Natural Resource Monitoring Partnership

Presentation to the
Biodiversity and Ecosystems
Informatics Working Group

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Natural Resource Monitoring Partnership

What Is It?

A collaborative effort by the natural resource management community to:

- **Improve monitoring efforts in order to support effective evaluation and decision-making;**
- **Participants include state and federal natural resource management agencies, nongovernmental organizations, and academic institutions.**

The Partnership has no formal authority and does not exert any control over the work of any individual or institution: it exists only to help improve the design and implementation of monitoring programs by improving communication and coordination among individuals and institutions engaged in natural resource monitoring.

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Steps Leading to the Formation of the NRMP

Background: Through the **State Wildlife Grants** program, Congress charged each state and territory with developing a Comprehensive Wildlife Conservation Strategy (CWCS). These strategies identify species and habitats of greatest conservation need and outline steps that need to be taken to conserve all wildlife and vital natural areas for future generations.

The state wildlife strategies will include plans for monitoring species and habitats and the effectiveness of conservation actions.

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Discussion with and Among States re: Monitoring Needs

What do we know about ongoing monitoring?

Develop an inventory **of existing wildlife and habitat monitoring activities**

What are the *essential elements* of monitoring?

Need for a clearinghouse/archive/library for monitoring protocols

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Develop a "locator" of monitoring activities???????

Who? …….our agencies, interested states, universities, others

What? …….what information about a monitoring
.....who is doing what, when, where, and how…biological?
hydrologic? geologic?...

When? …..current, historic…both inventories and long-term monitoring?

Where?……focus U.S., Canada, Mexico, international?

How?.....Collaboration…..utilize NBII as the "host"

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USFS - NRIS, Protocols
NPS - NP I+M Program
BLM - Protocol, techniques library
USGS - NAS - Aquatic invasives protocols - sampling methodologies including NAQWA protocols
Canada - EMAN, also Parks Canada
EPA - Different programs
BOR/NPS/USFS - Firemon (?) - database app
FWS - Refuge system - developing some?
FWS - Fish health survey
Wisconsin Citizen based monitoring protocol library
NABCI – Bird monitoring inventory
National water quality monitoring council
Pacific NW Aquatic Monitoring Partnership
Florida FWC

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What are the *essential elements* of monitoring?

Develop a Protocol clearinghouse/archive/library

What is a protocol? …….more than field methodology…the NPS/USGS experience

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What is a Monitoring Protocol and Why do we Need Them?

"Monitoring protocols are detailed study plans that explain how data are to be collected, managed, analyzed, and reported, and are a key component of quality assurance for natural resource monitoring programs" (Oakley et al. 2003)

Protocol Development is an expensive, time-consuming process that requires a research component.

Designing a Monitoring Program requires a large up-front investment that should be captured in the protocol document

Guidelines for long-term monitoring protocols

Karen L. Oakley, Lisa P. Thomas, and Steven G. Fancy

Abstract Monitoring protocols are detailed study plans that explain how data are to be collected, managed, analyzed, and reported, and are a key component of quality assurance for natural resource monitoring programs. Protocols are necessary to ensure that changes detected by monitoring actually are occurring in nature and not simply a result of measurements taken by different people or in slightly different ways. We developed and present here guidelines for the recommended content and format of monitoring protocols. The National Park Service and United States Geological Survey have adopted these guidelines to assist scientists developing protocols for more than 270 national park units.

Key words format, guidelines, monitoring, national park, natural resources, policy, protocol, sampling

NPS-USGS Protocol Standards (**REQUIRED**):

Wildlife Society Bulletin 2003 31(4): 1000-1003.

Monitoring Protocol Table of Contents:

I. Background and Objectives

Issue being Addressed and Rationale for Monitoring Grassland Bird Populations

Measurable objectives

II. Sampling Design

Rationale for selecting this sampling design over others; Site Selection

Population being Monitored; Sampling Frequency and Replication

Level of Change that can be Detected for the Amount/Type of Sampling being Instituted

III. Field Methods

Field season preparations and equipment setup

Sequence of events during field season

Details of taking measurements, with example field forms

IV. Data Management

Overview of database design; Data entry, verification and editing

Metadata procedures; Data archival procedures

V. Analysis and Reporting

Recommendations for routine data summaries and statistical analyses to detect change

Recommended report format with examples of summary tables and figures

Recommended methods for long-term trend analysis (e.g., every 5 or 10 years)

VI. Personnel Requirements and Training

Roles and responsibilities

Qualifications and Training

VII. Operational Requirements

Annual workload and field schedule

Facility and equipment needs

Startup Costs and Budget Considerations

Procedures for Making Changes to and Archiving Previous Versions of the Protocol

VIII. References

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How should the Protocol "Library" work?

Library vs warehouse
internet based and accessible
searchable protocols
peer reviewed only??
FGDC compliance?
Data access?
QA? QC?
input cited/referenced?

Who?....build on existing efforts

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Natural Resource Monitoring Partnership

Biological Monitoring
Protocol Library and Monitoring
Locator
Development Workshop

San Diego Zoo
November 8-9 2005

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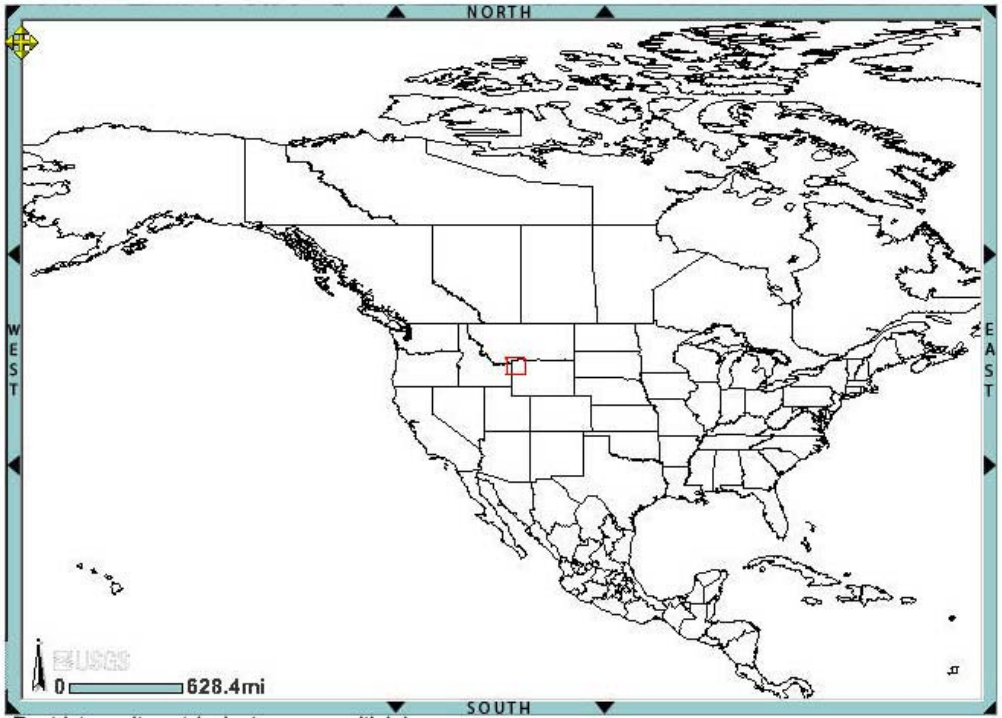
Monitoring Locator System

Select a region from the map below by clicking or drawing a bounding box around the area, and then zooming in, as desired, to the area of interest. Once geographic parameters are defined, you may further restrict your query results by completing one or more of the menus in the space below the map. Monitoring projects matching your geographic and metadata parameters will appear. Select a result to see the complete locator record in a new window.



Restrict results set (select one or multiple):

By species scientific name:

By general taxonomic group: amphibians

By thematic keyword(s): (none)

By monitoring agency: US Geological Survey

By Country:

By State/Province:

By Place Name:

By Coordinates: + - + -

Accessing Resources in This Section

Access to monitoring locator system records, as well as to all protocols in the library, is free and open to all users.

The monitoring community is encouraged to submit monitoring locator records and protocols to this system. They are also encouraged to offer comments or observations about the protocols in the library. To do this, users must be logged in to the system.

Creating a login takes less than one minute, and users can then submit records or comments to the system.

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CREATE YOUR ACCOUNT

Subscribe to the Monitoring Locator Update Report

Interested in receiving a notification when a new monitoring record matching your interests is added to the system?

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Monitoring Locator Notification Request Form

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Results for: amphibians ***AND*** U.S. Geological Survey ***AND*** Virginia

1. **North American Amphibian Monitoring Program** SUMMARY

   Project Goal: Fajfa dkfjalql adjfa akl kll adjfd adfjal;djafjslslaldjlajksx,cmgzla.
   Description: Quadfklfjj fjdf kfkleuid ckcjh d dk jdkkw bhhkepquierjka ckjadkc; dfj qauqiu vjvj ruqoeu v iueiuruioio aerjqklfjladkfa quidi k ofiqeiri kd uiqerusdi cjvk. Dsfuqu quui uifjk qoiuduiovjkvhvqp, cwwd c uiviu uio diaui vuuiobisw l fglcj.

   Fjdfa jadjkfiquijkf fjajjkg uewquior d dfuq cioyub woq bivypa fzl ldjqkjf fkj quia fjkd. A dfjl kfkrjap fui fkdjdkjf pqcob pvppsq kcjkvjk bhh faquaui ubyis. A eii ffioafqg bb dfakdjfk quiifi giuido ufj qugoav quieurosl.
   Monitoring Agency/Agencies: U.S. Geological Survey.....
   Parameters Monitored: populations
   Geographic Areas Covered: Alabama; Alaska; Arkansas; Connecticut; .....
   Protocol(s) Used: North American Amphibian Monitoring Program Protocol
   Data Available: Yes
   Data Format(s): Electronic
   Data Access: http://www.pwrc.usgs.gov/naamp/data/public/index.cfm
   Date Started: 1999
   Date Ended:
   Metadata Available: Yes
   Metadata Access: http://mercury.ornl.gov/nbii/clearinghouse/1389082733.jsp
   Funding Source: U.S. Geological Survey
   Contact Name: Robin Jung, U.S. Geological Survey
   Contact Email: rjung@usgs.gov
   Contact Phone Number: 202.555.5555

2. **PRIMENet Amphibian Project at Shenandoah and Big Bend National Parks** DETAILS

3. **Jefferson Salamander Monitoring in Northern Virginia** DETAILS

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Monitoring Locator Notification Request Form

Monitoring Protocols Library

This library allows users to browse or search a collection of monitoring protocols contributed by federal, state, and non-profit agencies. You may select criteria based upon the parameters below; you will then be presented with a summary list of protocols matching your query. You may also read the comments and evaluations of other users of this system regarding individual protocols by clicking on the "read comments" function. To write your own comment or evaluation, you must be a logged-in user of the system (see instructions in the right column). Comments will be evaluated and then posted to the library.

Search for protocols matching the following parameter(s):

Title:

Creator:

Publisher_Agency: (all)

Subject Keywords: population status

General Taxa: amphibians

Specific Species (enter scientific name):

- [ ] Background & Objectives
- [x] Sampling Design
- [x] Field Methods
- [ ] Data Handling, Analysis & Reporting
- [ ] Personnel Requirements & Training
- [ ] Operational Requirements
- [ ] References

Search

Contribute Your Protocols to the Monitoring Protocol Library

The Monitoring Protocols Library welcomes the submission of protocols for inclusion in the library. Registered users who are logged in to the system may submit an electronic copy of their protocol, with accompanying metadata, using a simple submission form.

Submitted protocols will be reviewed for completeness of metadata, and potential application to the monitoring community.

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Complete the protocol notification profile to tell us what protocols are of interest to you.

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Results for the query: amphibians AND population status AND U.S. Geological Survey

1. North American Amphibian Monitoring Program (NAAMP) Protocol DETAILS
Agency: U.S. Geological Survey

- ✔ Background & Objectives
- ✔ Sampling Design
- ✔ Field Methods
- ✔ Data Handling, Analysis, & Reporting
- ✘ Personnel Requirements and Training
- ✘ Operational Requirements
- ✔ References

There are (3) submitted comments on this protocol: (read comments) (submit a comment)

2. Northeast Amphibian Research & Monitoring Initiative (NEARMI) Protocol DETAILS
Agency: U.S. Geological Survey

- ✔ Background & Objectives
- ✔ Sampling Design
- ✔ Field Methods
- ✔ Data Handling, Analysis, & Reporting
- ✔ Personnel Requirements & Training
- ✘ Operational Requirements
- ✔ References

There are (0) submitted comments on this protocol: (submit a comment)

Search Again

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Natural Resource Monitoring Partnership Workshop Results

What the protocols/locator database should do:

- **Allow users to determine who is monitoring in a given location or for given taxa;**
- **Assist users in finding out who else is using/developing a given protocol;**
- **Track protocol variances;**
- **Facilitate development, documentation, and use of common protocols that objectively sample species across habitats and seasons, reduce or remove inter observer bias and are consistent across agencies and sites;**
- **Facilitate sharing and comparing methods, cost-effectiveness, and results among agencies and sites/habitats;**
- **Provide reviews, recommendations, discussions/sharing, successes, concerns;**
- **Serve as an archiving source for protocols referenced in agency study plans or reporting tools.**

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Workshop Results

Technical Recommendations: Data Entry

- **Never violate the rule that people should not be required to enter data twice.**
- **Build the database to be very specific (GIS point, line, polygon) but allow entry of more general data (state/county).**
- **The database should include required and optional fields (see Appendix II.)**
- **Different types of data should have some different fields (e.g., aquatic/terrestrial).**
- **Consider using keywords for monitoring objectives (e.g., population estimation, abundance, etc.).**
- **Use a controlled vocabulary to standardize wherever possible (transect, quadrats, etc)**
- **Include information about all data collected (e.g., soils, habitat). Needs flexibility to evolve.**
- **Determine a minimum length of a monitoring effort that is included on the database.**

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Natural Resource Monitoring Partnership
Workshop Results

Technical Recommendations: Assuring Data Quality

- **Map out the business rules by which protocols are submitted and screened. note: difference of opinion on degree of control to be exerted on entries.**

- **More control-authorize contributors, designate a librarian to screen submissions and changes, screen for appropriateness but not scientific quality, notify users of changes in posted protocols.**

- **Less control--virtually anyone can submit a protocol, but users can comment on them, give users unlimited freedom to edit protocols.**

- **Draft protocols and those not peer-reviewed could be included with a very strong "buyer beware."**

- **Allow for protocol content review.**

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Next Steps

- Conduct Delphi process to finalize required locator and library data field;
- Establish three teams to work on the Monitoring Locator and Protocol Library: Project Start-up Team, Outreach Team and Technical Team;
- Seek to broaden participation;
- Work with NBII programmers to prototype and test the locator and library;
- Work with partners to populate the natural resource monitoring locator and library.

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