

THE SCHOOL FOR FIELD STUDIES



1987 Annual Report

1986-87 CURRICULUM

PLANT COMMUNITY AND ECOSYSTEM ECOLOGY GROUP:

Center for Rainforest Studies, Queensland,
Australia:

Biogeography: Patterns of Ecological
Diversity (Semester)

Tropical Species Diversity (Summer)

Satellite Programs

Medical Botany: Discovering New Plant
Medicines, Ecuador

Acid Rain: Changing Aquatic Ecosystems,
Adirondack Mountains

Deforestation: Tropical Rainforests,
Costa Rica

SEMESTERS		JAN. TERM	JUNE 16 to JULY 15	JULY 22 to AUG. 20
FALL	SPRING			
	■		A	B
			B	B
				A
				A

ANIMAL BEHAVIOR AND CONSERVATION GROUP:

Center for Marine Mammal Studies, Baja,
Mexico (planned for 1988):

Biology and Conservation of Marine
Mammals (Semester)

Satellite Programs

Dolphin Biology and Behavior, Alabama

Social Ecology of Spinner Dolphins,
Hawaii

Humpback Whale Ecology, Gulf of Maine

Level B: June 8-July 7
Level A: July 2-31
Level A: July 27-August 25

Population Dynamics of Harbor Seals,
Alaska

Endangered Monkeys: Experimental Social
Ecology, Panama

		■	A	B
			B	A
			A	B
		■	A	B

WILDLIFE ECOLOGY AND MANAGEMENT GROUP:

**Center for Wildlife Ecology and Manage-
ment**, Kenya:

Wildlife Biology and Management
(Semester)

Wildlife Management (Summer)

Satellite Programs

Recovery of Endangered Species: Alpine
Ibex, Switzerland

Ecology of Bald Eagles, Alaska

Parks for Preservation: Large Mammal
Ecology, Colorado

■	■		B	A
			A	B
				A
			B	A

MARINE ECOLOGY AND MANAGEMENT GROUP:

Center for Marine Ecosystem Studies,
Virgin Islands:

Marine Biology and Management
(Semester)

Coral Reef Ecology (Summer)

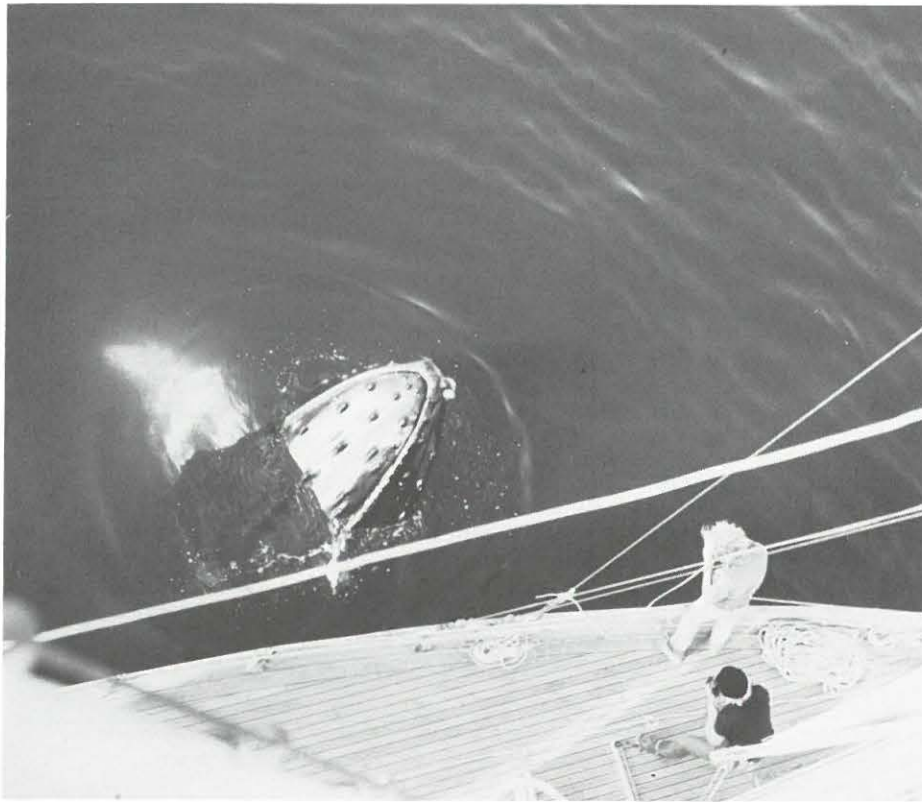
Marine Parks Management (Summer)

Sources of Reef Fish Toxins (Summer)

■	■		A	A
			B	
				B

THE SCHOOL FOR FIELD STUDIES

1987 Annual Report



(photo: Ben Baxter)

"Being within an arm's reach of a forty ton creature of another universe was mind boggling. It is beyond my comprehension how forty tons can sail out of the water in a flying breach with a few flicks of a fluke."
Robert Irvin, participant in SFS' Humpback Whale Ecology course in the Gulf of Maine.

Cover Photo: Acid Rain: Changing Aquatic Ecosystems' student Phil Nolan, with the assistance of Senior Faculty Dr. Robert Singer, collects samples of macro-invertebrates in a fresh water stream in the Adirondack Mountains. These samples will later be analyzed at the Rensselaer Polytechnic Fresh Water Institute. Phil and other students of the Acid Rain course, supported in part by the Boston Globe Foundation, studied the biological effect of atmospheric pollutants on sensitive Adirondack lakes and streams.

(Photo: William McComas)

SFS is an independent non-profit, educational institution.

CHAIRMAN AND PRESIDENT'S REPORT

Before the School for Field Studies existed, a young person interested in exploring the subject of conservation biology had no place to go. There were think tanks conducting policy studies on environmental issues, there were research organizations doing or funding scientific field work, there were college field trips (if you happened to go to one of the few schools with field biologists on their faculty), there were occasional graduate level positions which expected you to already be experienced in field work. But how could a young Jacques Cousteau, Jane Goodall, Charles Darwin, or John Muir get started?

And how could we as a society claim to value our environment and those natural resources upon which our quality of life is predicated, without providing substantial training to any student who wanted to pursue conservation biology?

Most colleges and universities could not meet this need. They were not in a position to offer or create opportunities in the relatively new field of conservation biology. The solution to this problem was to establish a new and independent institution which could serve the students from these schools who sought this type of education.

Herein lay a wonderful opportunity to explore new ways to help people learn. There was no need to be bound by the traditional didactic method employed by many colleges and universities. Not only did the study of environmental problems require an integrative approach utilizing key traditional disciplines (e.g. biology, sociology, economics, and geography), but the large size and complexity of the natural systems under study demanded a hands-on, field orientation. This combination of practical, experiential training with theoretical class work promised—and has delivered—a powerful synergy of learning where students can become literally and figuratively immersed in their studies.

Thus SFS was created seven years ago as a frontal attack on the widespread environmental illiteracy among all segments of our society. SFS pursues this mission most vigorously at the undergraduate level, for it is during this influential period when the personal attitudes and goals of our adult life are most often formulated. An SFS experience at this stage of life may steer a young person to a career in science—a critical mission at a time when this country is seeing significantly fewer youth enter scientific careers and must try to find ways to make up this loss. Or in a few cases, it may steer them away from the sciences—and we say all the better that such a personal decision be made sooner than after the investment in graduate school. An SFS course may significantly influence a future leader of government or business whose daily decision will impact our natural resources. It may inspire an average student to set his/her sights on higher goals. Each of these results are worthy; and indeed all have been, and will continue to be, accomplished by SFS.

Seven years after our first courses left for the field, SFS has realized much of the potential promised by this unique educational model. And the evolution of this model progresses regularly, fueled by a steadily increasing demand for our programs from students across the country.

Several important changes in staff have taken place this past year which are reflections of this growth. After two years of admirably struggling with the challenges of a rapidly growing student body and faculty from the office, our first Dean, Robert Singer, asked for and was granted the opportunity to return the field as our first Field Director for the SFS Center for Marine Ecosystem Studies. His successor, Richard Wetzler, received his Ph.D. in ecology from Yale University. He taught at the University of Toronto for four years where he directed the Environmental Studies Program. Paul Forestell has been hired as Program Director to direct the summer and January term courses at the satellite sites. Mr. Forestell was formerly an Assistant Professor at the University of Hawaii and Senior Research Associate at the University's Marine Mammal Laboratory, and has ten years of undergraduate teaching experience and field research in marine mammal behavior.

The following report endeavors to communicate the accomplishments of all the individuals who have played a part in the School's development over the past year. Their commitment, not only to SFS as it is, but more importantly to SFS as it can become, is the true soul of this institution. We are proud to be a part of it, and hope you too share the excitement SFS holds for the future.



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

Terry Herbert-Burns
Terry Herbert-Burns
Chairman

The School for Field Studies offers an accredited, experientially-based field curriculum in conservation biology and the environmental sciences. Through research expeditions to unique ecosystems around the world, SFS provides young people with challenging and motivating opportunities which inspire their natural curiosity to learn.

Founded in 1980 by four of the current Trustees, SFS has since established three year-round field Centers for student training, education and field research, with a fourth Center currently under

development. In addition, 11 satellite summer and January programs have been created to provide a wider diversity of opportunities than the Centers alone can offer. 500 students took advantage of these opportunities this past year; over 600 are expected this coming year. Enrollment increases have averaged 30% each year of SFS's operation, a vivid testimony to the national need for educational programs that enable students to actively participate in the study of the world's environmental issues.

OPERATING PRIORITIES

SFS has set forth an unusual ranking of priorities for resource allocation as part of our operating principles. They are:

1. Maximize the Quality and Quantity of the Faculty/Student Relationship

We view the learning process as a "contact sport", in which knowledge is transferred as directly and immediately as possible from one who knows to one who wants to know. Thus our highest priority is to refine our own understanding of who makes the very best teacher and how SFS can develop their talents further. It is our policy to keep student/faculty ratios very low (usually 7 to 1), and to have faculty available and involved on as close to a 24 hour a day basis as possible. We seek faculty who are mentors and role models, who are leaders in the fullest sense of the word. Academic degrees and scientific experience are important; the ability to inspire, challenge, and motivate is critical.

2. Maximize the Educational Setting:

The environment in which one learns is second in importance only to the people from whom one learns. The proper environment

inspires curiosity, the highest impulse available for stimulating the urge to learn. The opportunity to live what one is learning requires a dramatic, awe inspiring setting free from distractions. In the case of the natural sciences, it also equires unique ecological and biological features.

3. Maximize the Learning Process:

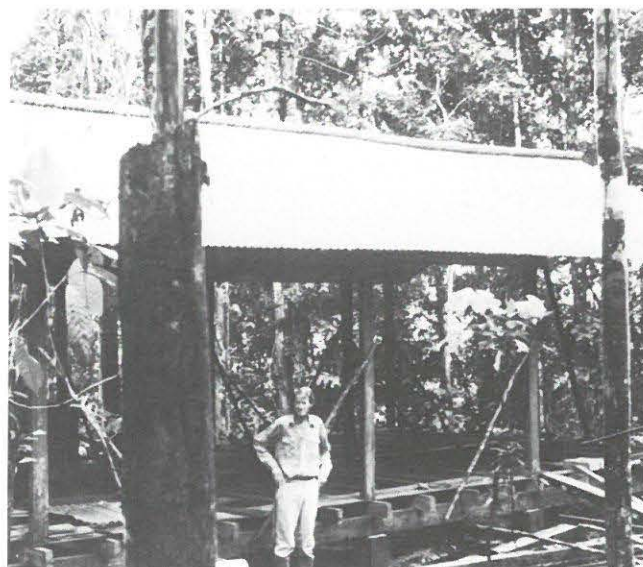
Most educational debate revolves around what subject material should be taught; yet more important is how the subject material is to be taught. Learning from textbooks is incomplete. Opportunities to practice and test new concepts and information from what one reads must be immediately available for the learning process to be successful. Emotional engagement by the student is essential for learning to be valued and valuable. Thus the subject material must be relevant to everyday concerns.

4. Maximize the Physical Hardware:

Classroom buildings, laboratories, equipment, libraries - all are important. For us, they are on the list of priorities - but last, not first.

BUILDING FOR THE FUTURE

Our target for the School's tenth anniversary in 1990 is to reach an enrollment of 1000 students, 300 of whom participate in semester programs and 700 in satellite courses. This will require establishing a total of 6 year-round Centers and 15 satellite sites. In addition, we expect to continue to explore and test new markets, such as the potential for a year long program and perhaps a 2 year major offered by SFS in conjunction with a consortium of 4 year schools. We plan to continue to increase foreign student enrollment as part of our goal of reaching a truly international student body, and to increase the number of host country scholarships we award as part of our recognition of the need to provide opportunities for students from less advantaged countries to study their own resource management problems.



SFS faculty Dr. David Neill stands at the site of the new camp for the SFS Medical Botany: Discovering New Plant Medicines course at the Jatun Sacho Biological Reserve in Ecuador.

Dean's Report

Each SFS program addresses the conflict between human demand and the persistence of species and their environments. No other organism except *Homo sapiens* encroaches upon the regenerative capacity of the earth's biota. The unprecedented scale of disruption we are currently witnessing is the focus of each of our courses at all our 14 sites around the world. The foundation of all our academic and scientific work rests on pursuing the concepts of conservation and sustainable use of natural resources.

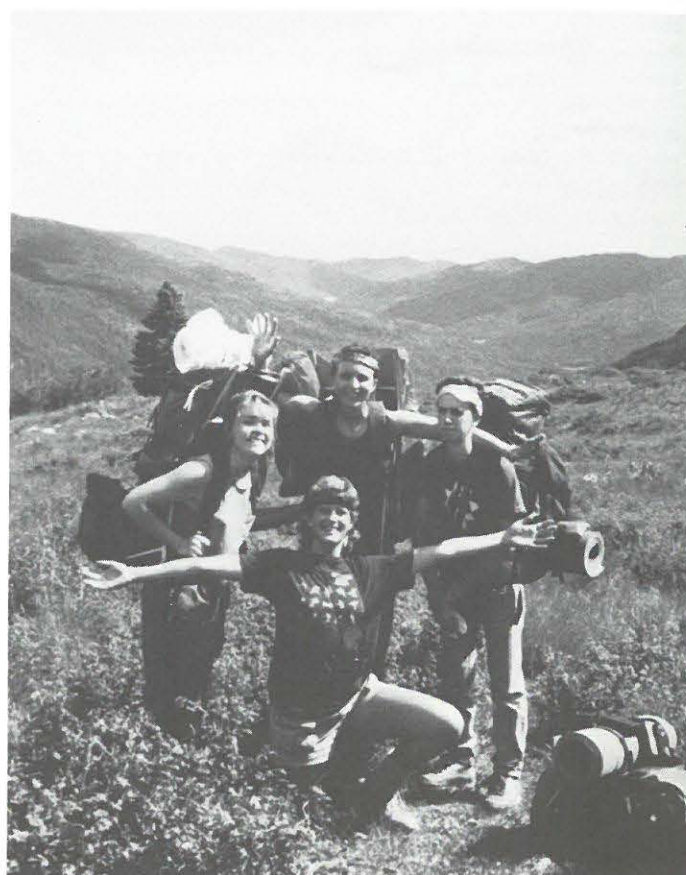
Our conservation biology curriculum is currently organized into four disciplines, each having both basic and applied thrusts: Animal Behavior and Conservation, Marine Ecology and Management, Plant Community and Ecosystem Ecology, and Wildlife Ecology and Management. In each discipline, our objective is to proceed beyond fundamental biological insights to a predictable understanding of the stewardship of plant and animal species in the context of their terrestrial and aquatic ecosystems.

Over the past three years, SFS has been able to establish a permanent, year-round Center in three of these curricular groups. Each Center employs a Director, two biologists or ecologists as resident faculty, several part time faculty including a sociologist, and several teaching assistants or interns. The existing three Centers are now becoming established, and each hosts two semester programs for 24 students and at least two summer courses for 15 students. Significant effort has also gone into identifying the resource management needs of the local area in order to construct long-term research goals to help address these needs. Development of a fourth Center is currently in progress in Baja, Mexico, which will become the cornerstone of the Animal Behavior and Conservation group and will focus on marine mammal studies. Behavioral and population studies will be conducted at this new Center on Gulf of California marine mammals as part of our mission to assess human impacts on these species. Perhaps the most diverse area in the world for marine mammal species, the Baja Peninsula provides access to populations of grey, blue, fin, humpback, and Brydes whales; bottlenose dolphins; harbor porpoise; and elephant seals and California sealions, all within reach by small boats.

This year the number of SFS student-field days (one student in the field with SFS for one day) grew from 15,500 to 20,067. This 30% increase created a challenge to maintaining and improving academic and scientific quality. Fortunately, SFS was able to accommodate this growth by utilizing our 14 sites more efficiently, and no increase in the number of sites was required.

We are pleased to report that the numerical ratings of overall faculty performance (as perceived by our students in their evaluations of their courses) maintained a 1.7 average on a 1 to 5 scale (1 being the best). This is essentially a B+ grade. In addition, the percentage of faculty with earned doctorates rose from 50% last year to 66%.

We can also report that no major illnesses, accidents or mortality have occurred in any programs during the School's history. The number of person-days lost in the field during this past year to accidents or injuries was 104.5 (less than one half of one percent of the total person days) excluding individuals who were prevented from diving but could participate in other aspects of their courses (157 person days). The number of schools accepting SFS programs for credit continues to climb and now includes 89 universities and colleges within the U.S. (see page 11).



(Photo: William McComas)

"One thought that kept coming back to my mind was how many people would never see this part of our world—feel the wonder of it—and sadly, not understand the importance of preserving it for all of us." Linda Thompson, participant in the SFS Large Mammal Ecology Course, Colorado.

Other programming improvements stem from a faculty-wide assessment of "What should an SFS graduate know?". The identification of essential core concepts at the organismal (including physiological and behavioral), populational, community, ecosystem and global levels has brought greater cohesion to our programs. All courses have been brought up to this new standard. In addition, the format for independent research has been changed to one of directed research. Independent projects are now pursued within the general perspective of each program's group research; each student's research advances now benefit the entire group.

A major objective for the coming year is to recruit colleges and universities across the country as SFS Affiliated institutions, thanks to partial funding for this project from the George Gund Foundation in Cleveland. Such relationships with mainstream academic institutions will allow their input into the design of new SFS programs and will help disseminate SFS's educational methodology.

Richard E. Wetzler, Ph.D.

This year, 22 January and summer term courses took place at 11 satellite sites on three continents, a 19% increase over 1986. 35% of our faculty returned from last year, an improvement from 30% in 1986. While student enrollment in satellite programs increased 18% and the actual number of courses increased, more faculty taught more than one course with SFS this year, reducing the number of individual faculty we required by 20%. This improved research continuity, and increased administrative efficiency.

In June, a new study of spinner dolphin social behavior began on the north coast of Kauai, Hawaii. Understanding the structure and dynamics of social cohesion in this highly gregarious species may help in efforts to prevent the massive incidental killings of spinner dolphins in the tuna fishery of the eastern Pacific. Dr. Tony Povolitis, who taught our Recovery of Endangered Species course in Switzerland last year, began a study in Colorado of the habitat requirements of large mammals in the Rockies. He hopes to develop a model for preserving park lands that is based on an understanding of the ecology of large mammal species in the area. A third new program to study the impacts of acid rain on forests in Germany was cancelled due to lack of enrollment.

In May, 30 summer faculty attended the annual faculty meeting in Massachusetts. A series of six workshops focused on identifying ways to help students think creatively, observe critically, and act cooperatively to solve problems. Our success in meeting these goals in the field can be gauged through student evaluations of our programs, students' directed research projects, and the recognition achieved by our faculty and students.

Students found our courses academically demanding. Of 321 student evaluations (80% rate of response) from all summer courses, 47% reported a "dramatic" change in their understanding of the academic material, while another 48% reported "some" change. 88% of the respondents said the academic quality was difficult yet satisfying. Students were asked to rate the academic content of SFS courses relative to their home institutions on the scale of 1-5, with 1 signifying "stronger than" and 5 signifying "weaker than". SFS courses received a mean score of 1.9, indicating that SFS courses are considered more demanding than those offered at home institutions. Students wrote that they gained greater confidence and a sense of accomplishment in meeting SFS's academic challenges.

January and summer term students completed 239 directed research projects during the past year, working individually or in small groups. These projects provide students an important introduction to the full "cycle of inquiry" of scientific research: from initial observation, through hypothesis formation and data gathering, to analysis and interpretation. Student projects also contribute to the overall faculty research projects on each program.

In the Adirondacks, students working with Dr. Robert Singer and Dr. Deborah Roberts investigated the impact of acid rain on fresh water lakes. In an effort to understand a highly controversial international environmental issue, Carolyn Muller wanted to know whether the diversity of zooplankton in acidic lakes is a direct result of increased pH, or is an indirect result of selective predation by insects, which "take over" acidic lakes when fish can no longer survive. Carolyn created small enclosures in an acidic lake, and introduced water beetle larvae into some enclosures and not others. Her periodic measures of zooplankton content suggest that water-beetle larvae prefer specific types of zooplankton, and can even efficiently select the larger in species diversity in acidic lakes.

Doug Fudge has gone fishing with his father out of Gloucester since he was ten years old. This summer he sailed in the Gulf of Maine with SFS on the schooner *Appledore* to study the abandonment of Stellwagen Bank by the endangered humpback whale. Sand lance, a primary food source for humpback whales, have shown a substantial decrease in numbers on Stellwagen bank over the last two years. Doug hypothesized that the decrease in sand lance might be a result of increasing number of humpback whales over-fishing Stellwagen. He proposed that the whales had left the area until the sand lance recover. A partial test of his hypothesis hinged upon establishing that equivalent levels of plankton occur in an area where both sand lance and humpbacks are found (the Great South Channel), and an area where both are no longer found (Stellwagen Bank). Plankton tows indicated equivalent levels of plankton in both places. Thus, the reductions in sand lance might be due to humpback predation, or to some unknown environmental occurrence that remains to be tested. Doug, now at Cornell, hopes to continue studying the problem.

This past June, Ellen Miller and Jean Fang, SFS alumni from the 1986 Ibex course, presented their directed research results at the 67th Annual Meeting of the American Society of Mammalogists. Both students received **SFS Science Communication Awards** for their efforts.

SFS faculty are recognized by the public, and among their peers, as researchers in the forefront of important and sometimes controversial conservation issues. SFS students in Switzerland participated in Dr. Michael Stuwe's Ibex research, which is funded by the Smithsonian Institution and will be featured in an upcoming article in Smithsonian Magazine. Students working with Jim Heimlich-Boran this January and with Dr. Stuart Innes this summer in Alabama have contributed important new insight into the home-range use and social affiliation patterns of bottlenose dolphins. This work has resulted in an invitation from the National Marine Fisheries Service to participate in a dolphin monitoring program in the Gulf of Mexico, to determine the impact of capture on the long-term stability of dolphin populations.

Dr. Dennis Rasmussen was successful in securing World Wildlife funding for SFS to support studies of the endangered tamarin monkey in Panama. Dr. Rasmussen has conducted experimental relocation of tamarins to a protected, uninhabited island near the Panama Canal. He has just completed a book chapter describing the project and the important data on recovery collected with the help of SFS students.

Students of the Humpback Whale Ecology program were delighted to see their Course Director, Dr. Steven Swartz, featured in a National Geographic article this summer. Dr. David Neill, SFS faculty of our Medical Botany course in Ecuador, was recently featured in a Canadian television series called *The Nature of Things* and appeared in the NOVA production, *The Power of Plants*. Reed Noss, who taught the new Parks for Preservation course in Colorado with Dr. Tony Povolitis, has recently drawn the attention of the ecological community for his far-sighted views on the development of protected habitats recently published in a number of scientific journals. Dr. Povolitis was invited to discuss the work done in Colorado during the summer at a Conference in Landscape Ecology in Denver this past September.

Such professional recognition emphasized the far-reaching impact of the work being done by SFS faculty, and gives evidence that SFS students are working with scientists on the leading edge of conservation issues to-day.

Paul H. Forestell

FIELD DIRECTORS' REPORTS

Center for Marine Ecosystem Studies, Virgin Islands

The 1986-1987 academic year marked the recruitment of the first full time faculty for the Center. The Director, Robert Singer, was joined by Peter Edmunds and Deborah Roberts in January. Dr. Edmunds recently completed his Ph.D. on coral energetics off Jamaica through Glasgow University. Dr. Robert's Ph.D. in Ecology is from Rensselaer Polytechnic Institute, from which she worked the past five summers for SFS teaching the Acid Rain course.

The first long term research agenda has been established. We have chosen to study the form and growth of the Caribbean fire coral (led by Dr. Edmunds) in order to better understand and distinguish natural forms of growth from those induced by human disturbance. Dr. Roberts is leading an effort to determine the responses of seagrasses to stress from boat anchoring, a resource management problem of significant implications to the Virgin Island National Park Service which has asked SFS to undertake this work. Dr. Singer is directing a project which is measuring the population growth of the commercially important queen conch, part of our overall emphasis on the sustainability of fisheries. (Dr. Singer was also honored this year by being appointed head of the review panel for the EPA's long term acid rain monitoring program).

This past summer, Drs. Chris Kohler and Robert Dickey led the Sources of Reef Fish Toxins course, which focuses on the ecology of algal toxins concentrated within food chains. Humans who ingest contaminated fish encounter high mortality from this poisoning.

The Center has a unique research opportunity to conduct comparative studies throughout the Caribbean. All the faculty, including the temporary appointees (Mr. Paul Joyce, Ms. Cindy Lott, Dr. Chris Petersen, Dr. Ilze Berzins) collaborated on a Caribbean-wide survey of coral communities to try to quantify the nature of a "typical" reef. This is important because it is difficult to describe a particular reef as "damaged" or "stressed" without placing it in a context of many reefs. Using the schooner *Elinore*, we visited reefs throughout most of the the U.S. and British Virgin Islands as well as Anguilla,

St. Maarten, St. Bart's and Saba. This ongoing research project will be continued over the next few years until a sample of 30 to 40 reefs have been described.

While SFS is committed to staying on St. John for the next year in the current facility owned by the University of the Virgin Islands, Dr. Singer investigated sites on St. Lucia, Greater Camanoe, Pine Gay (Turks and Caicos), and several sites in the U.S. Virgin Islands in search of a permanent home for the Center.

Annual enrollment reached an all time record total of 101 students, who participated in two semester programs and 4 summer courses. Students over the past several years have come from Italy, St. Lucia, Canada, Argentina, and many of the United States. Two 1986 semester alumni worked for several months as National Park Service Interns on an assessment of seagrass beds and a mongoose control project.

Robert Singer, Ph.D.



(Photo: Chris Neefus)

Cooperative effort is particularly important during underwater data collection at the Marine Ecosystem Center's base in Lameshur Bay, St. John USVI.

Center for Rainforest Studies, Australia

In the past year, the SFS Center for Rainforest Studies has gone from an idea on paper to a full-fledged program with 34 students attending a spring semester and two summer courses, thanks to a founding gift from the **R.J. Reynolds Company**. The setting for the program has been temporarily established on the southern end of the Atherton Tableland, in far north Queensland - near the town of Millaa Millaa. We have operated out of two rented houses which serve as living and classroom space, until we are able to establish a permanent home. We are currently pursuing several proposals involving property in the middle of primary rainforest and adjacent to World Heritage land.

Ervand Peterson served as the start-up Field Director. His Ph.D. is from the University of Michigan in natural resource management, and he has considerable experience directing field seminar and environmental education programs. Several part-time faculty over the past year participated in our programs. John Winter (Ph.D. in zoology, University of Queensland) is a former Queensland National Park and Wildlife Service employee of 15 years and renowned expert on Australia's wet tropics. Gordon Duff, a professor from James Cook University in Townsville where he earned his Ph.D., is an expert in rainforest botany; and Nicky Goudberg, also with a Ph.D. from James Cook, is an authority in possum behavior and rainforest mammalogy. (Dr. Goudberg has since joined SFS's full time staff as senior resident faculty member.) William Laurance, a graduate student from the University of California, Berkeley, who has been researching the effects of deforestation on populations of rainforest mammals in Australia for the past 2 years, taught in both Tropical Species Diversity summer courses.

A wide variety of student research projects were undertaken during the 8 start-up months, including: two projects in forest regeneration continuing projects in *Rattus* behavior and interaction, rainforest corridors as highways for possums and other species, comparison of disturbance-adapted plants in logged and cyclone-damaged rainforest, cane toad distribution and use of logging roads to invade rainforest, fungi distributions within Theresa Creek, and rat distribution and expansion from rainforest patches. Through these research projects, the Commonwealth Scientific Industrial Research Organization (CSIRO) Tropical Research Station has approached SFS to establish a cooperative agreement. They will offer SFS computer use, library use, and consulting with resident staff scientists on research projects. In return, we will share our research results with them.

The Center has become an established part of the Millaa Millaa community. Nearly half of the entire town's population attended the semester class presentation of their final research reports. We have presented programs at the Millaa Millaa State School and used their facility for public presentation of research projects. Bob Busteed, the Headmaster, has been extremely supportive of our program and is planning to develop cooperative interaction between his students and SFS students.

Dr. Peterson returned home to California at the end of August, and is succeeded by Mark Noble. Dr. Noble earned his doctorate in biogeography from the Australian National University; his M.S. and B.S. in botany are from the University of Minnesota. He was the Director of the University of Colorado's Mountain Research Station as well as Assistant Professor and member of the graduate faculty at CU before joining SFS.

Ervand Peterson, Ph.D.



Students of SFS' Wildlife Management courses have produced state-of-the-art autecological studies of the Masai Giraffe (*Giraffa camelopardalis*), that inhabit our site in Kenya.



(Photo: Zadya Lungren)

Near our site in the Rain-forests of Northern Queensland, semester student Karen Crawley works on her Directed Research project studying *Rattus* distribution and movement between rain-forest patches.

At the heart of the problem of enhancing wildlife productivity is the biological interaction between herbivorous mammals (mostly ungulates) and the rangeland vegetation to which they are closely adapted. Our group research has focused upon this herbivore/plant interface, developing autecological studies of the giraffe (*Giraffa camelopardalis*) as a model. Our experimental work is demonstrating the consequences of increased feeding in reducing the dietary quality of the giraffe's preferred host plants, the *Acacia* species. Current research also involves mapping the ranch's vegetation, observing the feeding behaviors of giraffes (individually and in known social groupings) and quantifying plant recovery and anti-herbivore defenses (such as thorn production).

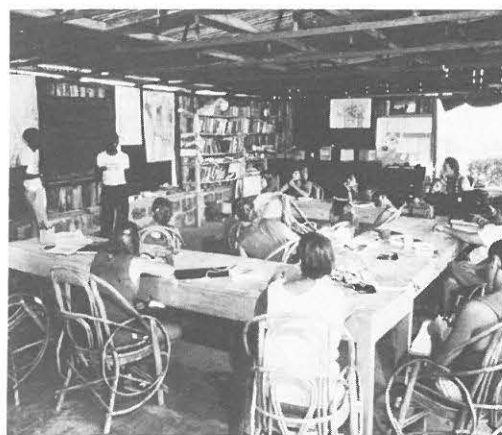
Five years of SFS collaboration with Wildlife Ranching and Research (WRR) - our landlords for the Center's campus - have been compiled in a report edited by Dr. Brad Stelfox and SFS alumnae Sara Graves. The results quantify the efficacy of the Ranch's cropping program and the ecological viability of such schemes for producing needed protein within semi-arid lands. Major conclusions indicate that game ranching is a better means of protein production per hectare than agricultural practice within this biome. Dr. Stelfox's publications as a result of his SFS work in this area have appeared during the past 3 years in the *Journal of Animal Ecology*, *African Journal of Ecology*, *Swara* and *Acta Zoologica Fennica*.

Dr. Stelfox, our first full time faculty member in Kenya and one of our very first summer faculty, "retired" from his senior resident faculty position at the end of the spring term to return to his native Canada with his new wife. He had taught 9 summer courses and 3 semesters for SFS since 1982 - 190 students in all. Dr. Stelfox was succeeded for the summer program by Truman Young, who, for his University of Pennsylvania doctorate, studied the ecology of Mt. Kenya's unique high alpine flora. Dr. Young has served on the faculties of St. Lawrence University and the University of Nairobi.

Dr. Toni Milewski joined SFS in September as a resident faculty member after a successful summer of SFS teaching. Dr. Milewski received his Ph.D. from Murdoch University in Australia, taught biology at the University of Western Australia, and has published two dozen articles on community and ecosystem ecology in professional journals. Working from our WRR base, Dr. Milewski is collaborating on a National Science Foundation funded project pertaining to nitrogen fixation in grassland soils in addition to his SFS teaching responsibilities.

A total of 70 students participated in 2 semester programs and 2 summer courses this year. Other recent developments include a well attended reunion from all Kenya courses in May in West Hartford, Connecticut. Improvements in our facilities at WRR include the construction of an extension to the classroom/dining building to house our field library, improved sanitary facilities and the acquisition of a bus to safely transport the entire group together on extended field trips. Field trips spanning much of Kenya's geography have been redesigned to better fit the curriculum.

The main building at the SFS Center in Kenya serves as a lecture hall, library, study-area and dining room.



(Photo: Elsen Karstad)

MARKETING AND ADMISSIONS DIRECTOR'S REPORT

October 15, 1987

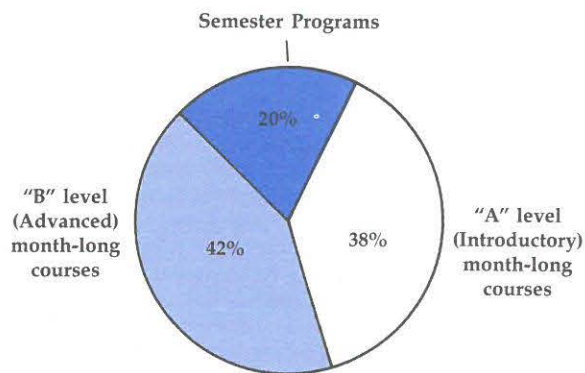
Yesterday afternoon, as we were packing up the SFS slide show after a well attended presentation at Tufts University, a young man approached the group of students who had stayed on to ask questions. Addressing the group, he said, "No matter what these people tell you, they can't begin to describe how great this program is. I was excited about going to Ecuador with SFS, but no way could I have imagined what a great experience it would be. We were learning all the time—the faculty knew so much and having the opportunity to spend two weeks with Leonardo (the local Yumbo medicine man or shaman) was incredible. The whole experience is beyond words - you have to go do it for yourself."

The enthusiasm of Michael Tasch, an alumnus of our summer 1987 Medical Botany course in Ecuador, is a welcome reward to the members of the Admissions Staff. 1987 marked our fourth consecutive year of significant student growth as the Admissions Office processed:

- over 11,000 inquiries, a 15% increase over 1986
- over 800 applications, a 15% increase over 1986

This growth culminated in an increase of 49% in semester enrollment and a 12% increase in month-long enrollment.

1987 SFS Enrollment

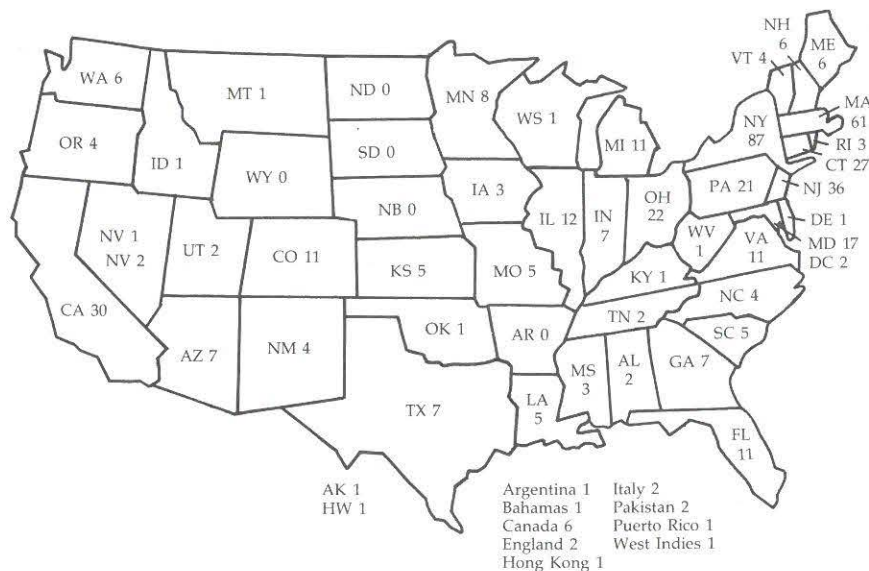


(Photo: Philippa Richards)



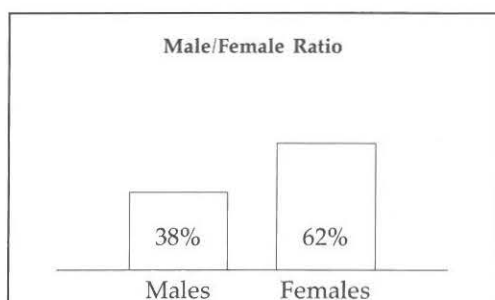
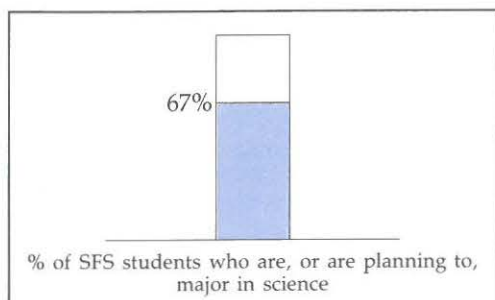
Tufts student Michael Tasch, left, in the Ecuadorian Rainforest.

Michael Tasch is one of 495 students from 47 states and 9 countries who went into the field with SFS this year.

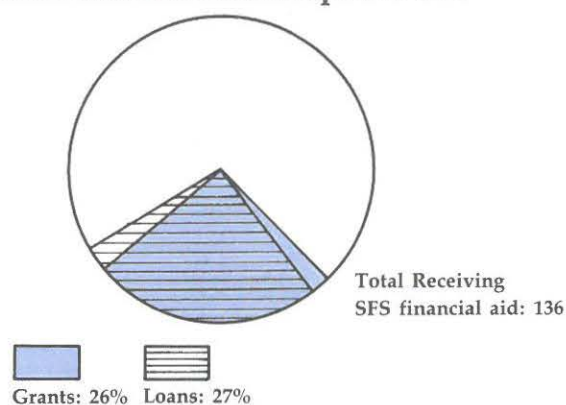


Michael, now a senior, is financing his own way through Tufts and raised the funds for his course with the help of SFS and Tufts scholarships and loans. He was one of 127 students receiving scholarship assistance from SFS in 1987.

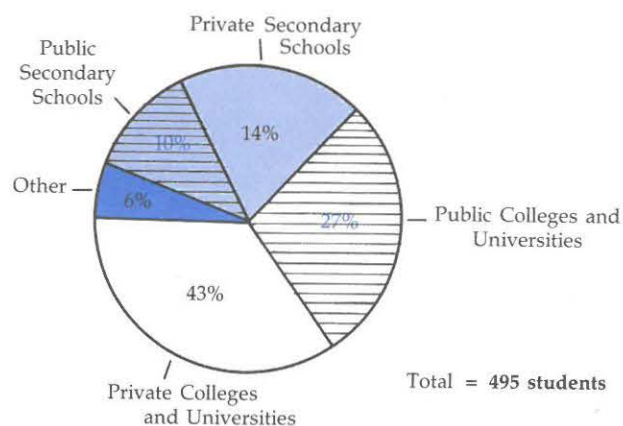
Each year the Admissions Office collects copious statistics on SFS participants. Our Class of 1987 is:



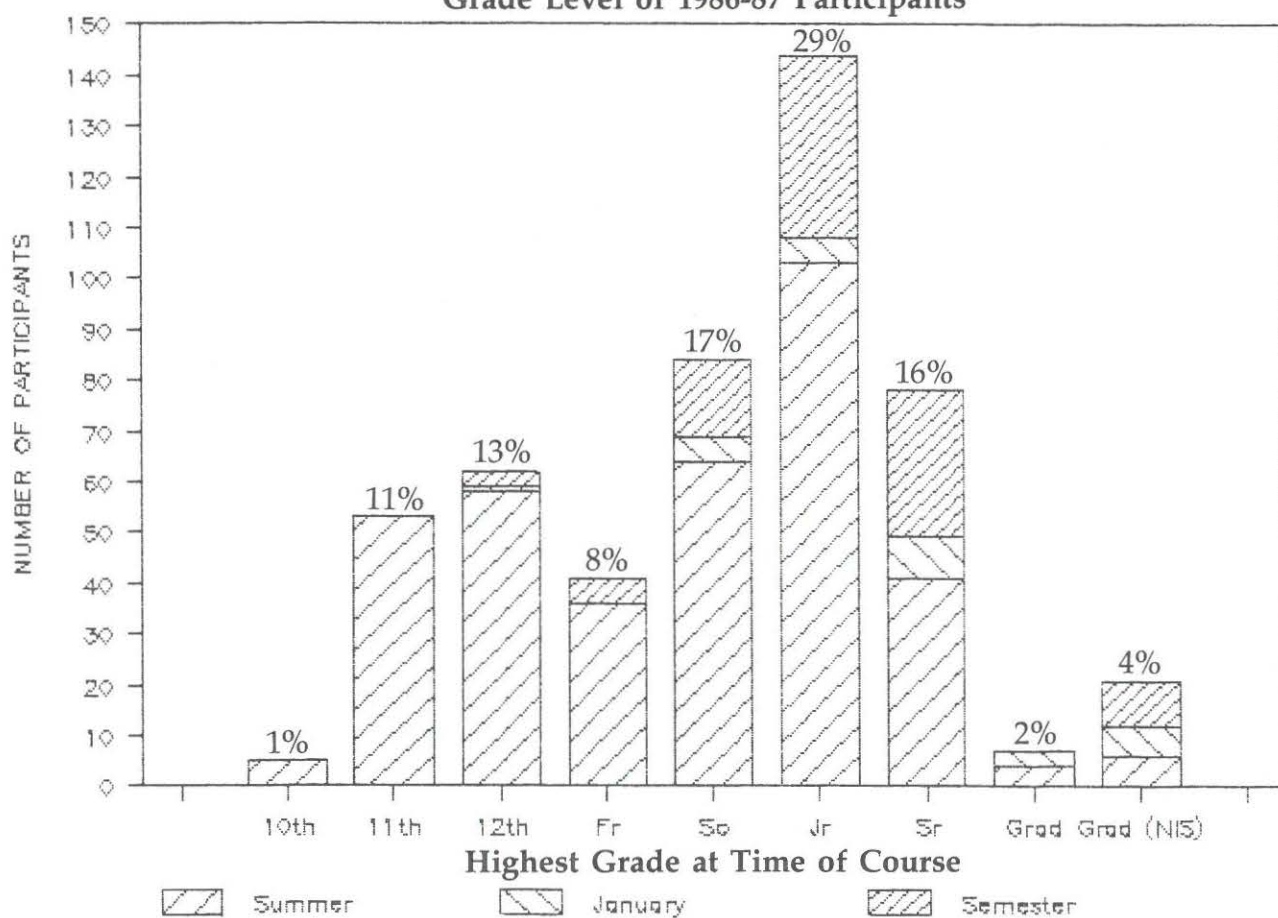
SFS Financial Aid Recipients 1987



Schools Attended by 1986-87 SFS Students



Grade Level of 1986-87 Participants



Michael and the many other alumni and potential SFS students we meet offer us live proof of what we've been seeing on paper in the Admissions Office - SFS students are special people. They are bright, energetic, curious and committed. The following pages will

introduce you to the members of the SFS Class of 1987. If they are representatives of the decision makers of the future, we have good cause for optimism.

Andrea C. Walgren

TEAM PROFILE— "ACID RAIN/ADIRONDACKS" JULY, 1987

Faculty:

Deborah Roberts, Ph.D.

School/Major:

Rensselaer Polytechnic Institute
(Biology)

Interests:

Resident Faculty—SFS Center for Marine Ecosystem Studies/Caribbean: SFS Acid Rain faculty for 5 years. Interests include running, camping and sailing.

Robert Singer, Ph.D.

University of Illinois (Limnology)

Former SFS Dean; Field Director—SFS Center for Marine Ecosystem Studies; Head of EPA Review Panel—Long-term Acid Rain Monitoring Program. Enjoys windsurfing, running, sailing.

Students:

Darryl Beasley
Boston, MA

Hampton University
Sr./Marine Science

Boy Scout; joined SFS to gain competence in the field

Cyrus Boga
Karachi, Pakistan

Hamilton College
Jr./Chemistry

Academic award winner; member Hamilton Economic Council; seeking hands-on experience

Cheuk Kwong (Stephen) Choy
Brooklyn, NY

Edward R. Murrow H.S.
Junior

Honor roll; Junior Academy of Science; conducted acid rain research at school

Heather Knight
W. Greenwich, RI

Lincoln School
Junior

Member Natural Science Field Club, writes for school literary magazine; x-country runner

Carolyn Muller
Stoneham, MA

Framingham State College
Sr./Environmental Biology

Interests include SCUBA, horseback riding; SFS will allow her to "live and work outdoors"

Philip Nolan
Dayton, OH

Wright State University
Soph./Geology, Geography

Cyclist; member Sierra Club, Greenpeace; interested in potential connection between Ohio coal and acid rain

Jane Payeur
Portland, ME

University of Southern Maine
Jr./Earth Science

ROTC; Amateur meteorologist and astronomer; hopes to continue her research after SFS course

Kristin Steinmetz
Trenton, NJ

Haverford College
Soph./Religion

American Friends Service Committee; avid gardener; wants to learn how she "can make a difference"

David White
El Paso, TX

Tulane University
Sr./Political Economics

Explorer, camper; works at college radio station; sees SFS as a means of getting ahead in his career

(Photo: William McComas)



Class of the 1987 Acid Rain: Changing Aquatic Ecosystems Course Group

COLLEGES AND UNIVERSITIES ACCEPTING/ AWARDING CREDIT FOR SFS COURSES

American University
Amherst College
Augsburg College
Barnard College
Bates College
Berea College
Boston University
Brown University
California Lutheran University
California State College
Carleton College
Carnegie Mellon University
Clark University
Colby College
Colgate University
College of the Atlantic
Connecticut College
Cornell University
Dartmouth College
Denison University
Duke University
Eastern Michigan University
Emory University

Evergreen State College
Framingham State College
Gettysburg College
Green Mountain College
Guilford College
Hamilton College
Hampshire College
Harvard College
Haverford College
Huntingdon College
Indiana State University
Kansas State University
Kent State University
Kenyon College
Macalester College
Marlboro College
Merrimack College
Miami University
Middlesex Community College
Mount Holyoke College
Mount Union College
Northern Kentucky University
Northeastern University

Northwestern University
Ohio State University
Oregon State University
Pennsylvania State University
Prescott College
Purdue University
Randolph Macon College
Saint Lawrence University
Salem College
Shimer College
Simons Rock College
Smith College
Southern Connecticut State University
State University of New York
Swarthmore College
Trenton State College
Tufts University
University of California
University of Cincinnati
University of Colorado
University of Connecticut
University of Iowa

University of Kansas
University of Maine
University of Massachusetts
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 Wisconsin
Virginia Polytechnic Institute
and State University
Washington University
Wellesley College
Williams College
Wofford College
Xavier College
Yale College



Members of our faculty, gathered here for the Annual Faculty meeting, are the lifeblood of SFS.

PARTICIPANTS

CENTER FOR MARINE ECOSYSTEM STUDIES, VIRGIN ISLANDS

Marine Biology and Management Fall Semester, 1986

Lisa Alschuler
Brown University
Barth Anderson
Simon's Rock College
James Bingham
Saint Michael's College
Sybil Conway
Temple University
Gilbert Falcone
Colby College
Jill Freidberg
Catlin Gabel
Robert Gennari
University of Maine
Jane Goldstein
Middlebury College
David Guttman
Washington University
Todd Hembrough
Rensselaer Polytechnic Institute
Rhea Hoch
Simon's Rock College
Sanderina Kapteyn
Pitzer College
Linda Lambert
University of Northern Colorado
Tracey Morrow
Colby College
Walter Raynes
Roanoke College
Rachel Shapiro
Haverford College
Joshua Smith
Williams College
Sean Smith
Simon's Rock College
Joseph Solomon
University of Vermont
Scott Stratton
Colby College
Jonathon Yoder
Eastern Mennonite College
Larissa Zacchini
University of North Carolina

Coral Reef Ecology I Level A

Michael Abrams
Friends School
Frank Baensch
Hebron Academy
Steve Bond
Simon's Rock College
Gerald Chertavian
Bowdoin College
Heather Guthrie
Moorestown Friends
Maye Head
The Altamont School
Rupert Herbert-Burns
College of Maritime Studies
Clifton Ho
Tufts University
Nicole Hosler
Skidmore College
Evelyn Lafave
Laurel School
Jeanne Lambert
Cincinnati Country Day
Brian Lockwood
Macomb Community College
Antonio Perazzi
Liceo Ginnagio Beccaria
Alicia Pulsifer
St. Marks School
Kimberly Stewart
University of Virginia
Carrie Viko
Ethel Walker School

Marine Parks Management, Level B

Christian Bode
University of New Orleans
Susan Bolton
Pennsylvania State University
Catherine Coon
University of Arizona
Alex Flagg
Dwight
Tom Foderaro
University of Southern Colorado
Laing Foster
Westminster School
Eric Friedman
Trinity School
Ian Gilbert
Colby College
Hillery Head
Yale University
Michelle Huber
Kent State University
Glenn Jahnell
St. Michael's College
Lindsay Jewett
Milton Academy
Craig Maiwald
University of Vermont
Edward Slingerland
Princeton University
Andre St. Omer
St. Mary's College

Coral Reef Ecology II Level A

John Alderman
St. Paul's School
Walter Aston
St. Paul's School
Francis Chan
The Bronx High School of Science
Aletia Coe
Catlin Gabel High School
Paul Delaney
Colorado School of Mines
Alexander Garnett
Darien High School
David Godschalk
University of North Carolina
Elizabeth Greene
Dalton School
Todd Hamilton
Boulder High School
Kirstin Hargie
New Trier High School
Sarah Lank
The Study School
Alexander Perry
Milton Academy
Jamie Sanderson
Albany Academy
Alexandra Stollman
Wellesley College
Ben Tsocanos
New Canaan High School
Desiree Urrutia
Villanova University

Sources of Reef Fish Toxins Level B

Hussein Fakhry
Clark University
Alexis Garcia-Penna
Tulane University
Suzanne Griffin
UC Davis
Diane Grigg
Northwestern High
Thano Hasiotis
Belmont Hill School

CENTER FOR RAINFOREST STUDIES, AUSTRALIA

Tropical Species Diversity, Level A

Lillian Bernhardt
Duke University
Julianne Berry
Stanford University
Nicole Butz
New Trier High School
Amy Craver
Western Reserve Academy
David Hovis
Duke University
Nancy Inouye
Duke University
Jessica Jay
Mt. Greylock High School
Susan Lee
Bronx High School of Science
Paul Marks
Skidmore College
Thomas Matheson
Harvard College
Maria McCabe
William Smith College
Edward Sawyer
Hamden High School
Janet Woodfin
Bronx High School of Science

Tropical Species Diversity, Level B

Melissa Duryea
Middlebury College
Hanelli Francis
University of Colorado
Sheila Froderman
Wellesley College
Thomas Gordon
Hampshire College
Zadya Lundgren
Hampshire College
Lois Morrison
University of Pennsylvania

Christine Petaccia
Drew University
Kenneth Snyder
Oberlin College

Biogeography: Patterns of Ecological Diversity, Spring Semester, 1987

Michael Benton
Forsyth Country Day School
Roxanne Bogart
Bryn Mawr College
Kathleen Bradley
Colby College
Caroline Brawner
University of California Santa Cruz
Matthew Christian
Luther College
Rebecca Contois
Harvard-Radcliffe
Karen Crawley
University of Mass-Amherst
Lisa Clapes
Barnard College
Jamie Eisenfeld
University of Pennsylvania
Jon Harwood
Portland State University
Heidi Lieberman
University of California-Santa Cruz
Wendy Ludwig
University of Pennsylvania
Paul Zevon
Dean Jr. College

William Horton
University of Georgia
Carl McKay
Washington and Lee University
Emily Onello
Carleton College
Scott Rice
Virginia Tech
Joel Simon
St. Olaf College
Edmund Smith
Santa Rosa Junior College
Caryl Waggett
Carlisle Regional High School
Joseph Williams
Sonoma State University

Marine Biology and Management Spring Semester, 1987

Jennifer Beeh
University of Puget Sound
Erin Block
Williams College
Adam Bortz
Cincinnati, OH
Trudy Cameron
University Prince Edward Island
Matthew Cohen
University of Rhode Island

Rick Englert
Syracuse University
Drew Girolamo
The College of Wooster
Anita Graf
Mount Holyoke College
Jennifer Hintz
College of St. Thomas
Jonathan Hoffman
Simon's Rock College
Tom Little
University of Virginia
Heidi McKee
Yale University
Nicholas Parash
College of William and Mary
James Prabulos
Tufts University
Guillermo Rivera
University of Cordoba
Heather Smith
University of Vermont
Chase Sovell
Bates College
Kristian Teleki
North Toronto Collegiate
Dana Torres-Stoddard
SUNY Binghamton

**Wildlife Biology and Management
Fall Semester, 1986**

Beth Alder
Eastern Michigan University
Stephanie Blenner
Bates College
Sarah Brace
Smith College
Carolyn Chandler
University of Colorado
Carlin Finke
Brown University
Marianna Gatje
Connecticut College
Drew Girolamo
The College of Wooster
Joanna Greenfield
Wesleyan University
Kelly Gruninger
Harcum Junior College
Lynne Lawrence
University of California
Kathleen McCarthy
New York University
Laurie McKee
Mount Holyoke College
Suzanne Meadows
Western Maryland College
Karen Muir
Connecticut College
Britta Muiznieks
University of California
Brooks Mullen
University of Colorado
Sidney Ottem
Brown University
Felicia Sanders
Duke University
Gillian Schweitzer
Tufts University
Helen Sellers
Stanford University
Alison Shaw
Connecticut College
David Sosa
Bucknell University
Edward Teufel
Middlebury College

**Wildlife Management
Level B**

Brian Ascher
Princeton University
Laurie Beck
University of New Hampshire
Julia Calhoun
Trinity College
David Carlson
University of Massachusetts
Amy Davis
Rhodes College
Elizabeth DeLano
Mary Washington College
Jennifer Goodwin
University of Vermont
Meredith Kennedy
Michigan State University
Carl McKay
Washington and Lee University
Jennifer Neale
Northwestern University
Jaffray Phillips
Amherst College
David Shin
Johns Hopkins University
Amy Smith
Molloy College
Joseph Trumpey
Wabash College

**Wildlife Management
Level A**

Kimberly Bowes
Town of Webb High School
Leila Bright
Rye, NY
Scott Coles
Texas AM University
Caroline Crutcher
Phillips Academy
Desiree Detoy
John F. Kennedy High School
Carl Guglberger
Paul Smith's College
Sanam Hoon
Clark University
Barbara Martin
University of California, Davis
Mary-Sue Nichols
International School of Islamabad
Debbie Oksenberg
Greenhills School
Joanne Scheiber
Connecticut College
Eric Slater
Bennington College
Marjut Turner
Boston Latin School
Laura Woods
Williams College
Sheng Wang
Bronx High School of Science

**Wildlife Biology and Management
Spring Semester, 1987**

Helen Armstrong
University of Vermont
Claire DeLeo
Villanova University
Kerri Galloway
Rutgers University
Jackie Goldberg
Cornell University
Kelly Hernsdorf
St. Lawrence University
Laura Jambazian
Wesleyan University
Ellen Lambert
University California Davis
John McAlpine
University of Victoria
Susan Mickolyzck
Southern Connecticut State University
Caroline O'Brien
Colby College
Erica Russell
Temple University
Wendy Schwarz
Yale University
Todd Schwebel
Union College
Blanca Simmons
California Polytechnic University
Wendy Todaro
Swarthmore College
Eileen Tucker
Allegheny College
Michelle Weidemann
Union College
Day Wilkes
Mt. Holyoke College

**"Acid Rain":
Changing Aquatic
Ecosystems**

Darryl Beasley
Hampton University
Cyrus Boga
Hamilton College
Stephen Choy
Edward R. Murrow High School
Heather Knight
Lincoln School
Carolyn Muller
Framingham State College
Philip Nolan
Wright State University
Jane Payeur
University of Southern Maine
Kristin Steinmetz
Haverford College
David White
Tulane University

**Deforestation:
Tropical Rainforests**

Roger Benepe
Huron College
Tanja Crockett
Virginia Polytechnic Institute
Paul Doolittle
George Washington University
Alexander Emonds
St. Ann's School
Rima McCoy
Oberlin College
Jane McGinnis
West Virginia University
Andy Nass
Cornell University
Minjung Park
Bronx High School of Science
Benoit Richard
McGill University
John Roberts
Western Reserve Academy
Robert von Stein Redick
University of Virginia

Dolphin Biology and Behavior, Level A

Stephanie Bars
Lewis & Clark College
Rebecca Brandstadter
Eckerd College
Mark Caldarone
Curry College
Amanda Cotten
Metairie Park Country Day
Gretchen Dietrich
Ohio University
Lauren Doctoroff
Miss Porter's School
Jennifer Elliott
Heathwood Hall Episcopal School
Rebecca Galler
Phillips Academy
Alison Ginsberg
Rivendale Country Day
Karen Hopfl
Vassar
Anne Kent
Central Connecticut State University
Devin McDonald
St. Ann's School
Heather Seabury
Greenhills School
Caren Stark
Bronx High School of Science
Ann Sykes
Centre College
Danielle Urban
Concord Academy

Dolphin Biology and Behavior, Level B

Sarah Ellenberger
Hillsdale College
Rebecca Galler
Phillips Academy
Margaret Kline
Bryn Mawr College
Donna Lanzendorf
Union College
Allegra Lowell
Duke University
Erica McDonald
New York University
Kim Michel
University of Montana
Lori Nero
St. Bonaventure University
Francie Ruben
University of Pennsylvania
Paul Schuh
Miami University
Nanci Shapiro
University of Pennsylvania
Emily Showalter
Pasadena City College
Karen Van Blaricum
Bucknell University
Kimberly Vines
University of California, Santa Barbara
Marie Waechter
Allegheny College
Tom Walk
University of Missouri
Valier Zandoli
University of Pennsylvania

Dolphin Biology and Behavior, January

Lisa Barry
University of Nevada
Alexander Douglas
University of Massachusetts Amherst
Valerie Garlick
Jefferson County Open High School
Nancy Haley
Tufts University
Jill Hyland
St. Olaf College
Luanne Johnson
Butler University
Elizabeth Kennedy
Phillips Exeter Academy
Louellen Klints
Geneseo University
Garnett Matthews
University of Missouri
Maryellen McPhee
Tufts University
Malia Schwartz
Arizona State University
Kira Serchuk
Amherst College
Eric Taniuchi
Colgate University
Kim Williams
Cook College; Rutgers University

**Ecology of Bald Eagles,
Level A**

Richard Camp
University of Minnesota
Shelly Catterson
Mountain Open High School
Rachel Heyman
Stuyvesant High School
Jennifer Hillmer
College of Wooster

Joanna Kline
Tufts University
John Marburger
Loomis Chaffee School
Amy Marquis
Connecticut College
Patrick Minze
Edward R. Murrow High School
Lili Murad
Northeastern University
Rachel Urban
Rutgers University

Endangered Monkeys: Experimental Social Ecology, Level A

L. Michelle Barton
Winchester High School
H. Gardner Bryant
Buxton School
Elizabeth Brannon
St. Ann's School
Wendy Cole
Evanston Township High School
Michele Gilbert
North Andover High School
Stacy Harris
San Francisco State University
Jolie Katz
University of California
Santa Cruz
Kiera Kelly
Evanston Township High School
Meghan Kennedy
Skidmore College
Robert Peloquin
Deerfield Academy
Joff Roy
Tilton School

Endangered Monkeys: Experimental Social Ecology, Level B

Hugh Bailey
North Carolina State University
Brenda Bernstein
Bronx High School of Science
Elisabeth Buchanan
Shimer College
Karen Cosentino
Amherst College
Elizabeth Dettmer
University of New Mexico
Kelly Dugan
University of Kansas
Laura Garst
Virginia Polytechnic Institute
Jeannie Giordano
College of Charleston
Joshua Greenberg
Norwich, VT
Andrea Lewis
University of British Columbia
Murray McHugh
Bronx High School of Science
Richard Roston
Brown University
Dina Strachan
Harvard College
Christopher Sutton
University of Connecticut
George Webber
Duke University
David Williams
Emory & Henry College
David Zipes
Indiana University

Endangered Monkeys: Experimental Social Ecology, January

John Beck
Hillsdale College
Michael Berlin
SUNY Oneonta
Robert Boyajian
University of Maine
Frances Brewster
Colgate University
Ronald Cammarata
Cornell University
Daniel Chaja
Indiana University
Amy Kessel
Hillsdale College
Barbara Kirkevold
University of Washington
Peter Linehan
Middlebury College
Thomas Magana
Cornell University
Derek Madden
California State University,
Fresno
Marc Richards
Hillsdale College
Blaine Rothauer
Kean College
Lori-Anne Russo
University of Massachusetts
Amherst

Humpback Whale Ecology, Level B

Robert Irvin
University of Colorado
Kimberly Kent
University of Maryland
Alice Leung
New York University
Gail Lewkowicz
University of Vermont
Brenda Lucci
Quinnipiac College
Roberta MacIntosh
Trenton State College
David Mariera
Bristol Community College
Eric Mintz
Wesleyan University
Robert Nunag
Franklin & Marshall College
Donna Reardon
Trenton State College
Julie Roark
University of California
San Diego
Dawn Robertson
Centenary College
Connie Jo Sears
Southwestern University
Glynis Shiner
Stockton State College
Kimberly Thorsfeldt
University of Iowa

Humpback Whale Ecology, Level A I

Lance Dibble
Principia School
Daniel Evans
Amherst High School
Mark Ford
St. Michael's College
Douglas Fudge
Masconomet Regional High
School
John Henry
Ball State University

Stuart Martin
University of North Carolina
Chapel Hill
Maryann Morley
University of Vermont
Jennifer Schenkel
Cornell University
Jon Shurin
Shaker Hts. Senior High School
Illica Silverman
Stuyvesant High School
Deborah Sodickson
The Winsor School
Dave Stemper
University of Minnesota
David Spielman
International School of Islamabad
Christopher Van Haver
University of Grenoble
Eliza Whitbeck
Newton North High School
Laura Wimmer
Frostburg State College
Kevin Young
University of Notre Dame

Humpback Whale Ecology, Level A II

Susan Armknecht
Kent School
Dianne Baker
Catonsville High School
Ashley Bruce
Brown University
Johanna Capps
Corpus Cristi State University,
Del Mar
Kathryn Curtin
Miami Dade College
Brenda Gregory
Sarcosie High School
Nico Katz
Evanston Township High School
Deborah Keenan
Henrico High School
Georgiann Knafelc
Southern Illinois University
Natasha McLaren
New Hampton School
Cecile Moore
College of Staten Island
Debra Scheenstra
University of California Davis
Keiko Ueda
Washington University
Andrea Vecchione
Humanities High School

Medical Botany: Discovering New Plant Medicines, Level B I

Cindi Arost
Cornell University
Pia Grutter
Oregon Institute of Tech.
Tish Hockenberry
Clark University
Joel Hunter
Whitworth College
Kimberly Kamborian
Boston University
Dayton Lambert
Miami University
Paul Olson
Iowa State University
Evan Rauch
University of California Berkeley
Deborah Smith
University of New Hampshire

William Stauffer
St. Olaf College
Charles Stroebel
St. Olaf College
Annie Szvetcz
University of Colorado
Jayne Uerling
Cornell University
Erika Vohman
University of Colorado

Medical Botany: Discovering New Plant Medicines, Level B II

Rachel Bostonian
Ouachita Baptist University
Cathleen Dull
University of Nevada Las Vegas
Todd Fellman
College of St. Thomas
MaryEllen Gevry
Mass. College of Pharmacy
Yale Goldman
University of Pennsylvania
Leona Greer
Park College
Julia Henn
Oberlin College
Tamara Parvizi
Clark University
Alisa Pascale
Brown University
Montserrat Rios
Ecuador
Philippa Richards
William Smith College
Cherylann Schreiner
Johnson State College
George Shillinger
University of Pennsylvania
Michael Tasch
Tufts University
George Theodoris
SUNY Stony Brook
Sara von Schilling
Chatham Hall
Jonathan Rosenthal
University of Michigan

Parks for Preservation: Large Mammal Ecology, Level A

Matt Anderson
Winter Park High School
Michelle Boucher
Smith College
Martin Caracul
SUNY New Paltz
Lissy Dyer
The Taft School
Maia Enzer
Union College
David Epstein
Edward R. Murrow High School
Kristina Jackson
University of Florida
Gail Johnson
Brunswick High School
Jordon Magill
Edward R. Murrow High School
Jon Schwartz
Rye Country Day School
Mark Skalny
Paul Smith's College
Linda Thompson
Greenfield Community College
Merideth Toler
College of Environmental Science
and Forestry

Parks for Preservation: Large Mammal Ecology, Level B

Peter Ahlfeld
Clark University
Susan Buch
Whitworth College
Ann Busse
Laurel School
Martin Caracuel
SUNY New Paltz
Seth Cohen
University of Michigan
David Cornet
Cleveland State University
Pamela Hess
University of Vermont
Todd Haines
Phoenix College
Elizabeth Lincoln
Red Rocks Community College
Jeffrey Peterson
San Juan College
Nicole Shurman
University of Michigan
Theresa Spataro
Southern Connecticut State University
Barbara Thompson
Framingham State College

Population Dynamics of Harbor Seals, Level A

Pauline Chiou
Phillips Exeter Academy
Molly Curtin
Wellesley High School
Torrey Eilertson
University of Massachusetts
Jeffrey Freeseemann
University of California Berkeley
Stephanie Gottlob
Beachwood High School
Anne Keating
Winsor School
Suzanne Meadow
Cornell University
Michael Paler
Trinity School
Anthony Pera
Prescott College
Anne Smyth
St. George's School

Population Dynamics of Harbor Seals, Level B

John Baker
Villanova University
Angela Braeseker
Eastern Michigan University
Elisabeth Brennan
St. Michael's College
Elizabeth Fenstermacher
North Carolina State University
David Ghiglione
University of California Santa Cruz
Julie Kettelkamp
Fort Wayne, IN
Paul Kriebel
University of Maryland
Evan Lurier
University of Rochester
Marguerite Martini
Mundelein College
Joanne Moseley
Sweet Briar College
Mary Namiotka
Temple University

Jeffrey Shaman
University of Pennsylvania
Perri Wexler
College of Wooster

Recovery of Endangered Species, Level A

Ryan Brackley
Boston College
Jennifer Cullis
Connecticut College
Mindy Douglas
Erskine College
Polly Parker
Westminster School
Edoardo Perazzi
University Statale Milano
Adrienne Statfeld
Skidmore College

Recovery of Endangered Species, Level B

Catherine Avent
Prescott College
Lynley Jones
Northland College
Solomon Ioannou
SUNY Binghamton
Hau Le
University of Utah
Peter Leider
Stanford University
Barbara Mayritsch
Santa Clara University
Jennifer Pipe
University of Vermont
Patrick Zollner
University of Michigan

Social Ecology of Spinner Dolphins, Level A

Lynne Barre
Ridge High School
Alice Behrens
Garrison Forest School
Nicholas Birnback
St. Ann's School
John Blum
Riverdale Country School
Darya Bronston
Notre Dame High School
Brad Gould
The Lovett School
Penelope Graboys
Brookline High School
Claudia Hackethal
Vivian-Webb School
Yvonne Koston
Canada College
Alexandra Landrum
St. Lawrence University
Anna Manresa
Miami Sunset Senior High
Lori Rosenburgh
University of Vermont
Nicki Ruckman
Hawken School
Lisl Shoda
Northwestern University
Ted Slabik
Simon's Rock College
Virginia Spahr
Trinity College

Social Ecology of Spinner Dolphins, Level B

Gary Avery
University of Puget Sound
Stacey Benton
Cincinnati Country Day
Roger Donovan
Lafayette College
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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 or made available to students of the School and does not discriminate on the basis of sex, religion, race, color, national and 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.



(Photo: Deborah Roberts)

Students and faculty from the Marine Ecology and Management semester aboard the schooner Elinore as they embark on a 10 day venture to investigate the varying reef systems of the Virgin Islands.

TREASURER'S REPORT

SFS's continues to remain free of long term debt. The School's chronically cash poor environment resulting from sustained growth showed some improvement this year. Working capital improved significantly compared to last year; but we are still forced to use resources better applied to program development in order to fund working capital. Total fund balances improved significantly by \$173,902, due to more efficient operations and several substantial in-kind contributions. The operating budget this year was within 5% of the Trustee's goal of "breaking even", where tuition income equals all operating expenses except scholarships, capital expenses, and new program development costs; these exceptions are the areas to which we have applied all other 1986/87 contributions.

We expect the 1987/88 budget to meet this goal. FY 1988 should see total income increase to \$2.1 million as the six semester programs fill to capacity with 146 students and as the summer grows to 480 students. We are pleased to be able to hold the average tuition increase next year to 6%.

Each SFS Center currently utilizes leased facilities. A major objective over the next several years is to build campuses which we control, enabling improvements in the lab, library and related educational and scientific plant. Much of the projected \$200,000 increase in fund balances for the coming year will be set aside for this purpose.

Carlos Riva, Treasurer

FINANCIAL SUMMARY 1981-1988

	FY 1981 (9 months)	FY 1982	FY 1983	FY 1984	FY 1985	FY 1986	FY 1987 (Est.)	FY 1988 (Projected)
Operations								
Tuition and other income	\$108,894	\$182,971	\$217,518	\$352,931	\$612,383	\$928,406	\$1,328,228	\$1,810,000
Donations Received	63,517	106,753	146,648	234,924	305,682	399,216	418,546	350,000
Less:								
Operating Expenses	153,300	274,503	354,749	509,691	848,150	1,198,125	1,499,047	1,870,000
Less:								
Scholarships Granted	8,900	11,400	24,380	27,500	54,030	65,725	73,825	90,000
Net Income	\$10,211	\$3,821	\$(14,963)	\$50,664	\$15,885	\$63,772	\$173,902	\$200,000
Fund Balances								
Beginning Balances	—	\$10,221	\$14,032	\$(931)	\$49,733	\$65,618	\$129,390	\$352,341
Net Income (Deficit)	10,211	3,821	(14,963)	50,664	15,885	63,772	173,902	200,000
Ending Balances	\$10,211	\$14,032	\$(931)	\$49,733	\$65,618	\$129,390	\$303,292	\$552,341
Working Capital								
Current Assets	\$18,573	\$21,347	\$29,084	\$80,358	\$59,092	\$113,530	\$498,300	\$610,000
Less: Current Liabilities	16,658	19,509	81,125	121,750	159,308	276,950	501,955	475,000
	\$1,915	\$1,838	\$(52,041)	\$(41,392)	\$(100,216)	\$(163,420)	\$(3,655)	\$135,000
Fixed Assets								
Fixed Assets (Prior Year)	—	\$12,412	\$18,110	\$61,640	\$103,201	\$184,300	\$352,814	\$417,546
Capital Expenditures	12,412	5,698	43,530	41,561	81,099	168,514	64,732	120,000
Total Fixed Assets	\$12,412	\$18,110	\$61,640	\$103,201	\$184,300	\$352,814	\$417,546	\$537,540
Less:								
Accumulated Depreciation	1,241	3,794	9,229	11,597	18,466	45,001	84,556	110,000
	\$11,171	\$14,316	\$52,411	\$91,604	\$165,834	\$307,813	\$332,990	\$427,540

*The fiscal year of SFS runs from September 1 to August 31. SFS was founded on October 20, 1980.

The condensed financial statements shown here have been derived from the audited financial statements of The School for Field Studies, Inc. The financial statements are the unqualified opinion thereon of the auditor, Ernest M. Smith, Jr., certified public accountant. Copies of the complete audited financial statements are available from SFS upon request.

We are very pleased to report that contributions totaled \$418,546, a slight increase from last year. The number of individual donors also held steady at 115. Several remarkable gifts this year deserve special note.

Laurance Rockefeller, the **Archer Daniels Midland Company Foundation**, and **The Boston Globe Foundation** each continued for the second year their course sponsorship, supporting respectively the Center for Marine Ecosystem Studies (Virgin Islands), the Deforestation program (Costa Rica), and the Acid Rain program (Adirondacks). They were joined this year by the **R.J. Reynolds Company**, which donated the startup funding for the Center for Rainforest Studies; and the **Cargill Company** which supported our Medical Botany program.

The **Island Foundation** continued its leadership support of the student scholarship fund; the **Merck Family Fund** continued to build

the Merck Family Student Loan Fund to its current level of \$82,000 (which assisted 134 students this year with tuition loans) towards the goal of \$100,000 in the revolving loan fund by 1988. **Digital Equipment Corporation** kindly made a matching grant towards the purchase of their PDP/11 - 73 computer system. **Willett Moore** generously donated his 34' sportfish powerboat which we hope to put into program use. And the **Andreas Foundation** continued again for the seventh year to provide their unique and special leadership giving.

We offer our sincere gratitude to the 115 donors listed below who enabled SFS, with their contributions, to: launch a new SFS Center in Australia, develop three new summer courses for 72 students, grant scholarships and loans to 137 low and middle income students, purchase \$60,000 of new field equipment, and make substantial advances in operations.

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RESEARCH PAPERS RESULTING FROM SFS FIELD COURSES (Partial Listing)

PLANT COMMUNITY AND ECOSYSTEM ECOLOGY GROUP

Community Ecology, Mount St. Helens

ADAMS*, A.B., J.R. WALLACE, J.T. JONES, and W.K. MACKELROY, 1986. "Plant ecosystem resilience following 1980 eruptions: Mt. St. Helens, Washington". In S. Keller (ed.), Mount Saint Helens Five Years Later. Cheney: Eastern Washington University Press. pp. 182-207.

ADAMS*, A.B., and S.R. LEFFLER, 1986. "Insect recolonization of northwest sector of the Mount St. Helens blast". In S. Keller (ed.), Mount Saint Helens Five Years Later. Cheney: Eastern Washington University Press. pp. 307-324.

ADAMS*, K.E. HINCKLEY, C. HINZMAN, and S.R. LEFFLER, 1986. "Recovery of small mammals in northwest sector of Mount St. Helens National Volcanic Monument". In S. Keller (ed.), Mount St. Helens Five Years Later. Cheney: Eastern Washington University Press. pp. 345-348.

ADAMS*, A.B., and V.H. DALE, 1987. "Vegetative succession following glacial and volcanic disturbances in the Cascade mountain range of Washington, USA". In D.E. Bilderback (ed.), Mount Saint Helens 1980 Botanical Consequences of the Explosive Eruptions. Los Angeles: University of California Press. pp. 70-147.

WASSERMAN, L., D. MARTIN, A.B. ADAMS*, and V. ADAMS. 1983. The relation of fish survival to riparian vegetation on the west side of Mount St. Helens. Presented at the Mount St. Helens Symposium, Northwest Scientific Association 56th Annual Meeting, The Evergreen State College, Olympia, Washington. Paper: 166

Ecology and National Park Planning, Atacama Desert, Chile, 1983

RAEDEKE*, K.J., J.A. SIMONETTI*, M.A. BRANNON**, M. GAMBLE**, P. HAYWARD**, E. HYDE**, O. KOMAR**, R. OLIVIA**, R. PEARSON**, and P. RUMSEY**, 1984.

Sierra Las topia, coastal northern Chile as a guanaco reserve: a preliminary biological survey. Final Report to Corporación Nacional Forestal, Santiago Chile.

RAEDEKE*, K.J., and J.A. SIMONETTI. 1988. In press. Food habits of guanaco in the Atacama desert of northern Chile. Journal of Mammalogy.

SIMONETTI*, J.A., A. POIANI, and K.J. RAEDEKE*. 1984.

Food habits of the dusycion griseus in northern Chile. Journal of Mammalogy 65:(3) 515-517.

SIMONETTI*, J.A., A. POIANI, and E. HYDE**. 1984

Oryzomys lingicaudatus (Bennet 1832) en sierra Las Topias, norte de Chile. Neotropica. 30:(83) 17-18.

SIMONETTI*, J.A., and E. HYDE**. In press. "Small mammals of coastal Chile: a case study". Bulletin of the Natural History Museum, Santiago, Chile.

Hazardous Waste and Coastal Ecology, Chesapeake Bay, 1985.

KRISHNAN**, K., W.D. MARSHALL, J.S. BLAIS, and W.I. HATCH*. 1985.

Littorina irrorata, a bioindicator of alkyllead pollution in Chesapeake Bay. Presented at the Eastern Region Conference of the Canadian Association on Water Pollution Research and Control, McGill University, Montreal.

MARSHALL*, W.D., D.S. FORSYTH, K. KRISHNAN**, J.S. BLAIS, and C. DOIGE.

The speculation of alkyllead in environmental samples. Presented at the 69th Canadian Chemical conference. Saskatoon, Saskatchewan. June 3, 1986.

JACQUES, L., K. KRISHNAN**, and W. HATCH*.

Calcification of saltmarsh periwinkle shells in pristine and polluted environments. Presented to the 54th Congress of the Franco-Canadian Association for the Advancement of Science. May 14, 1986.

MARSHALL*, W., K. KRISHNAN**, D. FORSYTH, and J.S. BLAIS.

Biomethylation of lead (II) in the environment; a factor or a possibility? Presented to the 54th Congress of the Franco-Canadian Association for the Advancement of Science.

Acid Rain, Adirondacks Mountains, New York. 1983, 1984, 1985, 1986, 1987

SINGER*, R., D.A. ROBERTS*, and C.W. BOYLEN. 1983.

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

Maya Archeology, Belize 1985, 1986

GIBSON*, E., L. SHAW*, and D. FINAMORE*, 1986.

Early Evidence of Maya hieroglyphic writing at Kichpanha, Belize. Center for Archaeological Research, University of Texas at San Antonio. Working Papers in Archaeology, No. 2.

ANIMAL BEHAVIOR AND CONSERVATION GROUP

Marine Mammal Biology and Conservation, Glacier Bay and Kenai Peninsula, Alaska. 1982, 1983, 1984, 1986.

CALAMBOKIDIS*, J., L. HEALEY**, and G.H. STEIGER**. 1983.

Behavior of Harbor Seals and their reaction to vessels in Glacier Bay Alaska. Proceedings of the 5th Biennial conference on the Biology of Marine Mammals. November 27-December 1. p. 16.

CALAMBOKIDIS*, J., and G.H. STEIGER**. 1982.

The behavior of harbor seal porpoise in Glacier Bay Alaska with emphasis on marked individuals. Presented to Glacier Bay National Park Service.

CALAMBOKIDIS*, J., and G.H. STEIGER**. 1985.

Bald Eagle (*haliaeetus leucocephalus*) consumption of harbor seal (*phoca vitulina*) placenta in Glacier Bay, Alaska. Raptor Research 19:(2)



(Photo: Julia Schwantes)

"The Ecuadorian rainforest is a new world. It is dark, wet and eerie, yet interesting, fascinating, intriguing, and beautiful. The diversification in plant forms is phenomenal. So much new was to be learned, explored, and experienced." (Todd Fellman, student of the SFS Medical Botany course in Ecuador)

CALAMBOKIDIS*, J., B.L. TAYLOR*, S.D. CARTER*, G.H. STEIGER**, P.K.

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

CALAMBOKIDIS*, J., G. STEIGER**, and R.A. BUTLER**. 1983.

Biology and Behavior of molting Canada geese in Glacier Bay. Proceedings of First Glacier Bay Science Symposium, p. 33.

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

HEIMLICH-BORAN*, J., and S. HEIMLICH-BORAN*. 1987. In press.

Population estimation and seasonal habitat use patterns of bottlenose dolphins (*Tursiops truncatus*) off the gulf coast of Alabama. 7th Biennial Conference on the Biology of Marine Mammals. Dec. 5-9.

Primate Social Behavior, Costa Rica, Endangered Monkeys, Panama 1984, 1985, 1986, 1987

CLARKE* M.R., and E. ZUCKER*. 1985. Distribution of howling monkeys (*Alouatta palliata*) in a dry deciduous tropical forest. *American Journal of Physical Anthropology*, 66: 156

CLARKE*, M.R., E. ZUCKER*, and R. SCOTT, 1986. Population trends in the howler monkey (*Alouatta palliata*) in Costa Rica. *American Journal of Primatology*.

RASMUSSEN*, D., In press. Studies of food enhanced primate groups. Fa and Southwick.

RASMUSSEN*, D., In press. Social Ecology and Conservation of Panamanian Tamarins (*Saguinus oedipus goeffroyi*). *The Nature of Panama*. IUCV



(Photo: Sandra Taylor)

"The faculty represented a breed of scholars who care deeply about their fields of expertise and were working to make real differences in the field of conservation. At the same time, they were genuinely committed to passing their education and concern on to the students. In the final analysis, I realize that the enthusiasm of our faculty made a large difference in my own enthusiasm." E. Day Wilkes, Participant in the SFS Wildlife Management semester, Kenya.

WILDLIFE ECOLOGY AND MANAGEMENT GROUP

Center for Wildlife Management, Kenya 1982, 1983, 1984, 1985, 1986, 1987

STELFOX*, J.B. and D. HOPCRAFT, 1984. Wildlife production systems in Kenya. *Acto Zool. Sennica*. 172: 225-226

STELFOX*, J.B. 1984. Game ranching in Kenya: success amidst controversy. *Swara* 75: 15-16

STELFOX*, J.B., and R.J. HUDSON, 1984. Relationships among physical traits, age and social status in Thompson's and Grant's gazelles. *Appl. Anim. Behav. Science* 13: 347-357.

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

Population Dynamics of Endangered Species. Greek Islands, 1983, 1984.

DAVIS*, P.B., HUSBAND*, T.P., and J.H. BROWN*, JR. 1985.

The biology and management of the cretin agrimi. IV. International Theriological Congress. Abstract No. 307.

HUSBAND*, T.P., P.B. DAVIS*, and J.H. BROWN*, JR. 1986. In press. Ecology of the cretin agrimi. *J. of Mon. Ecol. and Dev.*

HUSBAND*, T.P., P.B. DAVIS*, 1984. Ecology and behavior of the cretin agrimi. *Canadian Journal of Zoology* 62:411-420

HUSBAND*, T.P., J. BROWN*, and P. DAVIS*, 1985.

Biology and management of mountain ungulates. *Journal of Ecology and Development*. Paper presented to the 4th Theriological Congress in Edmonton, Alberta, August. (Abstract 307)

MARINE ECOLOGY AND MANAGEMENT GROUP

Marine Biology and Management, St. John, USVI, 1982, 1983, 1984, 1985, 1986, 1987

WITMAN*, J.D. 1988. Effects of predation by the fire worm *Hermodice carunculata* on milliporid hydrocorals. *Bulletin of Marine Sciences* Volume 42

Coral Reef Ecology, St. John, USVI 1982, 1983, 1984, 1985, 1986, 1987

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

NEEFUS*, C 1982.

Photadaptive responses in the tropical brown seaweed, *Lobophora variegata* (lamour) womers. May. Dissertation for Ph.D. in Botany, University of New Hampshire, Durham, New Hampshire.

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

KOHLER*, C., 1987. Production, identification and characterization of the multiple toxins responsible for ciguatera fish poisonings in the Caribbean and South Atlantic. Sea Grant Progress Report.

KOHLER*, C.C., D.R. TINDALL, P.C. PHILLIPS*, and S. KOHLER*. 1987.

Ecology of Organisms Involved in Ciguatera Poisoning in Great and Little Lameshur Bays, St. John, United States Virgin islands. Report submitted to United States National Park Service, St. Thomas, USVI

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