pool habitat with vegetated banks (Backlund, *pers. comm.*). The investigators will do a visual survey of the streams to determine where such habitat exists. If possible, all pool habitat that may contain the plains topminnow will be surveyed by sein using the methods described under Objective 1. If it is not possible to sample all pools due to budget, time or access constraints, a subset of pool habitat will be randomly selected. The subset will contain the maximum number of sampling points possible.

Objective 3: Voucher specimens of fish species that are new or not represented in voucher collections of each park will be euthanized with an overdose of MS222 and preserved in 10% formalin. Each collection will be labeled with species, date, location, and collectors. Specimens will either be kept at the park where they were collected (e.g. WICA and MORU) or an agreement with a University will be established for curation. Since these specimens will not be collected until just before the beginning of the next fiscal year (FY02), any additional funding required for curation will be requested as part of the revised, detailed study plan submitted in October 2001.

Objectives 4 and 5: The Park Service will use the data collected in this survey to update each of the databases central to inventory effort: NRBib, NPSpecies and the Dataset Catalog. In addition, the Park Service will process the GIS data collected in the field to create maps useful to park management. The investigators will assist in completing the metadata form associated with the GIS layer(s)

References:

Armstrong, DM and RA Adams. 1988. Vertebrates of Fort Laramie National Historic Site, Wyoming: an ecological and historical perspective. National Park Service Technical Report. Contract #MR7-36. 70pp.

Backlund, D. Biologist, South Dakota Natural Heritage Program, South Dakota Department of Game, Fish and Parks, Pierre, S.D. Personal Communication, November, 2000.

Patton, TM, Hubert, WA and FJ Rahel. 1998. Ichthyofauna in streams of the Missouri River Drainage, Wyoming. *Prairie Nat.* 30(1):9-22.

Patton, TM, Hubert, WA, Rahel, FJ and KG Gerow. 2000. Effort needed to estimate species richness in small streams on the Great Plains in Wyoming. NA J of Fisheries Mgmt 20:394-98.

South Dakota Game, Fish and Parks. 1997. Electrofishing of Beaver, Cold Spring and Highland creeks, Wind Cave National Park. Unpublished report. 15pp.

Strahler, A.N. 1957. Quantitative analysis of watershed geomorphology. American Geophysical Union, Transactions 38:913-920

PRODUCTS:

To be completed by investigators:

1. Final report for inventories in standard scientific format including an introduction, detailed methodology, results, list of species and discussion.
2. Original field notebooks, notes and photographs along with accompanying documentation will be required to be inventoried and submitted to the principal investigator's records. These in turn will be accessioned into the records of the NGP network for copying and archiving.
3. GPS data from sampling locations including original rover files, base files and differentially corrected files (if applicable) included on diskette, zip drive or CD; FGDC compliant metadata.
4. Voucher specimens for fish species that have not been documented previously for all parks inventoried

To be completed by network coordinator and/or data management biotechnician:

1. Reviewed list of fish species known to and likely to occur in the five parks
2. All field data entered into Access relational database (to be developed)
3. All species and appropriate study information added to NRBib, NPSpecies, ANCS+ and Dataset Catalog databases
4. ArcView shape files and graphics derived from plot data; FGDC compliant metadata for all GIS data

PROJECT SCHEDULE:

The Park Service currently has sufficient funding to complete inventories at Devils Tower NM, Mount Rushmore NM, Fort Laramie NHS and Scotts Bluff NM. These projects will be completed during phase I of this project. If the Park Service receives the funding it expects to complete this project, Wind Cave NP will be incorporated into the fish inventories (Phase II).

October 2000-May 2001

- Complete list of fish species known to occur within the parks and species likely to occur that has been prepared by the Park Service and reviewed by the investigators
- Collection permit for fish species secured by Park Service

August-September 2001

- Field work for fish inventories conducted PHASE I: DETO, MORU, FOLA, SCBL
PHASE II: WICA

December 2001

- Final report for fish inventories at all parks inventoried
- Submittal of original field notebooks, notes and photographs for inventorying and copying
- Submittal of GPS data and FGDC compliant metadata

January-June 2002

- Data entered by I&M staff into all databases: NRBib, NPSpecies, ANCS+, Dataset Catalog and N. Great Plains database (to be developed)
- Development of ArcView shape files from field data with metadata

BUDGET:**Phase I****Personnel**

Two investigators \$ 3,840
(20 days @ \$12.00/hr each)

Benefits (10%) 384

Supplies

Sein net, jars for collection, waders, etc. \$ 600

Travel

Gas and maintenance for
Federal vehicle \$ 550

Per diem

(20 days @ \$80/day for two people) \$ 3,200

Subtotal \$ 8,574

Overhead (15%) \$ 1,286

Phase I Project Total **\$ 9,860**

Phase II**Personnel**

Two investigators \$ 1,152
(6 days, 2 people @ \$12/hr)

Benefits (10%) 115

Travel

Gas and maintenance \$ 200

Per diem (6 days, 2 people @ \$80/day) \$ 960

Supplies

Collection jars, misc \$ 100

Subtotal \$2,527

Overhead (15%) \$ 379

Phase II Project Total **\$ 2,906**

Total project costs **\$12,766**

Table 3. List of expected fish species in parks to be inventoried. A gray box indicates species documented in previous studies.

Fish species		DETO	FOLA	SCBL	MORU	WICA
Common name	Scientific name					
Creek chub	<i>Semotilus atromaculatus</i>	X	X	X		X
Fathead minnow	<i>Pimephales promelas</i>	X	X	X		X
Flathead chub	<i>Platygobio gracilis</i>	X				
Lake chub	<i>Coeusius plumbeus</i>	X				
Longnose dace	<i>Rhinichthys cataractae</i>	X	X	X	X	X
Sand shiner	<i>Notropis stramineus</i>	X	X			
Northern redhorse	<i>Moxostoma macrolepidotum</i>	X		X		
Quillback	<i>Carpiodes cyprinus</i>	X		X		
White sucker	<i>Catostomus commersoni</i>	X	X	X	X	X
Stonecat	<i>Noturus flavus</i>	X	X	X		
Smallmouth bass	<i>Micropterus dolomieu</i>	X				
Bigmouth shiner	<i>Notropis dorsalis</i>		X			
Brassy minnow	<i>Hybognathus hankinsoni</i>		X			
Common shiner	<i>Luxilus comutus</i>		X			
Emerald shiner	<i>Notropis atherinoides</i>		X			
Stoneroller	<i>Campostoma anomalum</i>		X	X		
Longnose sucker	<i>Catostomus catostomus</i>		X	X		
Plains killifish	<i>Fundulus zebrinus</i>		X	X		
Johnny darter	<i>Etheostoma nigrum</i>		X			
Suckermouth minnow	<i>Phenacobius mirabilis</i>		X			
Horneyhead chub	<i>Nocomis biguttatus</i>		X			
Red shiner	<i>Cyprinella lutrensis</i>			X		
Northern pike	<i>Esox lucius</i>			X		
Orangethroat darter	<i>Etheostoma spectabile</i>			X		
Channel catfish	<i>Ictalurus punctatus</i>			X		
Bluegill	<i>Lepomis macrochirus</i>			X		
White bass	<i>Morone chrysops</i>			X		
Gizzard shad	<i>Nematalosa nasus</i>			X		
Sand shiner	<i>Notropis stramineus</i>			X		
River shiner	<i>Notropis blennioides</i>			X		
Bigmouth shiner	<i>Notropis dorsalis</i>			X		
Madtom	<i>Noturus gyrinus</i>			X		
Walleye	<i>Stizostedion vitreum</i>			X		
Mountain sucker	<i>Catostomus platyrhynchus</i>				X	X
Plains topminnow	<i>Fundulus sciadicus</i>					X
Exotic species						
Common carp	<i>Cyprinus carpio</i>	X	X	X	X	
Green sunfish	<i>Lepomis cyanellus</i>	X	X			
Yellow perch	<i>Perca flavescens</i>		X			
Rainbow trout	<i>Oncorhynchus mykiss</i>		X			
Brown trout	<i>Salmo trutta</i>		X	X		
Brook trout	<i>Salvelinus fontinalis</i>				X	X

Sources:

Armstrong, DM and RA Adams. 1988. Vertebrates of Fort Laramie National Historic Site, Wyoming: an ecological and historical perspective. National Park Service Technical Report. Contract #MR7-36. 70pp.

Chipps, S. 2000. Fisheries Biologist. South Dakota State University, Cooperative Fish and Wildlife Services Unit. Personal communication.

Erickson, J. 2000. Fisheries Biologist. South Dakota Game and Fish Department. Rapid City office. Personal communication.

Nebraska Department of Game, Fish and Parks. No date. List of species likely to occur in the North Platte River compiled for Scotts Bluff National Monument.

Patton, TM, Hubert, WA and FJ Rahel. 1998. Ichthyofauna in streams of the Missouri River drainage, Wyoming. *Prairie Nat* 30(1):9-22.

South Dakota Game, Fish and Parks Department. 1997. Electrofishing of Beaver, Cold Spring and Highland Creeks, Wind Cave National Park. Unpublished report.

Section 5. Schedule for FY2001

December 2000

- Continue NPSpecies updates with intermittent employees
- Establish agreements to complete literature searches, voucher searches and plant master lists
- Initiate process for hiring data manager

January-March 2001

- Continue NPSpecies updates with intermittent employees
- Voucher searches and master list compilation on-going
- Complete literature search
- Hire data manager—assist in completion of NRBib and NPSpecies; begin work on Dataset Catalog and developing GIS layers from existing inventories
- Initiate compliance process for fish inventories

April 2001

- Master lists complete
- Voucher searches complete
- Updates to NPSpecies and NRBib complete

May 2001

- Network meeting to review results of data compilation and inventory priorities

June-August 2001

- Develop detailed study plan including protocols and budgets for inventories
- Develop data management plan
- Develop NGP network database
- Initiate compliance procedures for new inventories

September 2001

- Field work for fish inventories
- Draft of revised study plan available for review
- Complete compliance procedures for new inventories
- Final study plan submitted October 1, 2001

Section 6. BUDGET

The following table shows a revised budget for FY2001. Since the data management position may not be filled until February or March 2001, the unused salary was reallocated for setting up contracts or cooperative agreements to complete data mining activities. An additional \$10,000 is requested to set up an agreement to locate voucher specimens in off-site collections. Since there has been detailed planning for inventories scheduled in FY2001, the estimated costs for those particular inventories are listed. For FY2002-2004, the inventories are grouped together. The funding for inventories in FY2002-2004 is the amount remaining, after the known costs were subtracted for the total network funding and divided among the remaining three years (spending the majority in the last two years).

Table 4. Budget proposal for FY2001-2004.

BUDGET	2001	2002	2003	2004	TOTALS
Total available funds: \$782,749					
Funding received for pre-proposal: \$61,000					
Remaining funding for FY2001-04:\$722,249					
Budget Items					
<i>Network Coordinator</i>					
Salary+benefits (GS 9/11 year 1, GS 11 after; ~3% cost of living increase each year)	51,500	59,000	60,770	62,897	
Travel (avg 5 days/mo @ \$100/day)	6,000	6,000	6,000	6,000	
Misc. costs and supplies	2,000	2,000	2,000	2,000	
Administrative support for THRO	5,000	5,000	5,000	5,000	
	64,500	72,000	73,770	75,897	286,167
<i>Data management technician</i>					
Salary + benefits (GS 5/7) 8 mos. salary FY01	20,550	39,006			
Travel	4,000	4,000			
Laptop computer	4,000				
Misc. costs and supplies	2,000	2,000			
Administrative support for THRO	3,000	3,000			
	33,550	48,006			81,556
<i>Inventories (high and medium priority)</i>					
Fish inventories (\$9,860 obligated from FY2000)	2,906				
Contract/agreement for voucher searches	10,000				
Contract/agreement for information review/search	2,500				
Contract/agreement for plant inventory assessment (master lists)	7,500				
Salary for intermittent employee (THRO)	1,500				
Other Inventories		52,000	122,000	122,000	
“Contingency” fund (~5%)	6,000	8,000	10,000	10,000	
Total	128,456	180,006	205,770	207,897	722,129

APPENDIX A. Planning and Compliance in the I&M Process

Specifically the network will take the following steps:

Step 1. Describe the Project

The project descriptions for FY2001 and the revised study plan will include:

- clear project goals and objectives and a description of how they were derived (who participated in their formulation);
- a complete description with figures (e.g., maps and drawings) of where work will take place and the methods that will be used to accomplish all work;
- a detailed description of which resources will be affected directly (e.g., voucher specimen collection) and indirectly (e.g., crew access modes and routes to study areas); and
- assignment of responsibilities for general project oversight, compliance process documentation, and actual work.

Step 2. Obtain Concept Approval

The superintendent of each park in each Network should approve or reject the inventory and or monitoring concepts presented in the general project description. Each superintendent may indicate that certain revisions are needed and or request more detailed information/specific project plans. The concept approval process should be documented and any changes made must be incorporated into a revised project description (Step 1).

Step 3. Conduct Internal Scoping

An in-house team for each park will review and evaluate the study plan and alternatives, if any. This team determines whether additional documents, project definition, or planning details are necessary. Planning documentation should be of appropriate detail and quality to correspond with the complexity of the project.

A compliance review committee is usually interdisciplinary and includes at a minimum:

- Park “Impact Assessment Coordinator”
- Cultural and Natural Resource Technical Specialists (who to include depends on the types of resources potentially affected).

It is advisable for in-house team members to conduct one or more site visits with the project leader(s)/principle investigator(s) to enable full understanding of the conditions and potential impacts on park resources, visitors, and operations. Compliance actions needed and level of documentation required under law and policy are usually identified in this step using an Environmental Screening Form (example included from the Midwest Region, see page x).

Step 4. Create a Complete Project Plan

The network coordinator will be the study plan project planner. The coordinator will develop the required compliance documentation and returning the completed project plan to the impact assessment coordinator for the park and/or network. This usually means that the project planner is responsible for facilitating assistance from others, possibly including consultation with the US Fish and Wildlife Service, the State Historic Preservation Officer, and park curators/archivists to meet the quality and sufficiency requirements established for project implementation and documentation.

Step 5. Plan is Reviewed and Signed off on by Park Management Team

The management team for each park will have an opportunity to review the near-complete study plan. Each park management team will be involved in discussions about the concepts in the inventory study plans prior to initiation of the impact assessment process so that this stage of the process is not their first exposure to the project. Park management team signatures should be obtained to document this critical review step.

Step 6. Submit Preliminary Study Plan for Superintendents' Approval

Every Network study plan should be sufficiently complete so that the superintendents of affected parks are able to know the total need for park assistance and the anticipated level of compliance documentation required under law and policy when they receive the each draft study plan.

Step 7. Prepare Required Compliance Documents

The two primary laws involved in the “compliance process” are the National Environmental Policy Act (NEPA) and the National Historic Preservation Act (NHPA). Many other laws and executive orders also apply, as well as National Park Service (NPS) policies. Natural resource inventory and monitoring decisions require formal impacts assessment documentation according to recent NPS policy changes (DO-12) relative to NEPA. Some research, inventory and monitoring actions may be categorically excludable under NEPA or NHPA, but this decision must be documented on a project-by-project basis at every park through an in-house review process which is usually accomplished in Step 3.

It is possible that implementation of one or more inventory and or monitoring sub-projects in each park will not be categorically excludable under NEPA (see 516 DM 6 App. 7.4 C(20), E(1-3) for possible exclusion categories), and or NHPA Section 106 (part IV.B.3 “Installation of environmental monitoring units). Those actions that are not categorically excluded under NEPA will require preparation of an environmental assessment (EA) or an environmental impact statement (EIS). Under the NHPA, determination of “effect” on each category of cultural resource must be made by subject matter experts, however, there are several givens which are helpful in the study plan

development process. For example, ground-disturbing activities, such as installation of pitfall traps to inventory and or monitor reptiles, amphibians, and shrews require a documented National Historic Preservation Act, Section 106 clearance.

Step 8. Obtain Approval to Start Project

The park superintendent for each park has the delegated authority to approve the use of categorical exclusions and to approve EAs for their parks. The authority to approve Findings of No Significant Impact (FONSI's) remains with the regional director

ENVIRONMENTAL SCREENING FORM

This form must be attached to all documents sent to the regional director's office for signature. Sections A and B should be filled out by the project initiator (may be coupled with other park project initiation forms). Sections C, D, E, and F are to be completed by the interdisciplinary team members. Sections A-F and J must remain in this format; sections G-I may be modified to meet individual park needs.

A. PARK NAME _____ **Project Number**

Project Type (Circle): Cyclic, Cultural Cyclic, Repair/Rehab, Park ONPS, NRPP, CRPP, PRAM, FLHP, Line Item, Fee Demo, Concession Reimbursable, Other (specify) _____

Project Location _____ **Project**
Originator/Coordinator _____

Project _____ **Title**

Contract # _____ **Contractor Name**

B. PROJECT DESCRIPTION/LOCATION [Attach maps, notes of site visits, agency consultation, relevant data or reports, the categorical exclusion form (if relevant) etc. to this form to begin the statutory compliance file.]

Preliminary drawings attached? ___ Yes ___ No Background info
attached? ___ Yes ___ No

Date form initiated _____ Anticipated date compliance should be complete

Projected Advertisement/Day labor start _____ Construction start

C. When you have completed a site visit (or if staff are familiar with the specifics of the site), consulted with affected agencies and/or tribes, and if you answered all lines in the checklists below

with “no,” you may proceed to the categorical exclusion form if the action is described in section 3-4 of DO-12. If any answers in the checklist are “yes” or “data needed to determine,” or the action is not described in section 3-4, prepare an environmental assessment, environmental impact statement, or redefine the project.

MANDATORY CRITERIA (A-M): WOULD THE PROPOSAL, IF IMPLEMENTED...

	Yes	No	Data Needed to Determine
A. Have significant adverse effects on public health or safety?			
B. Have adverse effects on such unique characteristics as historic or cultural resources, park, recreation or refuge lands, wilderness areas, wild or scenic rivers, sole or principal drinking water aquifers, prime farmlands, wetlands, floodplains, or ecological significant or critical areas, including those listed in the National Register of Natural Landmarks?			
C. Have highly controversial environmental effects?			
D. Have highly uncertain and potentially significant environmental effects or involve unique or unknown environmental risks?			
E. Establish a precedent for future action or represent a decision in principle about future actions with potentially significant environmental effects?			
F. Be directly related to other actions with individually insignificant, but cumulatively significant environmental effects?			
G. Have adverse effects on properties listed or eligible for listing on the National Register of Historic Places?			
H. Have adverse effects on species listed or proposed to be listed on the List of Endangered or Threatened Species, or have adverse effects on designated Critical Habitat for these species?			
I. Require compliance with Executive Order 11988 (Floodplain Management), Executive Order 11900 (Protection of Wetlands), or the Fish and Wildlife Coordination Act?			
J. Threaten to violate a federal, state, local or tribal law or requirement imposed for the protection of the environment?			
K. Require a permit from a federal, state, or local agency to proceed, unless the agency from whom the permit is required agrees a CE is appropriate?			
L. Have the potential for significant impact as indicated by a federal, state or local agency or Indian Tribe?			
M. Have the potential to be controversial regardless of its impact?			

D. Are any measurable impacts possible on the following physical, natural or cultural resources?
(Tailor the following to meet individual park/unit project needs.)

	Yes	No	Data Needed to Determine
A. Geological resources – soils, bedrock, streambeds etc.			
B. From geohazards?			
C. Air quality, traffic, or from noise			
D. Water quality or quantity			
E. Streamflow characteristics			
F. Marine or estuarine resources			
G. Floodplains or wetlands			
H. Land use, including occupancy, income, values, ownership, type of use			
I. Rare or unusual vegetation – old growth timber, riparian, alpine			
J. Species of special concern (plant or animal; state or federal listed or proposed for listing) or their habitat			
K. Unique ecosystems, biosphere reserves, World Heritage sites			

L. Unique or important wildlife or wildlife habitat			
M. Unique or important fish or fish habitat			
N. Introduce or promote non-native species (plant or animal)			
O. Recreation resources, including supply, demand, visitation, activities, etc.			
P. Visitor experience, aesthetic resources			
Q. Cultural resources including cultural landscapes, ethnographic resources			
R. Socioeconomics, including employment, occupation, income changes, tax base, infrastructure			
S. Minority and low income populations, ethnography, size, migration patterns, etc.			
T. Energy resources			
U. Other agency or tribal land use plans or policies			
V. Resource, including energy, conservation potential			
W. Urban quality, gateway communities, etc.			
X. Long-term management of resources or land/resource productivity			
Y. Pollution prevention (greening the parks)			
Z. Other important environment resources?			

E. Please answer the following questions/provide requested information

- 1) Check one or both boxes as appropriate
Personnel preparing this form are familiar with the site _____
and/or a site visit was conducted _____
(Attach meeting notes or additional pages noting when site visit took place, staff attending, etc.)
- 2) Is the project in an approved plan with accompanying environmental document?
____ Yes ____ No
If so, plan name _____
FONSI/ROD (Circle one) Date approved _____
Is the project still consistent with the approved plan? ____ Yes ____ No (If no, prepare plan/EA-EIS)
- 3) Are there any interested or affected agencies or public? ____ Yes ____ No
Did you make a diligent effort to contact them? ____ Yes ____ No
- 4) Has consultation with all affected agencies or tribes been completed? (Attach additional pages detailing the consultation, including the name, date and summary of comments from other agency or tribal contacts.)

F. SIGNATORY (All ID Team Members Need To Sign)

In signing this form, you are saying you have completed a site visit or are familiar with the specifics of the site, have consulted with affected agencies and tribes, and that the answers to the questions posed in the checklist are, to the best of your knowledge, correct.

Interdisciplinary Team Leader

Date

Technical Specialist

Field of Expertise

Technical Specialist

Field of Expertise

Technical Specialist

Field of Expertise

G. This section may be filled out either as the project progresses or when environmental documentation is complete.

National Environmental Policy Act Data entered by:

(Choose one and fill in blanks)

___ CE CE Citation 516DM__ Appendix _____
Excepted actions apply? ___ Yes ___ No (If yes,
do EA or EIS)

(Attach signed CE form)

___ EA EA release to public _____
FONSI date _____

___ EIS ROD date _____

National Historic Preservation Act Data entered by:

Ground disturbance involved? ___ Yes ___ No
Historic structures involved? ___ Yes ___ No
Cultural landscapes involved? ___ Yes ___ No
Ethnographic concerns involved? ___ Yes ___ No
If yes, interested parties contacted? ___ Yes ___ No

(Choose one and fill in blanks)

___ No historic properties affected
___ Programmatic exclusion Citation _____ Date AEF to
SHPO/THPO _____
___ Determination of effect ___ No adverse effect ___ Adverse Effect
Date to SHPO/THPO _____ Date to ACHP

Date consultation completed _____

Endangered Species Act Data entered by:

Any threatened/endangered species in area? ___ Yes ___ No
If species in area ___ No effect ___ Not Likely to Adversely Affect ___ Likely to
Adversely Affect
(If checked,
need EIS)

Date to FWS _____ Date FWS response _____

Floodplains/Wetlands/§404 Permits Data entered by:

Is project in 100- or 500-year floodplain? Yes No *If yes, statement of findings*

Is project in wetlands? Yes No *approval date* _____

404 permit needed? Yes No Date _____

State 401 certification? Yes No Date _____

State Water Quality permit? Yes No Date _____

Tribal Water Quality permit? Yes No Date _____

CZM Consistency determination needed? Yes No Date _____

Other permits/laws _____ Data entered by:

Wilderness minimum tool decision needed? Yes No Date _____

Wild and scenic river concerns? Yes No Date _____

National Trails concerns? Yes No Date _____

Air Quality consult w/State? Yes No Date _____

Other _____ Yes No Date _____

Consistent w/Architectural Barriers, Rehabilitation, and Americans with Disabilities Acts? Yes No

H. MITIGATING MEASURES TO BE INCLUDED IN PROJECT:
(Specify here or attach appropriate pages from EA, EIS, FONSI, or ROD)

I. ADMINISTRATIVE RECORD

Location _____

Contact _____

J. *Based on the information provided in this environmental screening form, environmental documentation for the subject project is complete.*

Recommended: _____
Park Compliance Specialist

Approved: _____
Superintendent