

**ANNUAL ADMINISTRATIVE REPORT (FY2003) AND
WORK PLAN (FY 2004) FOR INVENTORIES AND VITAL SIGNS
MONITORING**

FY2003-FY2004

MID-ATLANTIC NETWORK (MIDN)

Shenandoah NP (SHEN) (Prototype Park), Booker T. Washington NHS (BOWA), Richmond National Battlefield Park (RICH), Appomattox Court House NHS (APCO), Petersburg National Battlefield Park (PETE), Fredericksburg and Spotsylvania NMP (FRSP), Gettysburg National Military Park (GETT), Eisenhower National Historic Site (EISE), Hopewell Furnace NHS (HOFU), and Valley Forge National Historical Park (VAFO)

Mid-Atlantic Network Approval Signatures

John Karish
Chief Scientist, Northeast Region

Date

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Date

Board of Directors, Mid-Atlantic Network

Date

AARWP Checklist

[Enter an X or 'Yes' in the first column after you have completed an item]

<u>Budget program (MS Access, aarwp_budget.mdb)</u>	
xp	Which version of Access did you use? [Enter 97 or XP for Access 97 or Access XP at the beginning of this line.]
x	The income amounts entered for Biological Inventories, Vital Signs Monitoring, Prototype \$\$ - Annual Transfer, Water Quality Monitoring and other sources matches the dollar amounts from the memos sent to the regions/networks by WASO (have you used the correct income amounts?).
x	In the Add/Edit Budget Records form, the amount shown for Total Expenses matches that for Total Income. (If it doesn't, enter a record under Expenses in the 7_Other category to make it balance; use an entry such as 'Unexpended funds' or 'Overspent Funds' in the Description column to explain the amount.)
x	For all Expense records, the Description field includes the name of the university, agency, company, or other vendor to help us document our outsourcing efforts. (If this expense involved a contract, cooperative agreement, interagency agreement, or other partnership, is it clear where the money went?)
x	For all Expense records, the correct item from the picklist for 'Where \$\$ Went' has been entered. [Think about who the check was written to; e.g., enter 'Other Non-Federal' for funding that went directly to the private sector, such as for purchases (computers, supplies, etc.), travel (airlines, rental cars, hotels).]
x	On the Status of Biological Inventories form, there is one record for each inventory that is described in the text section of the AARWP or the budget program for FY 2000-2003 (data should be included for previous years since this is our first year of building this database). Be sure to list each park that was involved in the particular inventory.
x	Each year's budget has been exported as an .rtf file (one for FY 2003 and one for FY 2004), and both files have been inserted into MS Word at the end of the AARWP document.
x	The file aarwp_budget.mdb has been renamed to include the 4-character network alpha code and the years, as shown in this example: NCCN_FY0304_aarwp.mdb
<u>Annual Report and Work Plan (MS Word)</u>	
x	I have carefully read the guidance for the AARWP and followed it.
x	A header or footer with the date that the aarwp was last revised has been included.
x	I gave special attention to the 'Public Interest Highlights' and 'Major Accomplishments' sections of the report. (We need good examples of the successes, applications, and highlights of the program to help us obtain funding for all 32 networks! Your 'Major Accomplishments' section is what we'll use for the I&M Program's annual Report to Congress to justify the funding spent by your network.)
no	In the 'Status of Park Vital Signs Monitoring' table, all entries are equal to or greater than the entries in last year's report. NOTE: APPA now reported in NETN so the entries are decreased by 1 park in some cases
	Photographs that might be included in one of the reports to Congress, brochures, websites, or other materials that help the program have been submitted by the network. (See the guidelines for submitting photographs.)
x	The aarwp file has been renamed using the network's 4-character alpha code and the years (FY0304) as in the example NCCN_FY0304_aarwp.doc
x	The annual report has been approved by the appropriate individuals, per my region's procedures. (If you cannot get electronic signatures, it is okay to submit a hard copy with signatures after November 8.)
x	I have followed my region's procedures for submitting the two files (e.g., NCCN_FY0304_aarwp.doc and NCCN_FY0304_aarwp.mdb). (Most regions require you to submit the files through the regional office. The files may be zipped into a zip file if desired, and then submitted to Steven Fancy via either email or ftp).
<u>Review of FY 2004 Work Plan by WASO</u>	
yes	[Enter Yes or No]: Has the FY 2004 work plan been approved by the network Board of Directors, and therefore ready for the full WASO review? (If you enter No, the WASO I&M and WRD offices will only briefly review the work plan for 'red flags'.)

I. Overview and Objectives

The Mid-Atlantic Network (MIDN) includes ten parks with significant natural resources. All of the parks are located in Virginia and Pennsylvania. In October 2001, the Mid-Atlantic Network Inventory Study plan was submitted to WASO and the Network received funds in FY02 to begin implementing inventories on vertebrate and vascular plants in network parks. Vertebrate inventories are underway to address the lack of information in five of the six VA parks in the Network. The four PA parks in this network were fortunate to have received substantial funding for biological inventories prior to the establishment of I&M networks. Shenandoah National Park, a prototype park, had completed much of their inventory work prior to establishing their monitoring program, and recommended devoting the limited funds to the smaller VA parks. Although SHEN is an integral part of the Network, as a prototype, SHEN reports progress under a separate Annual Administrative Report and Work Plan.

The Appalachian National Scenic Trail (APPA) covers 14 states and 5 networks in the east, but was included in the MIDN for inventory purposes in 2000 and the Network has reported on progress regarding the AT from 2000-2002. APPA received separate funding for biological inventories that was added to the MIDN. As of 2003, the Appalachian Trail was participating in 5 networks. To reduce the workload on APPA staff, the Northeast Temperate Network will include APPA and the network coordinator will assure communication across networks to continue to complete biological inventories and to develop a vital signs program for the AT. APPA will be included in the Annual Administrative Report and Work Plan for the Northeast Temperate Network.

In 2001, subject matter experts attended a scoping workshop involving only the VA parks to help identify gaps in vertebrate and vascular plant inventory information. One of the outcomes of this workshop was the submission of a number of proposals from well-known taxonomic experts who attended the workshop in Richmond. Budgets in inventory proposals exceeded the biological inventory funding available for MIDN in FY02 so, when several Northeast Coastal and Barrier Network projects were not ready to fund in FY02, Mid-Atlantic Network projects, ready to go, were funded. The Mid-Atlantic Network reimbursed the Northeast Coastal and Barrier Network in FY03 and will do the same in FY04.

Projects that are ongoing for 2002-2003 in the Network include, compiling and entering existing data, into NPSpecies, NatureBib and the Dataset Catalog. The NPSpecies database for all parks has been reviewed and is verified and current. We are awaiting the addition of vertebrate inventory data for the VA parks and floristic data from the Plots database resulting from vegetation mapping projects... Taxonomic experts have been identified to review NPSpecies for some of the parks in the Network and that work will continue in 2004, once each park's database has been completed and all inventory data has been entered. The cooperative agreement with Penn State University (PSU) to update NatureBib for the four Northeast Region Networks, including the Mid-Atlantic Network, has been extended. The database is up to date for all but three network parks (GETT, EISE and PETE). The research associate from PSU hired to correct and update NatureBib has been visiting each park to search for new documents and update existing information.

Product specifications that specify formats for deliverables, such as, FGDC compliant metadata for all spatial data sets, FGDC Biological Profile for all biological data sets, and relational databases in MS Access were included in each cooperative agreement. The Northeast Coastal and Barrier Network data manager assisted and/or developed relational databases for cooperators working on biological inventories to assure quality products at the completion of each project.

Deliverables from the inventory projects funded by I&M and regional science in FY00 and FY01 in the four PA Network parks, GETT, EISE, HOFU and VAFO, are now being submitted. These projects were funded prior to the development of I&M product specifications. The Network has cooperators, park staff and the Northeast Coastal and Barrier Network data manager to work with each of these inventory cooperators to make sure that products are being delivered following I&M specifications. Relational databases are being developed to house much of this data, data dictionaries and FGDC compliant metadata are being developed with the cooperators to ensure proper documentation of all products. Reports are peer reviewed for content and databases are reviewed for accuracy and error.

Vegetation mapping is underway in all of the network parks. VAFO is complete and has served as an example for us to develop a review process for vegetation mapping products. HOFU is under review. Mapping in VA parks is continuing and may need to be extended due to impacts of Hurricane Isabelle. Air photos were flown at GETT and EISE in 2003 and digital orthophotos are being developed. A fire fuels research project in the VA parks has determined that vegetation communities in the northeast described in the National Vegetation Classification (NVC) crosswalk well to fire fuels models.

The Mid-Atlantic Network received \$150,000 start-up funding in 2003 to begin developing a monitoring program. The Network Board of Directors were presented with a choice of duty locations for Network staff and voted to station staff at Fredericksburg NMP. The park made a building available and Network funds were used to install communication systems, locks and upgrade facilities. The Network Coordinator vacancy closed mid-July; however, no one was selected from any of the lists and it will be re-announced in FY04. While hiring of permanent staff is delayed, we plan to fill the Network's needs via temporary staff or cooperators hired to oversee incoming data and deliverables from recently funded inventories, manage the three WASO databases for the Network and begin to compile materials for completing the Phase 1 report for the Network.

Objectives

Biological Inventories

1. Locate, catalog and archive park natural resource documents, data sets, and spatial information and ensure such information is accurate, in useable formats and readily available.
2. Conduct inventories targeted at vertebrate and vascular plant species in the Network parks and conduct quality assurance and review of all inventory products.
3. Conduct investigations on species and species assemblages that are of special concern to network parks and conduct quality assurance and review of all inventory products.
4. Conduct other baseline inventories identified as important to Network parks and the Network Vital Signs program and conduct quality assurance and review of all inventory products.

Vital Signs Monitoring

5. Hire and retain professional staff and provide a safe, healthy, and productive work environment.
6. Develop and maintain working and decision-making processes that engage the network board of directors, technical staff, cooperators and managers of network parks.
7. Develop, implement, and maintain a Network data management program. (Note: this objective is placed under Vital Signs monitoring, however, it is equally important and integrated with the Biological Inventories portion of the program.).
8. Identify and prioritize Network Vital Signs, develop protocols and implement programs to monitor these Vital Signs in Network parks.
9. Integrate water quality monitoring in the Network Vital Signs monitoring plan.

II. Accomplishments (FY2003) and Scheduled Activities (FY2004)

A. Biological Inventories

Objective 1 –Locate, catalog and archive park natural resource documents, data sets, and spatial information and ensure such information is accurate, in useable formats and readily available.

Task 1.1 – NPSpecies (all parks)

- **FY 2003 Accomplishments:** (1) Through an existing cooperative agreement with Penn State University (PSU) a part-time research associate continued to convert and verify existing data in the Network's NPSpecies database in the spring of 2003 (this position is shared between two Networks, the Mid-Atlantic and Eastern Rivers and Mountains). Existing records in NPSpecies were to be verified and corrected in association with the original hard copy documents. This included verifying each species with its associated reference, identifying species in the database not referenced and removing them, addition or removal of documented common or scientific names, and adding locational information, abundance and nativity information. Spelling errors were also to be corrected as well, and any new data gathered in 2001/2002 entered.
- **Scheduled FY 2004 Activities and Products:** (1) Complete the verification process for NPSpecies. Assist parks in reviewing their park database. Hire additional taxonomic specialists to review NPSpecies for the Network. (2) Provide NPSpecies training to park staff. (3) Gather data collected in 2003 from Network parks and enter it into NPSpecies and other appropriate NPS databases. (4) Establish a Point of Contact for NPSpecies data for the Network.

Task 1.2 NatureBib (all parks)

- **FY 2003 Accomplishments:** (1) Through an existing cooperative agreement with PSU, a full-time research associate is entering and verifying existing references in the NPS bibliographic database, NatureBib. This is a shared position between the four Northeast Region Networks. In order to locate new records for inclusion into each park database, update work includes visits to the parks, as well as searches and/or visits to local, state, and federal public, private, educational, and governmental libraries and repositories. Online databases and resources are also searched for relevant natural resource information via the Internet or locally. Also included in this updating is the editing of the existing records for duplication, authority control, and data enhancement due to multiple sources, non-NatureBib originated cataloging. Site visits were made to APCO, BOWA, FRSP, HOFU, and VAFO, new records were added at: APCO (12 records), APPA (989 records), BOWA (18 records), FRSP (47 records), HOFU (24 records), and VAFO (64 records) and many records were updated: APCO (11 records), BOWA (13 records), FRSP (91 records), HOFU (31 records), and VAFO (112 records).
- **Scheduled FY 2004 Activities and Products :** (1) Complete the update and verification of Naturebib, including park visits to network parks as needed

Objective 2 –Conduct inventories targeted at vertebrate and vascular plant species in the Network parks and conduct quality assurance and review of all inventory products.

Task 2.1 – Mammal Surveys (FRSP, RICH, BOWA, PETE, APCO, VAFO)

- **FY 2003 Accomplishments:** (1) A cooperative agreement was established in FY2002, with the CESU at Frostburg State University, Dr. Ron Barry to conduct a two-year study to determine the presence, relative abundance, and distribution of small, medium, and large mammal species at RICH and FRSP and three Northeast Coastal and Barrier Network parks. In 2002-2003, historical records and current information on mammals from the NPSpecies database were obtained for RICH. Surveys of RICH mammals were initiated by an FSU graduate assistant and [summer 2003]

research technician. UTM coordinates were obtained by GPS at each sampling location, and preliminary characterizations of habitats were made. Data were compiled in MS Access format. Eight species of mammals had been recorded for RICH, and the cooperators have confirmed by live trapping, salvage, and observation (including sign) the presence of 6 of these species and an additional 10 species not recorded previously. (2) A cooperative agreement was established (FY02) with Virginia Commonwealth University, Dr. John Pagels to conduct a two-year study to determine the presence, relative abundance, and distribution of small, medium, and large mammal species at APCO, BOWA and PETE. A literature search was completed to determine all mammals that may potentially occur at each of the study areas. In December 2002 initial visits were made to PETE (Eastern Front and Five-forks tracts—which are treated as separate major areas) and APCO. Habitat determinations and sampling site selection at PETE and APCO began in early March 2003. By April 2003 all trapping sites were staked out and by mid-May 2003 all pitfall traps had been installed at PETE and APCO. In May 2003 site selection, site setup, and pitfall trap installation had been completed for BOWA. There are a total of 59 sampling sites at the four study areas. Soil samples were taken from all sites at all locations during pitfall trap placement. Between June and August of 2003 trapping, tagging and releasing of small mammals was completed at all four locations for a total of seven nights each. In total, 19 mammals representing 6 species were captured at PETE (Eastern Front), 85 mammals representing 7 species were captured at PETE (Five-Forks), 41 mammals representing 6 species were captured at APCO, and 92 mammals representing 10 species were captured at BOWA. Initial camera trapping attempts at BOWA in August proved to be moderately successful. In September 2003, began entering trapping data into NPS database. (3) An MS Access relational database was developed for Dr. John Pagels by the Northeast Coastal and Barrier Network data management staff. (4) In September 2003, a cooperative agreement was established with Dr. Richard Yahner to inventory mammals at VAFO.

- **Scheduled FY 2004 Activities and Products :** (1) The survey of mammals in RICH will continue through FY 2004 by the Frostburg State University cooperators. Data will be compiled and analysis will begin in September 2004. Historical records of mammals at FRSP will be obtained from October – December 2003. During this same period habitat strata will be outlined and ground-truthed, sampling sites will be identified, and sampling protocol will be established for FRSP. The survey of mammals will begin in March and continue through FY 2004. A progress report will be prepared from November 2003 – January 2004. Note: the schedule of activities in THST, GEWA, and RICH may be modified to accommodate the effects of hurricane Isabel, which occurred in September 2003. (2) October – November 2003, fall trapping to take place at all four locations for two nights at each study area.. January – February 2004, winter trapping to take place at all four areas for two nights at each place. March – April 2004, spring trapping to take place at all four locations for two nights at each place. June – August 2004, summer trapping to take place at all four locations for seven nights at each of the four major locations. All minor PETE sites where actual sampling may not be feasible (too small, loss of traps) will be visited and habitats and potential mammals noted. Vegetative analyses for all four major all locations will be completed during the summer months. In addition, camera trapping will be stressed throughout 2004. It is anticipated that many of the sites will have to be reconfigured/reset because of damage created by fallen trees during Hurricane Isabel in September 2003. (3) Data will be entered to the database template. (4) Field sampling design will be established based on Yahner's previous work and field work will begin at VAFO in 2004.

Task 2.2 – Avian Surveys (FRSP, RICH, BOWA, PETE, APCO)

- **FY 2003 Accomplishments:** (1) A cooperative agreement was established with the Center for Conservation Biology at the College of William and Mary, Dr. Dana Bradshaw, to search for and catalog all verifiable records of birds occurring within park boundaries, develop an expected species list for each park and conduct targeted avian inventories to fill information gaps at APCO,

BOWA, PETE, RICH and FRSP. Historical records research began in Fall 2002 along with review of digital imagery for study site selection. Survey sites were established, documented with GPS and the respective park natural resource contacts were met and provided with copies of the survey plan and digital data layer of points in December 2002. Surveys were initiated in January 2003 with the hiring of field techs. Five survey rounds of all park units were completed during FY 2003. Two events confounded survey efforts during this period forcing a consolidation of survey rounds during critical phases. First, central Virginia experienced its wettest spring on record causing critical missed surveys during the peak of spring migration. Rain or high winds precluded effective surveys for days at a time. This was followed by Hurricane Isabel in mid-September during the peak of fall migration. Many park units were closed to all but emergency personnel to assist with storm damage cleanup and repair.

- **Scheduled FY 2004 Activities and Products:** (1) At least three additional survey rounds will be conducted between fall 2003 and early spring 2004 to compensate for missed surveys during FY 2003. A progress report will be completed and submitted to the regional office as well as to the respective park natural resource contacts no later than December 31, 2003. A draft technical report will be submitted by March 31, 2004. A final project technical report will be submitted by July 31, 2004. This will include predicted species lists, documented survey results and bird/habitat associations, associated databases, digital data layers, and quantitative estimates of relative abundance for selected species. (2) Per an amendment to the cooperative agreement in late FY 2003 a final effort will involve reviewing and editing existing species data currently entered in the NPSpecies database for each of the five Mid-Atlantic Network parks. This will include correcting inaccuracies, filling in blanks, and merging new data from the current avian inventory project. Draft and final reports will be due March 31, and July 31, 2004 respectively.

Task 2.3 – Herpetological Surveys (FRSP, RICH, BOWA, PETE, APCO)

- **FY 2003 Accomplishments:** (1) Through a cooperative agreement with Dr. Joseph Mitchell, University of Richmond, herpetological inventories at FRSP, RICH, BOWA, PETE and APCO began in October 2002 and continued through September 2003. A total of 17 species of amphibians and 13 reptiles have been documented thus far for APCO, 9 and 9 for BOWA, 20 and 21 for FRSP, 20 and 27 for PETE, and 23 and 20, respectively, for RICH. New county records and range extensions for several species, mostly frogs and salamanders, have been documented. Park personnel have supplied information and in some cases photographs of amphibians and reptiles they have encountered. Resource managers in two parks have picked up and frozen road-killed snakes for us. These valuable observations provided new information on several species. (2) An MS Access relational database was developed for the herpetological inventories in these parks, by the Northeast Coastal and Barrier Network data management staff.
- **Scheduled FY 2004 Activities and Products:** (1) Field work will continue in these parks by the University of Richmond cooperators into October 2003 and will resume in March 2004. Field inventories will continue through May 2004. Final reports with appendices (electronic databases and digital photographs) will be written and submitted by September 2004. We anticipate continued helpful cooperation from all park resource managers.

Task 2.4 – Fish inventories (FRSP, RICH, BOWA, PETE, APCO, HOFU, VAFO, GETT, EISE)

- **FY 2003 Accomplishments:** (1) Fish inventory data collected at APCO, BOWA, FRSP, PETE and RICH by the fisheries staff of SHEN, during 2002 were summarized and submitted to the I&M Regional Coordinator for entry into NPSpecies. Park specific databases and an annual progress report were also prepared and submitted to the Natural Resource staff at each of the parks inventoried during 2002. (2) During May and June of 2003, specific sites within FRSP, RICH and PETE were either revisited due to drought conditions or other problems experienced during 2002, or were sampled for the first time. Sites within PETE and RICH were sampled cooperatively with Virginia Department of Game and Inland Fisheries personnel and/or equipment. (3) During July

and August sampling was initiated within VAFO. (4) Fish inventory data from HOFU were received by SHEN staff from Penn State University cooperators and entered as a component of the Mid Atlantic fish inventory database. All data entry and verification were completed for the 2003 field season during August and September.

- **Scheduled FY 2004 Activities and Products :** (1) Revised or new park specific databases will be prepared and submitted to all parks sampled during 2003 by the SHEN staff and the most recent data will be submitted for entry into NPSpecies. Additionally, an annual progress report including data summaries and maps of sampling locations for 2003 will be completed. (2) During the summer of 2004, sampling will be completed within GETT, EISE and VAFO. The only remaining site within VAFO, a two mile reach of the Schuylkill River, will be sampled by the Pennsylvania Fish and Boat Commission when conditions are suitable for shocker boat operations. (3) Additions to NPSpecies will be made as new species are discovered as a result of follow-up field work.

Task 2.41 – Compilation of Historic Data for Fishes of the Northeast Region

Parks Involved: VAFO, HOFU, GETT, EISE, RICH, APCO, PETE, FRSP, BOWA

- **FY 2003 Accomplishments:** (1) Continued effort of regional I&M staff (Sara Stevens) to develop database format to assist completion of past project with Penn State University (Dr. Jay Stauffer and Tim Stecko) to provide fish distribution, voucher and species data for PA, VA and WV parks from an earlier cooperative agreement.
- **Scheduled FY 2004 Activities and Products:** (1) Project will be completed and final deliverables received.

Task 2.5 Relational database development for PA Park inventories (GETT, EISE, VAFO, HOFU)

- **FY 2003 Accomplishments:** (1) A student was hired at North Carolina State University (NCSU) to develop relational databases in MS Access, assist cooperators in developing FGDC compliant metadata for their projects, and convert incoming inventory data from projects funded prior to I&M product specifications. Both herpetological and avian inventory data collected by Dr. Richard Yahner from Penn State University was converted to the new database.
- **Scheduled FY 2004 Activities and Products :** (1) Continue to convert existing inventory data to relational access databases and assist cooperators in developing FGDC compliant metadata following the biological profile. (2) Provide these Access databases to parks, and assist park staff in developing data entry forms for further use for park inventories.

Task 2.6 Assist cooperators with developing FGDC compliant metadata for biological inventories (All parks)

- **FY2003 Accomplishments:** (1) Discussions among cooperators, data managers, and I&M staff in the Northeast identified the need to provide support to cooperators in developing FGDC compliant metadata for their projects. Currently in the Mid-Atlantic Network there are eight cooperators at different Universities conducting biological inventories in the Network parks. The region itself has many more. An amendment to the existing cooperative agreement with NCSU FTSC, was funded by all 4 networks in the region to train undergraduates at NCSU to develop FGDC compliant metadata following the biological profile.
- **Scheduled FY 2004 Activities and Products:** (1) Trained students will directly assist Northeast Region I&M cooperators with the development of FGDC compliant metadata for all projects.

Task 2.7 Peer review of biological inventory work (All parks)

- **FY2003 Accomplishments:** (1) A cooperative agreement was amended with Penn State University, Dr. Richard Yahner to provide funding for scientific peer review of incoming

vertebrate inventory data and reports for the Mid-Atlantic Network and some projects being conducted in the Eastern Rivers and Mountains Network parks. (2) A complete review of the Tiebout herpetological report and database for VAFO was accomplished. We are awaiting final data products. (3) A complete review of Tiebout data and report for HOFU was accomplished and we are awaiting data.

- **Scheduled FY 2004 Activities and Products:** (1) Continue peer review as data and reports are submitted to the Mid-Atlantic Network from Ron Barry (mammals), John Pagels (mammals), Joe Mitchell (reptiles and amphibians), Dana Bradshaw (birds).

Objective 3 – Conduct investigations on species and species assemblages that are of special concern to network parks and conduct quality assurance and review of all inventory products.

- **FY2003 Accomplishments:** No inventories were conducted in the MIDN this year on species or species assemblages of special concern.
- **Scheduled FY 2004 Activities and Products:** No inventories are planned.

Objective 4 – Conduct other baseline inventories identified as important to Network parks and the Network Vital Signs program and conduct quality assurance and review of all inventory products.

Task 4.1 – Complete vegetation sampling, classification and mapping for FRSP, RICH, BOWA, PETE, APCO

- **FY 2003 Accomplishments:** (1) VA Division of Natural Heritage Ecologists entered data collected in 2002 at APCO, BOWA, FRSP, and RICH into databases and conducted preliminary analyses (2) began edits to the photo interpretation line work for BOWA (3) continued fieldwork in APCO and FRSP, sampling quantitative vegetation plots (4) spent time in field at FRSP with NS State cooperators, field checking photo interpretation.
- **Scheduled FY 2004 Activities and Products:** (1) A progress report is due in December 2003 (2) edits to photo interpretation line work for BOWA and APCO will be completed and polygons will be attributed with vegetation classifications (3) data collected in 2003 will be entered into databases and analyzed within a larger VA Piedmont/Coastal Plain dataset (4) fieldwork in FRSP will be completed and fieldwork will continue in RICH and PETE.

Task 4.2 – Complete vegetation sampling, classification and mapping for HOFU

- **FY2003 Accomplishments:** (1) Kucera International, Inc. completed aerial photography for HOFU. Richard Easterbrook from PETE, served as contracting officer technical representative and reviewed the photos to ensure they met necessary specifications. (2) The FTSC at North Carolina State University (NCSU) developed orthophoto mosaics of each park. (3) PA Science Office of the Nature Conservancy, PA Natural Diversity Inventory (PANDI) utilized the digital imagery to locate, identify, and map the plant communities at HOFU. PANDI, completed vegetation classification field work, entry of data into Plots database, completed data analysis and developed vegetation classifications for the Park, developed an identification key for vegetation types in the park, developed alliance level vegetation map for HOFU. (4) PANDI developed accuracy assessment sampling design and completed accuracy assessment sampling (5) The Pennsylvania Science Office of the Nature Conservancy (PSO) submitted a draft vegetation classification and map to the National Park Service (NPS) in early July 2003. PSO has received preliminary comments and has begun responding to comments and making requested changes. (6) PSO ecologist Greg Podniesinski attended an expert roundtable at the invitation of the NPS to discuss the status of Hopewell Furnace NHS natural resources and management needs. Dr. Podniesinski

presented the draft state of plant communities within the park and priority management issues. A general consensus among park staff and experts attending the meeting was that invasive and exotic plant species as well as heavy deer browse were the most pressing management issues. (7) An existing cooperative agreement was amended to involve NatureServe in completing a crosswalk for the Pennsylvania classification to the National Vegetation Classification (NVC).

- **Scheduled FY 2004 Activities and Products:** (1) PANDI will revise draft report and maps per National Park Service and peer review comments (2) PANDI will assemble and submit final report, maps and other deliverables as specified in the Coop Agreement. (3) MIDN I&M will develop procedures for archiving and distributing products.

Task 4.3 – Complete vegetation sampling, classification and mapping for GETT and EISE

- **FY 2003 Accomplishments:** (1) An amendment to the Cooperative Agreement with PA Natural Diversity Inventory (PANDI), PA Science Office of The Nature Conservancy was fully funded in 2003 to complete vegetation classification, sampling and mapping for GETT and EISE. PANDI developed park specific scopes of work detailing tasks, deliverables and schedule of work for each park. PANDI held start-up meetings and performed reconnaissance of park vegetation at EISE and GETT. (2) Spring 2003, leaf off CIR photography was flown under a contract with Kucera International, Inc.. (3) Contract specifications were developed and shape files and boundaries provided by NCState University. COTR duties handled by Richard Easterbrook (PETE), (4) Entered into a cooperative agreement for NC State to develop digital orthophotography to be used by the ecologists with PA Science Office. (5) An existing cooperative agreement was amended to involve NatureServe in completing a crosswalk for the PANDI classification to the National Vegetation Classification (NVC).
- **Scheduled FY 2004 Activities and Products :** (1) North Carolina State University will develop digital orthophotos, metadata and an archive for hard copy air photography. (2) PANDI will perform air photo interpretation, develop formation- level vegetation map and vegetation classification sampling strategy and complete vegetation classification sampling during the summer 2004 field season and begin data entry into database

Task 4.4 Assist in the development of standards for vegetation map review and assessment (All parks)

- **FY 2003 Accomplishments:** (1) Vegetation mapping has been funded in all network parks and products are being delivered. The VAFO vegetation map was reviewed and final products delivered. We made some progress in the development of a standard review protocol using the VAFO map and the HOFU map. An initial meeting was held in Luray, VA during the veg mapping training session to discuss gaps in veg mapping guidelines, to identify parties responsible for review of spatial data, ecological data and the classification and keys.
- **Scheduled FY 2004 Activities and Products:** Finalize review and data management procedures for vegetation mapping products including air photos, digital spatial database products, access (PLOTS) databases, field sheets and reports.

Task 4.5 Mapping of Fire Fuels

- **FY 2003 Accomplishments:** (1) Protocols were developed for mapping fire fuel loads using the 1:6,000 scale leaf-off aerial photography used for creating vegetation maps. Three NC State staff members received training in data collection using Brown's transects at a US Forest Service, Forest Inventory and Analysis training session in mid June in Asheville, NC. Fire fuel load data using Brown's transects and Bergen Roethermel techniques have been collected at APCO, PETE, RICH, FRSP and BOWA. Fuel loading for each vegetation type found within BOWA has been calculated using Brown's calculations and a National Park Service quick

calculation method. We analyzed the fuel loading to find variations between the different vegetation types.

- **Scheduled FY 2004 Activities and Products:** A final report will be submitted.

Task 4.6 Inventory Paleontological Resources (All Parks)

- **Scheduled FY 2004 Activities and Products:** An inventory of paleontological resources will be completed for network parks by Vincent Santucci.

B. Vital Signs Monitoring

OBJECTIVE 5-Hire and retain professional staff and provide a safe, healthy, and productive work environment.

Task 5.1 – Hire Network Coordinator and Data Manager

Parks Involved: ALL

- **FY 2003 Accomplishments:** (1) Fredericksburg was the preferred option for a duty station for network staff. A vehicle was purchased and the building was prepared for office space (2) A MIDN Network Coordinator position was advertised and closed in July 2003, but no one was hired from the certificate of eligibles.
- **Scheduled FY 2004 Activities and Products:** (1) The Network Coordinator position will be re-advertised in November 2003, has been reannounced and closes January 30, 2004. Arthur Stewart, VAFO Superintendent will represent the BOD on the selection panel. (2) Full vital signs funding for this network is not expected now until after 2005 and then it is just \$301,000. (3) Data Management needs will be accomplished via a Cooperative Agreement until a hired Network Coordinator can recommend strategies for data management in the future. (3) The Board of Directors recently agreed to hold off on hiring a permanent Data Manager until future funding was secure citing sustainability of the network as a reason. Data management needs will be accomplished via a Cooperative Agreement or temporary staff.

OBJECTIVE 6 - Develop and maintain working and decision-making processes that engage the Board of Directors, Science Advisory Committee, technical staff, and managers of Network parks.

Task 6.1 – Board of Directors and Network Charter

Parks Involved: ALL

- **FY2003 Accomplishments:** (1) A network Board of Directors meeting was held via conference call April 2003. All Board members and park resource management staff attended. (2) The Network Charter was drafted and approved via signature from all Board members. (3) The Board reviewed the location for the network and selected the proposal from Fredericksburg NMP.
- **Scheduled FY 2004 Activities and Products:** (1) Board of Directors membership will be updated to reflect changes in Park Superintendents. (2) The Network Charter will be re-drafted and approved to reflect these changes and to (3) incorporate the designation of a Point of Contact for NPSpecies. (4) A BOD meeting will be scheduled for November-December was held January 20, 2004 to review 2003 progress, discuss hiring, and approve the FY04 work plan. (5) The BOD established Russ Smith, Superintendent FRSP as signatory for the Board.

Task 6.2 – Science Advisory Committee

Parks Involved: ALL

- **FY2003 Accomplishments:** (1) Network resource managers nominated Science Advisory Committee members. RICH park resource manager Kristen Allen contacted nominees to seek participation. Such a group has not been established officially.
- **Scheduled FY 2004 Activities and Products:** (1) Park superintendents, resource managers, resource specialists and site managers for parks, as well as the regional chief scientist and regional I&M coordinator, will establish a Science Advisory Committee. (2) The Science Advisory Committee will meet once to learn about the vital signs program and assist with developing meetings will be held to prepare material needed for scoping sessions.

Task 6.3 – Site Visits with Natural Resource Staff

Parks Involved: ALL

- **Scheduled FY 2004 Activities and Products:** (1) MIDN will hire temporary staff to visit the parks and begin to gather data for the Phase 1 report including park natural resource issues, natural resource threats, current projects, and potential vital signs. Carolyn Davis, NNL Coordinator will assist the network. In order to summarize data for the report, each park will need to provide a resource management plan, a strategic plan, a general management plan and other planning documents that might identify goals and objectives for natural resource management.

Task 6.4 – Develop Web Page for the Network

- **Scheduled FY 2004 Activities and Products:** (1) An existing cooperative agreement between the NCBN and URI Environmental Data Center will be modified to develop a Webpage for the MIDN and for SHEN I&M prototype program. These webpages will also be linked to the National I&M Program and will be a centralized place for Network Parks, Scientists, and others interested in the Network's I&M Program to receive information. The SHEN I&M prototype webpage will be designed with much park assistance.

Task 6.4 - Contribute to General Management Planning

- **FY2003 Accomplishments:** (1) The VAFO GMP process continues to be augmented by I&M data. The HOFU GMP process benefited from I&M available data.
- **Scheduled FY 2004 Scheduled FY 2004 Activities and Products:** (1) Northeast Region I&M staff will continue to assist park resource managers as information is available to identify and review existing natural resource studies and data sets for network parks; analyze, consolidate and synthesize this information to identify the natural resource characteristics and conditions in the context of each park's purpose and mission; identify issues and opportunities that should be addressed during the GMP process; identify critical gaps in the knowledge base which must be addressed prior to initiating the planning process; identify usable natural resource data to better inform the GMP process; present the results of this work to park planners and managers in a way that is understandable and useable in the park planning and management process(s); and identify a cadre of knowledgeable natural resource professionals that would continue in an advisory role during each park's planning process.

OBJECTIVE 7 - Develop, implement, and maintain a Network data management program. (Note: this objective is placed under Vital Signs monitoring, however, it is equally important and integrated with the Biological Inventories portion of the program.).

Task 7.1 – GIS and Data Management Assistance

- **FY 2003 Accomplishments:** A cooperative agreement was established with NC State for data management assistance in the Northeast Region Inventory and Monitoring (I&M) Program. The project includes four central activities: (1) providing support to I&M biological inventory projects

including database development, data product review and metadata creation; (2) reviewing orthophotos created by others and creating digital orthophoto mosaics for some network parks; (3) compiling and distributing base GIS data; (4) and developing vegetation map data review procedures.

- **Scheduled FY 2004 Activities and Products:** (1) During the first year of this project NC State expects to provide research support to 25-30 I&M Program biological inventory projects that will include: Verifying that each scientist is working with the appropriate GIS base data; Reviewing tabular data from each project for compatibility with the national data structure following the Natural Resource Database Template and assisting with soliciting any missing information; Assisting each scientist to assure that all information necessary for completing fully compliant metadata is available and taking a lead role in constructing metadata records; and constructing the appropriate NPS Dataset Catalog records and Microsoft Word formatted data dictionaries for each project. (2) NCState will create and distribute orthophotos for GETT and EISE. (3) NC State expects to develop distribution procedures and distribute base GIS data for the MIDN this fiscal year. At a minimum, base GIS data will include the following layers, in their latest and highest available resolution, with FGDC compliant metadata: 1. Park Boundary, 2. Digital Ortho Quarter Quadrangles (DOQQ's) in MrSID format, 3. Digital Elevation Models (DEM's), 4. Digital Raster Graphics (DRG's) in MrSID format, 5. All available vector base data (roads, trails, hydro, contours, facilities, shorelines, etc.). (4) Vegetation map review procedures will be tested on HOFU (5) In 2004, all networks in the Northeast Region will share in the cost of a photo library and archive to be developed and managed by NCState to house air photos resulting from the I&M vegetation mapping effort. This is to assure that products are not lost.

Task 7.2-Relational database development for park inventories

- **Scheduled FY 2004 Activities and Products:** (1) locate significant data sources and convert existing inventory data to relational access databases and assist cooperators in developing FGDC compliant metadata following the biological profile. (2) Provide these Access databases to parks, and assist park staff in developing data entry forms for further use for park inventories.

Task 7.3-Archive data sets and reports

- **Scheduled FY 2004 Activities and Products:** (1) In conjunction with the other Northeast Region Networks, establish archival procedures for incoming biological data, including vegetation mapping field forms, plots data and reports. (2) Identify data storage sites. (3) Initiate a scanning and document creation effort to catalog and store electronic copies of current and historic documents.

OBJECTIVE 8 -Summarize existing data, identify, and prioritize all indicators, then develop protocols and implement programs to monitor the Vital Signs.

Task 8.1-Summarize Existing Data and Identify Potential Indicators.

- **Scheduled FY 2004 Activities and Products:** (1) Hold informal and formal meetings with Park resource managers, cooperators, and members of the Science Advisory Committee that are actively involved with natural resource management within network parks. (2) Under a cooperative agreement, hire a Research Associate to summarize enabling legislation, existing monitoring programs, important natural resources, and ecologically significant "stressors" that have the potential to impact natural resources within network parks. A draft of this report will be completed in May 2004 (3) Compile existing data, begin an analysis of the adequacy of current monitoring by NPS or others.

Task 8.2-Develop Conceptual Models for Important Ecosystems.

- **Scheduled FY 2004 Activities and Products:** (1) Develop conceptual models for network ecosystems, identify relationships between potential indicators, stressors and agents of change. (2) Work with Park Staff and Science Advisory Committee to elicit and attain a cooperator to develop conceptual models for important ecosystems.

OBJECTIVE 9 - Integrate water quality monitoring in the Network Vital Signs monitoring plan.

Task 9.1-Summarize existing data.

- **Scheduled FY 2004 Activities and Products:** (1) This is not yet a funded activity. However, as time allows, as part of the vital signs program development, we will seek expertise to a) compile information on state-identified "impaired" (305b and 303d-listed) waters within network parks, b) compile information on state-identified outstanding waters, or special protection waters, c) compile information on other water bodies in the network not officially recognized as such, but that are thought to be both pristine and ecologically highly significant at the park or Network scale, and d) identify ecologically significant "stressors" that have the potential to impact water quality within network parks.

Task 9.2- Identify and acquire published resources on water quality monitoring

- **Scheduled FY 2004 Activities and Products:** (1) Review work of other networks in integrating water quality into vital signs.

Task 9.3-Technical Evaluation of existing Water Quality Monitoring Programs

- **Scheduled FY 2004 Activities and Products:** (1) Work with Park Staff and Science Advisory Committee and seek a cooperator to do the following: a) data mining and database review activities to determine the status of active and historic water quality monitoring within the parks of MIDN, b) begin compiling existing water quality data, and begin an analysis of the adequacy of current monitoring (by NPS or others), c) evaluate existing water quality monitoring programs (NPS or other).

III. Staffing

Inventory and Monitoring Staff

John Karish, Chief Scientist

Elizabeth Johnson, Northeast Region I&M Coordinator

Jennifer Keefer, Research Associate, PSU

Scott Tiffney, Research Associate, PSU

Sara Stevens, Northeast Coastal and Barrier Network Data Manager

Carolyn Davis, NNL Program

Mid-Atlantic Network Cooperators

Frostburg State University-Dr. Ron Barry

Virginia Commonwealth University-Dr. John Pagels

College of William and Mary, Center for Conservation Biology-Dr. Dana Bradshaw

University of Richmond-Dr. Joe Mitchell

West Chester University, Dr. Harry Tiebout III

James Atkinson and the SHEN fish crew

Alan Williams (fish data management)

Richard Easterbrook, PETE (air photos and vegetation mapping)
North Carolina State University-Field Technical Support Center, Dr. Hugh Devine
NatureServe, Lesley Sneddon
VA Department of Natural Resources (Heritage program), Chris Ludwig and Karen Patterson
PA Natural Diversity Inventory (Natural Heritage Program), Greg Podniesinski and Stephanie Perles
University of Rhode Island, Environmental Data Center, Dennis Skidds
Tonnie Maniero - NPS ARD
Vincent Santucci - NPS
Penn State University - Dr. Richard Yahner and Brad Ross
Penn State University - Dr. Jay Stauffer and Tim Stecko

IV. Reports, Publications and Presentations

Reports

Atkinson, James B. Virginia Parks Fish Inventory; Mid-Atlantic Network, 2002 Annual Report. Natural Resources Branch; Division of Natural and Cultural Resources; Shenandoah National Park; 2003. 45 p.

Barry, R. E. Mammal surveys at George Washington Birthplace NM, Thomas Stone NHS, Colonial NHP, Fredericksburg and Spotsylvania NMP, and Richmond NBP. Progress Report for Cooperative Agreement No. 1443DCA309701200, Task Order No. T-3097-01-300 of the Chesapeake Watershed Cooperative Ecosystem Studies Unit. January 2003.

Harry M. Tiebout III. Inventory of the Herpetofauna at Valley Forge National Historical Park. Department of Biology West Chester University West Chester, PA 19383. Final Report June 2003

Harry M. Tiebout III. Inventory of the Herpetofauna at Hopewell Furnace National Historic Site. Department of Biology West Chester University West Chester, PA 19383. Final Report June 2003

Richard H. Yahner, Bradley D. Ross, Gregory S. Keller, and Davis S. Klute. Comprehensive Inventory Program for Birds at Six Pennsylvania National Parks. School of Forest Resources The Pennsylvania State University University Park, PA. Final Report December 2001.

Richard H. Yahner, Katherine L. Derge, and Jennifer Mravintz. Inventory of Amphibian and Reptile Species at Gettysburg National Military Park and Eisenhower National Historic Site. Center for Biodiversity Research. Environmental Resources Research Institute. The Pennsylvania State University, University Park, PA. Final Report March 2001

Publications

Ross, B.D., R.H. Yahner, J. Karish, D.S. Klute, and G.S. Keller. 2003/04. Inventory program for birds at Pennsylvania National Parks. *Pennsylvania Birds*. (In press).

Ross, B.D., D.S. Klute, G.S. Keller, R.H. Yahner, and J. Karish. 2003. Inventory of birds at six national parks in Pennsylvania. *Journal of the Pennsylvania Academy of Science*. 77(1):20-40.

Smith, Mark P. 2003. Predicting fuel models and subsequent fire behavior from vegetation classification maps. Master of Science thesis. North Carolina State University. 141pp.

Betsie Blumberg. 2003. Birds surveyed in six National Parks in Pennsylvania. Park Science 22(1):18-19.

Presentations

Devine, Hugh A. 2003. “Predicting Fire Fuel Models from National Vegetation Inventory Data.” Presentation at the Northeast Region Fire Management Officer’s Workshop. Boston, MA. May 13

Smith, Mark P. “Field data collection of fuel load based on formation-level vegetation.” Presentation at the NPS National Vegetation Classification Workshop. Luray, VA. October 23-25, 2002.

MIDN Board of Directors Meeting and Charter Development. April 8, 2003. Conference call with PowerPoint presentation.

V. Status of Park Vital Signs Monitoring

Since this network includes SHEN, a prototype park, one of the 10 parks in the network has identified vital signs. The other 9 parks are in the very early stages of planning a park vital signs monitoring program, and are considering all 7 monitoring categories, but have not yet made decisions and prioritized what components they will monitor. Several parks are already doing some monitoring using funds from park base and partnerships and other sources as reflected in the “protocols implemented” and “analysis/synthesis available” sections.

Mid-Atlantic Network 2003	Air Quality	Water Quality	Water Quantity	Geologic Resources	Plants	Animals	Landscape Characteristics
Planning and Design							
# parks monitoring w/ NRC funding	10	10	10	10	10	10	10
# parks monitoring w/ other funding	1	3	1	1	4	10	0
Protocols Implemented							
# parks monitoring w/ NRC funding	0	0	0	0	0	0	0
# parks monitoring w/ other funding	1	3	1	1	4	10	0
Analysis/Synthesis Available							
# parks monitoring w/ NRC funding	0	0	0	0	0	0	0
# parks monitoring w/ other funding	1	3	1	1	4	10	0

VI. USGS Protocol Development and Monitoring-Related Research Needs

The USGS Status and Trends Program provides funding to USGS scientists to assist parks with protocol development and other monitoring-related research needs such as assistance with

monitoring planning and design, spatial sampling design, database design, statistical data analysis and power analysis assistance, and review/revision of existing protocols. The items provided by networks under this category will be used to identify and prioritize park needs to help the USGS determine how to allocate their funding.

The Mid-Atlantic Network can use assistance from USGS in review of vegetation mapping products and developing conceptual models to assist in identifying vital signs for each park and for the network. The MIDN anticipates needing assistance with monitoring planning and design and spatial sampling design in FY2005-6.

VII. Budget

In FY2003, the MIDN received \$456,000 in funding, including inventory (\$188,000), monitoring (\$150,000) and vegetation mapping (\$118,000) funds. In FY 2003, MIDN reimbursed the Northeast Coastal and Barrier Network (NCBN) \$156,250 and Northeast Temperate Network (NETN) \$7,820 in funds that were "borrowed" in FY 2002 to get the network biological inventories underway. The MIDN still owes NCBN \$86,212 to be reimbursed in FY 2004 from inventory funds. Monitoring funds were used for office expenses, vehicle purchase, data acquisition and data management for the network.

We anticipate the authorization of \$150,000 for vital signs monitoring in FY2004. We do not anticipate any water quality funding for the network. Biological inventory funds for FY 2004, \$96,635, will reimburse NCBN for \$86,212 and the remainder will support extensions of inventories, as needed, to address data missed due to poor sampling weather and review of incoming data by a cooperator. Vital signs funds will support a Network Coordinator to be hired in 2004 and to support data management to be accomplished by a variety of temporary staff and cooperative agreements. We anticipate some additional one-time purchases of computer equipment, travel and support for the office at FRSP.

A summary of our FY2003 expenditures and FY2004 budget plans is provided on the following pages.

Budget Summary

FY03 Admin Report

Network: 30 Mid-Atlantic

Category: 1_Income

Description	\$ Amount	\$\$ Source	Where \$ Went	Comments
	\$150,000.00	I&M - VS Monitoring		
	\$118,000.00	Veg. Mapping Program		
1/4 Regional Coord 2144-NII account	\$22,500.00	I&M - VS Monitoring		
	\$188,000.00	I&M - Biol. Inventory		
Subtotal	\$478,500.00			

Category: 2_Personnel

Description	\$ Amount	\$\$ Source	Where \$ Went	Comments
Regional Coordinator 2144-NII	\$22,500.00	I&M - VS Monitoring	NPS	
Subtotal	\$22,500.00			

Category: 3_Coop. Agreements

Description	\$ Amount	\$\$ Source	Where \$ Went	Comments
Penn State - Yahner mammals VAFO	\$13,174.00	I&M - VS Monitoring	Univ_Non-CESU	
University of RI - office support	\$1,875.00	I&M - VS Monitoring	Univ_Non-CESU	Regional Coord office support
University of RI - EDC Database dev	\$126,499.00	I&M - Biol. Inventory	Univ_Non-CESU	repay NCBN for MIDN inventory 2002
University of RI - YQ Wang	\$7,820.00	I&M - Biol. Inventory	Univ_Non-CESU	repay NETN for MIDN inventories 2002
NC State U - data management	\$23,897.00	I&M - Biol. Inventory	Univ_Non-CESU	repay NCBN for MIDN inventories 2002
NC State U - acquire GIS data	\$14,300.00	I&M - VS Monitoring	Univ_Non-CESU	
NC State U - data management	\$67,500.00	I&M - VS Monitoring	Univ_Non-CESU	
NC State U - veg product review	\$5,000.00	I&M - VS Monitoring	Univ_Non-CESU	
Nature Conservancy-PANDI	\$6,000.00	I&M - VS Monitoring	Other non-Federal	UPDE veg-ERMN repay in 2004
Penn State - Yahner mammals VAFO	\$11,826.00	I&M - Biol. Inventory	Univ_Non-CESU	
College Wm & Mary-Bradshaw- Bird Inv add on	\$2,825.00	I&M - Biol. Inventory	Univ_Non-CESU	
University of Richmond -Mitchell -herp inv	\$8,212.00	I&M - Biol. Inventory	Univ_Non-CESU	
NC State U - digital image development	\$59,000.00	Veg. Mapping Program	Univ_Non-CESU	
East Stroudsburg U -DEWA flying squirrel	\$1,302.00	I&M - VS Monitoring	Univ_Non-CESU	ERMN repay MIDN in 2004

NatureServe -Sneddon	\$50,040.00	Veg. Mapping Program	Other non-Federal	crosswalk to NVC
Subtotal	\$399,270.00			

Category: 4_Contracts

Description	\$ Amount	\$\$ Source	Where \$ Went	Comments
Kucera International-air photos	\$8,305.00	Veg. Mapping Program	Other non-Federal	\$4330 for THST, PETE \$3975 GETT/EISE /NCBN owes MIDN \$2115 for THST
Subtotal	\$8,305.00			

Category: 5_Operations/Equipme

Description	\$ Amount	\$\$ Source	Where \$ Went	Comments
PETE air photo COTR assistance	\$4,345.00	I&M - VS Monitoring \$\$	Other non-Federal	
PETE air photo COTR assistance	\$655.00	Veg. Mapping Program	Other non-Federal	
SHEN fish crew - fish inv	\$4,000.00	I&M - Biol. Inventory \$\$	Other non-Federal	VAFO RICH PETE FRSP THST GEWA
GSA - vehicle purchase	\$18,795.00	I&M - VS Monitoring \$\$	Other Federal	
FRSP office	\$11,517.00	I&M - VS Monitoring \$\$	Other non-Federal	
PO Equipment- DEWA flying squirrel	\$1,098.00	I&M - VS Monitoring \$\$	Other non-Federal	Comments ERMN repay MIDN in 2004
Subtotal	\$40,410.00			

Category: 6_Travel

Description	\$ Amount	\$\$ Source	Where \$ Went	Comments
training, travel	\$5,094.00	I&M - VS Monitoring \$\$	Other non-Federal	ERMN repay 5094 in travel
SHEN fish crew - fish inv	\$2,921.00	I&M - Biol. Inventory \$\$	Other non-Federal	NCBN owes MIDN \$3739
Subtotal	\$8,015.00			

Budget Analysis

Analysis of Expenses by Where \$ Went

Funding Source	Total \$\$	NPS	USGS	Other Federal	Univ.-CESU	Univ_Non-CESU	Other non-Federal
I&M - Biol. Inventory \$\$	\$188,000					\$181,079	\$6,921
I&M - VS Monitoring \$\$	\$172,500	\$22,500		\$18,795		\$103,151	\$28,054
Veg. Mapping Program	\$118,000					\$59,000	\$59,000
Totals	\$478,500	\$22,500		\$18,795		\$343,230	\$93,975

Analysis of Expenses by Category

Funding Source	Total \$\$	Personnel	Coop Agree.	Contracts	Operations/Equip.	Travel	Other
I&M - Biol. Inventory \$\$	\$188,000		\$181,079		\$4,000	\$2,921	
I&M - VS Monitoring \$\$	\$172,500	\$22,500	\$109,151		\$35,755	\$5,094	
Veg. Mapping Program	\$118,000		\$109,040	\$8,305	\$655		
Totals	\$478,500	\$22,500	\$399,270	\$8,305	\$40,410	\$8,015	

Expense Totals By Category

Category	SubTotal	Percent
2_Personnel	\$22,500	4.70%
3_Coop. Agreements	\$399,270	83.44%
4_Contracts	\$8,305	1.74%
5_Operations/Equipment	\$40,410	8.45%
6_Travel	\$8,015	1.68%
	\$478,500	

Budget Summary

FY04 Work Plan

Network: 30 Mid-Atlantic

Category: 1_Income

Description	\$ Amount	\$\$ Source	Where \$ Went	Comments
1/4 Regional Coordinator 2144-NII account	\$30,000.00	I&M - VS Monitoring \$\$		
	\$84,000.00	Veg. Mapping Program		
	\$150,000.00	I&M - VS Monitoring \$\$		
	\$96,635.00	I&M - Biol. Inventory \$\$		
Subtotal	\$360,635.00			

Category: 2_Personnel

Description	\$ Amount	\$\$ Source	Where \$ Went	Comments
Regional Coordinator salary	\$30,000.00	I&M - VS Monitoring \$\$	NPS	
Personnel	\$75,000.00	I&M - VS Monitoring \$\$	NPS	Network Coordinator/Data Manager
Paleo Inventory	\$5,600.00	I&M - VS Monitoring \$\$	NPS	
Subtotal	\$110,600.00			

Category: 3_Coop. Agreements

Description	\$ Amount	\$\$ Source	Where \$ Went	Comments
Vegetation Mapping VA Parks	\$60,000.00	Veg. Mapping Program	Other non-Federal	to complete extensive editing to formation maps one year extension
Complete report and deliverables template VAFO HOFU veg	\$5,000.00	Veg. Mapping Program	Other non-Federal	
NC State U - data management assistance	\$32,292.00	I&M - VS Monitoring \$\$	Univ_Non-CESU	
APPA point of contact	\$5,000.00	I&M - VS Monitoring \$\$	University-CESU	if WASO funds the APPA position this will be used for data management
NC State U - biological inventory data review	\$5,854.00	I&M - Biol. Inventory \$\$	Univ_Non-CESU	
NC State air photo archive/data review	\$19,000.00	Veg. Mapping Program	Univ_Non-CESU	
Inventory time extensions	\$4,569.00	I&M - Biol. Inventory \$\$	Univ_Non-CESU	
Website Development	\$6,108.00	I&M - VS Monitoring \$\$	University-CESU	
Subtotal	\$137,823.00			

Category: 6_Travel

Description	\$ Amount	\$\$ Source	Where \$ Went	Comments
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travel, move, training		\$20,000.00	I&M - VS Monitoring \$\$	Other non-Federal
	Subtotal	<i>\$20,000.00</i>		

Category: 7_Other

<i>Description</i>	<i>\$ Amount</i>	<i>\$\$ Source</i>	<i>Where \$ Went</i>	<i>Comments</i>
Office support	\$6,000.00	I&M - VS Monitoring \$\$	NPS	
FY02 MID owes CBN \$65,955;Pd. \$45559 in FY03	\$20,396.00	I&M - Biol. Inventory \$\$	Univ_Non-CESU	FY02 CBN PAID VCW Univ./Pagels; Mam. Inv.; BOWA APCO PETE
FY02 MID owes CBN \$66,298 Pd. \$482 in FY03	\$65,816.00	I&M - Biol. Inventory \$\$	Univ_Non-CESU	FY02 CBN PAID Wm.&Mary/Bradshaw; Bird Inv.; RICH PETE BOWA FRSP APCO
	Subtotal	<i>\$92,212.00</i>		

Budget Analysis

Analysis of Expenses by Where \$ Went

Funding Source	Total \$\$	NPS	USGS	Other Federal	Univ.-CESU	Univ_Non-CESU	Other non-Federal
I&M - Biol. Inventory \$\$	\$96,635					\$96,635	
I&M - VS Monitoring \$\$	\$180,000	\$116,600			\$11,108	\$32,292	\$20,000
Veg. Mapping Program	\$84,000					\$19,000	\$65,000
Totals	\$360,635	\$116,600			\$11,108	\$147,927	\$85,000

Analysis of Expenses by Category

Funding Source	Total \$\$	Personnel:	Coop Agree.	Contracts	Operations/Equip.	Travel	Other
I&M - Biol. Inventory \$\$	\$96,635			\$10,423			\$86,212
I&M - VS Monitoring \$\$	\$180,000	\$110,600		\$43,400		\$20,000	\$6,000
Veg. Mapping Program	\$84,000			\$84,000			
Totals	\$360,635	\$110,600		\$137,823		\$20,000	\$92,212

Expense Totals By Category

Category	SubTotal	Percent
2_Personnel	\$110,600	30.67%
3_Coop. Agreements	\$137,823	38.22%
6_Travel	\$20,000	5.55%
7_Other	\$92,212	25.57%
	\$360,635	

Appendix 1: Summary of Major Accomplishments

Mid-Atlantic Network – The Mid-Atlantic Network (MIDN) is comprised of 10 parks located in Pennsylvania and Virginia: Shenandoah NP (SHEN) (a Prototype Park), Booker T. Washington NHS (BOWA), Richmond National Battlefield Park (RICH), Appomattox Court House NHS (APCO), Petersburg National Battlefield Park (PETE), Fredericksburg and Spotsylvania NMP (FRSP), Gettysburg National Military Park (GETT), Eisenhower National Historic Site (EISE), Hopewell Furnace NHS (HOFU), and Valley Forge National Historical Park (VAFO). During FY 2003, the network continued biological inventories and compilation of existing park data to reach its goal of documenting 90% of all vertebrate and vascular plant species present in the network parks. In addition, the network received funding from the vegetation mapping program in FY 2003 to provide for vegetation sampling, classification and mapping in all network parks.

The network also received start up vital signs monitoring funding in FY 2003 to hire staff and begin development of a vital signs monitoring program.

Inventory support to the Appalachian Trail (APPA) from Maine to Georgia was provided by the Mid-Atlantic Network and the Northeast Region from 2000-2002. As of 2003, the Appalachian Trail was participating in 5 networks for vital signs monitoring program development. To reduce the workload on APPA staff, the Northeast Temperate Network will include the trail and the network coordinator will assure communication across networks to continue to complete biological inventories and to initiate planning for a vital signs program for the AT.

FY 2003 Network Objectives for Biological Inventories

- Locate, catalog and archive park natural resource documents, data sets, and spatial information and ensure such information is accurate, in useable formats and readily available.
- Conduct inventories targeted at vertebrate and vascular plant species in the Network parks and conduct quality assurance and review of all inventory products.
- Conduct investigations on species and species assemblages that are of special concern to network parks and conduct quality assurance and review of all inventory products.
- Conduct other baseline inventories identified as important to Network parks and the Network Vital Signs program and conduct quality assurance and review of all inventory products

Summary of Major Network Accomplishments During FY 2003 – Throughout FY 2003, the network continued to fund ongoing data management projects that include, compiling and entering existing data, legacy data, into NPSpecies, NatureBib and the Dataset Catalog. The NPSpecies database for all parks is verified and current but there are still gaps in documentation of 90% of species. We are awaiting the completion of a number of vertebrate inventories and completion of vegetation mapping projects in the Network to add vertebrate inventory data for the VA parks and floristic (vascular plant) data from the Plots database (from NatureServe) for all network parks. Taxonomic experts have been identified to review NPSpecies for some of the parks in the Network but that will wait until data from new inventories is entered.

A cooperative agreement with Penn State University (PSU) to update NatureBib for the four Northeast Region Networks, including the Mid-Atlantic Network is continuing. The database is up to date for all but four network parks (GETT, EISE, RICH and PETE). Still 165 new records have been added and 258 records have been edited for content and accuracy. The research associate from PSU hired to correct and update NatureBib has been visiting each park to search for new documents and update existing information.

Since FY 2002, Northeast Region has distributed written "product specifications" that specify formats for biological inventory and other deliverables that are received from cooperators, such as, FGDC compliant

metadata for all spatial data sets, FGDC Biological Profile for all biological data sets, and relational databases in MS Access. These were included in each cooperative agreement established for vertebrate inventories (funded by I&M, regional science or park funds) since 2002. The Coastal and Barrier Network data manager assisted and/or developed relational databases and worked with MIDN biological inventory cooperators to assure quality products at the completion of each project. Communications with Network cooperators continued in FY 2003 for inventories funded in 2002 and indicate that all are following the product specifications.

Incoming data and reports from biological inventories are being peer reviewed for scientific content, accuracy and error. A cooperative agreement was amended with Penn State University, Dr. Richard Yahner to continue scientific peer review of incoming vertebrate inventory reports for Northeast Region Networks. A complete review of the herpetological reports and databases for VAFO and HOFU from Dr. Harry Tiebout, West Chester University was accomplished. We are awaiting final data products. Electronic databases are reviewed for accuracy and error and assistance is provided in developing FGDC compliant metadata.

Herpetological and avian inventory products from Penn State University, Dr. Richard Yahner, et al. funded by the I&M program and regional science program prior to FY 2002 (in FY00 and FY01) in the four PA Network parks, GETT, EISE, HOFU and VAFO, are now being submitted. Since these projects were funded prior to the development of product specifications and a good description of database deliverables, we are converting data to new formats. Through a cooperative agreement with North Carolina State University and with assistance from park staff and the Coastal and Barrier Network data manager, relational databases are being developed to house much of this incoming data and data dictionaries and FGDC compliant metadata are being developed with the cooperators to ensure proper documentation of all products. Both herpetological and avian inventory data collected by Dr. Yahner was converted to the new database. Reports are being peer reviewed for content and databases are reviewed for accuracy and error.

Mammal Inventories in network parks are underway in 2003. Dr. Ron Barry, Frostburg University finished a second field season in RICH. Eight species of mammals had previously been recorded for RICH, and the cooperators have confirmed by live trapping, salvage, and observation (including sign) the presence of 6 of these species and an additional 10 species not recorded previously. Dr. John Pagels, Virginia Commonwealth University completed the first year of sampling. In total, 19 mammals representing 6 species were captured at PETE (Eastern Front), 85 mammals representing 7 species were captured at PETE (Five-Forks), 41 mammals representing 6 species were captured at APCO, and 92 mammals representing 10 species were captured at BOWA. Initial camera trapping attempts at BOWA in August proved to be moderately successful. These data were limited by an extremely wet spring and the effects of hurricane Isabelle in September 2003.

Bird inventories are happening under a cooperative agreement with the Center for Conservation Biology at the College of William and Mary. Dr. Dana Bradshaw will search for and catalog all verifiable records of birds occurring within park boundaries, develop an expected species list for each park and conduct targeted avian inventories to fill information gaps at APCO, BOWA, PETE, RICH and FRSP. Five survey rounds of all park units were completed during FY 2003. Two events confounded survey efforts during this period forcing a consolidation of survey rounds during critical phases. First, central Virginia experienced its wettest spring on record causing critical missed surveys during the peak of spring migration. Rain or high winds precluded effective surveys for days at a time. This was followed by Hurricane Isabel in mid-September during the peak of fall migration. Many park units were closed to all but emergency personnel to assist with storm damage cleanup and repair.

Through a cooperative agreement with Dr. Joseph Mitchell, University of Richmond, herpetological

inventories at FRSP, RICH, BOWA, PETE and APCO began in October 2002 and continued through September 2003. A total of 17 species of amphibians and 13 reptiles have been documented thus far for APCO, 9 and 9 for BOWA, 20 and 21 for FRSP, 20 and 27 for PETE, and 23 and 20, respectively, for RICH. New county records and range extensions for several species, mostly frogs and salamanders, have been documented: two species of frogs new to Henrico County, Virginia, were documented in the Fort Harrison unit of RICH, one species of frog and two species of salamanders have been newly documented for the Piedmont Physiographic Province and Dinwiddie County, Virginia, in the Five Forks unit of PETE, a salamander of special interest in Virginia, the rarely-seen mole salamander, was documented for APCO and a frog of special interest in Virginia, the carpenter frog, was documented for the Stonewall Jackson Shrine in FRSP. Park personnel have supplied information and in some cases photographs of amphibians and reptiles they have encountered or have picked up and frozen road-killed snakes. These valuable observations provided new information on several species.

Fish inventory data collected at APCO, BOWA, FRSP, PETE and RICH by the fisheries staff of SHEN, during 2002 were summarized and entered into NPSpecies. Park specific databases and an annual progress report were also submitted to each park inventoried during 2002. During May and June of 2003, specific sites within FRSP, RICH and PETE were either revisited due to drought conditions or other problems experienced during 2002, or were sampled for the first time. During July and August sampling was initiated within VAFO. Fish inventory data collected by Penn State University in conjunction with a level 1 water quality survey at HOFU were sent to SHEN staff and entered as a component of the Mid Atlantic fish inventory database.

SHEN natural resource staff and their contacts have been instrumental in gathering and processing fish data for the MIDN and some Northeast Coastal and Barrier Network (NCBN) parks in Virginia. The partnership that has been formed with the Virginia Department of Game and Inland Fisheries as the result of the fisheries monitoring program at Shenandoah National Park played a key role in the inventory of fishes within other parks in the Mid-Atlantic Network. A number of fisheries biologists from the Game Department provided assistance in the form of additional personnel and/or specialized equipment for field sampling efforts at Booker T. Washington National Monument, Petersburg National Battlefield and Richmond National Battlefield Park. Adequate inventories associated with large ponds or deep cut stream channels present within the Richmond and Petersburg parks would not have been practicable without the shocker boats provided by the Game Department. Booker T. Washington National Monument is located outside of the Chesapeake Bay Watershed and contains a number of fish species that do not otherwise occur within Mid-Atlantic Network parks. Game Department personnel from Virginia's southwest region provided valuable assistance both with the sampling effort and in the identification of fish species present within the monument.

In developing an inventory study plan in 2000 and 2001, the network made a decision to spend limited funds on vertebrate inventories and surmised that vegetation sampling plot data, as is required for vegetation classification and mapping, might substantially fill the vascular plant data gap. To that end, vegetation mapping is underway in all of the network parks. Cooperators for Network vegetation mapping include: 1. The Nature Conservancy, PA Science Office, PA Natural Diversity Inventory, 2. NatureServe, 3. Virginia Division of Natural Heritage, 4. North Carolina State University, 5. Richard Easterbrook, PETE GIS Specialist and COTR for air photos, 6. Kucera International, Inc., and 7. staff in each network park who are essential in the field operations and data review. Early in FY 2003, vegetation mapping training was held in Luray, VA. Prepared by NatureServe and attended by Northeast Region and National Capital Region staffs, the purpose of this session was to make National Park Service staff and some cooperators aware of how the data are collected and used and how products might be used in the parks. The session provided an excellent means for staff to understand the vegetation mapping process that can take up to 4-5 years to complete.

Vegetation mapping products are complete for VAFO and that project pointed to a need for us to standardize a review, data distribution and data archiving process for vegetation mapping products. HOFU is complete and under review. As part of vegetation sampling, classification and mapping at HOFU. The Nature Conservancy, PA Natural Diversity Inventory discovered two potential Pennsylvania state rare plant species in shrub swamp in center of the park. Mapping in VA parks is on schedule but may need to be extended due to park closures from hurricane Isabelle. At GETT and EISE in Pennsylvania, air photos (CIR) were flown by Kucera International, Inc. in 2003 and digital orthophotos are being developed by North Carolina State University for use as vegetation base map.

North Carolina State University completed a fire fuels research project completed in conjunction with vegetation mapping in the VA parks and determined that vegetation communities in the northeast described in the National Vegetation Classification (NVC) crosswalk well to fire fuels models. Given the recent extreme weather events in these parks, it is imperative that the fire fuel assessments be incorporated into park operational plans. Research at North Carolina State University identifies a potentially robust and relatively inexpensive method to both inventory and monitor fire fuels and subsequently plan for both pre-suppression and suppression actions.

FY 2003 Network Objectives for Vital Signs Monitoring

- Hire and retain professional staff and provide a safe, healthy, and productive work environment.
- Develop and maintain working and decision-making processes that engage the network board of directors, technical staff, cooperators and managers of network parks.
- Develop, implement, and maintain a Network data management program. (Note: this objective is placed under Vital Signs monitoring, however, it is equally important and integrated with the Biological Inventories portion of the program.).
- Identify and prioritize Network Vital Signs, develop protocols and implement programs to monitor these Vital Signs in Network parks.
- Integrate water quality monitoring in the Network Vital Signs monitoring plan.

Summary of Major Network Accomplishments During FY 2003 – The Mid-Atlantic Network received \$150,000 start-up funding in 2003 to begin developing a monitoring program. During the first MIDN Board of Directors meeting via teleconference, the superintendents were presented with a choice of duty locations for Network staff and eventually voted to station staff at Fredericksburg NMP. The park made a building available and Network funds were used to install communication systems, locks and upgrade facilities. A vehicle was also purchased to support network travel. The Network Coordinator vacancy closed mid-July; however, no one was selected from any of the lists and it will be re-announced in FY04. While hiring of permanent staff is delayed, we plan to fill the Network's needs via temporary staff or cooperators hired to oversee incoming data and deliverables from recently funded inventories, manage the three WASO databases for the Network and begin to compile materials for completing the Phase 1 report for the Network.

Under a cooperative agreement with the University of RI, the network has developed a website for the program that will be populated with reports, study plans and network highlights as the monitoring strategy is developed.

FY 2003 Network Objectives for Water Quality Monitoring

The network will not receive water quality monitoring funding until future fiscal years; however, some action will be taken to address water quality. As part of the data mining process, water quality inventory

data and spatial hydrology layers will be assembled and cooperators will be located to report on 305 (B) and 303(D) reporting for network parks.

Public Interest Highlights (MIDN 2003)

Fire Fuels evaluated as part of vegetation mapping program in VA parks

Given the recent extreme weather events in these parks, it is imperative that the fire fuel assessments be incorporated into park operational plans. Research at North Carolina State University identifies a potentially robust and relatively inexpensive method to both inventory and monitor fire fuels and subsequently plan for both pre-suppression and suppression actions.

Rare plants identified during vegetation mapping at Hopewell Furnace National Historical Site

As part of vegetation sampling, classification and mapping at Hopewell Furnace National Historical Site, cooperators discover two potential Pennsylvania state rare plant species in shrub swamp in center of the park.

New county records discovered during Mid-Atlantic Network amphibian and reptile inventories

- Two species of frogs new to Henrico County, Virginia, were documented in the Fort Harrison unit of Richmond National Battlefield Park.
- One species of frog and two species of salamanders have been newly documented for the Piedmont Physiographic Province and Dinwiddie County, Virginia, in the Five Forks unit of Petersburg National Battlefield.
- A salamander of special interest in Virginia, the rarely-seen mole salamander, was documented for Appomattox Court House National Historical Park.
- A frog of special interest in Virginia, the carpenter frog, was documented for the Stonewall Jackson Shrine in Fredericksburg and Spotsylvania National Military Park.

Partnerships formed to conduct Mid-Atlantic Network freshwater fish inventory

The partnership that has been formed with the Virginia Department of Game and Inland Fisheries as the result of the fisheries monitoring program at Shenandoah National Park also played a key role in the inventory of fishes within other parks in the Mid-Atlantic Network. A number of fisheries biologists from the Game Department provided assistance in the form of additional personnel and/or specialized equipment for field sampling efforts at Booker T. Washington National Monument, Petersburg National Battlefield and Richmond National Battlefield Park. Adequate inventories associated with large ponds or deep cut stream channels present within the Richmond and Petersburg parks would not have been practicable without the shocker boats provided by the Game Department. Booker T. Washington National Monument is located outside of the Chesapeake Bay Watershed and contains a number of fish species that do not otherwise occur within Mid-Atlantic Network parks. Game Department personnel from Virginia's southwest region provided valuable assistance both with the sampling effort and in the identification of fish species present within the monument.

