

Big Cypress National Preserve Student Conservation Association



2001 Big Cypress Restoration Corps Project Summaries



DEPARTMENT OF INTERIOR
NATIONAL PARK SERVICE

BIG CYPRESS NATIONAL PRESERVE STUDENT CONSERVATION ASSOCIATION

**BIG CYPRESS RESTORATION CORPS
2001 PROJECT SUMMARIES**

April, 2001

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United States Department of the Interior

NATIONAL PARK SERVICE
Big Cypress National Preserve
HCR 61, Box 110
Ochopee, Florida 34141-9710

A34 (BICY)

April 23, 2001

Student Conservation Association
Birdon Road
Ochopee, Florida 34141

Dear Interns and Staff:

I could never adequately express the value of the contribution that all of you have made this year to Big Cypress National Preserve (BICY) and therefore to our national heritage. What we have embarked upon here at BICY is nothing less than one of the greatest restoration efforts in the history of the National Park Service (NPS). At this time, we are not only restoring the natural resources that have suffered damage as a result of off road vehicle usage, but also the concept of this preserve and what level of protection has been mandated by the Congress. Your part in that effort as both an organization and as individuals is central to the success of the entire program.

When I have the great pleasure of seeing you all working in the field and listening to you express your concern and obvious dedication to protecting the environment it reminds me of the three things I always focus on when I speak or write. Those three things are the future, the future and the future. I am always concerned about the future for the resources we protect. I try to plan for the future of the organization (the NPS). I also focus on the future of the people who will carry on this honorable work when today's stewards are long gone.

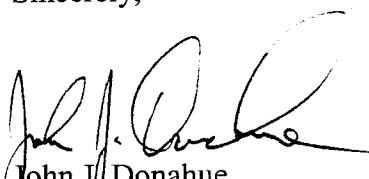
Meeting all of you and seeing the fruits of your efforts has given me great hope for that future. I take great pride in knowing that we at BICY have had some part in assembling all of you into the effective corps that you have become. I find solace in knowing that perhaps some of you will join the NPS and wear the gray and green uniform for the next thirty or forty years. I am also inspired to know that there are young people such as yourselves, who are filled with the missionary zeal for protecting and preserving these "fountains of inspiration for the soul of mankind," as John Muir once put it.

I have always believed that of all the things a manager may do that contributes to our mission, the most critical is to help find that people who will replace today's stewards. I am very pleased to tell you all that you have confirmed my belief that our mission is safe in the hands of the next generation. I look forward to the day when we will hand the

reins of these parks, seashores, preserves and historical sites over to all of you to manage. I encourage you to continue training yourselves in your sciences and arts, but never to forget the spiritual beliefs that have drawn you to this work.

I thank you on behalf of the National Park Service, but also on behalf of resources who can not speak for themselves. I urge you to add your voice and your future efforts to those of John Muir, Gifford Pinchot, Stephen Mather and Horace Albright. Keep on being one of those people who makes a difference and the generations that follow yours will be as proud of you as we all are of those nineteenth century prophets who created the national parks.

Sincerely,



John J. Donahue
Superintendent



changing lives through service to nature

Since 1957

Dear Reader,

".... from the road and maybe even on a map, this Preserve and the surrounding land do not project its true wealth. One has to get to know BICY interior. When you come home from work and watch the sunset behind cabbage palms, slash pine and saw grass, you want nothing more than to preserve it." The following pages of this document demonstrate that these words from one of the interns have most definitely been turned into action.

The Student Conservation Association (SCA) is dedicated to the mission of building the next generation of conservation leaders by providing opportunities to serve nature in the most hands on way. In partnership with the National Park Service, thirty SCA interns were brought to Big Cypress National Preserve to work and live together during the winter of 2001. They were drawn to this project for a variety of reasons: for adventure, to develop skills and contacts, to interact with other like-minded individuals. But there is one reason that they all share – a love of nature and the understanding that sometimes it takes hard work to protect and even understand what you love. The SCA/Big Cypress project originated as part of a strategy by the National Park Service to mitigate the effects of long term ORV use across sensitive areas of the preserve. It was hoped that the interns would assist in restoring the wilderness character of the preserve while still allowing low impact access for ORV use, hunting, and fishing. The actual work these interns performed was broader than this original intent, but remained focused on taking the initial cautionary steps of restoring an ecosystem. They learned it will take time, that resources are not always easily available, that it requires cooperation and teamwork, and that the goals are not always clear and agreed upon.

This document provides a brief description and view into the numerous projects the interns were involved in across the five months they spent working together. The accomplishments and impact have been substantial, and hopefully both the land and those who enjoy it will reap the benefits.

David Critton
Program Director
April 2001

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**U.S.G.S. Biological
Resource Division:
Fire Ecology
Research**

The goal of the Fire Ecology Research project is to help determine the effects of prescribed fire on plants in pinelands. Wildfires are a pivotal aspect of Southwestern Florida's ecosystem, but as fuel loads increase, those naturally and human-

caused fires build up a potential to become unmanageable. Therefore, it is important to have scheduled prescribed burns to reduce fuels. The results and conclusions of the research are intended to aid fire crews in Big Cypress National Preserve and other land managers in South Florida in planning prescribed burns more optimally.

The project, a long term study that was designed by Dr. Jim Snyder of USGS, consists of six different burn regimes that vary on length of time between burns -- three or six years -- and also season of prescribed burn. Besides the variance in fuel moisture and weather, each of the three seasons simulates a different type of fire: the winter burns generally represent arson fires and the spring and summer burns represent wildfires.

Two SCA interns at a time work on a crew with three USGS employees, performing mostly field research that is conducted in the Pinelands at Raccoon Point.

By periodically identifying plant species in vegetation plots as well as calculating the percent cover of each plant in the plots, the influence of fires can be monitored with respect to the



regrowth and changes in diversity of native and exotic species. The interns collect data and aid in the identification process. This is a tedious process due to the fact that the study consists of eighteen units with five vegetation plots in each unit.

Two of the interns witnessed the effects of fire first hand when one unit was burned in early February. For this burn, fuel samples were taken at each vegetation plot before and after the fire. The difference in results represents the fuel consumption by the fire, signifying the intensity of the fire in certain areas; this was also demonstrated by temperature plates that the interns set up before and collected after the burn in order to record the temperature of the fire. Additionally, pre- and post-burn analyses were conducted on the tree plots in the unit. This task involves measuring the diameter at breast height (DBH) of pines, recording the height of char occurring on the tree trunks, determining the scorch and crown damage of pine needles, and assessing tree mortality.



In addition to field research, interns have been assisting the team in improving the quality of the project with independent tasks. They have taken the GPS points of every plot in the project in order to produce accurate maps and locations of each unit. Those working on the project have also identified, mounted, and labeled specimens to improve the Preserve's herbarium.





Fire Effects

The fire effects interns at Big Cypress National Preserve have many interesting, diverse, and important jobs that assist the Fire Effects crew. These jobs, in turn, help the Preserve to observe and predict fire behavior in a variety of ways. Twice daily, weather observations are obtained from the Preserve's manual and remote weather stations and this information is entered into the weather management system. This helps forecast possible hazardous weather conditions that may affect wildfire behavior and suppression

tactics. Other duties include maintaining and repairing the Preserve weather stations and preparing weather reports and forecasts for the use of the Preserve fire crew. Interns also aid in installing and preparing photo points throughout the Preserve. These photos help to "tell the story" of prescribed fire by documenting an established area as it goes through the various phases of pre- and post-burn activity. By installing vegetation plots, the fire effects crew can inventory the plant life in a specific area to see how burning affects plant diversity. Fuel samples are obtained and measured to help the effects crew determine moisture conditions throughout the Preserve.

In addition to these tasks, the interns are also members of the Preserve's wildfire suppression crew. This means that the interns will assist the fire crew in the event of wildfires, but also help with the operation and maintenance of fire vehicles, pumps, and other tools.



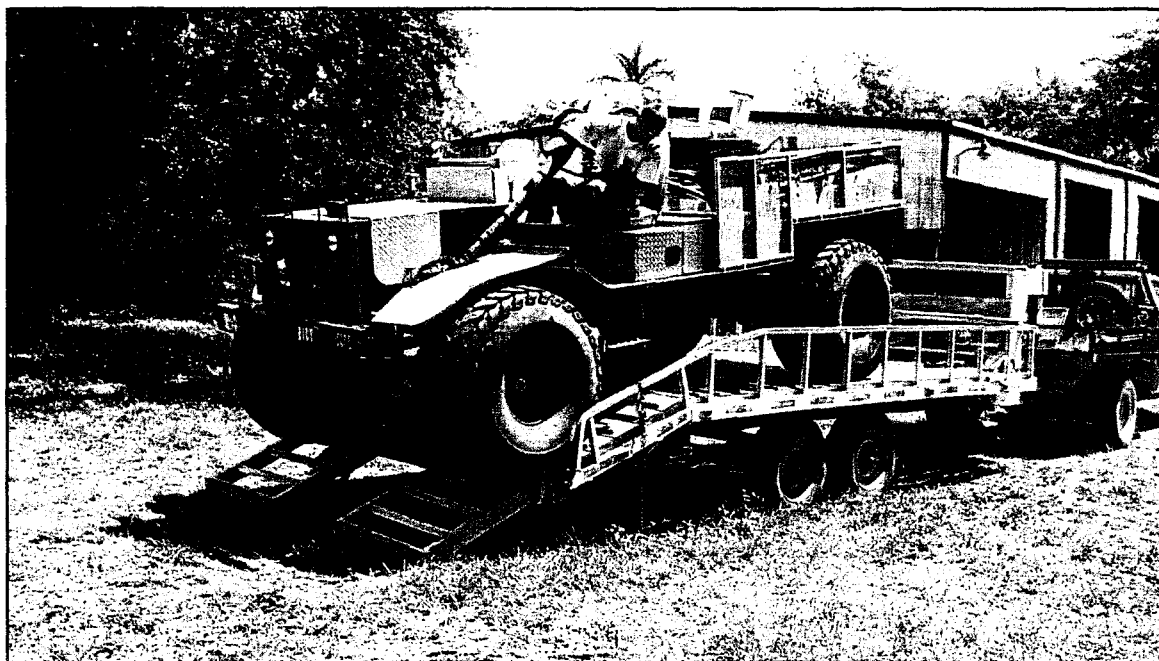


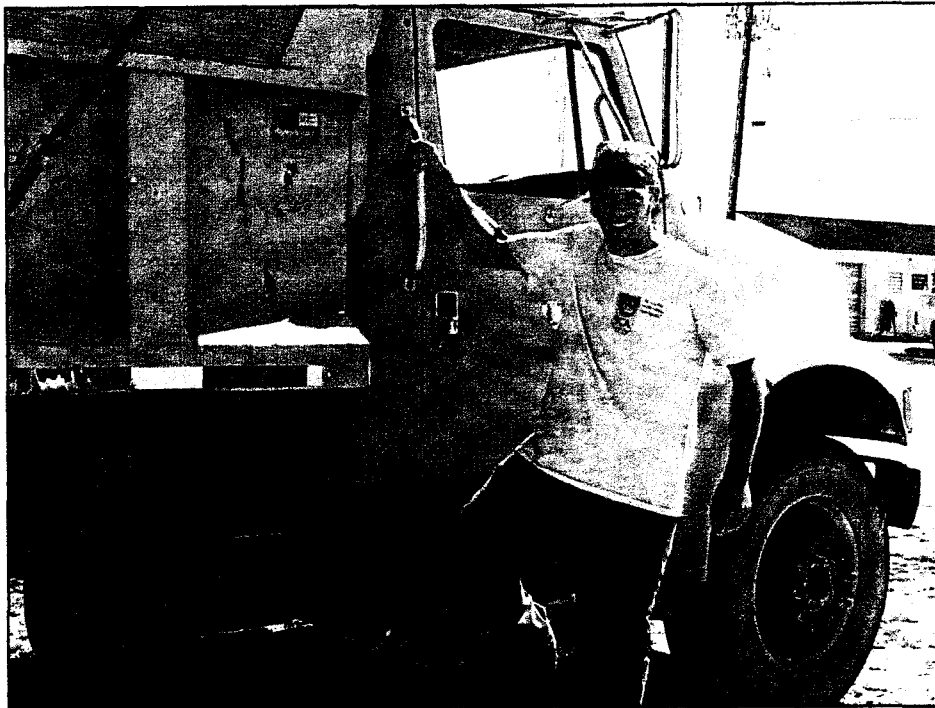
Wildland Fire Crew

Wildland firefighting is an integral part of managing our public lands. Wildfires, a natural phenomenon, rejuvenate vegetative communities, clear dense growth, and spur new growth in its wake. As the wildland/urban interface becomes more prevalent, there is a greater threat to structures, personal property, and lives if a fire gets out of hand. Firefighters are depended upon to control these fires and ensure the safety of those they threaten. As part of the Big Cypress National Preserve fire crew, interns are given the

opportunity to assist in fire operations for 4-5 weeks. The Fire Management Division presented a one-week fire-training course, certifying all thirty SCA interns with basic firefighting credentials. Interns are stationed at either Oasis or Deep Lake fire stations, and are dispatched to fires according to proximity and severity of conditions. This could include anything from pre-suppression or mop-up to initial attack. When not fighting fires, interns are continuously trained on engine/buggy use and maintenance, hose laying, drafting, tool use, and suppression techniques. Interns are also expected to perform one hour of physical training daily in order to endure the rigorous physical demands of firefighting.

The fire crew position has not only certified interns to fight wildland fire, but also has exposed them to the physical and mental challenges that firefighting holds. Though important lessons are learned in tactical operations, they also learn that crew cooperation, communication, and safety are just as significant in successfully suppressing fire. This position is extremely beneficial because it gradually introduces people to the extremely rigorous and demanding field of fire suppression.





ORV Trail System / General Maintenance

The SCA's involvement with the maintenance department at Big Cypress National Preserve includes a wide variety of tasks. Fifty percent of the work relates to the task of building ORV trails at the Concho Billy trail site. Interns were involved with the following aspects of this project:

- Promoting sheet flow by raking/throwing stray rocks back into the trail for aesthetic purposes. This is also accomplished by knocking down small rock embankments in tight places machinery could not reach.
- Assisting with the laying of Geoweb, which is a soil stabilizing and compaction-reducing plastic webbing that is buried under the trails. Geoweb is placed on the wet areas of designated off-road vehicle (ORV) trails. It is designed to prevent rutting, promote sheet flow for constant surface level, and preserve the integrity of the trail so that people will not have the desire to ride their vehicles off the designated trails.
- Clearing vegetation from the trail to allow passage of machinery and better designation of the trail
- Covering exposed sections of Geoweb to prevent further damage to its structure
- Operating the crawlers -- construction vehicles -- under various circumstances

The other half of the time spent with maintenance includes, but is not limited to, picking up litter, emptying barrels at various locations in the Preserve, and installing road signs.





Exotic Plant Control

Under the supervision and guidance of William A. Snyder, the Big Cypress National Preserve Vegetation Management Specialist, SCA interns assist with the management of exotic vegetation within the Preserve. Several species of non-native plants have encroached and flourished within Big Cypress National Preserve and pose a potential threat to

native vegetation and the ecosystem balance. Interns perform various duties to assist in the identification and removal of exotic vegetation. Efforts are concentrated on three major species of exotics: *Schinus terebinthifolius* (Brazilian Pepper), *Casuarina spp.* (Australian pine), and *Melaleuca quinquinervia*. Stands of these and some other exotic plants are located from the air by helicopter or from the ground along main roads and then marked on a map by recording the geographic coordinates. Removal and treatment consists of either cutting down or girdling the trees and then spraying them with a herbicide solution that is appropriate for each of the different species. Interns also oversee the activities of the team of contractors removing and treating exotic vegetation to make sure treatment areas are thoroughly covered as well as enter the data collected from each treatment site into a comprehensive database.

SCA interns help in locating previously unknown stands of exotic vegetation and have removed several thousand stems of the three major exotic species within the Preserve. Through a diligent seventeen-year exotic plant control program, utilizing an Integrated Pest Management approach, approximately 17 million exotic plant stems have been treated resulting in a significant reduction of *Melaleuca* and *Casuarina* within the boundaries of Big Cypress National Preserve.





Trespass Camp/Fence Removal

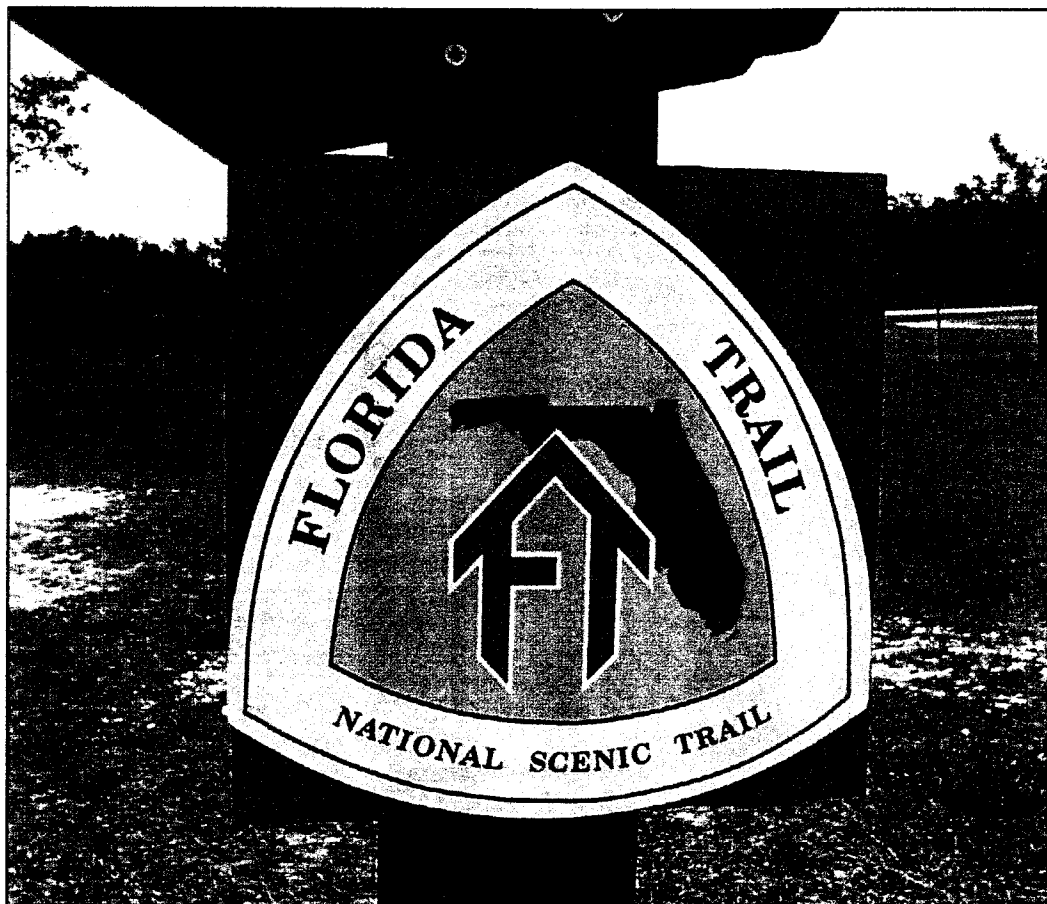
The objective of this project is to remove all unnatural elements of the Preserve for aesthetic and environmental benefit. Crews of six to eight SCA interns and one or two NPS rangers perform labor intensive duties as well as demonstrate problem-solving skills needed in every challenging yet adventuresome project. The early endeavors of this project consisted mainly of the removal of barbwire fence that remained from old cattle ranches and private houses throughout many areas in Big Cypress

National Preserve, especially concentrated on upper Turner River Road and Bear Island. Using wire-cutters, each week the crew removed at least five miles of fence.

The project slowly shifted gears into trespass camp removal. Over the past century there have been hundreds of structures built inside Big Cypress National Preserve in which people resided. When the NPS acquired the land, the people gradually abandoned their homes and left behind the remains. In addition to the structures, these trespass camps include an assortment of items such as appliances, vehicles, fence, and other miscellaneous objects. The camp remnants seem out of place from the natural beauty of a National Preserve. Thus, with the use of a swamp buggy, hay trailer, crowbars, hammers, and an abundance of other tools, many of these sites have been successfully removed while minimizing human impact. The 8,000 lb. winches on the swamp buggies greatly aid in tearing down large housing structures. Due to the fact that work on many backcountry camps is located far from public roads, swamp buggies are especially valuable.

Throughout all this work, the most important result is the satisfaction in removing a camp. Everyone who has worked on the project – whether it is for 4 hours or 4 weeks, collapsing a roof or picking up litter from the backwoods – has enjoyed him or herself. The most rewarding aspect of the project is reflected in seeing, after a long day's work, the eyesore of an abandoned camp restored to a natural area. Group morale and team-work attitude among the rangers and interns are wonderful and contagious.





Florida Trail Marking Project

This project, independently established by an SCA intern, is designed to accomplish the goals of improving navigation along the Florida Trail and providing new GPS points to determine the path of the trail for mapping. Two SCA interns who will be hiking the trail will complete this project. In hope of establishing an easily navigated trail, the SCA interns will be clearing trail with machetes to provide a path that can be followed between blazed markers. The Florida Trail Association has provided the Preserve with small plastic signs that will be hung throughout the length of the trail to aid in establishing the path of the trail. All of this work will be taking place on the 39 mile section of the trail that goes through the Big Cypress National Preserve from Loop Road to Interstate 75. The interns will be hiking an average of eight miles a day for one week to accomplish the goal of marking the trail. The hike will start at the north section of trail at Interstate 75 and head South to Oasis in four days. They will then replenish with supplies and proceed to mark the Loop Road section.

Ranger Lila Jo Roybal and William A. Snyder are overseeing the project and will remain in radio contact with the interns throughout the project. Nina Dupree will be overseeing the supply issues of trail marking equipment. This equipment includes bark scrapers, paint, and paintbrushes for the blazing of the trail as well as other miscellaneous supplies that may be needed to aid in marking the trail. Due to the warm nature of the South Florida climate, water will be supplied by helicopter two days into the project.



Hydrology

Big Cypress National Preserve hydrologist, Bob Sobczak, and his technician, David Moody, have various surface water gauges installed throughout the Preserve. These gauges include PVC pipes, wells, nails in trees, and tops of

rocks. During the wet season, these gauges are used to measure water volume and flow. In order to make accurate assumptions about water volume and flow, it is necessary to know the elevation of the gauge.

It is the goal of the SCA Hydrology team to survey the elevations of these gauges. During the six weeks of the project, sites on Loop Road, Bear Island, Turner River Road, Fakahatchee Strand, Highway 41, and Highway 29 are surveyed. In addition, the team surveys Dr. Jim Burch's vegetation plots at Concho Billy, Deep Lake, Monument Lake, and Oasis.

Elevation is surveyed using the Total Station (Topcon GTS 211D) and Stadia. The team starts at benchmarks, which are known elevations, and then uses turning points to cover the distance to the point that is being surveyed. Upon completion of this project, the crew will have compiled a comprehensive report of the findings. The report will include all data collected, site maps, and final results.





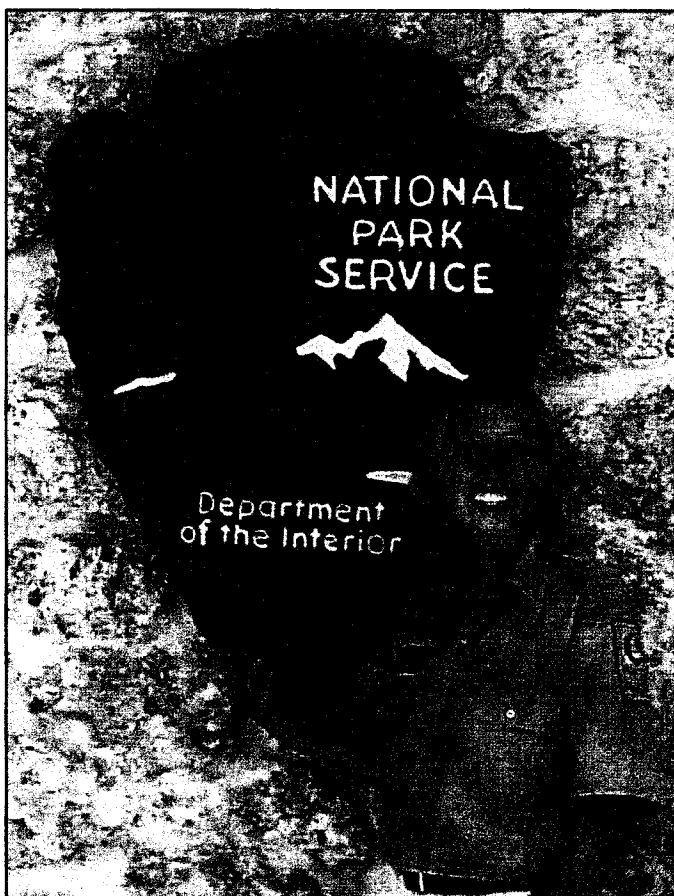
Panther Refuge Trail Construction

The Florida Panther National Wildlife Refuge is adjacent to Big Cypress National Preserve and shares similar goals for preserving unique species. SCA lent a hand to this neighbor by aiding in trail construction. Prior to this project, the refuge has been closed to the public. However, the Refuge is now attempting to maintain public support for the Florida Panther by allowing them to see a representative habitat. The trail is located in a low-impact area of the Refuge

but will still allow public education of this endangered species.

SCA interns built an eight-foot wide loop trail that is 1.25 miles long by clearing roots, rocks, stumps, and debris. The trail was cleared to mineral soil and leveled to make it accessible to all people. Some other projects worked on in the Refuge include removal of the exotic Air Potato and revegetation with native species at the headquarters area of the Refuge.





Visitor Center and Interpretation

The Big Cypress National Preserve Visitor Center has a total of three interpretation interns during the five-month stay of the 30-member SCA crew. The two initial interns who have worked at the Oasis Visitor Center each have spent three days a week there, primarily at the Visitor Center counter but also occasionally helping out with other projects. These activities have included performing off-road vehicle inspections, entering data into the computer, filing, roving around the Visitor Center, sharing local nature information with tourists, answering phone calls, and helping out with weekend activity registration.

The implementation of the new ORV management plan has increased the duties of the Visitor Center employees. The SCA interns behind the counter at Oasis have absorbed some extra work to alleviate a bit of the busy season rush. They have also relieved a bit of the

pressure on the interpretation rangers by assisting them with ORV inspections. The SCA crew arrived when the intense burden of the ORV inspections was waning but still apparent. The interns have studied the native wildlife and local activities and have given a hand mostly by providing information to tourists, personally assisting up to 150 people in one day. The second half of the project is satisfied by one intern working three days a week at the Visitor Center as the tourist season comes to an end.





Trail Marking

The work of the trail marking project is intended to help the Preserve prepare for planning the General Management Plan (GMP) for the Addition Lands north of I75. Vegetation (including exotics) has encroached on many of the roads to the extent that they are impassible to vehicular traffic. To aid with forming the GMP, the Preserve is beginning to survey the resources in the area that will be of great value, and access is a critical part of this process. Fire and law enforcement would also benefit from the maintenance of these roadways. An additional advantage would be for hikers and bicyclists who are currently using these roads.

In the Addition Lands, the interns use historical topographical maps to locate the often overgrown roads. These are then



flagged and marked by taking GPS data points. Detailed maps are then constructed using ArcView GIS. These roads are then cleared using an assortment of hand tools. The crew works in conjunction with the Exotic Plant Control team in order to eradicate invasive plants from the roads more effectively.

Another section of the project is designed to aid in the implementation of the ORV management plan. This includes marking existing trails within the Preserve with NPS employees, who then determine which trails would be appropriate for improvement and entry into the final trail system. The crew has cut, pounded and flagged metal stakes to place along proposed trails.

The crew also has spent considerable time mastering the use of the Trimble GPS unit, downloading data to the computer, and using ArcView GIS software to graphically display the collected data.





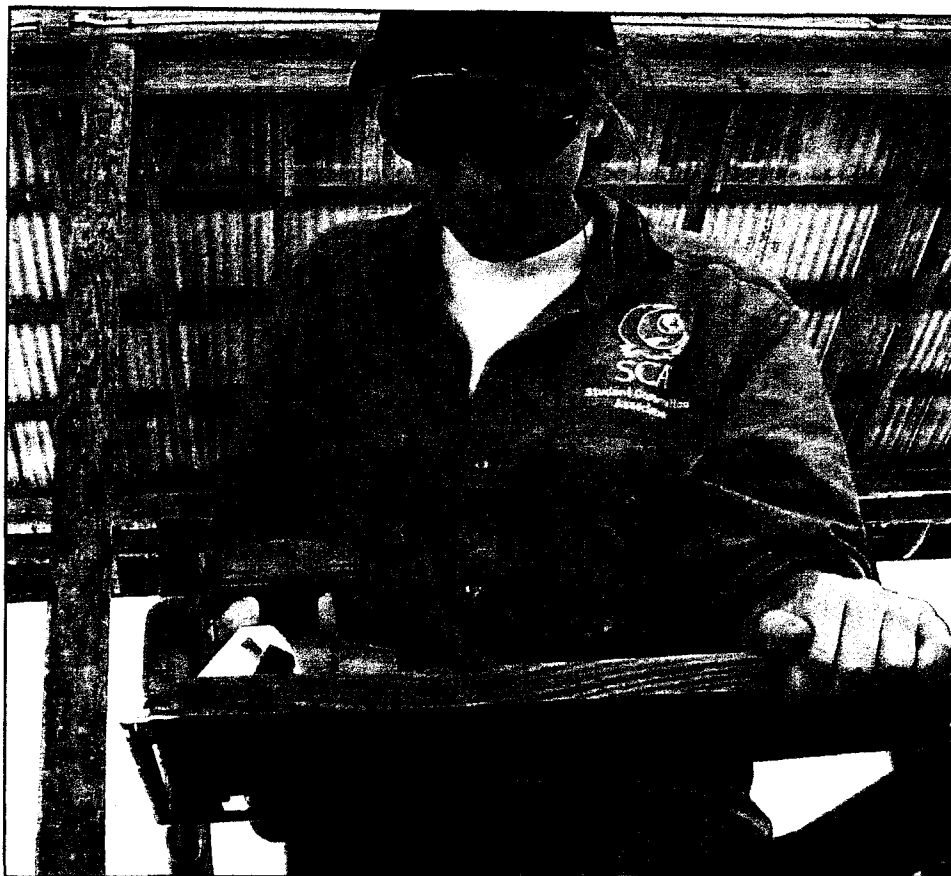
Plant Community Analysis

The plant community analysis project is an exploratory study of the effect of off-road vehicles on plant species in the Preserve. This study involves a crew of four people working two days a week, overseen by

Dr. Jim Burch. Each week these four interns, occasionally accompanied by Dr. Burch, go out to various areas in the Preserve, primarily prairies, and establish 10 x 10 meter plots. In each general area, an attempt is made to set up a plot disturbed by off-road vehicle use and a plot that is undisturbed. Sometimes an intermediately disturbed plot is also established to aid in further analysis. Off-road vehicle impact is typically recognizable by tire ruts and less vegetation. Once the plots are designated, the "line-transect method" is used to determine overall species cover. In this technique, four randomly determined parallel lines across the plots are marked. All species cover along these lines is recorded. The mean species covers for the plots are then calculated by averaging the species covers of the four lines.

The plant community analysis group is scheduled to establish and analyze forty plots upon completion in June. This research is critical to document the changes, if any, in the plant species' varieties and amounts in ORV-impacted areas. Over time, the lasting deterioration and/or recovery of the vegetation in impacted areas could be helpful in helping to formulate reasoning for regulation of off-road vehicle use.





Shade House Construction / Propagation

The purpose of these two connected projects is to aid in the restoration of areas damaged by previous unrestricted ORV use. Human assistance is needed in order to accelerate the recovery of dominant native plant communities in the areas. SCA interns are building a shade house for plant propagation under the direction

of Dr. Jim Burch. This project began with the tearing down of a former shade house that was too small. The new shade house is a 30 ft x 24 ft structure with shade screening on the sides of the building. It is designed to hold thirty tables measuring 5 ft x 2 ft each, also constructed by the interns.

Upon completion of the structure, SCA interns will begin work on the Propagation project. Propagules of native plants are collected from Preserve areas. These plants will eventually be transplanted upon maturation to restoration sites that may benefit from introduction of native plants.





Soils Data Collection

The SCA interns that participate in the soil and periphyton research at Big Cypress National Preserve are working to determine effects of off road vehicles (ORV) usage on the soil.

Numerous sites have been selected throughout the Preserve that indicate a gradient of zero, low, moderate, and high disturbances caused by ORV's. Each site is a ten by ten meter square plot with five randomly selected one by one meter quadrates. Within each of these quadrates, depth-to-caprock and root density are measured and periphyton cover is estimated. The soil profiles are also described within each quadrate. Soil and periphyton samples are taken and further studied in the lab to establish pH, organic content, and percentage of carbonate at each study site. To further characterize each site, the soils data described above will be compared with that of the plant community analysis research. The culmination of this research will provide a more objective understanding of how ORV's affect the Preserve, and provide insight into determining the most effective management scheme.





Big Cypress Restoration Corps 2001, Student Conservation Association

Back row, standing (left to right): Jay Lindsay, William A. Snyder (NPS Liaison), David Critton (Program Director), Jon Goldhammer, Sam West (Field Coordinator), Nelson Bruni, Steve Hester (Assistant Program Director)

Front row, standing: Denise Bacon, Justin Baker, James Wilson, Eric Kline, Matt Melnicki, Mariah Keagy, Heather Freeman (Cook), Amy Livingston, Adam Romary, Kenn Perreault, Pauli Iida

Kneeling: Erin Smithies, Dave Hubbard, Jenny Meisel, Wendi Field, Jen Guest, Elizabeth Wiemels, Bethany Sullivan, Donna Shorrock, Christina Kehas

Sitting: Jessica Schulte, Nick Delzotto, Leslie Van Allen, Matt McNamara, Emily Kolod, Jackie Lucero (Field Coordinator), Karen Castenson, Amanda Kuenzi, Alison Shapiro