

**Administrative Report (FY 2002) and Workplan (FY 2003)
for Biological Inventories and Vital Signs Monitoring**

Mediterranean Coast Network

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Submitted by:



Denise Kamradt
Biological Inventory Coordinator, Mediterranean Coast Network

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J. Lane Cameron
Network Coordinator, Mediterranean Coast Network

Date: October 25, 2002

Approved by:



Woody Smeck
Acting Superintendent, Santa Monica Mountains National Recreation Area
Board of Directors, Mediterranean Coast Network

Date: October 25, 2002

I. Overview and Objectives

The Mediterranean Coast Network is composed of three parks in coastal southern California: Cabrillo National Monument (CABR), Channel Islands National Park (CHIS), and Santa Monica Mountains National Recreation Area (SAMO). These parks protect and manage an increasingly rare example of a Mediterranean coastal ecosystem. Inventorying the diversity of plants and animals in the Mediterranean Coast Network is the first critical step in protecting and managing network ecosystems. The long-term monitoring of selected park resources to determine the range of normal ecosystem variation and provide indication of ecosystem health will follow the completion of resource inventories, and will meld with existing monitoring programs already implemented in the parks.

This document reports on FY 2002 accomplishments and outlines the FY 2003 workplan for the network Inventory and Monitoring Program. All existing monitoring activities for SAMO and CABR are included whether they were fully or partially funded through the service-wide I&M program. The vegetation mapping program at SAMO, a critical inventory effort, was included though funds were provided by the national Fire Program rather than the I&M program.

Biological Inventories

In fiscal year 2000, using funds provided through the National I&M program, the MCN began an inventory of vascular plants and vertebrate species. In the first year, the network collected existing inventory information; held a scientific workshop to assess the parks' biological knowledge, identify remaining gaps, and discuss how to fill those gaps; and developed a study plan to complete park inventories within five years. The following year, FY 2001, the network continued collection of existing species inventory information and initiated fieldwork to inventory reptiles and amphibians. In FY 2002, the network began an inventory of reptiles and amphibians for CHIS and initiated inventories of bats, exotic plant species, and rare plant species in all three parks. The collection of pre-existing inventory information was largely completed. Work on the exotic plant species and rare plant species inventories at the three network parks will continue in FY 2003, as will the bat inventory at SAMO and the bat and herpetofauna inventories at CHIS.

Objectives for Biological Inventories:

1. Hire key personnel to implement the network inventories.
2. Compile and evaluate existing data for each park and enter into NPS databases.
3. Complete the documentation of 90% of vertebrate and vascular plant species in the parks through targeted field investigations.

Vital Signs Monitoring

In FY 2001, the network received funding to plan and initiate a Vital Signs monitoring program. These planning funds were used to supplement existing monitoring programs at CABR and SAMO (CHIS' monitoring program was funded earlier through the I&M Prototype program)

and, through a cooperating agency, to support a Vital Signs workshop for the Santa Monica Mountains. This workshop is scheduled for December 2002. A network coordinator was hired in late FY02.

Objectives for Vital Signs Monitoring:

4. Hire key personnel to implement the network-monitoring program.
5. Develop and implement network organizational structure.
6. Design integrated network Vital Signs monitoring program.
7. Develop a network Vital Signs monitoring plan to fill gaps and meet network goals.
8. Support ongoing inventory and monitoring activities consistent with Vital Signs. Conduct prototype monitoring program at CHIS. Implement network Vital Signs Monitoring.

Water Quality Monitoring

Additionally in FY 2001 a water quality monitoring work plan was developed to address the overall objective of the design and implementation of a Water Quality Monitoring Program. To get there, the network identified several major steps: (1) Collect, compile, and evaluate known information about fresh, estuarine, and marine water resources and water quality monitoring among the network parks; (2) Support and/or complete ongoing baseline water quality data collection in the network parks, specifically at SAMO and CHIS; (3) Develop a long-term strategy to implement appropriate water quality monitoring programs, including consideration of existing efforts from cooperating agencies across the network and the provision of NPS staff and resources to coordinate and manage such a strategy.

Initial funding (received in FY 2001) was used to support the first two steps, while FY02 funding allowed the network to work on all three steps with the goal of implementing a long-term water quality monitoring program beginning in FY 2003. A water quality monitoring coordinator will be hired in the third quarter of FY 2003. The network receives \$76,000 annually from the Water Resource Division to support water quality monitoring.

Additional Objectives for Water Quality Monitoring

9. Design and implement network Water Quality Monitoring Program

Other Natural Resource Inventories

At current national funding levels, the parks in the Mediterranean Coast Network are not scheduled to receive I&M Program funding for vegetation mapping for many years. However in the interim, network parks are seeking other sources of funds to complete this critical inventory. And, as a result of heightened public and political awareness of fire hazard issues at the wildland-urban interface, a vegetation/fire fuels map for SAMO has been funded by the National Fire Program. Fire management and hazard fuel reduction in the Santa Monica Mountains are complicated by the natural fire regime of large wind-driven fires, an extensive urban-wildland interface, high hazard fuels, and substantial natural and cultural resource values. Currently, park fire managers do not have the information and tools they need to most effectively manage fire in

the mountains. In order to evaluate and manage fire hazard the park must develop background data critical for fire management planning and analysis, particularly a detailed fire fuels map. Park managers will then be able to complete fire hazard and risk analyses for the mountains and work with both the public and other local fire management agencies to develop effective fire hazard management strategies while protecting resource values.

While this program is not funded by the national I&M program, the vegetation map will fill a critical inventory need. Thus, it was included in this report.

Objectives for Other Natural Resource Inventories:

10. Complete SAMO Vegetation/Fuels Map following I&M program standards, procedures and guidelines.

II. Accomplishments (FY 2002) and Scheduled Activities (FY 2003)

A. Biological Inventories

Objective 1 – Hire key personnel to implement the network inventories.

FY 2002 Accomplishments:

Selected in FY 2001 to coordinate implementation of the network inventories, Denise Kamradt, SAMO GIS Specialist, continued as Biological Inventory Coordinator. Inventory funds covered approximately 0.3 FTE for this coordination function. Funds were transferred to the USGS-BRD at the Channel Islands field station to support a coordinator and a technician for the CABR and CHIS exotic plant and rare plant surveys. The network hired Tarja Sagar as a term biological technician to implement exotic and sensitive plant surveys at SAMO. Additionally, SAMO developed a cooperative agreement with the Resource Conservation District of the Santa Monica Mountains to provide part-time field support to the SAMO plant surveys.

Scheduled FY 2003 Activities and Products:

The SAMO GIS Specialist will continue as Inventory Coordinator through FY 2003. About one-third of this position will be funded by the biological inventories. Funds will be moved to the USGS-BRD at the Channel Islands field station to support a coordinator and a technician for the CHIS exotic plant and rare plant surveys

Objective 2 – Compile and evaluate existing data for each park and enter into NPS databases.

Task 2.1 – Review and compile existing information on plants (all parks).

FY 2002 Accomplishments:

- (a) Work continued on a major revision of the Santa Monica Mountains Flora. Herbarium records were checked for 253 species in 245 genera. Representative voucher specimens were confirmed, documented, and entered in a database currently containing over 2,000 herbarium records. Areas within the park that were not included in the original Flora, were surveyed in the field. Additionally, reports (e.g. EIRs, EIS, development plans, etc.) were examined for species checklists and locations. Collections were made where acceptable vouchers specimens do not currently exist. These collections are awaiting processing and accessioning into the UCLA Botanic Garden Herbarium. To speed the process, the newly hired SAMO plant inventory biological technician began assisting the cooperator on one day each week.
- (b) In FY 2001, the network acquired an existing database developed by Dr. Gary Wallace of the Rancho Santa Ana Botanic Garden (RSABG). This database represents over 10 years of voucher specimen searches at various herbaria for Channel Islands plant species. An inventory technician reformatted the digital portion of the database and added additional records based on Dr. Wallace's hand-written notes. The Los Angeles Museum of Natural History agreed to publish the database in a technical document and the network transferred \$2,000 to the museum to assist with publication costs. The data will also likely be published on the web in future years to encourage additional review and comment. In FY 2002, work

continued on the Gary Wallace herbaria database. Main work on a searchable database is complete and awaits final output to a publishable document. There are over 15,000 herbarium records in this database. The purchase agreement with Los Angeles County Museum of Natural History was extended to the end of calendar year 2002 to accommodate the completion of this document.

Scheduled FY 2003 Activities and Products:

- (c) Continue work on the flora revision for SAMO. By the end of FY02, complete field work, data entry and edit NPSpecies records to reflect the flora revisions. Seek additional funds to support publication of the revised flora.
- (d) Enter results of CHIS and CABR exotic and rare plant surveys into NPSpecies.
- (e) Continue data entry into NPSpecies and other NPS databases with parks, contractors, and cooperators as necessary.
- (f) Coordinate publication of Gary Wallace database of voucher specimen searches for CHIS plant species.

Task 2.2 – Identify, collect and process voucher specimens (all parks).

FY 2002 Accomplishments:

- (a) As part of the update of the Santa Monica Mountains Flora, herbarium records were searched to identify need for collection of uncollected species. This work is ongoing. Currently, 51 new specimens have been collected. These specimens await processing.
- (b) A network technician identified priority specimens at CHIS for voucher processing. A procedure for processing the backlog of specimens was developed and implemented. Approximately 75-100 vouchers remain to be processed for the inventory. When completed, these vouchers will reside at the SBBG herbarium.

Scheduled FY 2003 Activities and Products:

- (c) Continue processing CHIS vouchers and deposit at SBBG for accessioning into the herbarium collection.
- (d) Newly collected SAMO voucher specimens will be processed and accessioned into the UCLA herbarium collection. Additional collections will be made as needed to ensure acceptable voucher specimens exist for all species listed in the update of the Santa Monica Mountains Flora.

Task 2.3 – Document bird species checklists (all parks).

FY 2002 Accomplishments:

- (a) In FY 2001, a database of bird vouchers for the Channel Islands developed by Paul Collins, Santa Barbara Natural History Museum, was acquired, digitized, and returned for proofing. The records were entered into NPSpecies. Mr. Collins has also collected reliable sightings data and a bibliography of bird species for the Channel Islands. Additional funding will be sought to acquire and digitize these databases. Ultimately, Paul Collins will use this bird information for a book on birds of the Channel Islands. In FY 2002, major work on the CHIS bird voucher database was completed and the final version was sent to Santa Barbara Museum of Natural History in May, 2002. Minor revisions continue. There are over 4500

records in this database, over 2,000 of which represent vouchers from Channel Islands National Park (the other records pertain to the other Channel Islands). This database provides evidence for over half of the NPSpecies bird records for CHIS.

(b) Miscellaneous minor additions and updates were made to NPSpecies records.

Scheduled FY 2002 Activities and Products:

Coordinate data entry into NPSpecies and other NPS databases with parks, contractors, and cooperators as necessary.

Task 2.4 – Review and compile existing information on fish (all parks).

FY 2002 Accomplishments:

Miscellaneous minor additions and updates were made to NPSpecies records.

Scheduled FY 2003 Activities and Products:

Coordinate data entry into NPSpecies and other NPS databases with parks, contractors, and cooperators as necessary.

Objective 3 – Complete the documentation of 90% of vertebrate and vascular plant species in the parks through targeted field investigations.

Task 3.1 – Rare, threatened, or endangered plant species surveys (all parks) and Invasive exotic plant species surveys (all parks).

(Note: To make the most efficient use of funds, time, and personnel, Rare, Threatened, or Endangered Plant Surveys will be conducted in conjunction with Invasive Exotic Plant Surveys in all parks.)

FY 2002 Accomplishments:

- (a) Dr. Kathryn McEachern, USGS, developed a detailed study plan and budget to survey the vegetation of Santa Cruz Island over a two-year period. Funds were transferred to USGS-BRD, Channel Islands Field Station and Santa Barbara Botanic Gardens to conduct plot-based sampling, sample known locations of Federally listed plants, complete analysis and reports and update NPSpecies with the results. In FY2002, 175 plots were sampled to characterize herbaceous vegetation communities. Due to the extremely low-rainfall year, few rare species were found and 2003 surveys will focus on rare plant species and vegetation communities under-represented in 2002 samples.
- (b) A scope of work was developed to contract the design and implementation of a plant survey at CABR. The survey will focus on a list of high priority invasive exotic plant species, however occurrence of rare plant species and other exotics will be noted. The project also includes recheck of rare plant populations mapped in a 1998 rare plant survey. The project was contracted to Dossey and Associates, Encinitas, CA.
- (c) SAMO staff worked with volunteers and cooperators to identify and survey potential habitat for a list of high priority exotic species. At this point approximately 20% of the study area has been surveyed. Potential habitats primarily include disturbed areas (e.g. trailside, firebreaks, grazed areas, etc.) and riparian areas. Additionally, SAMO developed a

cooperative agreement with the Resource Conservation District of the Santa Monica Mountains to provide part-time field support for the exotic and rare plant surveys in FY2003.

(d) Miscellaneous minor additions and updates were made to NPSpecies records.

Scheduled FY 2003 Activities and Products:

- (e) In FY 2003, the island-wide survey of the vegetation of Santa Cruz Island will focus on rare plant species and particular plant communities under-represented in samples in 2002, including oak groves, riparian areas, springs and seeps and coastal bluffs. For rare plant species, all known populations of Federally listed plant taxa on Santa Cruz Island will be visited. A minimum of two populations for each taxon will be selected for a demographic study over two to three years to determine abundance and range in abundance.
- (f) In 1995, SAMO began work on a survey of sensitive plant species. In FY2003, known populations of high priority sensitive species at SAMO will be located in the field and accurately mapped. Data on population status and site characteristics will be collected following procedures already in place. Data will be entered in NPSpecies and submitted to the California Natural Diversity Database.
- (g) The exotic plant species survey at SAMO will continue. Products will include maps of areas surveyed, and locations and descriptions of populations. The information will be used to develop management and monitoring strategies for the park's Exotic Plant Management Plan.
- (h) A contractor (see Task 3.1b above) will design and implement a survey to determine distribution and abundance of high priority invasive exotic plant species at CABR. In conjunction with this survey, previously mapped locations of rare plant species will be checked. Additional rare plant species populations found during the survey will be mapped. Status of mapped locations of rare species at CABR. Maps and a report will be submitted to CABR by the end of FY03.
- (i) Enter data into NPSpecies.

Task 3.2 – Riparian understory shrub and herbaceous plant species surveys (SAMO)

Scheduled FY 2003 Activities and Products:

This project is currently unfunded. The network will seek outside funding to implement this project.

Task 3.3 – Bat surveys (all parks)

FY 2002 Accomplishments:

- (a) Through Interagency Agreement with the USGS-BRD, San Diego Field Station, a thorough, year-round survey for bat species was conducted to determine which species forage at, migrate through, or reside on Point Loma (CABR). Methods included acoustic scouting surveys and roost surveys for potential bat roosting sites (historic structures, caves, etc.). The survey has found species foraging incidentally in Point Loma or tree roosters using the cemetery site. Four species, previously unknown from Point Loma were detected and a total of six species were found. A report including results, protocol, and recommendations will be completed by December 2002.

- (b) A scope of work and Interagency Agreement with USGS-BRD, Colorado Plateau Field Station was developed to inventory bat species for CHIS to identify species present, estimate abundance, and describe distribution (see Task 3.3d, below for additional details).
- (c) SAMO developed a cooperative agreement with the Maturango Museum to inventory bat species in the park. In FY 2002, the cooperators trained a crew of Santa Monica Mountains NRA biologists in bat identification, mist netting, and use of Anabat and/or Pettersson bat detectors and associated software. SAMO purchased bat monitoring equipment and supplies and worked with bat experts employed by the cooperators to establish and sample 15 mist net sites and, in conjunction, run bat detectors and analyze their output, and inspect structures for bat use. Seven bat species have been identified through the mist netting and preliminary bat detector data analysis. The project will continue through FY 2003.

Scheduled FY 2003 Activities and Products:

- (d) The inventory of bats on the Channel Islands will continue through agreement with USGS-BRD, Colorado Plateau Field Station. Work will focus on previously un-surveyed areas and areas where bats are known to exist but where past surveys were incomplete or seasonal in nature. Surveys will be conducted using bat detectors. Mist nets and monitoring of known roost sites. Additionally, park personnel will be trained in the use of the Anabat/laptop computer bat detection systems. The use of remote monitoring systems for bats will allow the park to continue to conduct bat surveys and monitoring after the completion of this project. As part of this project USGS biologists will orient NPS staff to the use of the Anabat detectors and associated computer data collection systems, and provide recommendations for future use. A report will be completed by the end of calendar 2004.
- (e) SAMO, in cooperation with The Maturango Museum, will complete field inventory of bats and submit a report to the park by the end of FY 2003. The report will include findings, methods used, and recommendations for monitoring.

Task 3.4 – Small mammal surveys (CABR and SAMO)

FY 2002 Accomplishments:

An inventory small mammals was initiated at CABR through interagency agreement with USGS-BRD.

Scheduled FY 2003 Activities and Products:

- a) Field work on the CABR small mammal inventory will be completed November 2002. A report incorporating results, protocol, and recommendations will be submitted to the park.
- b) SAMO is initiating small mammal and lagomorph surveys for both inventory information (species presence and distribution) and for information on diversity and abundance relative to urbanization and fragmentation. This project was included in the Biological Inventory Study Plan, but was unfunded. Some regional funding has been secured. The network will seek additional funding through outside sources.

Task 3.5 – Breeding raptor inventory (CABR and SAMO)

FY 2002 Accomplishments:

SAMO began initial work on a raptor inventory. Potential raptor nest habitat was identified and

surveyed. FY 2002 work focused on a limited study area, comparing habitat patches in an area of mixed natural habitat and suburban residential and commercial development. In FY 2003, the inventory will be expanded to encompass all of SAMO and will be extended to CABR.

Scheduled FY 2003 Activities and Products:

Raptor inventories will be conducted at CABR and SAMO. A contractor will be selected to determine relative abundance of adult raptors and absolute abundance of raptor nest sites at both parks. Products will include coordinates of nest sites and a report detailing project findings. The work will be complete by the end of FY 2003.

Task 3.6 – Survey reptiles and amphibians (all parks)

FY 2002 Accomplishments:

- (a) In a joint effort between the Resource Conservation District of the Santa Monica Mountains, USGS-BRD, Pepperdine University and the National Park Service, 35 stream sites in SAMO were surveyed for the presence and reproductive success of native amphibians. Water quality measurements and stream flow data were collected, and non-native species presence was also recorded. Benthic aquatic invertebrates were collected and have been sent to a lab to initiate a baseline inventory of invertebrate diversity.
- (b) At SAMO and CABR, terrestrial reptiles and amphibians were sampled using pitfall trap arrays installed in representative habitats throughout the two parks. Sampling protocols followed those developed by Robert Fisher of the USGS, Biological Resources Division and will feed into a broad regional database of reptile and amphibian distribution throughout mainland southern California. At CABR, the USGS-BRD submitted a draft report to the park for review. The report was forwarded to University of Wyoming for peer review and recommendations. Report revisions will incorporate recommendations for transitioning from inventory and monitoring. At SAMO, the inventory initially focused on habitat patches within and around the suburban areas in the northern portion of the park. In FY 2002, trap arrays were installed in the western Santa Monica Mountains. Early analysis of SAMO data has demonstrated higher species richness in larger habitat patches as expected. However, while some species are not found at all in small and medium patches, a few are more common in small habitat patches
- (c) A scope of work and Interagency Agreement with USGS-BRD, Colorado Plateau Field Station was developed to collect and analyze population information on distribution, relative abundance, and habitat occurrence of amphibian and reptile species on the islands within the National Park.

Scheduled FY 2003 Activities and Products:

- (d) CABR reptile and amphibian surveys will continue through the first half of FY 2003. Based on recommendations from the revised report (see Task 3.6b, above), study methods will be changed to meet monitoring objectives.
- (e) At CHIS, the USGS-BRD, Colorado Plateau Field Station, will continue a survey of reptiles and amphibians. Surveys will be conducted twice per month during the spring and summer. Survey methods will include but not necessarily be limited to cover boards, drift fence arrays, road surveys, and visual encounter surveys. Additionally, tissue samples will be obtained from selected amphibian and reptile species and examine for population genetics and species

relationships. This effort will be in response to specific questions of taxonomy as described in the published literature. Samples will be collected according to established techniques, and will be conducted under the specifications of an NPS collecting permit. Reposition locations of samples will be determined prior to collecting. Interim summary reports (no more than five pages) or an NPS Investigator's Annual Report (IAR) will be provided every six months. Survey data, field notes, digital map of sampling locations (mapped using GPS if possible), and a final comprehensive report of findings, including suggestions for additional inventories, future monitoring needs for bats, reptiles and amphibians on the islands, and management recommendations, will be delivered to the Park within six months of project completion.

- (f) At SAMO, the reptile and amphibian survey will be expanded with trap arrays installed and sampled in the central Santa Monica Mountains. Existing traps (northern and western regions of the park) will continue to be sampled.

Task 3.7 – Survey intertidal and shallow (<40 m) subtidal for fishes (CABR and CHIS)

Scheduled FY 2003 Activities and Products:

- (a) CABR will contract a fish survey to inventory intertidal and subtidal fish species, determine distribution and relative abundance categories by habitat type, and collect basic age class data.
- (b) No funding is available for the survey at CHIS. The network will seek outside funding to implement this project.

Task 3.8 Stream/lagoon surveys for abundance and distribution of native and alien fishes at SAMO

Scheduled FY 2003 Activities and Products:

SAMO will seek a contractor to determine distribution and relative abundance of non-native aquatic species. All three lagoons and a selected set of streams will be sampled. Sampling will be accomplished using seines and, where necessary, Electro-shocking. At each sampling site, species will be counted and identified and locations mapped by GPS. Voucher specimens will be collected and prepared for accession according to NPS collection standards. Surveys will be designed and implemented to compliment ongoing stream assessments (see Tasks 3.6) and a non-NPS funded survey of SAMO streams, specifically focused on the endangered southern California steelhead trout.

Task 3.9 Survey deepwater (40-400 m) for fishes (CHIS)

Scheduled FY 2003 Activities and Products:

This project is currently unfunded. The network will seek outside funding to implement this project.

B. Vital Signs Monitoring

Objective 4 – Hire key personnel to implement the network-monitoring program.

FY 2002 Accomplishments:

In July of FY02 Dr. J. Lane Cameron was hired as the network coordinator for the Mediterranean Coast Network. He joined Denise Kamradt of SAMO, the network biological inventory coordinator, and Lena Lee also of SAMO, a network cartographic technician, to round out network staff.

Scheduled FY 2003 Activities and Products:

Early in FY03 the network will advertise for a GS-11 water quality coordinator to provide continued direction and coordination to the network water quality monitoring program.

Objective 5 – Develop and implement network organizational structure.

FY 2002 Accomplishments:

Since the signing of the network charter in April of 2001 the network has had consistent and regular meetings of the Board of Directors and Technical Committee to discuss and implement a long-term monitoring program within Cabrillo National Monument and Santa Monica Mountains National Recreation Area, and to coordinate monitoring activities with Channel Islands National Park. The network has benefited from the experiences of Channel Islands National Park's Prototype Monitoring Program.

The technical committee consists of the resource management chiefs at all three network parks, the network monitoring coordinator, the network biological inventory coordinator, and several natural resource managers or science advisors from each of the network parks as necessary. The excellent working relationship, which has been established among the parks, has built a foundation of trust and cooperation that will be expanded upon in the future.

Scheduled FY 2003 Activities and Products:

Established mechanisms for coordinating network activities will continue with semi-annual meetings of the Board of Directors and at least quarterly meetings of the technical committee.

Objective 6 – Design integrated network Vital Signs monitoring program.

FY 2002 Accomplishments:

Immediately upon his arrival Dr. Cameron prepared a presentation on the implementation of the monitoring program within the Mediterranean Coast Network to be delivered at the National I&M meeting in August in Denver, Colorado, implemented a program to formalize the preparation of a network conceptual model for the Phase I report due October 1, 2002, began compiling information on the history of natural resource management in the park service leading to the I&M program, made a site visit to Cabrillo National Monument, and with support from park and network staff completed the Phase I report. All of this work built upon the monitoring foundation and vital signs focus within network parks laid by the network technical committee, which has been functioning for nearly two years.

Scheduled FY 2003 Activities and Products:

The network has fully embraced the program design concepts recommended by the national I&M program and the phased approach to developing a monitoring plan. FY03 will see a

vigorous and aggressive program to meet programmatic expectations in implementing the vital signs monitoring program within the Mediterranean Coast Network.

Objective 7 – Develop a network Vital Signs monitoring plan to fill gaps and meet network goals.

FY 2002 Accomplishments: The completion of chapters II and III of the vital signs monitoring plan, commonly referred to as the Phase I report, in early October of 2002 culminated the primary FY02 effort of the network to develop a vital signs monitoring plan. Concomitant with this effort, several park-specific and network-based working groups developed monitoring concepts for discussion and implementation with network parks. Notably the SAMO learning center funded an international workshop with participants from network parks, local universities, and the national parks system of Chile to discuss common resource management concerns and activities within the Mediterranean climate regions of both countries.

Scheduled FY 2003 Activities and Products:

Early in FY 2003 the network will sponsor a vital signs workshop at SAMO to identify vital indicators of ecosystem health within Santa Monica Mountains NRA. The two primary goals for this workshop are to refine and finalize a draft conceptual model of the network and to identify a suite of ecosystem components or processes to be considered in the development of vital sign indicators for SAMO. A preliminary outline of activities for this workshop has been completed, a venue has been selected, and invitation letters have been mailed to some 80 plus potential attendees. The final report from a vital signs workshop held in CABR will be finished and integrated with the results of the SAMO workshop for inclusion in Chapter IV of the monitoring plan.

Following the SAMO workshop, park resource staff and university cooperators will be tasked to prepare a final network-wide conceptual model. This activity will be structured to meet the goals of the phased approach for developing a vital signs monitoring plan. The selection of vital signs will be completed by April 1, 2003.

Objective 8 – Support ongoing inventory and monitoring activities consistent with Vital Signs. Conduct prototype-monitoring program at CHIS. Implement network Vital Signs Monitoring.

Task 8.1 – Acquire infrastructure needed to support Vital Signs monitoring.

FY 2002 Accomplishments:

The network purchased and installed office furniture, computers, and telephones needed to support I&M staff, including the vegetation mapping field crew and wildlife monitoring technicians at SAMO. SAMO increased capacity and upgraded GIS to accommodate increased data storage and processing capacity for I&M projects and databases.

Scheduled FY 2003 Activities and Products:

Purchase and install office furniture and equipment to support network Monitoring Coordinator and network Water Quality Monitoring Coordinator. Maintain and upgrade I&M office equipment and infrastructure as needed.

Task 8.2 – Support ongoing CABR Vital Signs monitoring.

FY 2002 Accomplishments:

- (a) Monitoring funds supported field inventory of reptiles and amphibians needed to develop baseline data for future Vital Signs monitoring. (See Inventory Task 3.6 for further information.)
- (b) The CABR rocky intertidal monitoring program has directly resulted in significant researcher interest in related issues. New projects initiated in just the last year include an investigation of the effects of trampling and sand on turf communities (Tonya Huff, Scripps Institution of Oceanography), study of the size and growth rates of owl limpets and a full inventory of CABR's mollusk populations (Dr. Kaustav Roy and students, University of California San Diego), and research into the disappearance of ochre seastars at CABR (Corrina Marote, University of California Los Angeles), lobster life history and habitat use (Dr. Kevin Hovel and students, San Diego State University), and population genetics of surfgrass limpets (Emina Begovich, University of California Berkeley).
- (c) Conducted monitoring of tidepools, vegetation communities, and air quality at CABR.
- (d) A tidepool monitoring workshop was held in November, 2001. Funding support for the workshop came from the Cabrillo Marine Institute. A report will be available in FY 2003.

Scheduled FY 2003 Activities and Products:

- (e) Continue to monitor tidepools, vegetation communities, and air quality as described in monitoring plan. Monitoring of reptiles and amphibians will be initiated based on recommendations from the inventory report. (See Inventory Task 3.6? for further information.)
- (f) Eliminate backlog of slides to be scored for species cover via contract (funds obligated in FY 2002).

Task 8.3 – Support ongoing CHIS prototype monitoring program

FY 2002 Accomplishments:

- (a) Conducted prototype monitoring program according to approved protocols. Program included monitoring of land birds, terrestrial vertebrates, vegetation, seabirds, rocky intertidal, and kelp forest community.
- (b) CHIS developed a cooperative agreement with SCA to support analysis of vegetation monitoring data. (See FY 2003 activities, below.)
- (c) CHIS contracted a weather monitoring program review and protocol revision. (See FY 2003 activities, below.)
- (d) Data and analysis from CHIS monitoring program were instrumental in support of the approved listing package for Xantus's murrelet (*Sythliboramphus hypoleuca*).
- (e) Approximately 25% of park waters were designated Marine Protected Areas, no harvest, largely due to CHIS kelp forest and rocky intertidal monitoring.

- (f) Work is ongoing with park staff to revise protocols for sea bird, rocky-intertidal, and land bird monitoring.

Scheduled FY 2003 Activities and Products:

- (g) Conduct prototype monitoring program.
- (h) Implement vegetation monitoring program protocol review recommendations submitted by USGS-BRD in August, 2001. The revisions call for reductions in transect sample effort in order to increase effort in other areas of the program. The existing LandVeg monitoring data will be analyzed to decide which transects to drop from annual sampling, and what longer interval would be appropriate for the transect data collection. A new sampling plan will be developed.
- (i) Selected contractors will conduct a review of the weather data collection and data management protocol, development of a revised protocol that incorporates new technology, and integrate the existing and future weather data with the Channel Islands National Park Inventory and Monitoring database in MS Access. Work will be completed by the end of FY 2003.
- (j) Work is ongoing with park staff to revise protocols for sea bird, rocky-intertidal, and land bird monitoring.

Task 8.4 – Support ongoing SAMO inventory and monitoring activities consistent with Vital Signs.

FY 2002 Accomplishments:

Monitoring funds supported field inventory of reptiles and amphibians needed to develop baseline data for future Vital Signs monitoring. (See Inventory Task 3.6 for further information.)

Scheduled FY 2003 Activities and Products:

Reptile and amphibian work in SAMO will continue as the program begins a transition from inventory to monitoring. Pitfall traps will continue to be assessed throughout areas of the park where they were previously installed and new sites will be added to complete the inventory across the park. (See Inventory Task 3.6 for further information.)

Task 8.5 – Develop and support regional monitoring programs.

FY 2002 Accomplishments:

- (a) CHIS and CABR worked with seven other partners from the government, academic institutions, and the private sector as part of a monitoring group, MARINE, to develop and implement a regional program for rocky intertidal monitoring. Comprehensive baseline surveys were conducted. The group also created standardized protocols and developed a centralized database for the regional monitoring data.
- (b) The CHIS kelp monitoring program was expanded to include San Clemente Island through contract with the US Navy.
- (c) Sampling protocols for ongoing reptile and amphibian inventory/monitoring followed those developed by Robert Fisher of the USGS, Biological Resources Division and will feed into a broad regional data base of reptile and amphibian distribution throughout mainland southern California

Scheduled FY 2003 Activities and Products:

CHIS and CABR will continue to support and participate in MARINE (see above).

Task 8.6 – Participate in outreach and professional activities both internal and external to NPS

FY 2002 Accomplishments:

- (a) The network developed a public web site to publicize and post information about the network I&M program, including project results and reports. After internal review, the web site will be made available to the public via the national I&M office in Fort Collins.
- (b) Network representatives participated in several regional and national I&M meetings. See publications section of this report for a list of presentations at NPS and professional meetings and conferences.

Scheduled FY 2002 Activities and Products:

- (c) The network web pages will be uploaded to a national I&M server in Fort Collins. Network staff will maintain the site, posting additional reports and updating information as necessary.
- (d) Network representatives will continue to participate in regional and national I&M workshops and meetings and continue to produce presentations and publications for a variety of audiences.

Objective 9 – Design and implement network Water Quality Monitoring Program.

Task 9.1 – Hire key personnel specific to design and implementation of the network Water Quality Monitoring Program.

Scheduled FY 2003 Activities and Products:

The network will hire a full-time water quality monitoring coordinator. The position will likely be advertised as a multi-disciplinary hydrologist/ecologist with responsibility for both fresh water and marine water quality monitoring.

Task 9.2 – Monitor stream biological and physical characteristics.

FY 2002 Accomplishments:

- (a) At SAMO, Water quality monitoring funds supported field assessment of stream biological and physical characteristics needed to develop baseline data for future Vital Signs monitoring. (See Inventory Task 3.6 for further information).
- (b) CHIS completed a water quality monitoring project assessing vegetation and stream morphology on Santa Rosa Island with the goal of documenting changes in water quality since cattle were removed from the island in 1998. The project included conducting Level II characterization of the Old Ranch Watershed (Rosgen Channel Classification); monitoring fifty-six nested-rooted frequency and cover riparian transects established in the Quemada Stream drainage; re-surveying nine precise cross-section profiles in the Old Ranch stream to measure changes in channel morphology; and establishing a 1,000 meter stream condition assessment transect (using R5 Forest Service Stream Condition Assessment Protocol) in Arlington Stream. Components of the project included inorganic and bacteria water

sampling, measurement of channel morphology, vegetation sampling, and installation of photopoints.

Scheduled FY 2003 Activities and Products:

- (c) CHIS will complete a report on the Santa Rosa Island water quality monitoring project (see 7.3b, above). The report will be given to the Central Coast Regional Water Quality Control Board as part of the Park's effort to rescind a Cleanup or Abatement Order. Road improvements will also be documented and presented as part of the rescission package.
- (d) Complete baseline inventory of estuaries on Santa Rosa and Santa Cruz Islands. Complete laboratory analysis of marine water quality samples for CHIS.
- (e) Water Quality funds will be used at SAMO to continue the comprehensive stream inventory initiated previously with I&M funding. In particular, technician support will be provided to ensure that the important stream monitoring baseline data are collected in the 35 target streams.

Task 9.3 – Summarize existing data and understanding and hold a water quality monitoring workshop.

FY 2002 Accomplishments:

- (a) In FY 2001, the network obligated funds to the Resource Conservation District of the Santa Monica Mountains (RCD) through a cooperative agreement to hire a water quality technician to collect, compile, and evaluate water quality data from all network parks. The RCD has been tasked to collect all known information about fresh, estuarine, and marine water quality monitoring efforts underway within and adjacent to network parks, determine which factors or parameters are measured, how each is measured (i.e. methods or protocols), the frequency and duration of the monitoring effort, the specific locations for monitoring, the repository location for the monitoring data, and the primary contacts/investigators from the lead agency or organization conducting the monitoring. They will also organize these data into a comprehensive database, assess information gaps in water quality monitoring programs, and solicit input on potential improvements or monitoring needs. The work began in FY 2002 will the acquisition of an existing database of water quality monitoring throughout California. Searches resulted in over 70 records for the southern California coastal region. Additional ongoing monitoring within the area of interest of each park will be added to the database. Regional water management, regulatory, and land management agencies, and non-governmental organizations were contacted for information regarding water quality monitoring programs.
- (b) Funds were set aside through agreement with the Resource Conservation District of the Santa Monica Mountains to support a water quality monitoring workshop in FY 2003.

Scheduled FY 2002 Activities and Products:

- (c) Existing water quality data and information on existing monitoring efforts in the three parks (including monitoring conducted by other agencies) will be continued to be collected, compiled and evaluated. These data will be used to identify monitoring gaps and data needs for a future long-term monitoring strategy for the network. A report will be completed by the second quarter of FY 2003. This component was funded through cooperative agreement with FY01 funds.

- (d) A network-wide water quality monitoring workshop will be held in the spring or summer of 2003. The objectives of the workshop will be to assess regional and local ongoing monitoring efforts, identify gaps and additional issues, and, within guidelines established by the NPS Water Resources Division, develop priorities for a network water quality monitoring program.

C. Other Natural Resource Inventories

Objective 10 – Complete SAMO Vegetation/Fuels Map following I&M program standards, procedures and guidelines.

FY 2002 Accomplishments:

This vegetation/fuels map for the Santa Monica Mountains will provide critical information for park fire management while following I&M vegetation mapping standards and procedures. Work began in early 2002 and the digital map should be complete by the end of 2004. Todd Keeler-Wolf, Vegetation Ecologist, California Department of Fish and Game is developing the vegetation classification. Aerial Information Systems (AIS) is completing aerial photo interpretation and map automation. Work is being performed through contract with Environmental Systems Research Institute, Inc. (ESRI). Park staff are collecting detailed field-based data for the vegetation classification and accuracy assessment. In FY 2002, a preliminary classification was developed. Five biological technicians were hired to term positions for field data collection. Equipment and supplies were acquired for the field crew. The remaining air photo interpretation and a portion of the automation was contracted to ESRI

Scheduled FY 2002 Activities and Products:

Contract remaining map automation. Continue rapid assessments and plot data collection in field for classification, accuracy assessment, and refinement of photo interpretation.

III. Staffing

Board of Directors

Woody Smeck, Acting Superintendent, SAMO
Terry DiMattio, Superintendent, CABR
Jack Fitzgerald, Acting Superintendent, CHIS

Ad Hoc Members:

J. Lane Cameron, Network Coordinator
Penelope Latham, I&M Coordinator, Pacific West Region

Science Advisory Committee

(TBA)

Network Technical Committee

Andrea Compton, Chief of Natural Resource Science, CABR
Kate Faulkner, Chief of Natural Resources, CHIS
Ray Sauvajot, Chief of Planning Science & Resource Management, SAMO
J. Lane Cameron, Network Coordinator
Denise Kamradt, Biological Inventory Coordinator
Vacant (TBA), Network Water Quality Monitoring Coordinator
Lena Lee, Data Management Trainee
Park Resource Staff as needed

Network Inventory and Monitoring Staff

J. Lane Cameron, Network Coordinator
Denise Kamradt, Biological Inventory Coordinator
Vacant (TBA), Network Water Quality Monitoring Coordinator
Lena Lee, Data Management Trainee

IV. Public Interest Highlights

- Tidepool monitoring has detected a large decline in California mussel populations at Cabrillo National Monument and the disappearance of a once-common predator, the ochre seastar. Documentation of these and other changes that have led to the closure of a third of the park's tidepools to all visitors. (See below for more details.)

Local citizens protect tide pools at Cabrillo National Monument

Tide pools at Cabrillo National Monument in San Diego, CA, draw people from all over to see the last remnants of these fascinating windows on the sea. More than 100,000 visitors explored the sea's edge here every year in the 1980s. Concern about trampling and other visitor disturbance on tide pool health prompted the National Park Service to start monitoring tide pool vital signs in 1990 with community volunteers.

Three years later community attention was riveted on Monument tide pools when the city's municipal sewage outfall pipe broke adjacent to the monument. Treated effluent covered the tide pools twice a day for two months. The area was closed during this period to protect human health, and many feared the worst for the tide pools. When the pipe was fixed and people could safely return, they found an amazing sight.

Far from ruined by the effluent, the tide pools sported plush carpets of algae and an "Emerald City of Oz" look. After two months' respite from visitor trampling and probing, the improved tide pool vital signs allowed people to see what effect they had been having on the fragile veneer of algae and anemones, mussels and barnacles, and myriad other critters. As a result, the public has supported the park's decision to close 1/3 of the tidepools in 1996. This small marine reserve allows for the replenishment of species within it, and is utilized as a vital tool in determining the effects of human impacts.

Currently all marine monitoring in the park is done by volunteers. Since the program's inception in 1990, over 200 volunteers have helped out with the assistance of only one paid NPS staff member. Additionally, over 50 volunteer docents create a constant presence in the park during weekends and good daytime low tides. Their job is to protect the resource by enforcing park rules and acting as educators to teach the public about the resource and explain why the rules exist. A team of more specialized volunteers helps with different marine projects, studying invertebrate settler monitoring, vouchering our species lists, monitoring visitation, office work, and individual research projects.

Community leaders recognized their opportunity to restore monument tide pools and provide valuable educational and recreational opportunities. They

are now actively engaged with the National Park Service and other agencies in tide pool restoration and continued monitoring to assure that future generations can enjoy unimpaired tide pools.

- Channel Islands National Park and Cabrillo National Monument worked with seven other partners from the government, academic institutions, and the private sector as part of a monitoring group, MARINE, to develop and implement a regional program for rocky intertidal monitoring. Comprehensive baseline surveys were conducted. The group also created standardized protocols and developed a centralized database for the regional monitoring data.
- The Channel Islands National Park kelp-monitoring program was expanded to include San Clemente Island through contract with the US Navy.
- Sampling protocols for ongoing reptile and amphibian inventory/monitoring at Santa Monica Mountains National Recreation Area and Cabrillo National Monument followed those developed by Robert Fisher of the USGS, Biological Resources Division and will feed into a broad regional data base of reptile and amphibian distribution throughout mainland southern California
- At Channel Islands National Park, monitoring of reptiles and amphibians on Anacapa Island is being carried out in conjunction with the eradication of rats from that island. Rats were eradicated from East Anacapa in Fall 2001, Middle and West Anacapa will be treated in Fall 2002. The monitoring data is already showing a response by Channel Islands slender salamanders, an endemic species, and side-blotched lizards. Twice as many juvenile salamanders and lizards were found on East Anacapa as on Middle Anacapa. In past years the numbers were comparable between the two islets.
- Vegetation sampling of nearly 200 plots scattered across Santa Cruz Island indicates that there are virtually no areas of the island where the vegetation and habitats are unaffected by feral pigs. Evidence of pig trailing, rooting or scat was seen in nearly every plot. Removal of the pigs from the island should result in remarkable change in the vegetation island-wide. Additional details are contained in the project abstract below:

Santa Cruz Island vegetation inventory: 2002 – 2003

This project is an island-wide survey of the vegetation of Santa Cruz Island, conducted during the growing seasons of 2002 and 2003 (roughly March-July). Over the two years, we will sample the vegetation of the island in about 300 releve plots scattered across the entire island. We are accomplishing this work with significant contributions of time from volunteer botanists. The main objective of the project is to provide a basic quantitative description of the plant communities across all of Santa Cruz Island before pig removal, and to establish the status of populations of several listed plants of the island. We are collecting data to show which species make up the plant communities,

which are the dominant species in each community, where native and exotic plants are abundant, what the vegetation structure is like, and how factors like topography, bedrock geology, slope, aspect, elevation and disturbance affect the vegetation. The information can be used in many ways. Most immediately, it will provide a thorough baseline description of the condition of the island vegetation before pig removal. And, it will provide information needed to select a few sites for intensive long-term monitoring studies of the effects of pig removal on Santa Cruz Island ecosystems. This study is designed so that it can be repeated in the future, to judge island-wide change in the vegetation over long time intervals. In 2002, we sampled 175 plots chosen at random with respect to the vegetation. In 2003, we will focus on rare plant species and particular plant communities under-represented in samples in 2002, including oak groves, riparian areas, springs and seeps and coastal bluffs. Generally, the data support and quantify the community descriptions in Junak et al, 1995, *A Flora of Santa Cruz Island* (Santa Barbara Botanic Garden). We recorded signs of pig disturbance in nearly every plot, and we expect that as pig removal progresses we should see changes all of the plant communities of the island.

Dr. Kathryn McEachern, Research Ecologist, Katie Chess, Botanist, Matthew Barmann, Biotechnician USGS-BRD-WERC, Channel Islands Field Station, Ventura, CA 93001; Steve Junak, Herbarium Curator, Santa Barbara Botanic Garden.

- The ongoing inventory and monitoring of stream conditions at SAMO has already had fairly dramatic results. It is very obvious that streams that go through urban areas are very different than those that are in natural areas. The water quantity is much higher in urban areas, the habitat characteristics and structure of urban streams vary, and the presence of exotics is much greater. This year, the very low rainfall has resulted in reduced or no flow in many mountain streams. However, streams in urban areas are still flowing—some as much as ever—dramatically illustrating the amount of water input from urban land uses. These results are being investigated in greater detail through ongoing monitoring and the information has already been disseminated to the media and other sources. Local environmental groups and other agencies are looking to the NPS for reliable and scientifically credible information on how streams are altered when developments occur within specific watersheds.
- Ongoing carnivore monitoring at SAMO, including monitoring carnivore movements along freeway barriers, has resulted in the re-evaluation of proposed development projects along critical wildlife movement corridors. For example, in the City of Agoura Hills, the local planning commission recommended detailed wildlife corridor impact analyses for development projects located adjacent to a wildlife movement corridor linking park areas between the Santa Monica Mountains and Simi Hills. This recommendation was based on data available from the NPS carnivore monitoring efforts from this and nearby areas.

- Data and analysis from CHIS monitoring program were instrumental in support of the approved listing package for Xantus's murrelet (*Sythliboramphus hypoleuca*).
- Approximately 25% of park waters were designated Marine Protected Areas, no harvest, largely due to CHIS kelp forest and rocky intertidal monitoring. (See below for more details.)

New Marine Reserves approved at Channel Islands National Park. On October 23, 2002, The California Fish & Game Commission approved the agencies' preferred alternative for a network of 11 fully-protected marine reserves in Channel Islands National Park and Marine Sanctuary. The reserves will take effect January 1, 2003 in state waters. The Federal process for phase two in Sanctuary waters will likely take an additional 2-3 years. The park's kelp forest, tide pool, sea bird, and pinniped monitoring programs were instrumental in the design and creation of the reserve network. Without the baseline information they provide, the Commission would not have taken this action. Now, the park will work even more closely with the California Department of Fish & Game, the Sanctuary, and University scientists to measure the performance of the reserves. Additionally, the park will seek new funding to increase marine law enforcement activities, to add more monitoring sites and support additional research into kelp forest dynamics, and to increase marine education and community outreach efforts.

- Rocky intertidal monitoring at Cabrillo National Monument has directly resulted in significant researcher interest in related resource issues. New projects initiated in just the last year include an investigation of the effects of trampling and sand on turf communities (Tonya Huff, Scripps Institution of Oceanography), study of the size and growth rates of owl limpets and a full inventory of Cabrillo's mollusk populations (Dr. Kaustav Roy and students, University of California San Diego), and research into the disappearance of ochre seastars at Cabrillo (Corrina Marote, University of California Los Angeles), lobster life history and habitat use (Dr. Kevin Hovel and students, San Diego State University), and population genetics of surfgrass limpets (Emina Begovich, University of California Berkeley).

V. Reports, Publications and Presentations

Becker, Bonnie. 2002. Using Trace Element Signals in Mytilid Mussel Shells to Determine Larval Sources. (Presentation given at Larval Biology meetings, September 2002, Vigo, Spain and Western Society of Naturalists, November 2002, Monterey, CA.)

Becker, Bonnie. 2001. Rocky Intertidal Monitoring at Cabrillo National Monument. (Presentation given at West by Northwest, March 2001, Seattle, WA; Western Society of Naturalists, November 2001, Ventura, CA; and Scripps Student Seminar Series, December 2001, La Jolla, CA.)

Becker, Bonnie. 2001. Mussels, Lasers, and Marine Reserves. (Presentation given to North County Sierra Club, September 2001, Escondido, CA.)

Engle, J. M. and D. V. Richards. 2001. New and unusual invertebrates discovered at the California Channel Islands during the 1997-1998 El Niño. *Bulletin Southern California Academy of Sciences* 100 (3), 186-198.

Kaustuv Roy, Allen G. Collins, Bonnie J. Becker, Emina Begovic, and John M. Engle. 2002. Anthropogenic impacts and historical decline in body size of rocky intertidal gastropods in southern California. *Ecology Letters* (in press).

McEachern, K. and K. Chess. 2002. Using vegetation monitoring data to develop a commonness index for the NPSpecies database at Cabrillo National Monument, San Diego County, California *NPS Park Science* (in review).

Ng, S.J., J. Dole, R.M. Sauvajot, S.P.D. Riley, and T. Valone. In review. Culverts, tunnels and underpasses beneath highways: are they wildlife corridors? *Biological Conservation* (in review).

Richards, D. V. and J. M. Engle. 2001. New and unusual reef fish discovered at the California Channel Islands during the 1997-1998 El Niño. *Bulletin Southern California Academy of Sciences* 100(3) 175-185.

Riley, S.P.D., Sauvajot, R.M., T.K. Fuller, E.C. York, D.A. Kamradt, C. Bromley, and R.K. Wayne. In press. Effects of urbanization and habitat fragmentation on bobcats and coyotes in southern California. *Conservation Biology*.

Rogers-Bennett, Laura, Peter L. Haaker, Konstantine A. Karpov and David J. Kushner. 2002. Using spatially explicit data to evaluate marine protected areas for abalone in southern California. *Conservation Biology* 16 (5):1308-1317.

Schroeter, Stephen, Daniel C. Reed, David J. Kushner, James A. Estes and David S. Ono. 2001. The use of marine reserves in evaluating the dive fishery for warty sea cucumber *Parastichopus parvamensis*, in California U.S.A. *Can. J. Fish. Aquat. Sci.* 58:1723-1781

Schwemm, Cathy, Paige Martin, Dirk Rodriguez, and Tim Coonan. 2002. Mice, seabirds, and vegetation on Santa Barbara Island: The value of monitoring data for ecosystem restoration. (Poster at Ecological Society of America 2002 Annual Meeting, Tuscon, AZ, August 2002.)

Schwemm, Catherin A. and Paige L. Martin. In prep. Assessing the effects of predation by deer mice (*Peromyscus maniculatus elusus*) on Xantus's murrelets (*Sythliboramphus hypoleuca*) on Santa Barbara Island, California; Analysis of long-term monitoring data.

York, E.C., T.L. Moruzzi, T.K. Fuller, J. Organ, R.M. Sauvajot, and R.M. DeGraff. In press. Description and evaluation of an inexpensive remote camera and triggering system for monitoring carnivores. Wildlife Society Bulletin.

VI. Status of Park Vital Signs Monitoring

The following table shows the number of parks with ongoing and planned monitoring in the Mediterranean Coast Network. Parks with monitoring funded with both NRC and non-NRC funds are listed in both categories.

	Air Quality	Water Quality	Water Quantity	Geologic Resources	Plants	Animals	Landscape Characteristics	Components not yet determined
Planning and Design								
# parks monitoring w/ NRC funding	0	3	1	0	2	2	1	3
# parks monitoring w/ other funding	1	3	1	0	1	1	0	3
Protocols Implemented								
# parks monitoring w/ NRC funding	0	0	0	0	2	2	0	0
# parks monitoring w/ other funding	1	0	0	0	1	2	0	0
Analysis/Synthesis Available								
# parks monitoring w/ NRC funding	0	0	0	0	0	0	0	0
# parks monitoring w/ other funding	0	0	0	0	1	1	0	0

VII. Budget

Budget Narrative:

FY2002

In FY 2002, the network received \$265,600 from the NPS Service-wide I&M program for biological inventories. These funds were used to initiate bat, invasive exotic plant species, and rare and sensitive plant species inventories at all network parks. CHIS began an inventory of reptiles and amphibians. Funds are also allocated for network coordination. With separate funding, CABR initiated an inventory of small mammals.

Vital Signs monitoring and water quality funding for 2002 (\$152,000 and \$76,000 respectively) was allocated toward salary and training for monitoring technicians for inventory/monitoring projects, a Vital Signs monitoring coordinator, and a water quality monitoring coordinator.

A network monitoring coordinator was hired late in FY 2002. Funds originally allocated for coordinator salary (i.e. lapse salary) were spent on CHIS prototype monitoring protocol revisions and implementation, eliminating a backlog for CABR tidepool monitoring slide scoring, additional funding for the CABR I&M technician, SAMO technician support for ongoing I&M projects, I&M related travel expenses (national workshop in August, ESA poster presentation), and I&M web page development. As budgeted, vital signs funds were also spent on monitoring technicians for CABR and SAMO, vehicle expenses, travel and training, monitoring coordinator relocation, and miscellaneous baseline inventory needs.

The 1992 base increase for the CHIS prototype monitoring program was \$622,000. In FY 2002, about \$698,000 was spent on the program, including about \$76,000 of park funds. The funds were spent largely on salary for the program managers, field biologists and technicians, GIS support and administrative support. Approximately \$93,000 was spent on operations, equipment, and travel.

The water quality monitoring coordinator was not hired (this position is expected to be filled in FY 2003) and the funds budgeted for salary were spent on surveys of stream characteristics at SAMO, an agreement to support a water quality monitoring workshop in FY 2003, data management salary, water quality testing on Santa Rosa Island, lab analysis for ongoing water quality projects, vehicle support and equipment for ongoing water quality monitoring projects.

Exact accountings of park and other funds spent on inventory and monitoring projects were not available in time for this report, but a conservative estimate for the network is that at least \$553,918 was spent on the I&M program from non-I&M sources, and approximately \$547,656 was spent outside the NPS through agreement with the USGS and other agencies.

FY2003

In FY 2002, the network will receive remaining inventory funds of \$169,932 from the NPS Service-wide I&M program for biological inventories. Projects scheduled for FY 2004 and some projects scheduled for FY 2003 are unfunded or under-funded. The network will continue to

seek additional funding sources to implement unfunded projects. The Biological Inventory funds will be used to continue exotic plant and rare/sensitive plant species surveys at all three parks. An intertidal/subtidal fish survey will be initiated at CABR and a stream/lagoon fish survey started at SAMO. SAMO and CABR will conduct a raptor survey. Inventory funds will also support a network inventory coordinator part-time. With outside funding, SAMO will begin a survey of small mammals.

The network will receive its full Vital Signs monitoring and water quality funding in FY 2003 (\$302,000 and \$76,000 respectively). I&M funding will be allocated toward salary and training for monitoring technicians for inventory/monitoring projects at SAMO and CABR, a network data management specialist (student trainee), a Vital Signs monitoring coordinator, water quality monitoring coordinator, I&M related training and travel and equipment and supplies.

CHIS will spend approximately \$100,000 of non-I&M park funds on I&M in FY 2003. The amount to be spent by CABR, SAMO and other NPS and outside sources was not available when this report was submitted. It will likely be similar to that spent in FY 2002 with additional to be spent on salary increases. Approximately \$120,086 will be spent outside the NPS through agreement with the USGS and other agencies.

Budget Summary

FY02 Admin Report

Network: Mediterranean Coast

Category:

<i>Description</i>	<i>\$ Amount</i>	<i>\$\$ Source</i>	<i>Expense Type</i>	<i>Comments</i>
Funds for CABR tidepool workshop	\$3,000.00	Other Partners		Cabrillo Marine Institute
SAMO vehicle support for monitoring	\$6,000.00	Park or Regional \$\$		
Subtotal	\$9,000.00			

Category: 1_Income

<i>Description</i>	<i>\$ Amount</i>	<i>\$\$ Source</i>	<i>Expense Type</i>	<i>Comments</i>
CHIS funds expended on I&M	\$76,000.00	Park or Regional \$\$		
Funds for CABR tidepool workshop	\$3,000.00	Other Partners		Cabrillo Marine Institute
Biological Inventory program	\$265,600.00	I&M - Biol. Inventory \$\$		
Network coordination, etc.	\$22,500.00	Park or Regional \$\$	NPS	Denise Kamradt for time spent on I&M
SAMO/Regional project funds expended on I&M	\$70,000.00	Park or Regional \$\$		SAMO monitoring technicians
Prototype funds added to park base in 1992	\$622,000.00	Prototype Monitoring \$\$		
Salary for SAMO time on vegetation map	\$7,727.00	Park or Regional \$\$	NPS	Salary for John Tiszler and Denise Kamradt
Funding for vegetation mapping at SAMO	\$371,743.00	Fire Program/FirePro		
Water Quality Monitoring program	\$76,000.00	WRD - WQ Monitoring		
Vital Signs Monitoring program	\$152,000.00	I&M - VS Monitoring \$\$		
Funds for MARINE survey	\$1,991.00	Other Partners		Cabrillo Marine Institute
Subtotal	\$1,668,561.00			

Category: 2_Personnel

<i>Description</i>	<i>\$ Amount</i>	<i>\$\$ Source</i>	<i>Expense Type</i>	<i>Comments</i>
Vegetation mapping field crew	\$40,624.00	Fire Program/FirePro	NPS	SAMO vegetation map
Salary for Cathy Schoonmaker	\$5,000.00	I&M - VS Monitoring \$\$	NPS	SAMO monitoring technician (herp monitoring)
Salary for Marti Witter (0.06 FTE)	\$3,736.00	Fire Program/FirePro	NPS	SAMO vegetation map - Fire Ecologist
Salary for John Tiszler (0.06 FTE)	\$3,977.00	Park or Regional \$\$	NPS	SAMO vegetation map - Plant Ecologist

Salary for SAMO technicians	\$49,000.00	WRD - WQ Monitoring	NPS	Partial salary for Cass Bromley, Piper Roby, Kim Asmus to support Stream Assessment, Herp
CHIS water quality testing on Santa Rosa	\$8,000.00	WRD - WQ Monitoring	NPS	CHIS technician support for Santa Rosa monitoring
Salary for Robert Taylor (0.15 FTE)	\$9,715.00	Fire Program/FirePro	NPS	SAMO vegetation map - Fire GIS Specialist
Salary for Lane Cameron	\$16,262.00	I&M - VS Monitoring \$\$	NPS	Salary for monitoring coordinator
Salary for CHIS marine monitoring program	\$279,541.00	Prototype Monitoring \$\$	NPS	Richards (Supervisor/rocky intertidal), Martin (seabirds), Kushner (kelp forest), Lerma, (kelp forest/rocky intertidal)
Salary for Melinda Lucht	\$1,897.64	I&M - Biol. Inventory \$\$	NPS	SAMO exotic/rare plant inventory
Salary for Tarja Sagar	\$8,619.88	I&M - Biol. Inventory \$\$	NPS	SAMO exotic/rare plant inventory
Overtime for admin assistant	\$86.31	I&M - Biol. Inventory \$\$	NPS	SAMO exotic/rare plant inventory
GIS intern (Thomas Hartman)	\$120.00	I&M - VS Monitoring \$\$	NPS	Salary for GIS assistance
Salary for Denise Kamradt (0.3 FTE)	\$22,500.00	Park or Regional \$\$	NPS	Inventory and monitoring coordination
Salary for CHIS terrestrial monitoring program	\$223,235.00	Prototype Monitoring \$\$	NPS	Coonan (Supervisor), Dye (land birds), Rodriquez (vegetation)
Salary for Denise Kamradt (0.05 FTE)	\$3,750.00	Park or Regional \$\$	NPS	SAMO vegetation map
Salary for Thomas Hartman	\$4,711.33	I&M - VS Monitoring \$\$	NPS	Web developer
Salary for Lena Lee	\$30,934.32	I&M - VS Monitoring \$\$	NPS	Salary for data management trainee
Salary for Lena Lee	\$1,274.28	WRD - WQ Monitoring	NPS	Data management trainee
Salary for Tiffany Luas	\$38,500.00	I&M - VS Monitoring \$\$	NPS	CABR I&M technician
Salary for Jennifer Weist	\$2,721.38	I&M - Biol. Inventory \$\$	NPS	SAMO exotic/rare plant inventory
Salary for CHIS monitoring GIS support	\$64,752.00	Prototype Monitoring \$\$	NPS	Schwemm (monitoring GIS)
Salary for CHIS monitoring administration	\$38,267.00	Park or Regional \$\$	NPS	Morales
SAMO monitoring technicians (3)	\$70,000.00	Park or Regional \$\$	NPS	Approximate amount for SAMO portion of monitoring technicians
Salary for Denise Kamradt (0.4 FTE)	\$27,560.56	I&M - Biol. Inventory \$\$	NPS	Inventory coordinator
Subtotal	\$954,784.70			

Category: 3_Coop. Agreements

<i>Description</i>	<i>\$ Amount</i>	<i>\$\$ Source</i>	<i>Expense Type</i>	<i>Comments</i>
SAMO exotic/rare plant inventory	\$3,454.40	I&M - VS Monitoring \$\$	NPS	Resource Conservation District, SMMs
CABR bat survey	\$5,000.00	I&M - Biol. Inventory \$\$	USGS	USGS-BRD, WERC (San Diego Field Station)
CABR exotic/rare plant inventory	\$8,550.00	I&M - Biol. Inventory \$\$	Univ_Non-CESU	San Diego State University, Dr. John O'Leary
CHIS vegetation monitoring reanalysis & sample design	\$5,500.00	I&M - VS Monitoring \$\$	Other non-Federal	Student Conservation Association research associate
SAMO bat survey	\$34,986.00	I&M - Biol. Inventory \$\$	Other Federal	Maturango Museum

Network water quality monitoring workshop	\$7,015.00	WRD - WQ Monitoring	Other non-Federal	Resource Conservation District, SMMs
CABR funding for MARINE comprehensive survey	\$1,991.00	Other Partners	Other Federal	
CABR tidepool monitoring workshop`	\$3,000.00	Other Partners	Other non-Federal	
CHIS herp/bat inventory	\$78,500.00	I&M - Biol. Inventory \$\$	USGS	USGS-BRD, FRESC (Colorado Plateau Field Station)
CHIS exotic/rare plant survey	\$8,317.00	I&M - Biol. Inventory \$\$	Other non-Federal	Santa Barbara Botanic Garden, Steve Junak
CHIS/CABR plant voucher processing	\$2,807.00	I&M - Biol. Inventory \$\$	USGS	IA, USGS-BRD, WERC (Channel Islands Field Station)
CHIS exotic/rare plant survey	\$49,805.00	I&M - Biol. Inventory \$\$	USGS	USGS-BRD, WERC (San Diego Field Station)
SAMO exotic/rare plant inventory	\$16,000.00	I&M - Biol. Inventory \$\$	Other non-Federal	Resource Conservation District, SMMs
Subtotal	\$224,925.40			

Category: 4_Contracts

<i>Description</i>	<i>\$ Amount</i>	<i>\$\$ Source</i>	<i>Expense Type</i>	<i>Comments</i>
CHIS weather program data integration	\$10,000.00	I&M - VS Monitoring \$\$	Other non-Federal	Need contractor name
Photo Interpretation	\$299,331.00	Fire Program/FirePro	Other non-Federal	SAMO vegetation map - ESRI (AIS) contract
CABR tidal photoplot scoring	\$2,000.00	I&M - VS Monitoring \$\$	Other non-Federal	Need contractor name
CHIS weather program technical review`	\$5,000.00	I&M - VS Monitoring \$\$	Other non-Federal	Need contractor name
CHIS weather program protocol revision	\$3,000.00	I&M - VS Monitoring \$\$	Other non-Federal	Need contractor name
Water quality lab analysis for CHIS	\$2,000.00	WRD - WQ Monitoring	NPS	
Invertebrate analysis for SAMO stream assessment	\$1,400.00	WRD - WQ Monitoring	NPS	
Subtotal	\$322,731.00			

Category: 5_Operations/Equip

<i>Description</i>	<i>\$ Amount</i>	<i>\$\$ Source</i>	<i>Expense Type</i>	<i>Comments</i>
Botany field equipment	\$165.96	I&M - Biol. Inventory \$\$	NPS	SAMO plant vouchers
Botany field equipment (compasses, etc.)	\$571.02	I&M - Biol. Inventory \$\$	NPS	SAMO exotic/rare plant inventory
Battery for I&M laptop	\$208.53	I&M - VS Monitoring \$\$	NPS	Misc. I&M
Botany field equipment (binoculars)	\$2,060.00	I&M - Biol. Inventory \$\$	NPS	SAMO exotic/rare plant inventory
SAMO bat survey equipment	\$5,014.00	I&M - Biol. Inventory \$\$	NPS	Bat detectors, software, field equipment
Botany field equipment (rangefinders)	\$900.00	I&M - Biol. Inventory \$\$	NPS	SAMO exotic/rare plant inventory
Equipment for CHIS bat inventory	\$9,000.00	I&M - Biol. Inventory \$\$	NPS	GPS units, digital camera, bat detectors, supplies
Macro lens	\$567.00	I&M - Biol. Inventory \$\$	NPS	SAMO plant vouchers
Digital camera	\$365.00	I&M - Biol. Inventory \$\$	NPS	SAMO plant vouchers
Reference manuals	\$113.90	I&M - Biol. Inventory \$\$	NPS	SAMO exotic/rare plant inventory

Maps, field guides	\$93.68	I&M - Biol. Inventory \$\$	NPS	SAMO exotic/rare plant inventory
SAMO I&M vehicle lease/mileage	\$963.66	I&M - Biol. Inventory \$\$	NPS	SAMO exotic/rare plant inventory
Wildlife technician office setup	\$2,121.13	I&M - VS Monitoring \$\$	NPS	
Macromedia Studio (web software)	\$740.53	I&M - VS Monitoring \$\$	NPS	
Uniforms, etc.	\$430.00	I&M - Biol. Inventory \$\$	NPS	SAMO exotic/rare plant inventory
Herbarium supplies	\$103.17	I&M - Biol. Inventory \$\$	NPS	SAMO plant vouchers
Office Supplies	\$744.16	Fire Program/FirePro	NPS	SAMO vegetation map
SAMO I&M vehicles	\$2,000.00	I&M - VS Monitoring \$\$	NPS	
Office supplies	\$203.72	I&M - VS Monitoring \$\$	NPS	
Supplies for SAMO stream assessment	\$353.51	WRD - WQ Monitoring	NPS	
Flowmeter for Topanga Creek monitoring	\$4,016.43	WRD - WQ Monitoring	NPS	
Office supplies	\$16.38	WRD - WQ Monitoring	NPS	
PCOrd	\$309.00	I&M - VS Monitoring \$\$	NPS	
Computers and software for vegetation mapping	\$4,587.00	Fire Program/FirePro	NPS	SAMO vegetation map
Monitoring field equipment (spotting scopes)	\$2,244.00	I&M - VS Monitoring \$\$	NPS	
Herbarium equipment and supplies	\$2,208.00	Fire Program/FirePro	NPS	SAMO vegetation map
Field equipment and supplies	\$8,699.00	Fire Program/FirePro	NPS	SAMO vegetation map
Terrestrial monitoring equipment	\$6,950.00	Prototype Monitoring \$\$	NPS	
Equipment for marine monitoring	\$13,559.00	Prototype Monitoring \$\$	NPS	
Vehicles and Utilities for CHIS monitoring program	\$37,679.00	Park or Regional \$\$	NPS	
CHIS GIS operations and equipment	\$7,500.00	Prototype Monitoring \$\$	NPS	
Field vehicles (2) for vegetation mapping	\$2,098.00	Fire Program/FirePro	NPS	SAMO vegetation map
Photo developing	\$5.99	I&M - VS Monitoring \$\$	NPS	Raptor photos
SPSS, SigmaPlot	\$1,683.99	I&M - VS Monitoring \$\$	NPS	
Systat 10.2 upgrade	\$299.00	I&M - VS Monitoring \$\$	NPS	
Dibblee geology maps	\$144.00	I&M - VS Monitoring \$\$	NPS	
Dibblee geology maps	\$365.00	I&M - VS Monitoring \$\$	NPS	
Vehicle for SAMO stream assessment	\$2,325.00	WRD - WQ Monitoring	NPS	
Uniforms, etc.	\$423.73	I&M - VS Monitoring \$\$	NPS	Uniform for Lena
Rental truck for CABR monitoring	\$1,000.00	I&M - VS Monitoring \$\$	NPS	
Ecological methods/stats books	\$500.41	I&M - VS Monitoring \$\$	NPS	
TPD draft fees	\$5.70	I&M - VS Monitoring \$\$	NPS	
Subtotal	\$123,337.60			

Category: 6_Travel

<i>Description</i>	<i>\$ Amount</i>	<i>\$\$ Source</i>	<i>Expense Type</i>	<i>Comments</i>
Relocation travel for Lane Cameron	\$445.19	I&M - VS Monitoring \$\$	NPS	Monitoring coordinator relocation

Lena travel to CABR	\$150.50	I&M - VS Monitoring \$\$	NPS	
Lane Cameron travel to Denver	\$1,257.31	I&M - VS Monitoring \$\$	NPS	NPS I&M meeting
Gary Busted travel to Fort Collins	\$599.40	WRD - WQ Monitoring	NPS	Water Quality Monitoring Workshop
Gary Davis travel to Oakland	\$212.25	I&M - VS Monitoring \$\$	NPS	PWR I&M coordinators meeting
Travel for marine monitoring program	\$9,932.00	Prototype Monitoring \$\$	NPS	
Denise Kamradt travel to Oakland	\$434.50	I&M - VS Monitoring \$\$	NPS	PWR I&M coordinators meeting
Travel for CHIS monitoring administration	\$1,012.00	Prototype Monitoring \$\$	NPS	
Cathy Schwemm travel to ESA	\$1,500.00	I&M - VS Monitoring \$\$	NPS	
Travel for CHIS GIS specialist	\$2,800.00	Prototype Monitoring \$\$	NPS	
SAMO raptor consultant travel	\$268.82	I&M - VS Monitoring \$\$	NPS	
Travel for terrestrial monitoring program	\$13,482.00	Prototype Monitoring \$\$	NPS	
Subtotal	\$32,093.97			

Category: 7_Other

<i>Description</i>	<i>\$ Amount</i>	<i>\$\$ Source</i>	<i>Expense Type</i>	<i>Comments</i>
Relocation expenses for Lane Cameron	\$10,443.10	I&M - VS Monitoring \$\$	NPS	Monitoring coordinator relocation
Subtotal	\$10,443.10			

Budget

Analysis of Expenses by Expense

<i>Funding Source</i>	<i>Total \$\$</i>	<i>NPS</i>	<i>USGS</i>	<i>Other Federal</i>	<i>Univ.-CES</i>	<i>Univ_Non-CES</i>	<i>Other</i>
Fire Program/FirePro	\$371,742	\$72,411					\$299,331
I&M - Biol. Inventory \$\$	\$265,198	\$61,233	\$136,112	\$34,986		\$8,550	\$24,317
I&M - VS Monitoring \$\$	\$151,448	\$125,948					\$25,500
Other Partners	\$4,991			\$1,991			\$3,000
Park or Regional \$\$	\$176,173	\$176,173					
Prototype Monitoring \$\$	\$622,763	\$622,763					
WRD - WQ Monitoring	\$76,000	\$68,985					\$7,015
Total	\$1,668,316	\$1,127,51	\$136,112	\$36,977		\$8,550	\$359,163

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>
Fire Program/FirePro	\$371,742	\$54,075		\$299,331	\$18,336		
I&M - Biol. Inventory \$\$	\$265,198	\$40,886	\$203,965		\$20,347		
I&M - VS Monitoring \$\$	\$151,448	\$95,528	\$8,954	\$20,000	\$12,255	\$4,269	\$10,443
Other Partners	\$4,991		\$4,991				
Park or Regional \$\$	\$176,173	\$138,494			\$37,679		
Prototype Monitoring \$\$	\$622,763	\$567,528			\$28,009	\$27,226	
WRD - WQ Monitoring	\$76,000	\$58,274	\$7,015	\$3,400	\$6,711	\$599	
Total	\$1,668,316	\$954,785	\$224,925	\$322,731	\$123,338	\$32,094	\$10,443

Expense Totals By Category

<i>Category</i>	<i>SubTotal</i>	<i>Percent</i>
2_Personnel	\$954,785	57.23%
3_Coop. Agreements	\$224,925	13.48%
4_Contracts	\$322,731	19.34%
5_Operations/Equipment	\$123,338	7.39%
6_Travel	\$32,094	1.92%
7_Other	\$10,443	0.63%
Total	\$1,668,316	

Budget Summary

FY03 Work Plan

Network: Mediterranean Coast

Category: 1_Income

<i>Description</i>	<i>\$ Amount</i>	<i>\$\$ Source</i>	<i>Expense Type</i>	<i>Comments</i>
Vital Signs Monitoring program	\$302,000.00	I&M - VS Monitoring \$\$		
Water Quality Monitoring program	\$76,000.00	WRD - WQ Monitoring		
CHIS prototype monitoring program	\$622,000.00	Prototype Monitoring \$\$		
CHIS prototype monitoring program	\$100,000.00	Park or Regional \$\$		
Biological Inventory program	\$169,932.00	I&M - Biol. Inventory \$\$		remaining funds from original \$731,032
	\$0.00			
Subtotal	\$1,269,932.00			

Category: 2_Personnel

<i>Description</i>	<i>\$ Amount</i>	<i>\$\$ Source</i>	<i>Expense Type</i>	<i>Comments</i>
Salary for Tarja Sagar	\$28,000.00	I&M - VS Monitoring \$\$	NPS	SAMO plant monitoring tech, partially funded by inventory
Salary for Tiffany Luas	\$40,000.00	I&M - VS Monitoring \$\$	NPS	CABR monitoring technician
Salary for Lena Lee	\$35,000.00	I&M - VS Monitoring \$\$	NPS	Data management trainee
Salary for Denise Kamradt, ~0.4 FTE	\$29,820.00	I&M - Biol. Inventory \$\$	NPS	Inventory coordinator
Salary for SAMO wildlife monitoring support	\$38,000.00	I&M - VS Monitoring \$\$	NPS	Partial wildlife technician support
Salary for Thomas Hartman	\$1,900.00	I&M - VS Monitoring \$\$	NPS	Web technician
Salary for SAMO technician TBA	\$23,000.00	I&M - VS Monitoring \$\$	NPS	Temporary, GS-05, 0.8 FTE
Salary for J. Lane Cameron	\$78,000.00	I&M - VS Monitoring \$\$	NPS	Network coordinator
Salary for CHIS prototype monitoring program	\$100,000.00	Park or Regional \$\$	NPS	park portion of CHIS I&M salary
Salary for CHIS prototype monitoring program	\$530,000.00	Prototype Monitoring \$\$	NPS	Includes increase for FY03 COLA, etc.
Salary for SAMO stream assessment technician	\$12,000.00	WRD - WQ Monitoring	NPS	
Salary for SAMO stream monitoring support	\$22,500.00	I&M - VS Monitoring \$\$	NPS	Partial stream technician support , partially funded by water quality monitoring
Technician support for SAMO raptor survey	\$4,000.00	I&M - Biol. Inventory \$\$	NPS	Partial funding for NPS techs working on raptor survey
Santa Rosa Island WQ report preparation	\$5,500.00	WRD - WQ Monitoring	NPS	~ 30-35 days, GS-07
Salary for coordinator TBA	\$50,000.00	WRD - WQ Monitoring	NPS	0.5 FTE, GS-11, permanent

Salary for Lena Lee	\$2,000.00	WRD - WQ Monitoring	NPS	Data management for water quality monitoring
Salary for Tarja Sagar	\$14,000.00	I&M - Biol. Inventory \$\$	NPS	SAMO exotic/rare plant survey, position partially funded by VSM
Subtotal	\$1,013,720.00			

Category: 3_Coop. Agreements

<i>Description</i>	<i>\$ Amount</i>	<i>\$\$ Source</i>	<i>Expense Type</i>	<i>Comments</i>
Network conceptual model review	\$4,000.00	I&M - VS Monitoring \$\$	Univ_Non-CESU	Cooperator/contractor TBA
Plant voucher processing for CHIS/CABR	\$2,806.00	I&M - Biol. Inventory \$\$	USGS	IA, USGS-BRD, WERC (Channel Islands Field Station)
CABR intertidal/subtidal fish survey	\$12,000.00	I&M - Biol. Inventory \$\$	Univ_Non-CESU	Agreement/contract TBA
CHIS exotic/rare plant survey	\$56,280.00	I&M - Biol. Inventory \$\$	USGS	IA, USGS-BRD, WERC (Channel Islands Field Station)
Subtotal	\$75,086.00			

Category: 4_Contracts

<i>Description</i>	<i>\$ Amount</i>	<i>\$\$ Source</i>	<i>Expense Type</i>	<i>Comments</i>
SAMO stream/lagoon fish survey	\$20,000.00	I&M - Biol. Inventory \$\$	Other Federal	Contract/agreement TBA
SAMO raptor survey	\$25,000.00	I&M - Biol. Inventory \$\$	Other non-Federal	Contract/agreement TBA
Plant voucher processing for SAMO	\$3,164.00	I&M - Biol. Inventory \$\$	Other non-Federal	
Subtotal	\$48,164.00			

Category: 5_Operations/Equip

<i>Description</i>	<i>\$ Amount</i>	<i>\$\$ Source</i>	<i>Expense Type</i>	<i>Comments</i>
SAMO Monitoring equipment & supplies	\$3,000.00	I&M - VS Monitoring \$\$	NPS	
SRI WQ report printing and supplies	\$500.00	WRD - WQ Monitoring	NPS	
CABR I&M vehicle	\$6,000.00	I&M - VS Monitoring \$\$	NPS	
Network water quality monitoring workshop expenses	\$3,000.00	WRD - WQ Monitoring	NPS	\$6,100 available through FY02 CA with RCD
Bat monitoring detectors	\$1,700.00	I&M - VS Monitoring \$\$	NPS	CHIS bat inventory
Office setup for coordinator	\$2,000.00	I&M - VS Monitoring \$\$	NPS	
Supplies/equipment for SAMO raptor survey	\$1,000.00	I&M - Biol. Inventory \$\$	NPS	
Plant voucher supplies for SAMO	\$200.00	I&M - Biol. Inventory \$\$	NPS	
Operations & equipment for CHIS prototype monitoring program	\$66,000.00	Prototype Monitoring \$\$	NPS	
SAMO VSM workshop expenses	\$5,000.00	I&M - VS Monitoring \$\$	NPS	
SRI WQ lab work	\$1,000.00	WRD - WQ Monitoring	NPS	
Network equipment & supplies	\$2,000.00	I&M - VS Monitoring \$\$	NPS	
SAMO I&M vehicle	\$6,000.00	I&M - VS Monitoring \$\$	NPS	

Equipment/supplies for CABR plant survey	\$1,662.00	I&M - Biol. Inventory \$\$	NPS
Subtotal	\$99,062.00		

Category: 6_Travel

<i>Description</i>	<i>\$ Amount</i>	<i>\$\$ Source</i>	<i>Expense Type</i>	<i>Comments</i>
Training and travel	\$2,000.00	WRD - WQ Monitoring	NPS	National workshops, misc. water monitoring related
Training for Tarja Sagar	\$1,000.00	I&M - VS Monitoring \$\$	NPS	Training for SAMO monitoring technician
Network training & travel	\$5,064.00	I&M - VS Monitoring \$\$	NPS	
Training and travel for CHIS prototype monitoring program	\$26,000.00	Prototype Monitoring \$\$	NPS	
Subtotal	\$34,064.00			

Budget

Analysis of Expenses by Expense

<i>Funding Source</i>	<i>Total \$\$</i>	<i>NPS</i>	<i>USGS</i>	<i>Other Federal</i>	<i>Univ.-CES</i>	<i>Univ_Non-CES</i>	<i>Other</i>
I&M - Biol. Inventory \$\$	\$169,932	\$50,682	\$59,086	\$20,000		\$12,000	\$28,164
I&M - VS Monitoring \$\$	\$302,164	\$298,164				\$4,000	
Park or Regional \$\$	\$100,000	\$100,000					
Prototype Monitoring \$\$	\$622,000	\$622,000					
WRD - WQ Monitoring	\$76,000	\$76,000					
Total	\$1,270,096	\$1,146,84	\$59,086	\$20,000		\$16,000	\$28,164

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 \$\$	\$169,932	\$47,820	\$71,086	\$48,164	\$2,862		
I&M - VS Monitoring \$\$	\$302,164	\$266,400	\$4,000		\$25,700	\$6,064	
Park or Regional \$\$	\$100,000	\$100,000					
Prototype Monitoring \$\$	\$622,000	\$530,000			\$66,000	\$26,000	
WRD - WQ Monitoring	\$76,000	\$69,500			\$4,500	\$2,000	
Total	\$1,270,096	\$1,013,720	\$75,086	\$48,164	\$99,062	\$34,064	

Expense Totals By Category

<i>Category</i>	<i>SubTotal</i>	<i>Percent</i>
2_Personnel	\$1,013,720	79.81%
3_Coop. Agreements	\$75,086	5.91%
4_Contracts	\$48,164	3.79%
5_Operations/Equipmen	\$99,062	7.80%
6_Travel	\$34,064	2.68%
Total	\$1,270,096	