

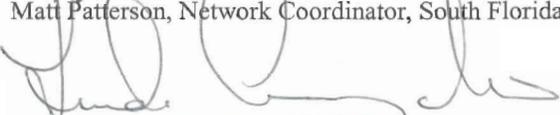
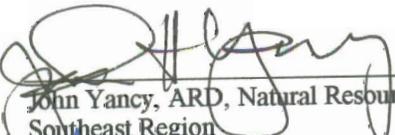
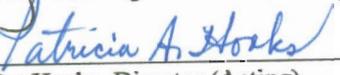
**ANNUAL ADMINISTRATIVE REPORT (FY 2003) AND
WORK PLAN (FY 2004) FOR VERTEBRATE AND VASCULAR PLANT
INVENTORIES AND VITAL SIGNS MONITORING**

FY 2003-FY 2004

South Florida / Caribbean Network

Includes: Biscayne National Park, Big Cypress National Preserve, Buck Island Reef National Monument, Dry Tortugas National Park, Everglades National Park, Salt River National Historic Site and Ecological Preserve, and Virgin Islands National Park.

South Florida / Caribbean Network Approval Signatures

	1/21/04
Matt Patterson, Network Coordinator, South Florida / Caribbean Network	Date
	1/21/04
Linda Canzanelli, Superintendent, Biscayne National Park Chair, Network Board of Directors	Date
	1/26/04
Larry West, Regional Inventory and Monitoring Coordinator, Southeast Region	Date
	1/26/04
Sherri Fields, Division Chief - Science and Natural Resources Southeast Region	Date
	1/26/04
John Yancy, ARD, Natural Resource Stewardship & Science Southeast Region	Date
	1/26/04
Pat Hooks, Director (Acting) Southeast Region	Date

(APPROVED)

I. Overview and Objectives

The South Florida / Caribbean Network (SFCN) includes seven national parks with significant natural resources in the Southern tip of the state of Florida and the U.S. Virgin Islands of St. Croix and St. John. In FY03, several biological inventories were conducted, including inventories for vascular plants, mammals, bats, fish, reptiles, and amphibians.

In FY 2003 the SFCN received \$418,155 in funding from the Service-wide Inventory and Monitoring (I&M) program. This funding was used to support the regional Inventory and Monitoring Coordinator; to continue conducting inventories of vertebrates and vascular plants; and to begin 'Vital Signs' planning for the network. The network continued work on inventories for vascular plants, freshwater fish, small and medium sized mammals, bats, and herpetofauna. The network had originally identified a high priority need for assistance with natural history voucher specimens generated by the ongoing inventory work. Everglades National Park hired Ms. Nancy Russell in Fall 2002 to curate the South Florida Collections Management Center, and the network hired a full-time network museum technician to assist her in ensuring the curation of inventory voucher specimens are of the highest level. This position assisted contractors and cooperators with adhering to NPS collections management guidelines, continued network data mining efforts, and coordinated with network park curators to ensure effective management of natural history collections across the network. I&M funding covered the network coordinator and data manager's salary; network and park staff travel; increased numbers of herbarium voucher specimens added to the NPS 'Virtual Herbarium' at Fairchild Tropical Garden; LIDAR surveys of the U.S. Virgin Islands parks; aerial photographic image acquisition for Card Sound, Florida Bay, and the west coast of Everglades National Park; and other projects. The South Florida / Caribbean prototype program based at Virgin Islands National Park was funded at \$269,332; \$236,000 from the NPS I&M program and \$33,332 from the VIIS Coral Reef Initiative. These funds were focused primarily on monitoring coral reefs and fish in the U.S. Virgin Island NPS Units.

In FY04 the SFCN anticipates to receive \$895,112 in funding from the National Park Service, \$491,020 in funding from the Service-wide Inventory and Monitoring (I&M) program, \$236,000 from the integration of the prototype program into the SFCN network, \$150,000 from the Geologic Resource Division to conduct geologic resource inventories in network parks, a 214% increase in funding. The SFCN biological inventories of amphibians, reptiles, bats and vascular plants will continue. A network-wide multi-park inventory of marine fish will be initiated. Network staff will continue to work with the Science and Technical Committee, collect and organize data, and work towards 'Vital Signs' Phase one and two reports. The I&M budget for network vertebrate and vascular plant inventories for FY04 is expected to be \$341,020. The I&M budget for 'Vital Signs' monitoring for FY04 is expected to be \$150,000. The network will hire a GS-11 ecologist/statistician/biometrician to analyze data collected from prototype efforts, identify monitoring efficiencies, and help with monitoring sampling development and data analysis. A term data management technician will be hired for web design and data management assistance. The network proposes to enter into a lease agreement to establish a SFCN office to support the growing program. This expenditure is critical to the success of the program, due to the inability to provide space for additional staff to undertake the requirements of the "Vital Signs" program development in the network's current office space configuration.

The FY03 budget was spent primarily on personnel accounting for 56.6% (\$388,848), projects with 27.5% (\$188,986 to contractors and cooperators), 6.4% (\$44,097) on operations, 8.3% (\$57,056) on travel and 1.2% (\$8,500) on other expenditures.

The FY04 budget proposes to allocate 41.6% on projects (\$242,991 to contractors and cooperators), 38.4% (\$224,021) on personnel, 16.6% (\$97,100) on operations, and 4.6% (\$41,000) on travel.

Objectives for Biological Inventories

1. Compile and evaluate existing data for each park.
2. Complete the documentation of 90% of vertebrate and vascular plant species in the parks through targeted field investigations.
3. Curate voucher specimens collected during inventories.
4. Provide network Data Management guidance to ensure quality data content.

Objectives for Vital Signs Monitoring

5. Determine network needs for “Vital Signs” monitoring.
6. Continue to work with partners at all levels to ensure long term planning occurs for resource allocation and strategic planning for the network.
7. Continue towards Phase One “Vital Signs” report development.
8. Begin development of network space plan, staffing plan, and data management plan.
9. Hire Key personnel to assist with data analysis
10. Migrate prototype program into network
11. Monitor Benthic cover
12. Monitor fisheries
13. Monitor seagrass
14. Monitor water quality

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

A. Biological Inventories

Objective 1 – Compile and evaluate existing data for each park.

Task 1.1 – Compile and evaluate existing data on vertebrates and vascular plants and enter them in a consistent format into NPSpecies, NatureBib, Database Template and the Dataset Catalog.

- FY 2003 Accomplishments: (1) Britton Wilson, network data manager provided training to Dr. William Loftus, USGS Biological Resource Discipline, Florida / Caribbean Science Center for his review and certification of NPSpecies records of freshwater fish of Everglades National Park, populating the database with known voucher information and ensuring accurate information throughout the records. Dr. William Loftus certified EVER freshwater fish NPSpecies records (621 records). (2) Britton Wilson, network data manager provided training to the Institute for Regional Conservation (IRC) to review the vascular plant records of all four South Florida parks (BICY, BISC, DRTO, EVER). IRC certified South Florida vascular plant NPSpecies records (551 records). Linkages will be made to observational records in the IRC Plant Conservation website and the Fairchild Tropical Garden Virtual Herbarium Website. (3) Data manager

attended training for Microsoft Office products, focusing on advanced training in Microsoft Access and Excel to provide expertise at database design and administration, and data summarization. (4) Data manager worked with Mr. Simon Kingston, NPSpecies administrator to ensure amended NPSpecies records would migrate back into the master database without conflict. (5) The network data manager obtained over 100 fish voucher records from the Florida Museum of Natural History. (6) The SFCN entered into a contract with the Institute for Regional Conservation (IRC) to enter all vascular plant inventory field data into a MS Access database from BISC. (7) The SFCN data manager developed a Southeast region park boundary spread sheet for facilitation of data mining. (8) The SFCN data manager added 75 entries in the Natural Resources Bibliography to support network inventory projects.

- Scheduled FY 2004 Activities and Products: (1) The SFCN plans to continue working with the Ft. Collins Inventory Program manager and the Fairchild Tropical Garden Keeper of the Herbarium to develop linkages from the NPS “Virtual Herbarium” and NPSpecies. (2) THE SFCN plans to coordinate data entry with parks, contractors, and WASO. (3) The SFCN will continue regional development and implementation of a Data Management Plan to ensure quality data content in all I&M databases. (4) The SFCN will continue adding functionality to the NPS database template, currently used for the data management for the network bat inventories (See 2.2). (5) The SFCN will hire a part-time data entry geo-referencing specialist to assist with data mining (\$4,000 from VSM funds)

Task 1.2 – Convert existing data into digital format and produce media to display existing data.

- FY 2003 Accomplishments: (1) Extended the delivery date for a Cooperative Agreement with Mrs. Maria Villanueva with the Department of Marine Affairs at the University of Miami to scan and georeference a series of aerial transparencies flown over Biscayne Bay and the Safety Valve for use in seagrass quantification and time series analysis. Delivery of the GIS image was scheduled for Fall 2002, however technical difficulties involving geo-rectification have required additional time. Delivery expected 2/2004 (2) Data manager digitized management zones for the BISC General Management Plan to determine area of “no take” zones protecting coral reef resources to compare with the U.S. Coral Reef Task Force protection recommendations for coral reef resources within federal jurisdiction. (3) Data manager developed a series of maps of the network parks with coral reef resources to be displayed at the U.S. Coral Reef Task Force meeting in Washington, D.C. at the Department of the Interior’s headquarters on February 26 – 27, 2003. These maps were displayed as part of the Department of the Interior’s task force introductory display. (4) Data manager acquired network parks’ enabling legislation for conversion to Adobe Acrobat portable document format (.pdf). (5) Data manager developed VIIS coral reef monitoring poster that was displayed at the George Wright conference. (6) The VIIS coral reef monitoring poster was also exhibited at the World Parks Congress in Durban, South Africa.
- Scheduled FY2004 Activities and Products: (1) The Data manager will continue to search for all available GIS and cartographic data to determine accuracy, significance, and prioritize need for digitization. (2) The data manager will assist contractors and cooperators with guidance for FGDC compliant metadata requirements. (3) The network anticipates launching its website during FY04 which will provide a mechanism to share and display existing data.

Task 1.3 – Adapt Database Template to South Florida / Caribbean Network I & M projects.

- FY 2003 Accomplishments: (1) The Database Template is being modified to accept cryptic reef fish data from the inventory work at BUIS by Dr. William Smith-Vaniz. (2) Customized development of a network wide bat inventory database. The database allowed the principal investigator to enter data for five sampling protocols all linked to a single sampling event and/or location. The application was developed to work as a stand alone program without the need for Microsoft Access. The stand alone application ensures database relationship integrity and protects the data manager from user modifications. (3) Database was certified by NRID-WASO database experts, Chris Dietrich and Simon Kingston, to ensure NPS template compatibility. (4) Worked with other SER data managers for uniform template development.
- Scheduled FY2004 Activities and Products: (1) The Database Template will be modified to integrate bat data for the bat inventories scheduled to start Winter 2002/3. (2) New data will be entered as it becomes available. (3) The network hopes to work with cooperators to have each inventory project populate NPSpecies databases for their inventory work, and certify the records. These records will be checked by the data manager for completeness and then appended to the master species list.

Objective 2 – Complete the documentation of 90% of vertebrate and vascular plant species in the parks through targeted field investigations.

Task 2.1 – Small and Medium Sized Mammal Inventories of Biscayne National Park

Parks involved: BISC

- FY 2003 Accomplishments: (1) Dr. Mike Gaines (University of Miami) sampled both the mainland and the keys throughout the year. The Arsnicker Keys are the only locations left to be trapped prior to completion of the field effort.
- Scheduled FY 2004 Activities and Products: (1) Final report, Shape files with FGDC Compliant metadata, and MS Access database shall be expected Spring 2004.

Task 2.2 – Inventory of Bats at all network parks.

Parks involved: BICY, BISC, BUIS, DRTO, EVER, & VIIS

- FY 2003 Accomplishments: (1) The Fly By Night, Inc. (FBN) research team spent 10 weeks in the field this year in all seven network parks. Inventory sampling with accomplished using K-9 unit Bruce Wayne, the guano detecting dog in four S. Florida parks. Bruce alerts when he sniffs out fresh bat guano, indicating the location of an active roost site. Bat activity was identified at night using Anabat acoustic monitoring systems which captured and recorded bat call information which can be processed and analyzed to identify bat species composition. Mist nets and harp traps were deployed in several parks; however no bats were captured during these deployments to date. Netting and trapping will continue for the duration of the project. (2) FBN has worked with park Natural Resource managers to provide notice to local media outlets to encourage local citizens to share bat locations, or bring in deceased bats for species identification. The Virgins Islands parks have received public interest and involvement through this process, where bats are the only native mammal to these islands. (3) SFCN data manager, working with FBN staff has finished the first phase of the bat inventory database. The database, using the NPS database template format, provides the FBN staff an easy to use data entry tool that can capture roost data, Anabat collection data, and trap/net data in a single database.

- Scheduled FY 2004 Activities and Products: (1) FBN is currently scheduled to continue thirteen additional weeks of fieldwork throughout the network to identify seasonal differences in activity patterns, as well as inventory additional sites for broad spatial coverage. (2) FBN is working with other bat researchers in both the U.S. Virgin Islands and South Florida comparing information and sharing data on species occurrence and distribution. (3) FBN and the SFCN data manager will continue work on phase two of the bat inventory database to define questions to be queried from the database, and developing the front-end functionality to provide easy to use reporting mechanisms for data compilation and dissemination (See 4.1) (4) FY03 Annual Report and FY04 Mid year report will be anticipated, inventory data will be forwarded to the SFCN data manager for archiving as processed and checked for Quality Control.

Task 2.3 – Freshwater Fish Inventories of Virgin Islands National Park

Parks involved: VIIS

- FY 2003 Accomplishments: (1) A total of 35 species (including the echeneid) were identified in this inventory, with five additional taxa which were sight records but could not positively be identified to species. The presence of 22 families showed the lack of dominance by any single family in inland waters. Thirty-three species used coastal ponds, four were found in gut pools, and six in inland ponds. Coastal ponds shared two and one species with gut and inland ponds, respectively. Gut pools and inland ponds shared only one species, the mountain mullet. Twenty-four species were found within the boundaries of VIIS, but the remaining 11 from extra-park waters should be considered as Hypothetical. These collections provided the first island records for several fishes, including the mangrove rivulus (*Rivulus marmoratus*), swordspine snook (*Centropomus ensiferus*), fat sleeper *Dormitor maculatus*), emerald goby (*Erotelis smaragdus*), and sirajo goby (*Sicydium plumieri*). Most species belonged to marine-derived families, with the exception of the tilapiine cichlid and the rivulid killifish. The majority of inland species were small-sized species or juveniles of larger species such as tarpon, white mullet, or common snook. A number of species were confined to one habitat. For example, the sirajo goby occurred only in a few pools in Fish Bay Gut, and most of the marine invaders occurred only in coastal ponds. As in Florida, mangrove Rivulus was usually the only species of fish where it occurred. It is able to utilize microhabitats with conditions that are intolerable to other fishes, including crab burrows and hypoxic mangrove waters with high hydrogen sulfide levels (Davis et al. 1990). In addition, one of the mangrove rivulus specimens was the first record of a male from the eastern Caribbean (S. Taylor, pers. comm.), an unusual find for this predominately hermaphroditic fish. The record of mountain mullet (*Agonostomus monticola*) from 47-49 PSU water in Caneel Bay Plantation is the highest salinity record for this species of which I am aware. It was also unusual to find the two snapper species, tilapia, and white mullet thriving in such hypersaline water there. Mountain mullet, spinycheek sleeper, and American eel were the most widespread species in freshwater and oligohaline habitats on St. John. Mangrove rivulus, yellowfin mojarra, and tarpon were widespread in mangrove habitats. In higher salinity waters, yellowfin mojarra, white mullet, and the two snappers were common. The yellowfin mojarra appeared to recruit into inland waters in autumn, based on size frequencies. Large numbers of small white mullet were also collected in December. Mountain mullet recruited into the gut at times of heavy rains that connected the gut to the sea. With the exception of the tropical peripheral-freshwater species (three species), most fishes appeared to utilize the inland waters of St. John as nursery areas.

- Scheduled FY 2004 Activities and Products: (1) The final report, database and GIS data should be available Fall 2003. (2) Additional field sampling trip for January 2004 was initiated to document species occurrence and distribution of inshore freshwater areas, after the November 2003 1 in 100 Year rainfall event which the island saw over 24” of rain in a nine day period.

Task 2.4 – Freshwater Fish Inventories of Big Cypress National Preserve and Biscayne National Park.
Parks involved: BISC, BICY

- FY 2003 Accomplishments: (1) A sampling program for Big Cypress National Preserve ichthyofauna stratified by habitat types was designed and implemented. Sampling was conducted across the range of forested and herbaceous wetland communities found in BICY, as well as in canals, borrow pits, and lakes. 298 sites have been sampled throughout Big Cypress during FY03, capturing a total of 17,187 individuals. A total of 62 fish species have been identified to date within the preserve, of which 9 are introduced exotics. (2) A variety of sampling methods have been tested for suitability in different BICY habitats, including electrofishing, gill nets, minnow traps, breder traps, hoop nets, cast nets, and angling. Field work on the BICY I & M project is anticipated to continue through fall 2004. (3) Sampling in Biscayne NP has proven problematic, however, most of the issues have been resolved. Sampling in adjacent canals will continue using electrofishing techniques. Wetland and solution hole sampling require rotenone use and will be delayed until an Environmental Assessment is completed.
- Scheduled FY 2004 Activities and Products: (1) Dr. Lorenz and crew will continue field work at BICY and BISC. (2) Dr. Lorenz, in collaboration with Dr. William Smith-Vaniz and Dr. Pam Cochran will draft an Environmental Assessment for rotenone use which will hopefully support that method for fish inventory work next year (See 6.3).

Task 2.5 – Inventory of cryptic reef fish

Parks involved: BUIS, BISC

- Scheduled FY 2004 Activities and Products: (1) The network will develop a Scope of Work for cryptic reef fish inventories for the deeper habitats of Buck Island Reef National Monument and Biscayne National Park, looking for method comparison for inventory, as well as trade-offs between different sampling techniques. This RFP should be advertised during Winter 2003. (2) The SFCN entered into a cooperative agreement with Dr. Jerry Lorenz, Florida Audubon, to develop an Environmental Assessment (EA) for rotenone use for inventory purposes in mangrove, seagrass, and coral reef habitats. Delivery of EA expected Spring 2004. (See 6.3) (3) The Inventory of Vertebrate and Vascular Plant Study Plan identifies \$100,000 for cryptic reef fish inventory work in FY04.

Task 2.6 – Inventory fish of the seagrass communities.

Parks involved: DRTO, VIIS

- Scheduled FY 2004 Activities and Products: (1) The network will develop a Scope of Work for seagrass fish inventories in at least Dry Tortugas National Park and Virgin Islands National Park. (2) The network will identify and fund an investigator to begin this inventory work in Spring /Summer of FY04. (3) The techniques used to inventory these species may include the use of Rotenone, which the network currently is in the process of development of a multi-park Environmental Assessment for the use of this ichthyicide in seagrass habitats. (See 6.3) (4) The

Inventory of Vertebrate and Vascular Plant Study Plan identifies \$50,000 for seagrass fish inventory work in FY04.

Task 2.7 – Inventory of pelagic fish deeper and offshore areas.

Parks involved: DRTO, BISC

- Scheduled FY 2004 Activities and Products: (1) The network will develop a Scope of Work for seagrass fish inventories in at least Dry Tortugas National Park and Biscayne National Park. (2) The network will identify and fund an investigator to begin this inventory work in Spring/Summer of FY04. (3) The Inventory of Vertebrate and Vascular Plant Study Plan identifies \$50,000 for pelagic fish inventory work in FY04.

Task 2.8 – Inventory of reptiles and amphibians

Parks involved: BISC, BICY, BUIS.

- FY 2003 Accomplishments: (1) Sampling for amphibians and reptiles in Big Cypress National Preserve (BICY) began on March 7, 2002. As of September 30, 2003 a total of 129 sites have been surveyed during a total of 595 sampling occasions. At each sampling occasion a 20m radius circular plot was searched using standard visual encounter survey (VES) techniques, and a 10-minute vocalization survey was conducted to detect calling anurans (frogs and toads). We have observed 2,887 individuals of 39 species during VES surveys and we have detected 14 species of anurans during vocalization surveys. Thirty four permanent inventory sites were established that were sampled on a monthly basis in BICY between March 2002 and March 2003. The locations of these sites were chosen randomly, within habitat stratification. We have seven monthly sites in cypress domes and six monthly sites in cypress prairie, a more sparse cypress forest habitat. Six monthly sites occur in the hardwood hammocks of BICY, and six monthly sites are located in marsh habitat. There are nine monthly sampled sites in pineland habitats throughout BICY. In addition to these 34 monthly sites, we have also conducted surveys at 95 other random sites in BICY. Random sites have been surveyed in Cypress (11), cypress prairie (11), hammock (8), marsh (26), pineland (15), and slough (13) habitats. Our goal is to continue to add random sites until all habitats in all of the major BICY management units have been surveyed. We have detected a total of 18 amphibian species in BICY, 14 anurans and four salamanders. Sixteen of the amphibian species have been detected during our standard surveys (VES and vocalization). The other two species, both salamanders, have only been detected opportunistically during other activities. Three of the 18 amphibians in BICY are introduced in south Florida: the greenhouse frog (*Eleutherodactylus planirostris*), the Cuban treefrog (*Osteopilus septentrionalis*), and the marine toad (*Bufo marinus*). We have found greenhouse frogs throughout BICY, but Cuban treefrogs and marine toads have mainly been observed near roads and buildings. We have detected a total of 33 species of reptiles: 7 lizards, 18 snakes, 7 turtles, and 1 crocodylian. Five of the lizards have been detected during standard VES surveys, and two have only been detected opportunistically. Seventeen of the 18 snake species detected in BICY have been seen opportunistically, but only nine have been detected during standard VES surveys. Six of the seven turtle species have been observed opportunistically, and four have been detected during VES surveys. It appears that the VES method is more reliable for lizards and turtles than for snakes. This may be a result of increased home range size or low abundance of snakes. Only three of the reptile species detected in BICY are introduced. The brown anole (*Anolis sagrei*) is ubiquitous in the preserve. The tropical

house gecko (*Hemidactylus mabouia*) is found on many of the buildings in BICY but not in natural areas. The Burmese python (*Python molorus*) was collected from Tamiami Trail, and was likely released as an unwanted pet. Monthly sampling of the 34 permanent plots concluded in March 2003. The sampling of additional random points concluded in August 2004. A detailed final report will be produced by spring 2004. (2) Sampling for amphibians and reptiles in Biscayne National Park (BISC) began on May 2, 2002. As of September 30, 2003 a total of 35 sites have been surveyed during a total of 228 sampling occasions. At each sampling occasion a 20m radius circular plot was searched using standard visual encounter survey (VES) techniques, and a 10-minute vocalization survey was conducted to detect calling anurans (frogs and toads). We have observed 378 individuals of 12 species during VES surveys and we have detected 10 species of anurans by vocalizations. We have established 16 permanent inventory sites that are sampled on a monthly basis in BISC. The locations of these sites were chosen randomly, within habitat stratification. Four of these sites (two in scrub habitat and two in mangrove habitat) are in the mainland portion of the park. Eight monthly sampled sites (three in scrub habitat, two in prairie habitat, and three in mangrove habitat) are on Elliott Key, the largest island in BISC. There are two monthly sites (one in mangrove habitat and one in hammock) on both Sands Key and Boca Chita Keys. In addition to the 16 monthly sites, we have also conducted surveys at twenty other random sites. These have been in scrub, hammock, and mangrove habitat sites on the mainland, Elliott Key, Adams Key, Old Rhodes Key, and Porgy Key. We have also conducted nighttime road surveys on the mainland in an attempt to further document reptile species. We have detected a total of ten amphibian species in BISC, all anurans. Three of the ten species are introduced in south Florida: the greenhouse frog (*Eleutherodactylus planirostris*), the Cuban treefrog (*Osteopilus septentrionalis*), and the marine toad (*Bufo marinus*). These species have been detected on both the islands and mainland of BISC. Six of the native frogs, the Florida cricket frog (*Acris gryllus*), the southern toad (*Bufo terrestris*), the green treefrog (*Hyla cinerea*), the squirrel treefrog (*Hyla squirella*), the leopard frog (*Rana sphenoccephala*), and the pig frog (*Rana grylio*) have only been detected in mainland parts of the park. The narrowmouth toad (*Gastrophryne carolinensis*) is the only native frog detected on the islands to date. We have detected a total of fourteen species of reptiles: six lizards, six snakes, and two crocodylians. Three lizards, the brown anole (*Anolis sagrei*), the Indo-Pacific gecko (*Hemidactylus garnotii*), and the tropical house gecko (*Hemidactylus mabouia*), are introduced in south Florida. The brown anole has been found in every habitat within the park and is the most ubiquitous of all reptile species observed with 233 individuals observed during our monthly VIS. One of the snakes, the Brahminy blind snake (*Ramphotyphlops braminus*) found on Adams Key, is also non-native. Four reptile species, the rough green snake (*Opheodrys aestivus*), the brown water snake (*Nerodia taxispilota*), the Everglades Racer (*Coluber constrictor paludicola*) and the Brown Basilisk (*Basiliscus vittatus*) have been found in such close proximity to the borders of the park (less than one mile), that is extremely probable that some or all of these species exist within the park boundary. The Brown Basilisk is another introduced lizard in south Florida, and seems to be associated with disturbed areas along canals. Sampling of monthly sites concluded in September 2003. All random points and road surveys will be concluded by November 2003. A detailed final report will be prepared by spring 2004. (3) The Final Report for the reptile and amphibian inventory for Buck Island was delivered to the NPS Spring 2003 as an interactive CD-ROM. NPS requested a formal report in addition to the multimedia, interactive deliverable.

- Scheduled FY 2004 Activities and Products: (1) BUIS Report will be delivered and reviewed. (2) A detailed final report will be produced by spring 2004 for BISC. (3) A detailed final report will be produced by spring 2004 for BICY.

Task 2.9 – Inventory of vascular plants at Biscayne National Park and Big Cypress National Preserve.
Parks involved: BISC, BICY

- Scheduled FY 2003 Activities and Products: (1) The Institute for Regional Conservation continued field work at BISC sampling 10 1 km² sampling cells on both mainland and the islands. The park has been 80% (80 of 100 cells) inventoried to date. One new species was discovered during FY03 for Biscayne National Park, Mahogany Mistletoe (*Phoradendron rubrum*). This species is state listed as Endangered and has been isolated to the Key Largo until this find at Biscayne National Park. The parasitic shrub was formerly known with certainty in Florida only from Florida. In the early 1960's Frank Craighead reported observing the species on Key Largo while conducting low elevation flights, but also reported that he believed he saw plants on Sands and Old Rhodes Keys, but this was never verified (Cooley 1963). The discovery on Sands Key prompted further surveys scheduled for Winter 2003 to ensure all shrubs will be located for further monitoring. A total of 424 plant taxa have been recorded as of September 2003. Of these 134 (31.6%) had not been previously reported for BISC (by Stalter et al 1999 who reported a total of 370), including 81 that are native to South Florida, 52 that are exotic, and one of doubtful nativity. Ten of the new species are listed by the State of Florida as Endangered and six as Threatened (although four of these listed species are only cultivated in the park). Nine of the new exotic taxa are listed by the Florida Exotic Pest Plant Council as Invasive or Potentially Invasive. (2) The Big Cypress National Preserve 2003 field season, conducted by the Institute for Regional Conservation, inventoried 160 sites bringing the project total to 230 completed sites. The remaining 70 sites will be inventoried during the 2004 field season. In addition, 15 road transects were completed in 2003, bringing the total completed to 30 with 15 remaining for the final year. Since the beginning of the inventory 172 new plant taxa have been added to the original list of Muss, et al., an 18% increase. Of these plants, 106 are native to South Florida and the remaining 66 are exotic species. The total number of plant species now recorded in Big Cypress National Preserve is 1021. As the result of this work, 5 new species have been added to the flora of South Florida and many significant discoveries of both tropical and temperate plants have been made. A list of these discoveries is included below as well as a list of all taxa added to the original list since the start of the project. A list of taxa added to the original plant list, with their native status, is also included. In addition to the new plants listed below, new populations of rare plants already known to occur in the preserve were discovered. Some of these include *Campylocentrum pachyrhizum*, *Croton humilis*, *Erythodes querceticola*, *Ionopsis utricularioides*, *Phoradendron leucarpum*, *Polygala polygama*, *Polyradicion lindenii*, *Tillandsia pruinosa*, and *Tillandsia x smalliana*. A total of 367 taxa were collected by IRC staff in the Preserve. A list of all determined taxa is included. Some species that have not yet been determined may also be new to the preserve. (3) Voucher specimens were delivered from BISC and BICY for inclusion of the NPS virtual herbarium at Fairchild Tropical Gardens (see 3.3) (4) The Institute for Regional Conservation was contracted to conduct a survey of Sands Key at Biscayne National Park to locate Mahogany Mistletoe (*Phoradendron rubrum*) during the winter

03/04. (5) The Institute for Regional Conservation was contracted to enter inventory data into a NPS/IRC designed database to ensure data consistency between BICY and BISC inventory projects. (6) The Institute for Regional Conservation was contracted to collect additional voucher specimens at BICY to show the full range of flora at this time in the preserve. The original contract stated that voucher specimens would only be collected if that species had not been previously vouchered. Since original contract scope of work development, the need for a comprehensive voucher collection to support the field observations became a higher priority to the network.

- Scheduled FY 2004 Activities and Products: (1) Vascular plant inventory will continue at Biscayne National Park with the 10 of the remaining 20 cells sampled to conclude a complete inventory of the entire terrestrial portion of Biscayne National Park. The final 10 cells will be funded from the FY04 budget as the year progresses and budget details unfold. (2) The Vascular plant inventory will continue at Big Cypress National Preserve with 60 1 km² cells sampled; 15 pairs of roadside transects; and 10 sites located from BICY natural resource management staff priority areas. (3) The Inventory of Vertebrate and Vascular Plant Study Plan identifies \$24,477 for year 3 of 3 for BICY plant inventories and \$2,970.52 for year 3 of 3 for BISC plant inventories.

Objective 3 – Curate voucher specimens collected during inventories.

Task 3.1 – Hired a Network Museum Technician.

Parks involved: BISC, BICY, BUIS, DRTO, EVER, SARI, & VIIS

- FY 2003 Accomplishments: (1) The South Florida / Caribbean Network and Everglades National Park hired Ms. Miriam Luchans on May 5, 2003 to assist the network parks with museum curation. Miriam has a Master's degree in Museum Studies from San Francisco State University and has worked in several national parks.
- Scheduled FY2004: (1) The SFCN Museum Technician continues to interact with principal investigators to ensure proper NPS museum collection guidelines are followed for natural history collections. (2) The SFCN Museum Technician will continue assigning accession numbers to collecting permits. (3) The SFCN Museum Technician maintains a worksheet tracking all permit data and projects and is constantly updated.

Task 3.2 – Curation of the NPS herbarium at the South Florida Regional Collection Center.

Parks involved: BISC, BICY, DRTO, EVER

- FY 2003 Accomplishments: (1) Ms. Miriam Luchans recataloged 5,000 Automated National Catalog System + (ANCS+) records with data from original herbarium catalog worksheets. (2) The SFCN Museum Technician inventoried the herbarium cabinet species and created labels for the cabinets.
- Scheduled FY 2004: (1) The SFCN Museum Technician will continue to update ANCS+ records from the original catalog worksheets. (2) The SFCN Museum Technician will perform a 100% inventory of the herbarium specimens. (3) The SFCN Museum Technician will coordinate the scanning and databasing of the South Florida Regional Collection Center (SFRCC) herbarium specimens with Fairchild Tropical Gardens herbarium staff.

Task 3.3 – Enter into a long-term cooperative agreement with Fairchild Tropical Gardens (FTG) to ensure professional curation of vascular plant voucher specimens.

- FY 2003 Accomplishments: (1) An umbrella cooperative agreement was developed to accomplish a series of tasks to ensure professional curation of the vascular plant vouchers of the South Florida / Caribbean Network. Tasks included proper mounting and labeling of vouchers, scanning and databasing of vouchers, creation of a virtual herbarium, to allow voucher viewing at a secure website so park staff and cooperators can see specimens with a web browser with the ability to zoom to 10x on-line, reducing the need to handle the actual specimen. (2) Over 2,000 specimens have been received by Fairchild Tropical Garden since this project began from multiple I & M networks.
- Scheduled FY 2004 Activities and Products: (1) Vouchers will continue to be sent to FTG as the inventories continue. (2) Arrangements have been made for scanning and databasing all voucher plants at the SFRCC for archival and research purposes over time. (3) The network has identified \$12,930 to continue processing of herbarium specimens into the NPS 'Virtual Herbarium'. (4) SFCN Museum Technician will work with FTG to ensure incoming specimens are properly labeled, to include NPS catalog and accession numbers.

Task 3.4 – Increased museum technician ability through advanced training.

- FY 2003 Accomplishments: (1) The SFCN Museum Technician attended NPS Archives Training in Denver, CO July 15 – 19, 2003. (2) The SFCN Museum Technician assisted Kathy Hawks, Conservator, to conduct the wet specimens collections condition survey August 2003 along with Linda Clement, Intermountain Museum Curator, and Bridget Beers, SEAC Museum Technician. (3) The SFCN Museum Technician attended an introductory session covering The Inventory and Monitoring Program during the Meeting of the Networks in Washington, D.C. during August 2003.
- Scheduled FY 2004 Activities and Products: (1) Training opportunities will be identified throughout the year for additional museum training, and the network will attempt to fund these opportunities as they arise.

Task 3.5 – Assist Southeast Coast Network with museum Survey

- Scheduled FY 2004 Activities and Products: (1) SFCN Museum Technician will survey SECN technical committee to identify curation and collection needs across the network for a better understanding of those needs.

Objective 4 – Provide network Data Management guidance to ensure quality data content.

Task 4.1 – Work with Network parks, cooperators and contractors to share I&M tools, policy and guidance.

- FY 2003 Accomplishments: (1) The SFCN data manager trained Dr. William Loftus with USGS BRD on NPSpecies certification. (2) The SFCN data manager trained Jerry Lorenz with the Audubon society on NPSpecies certification. (3) The SFCN data manager trained Laura Finn, Fly By Night, Inc., on populating her customized database. (4) The SFCN data manager facilitated the development of the South Florida National Parks Fire Fuels Vegetation Mapping proposal. (5) With the Network Board of Director's approval, the SFCN data manager became the designated NPSpecies Point of Contact (POC) for all network parks.
- Scheduled FY 2004 Activities and Products: (1) The SFCN data manager is scheduled to meet with Dr. Gary Ray to provide training for the updated version of NPSpecies for his certification of U.S. Virgin Island vascular plant species records. (2) The SFCN data manager will assist the new prototype data manager as she comes onboard and needs assistance navigating the multitude

of NPS databases. (3) The SFCN data manager will work with Fly By Night, Inc (FBN) to develop phase two of the SFCN bat inventory database (See 2.2). (4) The SFCN Network coordinator and data manager will work with SERO IT staff and Krome Center IT staff to develop an IT solution as the SFCN seeks office space for the network to grow in. The network has budgeted \$18,100 for IT hardware, \$12,000 for equipment, and \$10,000 for internet and phone equipment and service from the 'Vital Signs' budget.

Task 4.2 – Perform data mining throughout network to obtain both historic and current data relevant to the Inventory and Monitoring Program.

- FY 2003 Accomplishments: (1) A total of 56 geo-rectified imagery data sets were obtained from the Center for Marine Studies, USGS; for Biscayne, Dry Tortugas, and Everglades. Of these images 13 are aerial photography data sets all taken of BISC, 11 are AISA data sets of BISC and EVER, 2 are ASTER data sets both of BISC, 4 are GIS data sets all of BISC, 11 are IKONOS data sets of BISC and DRTO, 9 are LANDSAT data sets of BISC and EVER, 4 are QUICKBIRD data sets of BISC, and 3 are NASA EAARL data sets for BISC and DRTO. (2) Obtained the VIIS vegetation map from The University of the Virgin Islands. (3) Obtained additional EVER freshwater fish records from Florida Marine Research Institute and University of Florida.
- Scheduled FY 2004 Activities and Products: (1) Network staff will continue data mining to uncover current and historical data to support network I&M role. (2) The network will continue to work with the Florida Marine Research Institute to assist with the collection of aerial photography acquisition along the coast of Everglades National Park from Ten Thousand Islands to Card Sound to assess seagrass abundance and distribution (See 6.4).

Task 4.3 – Provide Geographic Information System support to network parks.

- FY 2003 Accomplishments: (1) The network received from Dr. Mark Monaco of NOAA Biogeography Program multiple geographic information systems (GIS) data layers representing benthic habitat characterizations, bathymetry, and national monument boundaries for the U.S. Virgin Islands parks. (2) The network received cutting edge aerial remote sensed imagery from above the coral reefs of BISC with 1 m² spatial resolution for use in hyperspectral algorithm development and habitat delineation. (3) The data manager obtained georectified satellite imagery covering the majority of the southern half of the State of Florida. (4) Entered into a cooperative agreement with the State of Florida Marine Research Institute (FMRI) to collect and interpret aerial photographic imagery of Florida Bay and Card Sound and develop both a georectified photo mosaic of the area, as well as a detailed benthic habitat Geographic Information System layer depicting seagrass beds, oyster bars, hardbottom and macroalgae communities. This project was leveraged with both state and Comprehensive Everglades Restoration Program funds, contributing \$20,000 of network funds for a \$107,000 overall project, over a 4:1 match. (5) Hurricane Isabel forced the network to cancel the network meeting in St. John, U.S. Virgin Islands during September 22-26. The funds planned to cover travel were used to partner with FMRI to collect aerial photography from Middle Cape to Ten Thousand Islands along the western coast of Everglades National Park. The additional funding will allow the state of Florida to collect and map the seagrass resources from Charlotte Harbor to Card Sound along the Southwest coast of Florida, over 175 miles of shoreline. The funding to complete this work was \$26,000.

- Scheduled FY 2004 Activities and Products: (1) Network staff will continue to support network parks as needed with geospatial analysis. (2) The network data manager will work with the State of Florida Marine Resources Institute to develop a relationship and understanding for data sharing and exchange. (3) FMRI will play co-host to the December 8-12, 2003 Inventory and Monitoring Advisory Council Meeting in St. Petersburg, Florida, where a half-day field trip focused on monitoring through remotely sensed data in which tours of the St. Petersburg main lab will be held.

Task 4.4 – Acquire training for better data management practices.

- FY 2003 Accomplishments: (1) Data manager completed training on database design and other MS programs at New Horizons, Miami. (2) Data manager attended I&M data management meeting in Phoenix, AZ.
- Scheduled FY 2004 Activities and Products: (1) Training needs were identified in the August 2003 survey. Network staff will look for opportunities to provide training to network and park staff as those opportunities come up. (2) The SFCN data manager will assist park staff with data management issues as necessary.

Task 4.5 – Performed needs analysis for Geographic Information Systems throughout the Network.

- FY 2003 Accomplishments: (1) Determined GIS training needs throughout the network. (2) Determined priority GIS data layer needs throughout the network. (3) Identified various computer operating systems across the network. (4) Identified GIS and remote sensing capabilities for each network park. (5) Performed process analysis for GIS data distribution from network parks.
- Scheduled FY 2004 Activities and Products: (1) Work with regional GIS coordinator to host ESRI GIS training course for regional and network employee instruction for ArcGIS software.

B. Vital Signs Monitoring

Objective 5 – Determine network needs for “Vital Signs” monitoring.

Task 5.1- Evaluate common vital signs priorities across the network .

- FY 2003 Accomplishments: (1) Surveyed network parks to identify the highest priority monitoring needs. (2) Surveyed network parks to identify commonalities for network staffing, equipment, and training. (3) Provided information to network Science and Technical Committee indicating the similar priorities.
- Scheduled FY 2004 Activities and Products: (1) The SFCN network meeting has been rescheduled for November 4 and 5, 2003 in Homestead, Florida. The goal for this meeting is to develop a Workplan for FY04 and a strategic plan for FY05 and beyond. (2) A Board of Directors meeting is scheduled for November 6, 2003 to designate a BOD chairperson, review network meeting action items, and discuss strategic planning for FY04 and FY05.

Task 5.2 – Determine the data management needs for the network.

- FY 2003 Accomplishments: (1) Surveyed network parks to identify the highest priority data management needs. (2) Surveyed network parks to identify commonalities for network operating systems, software, and training needs. (3) Provided information to network Science and Technical Committee indicating the similar priorities.

- Scheduled FY 2004 Activities and Products: (1) The network data manager plans to share the survey results during the November meeting, look for common issues, and prioritize action items based on network needs.

Task 5.3 – Determine the museum needs for the network.

- FY 2003 Accomplishments: (1) The SFCN museum technician evaluated museum collection needs for South Florida / Caribbean I & M network parks. (2) The SFCN museum technician established the primary museum contact and contact information for each park. (3) The SFCN museum technician determined the total size of each park's collection. (4) The SFCN museum technician learned the date and availability of each parks' collection management plan. (5) The SFCN museum technician assessed how much space is available in the current collection storage areas. (6) The SFCN museum technician established the estimate for each parks' catalog backlog. (7) The SFCN museum technician assessed collection storage needs for all regional I & M parks. (8) The SFCN museum technician ascertained collections stored offsite and the state of the loan agreement forms. (9) The SFCN museum technician determined the top priorities for each South Florida / Caribbean I & M regional park's museum programs. (10) The SFCN museum technician identified training needs for museum staff within the region. (11) The SFCN museum technician reviewed the Collection Management Plans for VIIS, CHRI, BUIS, and SARI. (12) The SFCN museum technician visited Christiansted National Historical Site, met Zandy Hillis-Starr, the resource manager; viewed collections, and began a preliminary assessment of the resources. (13) The SFCN museum technician conducted NPS museum collection annual inventories for EVER, BISC, BICY, and DRTO. (14) The SFCN museum technician updated 2,000 object locations from FY 2002 and FY 2003 NPS museum collection annual inventories into the ANCS+ database. (15) The SFCN museum technician evaluated FY 2002 and FY 2003 NPS museum collection annual inventories for above parks to track progress made during FY 2003. (16) The SFCN museum technician supervised the South Florida Regional Collection Center library move from the archives storage facility in The Bill Robertson building to the conference room in The Beard Center to ensure greater access for users. (17) The SFCN museum technician facilitated accessibility of previous research through identification and reorganization of museum archives.
- Scheduled FY 2004 Activities and Products: (1) Based on Museum needs survey results, the network museum technician will share survey information with network parks, help prioritize network needs for museum curatorial assistance, and identify key action items for her FY04 workplan.

Objective 6 – Continue to work with partners at all levels to ensure long term planning occurs for resource allocation and strategic planning for the network.

Task 6.1 - Entered into a inter-agency agreement with John Brock, USGS.

- FY 2003 Accomplishments: (1) Collected LIDAR data for VIIS, BUIS, SARI, and VICRNM. This data will provide both bathymetry and elevation information to assist managers with issues to include coral monitoring, watershed delineation, sedimentation source identification, and other uses. (2) Provided funding to hire a part-time GIS analyst to assist with data processing and dissemination. (3) Exchanged data between USGS and network staff that has been provided to the parks.

- Scheduled FY 2004 Activities and Products: (1) Continued work with Dr. Brock and his USGS staff is anticipated for FY04 as derivative products are being developed from the newly collected LIDAR data. (2) Derivative products will be distributed to parks, partners, and other interested parties, as requested. (3) Collect LIDAR data for Dry Tortugas National Park during July 2004 funded from Geologic Resource Division, National Park Service (\$50,000).

Task 6.2 – Entered into a cooperative agreement with Fairchild Tropical Garden (FTG) for the curation of network herbarium specimens.

- FY 2003 Accomplishments: (1) The SFCN continued to provide vascular plant specimens, collected as part of on-going inventories for mounting, labeling, scanning, databasing, and incorporating into NPS virtual herbarium. (2) THE Cooperative agreement drafted by the SFCN enabled the Gulf Coast Network to provide network herbarium specimens to Fairchild Tropical Garden for scanning, databasing, and incorporating into the NPS virtual herbarium. (3) THE SFCN facilitated a dialogue between NRID and FTG to link virtual herbarium records to NPSpecies.
- Scheduled FY 2004 Activities and Products: (1) New voucher specimens will be delivered to FTG for mounting and labeling. (2) Existing herbarium vouchers will continue to be processed as funding is available. (3) Continued improvements will be made to the ‘NPS Virtual Herbarium’.

Task 6.3 – Entered into a cooperative agreement with Florida Audubon for development of an Environmental Assessment for rotenone use in marine environments.

- FY 2003 Accomplishments: (1) Worked with Florida Audubon and the regional office to develop an outline for a multi-park Environmental Assessment (EA) looking at the effects of ichthyicide sampling in mangrove, seagrass, and coral reef habitats. (2) The EA will provide the National Environmental Protection Act (NEPA) documentation that the network has determined necessary to conduct various cryptic fish sampling in network parks. (3) Dr. Jerry Lorenz, Florida Audubon, will collaborate with Dr. William Smith-Vaniz and Dr. Pamela Cochran, USGS to ensure all habitat section of the EA will have subject matter expert contribution.
- Scheduled FY 2004 Activities and Products: (1) The draft EA will be reviewed by network and park staff, returning comments to network coordinator for a synthesized response to the cooperator. (2) Final EA will be returned to the network coordinator for distribution to network superintendents and regional NEPA coordinator for review. (3) Each network park will make a decision on how to move forward based on the information contained with the EA with respect to fish inventory work using Rotenone ichthyicide.

Task 6.4 – Entered into a cooperative agreement with The Florida Marine Research Institute (FMRI) to provide marine inventory, monitoring, and research activities.

- FY 2003 Accomplishments: (1) Provided network funds to match state funds to collect aerial imagery for Card Sound and Florida Bay. (2) Provided GIS data to FMRI for development of a Biscayne National Park boater’s guide. (3) Routinely communicated between network staff and FMRI scientists to ensure coordination between NPS and state marine related activities.

- Scheduled FY 2004 Activities and Products: (1) Network and EVER staff will coordinate with FMRI to identify peak times for image acquisition, based on water levels and clarity. (2) Network staff and FMRI will continue dialogue on how best to leverage resources between the National Park Service and the state of Florida for marine monitoring activities and data sharing.

Task 6.5 – Began Dialogue with the University of Miami, Rosenstiel School of Marine and Atmospheric Science to establish a NPS Marine Science Fellowship at the new Pew Institute for Ocean Science.

- Scheduled FY 2004 Activities and Products: (1) Meet with University of Miami administration and faculty to develop a full proposal on how the fellowship would be administered, what network issues would be focused upon, and how the recipient would be supervised. (2) Discuss with Network Science and Technical Committee to determine network priorities for research. (3) Advertise the fellowship and review applicants. (4) Panel will interview applicants after successfully meeting university admissions requirements. (5) Fellow would begin Fall 2004.

Task 6.6 – Modify Interagency Agreement with NOAA and BUIS to conduct deep water geologic mapping.

- Scheduled FY 2004 Activities and Products: (1) The NOAA Research Vessel Nancy Foster, 187' long will conduct biological surveys of fish and benthic habitat communities during February and March 2004. Additional funding from the Geologic Resource Division has enabled this cruise to collect additional geologic information using a multibeam sonar system and towed Remotely Operated Vehicle (ROV) during the cruise. This information will be the first look at the deepwater resources within the expansion area of Buck Island Reef National Monument and Virgin Islands Coral Reef National Monument.

Objective 7 – Continue towards Phase One “Vital Signs” report development.

Task 7.1 – Identify network park natural resource management issues.

- FY 2003 Accomplishments: (1) Surveyed network parks to identify in priority order significant natural resource management issues. (2) Obtained network park enabling legislation to identify resources which the park may have been established to protect. (3) Provided information to network Science and Technical Committee indicating the similar priorities.
- Scheduled FY 2004 Activities and Products: (1) Will hold network meeting November 4-6, 2003 to review survey results and discuss how survey priorities may assist in the identification of Vital Signs indicators/systems.

Task 7.2 – Develop ecosystem conceptual models.

- FY 2003 Accomplishments: (1) Obtained South Florida ecosystem conceptual model developed by The South Florida Water Management District to assist with Comprehensive Everglades Restoration Plan monitoring. (2) Obtained DRTO ecosystem conceptual model developed by The University of Miami. (3) Obtained VIIS ecosystem conceptual model from The South Florida / Caribbean prototype long-term ecological monitoring program.
- Scheduled FY 2004 Activities and Products: (1) Various conceptual models will be reviewed during November 4-6, 2003 meeting to identify level of detail needed for ‘Vital Signs’ indicator development phase. (2) A SFCN Conceptual Model working group was established and will discuss models available and the requirements for augmenting them to provide for Vital Signs planning.

Objective 8 – Begin development of network space plan, staffing plan, and data management plan.

Task 8.1 – Prepare for the Vital Signs Monitoring implementation.

- FY 2003 Accomplishments: (1) Identify potential office space possibilities for future network growth. (2) Perform cost benefit analysis based on future staff duty location. (3) Coordinated with regional data managers on the development of the network data management plan.
- Scheduled FY 2004 Activities and Products: (1) Funds have been set aside to host a meeting of the SFCN Science and Technical Committee in November to discuss ongoing projects, review data mining efforts, and determine areas where I&M efforts need to be adjusted. (2) SFCN and regional office have contacted WASO office space leasing contracting officer to move forward on office space acquisition. (3) GSA has been contacted to request a delegation of authority to lease space without using GSA as part of the provider of choice program. (4) Office space will hopefully be secured by summer 2004.

Objective 9 - Hire Key personnel to assist with data analysis

Task 9.1 – Hire a Network Biometrician/Statistician/Ecologist

- Scheduled FY 2004 Activities and Products: (1) Advertise and hire a permanent GS-11 biometrician/statistician/ecologist to analyze prototype data sets, examine current monitoring program and identify sampling efficiencies, assist with long-term monitoring sampling design and analysis. Position would be duty-stationed in South Florida.

Task 9.2 – Hire a Data Management Technician

- Scheduled FY 2004 Activities and Products: (1) Advertise and hire a term GS-5/6/7 data management technician with web design skills to assist with website development and data entry /manipulation tasks as dictated by the network data manager and statistician. Position would be duty-stationed in South Florida.

Objective 10 - Migrate prototype program into network

Task 10.1 – Transfer Prototype budget and FTE from VIIS to SFCN

- Scheduled FY 2004 Activities and Products: (1) Shift the WASO I&M derived portion of the prototype budget from VIIS to the SFCN. Funding will remain at VIIS to cover SCUBA tank fills and dive physicals for two staff duty stationed there. (2) Shift four FTE from VIIS to SFCN. (3) Shift Fisheries biologist and biological technician from VIIS to SFCN through personnel actions. (4) Promote fisheries biologist to first line supervisor at USVI I&M program.

Task 10.2 – Integrate USVI and South Florida I&M Servers

- Scheduled FY 2004 Activities and Products: (1) SERO IT staff will administer I&M server in St. John, allowing for USVI and SFCN – South Florida servers can be mapped to one another for file sharing and data management and archiving. (2) The SFCN will purchase a server for South Florida office to manage shared data and serve as a connection point for South Florida Ecosystem Office servers, and USVI I&M Server. (3) Data flow process will be engineered with fisheries biologist, data manager, and statistician to ensure that the data and metadata migrate from data collection, through QA, to analysis as seamlessly as possible.

Objective 11 - Monitor Benthic cover

Task 11.1 – Monitor Benthic Cover at Virgin Islands National Park.

- FY 2003 Accomplishments: (1) Four sites were monitored using the USGS video benthic cover protocol: 20 permanent transects at Mennebeck (10/02), 20 permanent transects at Yawzi (11/02), and 40 permanent transects at Newfound (3/03). (2) An additional study site was added at Haulover Bay that consisted of 20 permanent transects. This site was chosen because several other co-located monitoring efforts are operational there (fish, coral disease, water quality), and the need for quantitative benthic cover data became apparent. (3) A presentation was made at the April, 2003 George Wright Society Conference that compared the ability to detect trends in benthic cover using three different sampling regimes. (4) A draft report documenting the last 5 years of video benthic cover is nearing completion and includes a statistical power analysis of permissible trend detection levels and comparisons among study sites. (5) A relational database has been developed, using the NPS database template format, which provides for accurate data entry, error checking, querying, and export to statistical software packages. All previously existing EXCEL flat files (totaling 150,000 records) have been pulled into the database for both BUIS and VIIS.
- Scheduled FY 2004 Activities and Products: (1) Continue monitoring of four protocol sites. (2) Perform a data analysis comparing the video benthic cover method and the “chain transect” method, and evaluate to what level chain transects will continue to be monitored. (3) Finalize the Benthic Cover Report, which will include comparisons of study sites, evaluations of methodologies used and recommendations for future sampling frequencies and intervals. (4) Optimize the relational database for faster querying and report generation capabilities. (5) Analyze benthic cover data collected at BUIS.

Task 11.2 – Monitor Benthic Cover at Buck Island Reef National Monument

- FY 2003 Accomplishments (Work Plan Items): (1) Two BUIS sites were monitored using the USGS protocol: 20 permanent transects at the Western Patch Reef (6/03) and 20 permanent transects at the South Fore Reef (02/03). (2) Chain transects were completed. (3) VIIS staff conducted a training session to re-familiarize staff at BUIS in analyzing the video tapes in an attempt to reduce their current analysis backlog.
- Scheduled FY 2004 Activities and Products: (1) Both sites will be monitored using the USGS video protocol. All tapes will be analyzed by SFCN staff.

Task 11.3 – Monitor coral disease outbreak at Virgin Islands National Park

- FY 2003 Accomplishments: (1) Monthly monitoring of Plague Type II at Tektite reef was conducted. Twelve data points were collected in FY 2003 bringing the study, which began in 1997, to 63 total months. (2) Still photographs were taken of 28 coral colonies affected by Plague Type II at Haulover. Over six years of slides photographs are in this dataset, which has also now been scanned digitally and organized chronologically for each of the 28 tagged colonies. (3) Inventory & Monitoring staff continued to work with the US Coral Reef Task Force Coral Disease and Health Consortium. I&M staff attended a symposium on the outbreak of coral diseases and the status of *Acropora palmata*.

- Scheduled FY 2004 Activities and Products: (1) Continue monthly monitoring at Tektite reef. (2) Continued quarterly monitoring of tagged Haulover coral colonies. (3). Advice will be sought on how to best quantify and analyze the coral disease datasets, and recommendations made as to what course of action to take next in terms of monitoring efforts.

Task 11.4 – Calibrate Aquamap™ Underwater SONAR navigation system for SFCN South Florida coral reef parks.

- Scheduled FY 2004 Activities and Products: (1) Both Dry Tortugas National Park and Biscayne National Park will be visited by network staff to create calibration files for both areas based on underwater acoustic properties. This survey work requires multiple dives with lab time in between to download and upload files into the field equipment, and then retest the field equipment to determine accuracy. (2) Once calibrated, the equipment will be ready for use for monitoring site establishment, damage assessment, underwater mapping, and other uses if needed.

Task 11.5 – Develop a marine ecosystem metric benthic cover component

- Scheduled FY 2004 Activities and Products: (1) Work with SFCN staff, park biologists, and cooperators to determine which components of the benthic community most impact the ecosystem health. (2) Identify preliminary weighting for each component to correctly quantify the metric for all network systems. (3) Prioritize components for monitoring, examine existing protocols, and determine prioritized list of new protocols needed.

Objective 12 - Monitor fisheries

Task 12.1 – Monitor reef fish at Virgin Islands National Park

- FY 2003 Accomplishments: (1) The previously existing five year Cooperative Agreement between VIIS and Jacksonville University (NPS CA#: H5360 01 0313) was not renewed this year due to lack of funding and the fact that as of May, 2003, we were still waiting for deliverables from last year's Task Agreement amendment. (2) A final report associated with the existing five year Cooperative Agreement between VIIS and Jacksonville University (NPS CA#: H5360 01 0313) was finally produced in August 2003 that provided data analysis associated with historical groupers/snappers and juvenile fish monitoring. (3) Due to lack of funding and lack of protocol recommendations, groupers and snappers were not monitored at four sites using the Beets method.
- Scheduled FY 2004 Activities and Products: (1) Efforts will be focused on working with NOAA's Biogeography Program to develop a SFCN Reef Fish Monitoring Protocol. (2) Network Staff will develop Standard Operating Procedures to augment the NOAA fish monitoring protocol to cover training, NPS certification, data management and archiving. (3) SFCN staff will assist NOAA's Biogeography Program with fish census work aboard the NOAA ship Nancy Foster February/March 2004.

Task 12.2 – Monitor reef fish at Buck Island Reef National Monument

- FY 2003 Accomplishments: (1) Offers of assistance for 2 person-weeks of effort were made to the NOAA/BUIS fish monitoring efforts at BUIS, however NOAA felt that sufficient personnel were already available.

- Scheduled FY 2004 Activities and Products: (1) SFCN staff will continue to support the joint NOAA/BUIS reef fish monitoring efforts by contributing 4 person-weeks of assistance. The first trip is scheduled for 10/03.

Task 12.3 – Monitor juvenile fish at Virgin Islands National Park

- FY 2003 Accomplishments: (1) Monthly juvenile fish transect monitoring has continued for a sixth consecutive year at Yawzi Point.
- Scheduled FY 2004 Activities and Products: (1) Continue monthly juvenile fish transect monitoring at Yawzi Point. (2) A contract has been pursued with WEST Ecological Statistical Consultants to examine the relationship between the juvenile fish transect data and the adult point count abundance data to determine whether or not to continue the juvenile fish monitoring.

Objective 13 - Monitor seagrass

Task 13.1 – Monitor seagrass at Virgin Islands National Park

- FY 2003 Accomplishments: (1) The three sites that represent the “core” program were monitored using the AquaMap™ relocation/quadrat counting protocol. The four additional supplementary sites previously monitored using permanent transects were not completed due to time limitations and the fact that we were still waiting on the finalized protocol as of the field season in June. (2) A revised draft Seagrass Monitoring Protocol was delivered in December, 2002, and sent out to 2 peer reviewers on February 2003 and returned by May 2003. Dr. Muhlstein received comments from VIIS staff in July 2003, and we are waiting for the finalized protocol. (3) As a protocol has not been fully developed, a format for the annual report has not been determined. (4) A relational database was developed for RM seagrass monitoring activities using the NPS database template. These activities are different in scope than what the I&M program concentrates on because the RM focus is on the trends in seagrass densities in proximity to mooring buoys, as opposed to making inferences within an entire bay. However, much of the database will be directly applicable for the I&M seagrass monitoring data entry and error checking needs, as will some of the queries. (5) Assisted RM staff in supervising a SCEP student entering seagrass data and performing error checks.
- Scheduled FY 2004 Activities and Products: (1) With the expected receipt of a finalized protocol this FY, we will have a suggested procedure for data collection, data analysis and reporting. Therefore, the three “core” sites will be monitored at minimum, using the AquaMap™ relocation/quadrat counting protocol. (2) The existing seagrass EXCEL flat files will be pulled into the relational seagrass database mentioned above. Much of this database has been developed by I&M staff for RM and will be modified to incorporate the data variables collected for this methodology. Additional queries, data export routines, and reports will be developed to finish out the database. (3) A report summarizing the last 4 years of data collection will be produced that incorporates the suggested data analysis techniques and reporting procedures outlined in the finalized protocol.

Objective 14 - Monitor water quality

Task 14.1 – Monitor water quality at Virgin Islands National Park

- FY 2003 Accomplishments: (1) Data analysis on status and trends for the 15 year data set continues. (2) A set of 8 new temperature data loggers purchased in FY02 were placed alongside the older Ryan thermistors at the 4 study sites to allow them to operate in tandem until we are ready to switch over to the new technology.
- Scheduled FY 2004 Activities and Products: (1) SFCN will continue to monitor water temperature with thermistors at 4 study sites. (2) Data management assistance to VIIS RM Division will continue, particularly as it relates to processing and delivering our data to NPS Water Resources Division for archival purposes and migrating our data to the STORET database. (3) The Water Resources Division will be approached to assist in the status and trends analysis of the 15 year water quality dataset.

III. Staffing

Inventory and Monitoring Staff

Matt Patterson, South Florida / Caribbean Network I&M Coordinator

Miriam Luchans, South Florida / Caribbean Network Museum Technician

Jeff Miller, South Florida / Caribbean Network Fisheries Biologist – St. John, US Virgin Islands

Rob Waara, South Florida / Caribbean Network Biologic Technician– St. John, US Virgin Islands

Britton Wilson, South Florida / Caribbean Network Science Information Data Manager

Kathy Harris, 1/5 of the Regional Inventory and Monitoring Administrative Assistant, Atlanta

Board of Directors

Ms. Carol Clark, Acting Superintendent, Big Cypress National Preserve

Ms. Linda Canzanelli, Superintendent, Biscayne National Park

Mr. Joel Tutien, Superintendent, Buck Island Reef National Monument

Mr. Bob Howard, Acting Deputy Superintendent, Everglades / Dry Tortugas National Park

Mr. John Benjamin, Acting Superintendent, Everglades / Dry Tortugas National Park

Mr. Art Fredrick, Virgin Islands National Park

Mr. Matt Patterson, Network I&M Coordinator

Mr. Larry West, Regional I&M Coordinator

Science and Technical Advisory Committee

Mr. Ron Clark, Resource Management Chief, Big Cypress National Preserve

Mr. Rick Clark, Resource Management Chief, Biscayne National Park

Mrs. Zandy Hillis-Star, Resource Management Chief, Buck Island Reef National Monument

Dr. Thom Armentano, Chief of Biological Resources, Everglades National Park / Dry Tortugas National Park

Mr. Rafe Boulon, Resource Management Chief, Virgin Islands National Park

Dr. Carol Daniels, South Florida / Caribbean Cooperative Ecosystem Studies Unit Coordinator

IV. Public Interest Highlights

- ✓ 172 new plant taxa have been added to the Big Cypress National Preserve, increasing the park's flora by 18%, totaling 1,021 species. Of these new plants, 106 are native, 66 were exotic; with five new plants added to the flora of South Florida, and some new discoveries which are still yet unidentified.
- ✓ LIDAR surveys were flown over Virgin Islands National Park, Buck Island Reef National Monument, and Salt River National Historic Site and Ecological Preserve. These surveys will provide managers with detailed information on water depth, elevation, and provide new information to assist in vegetation community classification, coral reef mapping and monitoring, areas of possible rock slides or sedimentation, and a new interesting way to graphically view these areas.
- ✓ Multiple networks are currently using a new cooperative agreement with Fairchild Tropical Garden for the further development of the 'NPS Virtual Herbarium'; a secure website which allows a scientist or resource manager to search a online database from there desk to view a herbarium specimen. The program allows for magnification up to 10x which provides enough detail to typically make taxonomic judgments from the office without a trip to a physical herbarium.
- ✓ Freshwater fish inventory of Virgin Islands National Park identified a total of 35 species (including the echeneid), with five additional taxa which were sight records but could not positively be identified to species. The presence of 22 families showed the lack of dominance by any single family in inland waters. Thirty-three species used coastal ponds, four were found in gut pools, and six in inland ponds. Coastal ponds shared two and one species with gut and inland ponds, respectively. Gut pools and inland ponds shared only one species, the mountain mullet. Twenty-four species were found within the boundaries of VIIS, but the remaining 11 from extra-park waters should be considered as Hypothetical. Many had thought the these internal water bodies on the island to be devoid of any fish species.

V. Reports, Publications and Presentations

- Patterson, M.E., Bohnsack, J., and J. Ault. 2003. Florida Keys Coral Reef Ecosystem Fish and Habitat Census: Partnership in Paradise. Presentation to the George Wright Society Biennial Conference, San Diego, California. April 18, 2003.
- Patterson, M.E. 2003. "The South Florida / Caribbean Inventory and Monitoring Network: Current Projects and Future Needs." South Florida /Caribbean Cooperative Ecosystem Studies Unit Annual Meeting, Miami, Florida. June 3, 2003.
- Miller J., Peterson J., Waara R., Rogers C., and Wilson B. 2003. Comparison of Coral Cover and Sample Design on Reefs Around Virgin Islands National Park. Poster presentation to the George Wright Society Biennial Conference, San Diego, California. April 14, 2003.
- Miller J., Peterson J., Waara R., Rogers C., and Wilson B. 2003. Comparison of Coral Cover and Sample Design on Reefs Around Virgin Islands National Park. Poster presentation to the World Parks Congress, Durban, South Africa, September 7-17, 2003.

VII. Budget

SFCN:

Budget Narrative: In FY 2003, the network received \$397,563 from the NPS Servicewide I&M program for biological inventories and 'Vital Signs' monitoring. I&M funds were allocated towards inventories of vascular plants at Big Cypress and Biscayne; bat inventories of all network parks; curation and scanning of network herbarium specimens; aerial photography acquisition and benthic habitat mapping of Florida Bay and Card Sound; Mahogany Mistletoe inventory of Sand Key, Biscayne National Park; additional plant voucher specimen collection at Big Cypress National Preserve; Forest monitoring in Cinnamon Bay, Virgin Islands National Park; and LIDAR data collection for Virgin Islands National Park, Buck Island Reef National Monument, and Salt River National Historic Site and Ecological Reserve. In addition to the above projects, salary for the network coordinator, data manager and museum technician; travel for network and park staff, as well as training, operations, and supplies were funded through network I&M funds.

The total budget for the VI/SFCN Prototype LTEM was \$269,332 for FY03. This amount was reduced from previous year's totals because the lapse money associated with filling the I&M Coordinator and Data Manager positions was retained by the Superintendent's Office. Overall, 80 % went towards personnel costs, 2 % for contracts, 3 % for travel and 12 % for operations. For FY04, the full funding amount of \$336,000 is being sought. It is expected that 84 % will go towards personnel costs, 3 % for contracts, 5 % for travel, and 6 % for operations.

In FY04 the SFCN anticipates to receive \$895,112 in funding from the National Park Service, \$491,020 in funding from the Service-wide Inventory and Monitoring (I&M) program, \$236,000 from the integration of the prototype program into the SFCN network, \$150,000 from the Geologic Resource Division to conduct geologic resource inventories in network parks, a 214% increase in funding. The SFCN biological inventories of amphibians, reptiles, bats and vascular plants will continue. A network-wide multi-park inventory of marine fish will be initiated. Network staff will continue to work with the Science and Technical Committee, collect and organize data, and work towards 'Vital Signs' Phase one and two reports. The I&M budget for network vertebrate and vascular plant inventories for FY04 is expected to be \$341,020. The I&M budget for 'Vital Signs' monitoring for FY04 is expected to be \$150,000. The network will hire a GS-11 ecologist/statistician/biometrician to analyze data collected from prototype efforts, identify monitoring efficiencies, and help with monitoring sampling development and data analysis. A term data management technician will be hired for web design and data management assistance. The network proposes to enter into a lease agreement to establish a SFCN office to support the growing program. This expenditure is critical to the success of the program, due to the inability to provide space for additional staff to undertake the requirements of the "Vital Signs" program development in the network's current office space configuration.

Budget Summary

FY03 Admin Report

Network: 28 South Florida/Caribbean

Category 1_Income

<i>Description</i>	<i>\$</i>	<i>\$\$ Source</i>	<i>Where \$ Went</i>	<i>Comments</i>
Phase One "Vital Signs"	\$150,000.00	I&M - VS Monitoring \$\$		
NPS Prototype Funding	\$236,000.00	Prototype \$\$ - Park Base		
Coral Reef Initiative Funding - VIIS	\$33,332.00	Park or Regional \$\$		
Vertebrate and Vascular Plant Inventory	\$250,063.00	I&M - Biol. Inventory \$\$		
Regional Coordinator Salary (1/5)	\$18,092.00	Park or Regional \$\$		
Subtotal	\$687,487.00			

Category 2_Personnel

<i>Description</i>	<i>\$</i>	<i>\$\$ Source</i>	<i>Where \$ Went</i>	<i>Comments</i>
Museum Technician Salary	\$16,860.00	I&M - Biol. Inventory \$\$	NPS	
Household Goods Storage	\$1,500.00	Park or Regional \$\$	NPS	Prototype Coordinator storage
OPM charge for data manager announcement	\$3,150.00	Park or Regional \$\$	Other Federal	Certificate costs for recruiting prototype data manager
Network Coordinator Salary	\$80,583.00	I&M - VS Monitoring \$\$	NPS	
Biological Technician Salary	\$44,363.00	Prototype \$\$ - Park Base	NPS	
Hazard Pay - SCUBA diving	\$15,000.00	Prototype \$\$ - Park Base	NPS	
Data Manager Salary	\$54,856.00	I&M - Biol. Inventory \$\$	NPS	
Regional Administrative Assistant	\$2,500.00	I&M - VS Monitoring \$\$	NPS	Kathy Harris
Fisheries Biologist Salary	\$69,785.00	Prototype \$\$ - Park Base	NPS	
Regional Coordinator Salary (1/5)	\$18,092.00	Park or Regional \$\$	NPS	Regional I&M Coordinator split between 5 networks
Prototype Coordinator Salary	\$80,159.00	Prototype \$\$ - Park Base	NPS	
On-The-Spot Awards	\$2,000.00	Park or Regional \$\$	NPS	Reward excellent staff performance - USVI staff
Subtotal	\$388,848.00			

Category 3_Coop. Agreements

Description	\$	\$\$ Source	Where \$ Went	Comments
Fairchild Tropical Garden	\$15,080.00	I&M - Biol. Inventory \$\$	Other non-Federal	Virtual Herbarium
Florida Tropical Audubon-SFC-CESU	\$18,000.00	I&M - Biol. Inventory \$\$	University-CESU	Rotenone EA
USGS Center for Coastal and Watershed Studies	\$19,000.00	I&M - Biol. Inventory \$\$	USGS	USVI LIDAR surveys
Florida Marine Research Institute	\$20,000.00	I&M - Biol. Inventory \$\$	Other non-Federal	FI Bay Aerial Photography
Florida Marine Research Institute	\$26,000.00	I&M - VS Monitoring \$\$	Other non-Federal	West Everglades mapping
USDA Tree Monitoring in St. John	\$8,500.00	I&M - Biol. Inventory \$\$	Other Federal	20 year monitoring plot
Fairchild Tropical Garden	\$2,046.00	I&M - VS Monitoring \$\$	Other non-Federal	Virtual Herbarium
Subtotal	\$108,626.00			

Category 4_Contracts

Description	\$	\$\$ Source	Where \$ Went	Comments
BICY Plant Inventory	\$61,764.00	I&M - Biol. Inventory \$\$	Other non-Federal	year 2 of 3
BISC Plant Inventory	\$2,971.00	I&M - Biol. Inventory \$\$	Other non-Federal	year 2 of 3
BICY Plant Vouchers	\$10,000.00	I&M - Biol. Inventory \$\$	Other non-Federal	additional plant vouchers
BISC Database for Plant Inventory	\$2,625.00	I&M - Biol. Inventory \$\$	Other non-Federal	Inventory data entered into database
BISC Mahogany Mistletoe Inventory	\$3,000.00	I&M - Biol. Inventory \$\$	Other non-Federal	Sand Key survey
Subtotal	\$80,360.00			

Category 5_Operations/Equipm

Description	\$	\$\$ Source	Where \$ Went	Comments
Krome Center Space	\$6,000.00	I&M - VS Monitoring \$\$	NPS	
Office Supplies and Equipment	\$5,997.00	I&M - Biol. Inventory \$\$	Other non-Federal	
SCUBA tank fills	\$2,000.00	Prototype \$\$ - Park Base	Other non-Federal	
Office Supplies	\$2,500.00	Park or Regional \$\$	Other non-Federal	
Software	\$2,000.00	Park or Regional \$\$	Other non-Federal	SigmaPlot, extensis
Computers	\$6,000.00	Prototype \$\$ - Park Base	Other non-Federal	1 workstation and 1 server - VIIS
Boat Repairs	\$5,900.00	Prototype \$\$ - Park Base	NPS	Engine Replacement, misc repairs
SCUBA Dive Gear	\$1,100.00	Prototype \$\$ - Park Base	Other non-Federal	Dive computers, wet suits, regulators
SCUBA Dive Physicals	\$900.00	Park or Regional \$\$	Other non-Federal	
Video Coral Monitoring	\$3,500.00	Park or Regional \$\$	Other non-Federal	Equipment purchase/repair for AquaMap System
Video Coral Monitoring	\$1,700.00	Park or Regional \$\$	Other non-Federal	Camera and underwater housing
Computers	\$6,500.00	Park or Regional \$\$	Other non-Federal	3 workstations - VIIS
Subtotal	\$44,097.00			

Category 6_Travel

Description	\$	\$\$ Source	Where \$ Went	Comments
Invitational Travel for Dr. Pete Edmunds	\$3,500.00	Prototype \$\$ - Park Base	Univ_Non-CESU	Coral Monitoring - Cal State Northridge
Travel for VIIS I&M Staff	\$9,275.00	Prototype \$\$ - Park Base	NPS	Data Manager Meeting, George Wright Society
Network Staff Travel	\$11,894.00	I&M - Biol. Inventory \$\$	NPS	
Network Invitational Travel	\$300.00	I&M - Biol. Inventory \$\$	NPS	Marine monitoring meeting
Network Staff Travel	\$29,345.00	I&M - VS Monitoring \$\$	NPS	
Network Invitational Travel	\$2,742.00	I&M - VS Monitoring \$\$	NPS	
Subtotal	\$57,056.00			

Category 7_Other

Description	\$	\$\$ Source	Where \$ Went	Comments
Support for work performed at BUIS to monitor fish and coral	\$8,500.00	Prototype \$\$ - Park Base	NPS	Annual VIIS staff support for BUIS I&M Program
Subtotal	\$8,500.00			

Budget Analysis

Analysis of Expenses by Where \$ Went

<i>Funding Source</i>	<i>Total \$\$</i>	<i>NPS</i>	<i>USGS</i>	<i>Other Federal</i>	<i>Univ.-CESU</i>	<i>Univ_Non-</i>	<i>Other non-Federal</i>
I&M - Biol. Inventory \$\$	\$250,847	\$83,910	\$19,000	\$8,500	\$18,000		\$121,437
I&M - VS Monitoring \$\$	\$149,216	\$121,170					\$28,046
Park or Regional \$\$	\$41,842	\$21,592		\$3,150			\$17,100
Prototype \$\$ - Park Base	\$245,582	\$232,982				\$3,500	\$9,100
Totals	\$687,487	\$459,654	\$19,000	\$11,650	\$18,000	\$3,500	\$175,683

Analysis of Expenses by Category

<i>Funding Source</i>	<i>Total \$\$</i>	<i>Personnel:</i>	<i>Coop</i>	<i>Contracts</i>	<i>Operations/Equip</i>	<i>Travel</i>	<i>Other</i>
I&M - Biol. Inventory \$\$	\$250,847	\$71,716	\$80,580	\$80,360	\$5,997	\$12,194	
I&M - VS Monitoring \$\$	\$149,216	\$83,083	\$28,046		\$6,000	\$32,087	
Park or Regional \$\$	\$41,842	\$24,742			\$17,100		
Prototype \$\$ - Park Base	\$245,582	\$209,307			\$15,000	\$12,775	\$8,500
Totals	\$687,487	\$388,848	\$108,626	\$80,360	\$44,097	\$57,056	\$8,500

Expense Totals By Category

<i>Category</i>	<i>SubTotal</i>	<i>Percent</i>
2_Personnel	\$388,848	56.56%
3_Coop. Agreements	\$108,626	15.80%
4_Contracts	\$80,360	11.69%
5_Operations/Equipmen	\$44,097	6.41%
6_Travel	\$57,056	8.30%
7_Other	\$8,500	1.24%
	\$687,487	

Budget Summary

FY04 Work Plan

Network: 28 South Florida/Caribbean

Category 1_Income

Description	\$	\$\$ Source	Where \$ Went	Comments
Phase One	\$150,000.00	I&M - VS Monitoring \$\$		
Geologic Resource Division	\$150,000.00	Other Partners		
Prototype Network Integration	\$236,000.00	Prototype \$\$ - Annual Transfer		
Vertebrate and Vascular Plant Inventories	\$341,020.00	I&M - Biol. Inventory \$\$		
Regional Coordinator Salary (1/5)	\$18,092.00	Park or Regional \$\$		
Subtotal	\$895,112.00			

Category 2_Personnel

Description	\$	\$\$ Source	Where \$ Went	Comments
Biological Technician Salary	\$50,307.00	Prototype \$\$ - Annual Transfer	NPS	
Biometrician	\$33,095.00	Prototype \$\$ - Annual Transfer	NPS	6 months GS-11/1 hired May 04
Dive Hazard pay	\$10,000.00	Prototype \$\$ - Annual Transfer	NPS	
Data Management Technician	\$25,768.00	Prototype \$\$ - Annual Transfer	NPS	
Network Coordinator	\$87,297.05	I&M - VS Monitoring \$\$	NPS	
Fisheries Biologist Salary	\$77,630.00	Prototype \$\$ - Annual Transfer	NPS	
Regional Administrative Assistant	\$8,000.00	I&M - VS Monitoring \$\$	NPS	Kathy Harris
Regional Coordinator Salary (1/5)	\$18,092.00	Park or Regional \$\$	NPS	Regional I&M Coordinator split between 5 networks
Data Manager	\$64,852.23	I&M - Biol. Inventory \$\$	NPS	
Museum Technician	\$44,394.00	I&M - Biol. Inventory \$\$	NPS	
EPMT/I&M Cartographic Technician	\$4,000.00	I&M - Biol. Inventory \$\$	NPS	October-January
Subtotal	\$423,435.28			

Category 3_Coop. Agreements

Description	\$	\$\$ Source	Where \$ Went	Comments
-------------	----	-------------	---------------	----------

NOAA USVI Deepwater mapping	\$100,000.00	Other Partners	Other Federal	NPS-Geologic Resource Division Funding
Fairchild 'Virtual Herbarium'	\$12,929.20	I&M - Biol. Inventory \$\$	Other non-Federal	Continue Processing Herbarium Voucher Specimens
Cryptic Fish Inventory	\$80,000.00	I&M - Biol. Inventory \$\$	University-CESU	Undetermined Project (BISC, DRTO, SARI, BUIS)
Seagrass Fish	\$40,000.00	I&M - Biol. Inventory \$\$	University-CESU	Undetermined Project (VIIS & DRTO)
LIDAR Survey of Dry Tortugas NP	\$50,000.00	Other Partners	USGS	NPS-Geologic Resource Division Funding
Pelagic Fish	\$40,000.00	I&M - Biol. Inventory \$\$	University-CESU	Undetermined Project (BISC & DRTO)
Subtotal	\$322,929.20			

Category 4_Contracts

<i>Description</i>	<i>\$</i>	<i>\$\$ Source</i>	<i>Where \$ Went</i>	<i>Comments</i>
BICY Plant Inventory	\$24,477.00	I&M - Biol. Inventory \$\$	Other non-Federal	Year 3 of 3
BISC Plant Inventory	\$2,970.52	I&M - Biol. Inventory \$\$	Other non-Federal	Year 3 of 3
Subtotal	\$27,447.52			

Category 5_Operations/Equipm

<i>Description</i>	<i>\$</i>	<i>\$\$ Source</i>	<i>Where \$ Went</i>	<i>Comments</i>
SCUBA Gear	\$1,500.00	Prototype \$\$ - Annual Transfer	NPS	
Dive Physicals	\$700.00	Prototype \$\$ - Annual Transfer	NPS	
Boat Repairs	\$3,000.00	Prototype \$\$ - Annual Transfer	NPS	
Software Purchases	\$7,000.00	Prototype \$\$ - Annual Transfer	NPS	
Office & field equipment - supplies	\$2,500.00	Prototype \$\$ - Annual Transfer	NPS	
Dive Tank Fills	\$2,000.00	Prototype \$\$ - Annual Transfer	NPS	
Equipment Service for Aqua map system	\$1,500.00	Prototype \$\$ - Annual Transfer	NPS	
Office Internet/Phone Service	\$4,800.00	I&M - VS Monitoring \$\$	Other non-Federal	
Office Furniture	\$15,000.00	I&M - VS Monitoring \$\$	Other non-Federal	
Office Lease	\$21,183.00	I&M - VS Monitoring \$\$	Other non-Federal	
Office Equipment (Computers, Printers, Phones)	\$7,397.00	I&M - Biol. Inventory \$\$	NPS	
Office Equipment (Computers, Printers, Phones)	\$13,720.00	I&M - VS Monitoring \$\$	Other non-Federal	
Subtotal	\$80,300.00			

Category 6_Travel

Description	\$	\$\$ Source	Where \$ Went	Comments
Network Travel	\$20,000.00	I&M - Biol. Inventory \$\$	NPS	
Travel for VIIS Network Staff	\$21,000.00	Prototype \$\$ - Annual Transfer	NPS	
Subtotal	\$41,000.00			

Budget Analysis

Analysis of Expenses by Where \$ Went

<i>Funding Source</i>	<i>Total \$\$</i>	<i>NPS</i>	<i>USGS</i>	<i>Other Federal</i>	<i>Univ.-CESU</i>	<i>Univ_Non-</i>	<i>Other non-Federal</i>
I&M - Biol. Inventory \$\$	\$341,020	\$140,643			\$160,000		\$40,377
I&M - VS Monitoring \$\$	\$150,000	\$95,297					\$54,703
Other Partners	\$150,000		\$50,000	\$100,000			
Park or Regional \$\$	\$18,092	\$18,092					
Prototype \$\$ - Annual Transfer	\$236,000	\$236,000					
Totals	\$895,112	\$490,032	\$50,000	\$100,000	\$160,000		\$95,080

Analysis of Expenses by Category

<i>Funding Source</i>	<i>Total \$\$</i>	<i>Personnel:</i>	<i>Coop</i>	<i>Contracts</i>	<i>Operations/Equi</i>	<i>Travel</i>	<i>Other</i>
I&M - Biol. Inventory \$\$	\$341,020	\$113,246	\$172,929	\$27,448	\$7,397	\$20,000	
I&M - VS Monitoring \$\$	\$150,000	\$95,297			\$54,703		
Other Partners	\$150,000		\$150,000				
Park or Regional \$\$	\$18,092	\$18,092					
Prototype \$\$ - Annual Transfer	\$236,000	\$196,800			\$18,200	\$21,000	
Totals	\$895,112	\$423,435	\$322,929	\$27,448	\$80,300	\$41,000	

Expense Totals By Category

<i>Category</i>	<i>SubTotal</i>	<i>Percent</i>
2_Personnel	\$423,435	47.31%
3_Coop. Agreements	\$322,929	36.08%
4_Contracts	\$27,448	3.07%
5_Operations/Equipmen	\$80,300	8.97%
6_Travel	\$41,000	4.58%
	\$895,112	