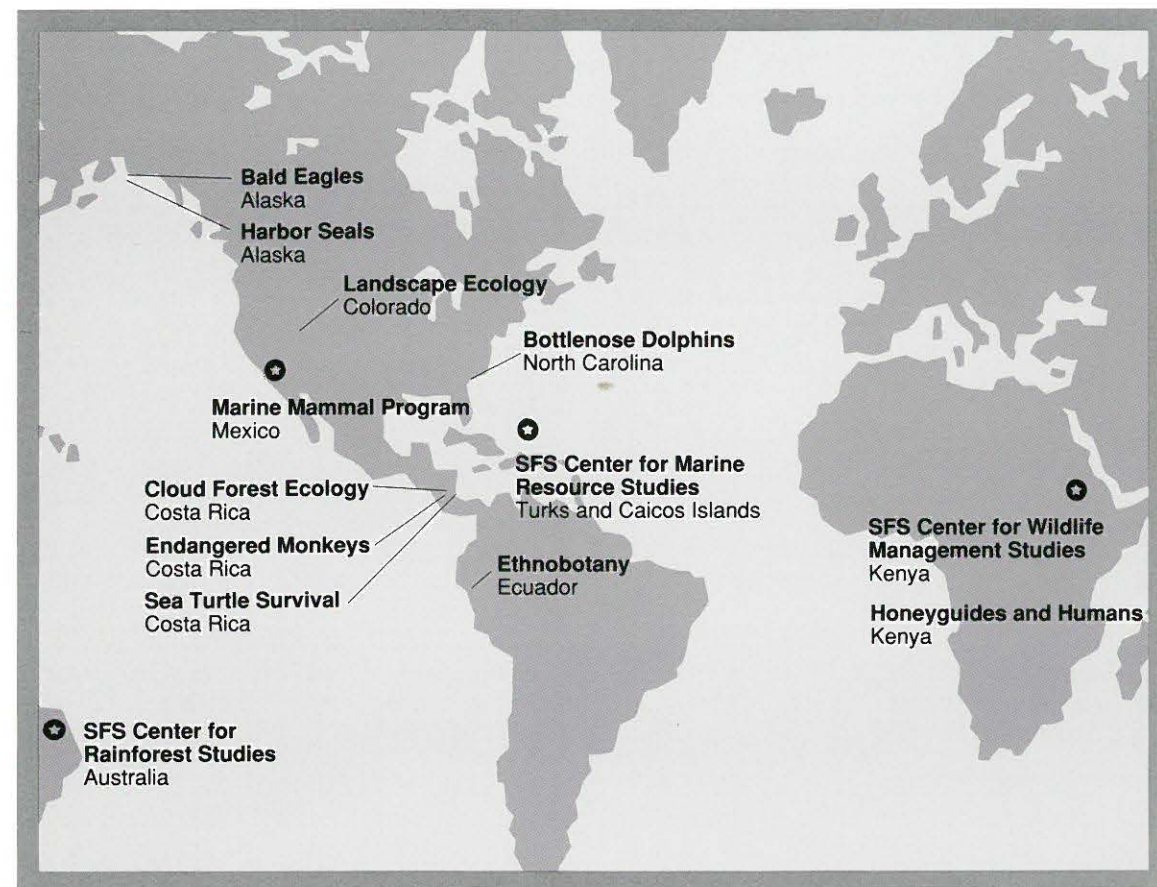


1991  
PROGRAM SITES



**The School for Field Studies**  
16 Broadway  
Beverly, Massachusetts 01915-4436  
Phone: (508) 927-7777  
Fax: (508) 927-5127

**SFS Center for Marine Mammal Studies**  
P.O. Box 270  
La Paz, Baja, California  
MEXICO  
Phone/Fax: 011-52-682-55525

**SFS Center for Marine Resource Studies**  
(South Caicos)  
P.O. Box 22750  
Fort Lauderdale, FL 33335  
Phone/Fax: 011-809-946-3362

**SFS Center for Rainforest Studies**  
Yungaburra, Queensland 4872  
AUSTRALIA  
Phone/Fax: 011-61 7095 3656

**SFS Center for Sustainable Development Studies**  
Apartado 568  
Heredia, COSTA RICA  
Phone/Fax: 011-506-773-278

**SFS Center for Wildlife Management Studies**  
c/o I.W.R.R., Box 47272  
Nairobi, KENYA  
Phone/Fax: 011-254-2-716-584

THE SCHOOL FOR FIELD STUDIES

1991

ANNUAL REPORT



The mission of The School for Field Studies is to provide highly motivated young people from the U.S. and abroad with an excellent practical education in environmental studies, in order that tomorrow's leaders may become more environmentally literate/aware as well as make immediate and future contributions towards the sustainable management of the world's natural resources. A practical education is defined as an education which is action-oriented, experienced-based, capable of being put to good use, manifested in practice, and concerned with voluntary actions and ethical decisions.

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### The School for Field Studies

16 Broadway  
Beverly, MA 01915  
(508)927-7777

The School for Field Studies admits students of any sex, religion, race, color, national and ethnic origin to all the rights, privileges, programs, and activities generally accorded to students of the School and does not discriminate on the basis of sex, religion, race, color, national or ethnic origin in the administration of its educational policies, admissions policies, scholarship and loan programs, and athletic and other School-administered programs. SFS is an affirmative action, equal opportunity institution.

Cover photo: Robert Singer and Deborah Roberts

## 1990-1991 CURRICULUM

### THE CENTER FOR MARINE MAMMAL STUDIES

**Site: Baja, Mexico**  
Fall and Spring Semester Programs:  
*Marine Mammal Biology and Conservation*

### THE CENTER FOR MARINE RESOURCE STUDIES

**Site: Turks and Caicos Islands, Caribbean**  
Fall and Spring Semester Programs:  
*Marine Ecology and Management*  
Summer Courses: (June 18 - July 17;  
July 24 - August 22)  
*Mapping Marine Ecosystems*  
*Coral Reef Management*

### THE CENTER FOR RAINFOREST STUDIES

**Site: Australia**  
Fall and Spring Semester Programs:  
*Biogeography: Patterns of Ecological Diversity*  
Summer Course: (June 28 - August 9)  
*Tropical Deforestation: Threats to Biological Diversity*

### THE CENTER FOR WILDLIFE MANAGEMENT STUDIES

**Site: Kenya**  
Fall and Spring Semester Programs:  
*Wildlife Ecology and Management*  
Summer Courses: (June 18 - July 17;  
July 24 - August 22)  
*Wildlife Management*

### SUMMER SATELLITE COURSES

Session I: June 18 - July 17;  
Session II: July 24 - August 22

- Humpback Whale Ecology**  
*North Atlantic*
- Primate Ecology and Conservation**  
*Costa Rica*
- Landscape Ecology**  
*Colorado*
- Ecology of Endangered Sea Turtles**  
*Costa Rica*
- Tropical Cloud Forest Ecology**  
*Costa Rica*
- Tropical River Ecology**  
*Belize*
- Ethnobotany**  
*Ecuador*
- Ecology of Harbor Seals**  
*Alaska*
- Ecology of Bald Eagles**  
*Alaska*
- Biology and Behavior of Bottlenose Dolphins**  
*North Carolina*

## THE SFS PROMISE

### Students participating in an SFS program will:

- experience the opportunity to make a meaningful personal contribution toward improving the condition and/or sustainable management of the natural resources of the community in which they are studying;
- acquire an approach to problem-solving and decision-making that involves identification and comparison of alternative courses of action and consideration of the social, ethical, political, and biological implication of each;
- develop an integrated understanding of conservation issues that emanates from a case-based study of:
  - ecology;
  - applied science and research techniques;
  - resource management;
  - the role and implications of the cultural context, including the political and economic implications; and
  - the inter-relationships of the above;
- experience opportunities for personal growth and achievement, including:
  - the opportunity to function productively as part of a group;
  - the challenge to achieve at his or her maximum personal potential;
  - the opportunity to pursue and realize extraordinary achievement; and
  - the opportunity to accept responsibility for his or her personal learning and growth.

## Letter from the Chairperson and the President

*We conserve only what we love.  
We love only what we understand.  
We understand only what  
we are taught.*

— Lao-Tzu

In this dictum from nearly three thousand years ago, the Chinese philosopher Lao-Tzu described succinctly the relationship between conservation and education. This relationship is precisely what SFS was founded to explore, as we seek to address the overwhelming need for greater environmental literacy.

As the School completes its tenth year of operation on the forefront of both environmental education and the educational reform movement, we are presented with more questions than answers — and disappointingly few educational models as reference points to which to turn for ideas.

What does it mean to build a truly interdisciplinary case studies-based curriculum? For example, should all courses be taught by all faculty? (How are grades given under such circumstances?) What are the essential elements of an environmental studies program, given that environmental studies has grown in some people's minds to literally encompass nearly all disciplines? And most importantly, how can we impart a sense of urgency about environmental issues without the almost unavoidable sense of pessimism which accompanies it?

The conch catch is down 50% in three years on South Caicos, probably due to overfishing. In Africa, a swelling human population, overgrazing, and drought have caused massive desertification of wildlife rangeland. Meanwhile, Kenya's human population will double in 17 years. Nearly 50 acres of the

planet's rainforests are destroyed every minute. The productivity of North America's oceans have dropped by a third in the last fifteen years — scientists suspect that globally, this may be much greater. These are all critical issues with which our 613 graduates this year have become intimately familiar.

These key resources are the essential building blocks of our children's future, a future to be determined almost exclusively by how well we understand what Lao Tzu had to say so

many centuries ago — how can we be so incredibly shortsighted? Why hasn't there been a groundswell of new environmental education programs to meet this urgent and pressing need for literacy and change? How else can we possibly address these problems if not through education?

Each day at SFS, we are evolving programs which address many of the major environmental crises. Based on what we've learned, we believe that now, more than at any other point in time, environmental education is the single most important key to resolving our common environmental problems.

In response to the growing need for SFS programs, we have built organizational strength and greater effectiveness in our programs by shifting focus from a collection of summer courses to a Center-based organization. This process, begun in 1986, is nearly complete, as the fifth of six eventual Centers opened in Costa Rica in 1991. The majority of SFS students now enroll in an SFS Center program. The Center semester programs are now generating 75% of the School's tuition revenue. The majority of our full time staff now operate out of our Centers, including all

seventeen of our full time faculty positions. This year, we invested over \$250,000 in new physical plant additions to our Centers, and we are committed to an additional investment of \$250,000 in 1992 as we move forward in our plans to eventually acquire permanent homes for all our Centers and our Headquarters.

Additional highlights of the past year include:

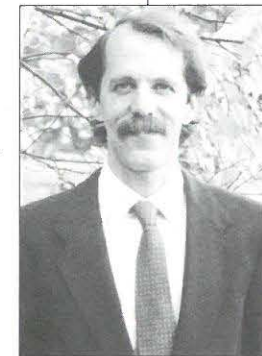
- Enrollment increased 16%, for the 10th consecutive year of growth.
- Four new Affiliates (Clark University, Colby College, Kenyon University, and the University of Miami) joined the current ten SFS Affiliates.
- Total revenue grew by 60%, or approximately \$500,000
- Total fund balances increased over 50%.

The pages that follow outline in more detail the successes of students and staff over the past year. We join the SFS Board of Trustees in thanking this year's 613 graduates, 57 full time staff and faculty, 42 part time faculty, 30 interns, and countless volunteers and friends, for the incredible support each and every one has given the School in 1991. With your continuing help, SFS will be able to continue to practice what Lao Tzu preached.

Sincerely,

*James L. Elder, Jr.*  
James L. Elder, Jr.  
President

*Terry L. Andreas*  
Terry L. Andreas  
Chairperson



(Photo: Barry Canner)



(Photo: James Elder)

## The Center for Marine Mammal Studies, Mexico

**T**he Sea of Cortez has long been recognized for its biological diversity and ecological importance. The geologically young sea supports an abundance of resident and migratory marine mammal species, including fin, humpback, brydes, blue, orca, and gray whales, sea lions and dolphins.

It also provides food and economic resources to the local community by way of a small but steadily growing fishing industry. The rapid growth of tourism and international fishing around the Baja California Peninsula have raised concern for the continued health of these marine ecosystems among the people of the region and the Mexican authorities who have the responsibility for managing some of the most important populations of marine mammals. The Bay of La Paz region, where both human and marine populations are concentrated, has been identified as particularly vulnerable.

SFS's *Center for Marine Mammal Stud-*



*I just returned from what was by far the greatest experience of my life. Learning about the ecology, conservation and management of our marine mammals, and also studying with a group who are just as interested and concerned as I am made the program for me. I plan on continuing marine mammal research.*

— Alison Becket,  
Whittenberg University

(Photo: Caroline Ross)

ies in La Paz, Mexico offers students and faculty outstanding opportunities to work closely with Mexican scientists to collect data on the diverse and abundant marine mammals in the Bay of La Paz. The broad research goal of the Center is to contribute to a marine mammal conservation strategy in the Bay.

To achieve this goal, we have been fortunate to have as a partner and affiliate the Universidad Autonoma de Baja California Sur (UABCS) and specifically to work with Jorge Urban, Director of the Marine Mammal program at UABCS and President of the Mexican Marine Mammal Society. Jorge Urban serves as Scientific Research Coordinator for the Center and coordinates our research with local research goals.

As the world's first year-round field program offering undergraduates training in marine mammal conservation, the Center is making significant contributions to the formation of wise management policies in this resource-rich area. Our program has three specific research objectives: (1) to collect base-line data on diversity, distribution and abundance of marine mammal species in the Bay of La Paz, (2) to assess the affects of human disturbance — boat traffic, fishing activity, development, and pollution — on local marine mammal populations, and (3) to collect base-line ecological data in the Bay of La Paz.

SFS students have benefited tremendously through their close associations with the people of La Paz and the Mexican scientists who have helped the students make meaningful personal contributions toward marine mammal conservation. Significantly, students are combining their data with that of the University and other scientists, and have already begun to see seasonal trends in the distribution and abundance of cetaceans. In 1991, student research continued to add significantly to the understanding of marine mammals in the area. In response to the growing concern for a local sea lion popula-

tion which is coming more and more in contact with the expanding human population, one group of SFS students developed a resource management strategy to minimize the impacts of tourism on sea lions on the



**SFS faculty and students are working with Mexican scientists to provide base-line research on the Baja region's marine mammal populations, essential to their management. In 1991, SFS students sighted the first sperm whales ever recorded inside the Bay of La Paz. (Photo: Steve Swartz)**

island where they breed in the Sea of Cortez. Their project eventually resulted in a cooperative effort on the part of SFS, the University, and a local tour operator to publish and distribute their guidelines to tourists.

Another group developed a cataloguing system for the marine mammals in the Bay as a way to identify stranded marine mammal specimens. This will be useful not only in future SFS courses, but to other researchers as well. Other student projects included an assessment of diversity, distribution and abundance of humpback whales, an analysis of the effects of plastic debris on marine mammals, and an estimation of fish species distribution and abundance in the Bay of La Paz.

In 1991, 53 students participated in two semester programs in *Marine Mammal Biology and Conservation* at the Center. Founded in 1990, SFS's Center for Marine Mammal Studies received critical start-up funding from the **Island Foundation**.

## The Center for Marine Resource Studies: Turks and Caicos

**R**ecent decades have brought tremendous challenges to marine resource managers. Humankind is rapidly depleting ocean resources worldwide, a problem particularly critical in the Caribbean. Many fishing practices have led to depleted stocks, and are also destroying non-target species. Pollution, industrial debris, and recreation are damaging the seagrass beds, mangroves, and coral reefs, and are rendering critical habitats unsuitable for sustainable use by fish and humans.

The *SFS Center for Marine Resource Studies* was established in 1985 to address these critical issues. 1991 was our second year in our permanent location in South Caicos, Turks and Caicos Islands, BWI. Until very recently, South Caicos was one of the world's largest exporters of conch and a significant exporter of lobster, both of which served as the major source of income for the island. Shellfish exports have dropped dramatically in the past few years, and a major focus of the Center's current research is to identify causes and possible solutions for this decline.

A total of 110 students participated in the Center's semester programs in *Marine Ecology and Management*, and summer programs in *Coral Reef Management* and *Marine Mapping Ecosystems*. Research continued to focus on the local conch and lobster fisheries and related issues, including research on "Abundance and Size Frequency Distribution of *Strombus gigas* at Six Hills Cay and Long Cay", "An Assessment of Juvenile Lobster (*Panulirus argus*) Habitat between South and East Caicos", and "A Study of Effort and Yield Trends in Conch Fishing at South Caicos". Other projects assessed local petroleum pollution as part of the United Nations Caribbean Program, and the health and composition of coral reefs.

A three-year project mapping shallow-water marine habitats was begun in June of 1991 in conjunction with the Turks and

Caicos Fisheries Department. This map will be a significant help to the Fisheries Department in monitoring changes in fish habitat.

Expanding community involvement both regionally and locally is also a priority. The Center was invited to join CARICOMP, a Caribbean-wide collection of field stations involved in a regional scientific program studying land and sea interactions. With our neighbors on South Caicos, some of the highlights in 1991 included our sponsoring an "Earth Day" program for elementary school children, hosting eight local guest

and Caicos Fisheries Department. Center staff and students presented their research findings, outlined future goals for the Center and thanked our friends for their support and assistance.

This last year has been one of great progress at our new home in the Turks and Caicos Islands. We are grateful to the **Laurance S. Rockefeller Charitable Trust** for six years of support of the Center for Marine Resource Studies. With the help of the Trust, SFS students are learning about the importance of preserving a society's culture and natural

*Our Directed Research projects gave us the opportunity to apply what the faculty taught us. I am particularly excited about my project which dealt with examining the local dump — determining its contents and amount of recyclable material, looking at its effects on the neighboring marine habitats and proposing alternatives to the current practice of land reclamation where all the solid waste is bulldozed directly into the ocean.*

— Cathleen Paige Buchanan, Lafayette College

(Photo: Christopher Neefus)



speakers, and sponsoring the Center's first local student, a South Caicos Fisheries Department Officer who participated in the Center's Coral Reef Ecology course. SFS looks forward to sponsoring local students annually as part of its long-term commitment to resource conservation.

Another highlight was the Center's first anniversary celebration, held on May 3, with a luncheon and presentations for local and national dignitaries. Among the guests were the Minister of Natural Resources, the Minister of Health, Education and Welfare, the Minister of Immigration, Works and Fisheries, and senior members of the Turks

resources, and are simultaneously contributing important information which can be used to resolve resource management issues.

We also want to thank the **Munson Foundation** for their Challenge Grant which will greatly benefit the work at the Center in 1992, specifically for improvements to the Center's physical plant, expansion of the Center's library which serves SFS students and faculty as well as the Turks and Caicos Fisheries Department, support of the Center's ongoing research of the local conch and lobster populations, and much needed scholarship assistance for students.

## The Center for Rainforest Studies: Australia

**T**ropical forests are the world's most biologically rich and ecologically complex communities. Although they cover only 7% of the planet's land area, tropical forests support nearly half of the earth's plant and animal species. Yet they are gravely threatened. During the past decade, the rate of tropical deforestation has nearly doubled. Today, as a result of crushing population pressure and frenetic economic development in tropical nations, these ancient forests are being cleared, logged, fragmented and overhunted at an unprecedented pace.

In the tropical forests of northern Queensland, Australia, the greatest diversity of wildlife in Australia and the greatest concentration of primitive flowering plants in the world are found. At the SFS *Center for Rainforest Studies* in North Queensland, Australia, our goal is to train undergraduate students in the complexities and challenges inherent in tropical rainforest management. Our 153-acre campus and field center, adjacent to an extensive World Heritage site, provides easy access to an array of pristine and modified habitats — an ideal natural laboratory for studies in rainforest conservation.

In 1991, we enrolled 59 highly qualified students from selective colleges nationwide in our two semester programs — *Biogeogra-*

*phy: Patterns of Ecological Diversity* — and 21 students in our summer course — *Deforestation: Threats to Biological Diversity* — altogether a 20% increase in enrollment over 1990. Students take three lecture and field courses — Rainforest Ecology, Natural Resource Management, and Cultural Ecology, as well as designing and conducting a field project of their choosing for Directed Research. Student research in 1991 focused on two vital topics: tropical conservation biology, and restoration ecology. Examples of student projects demonstrate the wealth of research opportunities at the Center: "Impacts of Roads and Highways on Small Mammal Movements in Tropical Rainforests", "Effects on Artificial Habitat Edges on Forest Bird Communities in Tropical Queensland", and "Diversity of Moths and Other Nocturnal Insects in Tropical Rainforests and Regenerating Forests."

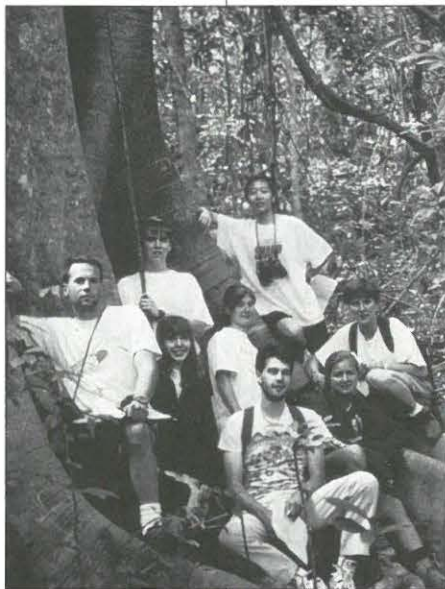
Our students and faculty continue to provide important data on the ecology and conservation of rainforest plant and animal com-

*Photo below: A single square mile of rainforest may contain as many tree species as the continental U.S. These students are assessing the impact of intensive land uses on tropical forest biota. (Photo: Jodi Isaacs)*

munities in North Queensland. During the past year, our projects at the Center were published or submitted to highly regarded international journals such as *Conservation Biology*, *Biological Conservation*, *Australian Journal of Ecology*, and *Australian Journal of Botany*. In 1991, we hosted four rainforest researchers from Australia, England, and Sweden in the Center's Visiting Scientist Program.

As visible members of the community in which we live, the residents and local scientific communities have provided our students and faculty with many rewards, both academically and personally. In 1991, the Center's faculty were active participants in scientific seminars locally, and were keynote speakers at several public meetings. A final highlight of 1991 was the Center's first open-house for the public, attended by over 120 local residents.

For seven years, the **Archer-Daniels-Midland Company** has provided substantial support for the SFS *Center for Rainforest Studies*. Their grant in 1991 has allowed the School to complete its expansion of the Center's "Deforestation: Threats to Biological Diversity" summer program, thus increasing student participation by 50%. Capital improvements to the Center's academic and residential facilities were also accomplished with the Company's support.



*SFS exposed me to a completely different lifestyle and value system, which made me realize the importance of simple or obvious elements of life. Along with friendship, I found a direction in life. My SFS experience was priceless.*

— *Katsumi Matsumoto,*  
*Brown University*  
(Photo: Jodi Isaacs)

## The Center for Sustainable Development Studies: Costa Rica

**S**FS's new *Center for Sustainable Development Studies* in Costa Rica came to life over the past six months in preparation for its first class in September 1991. The School has worked closely with the five institutions which comprise the supporting member schools of the Consortium for the Center — **Allegheny College, Colby College, Middlebury College, Dickinson College, and the University of Michigan.** The Consortium provides academic guidance, program development support, and technical assistance for the Center. Members also provide students. The opening

class will have a full enrollment of 24 students, half of whom come from the Consortium member schools.

In choosing the site for the Center, SFS and the Consortium members sought to create an opportunity for students to explore the concepts of sustainable development in a developing country in which significant progress is being made. Costa Rica was an ideal choice since it is having some success in protecting forested watersheds while developing hydroelectric power; establishing conservation regions for the protection of biological diversity, indigenous peoples, and the culture of regional communities; controlling disease; developing sustainable agriculture practices, and restoring native ecosystems.

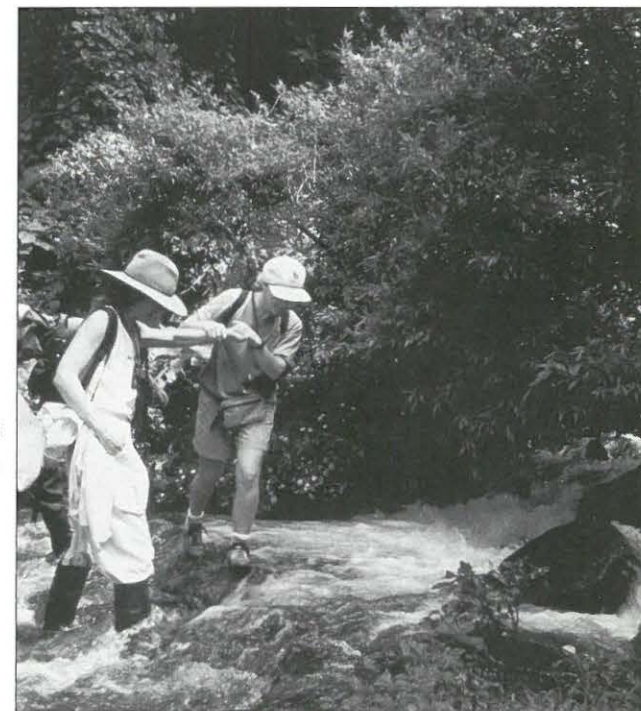
The Fall '91 semester will focus on 4 specific case studies which will provide students with exposure to a variety of sustainable development issues. These studies include...

**Land Utilization** in a region where the economic dependence on a single crop, coffee, is resulting in an economic crises due to the diminished coffee market;

**Transnational Corporations and Sustainable Development**, which examines the long-term effects the pineapple, palm oil and other agroindustries have on natural resources and the surrounding communities;

**La Amistad Biosphere Reserve**, the richest and most diverse ecosystem of Central America where advancing colonization threatens to overwhelm the social infrastructure and the ecosystems of the region;

**BOSCOSA**, a project created with international funding to salvage the dwindling forest on the Osa Peninsula through reforesta-

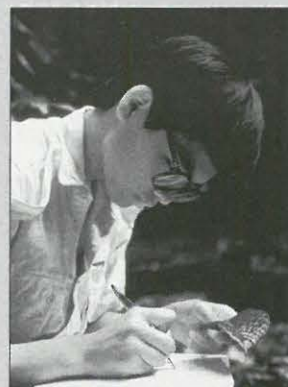


*Costa Rica presents many opportunities for case studies of the challenges of sustainable development. Outside Costa Rica's national preserves, deforestation continues at an alarming rate. These students are learning about cloud forests and the difficult decisions involved in conserving tropical resources. (Photo: Katie Teague)*

tion, natural forest management and conservation, sustainable agriculture, agroforestry, and small business development.

The site for the Center will be located at a field station in Las Cruces which is owned and operated by the **Organization for Tropical Studies (OTS)**. OTS provided invaluable advice and logistical support in the planning stages of the Center's program.

We are very grateful to the **Frese Foundation** for their three-year grant which contributed essential start-up funds for the Center, and to **Steve Trombulack**, Associate Professor, Biology Department, Middlebury College for his work in building, coordinating, and representing the Consortium.



*Designing a project and testing a hypothesis about something which is not known (unlike a laboratory setting) was completely alien to me before this program. For the first time I learned what it was like to be a research biologist. This comes none too soon considering that this is exactly what I hope to pursue as a career."*

— *Christopher Payne,*  
*University of Kansas*  
(Photo: Bill McComas)

## The Center for Wildlife Management Studies: Kenya

Once described as small islands of settlement in a sea of wildlife, East Africa now qualifies as islands of wildlife in a sea of people.

Kenya has one of the world's highest birthrates. It also contains the world's most renowned wildlife reserves. Not long ago, wildlife was viewed by Kenyans as some-

massive infusions of foreign exchange. And as a food source, it has the potential to feed millions of hungry people more efficiently than domestic species, while all the time being a sustainable, self-renewing resource.

SFS has been studying wildlife management in Kenya since 1982. At our **Center for Wildlife Management Studies**, students are given a unique opportunity to learn about some of the options available to developing countries such as Kenya. A total of 47 students participated in our two semester programs on **Wildlife Ecology and Management**. An additional 40 students participated in summer **Wildlife Management** courses. Students were given a first-hand, intensive look at wildlife as a sustainable component of development, and helped to create the tools available to wildlife managers.

Our dedication to conserving wildlife while providing for the needs of the people gives our students cause for optimism in an otherwise gloomy situation. Our work proposes alternatives to isolated national parks that alienate local people without yielding benefits, and we are attempting to find ways to make necessary compromises beneficial to both sides of the conflict. Understanding the needs and beliefs of the people who are most affected by wildlife conservation programs is also

an important component of the course, and we have increased the human ecological aspects in the study of wildlife issues in Africa.

Student and faculty research projects in 1991 have resulted in a number of projects which are being prepared for publication in several scientific journals. These include a major study to develop and verify a system for aging ungulates. A subsequent manual was presented to the Kenyan Government field personnel that allows them to classify

animals into verified age classes based on readily observable characteristics, and recommendations to help game ranchers determine optimal population structures and harvest strategies.

The findings from an extensive analysis of the game cropping techniques on the ranch were presented at an international conference on game ranching. The suggestions that resulted from this study offer more efficient and humane harvesting techniques at a time when several new game ranching operations are being started in Kenya.



*I went to Kenya a wide-eyed idealistic student, and returned knowing how to make a difference. I realized I want to be part of the solution to the problems facing our planet today. I've decided to do my post graduate work in an environmental field.*

—Jacqueline S. Eppolito,  
Rider College

(Photo: John Hurley)

Teamwork in scientific activity and daily life is an integral part of the SFS educational model. These students are studying the skeleton of an East African wildebeest, one of the bird and animal species that inhabit our site. (Photo: Sandra Taylor)

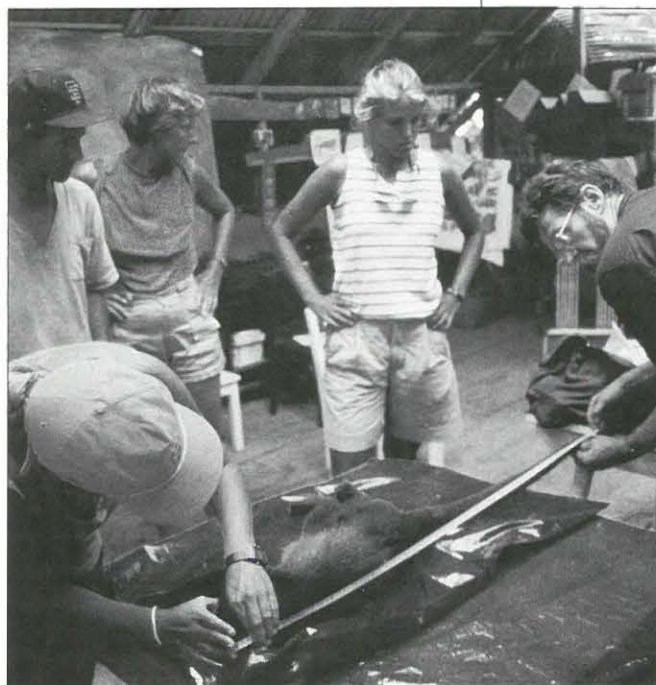
thing that destroys crops and livestock, and was considered a net liability. Today, however, the government and people of Africa are increasingly aware that wildlife attracts millions of tourists every year, thereby providing

## Satellite Sites Worldwide

SFS's summer courses at "satellite" sites are offered in addition to the semester and summer programs at SFS Centers. This provides our students with a broader range of course topics and also gives students unable to participate in the longer semester programs during the school year the opportunity to still take part in an SFS program. Our satellite courses also offer college credit and attract both science and non-science majors who want a short but intense learning experience in the field of environmental studies.

We expanded this summer's satellite curriculum to eleven courses on three continents and attracted 297 students — an 18% increase over last year. Twenty-six faculty, supported by 14 interns, led courses located in Alaska, Belize, Colorado, Ecuador, Massachusetts, and North Carolina, and at our Centers in Australia, Costa Rica, Kenya and South Caicos.

**SFS programs address environmental issues of significant, world-wide concern. The data these students are gathering is shared with the International Union for the Conservation of Nature's Primate Specialist Group. (Photo: Bill McComas)**



Our course, **Ecology of Endangered Sea Turtles** was relocated to Ostional on the Pacific coast of Costa Rica, where the endangered olive Ridley turtle nests. Little research has been done on this turtle, and students and faculty were able to make an immediate contribution to the local community as well as the longer-term research goals of the University of Costa Rica. One group of students produced educational materials on the turtles which can be distributed to the local community and tourists about the importance of protecting the turtles' nesting beach.

The **Ecology of Harbor Seals** course moved to the Glacier Bay National Park and Reserve in Alaska where perhaps the most accurate census of a harbor seal population in Glacier Bay was completed by SFS students and faculty, thus providing valuable base-line data to the Glacier Bay Park Service and the U.S. Fish and Wildlife Service.

In our new program, **Tropical River Ecology**, students were introduced to the aquatic ecology of a tropical river, the Sittee River which flows from the Maya Mountains of central Belize to the Caribbean Sea. Student's research results on the environmental health of the river's watershed have attracted the interest of the Belize Audubon Society, and the Jaguar Preserve staff.

Our students in **Biological and Behavior of Bot-**

*We collected data, analyzed it, tested it statistically and wrote a paper. Now, I'm editing that paper for submission to the journal Animal Behavior. Through SFS, I got a head start in the field I'll be working in professionally.*

—David Greenberg,  
Skidmore College

(Photo: Bill McComas)



**tlenose Dolphins** produced evidence that the reproductive rate of bottlenose dolphins in the Beaufort, North Carolina area has continued to increase over last year's level, but has still not reached the pre-die-off level of 1987.

Students in the **Landscape Ecology** course in Colorado intensified efforts to investigate the suitability of prairie dog towns in the San Juan Mountains for the reintroduction by the U.S. Fish & Wildlife Service of the black-footed ferret. They also researched the regeneration success of ponderosa pine under different conditions for the U.S. Forest Service.

Groundbreaking research on the actual alkaloid content of medicinal and other plants in tropical Ecuadorian forests was completed in the **Ethnobotany** course, where students also continued to collect information on the Runa Indians knowledge of and uses for indigenous plants in the Rio Napo area.

Students in every SFS summer program collected valuable data and some participants plan to publish their findings or present them at professional meetings in the near future.

## Admissions

**S**purred by a 16% increase in both summer and semester enrollments, participation in SFS programs once again reached record levels as a total of 613 students went into the field in 1990-91. We ended the year relatively unscathed by pressures from the Gulf War and the national economy, which took a toll on many other study abroad programs.

We continued our strategy of becoming a Center-focused operation as over half of all participants attended programs at one of the four SFS Centers. Approximately 300 summer students participated in summer courses at one of eleven satellite sites around the world. The percentage of SFS students attending semester programs increased from 28% last year to 33% in 1990-91.

An increasing number of participants are dependent on receiving financial assistance in order to participate in an SFS program. Through the generosity of a growing number of scholarship donors, SFS was able to provide financial aid for 160 students, an increase of 30 students over last year. Approximately 26% of all participants received financial assistance from SFS. In the case of most semester participants, this aid was supplemented with assistance from their home schools or from government sources.



*With the financial support of the Merck Family Fund and many others, SFS strives to meet the financial needs of every qualified young person who wishes to participate in the fieldwork opportunity of a lifetime. (Photo: Carrie Cox)*

Stacey Gonzales, a student at Harvard University, and Anjali Chandron of the University of Michigan, became the first recipients of a scholarship program underwritten by the **Pacific Whale Foundation** which enabled the them to participate in the Bottlenose Dolphin and Harbor Seal studies, respectively. Peter Heidmann was the recipient of the **Lands' End scholarship** to attend the Fall semester program at the Center for Marine Mammal Studies in Baja.

This summer also saw a continuation of our efforts to include students from host coun-

tries in which we work in SFS courses. Two students from The Universidad Autonoma de Baja California Sur, Jose Sanchez and Saudial Sanchez, attended summer programs studying bottlenose dolphins off the coast of North Carolina and humpback whales in the North Atlantic, respectively. And Leroy Brooks, an employee in the Turks and Caicos Department of Fisheries, received a full scholarship to attend a summer course at the Center for Marine Resource Studies, thanks to the generosity of **Walter and Hope Smith**.

The School was able to significantly expand the number of financial aid loans to students this year, thanks to the **Merck Family Fund's** 1991 contribution to the Merck Family Student Loan Fund. To date, 1,019 students — a full 26% of the student population — have received the assistance they needed to participate in an SFS program with the aid of the Merck Family Student Loan Fund.

Finally, this year's participants represented over 300 secondary schools, colleges and universities. The 1990-91 SFS student body was predominately (87%) college-level, with females comprising 65% of the enrollment. They hailed from 46 U.S. states, Puerto Rico, Kenya, Australia, Germany, Switzerland, Mexico, Canada, Italy, Korea, the British West Indies and the United Arab Emirates.

increase of almost 150% in affiliate participants; a total of 57 students, up from 23 students last year.

Looking forward to next year, 16% of the 1991 Fall semester participants are from Affiliate schools, up from 9% in Fall 1990. Our admissions representatives report a growing interest in affiliations as study abroad advisors and faculty members at schools across the country are inquiring about affiliate membership. Our goal is to

have a selective membership of 20 affiliate schools by September 1992.

### NORTHEASTERN UNIVERSITY

The vast majority of SFS students - 366 students to be precise - received academic credit for their SFS participation from Northeastern University. In addition to relying on their on-going support in the forms of providing course and faculty approval, academic credit and financial aid certification for SFS programs, we forged several new ties with Northeastern University during the year just

past. Most importantly, we are pleased to announce the creation of a special scholarship program, designed to increase access to SFS programs for Northeastern University students. A special tuition fund will enable Northeastern University students to attend an SFS semester program at any of our five centers at the same cost as attending Northeastern University. We would like to express our appreciation to Northeastern in general and the Administration of the College of Arts and Sciences in particular for their support of, and contributions to, SFS programs.

### SFS AFFILIATE SCHOOLS

Bennington College  
Case Western Reserve University  
Clark University  
Colby College  
Denison University  
Dickinson College  
Hiram College  
Kenyon College  
Lang College/New School for Social Research  
Miami University  
S.U.N.Y. College of Environmental Sciences and Forestry  
University of Miami  
Wells College

## Colleges and Universities Accepting or Awarding Credit for SFS Courses

**T**he following schools have accepted or awarded credit for SFS courses. Because each school has its own procedures which can change, past credit does not guarantee future credit.

Albion College  
Allegheny College •  
Alma College  
American University  
Amherst College  
Augsburg College  
Barnard College  
Barry University  
Bates College  
Bennington College ••  
Berea College  
Boston College  
Boston University  
Bowdoin College  
Brandeis University  
Brown University  
Bryn Mawr College  
Bucknell University  
California Lutheran University  
Calvin College  
Carnegie Mellon University  
Case Western Reserve University ••

Clarion University  
Clark University ••  
Colby College •••  
Colgate University  
College of the Atlantic  
College of St. Thomas  
Colorado College  
Colorado School of Mines  
Connecticut College  
Cornell University  
Dartmouth College  
Davidson College ••  
Denison University ••  
Dickinson College •••  
Drake University  
Drew University  
Duke University  
Eastern Michigan University  
Emory University  
Evergreen State College  
Fort Lewis College  
Framingham State College  
Franklin and Marshall College  
Franklin Pierce College  
Gettysburg College  
Green Mountain College  
Guilford College  
Hamilton College  
Hampshire College  
Harvard College  
Haverford College  
Hiram College ••  
Humboldt State University  
Huntingdon College  
Huron College  
Indiana State University

Indiana University  
Ithaca College  
Kansas State University  
Kent State University  
Kenyon College ••  
Knox College  
Lang College, New School for Social Research ••  
Lehigh University  
Lewis and Clark College  
Macalester College  
Marlboro College  
McGill University  
Merrimack College  
Miami University ••  
Middlebury College •  
Mitchell College  
Mount Holyoke College  
Mount Union College  
Muhlenberg College  
New York University  
North Carolina State University  
Northeastern University  
Northern Kentucky University  
Northwestern University  
Oberlin College  
Ohio State University  
Ohio University  
Ohio Wesleyan University  
Oregon State University  
Pacific Lutheran University  
Pennsylvania State University  
Pomona College  
Prescott College  
Providence College  
Purdue University

Randolph Macon College  
Saint Lawrence University  
Saint Michael's College  
Saint Olaf College  
Salem College  
Scripps College  
Shimer College  
Simon's Rock of Bard College  
Skidmore College  
Smith College  
Southern Connecticut State University  
Stanford University  
Stockton State College  
S.U.N.Y. College of Environmental Sciences and Forestry ••  
Trenton State College  
Trinity College  
Trinity University  
Tufts University  
Tulane University  
Union College  
University of Alberta  
University of California/Berkeley  
University of California/Los Angeles  
Univ. of California/Santa Cruz  
Univ. of California/San Diego  
University of Cincinnati  
University of Colorado  
University of Connecticut  
University of Iowa  
University of Kansas  
University of Maine

University of Maryland  
University of Massachusetts  
University of Miami ••  
University of Michigan •  
University of Minnesota  
University of New Hampshire  
University of North Carolina  
University of Pennsylvania  
University of Pittsburgh  
University of Puerto Rico  
University of Rhode Island  
University of Southern Indiana  
University of Southern Maine  
University of Utah  
University of Vermont  
University of Victoria  
University of Wisconsin  
Vassar College  
Villanova University  
Virginia Polytechnic Institute and State University  
Washington University  
Wellesley College  
Wells College ••  
Wesleyan University  
Whitman College  
William Smith College  
Williams College  
Wittenberg University  
Xavier College  
Yale College

• Sustainable Development Studies Consortium  
•• SFS Affiliate Schools  
••• Member of both

### THE SFS AFFILIATE PROGRAM

**A** primary catalyst for this year's growth in enrollment was the increasing strength and viability of the Affiliate Program. This program, now in its third year, was initiated with the goal of building better linkages within the academic community which provides SFS students. Students from Affiliate institutions receive preferential admission and financial aid from SFS. In return for these considerations and curricular input into SFS programs,

Affiliate schools directly award academic credit for SFS participation and provide on-campus advising about SFS programs.

We began the 1990-91 academic year with ten Affiliate School members. Membership increased to fourteen schools at year's end as **Clark University, Colby College and Kenyon College**, and the **University of Miami** joined the affiliate ranks. Approximately 10% of all SFS participants in 1990-91 came from Affiliate Schools. This represents an

## Financial Report

The past year has been one of extraordinary growth for SFS. The remarkable 24% rise in the number of student field days our programs produced was reflected in a 27% increase in revenues and a record-breaking 54% increase in the School's fund balances, including a 34% increase in the plant fund balance.

The large increase in the plant fund balance in 1991 is the result of the School's continuing capital investment program, undertaken several years ago to create the facilities and infrastructure necessary for quality programs at permanent Centers. This program has been supported by a number of significant donations, allowing the SFS to focus its increased tuition revenues on operating expenses.

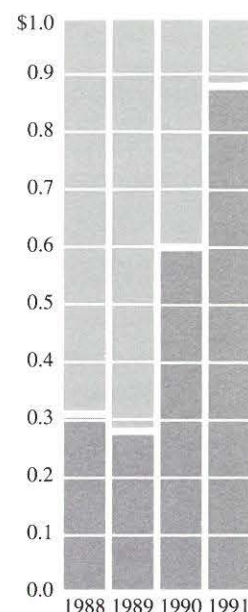
Plant fund investment in 1991 included student dormitories and classroom space at the Center for Rainforest Studies in Australia and renovations of program and living spaces at the Center for Marine Resource Studies in South Caicos, as well as boats, vehicles, computers, library materials, and research equipment for the Centers and several satellite programs. These investments and replacements of fixed

assets result in higher program quality by improving safety, providing better academic and research resources, giving hard-worked faculty and field staff better living conditions, or, in the case of computers, improving the productivity of both students and staff. In addition, some capital resources were directed to start-up equipment for the new Center for Sustainable Development Studies in Costa Rica and for upgraded computerization of Headquarters.

The School's operating funds (current unrestricted and current restricted) also were strengthened in 1991. We were able to reduce the accumulated deficit in the operating funds by 10% and continue to direct a high proportion of operating revenues to programs and scholarship aid, as in past years. The overall strengthening of the School's financial position and continuing efforts to improve the efficiency and effectiveness of administrative support services which were begun in 1991, put SFS in a good position to direct additional resources to program improvements, continued capital investment, and the development of a sixth permanent Center in the coming year.

### PLANT FUND BALANCES

(in millions of dollars)

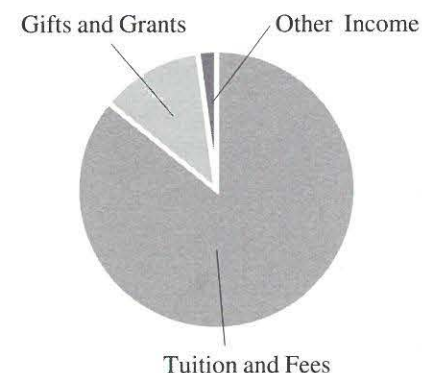


### BALANCE SHEET AUGUST 31, 1991

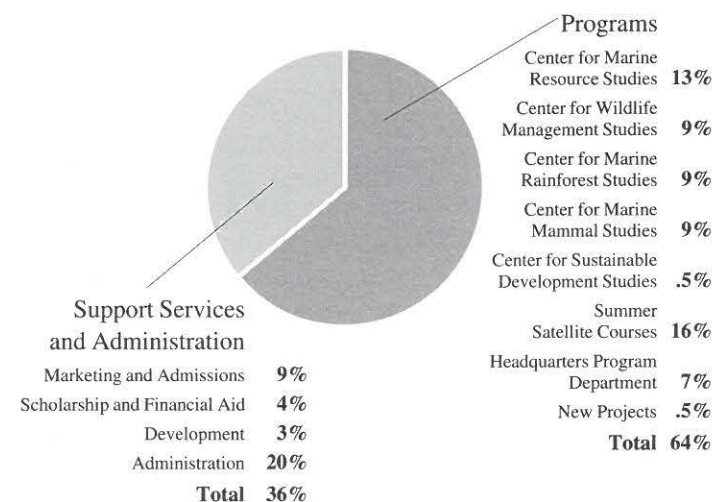
(with comparative totals for 1990)

|                                                                   | CURRENT<br>UNRESTRICTED<br>FUND | CURRENT<br>RESTRICTED<br>FUND | LOAN<br>FUND   | PLANT<br>FUND    | TOTAL<br>1991    | TOTAL<br>1990    |
|-------------------------------------------------------------------|---------------------------------|-------------------------------|----------------|------------------|------------------|------------------|
| <b>ASSETS</b>                                                     |                                 |                               |                |                  |                  |                  |
| Cash and short-term investments at cost which approximates market | \$ 725,549                      | 600                           | —              | 76,260           | 802,409          | 440,723          |
| Tuition receivable                                                | 13,499                          | —                             | —              | —                | 13,499           | 33,452           |
| Grants receivable                                                 | —                               | 15,000                        | —              | —                | 15,000           | —                |
| Loans receivable                                                  | 84,540                          | —                             | 104,187        | —                | 188,727          | 130,177          |
| Advances to course sites and other assets                         | 323,849                         | —                             | —              | —                | 323,849          | 112,901          |
| School plant, net                                                 | —                               | —                             | —              | 991,297          | 991,297          | 865,633          |
| <b>TOTAL ASSETS</b>                                               | <b>\$1,147,437</b>              | <b>15,600</b>                 | <b>104,187</b> | <b>1,067,557</b> | <b>2,334,781</b> | <b>1,582,886</b> |
| <b>LIABILITIES AND FUND BALANCES</b>                              |                                 |                               |                |                  |                  |                  |
| Accounts payable and accrued liabilities                          | \$ 188,262                      | —                             | —              | —                | 188,262          | 67,373           |
| Student deposits and deferred tuition                             | 1,175,216                       | —                             | —              | —                | 1,175,216        | 772,957          |
| Notes payable                                                     | —                               | —                             | —              | 267,226          | 267,226          | 286,160          |
| <b>TOTAL LIABILITIES</b>                                          | <b>1,363,478</b>                | <b>—</b>                      | <b>—</b>       | <b>267,226</b>   | <b>1,630,704</b> | <b>1,126,490</b> |
| <b>FUND BALANCES (DEFICIT)</b>                                    |                                 |                               |                |                  |                  |                  |
| Unrestricted                                                      | (216,041)                       | —                             | 104,187        | 76,260           | (35,594)         | (169,894)        |
| Restricted                                                        | —                               | 15,600                        | —              | —                | 15,600           | 30,670           |
| Net investment in plant                                           | —                               | —                             | —              | 724,071          | 724,071          | 595,620          |
| <b>TOTAL FUND BALANCES (DEFICIT)</b>                              | <b>(216,041)</b>                | <b>15,600</b>                 | <b>104,187</b> | <b>800,311</b>   | <b>704,077</b>   | <b>456,396</b>   |
| <b>TOTAL LIABILITIES AND FUND BALANCES (DEFICIT)</b>              | <b>\$1,147,437</b>              | <b>15,600</b>                 | <b>104,187</b> | <b>1,067,557</b> | <b>2,334,781</b> | <b>1,582,886</b> |

### REVENUES (operating funds)



### EXPENSES (operating funds)



### STATEMENT OF CHANGES

IN FUND BALANCES YEAR ENDED AUGUST 31, 1991

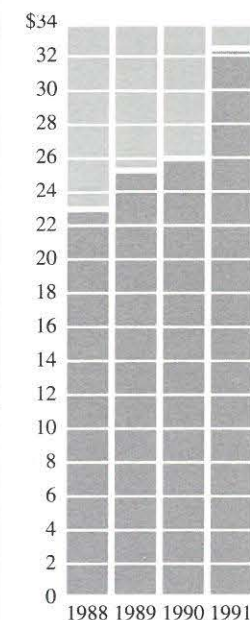
(with comparative totals for 1990)

|                                                       | CURRENT<br>UNRESTRICTED<br>FUND | CURRENT<br>RESTRICTED<br>FUND | LOAN<br>FUND   | PLANT<br>FUND  | TOTAL<br>1991    | TOTAL<br>1990    |
|-------------------------------------------------------|---------------------------------|-------------------------------|----------------|----------------|------------------|------------------|
| <b>REVENUES AND OTHER ADDITIONS</b>                   |                                 |                               |                |                |                  |                  |
| Educational and general revenues                      | \$2,731,790                     | —                             | —              | —              | 2,731,790        | 2,460,104        |
| Private gifts, grants, and contracts                  | 287,545                         | 67,045                        | 18,400         | —              | 372,990          | 87,470           |
| Government grants and contracts                       | —                               | —                             | —              | —              | —                | 4,975            |
| Expended for plant facilities                         | —                               | —                             | —              | 235,395        | 235,395          | 411,338          |
| Retirement of indebtedness                            | —                               | —                             | —              | 18,934         | 18,934           | —                |
| Net proceeds from sale of plant facilities            | —                               | —                             | —              | 20,500         | 20,500           | 17,000           |
| Other                                                 | 56,333                          | —                             | —              | —              | 56,333           | 24,661           |
| <b>TOTAL REVENUES AND OTHER ADDITIONS</b>             | <b>\$3,075,668</b>              | <b>67,045</b>                 | <b>18,400</b>  | <b>274,829</b> | <b>3,435,942</b> | <b>3,005,548</b> |
| <b>EXPENDITURES AND OTHER DEDUCTIONS</b>              |                                 |                               |                |                |                  |                  |
| Educational and general expenditures                  | \$2,703,400                     | 82,115                        | —              | —              | 2,785,515        | 2,484,081        |
| Expended for plant facilities                         | —                               | —                             | —              | 235,395        | 235,395          | 411,338          |
| Interest on indebtedness                              | —                               | —                             | —              | 34,696         | 34,696           | 24,798           |
| Retirement of indebtedness                            | —                               | —                             | —              | 18,934         | 18,934           | —                |
| Net cost of plant facilities sold                     | —                               | —                             | —              | 33,471         | 33,471           | 19,275           |
| Depreciation                                          | —                               | —                             | —              | 76,260         | 76,260           | 72,205           |
| Loan write-offs                                       | —                               | —                             | 3,990          | —              | 3,990            | 5,916            |
| <b>TOTAL EXPENDITURES AND OTHER DEDUCTIONS</b>        | <b>2,703,400</b>                | <b>82,115</b>                 | <b>3,990</b>   | <b>398,756</b> | <b>3,188,261</b> | <b>3,017,613</b> |
| <b>TRANSFERS AMONG FUNDS — ADDITIONS/(DEDUCTIONS)</b> |                                 |                               |                |                |                  |                  |
| Mandatory debt transfer                               | (37,482)                        | —                             | —              | 37,482         | —                | —                |
| Net additions to plant assets                         | (214,896)                       | —                             | —              | 214,896        | —                | —                |
| Transfer to loan fund                                 | (18,963)                        | —                             | 18,963         | —              | —                | —                |
| Transfer to fund depreciation                         | (76,260)                        | —                             | —              | 76,260         | —                | —                |
| <b>TOTAL TRANSFERS</b>                                | <b>(347,601)</b>                | <b>—</b>                      | <b>18,963</b>  | <b>328,638</b> | <b>—</b>         | <b>—</b>         |
| <b>NET INCREASE (DECREASE) FOR THE YEAR</b>           | <b>24,667</b>                   | <b>(15,070)</b>               | <b>33,373</b>  | <b>204,711</b> | <b>247,681</b>   | <b>(12,065)</b>  |
| <b>FUND BALANCES (DEFICIT) AT BEGINNING OF YEAR</b>   | <b>(240,708)</b>                | <b>30,670</b>                 | <b>70,814</b>  | <b>595,620</b> | <b>456,396</b>   | <b>468,461</b>   |
| <b>FUND BALANCES (DEFICIT) AT END OF YEAR</b>         | <b>\$(216,041)</b>              | <b>15,600</b>                 | <b>104,187</b> | <b>800,331</b> | <b>704,077</b>   | <b>456,396</b>   |

Copies of of KPM Peat Marwick's complete audited financial statements available upon request.

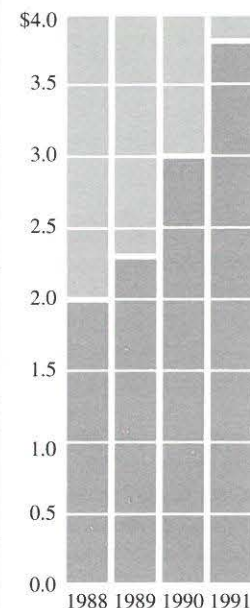
### STUDENT FIELD DAYS

(in thousands of days)



### ANNUAL BUDGETS

(in millions of dollars)



## Development

On behalf of this year's SFS graduates, we gratefully acknowledge and thank the 241 individuals, corporations and foundations whose generous contributions to the SFS Annual Fund amounted to \$269,660 in FY1991, providing essential financial support to SFS students and programs.

More than 4,000 students have participated in SFS programs since its founding. Contributions to the SFS Scholarship Fund this

past year made it possible for more students to participate than ever before. Expanding the Scholarship Fund will continue to be a major goal for 1992.

In addition to the contributors identified in the preceeding SFS Field and Department Reports, we'd like to give recognition to several SFS Benefactors who have made unrestricted gifts and grants to the School.

Special thanks goes to the **Andreas Foundation** for their ten years of support of the

School's general operating expenses and the SFS Scholarship Fund. The Foundation also made a special \$100,000 contribution to the School's Capital Fund this year, helping to accomplish several major improvements to our **Center for Marine Resource Studies** in South Caicos, and our **Center for Rainforest Studies** in Australia.

General operating support was also provided by a significant grant from the **Charles Engelhard Foundation** whose ongoing commitment to the School's programs has contributed significantly to the development and expansion of SFS programs.

The School also gives special thanks to several individuals for their continuing and substantial contributions in 1991. Thanks to **Astra Davis**, the trustees of **The Roy A.**

**Hunt Foundation**, **Walter and Hope Smith**, the law firm of **Brown Raysman & Millstein of New York**, and the individuals listed, SFS was able to provide its students a curriculum that addresses the key environmental issues of our time.



*SFS allows students to set goals, strive to achieve those goals, and in return, reap the personal academic benefits. Through careful preparation, and with the guidance of SFS staff, financial aid, and hard work, I was able to gain valuable experience.*

*Janet Depew,  
University of Maryland*

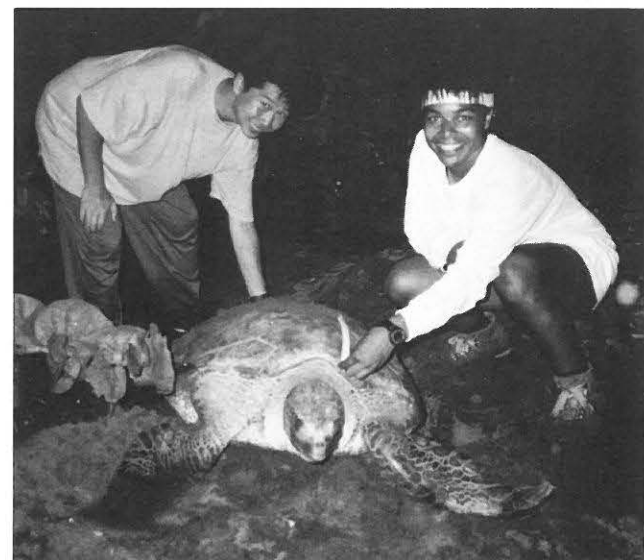
*I want to express my sincere gratitude to you for making my SFS experience possible. I hope SFS and generous sponsors like yourself continue to support this valuable program. Thank you.*

*Gina Hupton,  
Colorado College*

*Your sponsorship of my SFS grant made possible an extraordinary experience. I was able to participate in efforts to understand and avert environmental and cultural crises. Thank you.*

*Meiling Hazelton,  
John Burroughs School*

*(Photo: Patricia Lemay)*



*Many students describe their experiences as "life changing". The opportunities to meet the people in the communities where we work gives students a greater understanding of the human impact of natural resource exploitation.*

*(Top Photo: Steve Swartz)*

*(Bottom Photo: Susan Barvanek)*

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*(\$25,000 or more since SFS's founding)*

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**Stephen Cohen •**  
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*"There is nothing that can take the place of hands-on experience and immersion in the field that this course provided. My thanks to all of those people whose contributions make these courses available."*

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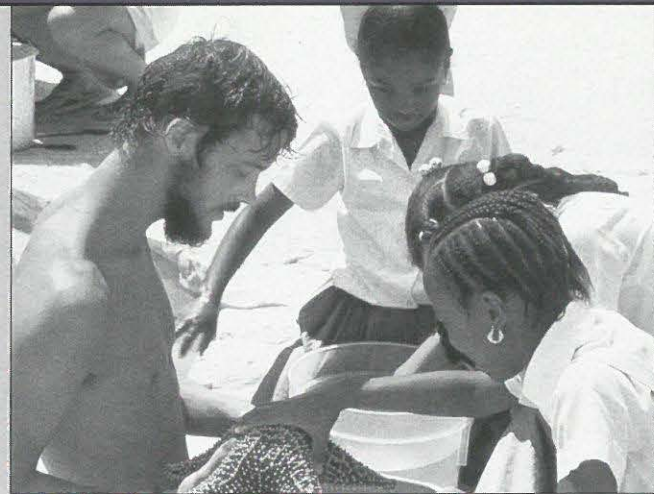
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## Selected Research Papers Resulting from SFS Field Courses

PLANT COMMUNITY  
AND ECOSYSTEM GROUPAcid Rain, Adirondack Mountains,  
New York, 1983

SINGER • R., D.A. ROBERTS •, and C.W. BOYLEN

Biological effects of acidification on small oligotrophic Adirondack lakes. Proceedings of the Second New York State Symposium on Acid Deposition; Ithaca, New York, 1983.

Community Ecology, Mount St. Helens,  
1982, 1983, 1984

ADAMS •, A.B., and V.H. DALE

Vegetative succession following glacial and volcanic disturbances in the Cascade mountain range of Washington, USA. Mount Saint Helens 1980 Botanical Consequences of the Explosive Eruptions. D.E. Bilderback (ed.), Los Angeles; University of California Press, 1987.

Biogeography: Patterns of Ecological Diversity,  
Australia, 1990

LAURANCE •, W.F., and E. YENSEN

Predicting the impacts of edge effects in fragmented habitats. Biological Conservation, Vol. 55, 1990.

PUTZ •, F.E.

Growth habitats of climbing palms (*Calamus* spp.) in north Queensland rainforest. *Australian Journal of Botany*, 1990.

## Ecology of a Neotropical River, Belize 1991

KANGAS, P. •, and L.A. Martinez

Report to the Belize Fisheries Department, 1991

LAURANCE •, W.F.

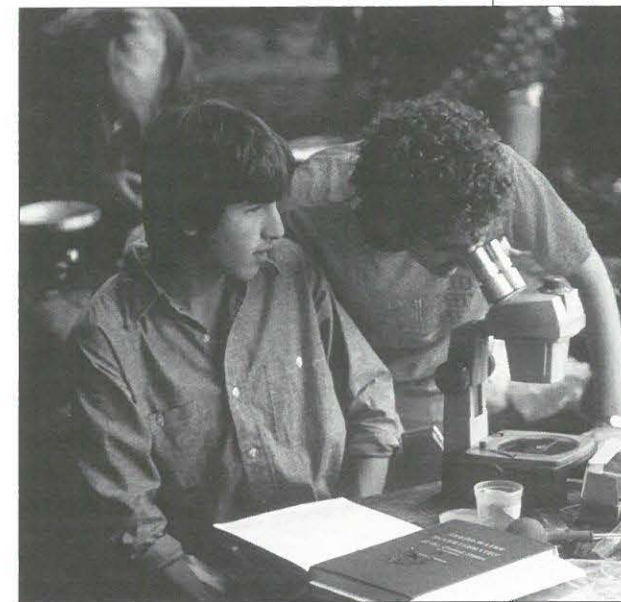
Rainforest fragmentation and mammal extinctions in Tropical Queensland: implications for nature reserve design. Presented at the Conference on Conservation Biology in Australia and Oceania, 1991.

MARINE BIOLOGY  
AND MANAGEMENT GROUPCoral Reef Ecology, St. John, USVI,  
1982, 1983, 1984

BRODY •, M., S.J. MILLER •, M.T. BALBACH •, J.M. EAGLES •, M.L. FINDLEY •, H.C.

FOWLER •, R.D. ING •, R.A. MADON •, W.S. MALDONADO •, D.P. REMSEN •, N.A. ROSE •, P. SIMPSON •, and T.R. WHITE •

Man and the biosphere: ground truthing coral reefs for the St. John Island Biosphere Reserve. Report to the Virgin Islands National Park Service, 1984.



*Our research seeks to discover new facts and relationships that will directly help managers and policy-makers make decisions involving a balance between mankind's needs to conserve as well as develop nature. (Photo: Deb Roberts)*

## Sources of Reef Fish Toxins, St. John, USVI, 1986, 1987

KOHLER •, C.C., D.R. TINDALL, P.C. PHILLIPS •, and S. KOHLER •

Ecology of organisms involved in Ciguatera poisoning in Great and Little Lameshur Bays, St. John, United States Virgin Islands. Report to the United States National Park Service, St. John, USVI, 1987.

Marine Biology and Management, St. John, USVI,  
1988, 1989

EDMUNDS •, P.J., D.A. ROBERTS •, and R. SINGER •

Reefs of the northeastern Caribbean I. Scleractinian populations. *Bulletin of Marine Science*, 46(3):780-789, 1990.

WITMAN •, J.D.

Effects of predation by the fire worm (*Hermodice carunculata*) on milliporid hydrocorals. *Bulletin of Marine Sciences*, No. 42, 1988.

ANIMAL BEHAVIOR  
AND CONSERVATION GROUPMarine Mammal Biology and Conservation,  
Glacier Bay and Kenai Peninsula, Alaska,  
1982, 1983, 1984, 1986, 1987

CALAMBOKIDIS •, J., and G.H. STEIGER •  
Bald eagles (*Haliaeetus leucocephalus*) consumption of harbor seal (*Phoca vitulina*) placenta in Glacier Bay, Alaska. *Raptor Research*, 19(2), 1985.

CALAMBOKIDIS •, J., and B.L. TAYLOR •, S.D. CARTER •, G.H. STEIGER •, P.K. DAWSON •, and L. ANTRIM •

Distribution and haul-out behavior of harbor seals in Glacier Bay, Alaska. *Canadian Journal of Zoology*, 65:1391-1396, 1987.

Endangered Monkeys: Social  
Ecology of Stumptail Macaques,  
Mexico 1989

JOLLY •, D.W. and D.R. RASMUSSEN •

Differences in Competitive Rates when Feeding on Natural or Provisioned food and when not Feeding in the Catamaco Troop of Stumptail Macaques. Presented at the Annual Meeting of the American Society of Primatologists, 1990.

Meeting of the American Society of Primatologists, 1990.

Dolphin Biology and Behavior, Florida Keys and  
Alabama, 1985, 1986, 1987

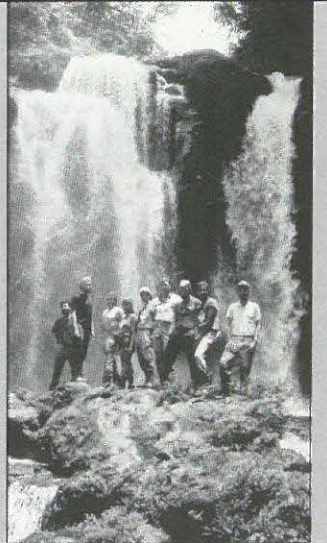
HEIMLICH-BORAN •, J., and S. HEIMLICH-BORAN •

Population estimation and seasonal habitat use patterns of bottlenose dolphins (*Tursiops truncatus*) off the Gulf coast of Alabama. Presented at the Seventh Biennial Conference on the Biology of Marine Mammals; December 5-9, 1987.

## Veterinary Ecology: Pronghorn Antelope Population Collapse, Wyoming, 1988

REEVE, A.F. •

Pronghorn productivity studies in the Fifteenmile herd unit. Prepared for the U.S. Bureau of Land Management and the Wyoming Fish and Game Department, 1988.



*Without the financial aid I received, this course would not have been possible. Before I went, I was uncertain about what I wanted to do with my biology degree. Now I know I want to work in the tropics.*

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Marine Mammal Biology and Conservation,  
Mexico, 1990, 1991

D. GREENBERG •, D.M. MORGAN, AND G.D. MILLER •

Airborne vocalizations in the California Sea Lion (*Zalophus californianus*). Presented at the Annual Meeting of Animal Behavior Society, 1991.

WILDLIFE ECOLOGY  
AND MANAGEMENT GROUPPopulation Dynamics of Endangered Species,  
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1982, 1983, 1984, 1985, 1986, 1987

STELFOX •, J.B.

Thompson's and Grant's gazelle in relation to seasonal environments and resource use. *African Journal of Ecology*, 24:111-120, 1987.

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