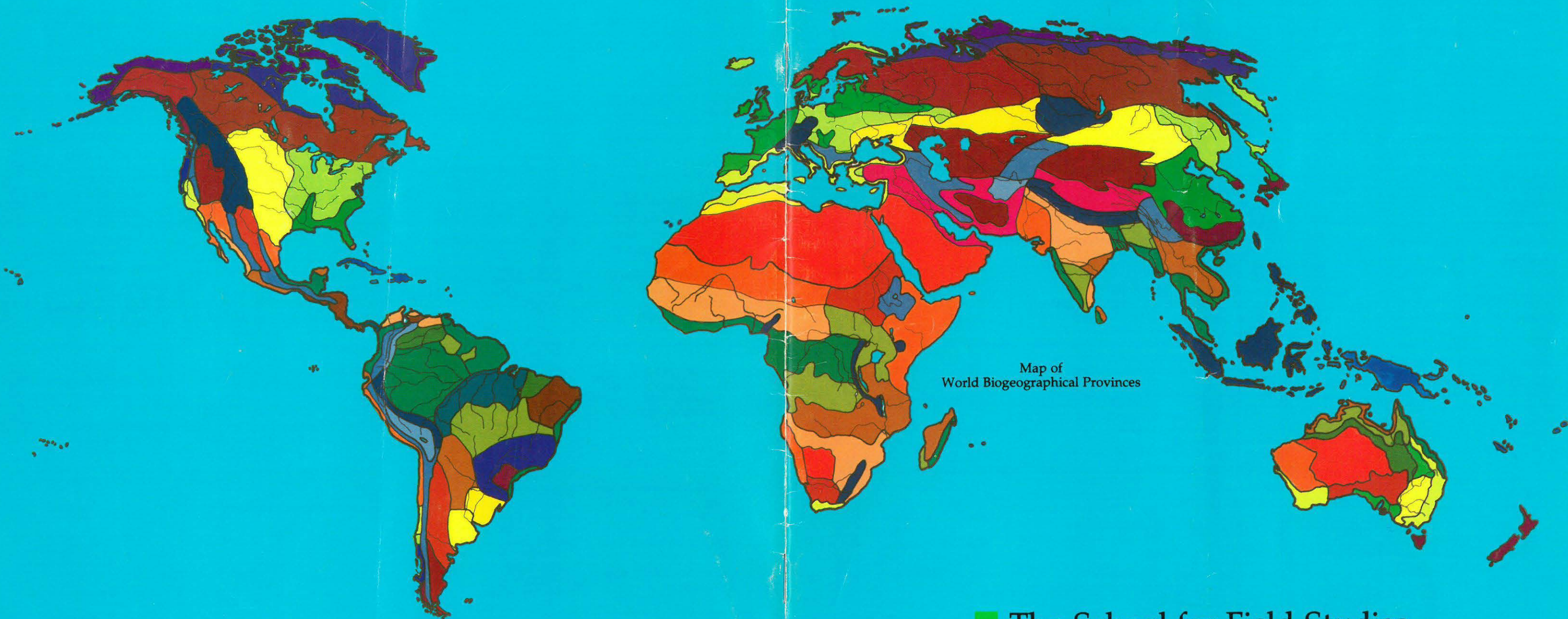




Map of
World Biogeographical Provinces

■ The School for Field Studies
1988 Annual Report



The School For Field Studies
16 Broadway
Beverly, Massachusetts 01915



Contents

Chairman and President's Letter.....	1
Background/Operating Priorities/Building for the Future.....	2
Academic and Scientific Affairs.....	3
Field Director's Report: SFS Center for Wildlife Management Studies, Kenya.....	4
Field Director's Report: SFS Center for Marine Ecosystem Studies, Virgin Islands.....	5
Field Director's Report: SFS Center for Rainforest Studies, Australia.....	6
Program Director's Report: SFS Satellite Sites.....	7
Marketing/Admissions Report.....	8
Treasurer's Report.....	9
Development Report.....	10
Course Participants.....	12
Selected Research Papers.....	15
The SFS Organization.....	16

1987-88 Curriculum

	Semesters FALL SPRING	JAN. TERM	JUNE 15 to JULY 14	JULY 21 to AUG. 19
Wildlife Ecology and Management SFS Center for Wildlife Management Studies/Kenya				
Wildlife Ecology and Management	☐	☐	☐	☐
Wildlife Management			☐	☐
Ecology of Bald Eagles/Alaska			☐	☐
Veterinary Ecology: Pronghorn Antelope			☐	☐
Population Collapse/Wyoming			☐	☐
Cultural Ecology: Conflicts in Ecological Management/Himalayas			☐	☐
Marine Biology and Management SFS Center for Marine Ecosystem Studies/Virgin Islands				
Marine Biology and Management	☐	☐	☐	☐
Coral Reef Ecology			☐	☐
Marine Parks Management			☐	☐
Ecology of Toxic Reef Fishes			☐	☐
Coastal Ecology: Habitat Assessment for Monk Seal Recovery/Greece			☐	☐
Plant Community and Ecosystem Ecology SFS Center for Rainforest Studies/Australia				
Biogeography: Patterns of Ecological Diversity	☐	☐	☐	☐
Tropical Species Diversity			☐	☐
Tropical Ecology: The Dynamics of Deforestation/ Costa Rica			☐	☐
Ethnobotany: Discovering New Plant Medicines/Ecuador			☐	☐
Acid Rain: Changing Aquatic Ecosystems/Adirondacks			☐	☐
Landscape Ecology: Designing Parks for Preservation/ Colorado Rockies			☐	☐
Center for Northern Studies/Vermont				
Resource Management: The Changing Environments of the Circumpolar North		☐		
Animal Behavior and Conservation SFS Center for Marine Mammal Studies/Baja, Mexico (Open 1987)				
Marine Mammal Biology and Conservation			☐	☐
Biology and Behavior of Bottlenose Dolphins/ Gulf of Mexico			☐	☐
Endangered Monkeys: Social Ecology of Stumptail Macaques/Mexico			☐	☐
Social Ecology of Spinner Dolphins/Hawaii			☐	☐
Dynamics of a Recolonizing Species: Alpine Ibex/Switzerland				☐
Humpback Whale Ecology/North Atlantic				☐

Key to the World Biogeographical Provinces

☐	Tropical Humid Forests
☐	Subtropical and Temperate Rainforests or Woodlands
☐	Temperate Broad-leaf Forests or Woodlands and Subpolar Deciduous Thickets
☐	Temperate Needle-leaf Forests or Woodlands
☐	Evergreen Sclerophyllous Forests, Scrub, or Woodlands
☐	Tropical Dry or Deciduous Forests (including Monsoon Forests) or Woodland
☐	Tropical Grasslands and Savannas
☐	Temperate Grasslands
☐	Warm Deserts and Semideserts
☐	Cold-winter (continental) Deserts and Semideserts
☐	Tundra Communities and Barren Arctic Deserts
☐	Mixed Mountain and Highland Systems with Complex Zonation
☐	Mixed Island Systems

Chairman and President's Letter



"Giraffes don't browse in a test tube, and rainforests won't fit under a microscope." This succinct explanation of why students enroll in SFS was given recently by a member of our highly capable Admissions staff, and we think it sums up fairly well the reason why SFS needs to exist.

SFS seeks to bring meaning to the process of education by fully integrating theoretical knowledge and practice. Raw information is of little value without an understanding of how to apply it in various contexts. Most young people intuitively realize the importance of this understanding. Often finding themselves bored in "ivory tower" situations, they have a thirst for "real life", where they can become involved and immersed in the issues of the day which are larger than themselves. They therefore gravitate towards learning environments where this integration of theory and practice occurs. This healthy impulse to move out of their sheltered dependency role in which they have existed since birth, and to engage in the adult struggle with the complexities and "muddiness" of life, leads them ultimately toward a better understanding of themselves. Such self knowledge is generally considered by all great thinkers as the purpose of human life on earth. It therefore should be the most worthy and highest goal of education: to assist and support a person in the search to know himself.

Such a goal can be pursued in all disciplines

of knowledge. But there is one area of knowledge which is particularly important today and also distressingly neglected in most college curricula. This is the field of environmental studies, and more specifically, conservation biology.

We have known intellectually that the world's resources are finite for some time. We now know that the world's resources are finite on a visceral level, as we come up against the limits of our resources more and more on a daily basis. How can we expect to learn to find a way to live in balance with our environment when we are not teaching the coming generation the importance and difficulty of this goal? The current conservation practice of putting aside tracts of land into protected status as parks is only a temporary measure at best, for the next generation will simply change the laws and develop these tracts if they choose.

We therefore created SFS eight years ago both as a frontal attack on the widespread environmental illiteracy present in today's society, and as a new model of education. 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. We must try to find ways to make up this loss. Or in a few cases, the SFS experience may steer them away from the sciences—and we say all the better that such a personal decision be made sooner rather than after the investment in graduate school. An SFS course may significantly influence a future leader of government or business whose daily decisions 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.

The demand for our programs is there. Enrollment increased this year by 15%, the fifth year in a row in which enrollment increased from 15 to 25% over the previous year. The number of student field days in-

creased 19% since we offered a larger number of longer courses. Our faculty continue to tell us that the overall quality of our student body is excellent. Our graduates continue to tell us that our programs offer the experience of a lifetime.

Yet much remains to be done. We need to stabilize our field operations by building campuses of our own, instead of the leasing arrangements we currently use. We need to find ways to increase our faculty support, so they may excel in teaching, research, and leadership. We need to strengthen our ties with the colleges and schools across the country from which we draw our students, so that our courses may be better integrated with their curricula.

The hundreds of individuals named throughout this report enabled SFS to successfully continue to develop this past year. Their commitment not only to SFS as it is but to SFS as it can become is the true soul of this institution. We are excited to be a part of this team, and hope that you share this excitement and will assist this worthwhile endeavor in whatever manner you can.

Sincerely,

James L. Elder, Jr.

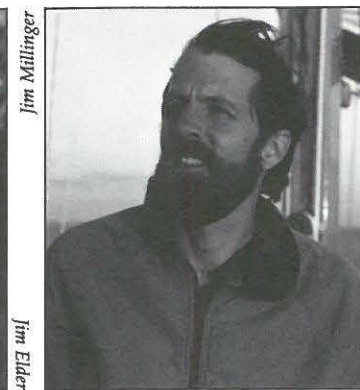
James L. Elder, Jr.
President

Terry L. Andreas

Terry L. Andreas
Chairman



Jim Millinger



Jim Elder



Background

Appropriate management of our environment is fast emerging as a top international priority for the future well-being of mankind. We have limited natural resources and are faced with accelerating technological change. In order to make the rational choices necessary to maintain, and hopefully improve, the quality of life we now enjoy, we must understand the increasingly complex relationship between development and resource conservation.

If we are to successfully prepare tomorrow's leaders and decision makers to assume responsibility for the management of critical resources, we must act now to address a widespread environmental illiteracy among young people. We must educate young people about the complexities of real world environmental issues. We must assist and inspire them to make environmental issues their own.

The School for Field Studies was founded in 1980 to address this need. SFS offers undergraduates the opportunity to learn first hand about real world environmental issues. SFS's thirty day and twelve week semester programs are intense academic and scientific experiences, currently accepted for academic credit at over 100 colleges and universities nationwide. A unique combination of practical, experiential training and theoretical class work results in a powerful synergy of learning where students become literally and figuratively immersed in their studies. Through SFS, students are actively engaged in the search for solutions to environmental problems.

SFS student research teams currently operate at 16 sites

on five continents, including three year-round field research centers in the Virgin Islands, Kenya and Australia. The SFS Center for Marine Mammal Studies is scheduled to open in the Spring of 1989 in Baja, Mexico. For the duration of their course, students are totally immersed in the ecosystem they are studying. The experience of spending a significant period of time as part of a small team, operating under rigorous field conditions, affords young adults a rare opportunity to reflect on their individual strengths and weaknesses as students, and more important, as people. The personal examination and growth experienced by SFS students is an integral component, equal to that of the intellectual exercise.



The opportunity for students to live what they are learning is an integral part of the SFS educational model. At the SFS Center for Wildlife Management Studies in Kenya, students and faculty reconstruct the skeleton of an East African wildebeest, one of the numerous bird and animal species that inhabit our site. (Photo: Sandra Taylor)

Operating Priorities

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

□ *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.

□ *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 requires unique ecological and biological features.

□ *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. Oppor-

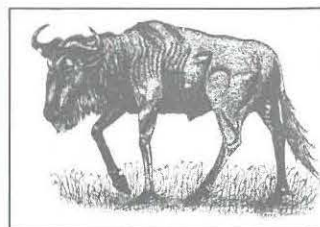
tunities to practice and test new concepts and information from what one reads must be immediately available for the learning process to be successful. Emotional engagement by the student is essential for learning to be valued and valuable. Thus the subject material must be relevant to everyday concerns.

□ *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 eleventh anniversary in 1991 is to reach an enrollment of 1,000 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.



The foundation of all our academic and scientific work rests on pursuing the concepts of conservation and sustainable use of natural resources. 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 the 14 sites from which SFS operates around the world.

The SFS conservation biology curriculum incorporates four areas of concentration: *Animal Behavior and Conservation, Marine Ecology and Management, Plant Community and Ecosystem Ecology, and Wildlife Ecology and Management.* Our objective, in all SFS programs, is to guide our students 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.

Two key components to achieving our objective are the effectiveness of the SFS curricular model and the promotion of the highest quality teaching. To this end, Dr. Shaun M. Bennett was recently appointed to the Dean of Faculty position at SFS. Dr. Bennett is the former Director of Undergraduate Studies at The School of International Training (SIT) in Brattleboro, Vermont (the academic arm of The Experiment in International Living). At S.I.T., Shaun was responsible for the World Issues Program, a 2-year Bachelor of International Studies Degree Program which includes an academic year-long internship

for each student at sites throughout the world. Under his leadership, a new four-year joint Bachelor's Degree program called the World Studies Program was also founded.

Dr. Bennett's arrival coincides with the conclusion of an academic year marked by growth and progress in our continuing quest to expand the impacts of our curriculum. The number of SFS student-field days (one student in the field with SFS for one day) grew this year from 20,067 to 23,819, a 19% increase in the total SFS program. We can again report that no major illnesses or accidents from which students or staff did not substantively recover have occurred in any program during the school's history. The number of schools accepting SFS programs for credit continues to climb and now includes over 100 universities and colleges within the U.S. The number of resident faculty with earned doctorates remains at 100%; the number of associate faculty having earned doctorates is now at about 50%.

The scientific caliber of the SFS curricular model was recognized this year by The National Science Foundation (NSF). Ten outstanding college students share the honor of having been selected as the first SFS/NSF Scholars and share in a \$44,679 grant awarded to SFS by NSF. The students are all participants in

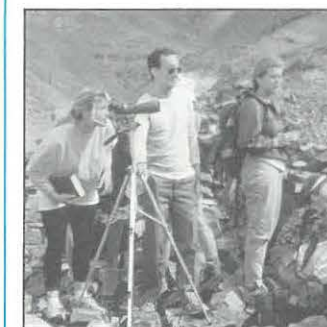
the "Primate Social Behavior" course which took place this summer at Lake Catemaco, Mexico. The course was led by SFS Senior Faculty Dr. Dennis Rasmussen.

As in all SFS courses, these students conducted a directed research project. In addition NSF scholars will follow up their SFS course with a year-long independent study at their home institution, analyzing their data and producing a manuscript for publication, under the guidance of an advisor from their home school and Dr. Rasmussen. The NSF Grant covers tuition for the program and provides Scholars with a \$1,600 stipend. The ten NSF Scholars, selected from over 40 applicants, were chosen on the basis of demonstrated academic achievement in science courses and previous field research performance.

One of our major foci during the year ahead will be to continue to broaden the impact of our curricular model. One means of achieving this goal is to recruit colleges and universities nationwide who will become SFS Affiliated Institutions. Such relationships with mainstream academic institutions will promote their input into the design of new SFS programs while at the same time, will facilitate enrollment of their students in SFS programs. The Affiliations Project is partially funded by The George Gund Foundation of Cleveland,

and The Charles Engelhard Foundation. As of September 1988, former SFS Dean Richard Wetzler will assume the title of Director of Field Studies Consortium to coordinate this effort.

The demands of providing high quality programs for enthusiastic undergraduate students seldom abate. There is a continued need to find creative ways to develop new and better courses, to recruit, develop and maintain top-notch faculty, and to ensure that student efforts in the field make the world a better place for us all. The solutions must come from many minds and hands and hearts, and to all of you who have worked so hard in the past year to bring continuing success to our efforts, a sincere thank you. We hope the coming year will bring us closer to new solutions, and no further from our old successes.



In the Northern Himalayas, students gather data in an effort to determine the cultural and ecological factors influencing the slow population recovery of the endangered snow leopard. (Photo: Phillippa Richards)

Total Number of Student Field Days*

1981	1,868
1982	3,302
1983	4,486
1984	6,218
1985	11,500
1986	15,550
1987	20,067
1988	23,819

*(One student in the field with SFS for one day)



Field Director's Report: SFS Center for Wildlife Management Studies, Kenya

1988 has been a year of transition at The SFS Center for Wildlife Management Studies in Kenya. Our staff has developed into a truly international one with Dr. Paul Siegel (USA), Field Director; Dr. Antoni Milewski (Australia), Senior Resident Faculty; Dr. Toloumbaye Ladinger (Chad), Resident Faculty, and three Associate Faculty members; Dr. Hussein Adan Isack (Kenya), Dr. Joshua Akong'a (Kenya) and Dr. Anne Fleuret (USA).

Our research effort has moved forward as our understanding of the autoecology of the giraffe has grown. The giraffe, the dominant browser in this region of Africa, plays a pivotal role in maintaining the balance between rangelands—inhabited by the herds of grazing animals for which East Africa is famous—and brushlands. Historically, this balance has also been maintained by the Black Rhino, but as rhino numbers have dwindled due to rampant poaching, brush regrowth has degraded once productive savannahs to inhospitable scrublands. Our studies on the regrowth of browse plants and plant-herbivore interactions shed more light on this delicate balance and help to better define the role of browsers in the ecosystem. Our research has covered three principal areas: Giraffe Allometry—the study of the unique morphology of the giraffe; Giraffe Feeding Behavior—feeding methods, plant selection, and diet composition; and Plant Defenses—the relationship between supposed plant anti-herbivore mechanisms such as symbiotic ants and thorns and their effects on both the herbivores and their relationship to the plants themselves.

We have also made strides in incorporating the Human

Element into our studies of Wildlife Management. It is clear that any study of wildlife management or wildlife conservation must include an understanding of people: both traditional and modern. Drs. Fleuret and Akong'a of the Institute of African Studies of the University of Nairobi, have added an element of broad-based Cultural Ecology, largely around the theme of traditional resource utilization, while Dr. Isack, of the National Museums of Kenya, offered a series of ethnographic lectures which culminated in an eight-day safari to deserts of northern Kenya. Here, students experienced first hand the way of life of the Boran people, a nomadic group whose homes, daily activity, music and dance reflect the selective pressures of a particularly harsh environment.

Our Environment and Society course has also matured and focused on many of the land/resource use conflicts which arise in today's industrializing societies.

We were very fortunate in being able to draw on experts from a number of fields to present guest lectures on various subjects such as Agroforestry (Professor Fred Owino, Moi University) Political Ecology (Dr. Tom Wolf, University of Nairobi), Animal Behavior (Dr. Sandy Andelman), Wildlife Food and Nutrition (Dr. Truman Young) and Game Ranching (Dr. David Hopcraft).

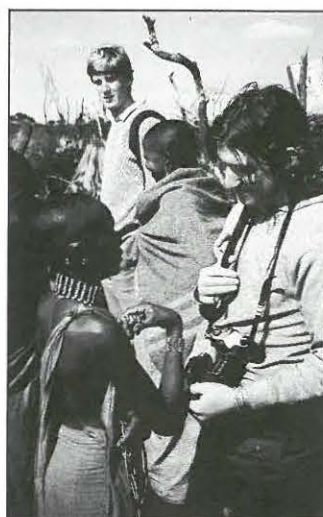
In an effort to become more individually involved with wildlife conservation in Kenya, SFS students this year volunteered to help maintain the fence surrounding the Lake Nakuru National Park. We spent a number of hours cutting the grass back from

the electric fence.

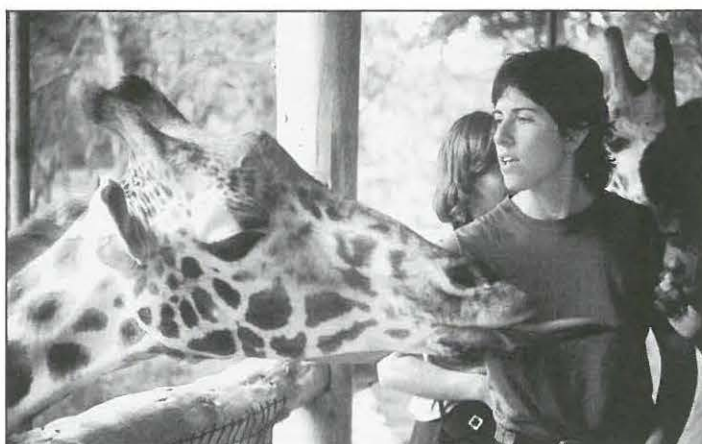
We are furthering our efforts to become more active on local, national, and regional conservation fronts with the formation of an Advisory Board composed of prominent members of the East African Wildlife/Conservation/Education community. The role of the Committee will be to suggest how SFS staff and students can more vigorously address the issues which the Kenyan government and other conservation minded organizations have pinpointed as the most critical. In this way we hope that the SFS Center for Wildlife Management Studies will soon come to be regarded as a regional educational and research resource.

A total of 81 students participated in 2 semester programs and 2 summer courses this year (up 14% from last year). Our research capabilities have improved with the purchase of a number of important reference texts and by substantially increasing our inventory of research equipment. Our physical site has also been upgraded by replacing some of our tents with thatched huts, installing a small solar hot water heater, and building a "quiet study area" behind the camp.

Paul Siegel, Ph.D.
Director



Field Research often extends beyond wildlife. Our semester's curriculum includes a Cultural Ecology component, designed to incorporate the human element into our studies. Here, SFS students meet with a local Masii tribe. (Photo: Jack Shea)



SFS Wildlife Management students in Kenya get a close inspection by the subject of their research efforts. They are studying the autoecology of giraffes, the dominant browser in this region of Africa, who play a pivotal role in maintaining the balance between rangelands and brushlands. (Photo: Nelson Holmes)



Field Director's Report: SFS Center for Marine Ecosystem Studies, Virgin Islands

The 1987-88 academic year was the sixth year of SFS operations in the Virgin Islands and marked the completion of our sixth semester program. It was a year in which efforts were directed at implementing procedures to streamline operations, standardize the academic experience, implement a long term research agenda, and work toward a permanent Caribbean home for the Center. Enrollment for the year totalled 94 students.

With the same full-time staff of biologists (Dr. Robert Singer, Dr. Peter Edmunds, and Dr. Deborah Roberts) on site for the past two years, great strides were made in developing and implementing the SFS model of education for our Center. The semester courses now lead into each other with a clear progression from first principles to developing problem-solving skills of resource utilization.

We developed a new "module" approach to our curriculum, where lectures from different courses are clustered together to focus on particular environmental topics such as "Fisheries Management" and "Stresses on Coral Reefs". This approach keeps the academic theory firmly grounded in real world practical problems. For example, in our one week "Fisheries Management" module, two lectures on fish biology from our Marine Biology course are integrated with two lectures on population growth from our Population and Community Ecology course as well as three lectures on conservation values and fisheries management techniques from the Resource Management course. All these lectures are supplemented with field activities which help to drive the principles home.

Thus, each course remains distinct, which helps outside schools evaluate our academic program along conventional guidelines; but the management topics which cut across course distinctions are collected and taught as a unit. Our goal in the upcoming year is to integrate the Cultural Ecology course (currently taught by a part-time anthropologist) into the current modules and to add several new modules. Student response is favorable, and exam performance indicates that their retention of concepts and theory has improved as a result.

The Center remains based at the Virgin Island Ecological Research Station, owned by the University of the Virgin Islands. A permanent agreement may be reached with the University during the upcoming months which will enable SFS to make improvements in the physical plant necessary for the Center to provide an ideal learning environment. If not, we will continue our diligent (and less than successful to date) search for a new home this fall.

Several research projects have come to fruition during the past year. Our survey of nearby Caribbean patch reefs resulted in a manuscript authored by Drs. Edmunds, Roberts and Singer which was submitted to the *Bulletin of Marine Science*. This paper was the result of a group research projects over the past four semesters, in which twelve sites on nine Caribbean islands were studied. At each site, students carefully surveyed the coral reefs and developed a description of a "typical" Caribbean patch reef. Other research scientists usually lack the ability to travel between habitats, so their research has been generally confined to only one

reef. Differences in methodologies between different research groups have frustrated scientific comparisons between sites, until the SFS team began this research project.

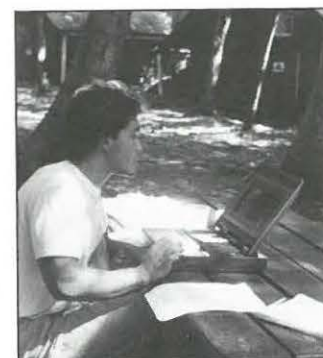
Another project which is nearing publication stage is our two year study of the Queen Conch population in Lameshur Bay. SFS students and staff have documented that the conch in the Bay do not represent a self-sustaining population because the recruitment of young conch to the population is very irregular. Large juveniles and adults are lost due to natural mortality, migration, and poaching at a rate which precludes the development of a conch fishery. These results support the total moratorium on conch fishing in the Bay imposed by the National Park Service in April of 1988.

Our surveys of Black Band Disease, led by Dr. Edmunds,

will be the major focus of our group research program for the upcoming year. Black Band Disease is an algal infestation which spreads over coral, leaving dead tissue in its wake. The extent of the disease is not known, nor is its method of transmission.

The Sources of Reef Fish Toxins summer course, led by Dr. Chris Kohler and Sue Kohler, took place for the third summer. The Kohlers spent half of the month-long course aboard the ketch *Sea Quest*, and determined that densities of toxic algae in the Virgin Islands remain at high levels. The disease Ciguatera, carried by the toxic algae, is the most common form of food poisoning in the United States, and the Kohlers are at the forefront of research into the ecology of the source of the toxin.

Bob Singer, Ph.D.
Director



Once the underwater work is done, students return to terra firma to collate their data. Here, with the aid of a lap top computer, student Matt Loh works on his research project. (Photo: Pete Edmunds)



As part of our effort to measure the effects of human disturbance on coral reef ecosystems, SFS student research teams lay transects in the waters of Lameshur Bay, St. John, USVI, home of the SFS Center for Marine Ecosystems Studies. (Photo: Chris Neefus)



The past year has been one of rapid change and exciting growth at the SFS Center for Rainforest Studies. Enrollment rose to 48 semester and 20 summer students, and this year's students enjoyed the benefits of improved field trips and new group research projects.

The most notable achievement was our acquisition in July of a tract of 153 acres, which has become the Center's new campus. One hundred acres of the property are primary rainforest, 20 acres are secondary forest, and 30 acres are clear. The existing house on the property has a magnificent setting with a grand view of the surrounding rainforest. Adjacent to the campus is a vast area of State rainforest which the Center can utilize, and other Queensland habitats are within easy reach as well. The rainforests in our area have been nominated by the Federal Government as World Heritage sites and should be officially listed as such in the coming year.

This new location provides expanded opportunities for study and investigation literally at our doorstep, and thus it promises to greatly enhance our research productivity. One of the student projects at the new campus demonstrated that the groundlayer vegetation of these rainforests can be comprised of a remarkably great number of species (114 different species were found in only 64m), a tremendous diversity even by Queensland tropical rainforest standards.

Group research has focused on animals that may serve as indicators of habitat quality, which meshes with our concern over the fragmentation of Queensland rainforests. We have begun by studying

logrunners, a rainforest bird, and the musky rat kangaroo, a small non-arboreal marsupial. The research on logrunners is based on campus, and is concerned with territory size, behavior, breeding success, and group size. These may change with habitat quality and the size of the rainforest available. At Lake Barrine National Park, a rainforest fragment just a short distance from campus, we are investigating the behavioral characteristics of the musky rat kangaroo, about which virtually nothing is known. These animals occupy rainforest fragments with varying success, and we intend to ascertain the parameters that are pertinent to their success. This may lead to management programs that can enhance their populations in some rainforest areas.

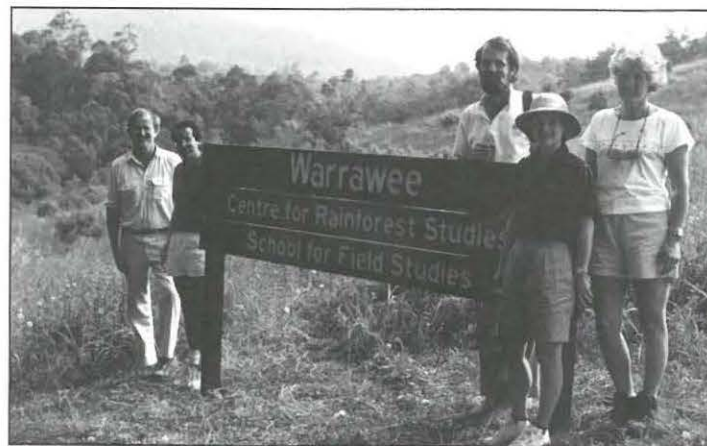
The acquisition of the new campus was greatly assisted by David Bright of New South Wales, who has kindly agreed to serve as the first Chairman on our Center Advisory Committee. The remaining appointments to the Committee should be completed in the months ahead. We anticipate that the committee will provide advice on the development of our program site and assist with fundraising, particularly to permit Australian students to join our program.

One of our goals is to disseminate the results of our research and studies to the public and scientific community. For example, a new outreach project by our students is the production of the natural history portion of an interpretive brochure for a new and very popular hiking trail, the Edmund Kennedy Bicentennial Walking Track.

Relations with government

and academic institutions have increased this year. At the request of personnel at the Australian National University and the Queensland National Parks and Wildlife Service, we are taking over a long-term lake sampling program as a field training exercise for our students. We have profited from a trial relationship with the Department of Ecosystem Management at the University of New England (UNE) in Armidale, New South Wales. They have provided staff for several of our courses and the positive results have led us to consider a more formal institutional link. Our working relationship with the Commonwealth Scientific and Industrial Research Organization, Queensland Department of Forestry, and the Queensland National Parks and Wildlife Service are healthy.

Dr. Nicki Goudberg, our senior resident faculty member has resigned to pursue other opportunities. Dr. Goudberg was the originator of our current research plan.



The eighth Anniversary of The School for Field Studies founding coincided with the purchase of our first SFS owned permanent Center. Celebrating the occasion at the entrance of our new Australia campus are (l-r) SFS Australia Advisory Board member David Bright, Australia Field Director Mark Noble, SFS President Jim Elder, SFS Chairman of the Board Terry Andreas, and SFS Trustee Susanna Colloredo-Mansfield. (Photo: Bob Peever)

Dr. Jeff Klahn, formerly on the faculty of the University of Iowa, replaced her in August. He had previously supervised large scale forest demographic studies in Panama and Malaysia after receiving his Ph.D. from the Department of Zoology at the University of Iowa in 1981. Our program has also benefited in the past year from the dedicated work of our temporary faculty, including David Cassells, Steven Comport, Karen Crawley, John Duggin, John Grant, Maureen Longmore, Jon Luly, David Lupke, Seonaid Melville, Kristine Plowman, JoAnn Resing and Geoffrey Smith.

We are now eagerly turning our attention and efforts to the new academic year. During this time we plan to develop a major field expedition of several weeks duration for our semester programs. In addition, we anticipate construction will begin to add to the facilities at our wonderful new campus.

Mark Noble, Ph.D.
Director



This year's curriculum for summer students included a total of fifteen satellite programs on four continents, including five new programs. Thirteen of the fifteen planned programs actually took to the field. 35 summer faculty along with 289 students, went to work in Alaska, Mexico, Alabama, Switzerland, Hawaii, the Adirondacks, Greece, the Gulf of Maine, Colorado, Wyoming, Ecuador, Costa Rica, Panama, and India.

Three new programs brought students to the mountains of northern India to study snow leopards, to the Ionian seas of Greece to survey endangered monk seals, and to the badlands of Wyoming to work with prong-horn antelope.

This year also saw the creation of the first Annual Student Research Journal. The research efforts of twenty-four 1987 SFS alumni are recognized in the journal.

A brief survey of student research project titles hints at the fascinating work they conducted in a brief time period. Examples include "A Comparison of Coleoptera and Acari Populations in Lakes With and Without Fish" by Nancy London (Acid Rain, Adirondacks); "Characteristics of Snow Leopard Markings and Marking Sites" by David Stone (Cultural Ecology, India); "Dolphin Day-care: A Study of Calf Protection in Tursiops truncatus" by Rosie Weld and Kimberly Murray (Bottlenose Dolphins, Alabama); "Frequency of Occurrence of Pronghorn Hair in Coyote Scats" by Walt Cook (Veterinary Ecology, Wyoming); and "Patch Dynamics and Movement Rates of Capra ibex" by Brian Bolton.

SFS faculty continue to be recognized for their contribu-

tions to science, to public education, and to conservation efforts. Dr. Phil de Vries (Senior Faculty, Ethnobotany, Ecuador, 1988) has been awarded a prestigious MacArthur Fellowship, a generous award designed to free promising men and women in arts and sciences from other responsibilities so they may pursue their interests with financial and professional support. John Calambokidis (Senior Faculty, Marine Mammal Conservation, Glacier Bay, 1982-83) recently co-authored a well-received book on the Marine Mammals of Puget Sound, and James Heimlich-Boran (Senior Faculty, Bottlenose Dolphins, Alabama, 1987) presented the results of SFS student research efforts at the Biennial Conference on the Biology and Behavior of Marine Mammals in Miami last December. He has since submitted an article on this work to the *Journal of Marine Mammal Science*.

Paul Forestell
Program Director



Team work takes on new meaning for students of the Humpback Whale Ecology course in the North Atlantic. Round the clock watches aboard their research vessel, close quarters and not always cooperative weather emphasizes the need to pull together.

Colleges and Universities Accepting or Awarding Credit for SFS Courses

American University	Oregon State University
Amherst College	Pennsylvania State University
Augsburg College	Prescott College
Barnard College	Purdue University
Barry University	Randolph Macon College
Bates College	Saint Lawrence University
Berea College	Saint Olaf College
Boston College	Salem College
Boston University	Shimer College
Brown University	Simons Rock College
California Lutheran University	Smith College
California State College	Southern Connecticut State University
Carleton College	State University of New York
Carnegie Mellon University	Stockton State College
Clark University	Trenton State College
Colby College	Tufts University
Colgate University	Tulane University
College of the Atlantic	University of California
College of St. Thomas	University of Cincinnati
Colorado School of Mines	University of Colorado
Connecticut College	University of Connecticut
Cornell University	University of Iowa
Dartmouth College	University of Kansas
Denison University	University of Miami
Duke University	University of Maine
Eastern Michigan University	University of Maryland
Emory University	University of Massachusetts
Evergreen State College	University of New Hampshire
Framingham State College	University of North Carolina
Gettysburg College	University of Pennsylvania
Green Mountain College	University of Pittsburgh
Guilford College	University of Puerto Rico
Hamilton College	University of Rhode Island
Hampshire College	University of Southern Indiana
Harvard College	University of Southern Maine
Haverford College	University of Utah
Huntingdon College	University of Vermont
Huron College	University of Wisconsin
Indiana State University	Virginia Polytechnic Institute and State University
Kansas State University	Washington University
Kent State University	Wellesley College
Kenyon College	William Smith College
Macalester College	Williams College
Marlboro College	Wofford College
Merrimack College	Xavier College
Miami University	Yale College
Middlesex Community College	
Mount Holyoke College	
Mount Union College	
New York University	
Northern Kentucky University	
Northwestern University	
Oberlin College	
Ohio State University	



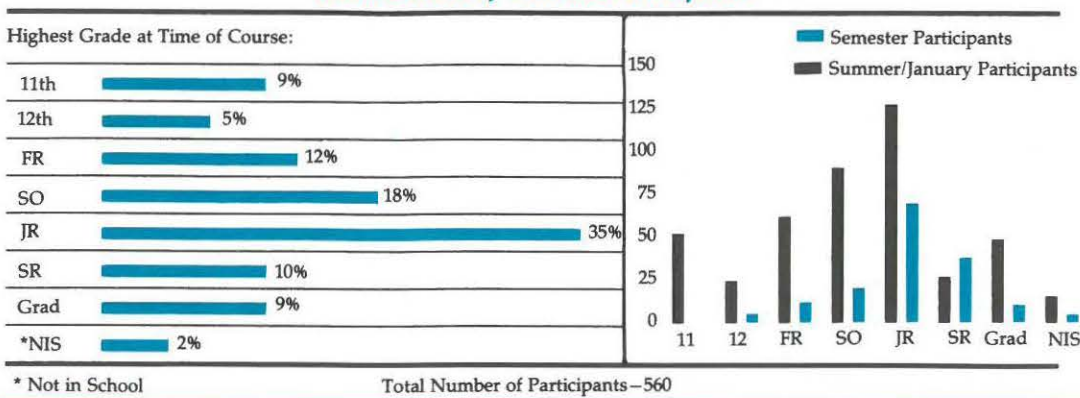
Inquiries from students and educators seeking more information about SFS programs continued to increase at double digit rates for the eighth year in a row, growing to over 12,000 requests in 1988. We are happy to say that evidence of the increasing demand for our programs can be seen in all our Admissions statistics for the year.

The size of the Marketing and Admissions Department expanded to five staff members to coordinate marketing efforts and process the increased volume. We enrolled a total of 560 students in 1987-88. Our biggest growth occurred in semester programs, where enrollment jumped 38%. Semester participants now make up 24% of the SFS student body. Enrollment in January Term and summer courses increased 7% during this period.

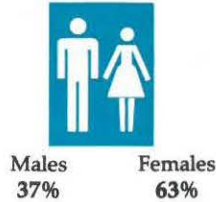
As our enrollment increases, our scholarship funds must do the same. In 1988, one out of every four participants received financial assistance from SFS, totaling more than \$200,000. One hundred and thirty five students received scholarship funding; 146 participants received no-interest loans from the Merck Family Revolving Loan Fund.

Each year, when students evaluate their SFS experience at the end of their program, they express surprise at the number of fun and special people who go on SFS courses. This fact comes as no surprise to those of us at SFS. It is these people that keep us going day to day. The following information provides a profile of the 1987-88 SFS Participants:

Grade Levels of 1987-88 Participants



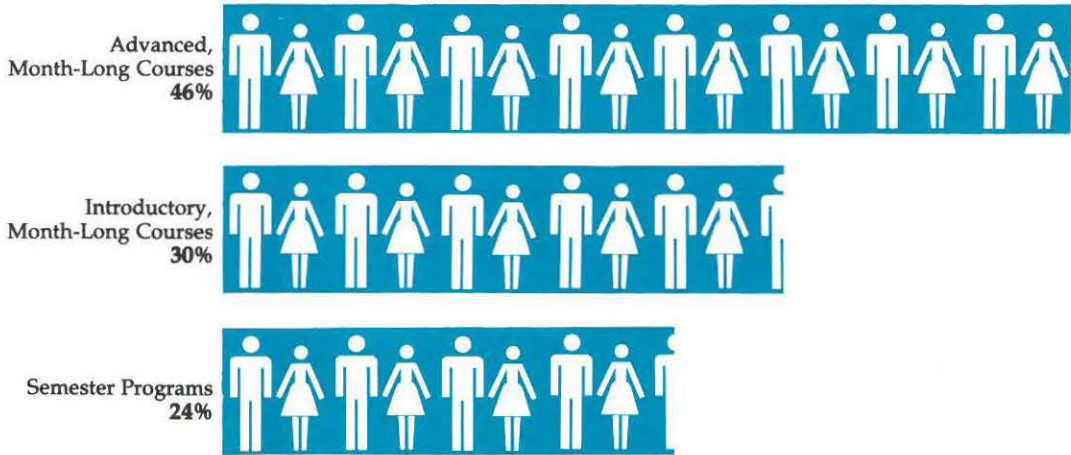
Male to Female Ratio



Percentage of Students Who Are, or Are Planning to Major in Science

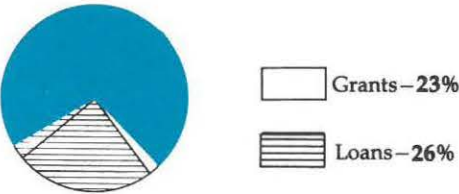
78%

1988 SFS Enrollment

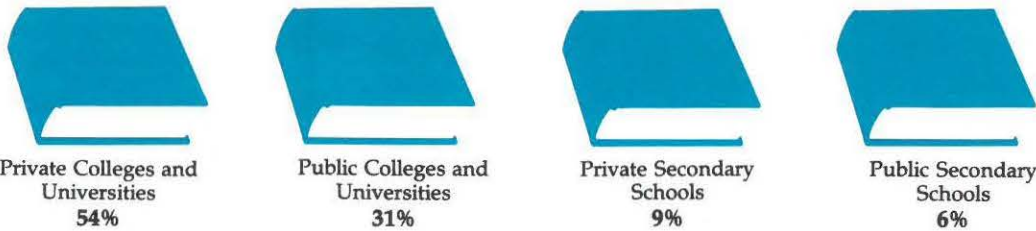


1988 Students Receiving Financial Aid

151
560 (total number of participants) = 27%



Schools Attended by 1987-88 SFS Students



Total fund balances improved by \$153,000 to \$545,000 during FY 1988. This accomplishment is significant because SFS almost reached the Trustee's goal of "Breakeven". "Breakeven" required tuition income to cover all of the operating expenses of the courses - naturally excluding scholarships, capital expenditures and new program development costs, which theoretically were covered by 1987-88 contributions. SFS managed to come within 5% of this objective through increasing revenues as a result of a 19% rise in the number of days students were attending

courses and by more efficient operation.

Working capital improved only slightly from last year, requiring SFS to continue to use resources to support this position which it would have preferred to apply toward program development. Additionally, it is important to note that SFS took on the first long term debt in its history to assist in the purchase of the new campus for the Center for Rainforest Studies in Australia.

Donations decreased by 20% in 1988 and are projected to decrease by the same amount

next year due to the change in the tax law and the completion of several three year grants.

FY 1989 should see total income increase by 15% to \$2.4 million as the seven semester programs enroll 150 students, and as the summer programs fill to capacity with 500 students. We are pleased to be able to hold the average tuition increase next year to 6.5%.

Except for our newly purchased 153 acre Center for Rainforest Studies in Australia, all other SFS Centers utilize leased

facilities. A major objective over the next several years is to continue the acquisition of our own campuses, enabling improvements in the lab, library and related educational and scientific plant. Much of the projected \$105,000 increase in fund balances for the coming year will be set aside for this purpose.

Copies of SFS's complete audited financial statements, which are the unqualified opinion of our independent auditor, Peat Marwick Main & Co. are available from SFS upon request.

Margaret Klein
Treasurer

SFS Financial Summary 1981-1988*

All figures are expressed in thousands

	FY 1981 (9 mo.)	FY 1982	FY 1983	FY 1984	FY 1985	FY 1986	FY 1987	FY 1988 (Preliminary)	FY 1989 (Projected)
Current Funds									
Tuition and other income	\$109	\$183	\$217	\$353	\$612	\$929	\$1,328	\$1,690	\$2,070
Restricted and Unrestricted Contributions	63	107	147	235	306	399	492	400	320
Less:									
Operating expenses	153	275	355	510	848	1,198	1,484	1,845	2,175
Less:									
Scholarships Granted	9	11	24	27	54	66	74	92	110
Net Increase	\$10	\$4	\$(15)	\$51	\$16	\$64	\$262	\$153	\$105
Fund Balances									
Beginning Balances	-	\$10	\$14	\$(1)	\$50	\$66	\$130	\$392	\$545
Net Increases	10	4	(15)	51	16	64	262	153	105
Ending Balance	\$10	\$14	\$(1)	\$50	\$66	\$130	\$392	\$545	\$650
Working Capital									
Current Assets	\$19	\$21	\$29	\$81	\$59	\$114	\$498	\$622	\$780
Less:									
Current Liabilities	17	19	81	122	159	277	502	605	700
Net	\$2	\$2	\$(52)	\$(41)	\$(100)	\$(163)	\$(4)	\$17	\$80
Fixed Assets									
Fixed Assets (Prior year)	-	\$12	\$18	\$61	\$103	\$184	\$353	\$418	\$573
Capital Expenditures	12	6	43	42	81	169	65	250	250
Less:									
Fixed Asset Sales	-	-	-	-	-	-	-	95	50
Total Fixed Assets	\$12	\$18	\$61	\$103	\$184	\$353	\$418	\$573	\$773
Less:									
Accumulated Depreciation	1	4	9	11	18	45	85	107	130
Net	\$11	\$14	\$52	\$92	\$166	\$308	\$333	\$466	\$643

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



We are pleased to acknowledge and thank over 150 individuals, corporations and foundations whose generous contributions totaled \$367,945 this year. The number of individuals contributing to SFS increased over 13% to 130. The fact that many of our new contributors are SFS alumni is a source of great satisfaction for us. We received several remarkable gifts this year that deserve special note.

With the assistance of the **Island Foundation**, whose ongoing generosity included a gift this year of \$55,925, we were able to lay the groundwork for the fourth SFS Center. The SFS Center for Marine Mammal Studies is scheduled to open in Baja, Mexico in 1989.

We are currently studying the possibility of a program merger with the Center for Northern Studies, providers of the only undergraduate program in the U.S. addressing issues affecting the circumpolar North. **The Boston Globe Foundation** has lent their generous support to the first phase of this project, which will examine the feasibility of the merger from a marketing perspective.

Our efforts to make an SFS experience accessible to greater numbers of students were boosted in several ways. **The Merck Family Foundation** continued to add to the Merck Family Student Revolving Loan Fund. The Family's generous contribution to the fund, (which assisted 143 SFS participants this year), now totals \$92,000.

We received many kind donations to the scholarship fund, enabling 134 needy students to participate in SFS programs during the year. We would like to offer special recognition to three donors,

The Arnold D. Frese Foundation, Mr. Bates McKee and family, and Ms. Astra Davis, who, with their ongoing support, have taken leadership roles in our efforts to raise scholarship funds.

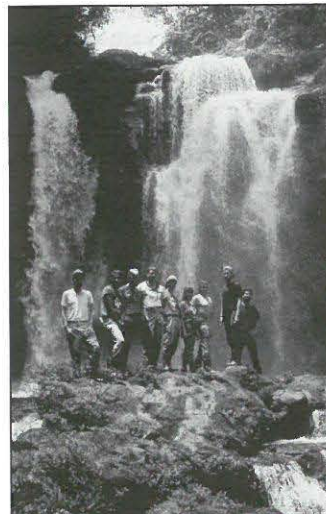
Thanks to two new major gifts received last fall, we were able to launch what we consider to be a key effort to boost enrollment in the form of an Affiliations Program. **The George Gund Foundation** honored SFS with a three year commitment totaling \$73,325 to fund our efforts to affiliate with Ohio area colleges and universities. In addition, **The Charles Engelhard Foundation** has lent their support to the Affiliations Project with a three year grant totaling \$100,000. We are pleased to name both foundations to our increasing roll of Founding Donors.

In April, we received the exciting news that SFS had been awarded a **National Science Foundation** Grant to fund ten outstanding students to attend our study of stump-tail macaques in Mexico, as part of the Research Experience for Undergraduates Program. NSF's recognition of the SFS program has and will have a significant impact on both our program and the academic careers of the ten NSF/SFS Scholars.

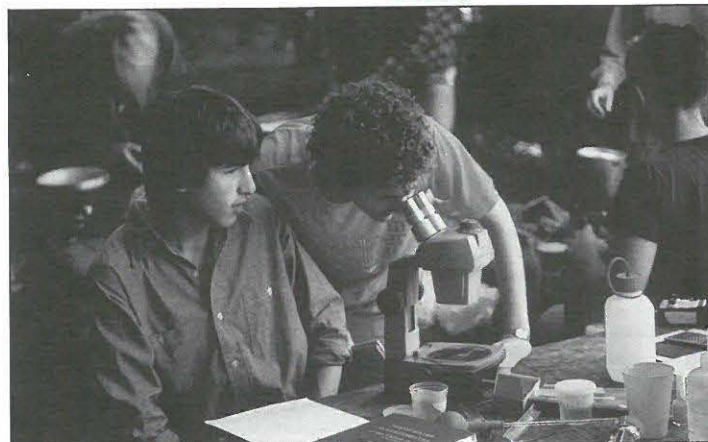
Continuing the precedent they began four years ago as our first corporate sponsors, the **Archer Daniels Midland Company** once again generously supported our Tropical Ecology program in Costa Rica. **Laurance Rockefeller** also graciously extended his ongoing support of our program in the Virgin Islands to include funds to assist with the purchase of a new boat for our Center for Marine Ecosystem Studies.

And, for the eighth year in a row, **The Andreas Foundation** has generously continued their unique and special leadership giving.

To all the donors listed below, we offer our sincere gratitude. The results of their generosity are in evidence every day, as we coordinate efforts at our Centers and satellite sites, and talk with future students and SFS alumni. With their contributions, we were able to: purchase our first SFS owned campus in Australia; develop

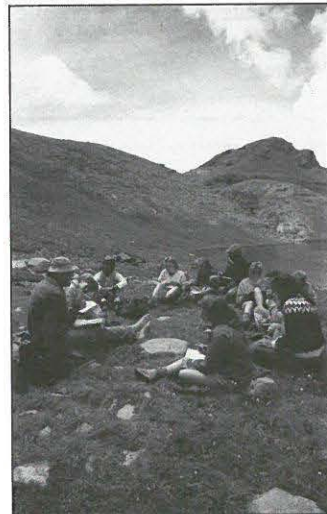


Thanks to generous course sponsorship by the **Archer Daniels Midland Company**, SFS students have the opportunity to travel to Costa Rica to study the dynamics of deforestation in what the World Conservation Strategy calls "the most exuberant celebration of genetic diversity on Earth." The rainforests. (Photo: Chip Isenhardt)



Quality scientific research requires quality scientific equipment. We were able to significantly improve our field labs this year with new computers, microscopes, hydrophones and other valuable research tools. These additions would not have been possible without the generous contributions of our supporters. (Photo: Deb Roberts)

three new satellite courses; lay the groundwork for one new Center and the possible merger leading to a second new Center; grant \$92,000 in scholarship funds; purchase approximately \$100,000 of new field equipment; and undertake substantial advances in our operations at World Headquarters and at our Centers worldwide. This committed corps of supporters deserve much of the credit for SFS's growth and our success. We are grateful and inspired that so many share our dreams and aspirations. Thank you.



We firmly believe that no qualified young person should be denied the opportunity to take part in an SFS course for lack of financial resources. This year, 134 needy students were able to participate, thanks to substantial individual and corporate donations to our Scholarship Fund. (Photo: Bill McComas)

Founding Donors (\$25,000 or more since SFS's Founding)

Terry L. Andreas
Stephen Cohen*
Astra Davis
Frederick Fisher*
E. Bates McKee*
Robert Meffort*
Willett Moore*
Laurance S. Rockefeller

Andreas Foundation
Archer Daniels Midland Foundation
Boston Globe Foundation
Cabot Family Charitable Trust
Digital Equipment Corporation
The Charles Engelhard Foundation
George Gund Foundation
The Hunt Foundation
Island Foundation
Richard King Mellon Foundation
Merck Family Fund
National Science Foundation
R.J. Reynolds Industries

Benefactors (over \$5,000)

Astra Davis
Mr. and Mrs. Walter C. Klein
Laurance Rockefeller

Andreas Foundation
Archer Daniels Midland Foundation
Bradford & Bigelow*
Bunge Corporation
The Charles Engelhard Foundation
Arnold D. Frese Foundation
Boston Globe Foundation
George Gund Foundation
Merck Family Fund

Associates (\$1,000 to \$4,999)

David Ayer
Edith W. Bacon
Enid Gort
Mr. and Mrs. F. Whitney Hatch, III
Mrs. Margarette Johnson
Cordelia Gould Kelly
Margaret K. Klein
Susanna Colloredo-Mansfeld
Emil Mosbacher, Jr.
Emil Mosbacher, III
James B. Rogers, Jr.
Richard B. Wilson
Mrs. John J. Wilson

The Chase Manhattan Bank, N.A.
Joseph and Barbara Ellis Foundation
GTE Foundation
The Hunt Foundation
Hurdle Hill Foundation
Kenneth Lipper/Evelyn Lipper Philanthropic Fund
Patagonia, Inc.
The Salomon Foundation, Inc.

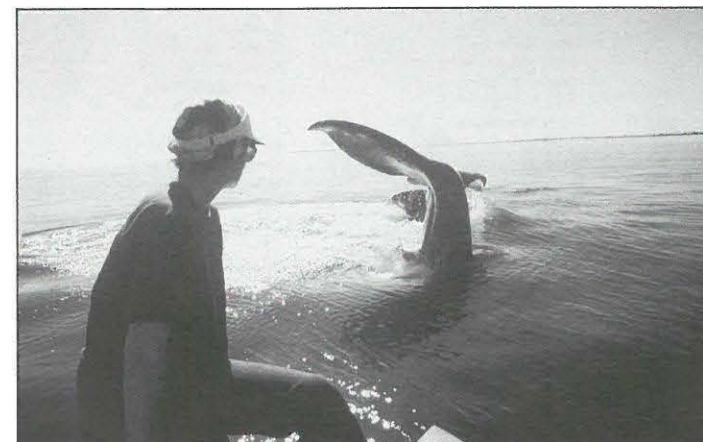
Sponsors (\$100 to \$999)

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Mr. and Mrs. John P. Arnhold
Mr. and Mrs. Ned W. Bandler, Jr.
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Christopher T. Clark
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James and Frances Elder
Travers Evans
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James H. Foster
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James H. Giffen
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Susan Rietman
Mr. and Mrs. R. McNicol Robbins
Willits H. Sawyer
Robert C. Seamans, Jr.
Mr. and Mrs. Robert M. Thomas, Jr.
George S. Tobias
Elizabeth F. and W. James Tozer, Jr.
Joanna De H. Underwood
Andrea C. Walgren
Paul and Sandra Walgren
Rose Ransier Wheeler
Cynthia L. Wood
Elsie P. Youngman
Sumner Gerard Foundation
Johnson & Higgins

Friends (\$10 to \$99)

Anonymous
Donald and Elizabeth Abbott
Brenda B. Anderson
Susan L. Armknecht
George E. Bevis
Susan E. Bolton
Janet T. Cammarata
Aletia Coe
William Connors, Jr.
Arthur and Isabella Corwin
Becky Contois
Melissa Duryea
Derrick B. Egbert
Tracy Farmer
Elizabeth Ann Fenstermacher
Heidi C. Freeman
Lee and Glynna Freeman
Jill Gill
Yale R. Goldman
Kristin E. Gordon
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for Dr. and Mrs. Darrell Wolfley
Lawrence B. Morris, III
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Jonathan D. Packman
Alisa A. Pascale
Julia Pounds
Paul S. Pottinger
Christine L. Reid
Fancie L. Rubin
Heather Seabury
Danielle C. Sedlak
Nanci Jane Shapiro
Robert N. Shapiro
Jeanne Sigler
Chanley M. Small
Jennifer S. Smith
Lauren A. Smith
Elizabeth Souhrada
Leslie Sprout
Kate Sullivan
Deborah Vowler
Susan M. Webster
E. Day Wilkes
Frederic Winthrop, Jr.
Jill L. Wittmer
Heidi E. Zimmerman

*Gifts in Kind



A generous grant to SFS from the **Island Foundation** has enabled us to expand our studies of the ecology of humpback whales and other marine mammals. The SFS Center for Marine Mammals Studies in Baja, Mexico is scheduled to open in the spring of 1989. (Photo: Steve Swartz)



1987-88 Course Participants

SFS Center for Wildlife Management Studies, Kenya

Wildlife Ecology and Management: Fall Semester, 1987

Erica R. Anderson
Pacific Lutheran University
Jennifer J. Beem
St. Olaf College
Katherine D. Bodkin
Middlebury College
Bill Bryson
University of North Carolina, Chapel Hill
Anne M. Caston
Sweet Briar College
Michael Christy
Drew University
Matthew D. Cohen
University of Rhode Island
Hanna Neale Cooper
Macalester College
Dara Dobson
Mt. Holyoke College
Elizabeth Glenn
Oberlin College
Michael I. Goldstein
Union College
Erica Suzanne Hellman
Smith College
Margaret J. Hillenbrand
South Dakota School of Mines and Technology and Landmark College
Elizabeth Hoelscher
The College of St. Catherine
Melissa Hughes
Bucknell University
Kimberly Knuuti
University of New Hampshire
Elizabeth A. Littlefield
University of Vermont
Ilyssa Manspeizer
Rutgers University
Todd Michael Palmer
Oberlin College
Anne Riederer
Brown University
David Schaepe
New York University
R. Wayne Sentman
University of Delaware
Pamela Brown Stephenson
Brown University
Cary Zackman
New York University
Diane Zenger
Bucknell University
Kathryn Zuberhuhler
Bucknell University
Spring Semester, 1988
Wendy Balmer
Grinnell College
Hilary Anne Bellamy
Wellesley College
Karen Bush
University of Massachusetts, Amherst
Penelope Carmichael
Boston University
Lisa M. David
Bernard M. Baruch College
David J. DeFilippo
Union College
Maia Enzer
Union College
Thomas Farmer
Tufts University
Christopher E. Filardi
Bowdoin College
Mark Taylor Lammers
Macalester College
Chris Lockhart
University of Washington
Tracy Ann McCracken
Texas A&M University
Lauraine Merlini
Fordham University

Adrienne Beth Nicotra
Wellesley College
Dev Niyogi
Swarthmore College
Kristin Peterson
University of California, Santa Barbara
Dana S. Roth
Tufts University
Michael K. Russell
Brown University
Tanya Swann
St. Lawrence University
Rosanne Tackaberry
Michael Tetreault
Brown University
David Turok
Middlebury College
Florence Williams
Yale College
Wildlife Management: Level A
Elizabeth Albert
Trinity University
James Brown
University of North Carolina, Chapel Hill
Anita Chabria
Worthington High School
Genevieve deVellis
University of California, San Diego
Brent Forman
Concord-Carlisle High School
Nathan Harrison
Greenhills School
Jeff Howarth
Princeton High School
Lee Hunnewell
Windsor School
Andrew Martz
New Hampton School
Alexander Mongiat
University of Iowa
Dawn Muraca
Oswego State University
Sara Runser
Boston University
Jessica Ryan
University of Massachusetts
Sarah Smith
Goddard College
Kerry Walker
Princeton High School

Essential to the successful completion of group research projects is the individual efforts of each team member.
(Photo: Bill McComas)



Not the least of the benefits of an SFS course is the strong network of friendships that come from sharing special experiences and working toward a common goal. (Photo: Chip Isenhardt)

Wildlife Management: Level B

Audrey Armondian
Tufts University
Amy Becker
University of California, Santa Cruz
Kristine Caggiano
Loyola College
Michele Christina
Westminster College
Kimberly Dietrich
University of Pennsylvania
Jeanne Fair
University of Northern Colorado
Gwen Fisher
Sweet Briar College
Latanya Frazier
Northeastern Christian Jr. College
Jacqueline Geer
Middlebury College
Brad Goodbar
California State University, Fresno
Kara Leonard
Trinity University
Azra Marghoob
Stuyvesant High School
Teresa Martini
Curry College
Stephen E. Pilkenton
University of Louisville
Mary Schustek
University of Connecticut
Alan Strauss
Purdue University
Susan Tuttle
University of New Hampshire
Alexandra Weill
University of New Hampshire
Scott Willard
University of Rhode Island
Richard Yelland
Brown University



SFS Center for Marine Ecosystem Studies, Virgin Islands

Marine Biology and Management: Fall Semester, 1987

Kevin Lee Bergman
Duke University
David Joseph Berkoff
Madison Memorial High School
Robert Blew
St. Gregory High School
Janice Teresa Brickell
University of California, Davis
Christopher Broadbridge
Boston College
Lauri Caplan
American University
Alexander Douglas
Ridgefield High School
Anthony Fitch
Colorado College
Andrew C. Geffert
Waukesha South High School
Craig Haims
College of Wooster
Heidi Ann Hertler
Bates College
Matthew R. Hwang
Worcester Polytechnic Institute
Jason Jed
Bard College
Mathew Loh
Lincoln College
Scott Kenneth Milsten
Duke University
Jean Mutone
Georgian Court College
Kate Stanwood Parker
Middlebury College
Caroline Robbins
Middlebury College
Malaika Tabors
Tufts University
Scott W. Thomas
Colorado College
John Underhill
Colorado College
Heather Varney
Sweet Briar College
Jason Weinberg
Stanford University
Danielle Zacherl
Brown University
Spring Semester, 1988
Sally Dominick
University of Colorado
Nina Hallowell
Cambridge School
Steven Henn
Harvard University
Lila Hicks
Barnard College
Bruce Kahn
University of Connecticut
Kristina Miller
Duke University
Linda Mortensen
University of Vermont
Gregory T. Nelson
Middlebury College
Tamsen Newcomer
St. Lawrence University
St. Danielle Renz
Tufts University
Stephen Rizzardo
St. Louis Community College
Eliza Sater
University of California, Santa Cruz
Craig Tobias
University of Delaware
William Webb
Emory University

Coral Reef Ecology I: Level A

Matthew Allen
Taft School
Amy Collini
Wellesley College
Gabriel de la Paz
Northwestern University
Tiffany Diers
Cincinnati Country Day School
Craig Duncan
Brown University
Jeffrey Goldman
Colorado College
Ashley Gripekoven
Williams College
Jodi Johnson
Pine Manor College
Willis Lee
Cincinnati Country Day School
Sarah Moffitt
Pitzer College
Stacey Motland
Princeton University
Stephen Paquelet
Western Reserve Academy
Jean Robbins
Miami Beach Senior High School
Walter Sall
Cincinnati Country Day School
Heather Sarg
University of Vermont

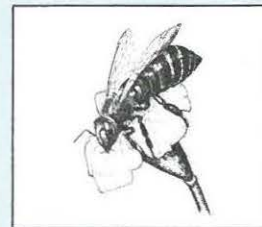
Coral Reef Ecology II: Level A

Ann Charlton
Kenyon College
Nicholas Doerfler
The Elizabeth Seeger School
Alexandra Fischer
Vivian Webb School
Nicholas Giusti
The Dalton School
Gwen Harvey
Stuyvesant High School
Amy Hazelton
Taft School
Vanessa Hinely
Atlantic Community College
Daniel Levey
Greenwich High School
Pamela Metzger
Cape Elizabeth High School
Renate Neumann
Concord Academy
James Paul, III
Hartwick College
Nancy Richardson
Cornell University
Degan Snyder
SUNY, Stony Brook
Richard Stewart
Cumberland Valley High School
Troy Willard
Washburn University
Marine Parks Management: Level B
George Baldwin
Keene State College
Alexandra Douglas
University of Massachusetts, Amherst
Kimberly Gill
Gettysburg College
Julie Harvey
University of Vermont
Christine Monheim
Oklahoma State University
Eric Odum
University of Puerto Rico
Heinz Proft
Mercyhurst College
Kristofer Schuett
Ohio State University
Michele Silin
College of the Atlantic
Stephen Smith
Western Carolina University
Andrew Steers
Albion College
Dane Terrill
Albion College

Angel Torino
Princeton University

Ecology of Toxic Reef Fishes: Level B

Paul Barber
University of Arizona
Isabel Bigelow
Harvard College
Robert Biggar
University of California, San Diego
James Donovan
University of Massachusetts
Jeffrey Galvin
SUNY, Binghamton
James Garvey
Miami University
Evan Goldenberg
Tufts University
Alexandra Grutter
University of California, Santa Barbara
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University of Puget Sound
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Purdue University
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Carleton College
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University of Virginia
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University of Pennsylvania
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California Polytechnic State University



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Biogeography - Patterns of Ecological Diversity: Fall Semester, 1987

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Mars Hill College
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Brown University
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Washington University
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University of Delaware
Sofia Dillof
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Colby College
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Macalester College
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Oberlin College
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St. Lawrence University
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SUNY, Geneseo
Florence L. Reed
University of New Hampshire
Kevin S. Richter
Dickinson College
Judith Sansone
Wesleyan University
F. Cory Scott
Lafayette College

Kenneth Austin Smith
Whitworth College

Hilary Stetson
Trinity College
Susan Stuart
College of the Atlantic
Karen Van Blaricum
Bucknell University
Richard Charles Weir
Clark University
Amanda Carder Welles
University of Vermont
Henry T. Yeh
Clark University
Spring Semester, 1988
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Carnegie-Mellon University
William Clapp Bullock, III
Colby College
John Carron
Colorado College
Christine Donahue
University of Vermont
Alexis Dragoni
George Washington University
Paul Ferraro
Duke University
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Oberlin College
George Caleb Hurtt
Middlebury College
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Bucknell University
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Carnegie-Mellon University
Nina Luttinger
Clark University
Andrew MacDougall
Dalhousie University
Mary Maier
University of Massachusetts, Amherst
Octavia Morgan
Wellesley College
James Mueller
Lake Forest College
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Tufts University
Loring G. Robbins
Middlebury College
David Sacks
Brown University
Camilla Schamaun
Clark University
Ashley Snyder
Middlebury College
Pamela Tannenbaum
University of Wisconsin
Tropical Species Diversity: Level A
Julia Burnside
Stephens College
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University of Oregon
Renee Kostick
Villanova University
Jane Nitz
University of Minnesota, Morris
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Palisades High School
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Bedford High School
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Caronsville Community College
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Allegheny College
Karen Campbell
Lafayette College

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Carleton College
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Middlebury College
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Drew University



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Saint Olaf College
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University of Connecticut
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Susan Lyon
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Patrick Shanahan
Saint Mark's School
Kirsten Swanson
University of Wisconsin
Christopher Tripler
University of Connecticut
Jennifer Wagner
University of Vermont
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Biology and Behavior of Bottlenose Dolphins, January

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Katherine Blair
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Melissa Dunford
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William Hirst
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Harper Hall School
Tracey Thieme
De Pauw University
David L. Thomson
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Ann Wonnacott
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Biology and Behavior of Bottlenose Dolphins, Level A

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Sidwell Friends School
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Dynamics of a Recolonizing Species: Alpine Ix, Level A

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Gulford College
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Stephanie Winter
University of North Carolina, Chapel Hill

Ecology of Bald Eagles, Level A

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Allegheny College
Level B
Tim Bricker
Princeton University
Claude Cahn
Oberlin College
Karen Eller
Wake Forest University



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1987-88 Course Participants

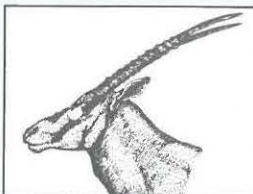
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Fordham University
Robert Noecker
De Pauw University
Christopher Perkins
University of Connecticut
Stephen Walker
Brown University
Wendy Wilkins
Albion College
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Level A**
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Evanston Township High School
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Brooks School
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St. Andrew's School
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Hamilton College
Tina Cole
Simon's Rock College
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Seven Hills High School
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**Endangered Monkeys:
Experimental Social Ecology,
January**
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University of Massachusetts
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Urbana
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William Sitar
Boston College
**Endangered Monkeys: Social
Ecology of the Stumptail
Macaque, Level B**
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Maria Vallejo
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Wesleyan University
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Parks for Preservation, Level A**
Abigail Armstrong
Oberlin College
Alicia Biagi
Memorial High School
Allison Bidlack
Kenwood Academy
Samantha Brody
Hampshire College
Kiran Desai
Amherst Regional High School
Jeffrey Friedman
Millburn High School
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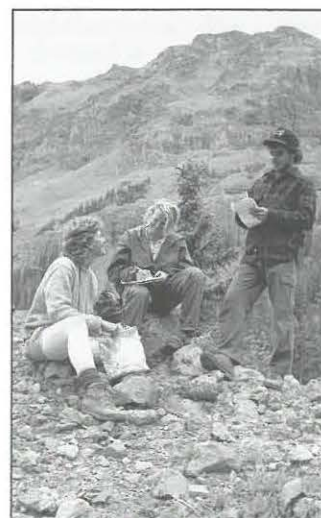
Selected Research Papers



Selected Research Papers Resulting From SFS Field Courses

Plant Community And Ecosystem Ecology Group

Community Ecology, Mount St. Helens
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.
Ecology and National Park Planning, Atacama Desert, Chile, 1983
RAEDEKE*, K.J., and J.A. SIMONETTI, 1988.
In press. Food habits of guanaco in the Atacama desert of northern Chile. *Journal of Mammalogy*.
Hazardous Waste and Coastal Ecology, Chesapeake Bay, 1985.
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

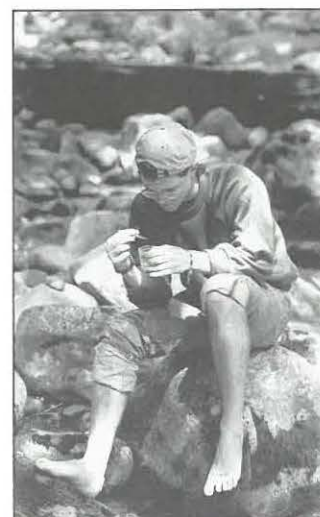


The San Juan Mountains of Colorado serve as a classroom for students of our Landscape Ecology: Designing Parks for Preservation course. Student research is aimed at determining the quality and size of ecological land units needed to preserve species diversity and conserve populations of large mammals in the Rocky Mountains. (Photo: Bill McComas)

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 Archaeology, 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, 1987.
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)
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



Current research conducted by students of the Acid Rain: Changing Aquatic Ecosystems course is focused on the biological effects of atmospheric pollutants on sensitive Adirondack lakes and streams. (Photo: Bill McComas)

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

Wildlife Ecology and Management Group

Population Dynamics of Endangered Species. Greek Islands, 1983, 1984.
HUSBAND*, T.P., P.B. DAVIS*, 1984.
Ecology and behavior of the cretin agrimi. *Canadian Journal of Zoology* 62:411-420
Center for Wildlife Management, Kenya 1982, 1983, 1984, 1985, 1986, 1987
STELFOX*, J.B. 1987.
Thompson's and Grant's gazelle in relation to seasonal environments and resource use. *African Journal of Ecology* 24:111-120

Marine Biology and Management Group

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.

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

* SFS Faculty
** SFS Students



A key component of SFS's success to date has been the promotion of the highest quality teaching. Pictured here are (r-l) SFS Australia Field Director, Dr. Mark Noble; SFS Virgin Islands Senior Faculty members; Drs. Peter Edmunds and Deb Roberts; SFS Kenya Field Director Dr. Paul Seigel; SFS Virgin Islands Field Director Dr. Bob Singer; and SFS Kenya Senior Faculty member, Dr. Tony Milewski. (Photo: Jim Elder)



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Acid Rain, Adirondacks

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Coastal Ecology: Habitat Assessment for Monk Seal Recovery, Greece

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Coral Reef Ecology, Virgin Islands

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Cultural Ecology: Conflicts in Ecological Management, Himalayas

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Dynamics of a Recolonizing Species: Alpine Ibex, Switzerland

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Ecology of Bald Eagles, Alaska

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Ecology of Toxic Reef Fishes, Virgin Islands

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Endangered Monkeys: Ecology of Stumptail Macaques, Mexico

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Ethnobotany: Discovering New Plant Medicines, Ecuador

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Social Ecology of Spinner Dolphins, Hawaii

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