

Environmental Field Studies Abroad

1999/2000 COURSE CATALOGUE

The SCHOOL for FIELD STUDIES



ENVIRONMENTAL PROBLEM SOLVING
ECOLOGY  RESOURCE MANAGEMENT  ECONOMICS

Semester & Summer
Environmental Field Studies Programs

Marine Resource Studies – BRITISH WEST INDIES

Rainforest Studies – AUSTRALIA

Rainforest & Fisheries Studies – PACIFIC NORTHWEST CANADA

Coastal Studies – BAJA, MEXICO

Sustainable Development Studies – COSTA RICA

Wildlife Management Studies – KENYA

Environmental Field Studies Abroad

INTRODUCTION

The School for Field Studies	1
Where We Work	2
Who Goes	4
Who Teaches	6
An Integrated Curriculum	8
Impacts and Results	9
Program Schedules	10

SEMESTER PROGRAMS & SUMMER COURSES AT SFS CENTERS

BRITISH WEST INDIES – Marine Resource Studies	12
Semester Program – 14	
Summer Course – 15	
AUSTRALIA – Rainforest Studies	16
Semester Program – 18	
Summer Course – 19	
BAJA, MEXICO – Coastal Studies	20
Semester Program – 22	
Summer Course – 23	
CANADA – Coastal Rainforest & Fisheries Studies	24
Semester Program – 26	
Summer Course – 27	
COSTA RICA – Sustainable Development Studies	28
Semester Program – 30	
Summer Course – 31	
KENYA – Wildlife Management Studies	32
Semester Program – 34	
Summer Course – 35	

ENROLLMENT

Semester Course Descriptions	36
Academic Credit	37
Admission and Financial Aid	38
Expectations and Responsibilities	39
Tuitions	40
Refund Policies	40
Application for Admission	appendix

Teaching children to swim in South Caicos so they can explore their marine environment.



Planting trees to restore wildlife corridors in Australia.



Understanding how wildlife impacts Kenyan communities.



Tending a demonstration garden in Costa Rica.



Working with First Nation groups to preserve Vancouver Island's threatened forests and streams.



Collecting data to address threats to biodiversity in Mexico's Bahia Magdalena.



The Mission

of The School for Field Studies is to provide motivated young people with an excellent practical education in environmental studies, enabling them to become more environmentally literate and aware and to make immediate and future contributions to the sustainable management of the world's natural resources.



THE SCHOOL FOR FIELD STUDIES

16 Broadway, Beverly, MA 01915-4499

Phone: (800) 989-4418 Fax: (978) 927-5127

e-mail: sfshome@igc.apc.org

Web Site: www.fieldstudies.org

Photos Above: Liann Babbar, Susan Gardner, Tom Jackman, Dennis Morgan, Carol Ridenour, Ed Stashko.



SFS is the country's oldest and largest educational institution exclusively dedicated to teaching and engaging undergraduates in environmental problem solving. Since our founding in 1980, over 8,800 college and high school students, with a variety of academic interests, have conducted hands-on field work in SFS programs around the world.



Students in fall and spring semester programs and intense 30 day summer courses at the six SFS field study centers earn college credit for participating in real-life field studies of challenging environmental dilemmas. Critical issues addressed by SFS teams include preserving entire ecosystems or individual species, balancing economic development and conservation, and finding ways to manage and maintain wildlife, marine and agricultural resources.

THE SCHOOL FOR FIELD STUDIES

SFS CENTERS AND PROGRAMS

Fall and Spring Semester and 30 Day Summer Programs are Offered at These SFS Centers

The Center for Marine Resource Studies – BRITISH WEST INDIES

Semester Program: Marine Resource Management

Summer Course: Marine Parks Management

The Center for Rainforest Studies – AUSTRALIA

Semester Program: Tropical Rainforest Management

Summer Course: Tropical Reforestation

The Center for Coastal Studies – BAJA, MEXICO

Semester Program: Conserving a Critical Coastal Ecosystem

Summer Course: Conserving Coastal Diversity

The Center for Coastal Rainforest and Fisheries Studies – PACIFIC NORTHWEST CANADA

Semester Program: Coastal Rainforests & Marine Resources

Summer Course: Conserving Marine Resources & Coastal Rainforests

The Center for Sustainable Development Studies – COSTA RICA

Semester Program: Studies in Sustainable Development

Summer Course: Alternative Strategies for Sustaining Tropical Ecosystems

The Center for Wildlife Management Studies – KENYA

Semester Program: Wildlife Ecology & Management

Summer Course: Community Wildlife Management

Photos Above: Mary Jane Albanese, Toni Jackman, Paul Masaki, Michael Quinn

Careful consideration has gone into the decisions on where to locate our six field study centers. Center locations must provide a suitable laboratory in which we can learn about the complex, interrelated nature of most environmental problems. For this reason, we seek to locate in resource dependent communities. These communities must actively demonstrate an interest in the work SFS is doing and request SFS assistance in addressing their resource use issues. At the same time, the site's natural beauty should help reinforce our shared motivation to utilize our natural resources wisely.

Once we have identified a location which meets these criteria, SFS makes a significant investment in developing and supporting the Center's facilities. This includes acquiring housing, classrooms, laboratories, libraries, computer centers, vehicles and research equipment. Whenever possible, Centers employ conservation measures such as solar energy, composting, recycling and wastewater treatments, to serve as "green models" for students and the community.

A stable home base allows us to undertake longterm projects and enables staff to develop strong relationships with the local community and partnerships with regional management agencies. We are working on real problems for real people - which enables students to gain another, sometimes contrary, perspective regarding resource use. And because of these ties and partnerships, chances are high that our results will be used and our efforts will make a difference.

The Center for Wildlife Management Studies is located on an 81 square kilometer game ranch on the Kenyan savanna. Wildlife in Kenya generates needed revenue from international tourists yet, with the human population increasing, many Kenyans view wildlife as a competitor for water and space. The Center location provides a base from which we can learn about and evaluate the effectiveness of various wildlife management techniques

Learn And Work Where You Can Make

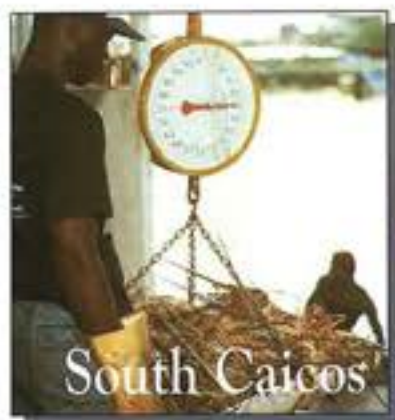


in protected and open range venues. Working with managers from local game ranches and tribal group ranches, our goal is to develop management plans for sustainable wildlife use based on the habitat under investigation.

The Center for Marine Resource Studies is located on the shore of South Caicos Island in the British West Indies.

The economy here is almost entirely dependent on conch and lobster fisheries. Working with government agencies, fish processing plants and local residents, we are researching local marine resources to determine if they can sustain the South Caicos economy.

Questions include what management techniques might make the fisheries sustainable and the fishing industry more efficient, and what are the potential impacts of proposed resort development.



The Center for Rainforest Studies sits on 153 acres of primary and secondary rainforest in Far North Queensland, Australia. Surrounding forests are now protected; but landowners, many of whom are farmers, struggle with conflicts regarding land use, preservation and restoration. The Center's location allows us to explore rainforest dynamics and apply this information to the restoration of currently degraded lands. Government agencies, local conservation groups and farmers are partners in our efforts here.

Photo: Lisa Ruffalo, MITTAL/DAVIS
Rob Robinson, Doug Singer
Ed Shattuck, Michael Whiteland

The Center for Sustainable Development Studies is located on a small farm in Costa Rica's Central Valley, within easy access to a range of habitats and land use models. Agriculture, including coffee, bananas and pineapples, is a primary income source for the country along with a growing eco-tourist industry. Land is limited and using it sustainably and effectively is an increasing concern. Working with government agencies, private organizations and local farming cooperatives, we are evaluating

A Difference

alternative, sustainable land management models for local communities.

The Center for Coastal Rainforest and Fisheries Studies, on Vancouver Island's Pacific coast, lies within some of earth's only remaining temperate rainforests.

These coastal and rainforest systems support fishing, logging and related industries that form the basis of the provincial economy. Controversial land use decisions have polarized local communities; ecological information and management recommendations are needed as decisions, with significant economic and environmental implications, are made about future rates and methods of logging and reforestation. Working with local residents, First Nation communities, logging companies, local government and resource managers gives us an opportunity to understand the complexities of the issues in this ecologically rich and rare region.



The Center for Coastal Studies is based outside a small Mexican fishing village on the shores of Bahia Magdalena, one of the most productive bays and largest remaining intact wetlands on the Pacific coast. Most residents are economically dependent on the Bay's resources (including fish, shellfish, marine mammals, sea turtles and mangroves) and are exploiting these resources at a rate that has already led to the commercial extinction of some species. Working with government agencies, Mexican and U.S. conservation groups and local residents, we are developing recommendations for the sustainable use of the Bay's resources as well as for alternative employment options for local residents.



WORK CLOSELY WITH PEOPLE WHO SHARE SIMILAR GOALS AND INTERESTS

Each SFS team consists of a center director, three full-time faculty and additional staff, and approximately 32 students. Each year students come to SFS from over 200 public and private high schools, colleges, and universities. (For a partial list of home schools please see page 37). They major in everything from science to economics to liberal arts. They come from across North America and from many other countries. Most semester participants are college sophomores, juniors and seniors; summer participants range in age from 16 to the mid-twenties. Approximately one in three SFS participants receives financial aid from SFS to enable their participation; others are able to access federal aid programs and assistance from their home schools.

Please see page 38 or call the SFS Admissions Office at 1-800-989-4418 for financial aid information.



"I had never gone camping before, not even in my backyard. The rest of the group had bombarded me with wonderful expectations but I simply didn't know how I would cope without running water overnight, let alone for three nights and four days! I survived the first night in a tent, in fact, I survived the five consecutive trips and was almost sad to return to the Center after the last trip."

Toni M. Schossler,
Oil City, PA - Davidson College

Although SFS students come from diverse backgrounds, they all share a commitment to learning, a concern for the environment, and a desire to make a real contribution to the future of our planet.

ALUMNI COUNSELORS

A network of over 100 SFS alumni are ready and eager to share their experiences with you.

To get a first-hand, student perspective please call the SFS Admissions Office

at 1-800-989-4418.

We will put you in touch with an alumnus from your region, school or the program(s) you are considering.



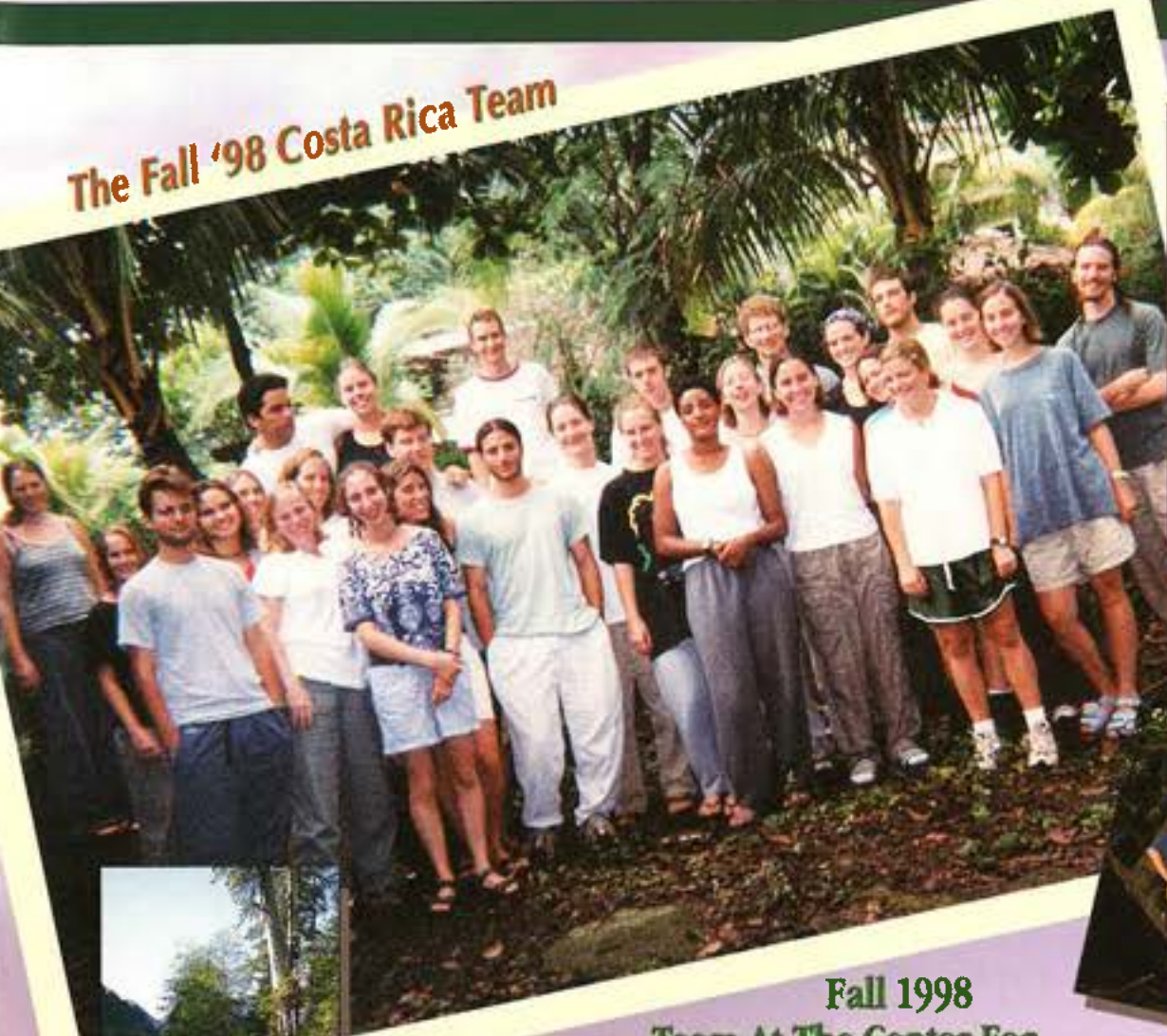
"During our field exercises and Directed Research, some of us showed skills in hands-on field work while others showed strong points in analyzing and presenting data with scientific reports and spreadsheet manipulation. Overall, we learned to work together as a team; we were all there to learn."

Jonathan Landwer,
West Palm Beach, FL -
Palm Beach Atlantic College



Photos: Liana Babbar, David Barron/Oxygen Group,
David Bathgate, Neal Elre, Dick Garstang,
Paul Houlihan, Meghan McGrath, David Silverberg
Vishal Grover

The Fall '98 Costa Rica Team



"Unfortunately, for science majors, study abroad experiences aren't all that available. I decided early on there was no way I was going to spend all four of my undergraduate years doing book and lab work!"

Jeremy Deer,
Whiteland, IN -
University of Evansville



"It was very valuable being part of a program that doesn't just learn about problems but works with local people to solve them. I was motivated by being surrounded by other people my age who also wanted to make a difference."

Naomi Sikes-Gilbert,
New York, NY -
Oberlin College

Fall 1998 Team At The Center For Sustainable Development Studies

Sara (Beth) Allgood, Atlanta, GA
Environmental Policy, University of Georgia
Heather Alvis, Bend, OR
Zoology, Oregon State University
Carly Anderson, South Windsor, CT
English, Emory University
Forest Bradley-Wright, Eugene, OR
Env Studies, Tulane University
Aaron Briggs, Colorado Springs, CO
Env Science, Willamette University
Rachel Cannon, Seattle, WA
Biology, Wells College
Alicia Clinton, Zirconia, NC
Integrated Studies, Warren Wilson College
Myles Collins, Denver, CO
Env Engineering, Northwestern University
Jonathan Curley, Bellingham, WA
Env Studies, Oberlin College
Elizabeth Dolan, Chevy Chase, MD
Env Studies, Washington University
Karen Douthwaite, Morristown, NJ
Env Science, University of Virginia
Alison Edmonstone, Old Lyme, CT
Biology, Davidson College
Zackry Guido, Chester, VT
Econ/Env Science, Lafayette College
Austin Lane, Richmond, VA
Biology, University of Virginia
Dawn Lehman, Kona, HI
Env Studies/Bio, Middlebury College

Amy Lieberman, Bedford, NY
Science & Culture, Brown University
Sara Miller, Mequon, WI
Env Studies, University of Colorado
Kelley Moore, Saratoga, CA
Geology, University of California/Los Angeles
Chloe Morreale, Hardwick, MA
Animal Science, University of Vermont
Jaime Palter, Sharon, MA
Env Science, Duke University
Emily Patterson, Atlanta, GA
Anthropology, University of Georgia
Jennifer Pinc, Northville, MI
Ecology & Evol Bio, Cornell University
Kyna Powers, Albany, OR
Env Studies, Scripps College
Kevin Regan, Gainesville, FL
Env Science, University of Tennessee
Desiree Robertson, Chesterton, IN
Biology, Northern Arizona University
Tad Schwager, Bainbridge Island, WA
Human Biology, Stanford University
Heather Smith, North Olmsted, OH
Env Stud/Zoology, Ohio Wesleyan University
Akiba Smith-Francis, Flushing, NY
Env Science, Harvard University
Jesus Verduzco, Brownsville, TX
Env Systems, Cornell University
Michael Waldman, Phoenix, AZ
Bio/Env Studies, Whitman College

"I decided I needed to learn more about the environment because this would be a major issue in international relations in the coming decades. That is how I found myself, a creative writing/international relations major, bound for Australia to study tropical rainforest ecology. Looking back, I realize what a varied group we were. Some were art students, some biology students, others unsure. In this diversity, we learned from each other."

Ben Bedard,
New Vineyard, ME -
University of Maine

Who Teaches SFS Programs

LEARN FROM EXPERIENCED FACULTY

Teaching you, providing you with the context and the knowledge and the skills to understand and address complex environmental issues, is the core of the SFS mission. We have designed the SFS program to be a guided experience, emphasizing teaching and mentoring and providing you with access to as much information and guidance as possible.

Every SFS Center is staffed with a Center Director and three full-time faculty (*usually an ecologist, a resource manager and an ecological economist*) who live on-site and are easily accessible to answer your questions or give you input. Additional support is provided by student affairs managers, interns, site managers and local support staff. This level of staffing provides students with a remarkably low student to faculty ratio (*no higher than 10:1*) and enables you to gain an interdisciplinary perspective on complex environmental issues. The teaching staff at each SFS Center have over 20 years of professional experience in the subjects and ecosystems we're studying - they know their stuff! These men and women are committed educators, selected for their interdisciplinary teaching and research approaches

as well as their leadership qualities. They are successful practitioners in careers you may be considering and are the source of a wealth of information and advice.



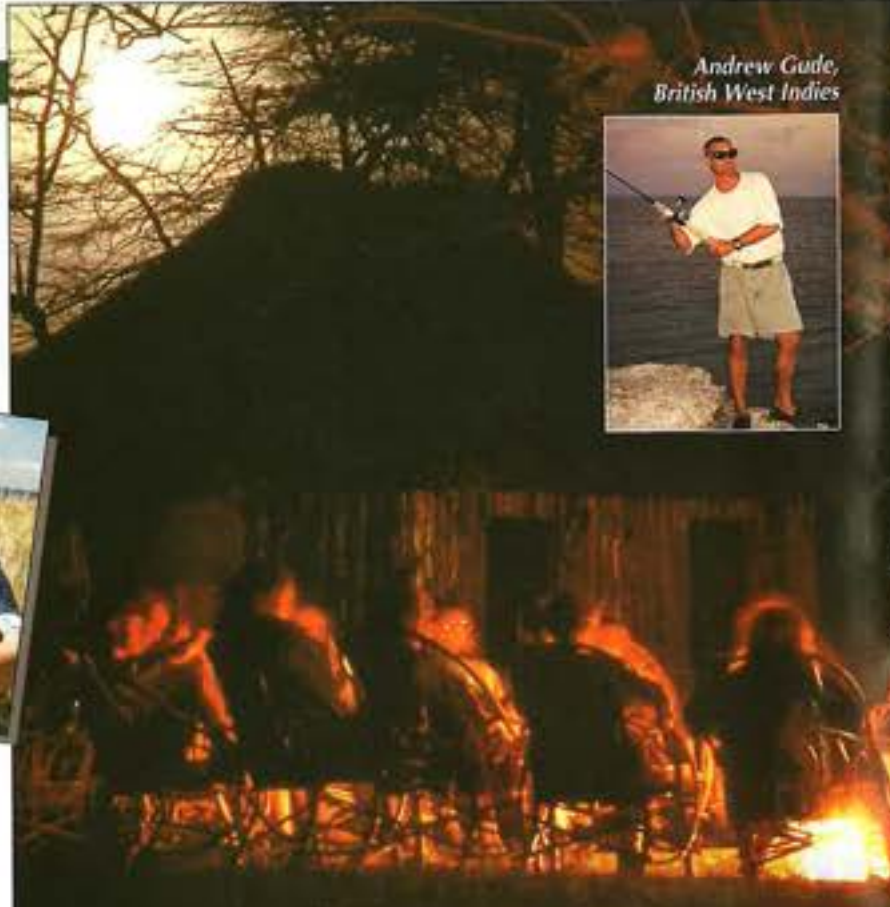
Sue Hamel, Student Affairs Manager, Center for Wildlife Management Studies



Salvador Garcia-Martinez, Mexico

An integral part of the SFS experience is the concept that students act "*as crew, not passengers*". Students are encouraged to

take responsibility for their academic, cultural and social growth. Every SFS center is staffed with a Student Affairs Manager (SAM) to assist students in these endeavors. Among many other tasks, SAMs coordinate volunteer and service opportunities in the local community and help students develop leadership skills. Included in these skills are the ability to recognize, analyze and manage risk. SAMs are supported by a full-time Risk Manager based at SFS Headquarters.



Andrew Gude, British West Indies



teach (*tēch*) v.

1. To impart knowledge or skill.
2. To provide knowledge of.
3. To cause to learn by example or experience.

"Webster's Dictionary"



Alex Tewfik, British West Indies

"The faculty really impressed me. I saw such dedication to what they were doing that I almost felt guilty for only beginning to be part of the environmental problem-solving process now. But I didn't feel guilty, I felt inspired. Those faculty were some of the most experienced and intelligent people I've ever known. They made me want to know and understand everything around me."

William Jernigan,
Rock Hill, CS -
Winthrop University

FACULTY PROFILES

Alex Tewfik
Resident Faculty

Center for Marine Resource Studies

Alex received a BS degree with honors in Marine Biology from the University of Guelph, in his native Canada. He went on to earn a Masters degree in Fisheries Science and Resource Management from Acadia



University in Nova Scotia, where his research focused on queen conch in the waters off Jamaica. After graduating, he returned to Jamaica in the role of Chief Scientific Officer for the Fisheries Division. Alex has served as a consultant for fisheries operating in Honduras, Belize, and Canada, focusing primarily on queen conch and spiny lobster. Before joining SFS full-time in 1997, Alex managed offshore production at the Caicos Conch Farm on Providenciales, a model operation visited regularly by SFS students, and advised several SFS directed research projects.

Barbara Heidenreich
Center Director

Center for Coastal Rainforest and Fisheries Studies



Barbara received an honors degree in Geography from York University and an M.A. in Economic Geography from McMaster

University. After receiving a second Masters in International and Public Affairs from Columbia University, she spent three years as an investment analyst in Brazil. She spent seven years as a regional planner before heading to Labrador as an administrative consultant to an Inuit association. At Trent University, she helped develop a new program in Native Management and Economic Development while also teaching environmental and resource studies. After serving as Director of the Canadian Institute for Environmental Law and Policy, she was appointed as a tribunal judge for an Ontario appellate court deciding on land use disputes. An avid sailor, Barbara also owns a farm in Ontario where she raises Highland Cattle and Scottish Deerhounds.

Lisa Bradshaw
Resident Faculty

Center for Sustainable Development Studies

After receiving an undergraduate degree with high honors from The University of Michigan, Lisa enrolled in a Ph.D. program at the University of California at Davis. Her research took her to Nicaragua where she spent two years studying the impacts of different



cover crops on coffee growth. She joined the Center staff in 1993 and has spent the past five years engaging SFS students in cutting edge research on integrated pest management and gender roles. Lisa has presented findings from these efforts at international symposia in The Netherlands, the U.S., Costa Rica, Mexico and Nicaragua. Most recently, she presented her work on "Home Gardens in Costa Rica's Central Valley: Reservoirs for Biodiversity and Genetic Conservation?" at the Society for Conservation Biology Meetings in Australia.

Luis Eduardo Calderon
Aguilera

*Center Director
Center for Coastal Studies*



Luis was born in Mexico City and received his undergraduate degree in Biology from the Universidad Nacional Autonoma de Mexico. After receiving an M.S. in Oceanography from CICESE, Luis enrolled in a Ph.D. program in Marine Science at the Universidad Politecnica de Cataluna, in Barcelona, Spain. Since receiving his Ph.D., Luis has been a senior scientist in the Department of Ecology and Director of Graduate Studies at CICESE (*Centro de Investigacion Cientifica y de Educacion Superior de Ensenada*). His research has focused on the shrimp fishery in the Gulf of California and the relationship between the fisheries resources and global climate changes. Luis joined SFS in 1997, after doing post-graduate work at the University of British Columbia. Luis (*who was an extra in the recent film Titanic*) and his wife have three daughters who visit the Center often.

Betty Nicholson, Kenya



"I was looking for a rigorous program and, thanks to the staff, was happy to find my experience in Kenya to be both challenging and academically fulfilling."

Jonathan Vlahos,
Kensington, CA -
Amherst College



Bernardo Aguilar

Program Director - Center for Sustainable Development Studies

As we sat down for lunch after a muddy morning of tromping around a Protected Zone, I found myself peeling back some layers of cynicism as I asked Bernardo some self-defeating questions: "Do enough people even think about how they affect the environment? How can we really expect our efforts to count for anything?"

My interrogation was cut short by a chorus of singing students bearing a cake. Bernardo was celebrating another birthday at the Center and, at the expense of thirty impatient sweet tooths, he raised his spatula and gave a short speech.

"We may have to give up the expectation that things will change in our lifetimes.

But, if I were to give up, if I were to allow myself to be cynical at my core, then I have nothing to work for and have done a great disservice to my children. If one of you leaves here with the choice to live a more sustainable life, if one of you has the courage to be more of an environmentalist, then something has changed. It is for this hope that I must remain an optimist."

"My classmates and I shared a look of wide-eyed empowerment. This was a day I won't soon forget but, because we live with our professors here at the Center, encounters such as these aren't rare. It was Bernardo's birthday, but today he gave me a gift."

Jaime Palter, Sharon, MA - Duke University

Our goal is to enable you to come away from your SFS experience with an understanding of the complexity and interrelatedness of environmental issues, as well as an increased commitment and new skills to help improve the environment and the lives of people dependent on that environment. We believe this can be best achieved by offering you a chance to make a meaningful contribution towards solving environmental problems. To deliver this opportunity, we have created an integrated curriculum incorporating:

1. an interdisciplinary "case studies" approach to teaching;

All SFS programs investigate local environmental problems in the form of case studies. Drawing from a number of disciplinary perspectives (*usually ecology, resource management, economics, applied anthropology, and political science*), we study the theories and tools that are relevant to understanding a particular complex problem. In each case study, we seek answers that enable natural resources to be developed economically in a manner which can be sustained indefinitely, a concept known as sustainable development.

Faculty lectures and readings provide the theoretical information you need to understand the problems raised by the cases. Guest lectures by individuals who are intimately involved in the issue under study provide a rich (*and, at times, conflicting*) context that is typical of major social problems. Lectures are integrated with field-work and practical, interdisciplinary activities enable us to gain hands-on experience as we address these issues.

Gain An Interdisciplinary Perspective



Several projects at the Center for Coastal Studies in Mexico address the threatened blue crab fishery. Because directed research projects are chosen from a list of projects requested by local clients, you know someone is interested in and will use your work.

2. learning problem-solving through field work designed to identify solutions to local environmental problems;

All SFS programs include a field research component, giving you the opportunity to make an immediate contribution to the improvement of a local environmental issue while you put the theories you are learning in the classroom into practice. We don't seek to promote research for its own sake but do seek to produce first-rate applied research in the form of practical reports to local resource managers as an essential part of our educational process.

You will design and carry out a field project related to the current goals of the Center or program. These projects usually last for more than half the program, culminating in presentations to both the local community and the larger outside community of scientists, researchers and representatives from SFS partners and clients.



Case studies require you to make a decision, usually with less than complete data and less than perfect solutions. In South Caicos, many residents are economically dependent on the conch and lobster fisheries. Our case study on the effectiveness of catch and size quotas as a way to manage the fisheries challenges you to reconcile local economic needs with national and international conservation interests.

The following pages will provide you with numerous examples of how SFS staff and students have impacted local environmental issues and worked with local communities. An

SFS experience can also have a profound impact on the way you view the world and your place in it. These impacts extend far beyond daily impressions while you are in the field and may include:

Impact The Envi The



Engaging in environmentally related community service projects provides opportunities to get to know local residents on a personal, informal level. In South Caicos, SFS students started a science club at the High School. Club members, in turn, helped our students stage a "SEA DAY", when island children come to the Center to learn more about their surrounding ocean environment.

3. involvement in the local community through field and service projects undertaken at the request of a local partner/client;

Case studies and field work can only be successful if we develop solid relationships with local individuals, organizations, and agencies interested in conservation. Our clients are stakeholders who are personally impacted by the environmental issue under study. Our partners are working on critical local environmental issues related to the Center.

4. participation in an educational journey during which you are asked to be a member of the crew, not a passenger; where we expect and encourage you to take a proactive role in all aspects of your education.

We seek to put some control of - and responsibility for - your educational process in your hands. We believe that, if given this opportunity, you will not only participate more fully in your education, but also benefit more fully from the results. Your responsibility to learn in an SFS program extends beyond academic study to many aspects of group dynamics, community relationships, daily living, and institutional relations.

Field work is fraught with daily challenges - equipment breaks down, field projects fail for reasons outside of your control, and a "foreign" environment, in many senses of the word, creates obstacles as well as opportunities. SFS teams often live in isolated settings; participants spend up to three months living in close proximity with up to forty other team members and will, at times, be asked to give up personal freedoms for the good and safety of the group. Identifying effective solutions to environmental problem-solving requires a sensitivity to, and an understanding of, the local context. Mastering these challenges requires developing problem solving, team and relationship building and risk management skills that are useful long after you leave the field.



Mastering the daily challenges of living with a large group in a rustic setting fosters problem solving, teamwork and risk management skills increasingly sought and valued by employers.

developing leadership skills...

"The SFS experiences have been a marvelous addition to our Biology curriculum at Davidson. Students return to campus with the self-assuredness that comes from having their sense of the

acquiring technical knowledge and analytical skills...

"Field work, real scientific research, real problems, provided an excellent insight to how scientific research is actually conducted and what kind of work could be in store for me in the future."

Christopher McGuire, Peekskill, NY - Pace University

gaining hands-on experience...

"I use the skills and understanding SFS helped me to develop every day in my life and career — things like teamwork, the importance of patience in scientific work, the reward of long, hard days in the field. My SFS program was one of the experiences that helped me define and focus my future career. I now have a Ph.D. in Invertebrate Zoology and I work at the Chesapeake Bay Program coordinating a multimillion dollar monitoring program and helping to restore and protect the beauty and bounty of the Chesapeake."

Dr. Jamie King, Annapolis, MD

Environment, Community, Your Future

world, and their place in it, challenged. Their experiences totally integrate learning and living so that the boundaries of the "academic" world and the "real world" dissolve. They have developed skills in problem-solving, critical thinking and research. In summary, the SFS experience develops leaders, both in and out of the classroom."

Verna Miller Case, Professor of Biology - Davidson College

developing personal confidence...

"My SFS experience has opened up a whole new world for me. Now I have the confidence and knowledge that I can succeed in a foreign country and I now desperately desire to work internationally. Politics, international relations, cultures and economics are now fields of fascination for me which is amazing considering I applied to SFS with my major interest being ecology."

Mark Nickum, Bloomington, IL - Knox College

SFS SEMESTER PROGRAMS

Curriculum

Fall and spring semester programs run for 14 weeks and enroll up to 34 students. To facilitate credit transfer, we have separated the lectures and field work in the integrated semester curriculum into four separate university courses, each carrying 4 semester credits. Three of these courses (*usually incorporating an ecological, resource management, and socio-economic or applied anthropology perspective*) focus on theory using local examples. Each course involves the traditional elements of an undergraduate course including more than 50 hours of lecture plus readings, written assignments, exams, field trips, oral and written evaluations. The fourth course, Directed Research, involves over 150 hours of course and field work including instruction in research design and completion of an individual field project addressing a component of the semester's research objective.

(Please see page 36 for individual course descriptions).

Schedule

Semester programs run for 95 days including a five day midterm break (*the only time you are free to travel on your own*). We compress a 16 week semester into 14 weeks (*by working on weekends among other methods*), so be prepared for an intensive learning process.

The program begins with an introductory module orienting you to the site and the local environmental issues. An average of three to four weeks is allotted to each of the case studies. Several days at the end of these periods are set aside for synthesis and evaluation. The program ends with a 'Re-Entry' Module offering an opportunity to reflect on the experiences of the semester, clarify values and consider career possibilities.

Our schedule varies. The first half of the semester includes approximately 15, one to one and one half hour long lectures a week plus 3-5 other meetings (*organizational, research/paper presentations, guest lectures*). Afternoons are generally filled with field trips or laboratories. Academic activities are usually held six days a week. On average, we spend a total of 3-4 weeks off-campus on field trips field exercises and community projects. (*Students at the South Caicos Center spend significantly less time off-campus*).

Later in the semester, there are fewer lectures and organized classes and more time is allocated for Directed Research projects. Additional meetings offer training sessions in the skills (*statistics, paper writing formats, computer spreadsheets, and laboratory analysis*) needed to complete your research.

In addition to daily chores like kitchen duty, several hours are scheduled each week for a thorough site clean-up.

Prerequisites

Semester participants must be at least 18 years old, must have successfully completed at least one college level ecology or biology course, and should have completed at least one semester at a college or university. Other prerequisites may apply; please be sure to check individual program descriptions.

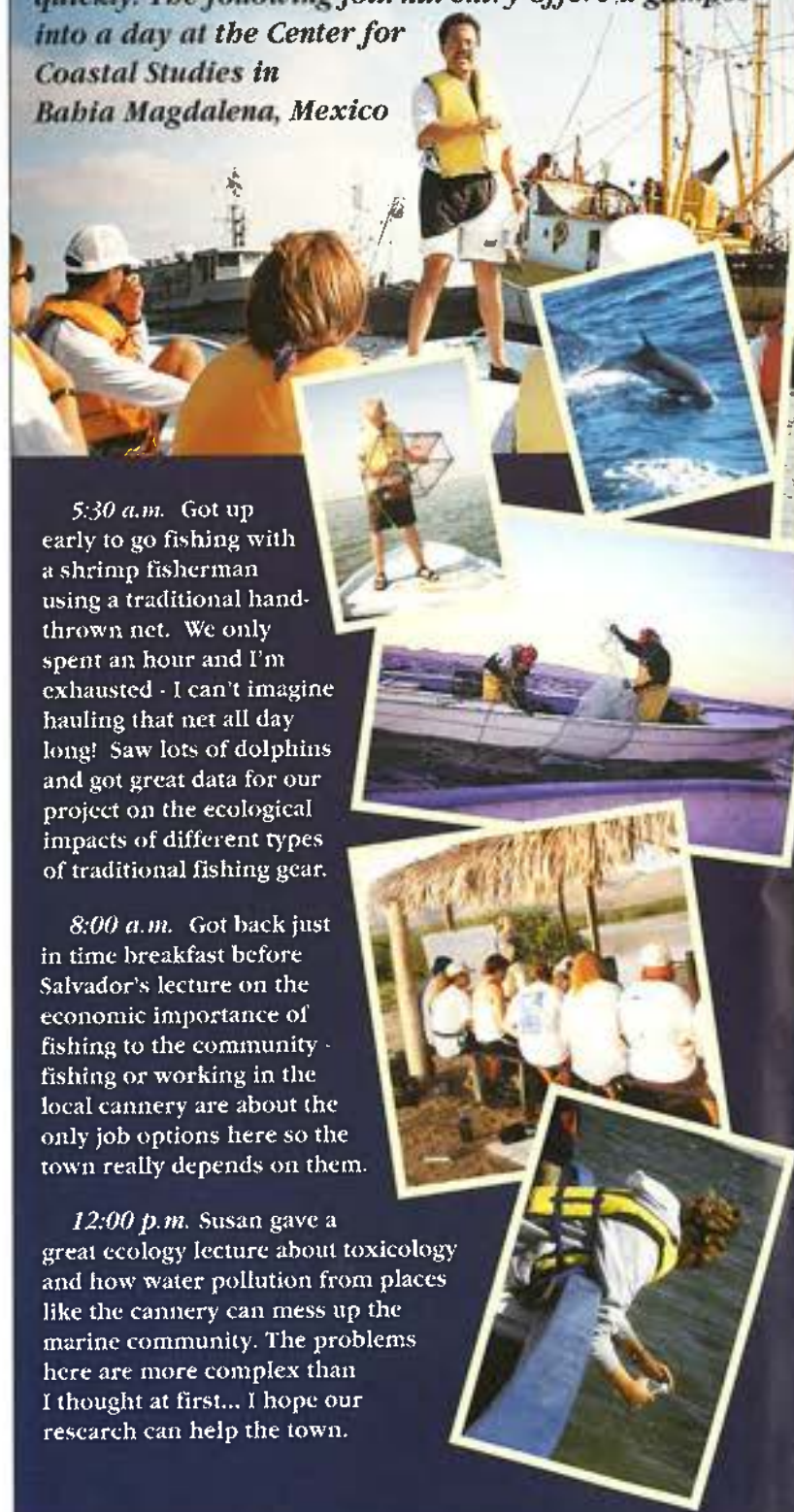
NOT JUST YOUR AVERAGE DAY!

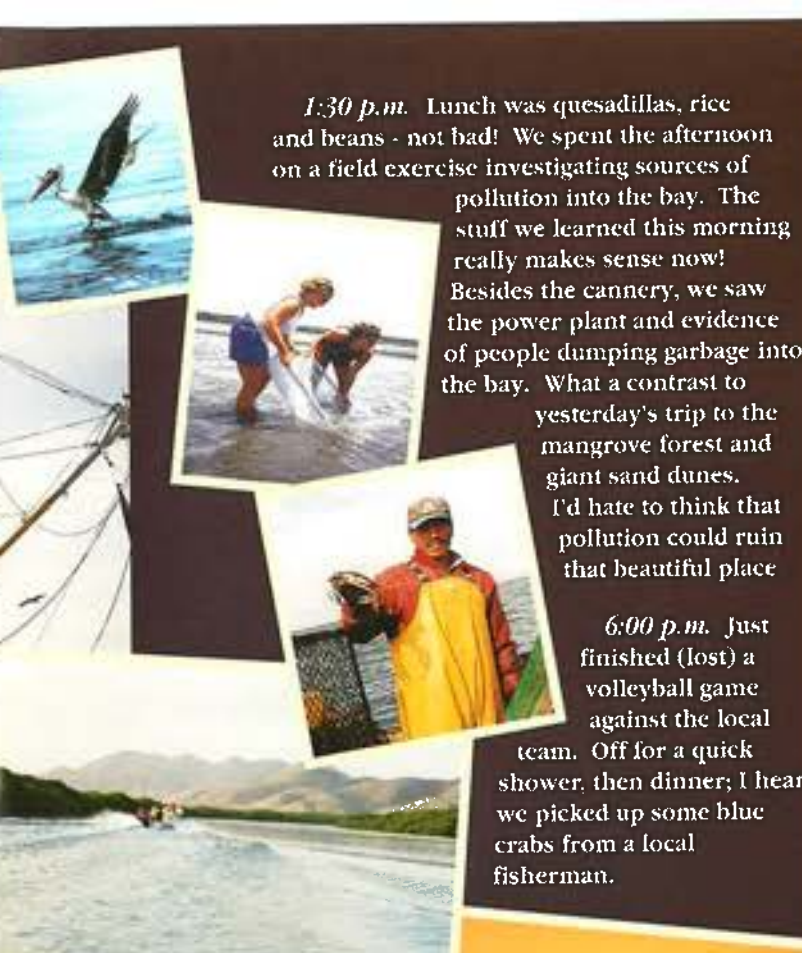
Many considerations drive the daily schedule and every day is a little different from those before or after. There are some consistencies too - every day brings some new discovery, a new awareness or understanding and a sense that time is passing too quickly. The following journal entry offers a glimpse into a day at the Center for Coastal Studies in Babia Magdalena, Mexico

5:30 a.m. Got up early to go fishing with a shrimp fisherman using a traditional hand-thrown net. We only spent an hour and I'm exhausted - I can't imagine hauling that net all day long! Saw lots of dolphins and got great data for our project on the ecological impacts of different types of traditional fishing gear.

8:00 a.m. Got back just in time breakfast before Salvador's lecture on the economic importance of fishing to the community - fishing or working in the local cannery are about the only job options here so the town really depends on them.

12:00 p.m. Susan gave a great ecology lecture about toxicology and how water pollution from places like the cannery can mess up the marine community. The problems here are more complex than I thought at first... I hope our research can help the town.





1:30 p.m. Lunch was quesadillas, rice and beans - not bad! We spent the afternoon on a field exercise investigating sources of pollution into the bay. The stuff we learned this morning really makes sense now! Besides the cannery, we saw the power plant and evidence of people dumping garbage into the bay. What a contrast to yesterday's trip to the mangrove forest and giant sand dunes. I'd hate to think that pollution could ruin that beautiful place

6:00 p.m. Just finished (lost) a volleyball game against the local team. Off for a quick shower, then dinner; I hear we picked up some blue crabs from a local fisherman.



7:15 p.m. Our research group met to write up the results of yesterday's social survey field exercise. It was fun to sit with local people and learn about their lives - everyone is so friendly! My Spanish is getting better; thanks to the language tutorials we have, I can communicate pretty well. We finished just in time to watch yet another gorgeous sunset... This place is so amazing!



8:30 p.m. Planned our next visit to the elementary school - we're going to use a scavenger hunt to teach the children about their environment.

9:30 p.m. Some students walked into town but I decided to hang out here. The moon

is lighting up the Bay and there's a breeze blowing through our palm trees. I'm going to crash hard tonight! Tomorrow is another early one as we're loading up the boats (called *pangas* here) and heading out to Isla de Magdalena where we'll camp and talk to villagers whose families have fished here for centuries...

SFS SUMMER COURSES

Curriculum

Summer courses focus on a single case study question. Each course carries four semester credits in environmental studies and involves elements of an undergraduate course including more than 40 hours of lecture, readings, written assignments, exams, field trips, oral and written evaluations. In addition, you will have the opportunity to design and carry out a directed field project from a list of projects related to the current goals of the Center. These projects usually last for more than half the program, culminating in presentations to the local community and interested scientists and representatives from SFS partners and clients.

Schedule

SFS summer programs run for 30 days, enroll 32 students and are taught by three faculty. You will be involved in activities seven days a week with only one or two unscheduled days during the program. Be prepared for an intensive learning process. Daily schedules vary from course to course, depending on research agendas, weather, field trips and logistics. Typically, we awaken early and either attend a morning lecture or head out to the field. We devote much of the day to field work, returning to the Center in the late afternoon to process our data or, if we haven't already done so, to participate in our daily lecture. After dinner we may have a guest lecture, group discussion or study time.

Later in the course, we spend less time in lectures and more time working on directed field projects. Additional meetings may be scheduled to offer training in skills (*statistics, paper writing formats, computer spreadsheets, and laboratory analysis*) needed to complete your research. Everyone should expect to be involved in kitchen/cooking duty and site clean-up.

Prerequisites

Summer courses are taught at the college introductory level. Our low student to faculty ratio and interactive teaching approach allow us to adjust the content and pace of the course to suit the needs of the team. While most summer participants have completed at least one college biology or ecology course, talented and motivated students with no ecology background have had comparable academic success. To apply to a summer program, you must be at least 16 years old by the time the program begins and must have successfully completed at least the junior year of high school. Other prerequisites may apply; please check specific program descriptions.

Photos: David Barron/Oxygen Group, Jim Elder, Susan Gardner, Marilyn Kazmers/Sharksong, Rich Malatesta, Ed Stashko

TROPICAL RAINFOREST MANAGEMENT

Our focus during the semester is on the restoration and management of degraded forests, pasturelands and watersheds. We begin with a week of orientation and preliminary lectures. Course material is integrated and presented in 2-3 interdisciplinary case studies focusing on local environmental problems and resource conflicts. Case studies change as problems are solved and new clients and issues are identified.

Recent case study questions include:

- ◆ How can continued agricultural development and human settlement be made more compatible with preservation and maintenance of biodiversity in Australian tropical rainforest regions?

A visit to Mission Beach introduces us to the habitat of the endangered cassowary. "My experience helped me realize what I did and did not like about biology and, more specifically, research. I found that there are ways to help the environment other than just in "environmental science" labeled careers.

Ann Huger, Lexington, VA - Hollins College

- ◆ How can the economic and ecological benefits of restoration be quantified in order to convince farmers to plant trees?
- ◆ Will forest corridors reduce the negative effects of habitat fragmentation and improve the long-term preservation of plants and animals?
- ◆ What is the status of tree kangaroos on the Atherton Tableland and how can rainforest restoration assist in their conservation?

Faculty lectures are supplemented with guest lectures. Fifteen to twenty local experts including resource and park managers, officials from government management agencies, researchers, farmers, aboriginal and community group leaders lecture and meet with students during the course of a semester.



Photo: Kathy Abbott

Field Work and Field Trips

Days are spent in a combination of lectures, field exercises and research. Our field work sites include forest and modified habitats on the SFS property as well as the adjoining protected forests and nearby private lands including banana, sugar cane and dairy farms. Through field trips to natural areas and areas reforested in a variety of ways, we will seek to understand the role that reforestation can play in restoration, wildlife conservation and watershed protection. Additional trips may include tree nurseries, the Mission Beach and Licuala Forests Cassowary Habitats, the ancient Stockwellia Rainforest near Mt. Bartle Frere, the lowland rainforests at Eubenangee Swamp, and to the Daintree area to study ecotourism and aboriginal land management.

Semester Program Dates:

September 8 - December 11, 1999

February 2 - May 6, 2000

Departure Point:

Cairns, Queensland, Australia

Students are registered in four academic courses:

BI/EE (NS) 369

Rainforest Ecology

EE (NS) 370

Principles of Forest Management

EE (SS) 302

Environmental Policy and Socioeconomic Values

EE 491 or 492

Directed Research

Please see page 36 for course descriptions.

Photo: Ed Stashko



Helping with a community planting to help establish a corridor between forest fragments. "We didn't just go out and plant trees, we had to analyze soil, carefully select the species to plant, and spend hours clearing the weeds from our plot. But when it finally came time to plant, I felt so proud of what we'd done, I wanted to do more!"

Kathleen Killus, Winona, MN - Knox College

Marine Resource Management

Semester Program — Page 14

Marine Parks Management

Summer Course — Page 15

ENVIRONMENTAL PROBLEM

The Turks and Caicos Islands (TCI) are a major exporter of conch and spiny lobster. South Caicos has been the country's most important port for the fishing industry which, in turn, is the economic mainstay of the island. The potential depletion of this resource and its impact on employment and social structure has become a major concern and developing sustainable fisheries is an immediate priority for this fishing community. The Department of Environmental and Coastal Resources must determine how to develop and manage the fisheries, parks, reserves and other human activities for the benefit of residents and visitors alike without degrading valuable marine resources.

At the same time, the country's spectacular and relatively unspoiled marine environment is drawing developers of second homes and resorts who may contribute to the degradation of the very attributes which drew them here initially. Throughout the Caribbean, communities have encouraged development as a means to diversify and strengthen their economies. This has often led to rapid and sometimes detrimental social, economic and



Photo: David Looie

ecological change. Tourism and industrial development could become major issues for South Caicos, as they already are on neighboring islands. Rapid development may offer residents short term financial gains while threatening the island's resource base. If the TCI are to escape the detrimental environmental effects of development, it is imperative that alternative community development strategies that are environmentally sound and sustainable as well as socially responsible and beneficial to local residents be identified and developed without delay.

The TCI lie at the southern end of the Bahamas, 100 miles north of the Dominican Republic. The local waters appear as a patchwork of blues and greens, a mosaic effect caused by the seagrass beds, mangrove-studded woodlands, sandy shoals, and patch, fringing and deep reefs that surround the islands. Over 40 species of corals and 200 species of fish live in the immediate habitat including spotted eagle rays, sharks, groupers, snappers and mahimahi. The islands are inhabited by lizards, crabs, birds, and iguanas. Sea turtles are often seen as are two species of dolphins.



Addressing: fisheries, coral reef ecology, Caribbean studies, resource economics, community development, Environmental Impact Assessment, marine parks, ecotourism.

Center Facilities

The Center is based in a former hotel on the southern edge of the island. A rainwater catchment system supplies water, a precious commodity here. The main facility has a large, screened dining area, kitchen, classroom, library/computer area and a covered veranda overlooking the sea. Students live 3 or 4 to a room in



two newly renovated residence wings. We are fully equipped for marine operations with access to two docks, four motorized boats, a commercial SCUBA compressor and plenty of tanks. Many field work sites

can be accessed by snorkeling in the warm ocean waters. Dives will usually be in waters under 60 feet deep, as that is where most of the sea life occurs. This is a true arid, tropical climate with hot days and warm nights. Tradewinds keep our rustic site comfortable and free of biting insects for much of the year. Students assist the cook with kitchen duty. Meals consist of simple food - rice, beans, pasta, fresh fish, conch and occasionally, fresh vegetables.



Center faculty have many years of experience as practitioners in their areas of expertise.

Center Director: Andrew Gude, M.S., Portland State University (Geography: Natural Resource Management)

Resident Faculty: Christophe Béné, Ph.D., University of Paris (Health and Life Sciences)

Michael E. Harrington, Ph.D. University of Miami (Marine Biology and Fisheries)

Alex Tewfik, M.S., University of Guelph (Resource Management)

Photo: Paul Masaki



"As good as the lecture portion of the class was, the field exercises were even more educational. We spent afternoons in the ocean learning numerous data collection techniques from using quadrats to map habitat, to how to measure coral growth, to how to identify many of the species of fish, coral and plant life that surrounded us."

Sarah Glaser, Manhattan, KS -
Kansas State University

Center Clients/Partners

The Department of Environment and Coastal Resources, Fisheries and National Parks Divisions, Department of Planning, Darden Restaurants Foundation (*parent company to Red Lobster and Olive Garden Restaurants*), local fish plants and fishermen, TCI public schools, and local community organizations are our principal clients and partners in undertaking ecological studies and resource assessments, marine environmental education and the monitoring of critical environmental impacts.

Recent Center Contributions

Research projects assessing stock levels of lobster and conch have provided important information for the Fisheries Department. The Center has hosted or supported a number of public forums and activities, attended by the governor and other officials, to enable community members to come together to discuss communal problems. SFS students offer environmental education programs and tutoring in the local schools and host an annual SEA DAY at the Center for local school children. Other contributions include the creation of brochures for National Park user groups and for visitor education, recommendations for parks management plans, review of Environmental Impact Assessment reports on local developments and clean-ups of local beaches and reefs. A current project testing the effectiveness of artificial lobster shelters in critical nursery and feeding grounds is showing early potential to significantly increase lobster yields.

ALUMNI PROFILE



Bruce Crawford
Smith Island,
Maryland
*Environmental Educator,
Chesapeake Bay
Foundation*

Growing up in Pittsburgh, Pennsylvania, I rarely got a chance to experience the ocean, its natural wonders, and the people who strive to exist with it. My experience with SFS in the Caribbean changed all that. Living, working, and learning for three months on South Caicos influenced me in many ways. I learned valuable lessons on water conservation as I watched our cistern sink lower and lower during a drought. Living with 30 people day in and day out provided me with an incredible outlet for cooperative learning and sharing of experiences.

Today I work for the Chesapeake Bay Foundation. I live and work on Smith Island, located off the Eastern Shore of Maryland. As an environmental educator, I help run three day field trips for 6th-12th graders (and adult trips). Our objective is to teach children about the Bay's ecology, diversity, complex problems, and to hopefully inspire them to help save the Bay. We use the outdoors as our exclusive classroom and attempt to give children critical thinking skills about the Bay and its problems. My SFS experience has provided me with practical skills applicable to education, along with showing me first hand the wonders of hands-on, field-based education.

For more information
and an internet tour of this Center,
please check out
www.sitesalive.com



Photo: David Firmege

There are many opportunities to get to know local residents from interviews with local fishermen, to weekly soccer games, to community functions and our activities in the local schools. SFS students host a SEA DAY at the Center to help elementary school students learn more about their ocean environment.

"Since SFS has been on South Caicos, grades on high school science exams have gone from last in the country to first and I believe SFS's presence in the community and work in the schools is primarily responsible."

Turks and Caicos
Government Official

Note: If you intend to use SCUBA you must be certified before arrival. Divers and snorkelers must bring their own SCUBA and snorkeling equipment; weights and tanks may be rented on site.

Semester & Summer Course Details
Continue on Next Page

SOUTH CAICOS ISLAND

MARINE RESOURCE MANAGEMENT

Our focus during the semester is on the development and management of fishery resources and the attractions offered by the spectacular natural marine environment which could potentially attract paying visitors. We begin with a week of orientation and preliminary lectures. Course material is integrated and presented in two interdisciplinary case studies focusing on local environmental problems and resource conflicts. Case studies change as problems are solved and new clients and issues are identified.

Recent case study questions include:

- ◆ How can the conch and lobster fishery be managed to bring about sustainable and profitable returns to the South Caicos community?

Students assessing the status of canals that carry water to the historic salt salinas, a possible tourist destination if ecotourism takes hold here. "I am no longer interested in doing research simply to publish my work. I want my research to make an impact on the environment."

Tracy Calvin, Stanhope, NJ - Lehigh University

- ◆ What alternative community development strategies are available to the Turks and Caicos Islanders that are environmentally sound, economically feasible and socially responsible?

- ◆ Which planning and environmental assessment procedures are best for the TCI to protect its natural resources as development takes place?

Faculty lectures are supplemented with guest lectures. A dozen or more local experts including government officials, resource managers, researchers, fisherman, educators, community leaders and business owners/developers meet with students during the course of the semester.



Photo: Paul Masala Photo: Andrew Guille



Measuring a Queen conch. "This course changed my perspective, I never realized how complicated the whole process of marine parks management is. I used to think that all that scientists had to do was determine what needed to be protected and it would happen."

Catherine Purcell,
Los Angeles, CA -
UCalifornia/Santa Barbara

Field Work and Field Trips

Days are spent in a combination of lectures, field exercises and research. Our field work sites include the colorful and fish filled reefs and shallow banks, seagrass beds, mangroves and beaches surrounding the island as well as the docks, schools and community of South Caicos. Field trip destinations include the historical boiling hole and salinas salt ponds, the Bell Sound Bonefish Nursery and Marine Reserve, the Admiral's Aquarium Reef Snorkeling Trail, and the High Point Resort development construction areas. Additional forays may include development projects at Ambergris Cay or Fish Cay or government offices on other islands.

Photo: Andrew Guille



Local residents attend a student presentation. "This is probably the most beautiful place I have visited. The lack of tourism made it an ideal place to study. There was little reef damage and the lack of foreigners on the island really allowed us to get to know the local people."

Eugene Richardson, Boca Raton, FL -
Duke University

Semester Program Dates:

September 8 - December 11, 1999

February 2 - May 6, 2000

Departure Point:

South Caicos Island, TCI, BWI

Students will be registered in four academic courses:

B/EE (NS) 373

Tropical Marine Ecology

EE (NS) 374

Principles of Resource Management

EE (SS) 302

Environmental Policy and
Socioeconomic Values

EE 491 or 492

Directed Research

Please see page 36 for
course descriptions.



SOUTH CAICOS ISLAND

MARINE PARKS MANAGEMENT

During the 30 day summer program, we will concentrate our efforts on one case study question: How can the proposed Admiral Cockburn Land and Sea National Park effectively protect and enhance conch and lobster stocks?

Directed Research

Every student will complete and present the results of a directed research project chosen from a list of projects requested by local clients. An introduction to research techniques, statistics and scientific writing precedes the directed research projects.

Recent projects have included:

- ◆ Best Practices Zonations and Utilization of National Parks Resources in the Turks and Caicos Islands;
- ◆ Use of mini-casitas (concrete blocks & conch shells) for recruitment of Caribbean spiny lobster, *Panulirus argus*, in areas surrounding South Caicos, TCI;

Species identification time. "Directed research was my favorite part of the program because it really allowed the students to become leaders. We were able to formulate a research project from the beginning design to preparing a final draft and presenting it. I had the honor of presenting my research groups' conclusions to the Governor of the Turks and Caicos Islands and other officials. This gave me a feeling that all my hard work was for something."

Brendan J. Reed, Edgemont, PA -
University of Richmond

- ◆ Effect of a Marine Protected Area on the stock of adult and juvenile Queen Conchs (*Strombus gigas*) in the Turks and Caicos Islands;
- ◆ Analysis of Technical Reports, Alternatives, and Mitigations for a Proposed Development on Grand Turk Island, Turks and Caicos Islands.

Involvement in the local community

The Center is literally steps away from the town of Cockburn Harbor and students quickly become involved with the community. Students get to know local residents through interviews, social activities and community forums. Much of the community involvement centers around the local schools where SFS students tutor in reading, work with the high school Science and Math Club and judge the debate competition. In addition, students give swimming lessons and host a SEA DAY at the Center to introduce elementary school students to the marine environment. Recent student groups have started a Big Sister/Big Brother program. Weekly soccer and basketball matches attract enthusiastic crowds as SFS teams challenge local teams (usually unsuccessfully) for the coveted tournament trophy.

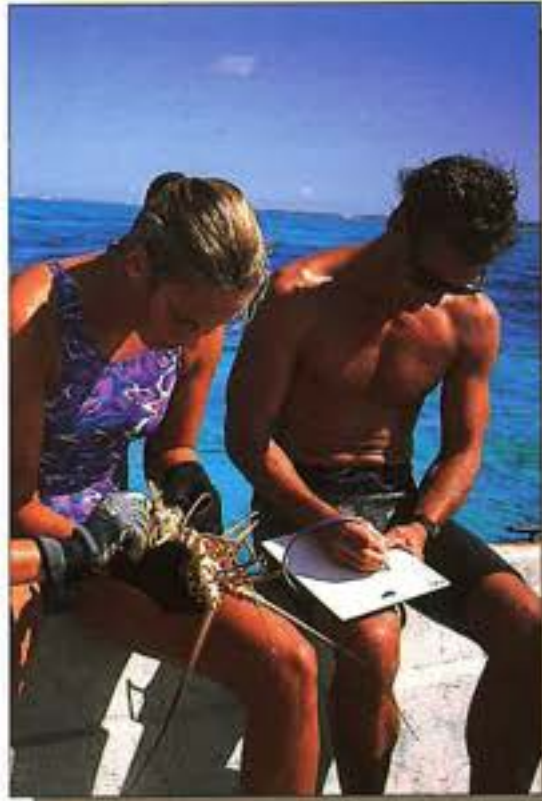


Photo: Ed Stashko

Program Dates:

Session I: June 9 - July 8

Session II: July 15 - August 13

Departure Point:

South Caicos Island

Course Number: EE (NS) 351

Field Work Focus

- ◆ Comparative stock assessments and modeling of conch and lobster populations;
- ◆ Artificial feeding and survival experiments on transplanted juvenile conch;
- ◆ Habitat association studies on lobster;
- ◆ Environmental impact assessment of proposed resort development;
- ◆ Marine Parks management and planning strategies.

Summer Course Objectives

The reefs surrounding the TCI provide excellent habitat for fish and lobster while conch are found in the shallow banks. The

reefs also attract tourists, the greatest source of potential new revenue for the area. These reefs are under assault from many sources - land and sea based pollution, diver and boat damage, dredging, dumping and construction. In 1992, a park system was approved by the government of the TCI to preserve critical natural areas, manage the harvest of renewable resources, and promote income-generating ecotourism.

We will focus on research that enables us to understand how the bank ecosystem works, its resource development potential, the threats facing these resources, and the role of marine parks in protecting and enhancing conch and lobster stocks. Our results may lead to policy recommendations, marine parks management plans, community projects, and/or innovation and appropriate technology transfer. Faculty lectures on marine ecology, fish stock assessment, coastal zone management and ecotourism development provide the framework for our fieldwork. Guest lecturers will discuss specific management approaches and economic alternatives, while interviews with local residents and fisherman will provide further social and economic information for our investigations. We will catalog resources in the vicinity of South Caicos and further afield when possible. In the course of our field work, we will become familiar with the use of transects, techniques for population sampling and statistical analysis.

Note: If you intend to use SCUBA you must be certified before arrival. Divers and snorkelers must bring their own SCUBA and snorkeling equipment; weights and tanks may be rented on site.

Tropical Rainforest Management

Semester Program - Page 18

Tropical Reforestation

Summer Program - Page 19

ENVIRONMENTAL PROBLEM

Australia's tropical rainforests lie cradled in a narrow, broken belt along the country's northeast coast in the state of Queensland. The rainforests here have suffered the same fate as most of their counterparts elsewhere in the tropics; agriculture, ranching, mining and logging have destroyed and disrupted habitat. Australia, realizing that its forests shelter unique primitive plant species, birds and marsupials found nowhere else on earth, moved to confront the threats to its rainforests faster than most tropical countries. In 1988, most of its remaining tropical rain forests were declared protected under World Heritage designation.

This decision was quite controversial. Australia's active exploration of these issues and the need to balance ecology and economics puts it years ahead of most tropical rainforest countries, and solutions developed here may serve as models for the rest of the world. At the same time, the country still struggles with the conflict between resource use and preservation, with how much land to allot to recreation, wilderness, reforestation, etc., and how to decide the fate of degraded lands.

The Center's field work and research focus on the restoration of degraded forests, pasture lands, and watersheds with the goal of helping to strengthen and revitalize the greater Tableland ecosystem for the benefit of human and non-human communities. In the past few years, scientists and resource managers have realized that restoration is critical to the conservation of ecological and cultural landscapes. There is a critical need for management plans that meet the ecological, economic, political and social requirements of the communities here. We believe that what you discover in Australia can be applied not only here but to other tropical ecosystems as well.

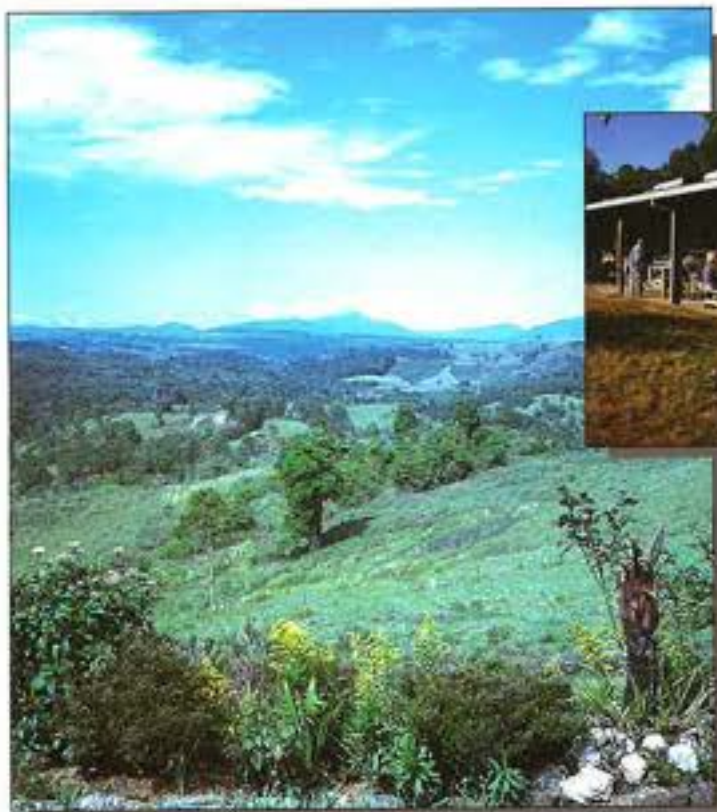


Photo: Kathy Abbott

The rainforests of Far North Queensland are treasure troves of primitive flowering plants long extinct on other continents. They shelter an astonishing array of bird species from the brilliant king parrot to the flightless, ostrich-like cassowary. And, they are home to a range of marsupials including bandicoots, tree-kangaroos and gliders, species found nowhere else in the world.



Addressing: rainforest ecology, biodiversity, conservation biology, aboriginal issues, ecological economics, restoration forestry, landscape ecology, watershed management.

Center Facilities

Called "Warrawee," aboriginal for "You are welcome here," the Center lies at 700 meters elevation in the northern foothills of the Atherton Tableland. The rolling, hilly site is surrounded by protected World Heritage forests. A third of the property's 153 acres is mature rainforest, and another 50 acres are forest regrowth. The nearest town is a 20 minute drive away but you'll stop regretting the

seclusion the first morning you wake to the birds' dawn chorus or when a group of flying foxes sweeps overhead at dusk. Students live in eight-person cabins; faculty occupy cabins nearby. The main building has lecture, computer

and library rooms, and a kitchen. Solar and standard electricity provide our power. The Australian summer stretches from November to March, and can produce heavy rains, soggy roads and warm temperatures; dry season arrives in April, along with night temperatures that can sink as low as freezing. Winter days are usually about 25 degrees C.



Center faculty have years of experience in Australia and over 50 years of combined experience as professional practitioners in their areas of expertise.

Center Director: Anthony Cummings, M.S., Yale University (Environmental Studies)

Program Director: Festus Fasehun, Ph.D., Iowa State University (Forest Biology)

Resident Faculty: Josh Farley, M.A., Columbia University (International Affairs)

Frederieke Kroon, Ph.D. University of British Columbia (Zoology)

Photo: Ed Stashko



Center Director Tony Cummings explains a concept in the rainforest. "I know more about the wet tropics region of Australia than I do about the deciduous forests near my home. I'm not necessarily proud of that but it says a lot about how much I learned during the program. I learned the trees of the region and their function, methods of reforestation, soil types, the economics of the rainforest, and much more."

Joshua Kramer, Shrewsbury, NJ -
High Technical High School

Center Clients/Partners

We work and share our data with the Wet Tropics Management Agency, the Atherton Shire Council, Queensland Department of Natural Resources, Water Watch Program, Yungaburra Primary School, Queensland Department of Environment, Queensland Department of Primary Industries and the Malanberra Aboriginal Clan. Local farmers, ranchers and foresters have a particular interest in our findings.

Recent Center Contributions

Students from the Center have planted over 8,000 trees, most grown from seed in the Center's shade house, in nearby deforested areas. Students have worked with the Atherton Shire Council to develop a management plan for the Tolga Scrub, a rare and endangered patch of rainforest facing ongoing degradation. Elements of the plan included weed control, replanting canopy gaps and creating an education program focusing on this area for use in local schools. Student directed research projects continue to monitor the floral and faunal succession of the Tooheys Creek Wildlife Corridor, which represents one of the first scientific attempts to facilitate the movement of wildlife between forest fragments.

ALUMNI PROFILE



Asher Cutter
Reading, Massachusetts
Fulbright Scholar,
Australia

I've always been interested in natural history and was a double major in biology and environmental science at Tufts University. In my junior year I headed off to Australia with SFS. Despite the fact that the wet tropics in Australia are small compared to those in the Americas, they are a no less wonderful place to study tropical ecology and environmental management. New species of invertebrates are constantly being discovered; my directed research project alone yielded over 20 undescribed ant species. It also allowed me to make contacts with members of the Australian scientific community. After SFS, I had a research internship at the Smithsonian and, upon my graduation, was awarded a Fulbright Scholarship to study for a year in Australia. My studies with SFS directly influenced my decision to apply for this scholarship and my research is an elaboration of my SFS project.



Photo: Ed Stashko

Students and faculty have planted over 8000 trees, most grown from seed in the Center's shade house. Our goal is to plant 2000 trees per year. Increasingly, private land owners are seeking solutions to watershed and water quality issues. Now that much of the land around the Center is protected, we need to understand the relatively new concept of rainforest restoration.

"After reading the student reports on their various projects, it is obvious your centre provides a very practical, experienced based course. In conservation and management terms, these projects have gathered data which is the basis for a collective revegetation monitoring program of the Yungaburra area with the potential to lead much farther afield. I am really impressed with the students' work and the initiative of your centre in devising such worthwhile, hands-on research opportunities."

Dr. Steve Goosem
Senior Principal Scientist,
Australia Wet Tropics
Management Authority

Semester & Summer Course Details
Continue on Next Page

For more information
and an internet tour of this Center,
please check out
www.sitesalive.com



TROPICAL REFORESTATION

During the 30 day summer program, we will focus our energies and attention on addressing a key question for local managers and residents: What are the most viable reforestation strategies for the Atherton Tableland?

Directed Research

Every student will complete and present the results of a directed research project selected from a list of projects requested by local clients. An introduction to research techniques, statistics and scientific writing precedes the directed research projects.

Recent projects have included:

- ◆ The use of Toohey's Creek corridor by avian communities;
- ◆ The development of enrichment plantings for a disturbed remnant forest at Tolga Scrub;
- ◆ Socio-economic and ecological cost benefit analysis of riparian reforestation along the Upper Johnstone River;
- ◆ An exploration of species ethnobotanically significant to aboriginal groups.

"With input from the community, our group produced a pamphlet that will be used by the government to help convince local dairy farmers to reforest the banks of their streams."

Jed Cooper, Anacortes, WA -
Brandeis University

Involvement in the local community

The communities of The Atherton Tableland are small and residents get to know us quickly. Interviewing farmers, community members, resource managers and aboriginal clan members enables us to gain insight into a variety of perspectives on environmental management. In addition, students participate in a number of volunteer and social activities. Activities include but are not limited to: building trails and planting seedlings; giving presentations at local schools; working with local conservation groups; participating in local sports competitions, bush dances and community festivals and hosting our neighbors at "barbys" at the Center.



Photo: Ken Weagle

Program Dates:

June 9 - July 8
July 15 - August 13

Departure Point:

Cairns, North Queensland, Australia

Course Numbers: EE (NS) 355

Tropical Reforestation

Field Work Focus

- ◆ Determining what forest birds, mammals and reptiles use replanted areas, and how they affect planted rainforest succession;
- ◆ Investigating the potential for creating wildlife corridors between fragmented rainforest parks;
- ◆ Investigating the success of different tree species and planting techniques in restored areas;
- ◆ Assessing interest of local land owners' in developing timber and wildlife values on their own lands.

Summer Course Objectives

Designation as a World Heritage Site did not eliminate local pressures on the forests; struggles continue over how to manage the multi-use forests, which

degraded patches to restore, and whether sustainable use is achievable given the slow pace of forest regeneration. To investigate the dynamics of reforestation, we will develop and implement a plan to convert a stretch of farm land between two protected rainforest areas into a reforested habitat corridor. This will involve designing and assessing specific reforestation and management strategies and physically planting seedlings, some of which have been grown in the Center's shade house. We will also study the ecology and development of already planted rainforest projects.

Lectures addressing relevant topics in conservation biology, forest ecology, tropical resource management and population demographics provide a base for our fieldwork. This information will be supplemented by guest lectures on reforestation strategies. We will become familiar with a number of field research techniques such as transect use, quadrat measurement, resource mapping, and bird and animal live-trapping that will be useful in conducting our directed research projects.

Conserving a Critical Coastal Ecosystem

Semester Program — Page 22

Conserving Coastal Diversity

Summer Program — Page 23

ENVIRONMENTAL PROBLEM

For centuries, Bahia Magdalena has supported some of the world's most productive fisheries. But today this beautiful bay is considered by many conservation organizations to be one of the most critically threatened ecosystems in Mexico. Fish, blue crabs and shrimp, which for centuries have served as the economic backbone of this region, are dangerously near collapse, their stocks over harvested. Under increasing financial pressure, local fishers respond by illegally harvesting sea turtles and other protected species.

Developers, drawn by the region's physical beauty, natural resources, and easy accessibility are buying coastal property. Potentially unsustainable large-scale aquaculture and ecotourism initiatives have been proposed as economic alternatives for the area. This kind of development, with its associated harbor dredging, highway construction, power plants, and human population growth would threaten critical habitats and impact water quality.

Most residents of Puerto San Carlos are economically dependent on the Bay's marine resources, yet little research has been done on fisheries management and the ecosystem of the Bay. Continued fishing at current rates is clearly unsustainable. Residents have requested assistance to better understand how they can sustainably utilize their natural resources and diversify the local economy. Diversification options such as resort development and large aquaculture facilities may offer alternative jobs and short term economic gain but may not be beneficial over the long run. Unregulated development has the potential to severely impact the marine resource base as well as the social culture of the local community.

Located 700 miles south of the U.S. border, Bahia Magdalena runs for 200 miles along the west coast of the Baja California peninsula. An important habitat on the Pacific flyway, the Bay is home to over 100 species of migratory and resident birds. Blue waters host scores of marine mammals including sea lions, dolphins and whales. Economically important populations of tuna, sardines, scallops, shrimp, abalone, grouper and halibut support an internationally based fishery. On-shore, mangrove-filled lagoons give way to white sand beaches backdropped by a colorful, cacti-strewn desert. Spectacular sunsets drape the mountains and dunes of the off-shore islands in orange and purple shadows.

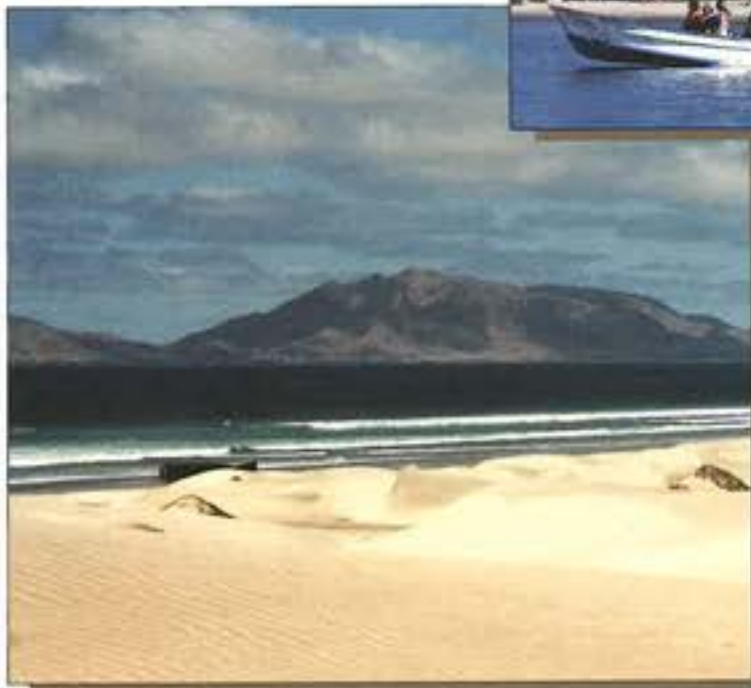


Photo: Ed Stashko



Photo: David Barnes



Addressing: fisheries management, community development, Latin American studies, coastal oceanography, eco-toxicology, resource economics, marine biology, ecotourism, wetlands management.

Center Facilities

Our Center lies on the outskirts of Puerto San Carlos, a 4,000 person fishing community. Sandy beaches lined with palms and mangroves fringe our two acre property. Students share four person, solar-powered cabins.

Additional facilities include a computer room, library, classroom, laboratory, kitchen, dining and study areas and bath/shower house. Faculty live in small houses on-site. During a typical day we alternate lectures with field work and data

collection. Because this program is oriented toward helping the community conserve its natural resources and develop sustainably, we spend time working with local fishing cooperatives, offering environmental education programs, and designing and implementing community service projects. Temperatures here are quite warm from July through September; the coolest months are January and February when a warm jacket is needed in the evening. We will share site maintenance duties while our local cooks prepare satisfying Mexican fare of beans, rice, fish, meat, poultry and vegetables.



Center faculty have many years of experience working in Mexico and as professional practitioners in their areas of expertise.

Center Director: Luis Calderon, Ph.D., (Marine Science), Polytechnical University of Catalonia, Barcelona, Spain

Resident Faculty: Susan Gardner, Ph.D., (Fisheries) University of Washington
Salvador Garcia-Martinez, M.A., (Economics) and M.S., (Marine Resource Management) Oregon State University
Additional faculty to be announced



Photo: Jim Elder

Conversations with local fisherman provide new perspectives. "I used to feel the best answer to our problems was to declare all open land wilderness and stop development, population growth, and just about every other socio-economic activity. My SFS experience showed me that the best method for dealing with environmental problems is something different: compromise. It's not that someone is always right and someone is always wrong. Everyone has a stake in something and conflicts are a natural result. People need to be given the option of getting involved and helping to solve these problems themselves."

Richard Shefferson, Lake Villa, IL -
Northeastern Illinois University

Center Clients/Partners

The Center works closely with the Universidad Autonoma de Baja California Sur, which offers local assistance in the operation of Center programs. Additional partners include SEMARNAP (Mexican Secretariat of the Environment, Natural Resources and Fisheries), Delegation Municipal de San Carlos, the Interdisciplinary Center for Marine Science, and local fishing cooperatives and whale watching companies.

Recent Center Contributions

The Center opened in early 1997, funded in part by one of the first ever debt for environmental education swaps. Students and staff have already made several important contributions to the community. A water quality analysis project, designed to discover the sources and impacts of contamination of the wetlands, has led to the development of a monitoring program. Students completed a socio-economic analysis of the economically important blue crab fishery, providing valuable data to assist the Puerto San Carlos Office of Fisheries in the development of management strategies. A student initiated community-based conservation plan has laid the groundwork to create a management plan for regional sustainable development. Students are currently using bioassay techniques to evaluate the effect of industries on the local marine ecosystem.

ALUMNI PROFILE



Dave Gold
Tucson, Arizona
Environmental
Consultant

My SFS experience had a lasting impact on me. For the first time, I saw science in action, and it woke me from a fog of academic mumbo jumbo. The program was a constant learning experience; whether we were learning about marine mammal behavior, the realities of scientific grant writing, or how to interact with people whose language you can't speak well. Every day I became more confident and more willing to undertake challenges.

I'm now an environmental consultant in Tucson, Arizona. I spend 20 percent of my time in the field, doing endangered species surveys or delineating "jurisdictional waters of the United States." The rest of my time might be spent evaluating impacts to water resources associated with the expansion of three mining operations, developing an irrigation management and integrated pest management plan for a golf course, or writing a model ordinance to restrict landscape watering. I'm also on a team developing policy recommendations to resolve major water problems in the Colorado River Basin. Diverse interests are at stake and science will play a critical role in resolving conflicts. The value of my scientific training from SFS is obvious. I highly recommend the SFS experience. A textbook can only take you so far...



Photo: Susan Gardner

Learning new observation and data collection skills. "Many study abroad programs are located at foreign universities where students take classes just as they would at their home school. I was looking for more, a program where students worked in biologically significant ecosystems and developed skills that can't be taught in a classroom. I found this at SFS."

David Moeller, Mars, PA -
Washington University



Photo: Rick Malatesta

Lecture time. "For those of you thinking that crossing an ocean is essential to your semester abroad, I urge you to reconsider. It is hard for me to imagine a Mexico that is further away from home! If you're looking for the experience of a lifetime, living and learning in beautiful yet endangered ecosystems, and making a difference in the environment...you should consider SFS."

Mame Donahue, Duxbury, MA -
Harvard University

Semester & Summer Course Details
Continue on Next Page

BAHIA MAGDALENA, MEXICO

CONSERVING A CRITICAL COASTAL ECOSYSTEM

Our focus during the semester is on collecting biological and socio-economic data necessary to develop a sustainable development management plan for the region and help local residents sustainably manage their resources. We begin with an orientation, Spanish-language lessons and lectures on the history, socio-economics, culture and resource-use patterns of Mexico and Bahia Magdalena. Course material is integrated and presented in 2-3 interdisciplinary case studies focusing on local environmental problems and resource conflicts in the bay. Case studies change as problems are solved and new clients and issues are identified.

Recent case studies have included:

- ◆ What are the impacts of the contamination on the biological and economic productivity of Bahia Magdalena's intertidal zones?
- ◆ How can the unsustainable exploitation of Bahia Magdalena's small-scale fisheries be prevented and what are the economic alternatives to fishing?

Bottlenose dolphins, sea turtles and sea lions can all be found in the bay waters. Resort developers, drawn by magnificent natural resources and easy access from major cities, are buying up miles of coastline. A growing whale-watching industry could cause the gray whale population to stop using the Bay as a winter calving and breeding ground. In 1992, approximately 4000 tourists came here to whale-watch, in 1995, the number increased to 25,000.



Photo: Jim Elder



Photo: Marilyn Kazmers/SharkSong

- ◆ What are the useful strategies for resource analysis in the Bahia Magdalena area and how do we incorporate them into the community?

Faculty lectures are supplemented with guest lectures. Over a dozen local experts including resource managers, university faculty, researchers, representatives of national or international conservation initiatives, and local employers, fisherman and community leaders lecture and work with students during the course of the semester.

Field Work and Field Trips

Days are spent in a combination of lectures, field exercises and active research. Our field work sites include the beaches, mangroves, waters and communities of Bahia Magdalena. Small skiffs, called pangas, are used for our water-based research. Field trip destinations have included the small island fishing village of Puerto Bahia Magdalena, home of the most traditional fishing families of the peninsula. Other field trip destinations may include the Estero San Buto to explore small aquaculture initiatives, the intertidal zones of Punta Santa Maria, and the starkly beautiful dunes and sandy white beaches at Punta Delgada.

Semester Program Dates:

September 8 - December 11, 1999

February 2 - May 6, 2000

Departure Point:

La Paz, Baja California Sur, Mexico

Students are registered in four academic courses:

BVEE (NS) 379

Coastal Ecology

EE (NS) 374

Principles of Resource Management

EE (SS) 303

Economic and Ethical issues in Sustainable Development

EE 491 or 492

Directed Research

Please see page 36 for course descriptions.



Photo: Susan Daw McCreedy

People here relate to their landscape, life, families and work in a way that has been all but lost in the U.S. - this is the real charm of Puerto San Carlos. Our location near town ensures we have the opportunity to become integrated into the community. "The interaction with the community was the most influential part of the program for me. Whether interviewing fishermen for our research project, teaching the Kindergarten about the environment, or simply playing a pick up game of basketball in the plaza, I not only learned more about the culture, but came to understand the reasons for some of the environmental problems."

Lauren Keyser,
Miami University



BAHIA MAGDALENA, MEXICO

CONSERVING COASTAL DIVERSITY

Directed Research

Every student will complete and present the results of a directed research project selected from a list of projects requested by local clients. A week-long introduction to research techniques, statistics and scientific writing precedes the projects.

Recent projects have included:

- ◆ Fisheries management techniques used in the Bahia Magdalena-Almejas lagoon system for the blue crab;
- ◆ A tri-seasonal abundance of copepods during the 1997-98 El Nino event in Bahia Magdalena;
- ◆ Evaluating by-catch of trawl-based shrimp nets;
- ◆ A working matrix for the assessment of tourism impact in Puerto San Carlos;
- ◆ Bay Business: A look at business practices in cooperatives of Bahia Magdalena;
- ◆ Anthropogenic impacts on water quality in Bahia Magdalena.

Checking out the catch in a crab trap. "SFS offers excellent academics as well as beautiful scenery! A combination of lectures and field exercises provides much more than the traditional college experience. I especially enjoyed the directed research; it offered excellent insight into the intricate workings - political, cultural, ecological and economic - of subsistence fishery, both its merits and its downsides."

Cat Dudnick, Linwood, NJ -
Franklin & Marshall College

Involvement in the local community

Because this program is oriented toward helping the community conserve its natural resources and develop sustainably, we spend significant time working within the local community of Puerto San Carlos. In addition to working with local clients and interviewing fishers, business owners, and community leaders, we also are involved in a number of volunteer and social activities. These include developing environmental education programs in the local schools, participating in community meetings and local conservation activities, and playing in local volleyball and soccer tournaments.

Note: Due to our extensive interaction with the people of Puerto San Carlos who recognize and appreciate any attempt to converse in Spanish, applicants are strongly encouraged to complete at least one semester of Spanish prior to the start of this program.

During the 30 day summer program we will focus our efforts on one of the critically endangered coastal resources (eg. fin or shellfish fisheries, water quality) as part of our efforts to develop sustainable management strategies for the Bay's resources.

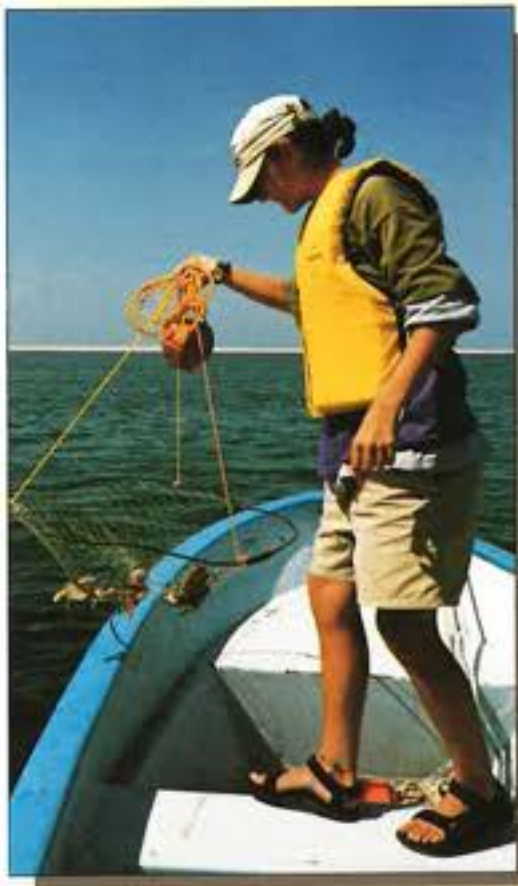


Photo: Meghan McGrath

Program Dates:

Session I: June 9 - July 8

Session II: July 15 - August 13

Departure Point:

La Paz, Baja California Sur, Mexico

Course Number: EE (NS) 356

Field Work Focus

- ◆ Collecting data on the threatened biodiversity of the Bay with a special focus on the bay's important coastal habitats, fisheries and sea turtle populations.
- ◆ Determining which of the Bay's resources are most critically threatened by human activities.
- ◆ Producing recommendations for designating special management zones or protected areas.

Summer Course Objectives

Bahia Magdalena is threatened by a variety of human activities. There are fishing cooperatives that overharvest fish and shellfish, canneries that pollute rich mudflats with toxic effluent, ranchers who

cut too many mangroves for fenceposts and poachers who continue to slaughter sea turtles. This sort of unsustainable use of resources by many residents threatens the viability of this incredible coastal ecosystem. Identifying the most critically threatened areas is an essential first step in designing strategies to protect these resources.

We will collect fisheries catch statistics, ecological, socio-economic, and cultural information from resource users. Armed with these data, we will then organize them to identify critically threatened areas and design strategies for their protection and management. Lectures will support this effort by introducing integrated concepts in coastal zone management, ecological economics, coastal ecology and fisheries management. Based on our findings, we may recommend solutions to the problems we observe such as the creation of a park or reserve or even smaller management zones that prohibit certain activities in the most ecologically sensitive areas.

For more information on this Center, please see Pages 10-11 or see www.sitesalive.com.

Coastal Rainforests and Marine Resources

Semester Program — Page 26

Conserving Marine Resources and Coastal Rainforests

Summer Course — Page 27

ENVIRONMENTAL PROBLEM

Coasts have provided a wealth of resources for humankind for thousands of years; it's no accident that most great civilizations and cities emerged in coastal regions. The Barkley and Clayoquot Sound regions provide perfect laboratories for exploring the relationship between ecosystems and the economy. The coastal rainforest system here contains some of the oldest, largest and most valuable trees in the world and supports fish, shellfish, marine mammals, shorebirds, agriculture, aquaculture, forestry, tourism, recreation and transportation.

Today, the future of this area is being hotly debated, from logging camps and the homes of native peoples to the seats of government. The provincial economy is heavily dependent on logging and related industries. Certain logging practices have altered the critical flow of water from coastal watershed to the estuaries and ocean, threatening migrating birds, fish and marine mammals. Recent studies have found extensive damage to salmon spawning streams from clearcutting. As fish catches diminish and the future of logging is debated, local communities are struggling with potential changes in their way of life. While immediate job loss is of deep concern, destruction of the productive capacities of the ecosystems upon which their livelihood depends remains an even deeper threat. Recent controversial land-use decisions for this area have further polarized not only the communities of Clayoquot and Barkley Sounds, but people across Canada and around the world.

The future is in crisis and there is a great need for social, economic and ecological data, problem-solving strategies, as well as training in ADR (*alternative dispute resolution*) techniques. The lessons learned working in a leading developed country are directly transferable to the U.S. or to other developing countries facing similar challenges.

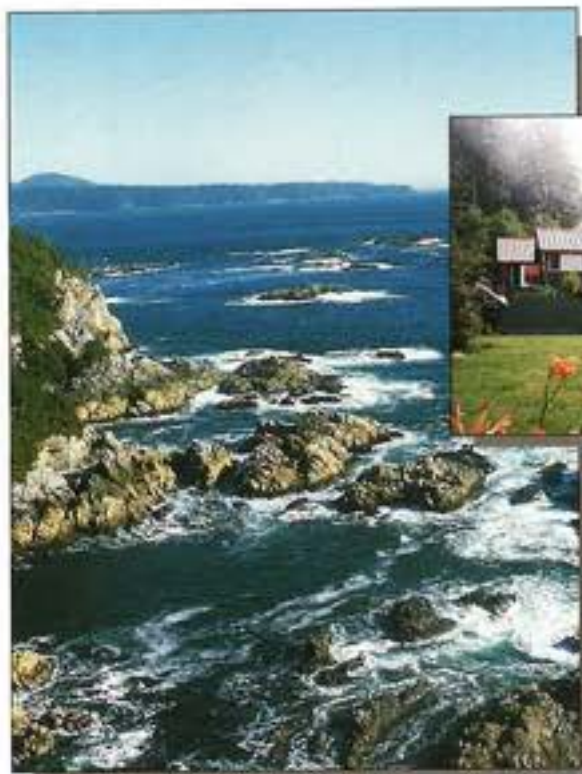


Photo: David Silverberg

Much of the world's last temperate rainforests are found along Vancouver Island's rugged west coast where a half million acres of timber, claimed to be worth billions of dollars, meet bountiful Pacific waters. The estuaries lying between these old growth forests and the sea support shellfish beds, migrating waterfowl, and nursing grounds for fish including a large salmon fishery. Forests of towering cedar, Sitka spruce and Douglas fir shelter wildlife ranging from small forest mammals to bald eagles to wolves and black bears. The coastal marine zone supports abundant fish and seabird populations as well as marine mammals including killer whales, porpoises and sea lions.



Addressing: forestry, fisheries, Native American studies, restoration ecology, environmental ethics, community ecology, watershed management, resource economics, coastal marine processes.

Center Facilities

Bamfield is home to a small community of both native and non-native people. The village offers a few restaurants, fishing inns, a post office, Coast Guard station, Red Cross medical clinic, and a tiny grocery. Our Center, accessible only by boat, is based in Aguilar House, overlooking Bamfield Inlet. Stunning beaches and intertidal zones are steps away. The main house contains the dining/study/lecture area, kitchen, lounge, library and computer rooms. Students are housed in four large rooms, each with a bath. Faculty and staff live in adjacent buildings. This region boasts the

mildest temperatures in Canada; temperatures range from an average of 40°F in January to the low 70's in the summer. Sunny spring and summer days will find us in tee-shirts but this is a rainforest, with over 120 inches of rain per year, and sturdy foul weather gear is also a must year-round. Weather and tides drive our lecture and field work schedule. Small and large boats facilitate our research along the rocky coasts and sandy beaches.



Center faculty have over 35 years of experience in Canada and have spent over 20 years as practitioners in their areas of expertise.

Center Director: Barbara Heidenreich, M.I.A., Columbia University (*International and Public Affairs*).

Resident Faculty: Janet Dymet, M.S., Simon Fraser University (*Resource and Environmental Management*).

Alec McBeath, M.A., University of Victoria (*Environmental Economics*).

Raphael Didham, Ph.D., University of London (*Biology*).

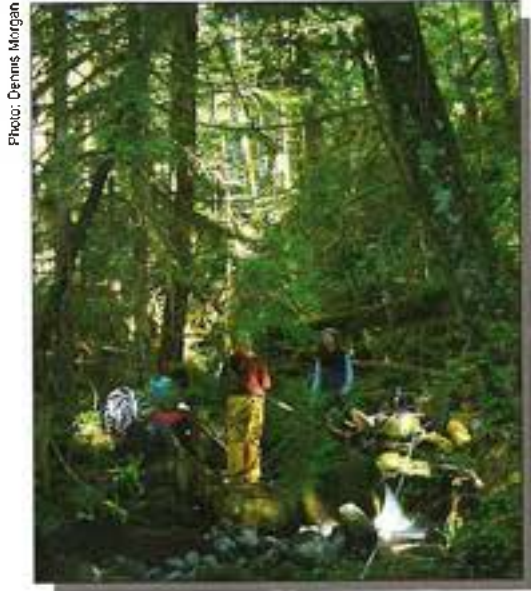


Photo: Dennis Morgan

Surveying a stream as we work with First Nation groups to reestablish the economically important salmon runs. "My time with SFS really taught me to use all resources when seeking information, to look at a problem from every angle and perspective, and to question everything. I learned a lot about the concept of "scale" and its important relationship to environmental issues."

Heather Peterson, Beaverton, OR -
Smith College

Center Clients/Partners

Partners include Uchucklesaht and Huu-Ay-Aht Tribes of Nuuchah-Nulth First Nations, Pacific Rim National Park, Bamfield Parks Committee, Port Alberni-Clayoquot Regional District, Ministry of Forests, Long Beach Model Forest, MacMillan and Bloedel Ltd., Canadian Department of Fisheries and Oceans, Northwest Ecosystem Initiatives, EcoTrust, Bamfield Community School and Bamfield Preservation and Development Society, and Greenmax Resources Woodlot 1479.

Recent Center Contributions

Staff and students at the Center have assisted the Huu-Ay-Aht band with recommendations for salmon creek restoration and have identified a large number of previously unmapped culturally modified trees with historical significance to First Nation communities that may qualify the areas in which they are found for preservation. They analyzed cut block plans for ecological sustainability and have added information on critical wildlife

habitat including black bear dens, nesting areas for the endangered Marbled Murrelet, and salmon streams in areas proposed for clear-cutting. This material was shared with local communities, planning authorities and logging companies. Recent SFS teams have completed an interpretive trail and environmental education program for a wood products company and an interpretive trail on Flores Island for the Ahousaht First Nation band.

ALUMNI PROFILE



Elizabeth Moody
Beverly, Massachusetts
Student - Western State
College, Colorado

I spent the Spring semester in Bamfield with SFS. My research project involved surveying black bear habitats in an area slated for logging. Other students identified "culturally modified trees (CMTs)" that were used centuries ago for making tools or canoes and therefore have cultural importance to First Nation bands. Our findings showed many more bear dens and CMTs than were previously thought to exist. We presented this information to the Ministry for the Environment and hopefully it will lead to the removal of this area from consideration for logging. At the end of the semester, four other students and I had the great honor of being invited back to do more research on stream assessments over the summer for the Huu-ay-aht band. In a logging area it's very important to know the streambed composition and gradient and whether fish can live there. This kind of information determines the logging companies' plans for the area. I felt like I made a difference through my work, and I'm thinking of going back to Canada after graduation. Maybe I can still do some good there.



Photo: Michael Ourni

A single huge cedar can bring up to \$30,000 at the lumberyard. With ongoing controversies around logging and a new moratorium on salmon fishing, the local economy has been severely impacted and the need for new revenue options has never been greater.

"The studies conducted by SFS will be of considerable value in the development of a theme of managing for biodiversity of the area. The work and dedication of your staff and students is appreciated and of considerable assistance."

Robert Redhead
Manager for Heritage
Resource Conservation,
Pacific Rim National Park

Semester & Summer Course Details
Continue on Next Page

VANCOUVER ISLAND

COASTAL RAINFORESTS AND MARINE RESOURCES

Our focus in the semester program is on issues related to community watershed planning and management in coastal ecosystems. We begin with a week of orientation and introductory lectures. Course material is integrated and presented in 2-3 interdisciplinary case studies focusing on local environmental problems and resource conflicts. Case studies change as problems are solved and new clients and issues are identified.

Recent case study questions include:

- ◆ What are the impacts of forestry on the Ritherdon River and once the impacts are determined, how can it be restored?

Students at Cow Bay, one of our field trip destinations. "I am still amazed at how much I learned about forestry, fisheries, marine life, ecotourism, etc. Living in the environment which I was studying made all the difference. The knowledge just sunk in because it was not all from reading textbooks and it was so interesting. We got to do some amazing, hands-on learning."

Meghan Cole, Worcester, MA - University of New Hampshire

- ◆ How do we assess and develop a landscape level plan for ecosystem management in Huu-ay-aht territory?
- ◆ What is the bio-physical consumption of resources in coastal temperate rainforest communities?
- ◆ How do we increase awareness of the coastal temperate rainforest?
- ◆ How can the coastal watershed be managed to support a healthy marine ecosystem as well as viable fisheries?

Faculty lectures are supplemented with guest lectures. Fifteen to twenty local experts including municipal foresters, representatives from logging concerns, park managers, First Nation elders and resource managers, researchers from local universities and the Bamfield Marine Station, salmon fisherman, local artisans, and community leaders lecture and meet with students during the semester.



Photo: Dennis Morgan

Field Work and Field Trips

Days are spent in a combination of lectures, field exercises and research. Our field work sites include the temperate forests, lakes, beaches and coasts of the watersheds and islands near Bamfield. Field trips allow us a comparative perspective and may include visits to Pacific Rim National Park, the spectacular Carmanah Provincial Park (home to some of the largest and oldest trees in the world), small scale woodlots, salmon fisheries, active logging operations, remains of Huu-ay-aht longhouses, First Nation communities, Clayoquot Sound and Hot Cove Springs, and the towns of Ucluelet and Tofino.



"A First Nation group will use our old growth forest research to either help acquire land in a treaty negotiation or submit it to the government as part of the process to become a national heritage site. That excites me!"

Karis Tenneson, Decorah, IA - Luther College



Photo: Michael Quinn

Working with a variety of clients and living in the small town of Bamfield enables us to experience both Canadian (it is different from the U.S.!) and First Nation cultures. During social outings and meetings with local First Nation groups, we are introduced to the concept of Hishuk ish ts'awalk, "everything is one," which forms the basis of their approach to conservation and the environment.

Semester Program Dates:

September 8 - December 11, 1999

February 2 - May 6, 2000

Departure Point:

Vancouver Island, British Columbia

Semester students will be registered in four academic courses:

BI/EE (NS) 379

Coastal Ecology

EE (NS) 374

Principles of Resource Management

EE (SS) 303

Economic and Ethical issues in Sustainable Development

EE 491 or 492

Directed Research

Please see page 36 for course descriptions



CONSERVING MARINE RESOURCES AND COASTAL RAINFORESTS

Directed Research

Every student will complete and present the results of a directed research project selected from a list of projects requested by local clients. Research is preceded by an introduction to research techniques, statistics, and scientific writing.

Recent projects have included:

- ◆ Sockeye salmon spawning habitat and stream morphology assessment;
- ◆ Assessment of distribution, abundance and role of coarse woody debris on a small scale woodlot;
- ◆ Assessment of aquaculture potential for the Sarita River delta;
- ◆ Mapping interpretive trails in the Bamfield community woodlots;
- ◆ Kix?n: Management options for a proposed Huu-ay-aht National Historic Site.

Taking a core sample. "After talking with my professors, I chose to go to the Pacific Northwest. The courses offered related to the forestry, economic and ecology skills I'll need to get a job in the forestry field in the U.S. The approach to learning used by SFS prepared me with the skills to confidently approach complicated environmental problems and culminated in the best learning experience I've ever had."

Sean Libbey, Westwood, MA -
Muhlenberg College



Photo: Michael Quinn

Program Dates:

Session I: June 9 - July 8

Session II: July 15 - August 13

Departure Point:

Vancouver Island, British Columbia

Course Number: EE (NS) 353

Field Work Focus

- ◆ Habitat identification and mapping;
- ◆ Assessing environmentally sensitive areas including restoration and management techniques;
- ◆ Bioregional mapping and cultural resource inventory techniques including ethnobotanical methods and oral history interviewing;
- ◆ Working forest assessment techniques.

Summer Course Objectives

The Nuu-Chah-Nulth have a deep belief in the spirituality and sacredness of life and of the earth, and in a oneness between humans and their environment. This philosophy contributes to a framework for

a new form of resource management or stewardship that is ecosystem-based. For these theories to become reality, they must be developed into specific, on-the-ground management practices.

We will use traditional First Nation territorial lands and other protected areas around Bamfield as our laboratory. These areas, which are key components to the overall strategy to protect biodiversity and insure ecological sustainability, are experiencing escalating pressures from burgeoning recreational use, logging and development, and threats against their ecological integrity. Many areas have been reduced to island fragments that cannot protect the long-term viability of their key flora and fauna. We will address the challenge of coordinating activities at a landscape level to insure protected areas are linked, aboriginal and non-aboriginal communities participate in decision making, lands are co-managed, biological benchmarks are established and economic opportunities for developing sustainable communities are considered.

Involvement in the local community

Students have many opportunities to integrate into the local Bamfield community to experience Canadian culture and the rich culture of the many First Nation bands who have inhabited this region for thousands of years. In addition to tutoring in the schools, engaging in local sporting events, and participating in community recycling efforts, students have hosted coffeehouses at the Center as well as a BC Rivers Festival, community workshops and a forest field trip for local residents. Student research presentations are open community events. SFS students have had the unique opportunity be included in a number of events hosted by First Nation groups including the most significant native celebration (*Potlatch*) of the decade.

Studies in Sustainable Development

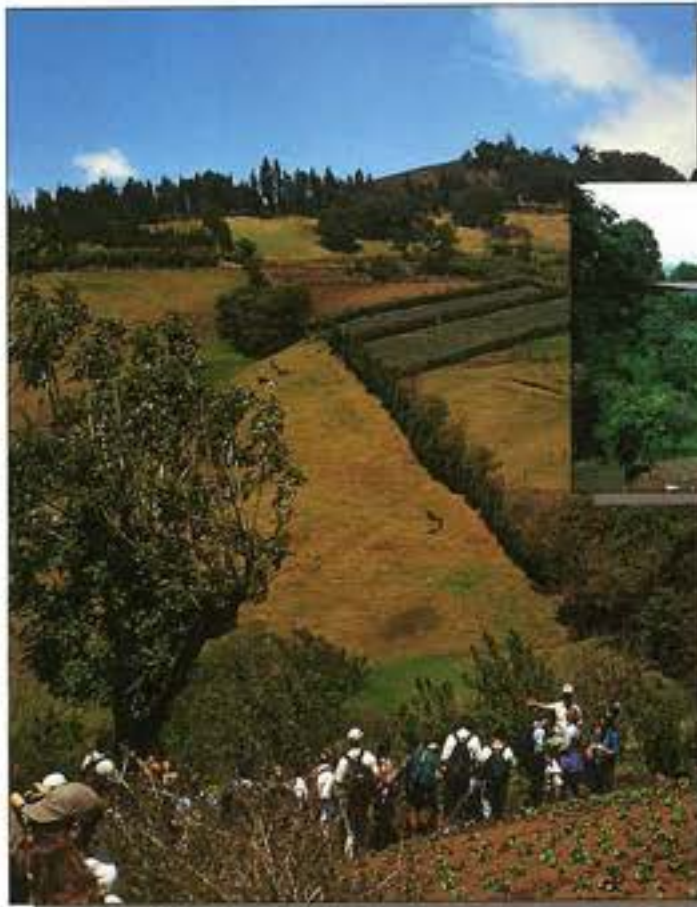
Semester Program — Page 30

Alternative Strategies for Sustaining Tropical Ecosystems

Summer Course — Page 31

ENVIRONMENTAL PROBLEM

Costa Rica faces a struggle common to many developing countries: How to preserve its beautiful (and increasingly economically valuable) natural resources while fostering its population's desire for First World-style prosperity. The struggle is vividly evident in its land-protection efforts: It has placed an impressive 27% of its land mass into preserved areas, yet at the same time suffers some of the world's highest rates of deforestation in unprotected lands just beyond the parks' borders. It is now recognized that protected areas cannot fulfill their mission to safeguard biodiversity and contribute to sustainable development while operating as isolated units. Issues such as river pollution, soil protection, and the need for biological corridors to address migration can only be addressed by protecting whole regions. Concurrently, the economic and cultural need for productive agricultural land for Costa Rica's vast array of export crops is escalating. Both traditional and alternative land-use options pose potential natural resource deterioration including water quality, soil erosion and pesticide build-up. Although Costa Rica's remaining natural riches have attracted international attention, there is no concrete evidence that ecotourism is a sustainable solution to this growing economic dilemma. The development which follows on its heels may be as destructive as agriculture has been to date.



Bordered by Caribbean and Pacific beaches, Costa Rica's spectacular natural resources make it a prime destination for ecotourists. Green hillsides are dotted with farms growing coffee, mangoes, bananas, citrus and pineapples. Cloud forests, rainforests and mountain plains shelter more than 6,000 plant species (including more than 1,000 orchid varieties). With 500+ species of butterflies, "butterfly ranching" has emerged as an ecotourism venture. More than 800 bird species - quetzals, toucans, hummingbirds, scarlet macaws - are found in the wet and dry forests. And the magnificent beaches are among the world's largest-known nesting grounds for sea turtles.



Addressing: sustainable development, ecological economics, tropical ecology, agro-forestry, Latin American studies, community development, land-use planning, watershed management, ethnobotany.

Center Facilities

Our base is a small farm on a hillside overlooking the Rio Grande river in the fertile Central Valley. The property includes a large house where faculty live and meals are eaten. Students live in a refurbished chalk factory converted to dormitory space; there are five large bedrooms (6-8 students to a room), bathrooms, classrooms, a small laboratory, and a library/computer room. With the help of local cooks, meals are a feast for

vegetarians and adventurous souls excited by ethnic cuisine: rice, beans, vegetables, plantains, and locally grown fruit, meat and poultry. At 2,600 feet above sea level, nights are cool, days warm and possibly

damp. The local community of Barrio Los Angeles is a short walk from the center while all of Costa Rica's varied and spectacular ecosystems are an easy day trip away.



Center Faculty have over 50 years of combined experience in Costa Rica and as practitioners in their areas of expertise.

Center Director: Liana Babbar, Ph.D., University of Michigan (Natural Resources)

Program Director: Bernardo Aguilar, M.S., University of Georgia (Agricultural and Applied Economics), License in Agrarian Law, University of Costa Rica.

Resident Faculty: Jose Luiz Diaz, M.A., Vanderbilt University (Economic Development and Social Planning)
Lisa Bradshaw, Ph.D., University of California at Davis (Ecology)

Photo: Liana Babbar



A community service project to repair the road. "We had many opportunities to interact with the local community from daily encounters to a community clean-up to giving a lecture at the local school... the friendliness of the local people went well beyond anything I've been used to and we were always included in any community activities."

Marcela Kostihova, Czech Republic - North Central College

Center Clients/Partners

A number of private organizations and government agencies look forward to sharing our research results including Costa Rica's National Park Service, the Ministry of the Environment, the Ministry of Agriculture, the Municipal Government, the Community Association of Atenas, the Universidad Nacional, and the Costa Rican Institute for Electricity as well as privately held preserves and the local cooperatives organized by farmers.

Recent Center Contributions

SFS students and staff have developed an operational management plan for two protected areas, Cerro Atenas and Rio Grande, in one of the most important watersheds in Costa Rica. At the request of local farmers, the center studied and recommended means for controlling the economically devastating white fly using integrated pest management options with natural extracts from local medicinal trees. Results of this work have been presented

at international symposia. Working with the Institute of Legal Research at the University of Costa Rica, students have conducted diagnostic studies on Costa Rican environmental regulations. Other publications resulting from Center efforts include guidelines for protecting Costa Rican wildlife in captivity and a book chapter detailing our studies on the energy necessary to produce coffee locally and recommendations for alternative, poly-cropping systems with lower environmental impacts.

The SFS Center for Sustainable Development Studies is the result of a cooperative effort between SFS and a consortium of schools including The University of Michigan, and Allegheny, Colby, Dickinson and Middlebury Colleges. A portion of the spaces in each semester are reserved for students from Consortium schools.

Semester & Summer Course Details
Continue on Next Page

ALUMNI PROFILE



Wesley Clow
Woodbury, CT
Environmental Spills
Manager

I've traveled quite a bit, and of all the trips I've taken, Costa Rica with SFS is still the best. I have pictures of everywhere I've been, but it's the Costa Rica pictures that draw the most attention. It was that kind of place. I'm 28 now, and I can still clearly remember my experiences there, especially the friendly people and the beautiful rainforest.

I grew up in Northford, CT and I was always into the outdoors. In Costa Rica, I did my semester research on insect diversity, studying the size, type and diversity of insects living in bromeliads. The following summer I graduated from Eastern Connecticut State University with a bachelor's in groundwater hydrology and later went to work with the Tyree Organization in 1992.

Today I'm the manager of their Environmental Spills Division. My specialty is cleaning up hazardous waste. Everyone has spills and somebody has to oversee how they're cleaned up. I handle any kind of spill in my region, which is New York and Connecticut. Some are underground storage problems, but most are surface spills involving gasoline and other substances. Last July we were sent to a Fedex crash at Newark Airport. There were 12,000 gallons of jet fuel on the ground and 250 drums of hazardous waste on the plane. Each incident is different and you have to decide how to deal with it to solve the problem. Problem-solving was one of the most important things I learned from my SFS experience and I use it every day.



Photo: Liana Babbar

Data collected by staff and students on indicators of ecosystem health, integrated pest management strategies and gender roles in agroecosystems have been shared locally and also presented at international conferences in the U.S., Mexico and Denmark. "It makes me proud to know my research results will be used and that my time was spent in a way that was beneficial to me and to Costa Rica."

Kristen Yates, Sparta, NJ - College of William and Mary

C O S T A R I C A

STUDIES IN SUSTAINABLE DEVELOPMENT

Our goal is to contribute to management plans for the sustainable development of the communities in the Atenas region by focusing on agricultural production, reforestation, community development, management of protected areas and the development of alternative economic opportunities including ecotourism. We begin with Spanish language lessons and introductory lectures. Course material is integrated and presented in 2-3 interdisciplinary case studies focusing on local environmental problems and resource conflicts. Case studies change as problems are solved and new clients and issues are identified.

We spend a third of our time on off-site field trips including a visit to an experimental mangrove charcoal business. "There is so much I learned in Costa Rica that I would not have even begun to understand in a cold classroom in Central Ohio...by actively participating and actually seeing and analyzing the environmental problems I came away with a greater sense of what is a sustainable system."

Susan Studer, Elida, OH -
Denison University

Recent case study questions include:

- ◆ How can Costa Rica achieve sustainable agriculture as it moves into the twenty-first century?
- ◆ How can community-based incentives more effectively promote conservation and production?
- ◆ How viable is grassroots-based sustainable development in small communities in view of the trends imposed by the globalization of the economies in less developed countries?
- ◆ How viable are ecotourism and other alternative resource utilization options?

Faculty lectures are supplemented with guest lectures. Fifteen to twenty local experts including resource and park managers, officials from government management agencies, researchers, farmers and cooperative members, representatives of multi-national corporations, community leaders and local grassroots organizers meet with students during the semester.



Photo: Liana Babbar

Field Work and Field Trips

Days are spent in a combination of lectures, field exercises and research. Our field work sites include local coffee plantations, farms, preserves, forests and the communities of Atenas. Field trips include the protected zones of the Central Valley to study watershed management and the cloud forests of the central highlands to explore alternative farming methods and natural forest management. Other destinations may include the Atlantic lowland rainforest regions of Talamanca and Sarapiquí, the site of intensive banana production. Three very different cultures interface here and provide us with examples of grassroot sustainable resource use including medicinal plant cooperatives, organic agriculture, and sustainable forest management using water buffaloes. Travel to the Pacific lowlands allows us to explore the contrast in production methods between grassroots cooperatives and multinational corporations.

Semester Program Dates:

September 8 - December 11, 1999

February 2 - May 6, 2000

Departure Point:

San Jose, Costa Rica

Semester students will be registered in four academic courses:

EE (NS) 377

Tropical Ecology and Sustainable Development

EE (SS) 301

Sociopolitical Systems and Sustainable Development

EE (SS) 303

Economic and Ethical Issues and Sustainable Development

EE 491 or 492

Directed Research

Please see page 36 for course descriptions.



Photo: Jessica Hartman

Soccer matches pit SFS against local teams.

"A simple walk 500 meters down the road to the only public telephone in La Presa would entail a countless number of potential conversations with local children, teenagers, parents and the elderly. The community was willing to engage in conversation with us about anything from soccer to farming strategies. I felt accepted and a part of the community."

David Grandmaison, Duluth, MN -
St. John's University

Prerequisites: This program is offered at the intermediate level. Applicants must have completed a college level course in each of the following: ecology or environmental studies; international development, economics or anthropology; and Spanish prior to participating.

Applicants from Allegheny, Colby, Dickinson and Middlebury Colleges and The University of Michigan should consult their Environmental Studies Department for application information.



ALTERNATIVE STRATEGIES FOR SUSTAINING TROPICAL ECOSYSTEMS

During the 30 day summer program we will visit several regions of Costa Rica to help develop management plans for the protected areas around designated parks as well as guidelines for assessing current land use practices in these areas.

Directed Research

Every student will complete and present the results of a directed research project selected from a list of projects requested by local clients. A week-long introduction to research techniques, statistics and scientific writing precedes the projects.

Recent projects have included:

- ♦ Integrated pest management in annual crops;
- ♦ Labor and sustainable development;
- ♦ The role of women in protection of natural resources;
- ♦ A comparison of energy efficiencies in the production and processing of coffee
- ♦ Bird species diversity and effects on fruit orchards;
- ♦ Holistic indicators of ecosystem health;
- ♦ Cultural continuity.

A trip into the rainforest to consider different production systems. "I now know that I can specialize in the environment with my economics degree. I am also considering law school now, as regulations also effect the environment. If I hadn't gone on this program, I wouldn't have realized how many skills environmentalism covers."

Shing Ho Cheng, Bayside, NY -
New York University



Photo: Julia Reid

Program Dates:

Session I: June 9 - July 8

Session II: July 15 - August 13

Departure Point:

San Jose, Costa Rica

Course Number: EE (NS) 352

Field Work Focus:

- ♦ Determining how much habitat protection is supplied by currently protected areas;
- ♦ Investigating whether current regulations protecting areas including buffer zones, create true protection or mere "paper parks;"
- ♦ Determining whether private initiatives can preserve ecosystems as efficiently as protected areas;
- ♦ Investigating whether privately protected areas are economically viable.

Summer Course Objectives

Costa Rica's model system of preserving biodiversity through the establishment of an extensive national park system has led to the development of an important economic industry - ecotourism. Tourism is about to become Costa Rica's No.1 source of income

surpassing coffee and banana production. Costa Rica is not only preserving biodiversity for its own sake, but to provide for the current and future economic needs of its people.

Involvement in the local community

Because the communities' land-use choices are among our chief concerns, we spend sizable blocks of time on local farms and speaking with agricultural cooperatives. Any sincere attempt to converse in Spanish is recognized and appreciated. Students quickly become involved in local activities ranging from weekly soccer games to community festivals to tutoring in local schools, volunteering in orphanages, repairing roads and establishing local recycling efforts.

Our search to identify successful management strategies may take us to a tropical cloud forest, the Guanacaste Conservation area, the Poas Volcano, the Carara Biological Reserve and a number of other Protected Zones. Faculty lectures will address the history of Costa Rican national parks, models of natural resource protection, economics and sustainable development, and managing for diversity. Guest speakers will explain national protection schemes and the operation of private reserves. During our visits we will involve local community members and investigate the sustainable use of natural resources, watersheds, soils, fauna, buffer zones, and sustainable agricultural production. Assessments of the economic and social impacts of preservation and degradation will be considered as we prepare to recommend the most viable preservation strategies.

Wildlife Ecology and Management

Semester Program — 38

Community Wildlife Management

Summer Course — 39

ENVIRONMENTAL PROBLEM

Kenya's reputation and reality are on a collision course. The habitat required by Kenya's wildlife, its most famous and one of its most economically valuable resources, is increasingly threatened by modern pressures and the country's high rate of population growth. Many Kenyans struggle to raise enough food just to survive. Farmers are being forced onto land that is marginal or unsuitable for agriculture and traditional pastoralist lifestyles are also threatened. Semi-nomadic peoples such as the Maasai, and their cattle herds, have been confined to diminished areas while their numbers grow. This is leading to overgrazing and rangeland devastation. The wild animals which have



Photo: Weaver Whitehead

co-existed for centuries with these non-hunting people are now seen as competitors for scarce water and grazing resources.

The parks and reserves which offer protection to wildlife are being isolated as the traditional dispersal areas surrounding the protected areas are converted to food production using methods hostile to wild animals. Reduced habitat undermines the long-term viability of Kenya's irreplaceable wild animal populations and the booming tourist industry they support. The search for ecologically appropriate solutions to the conflict between food production and wildlife habitat must proceed without delay.

Authors and adventurers have mesmerized us with descriptions of Kenya's harsh desert, arid plains, gentle savannas and dense forests. Acacia thorn trees and croton thickets shelter antelope, zebra, rhino, and elephant, as well as the lions, cheetahs and leopards which prey on them. Our field station, Jua Kali, lies in a quiet corner of a game ranch on the high plains. Oryx and vervet monkeys, umbrella shaped thorn trees, wildebeest, impala and the diverse array of tropical birds that characterize the ranch environment are reminders that we are in Africa. Mount Lukenya dominates the northern horizon; Dinesen's beloved Ngong Hills lie due west.



Addressing: wildlife ecology, rangeland management, African studies, resource economics, community development, population ecology, ecotourism, landscape ecology.

Center Facilities

Our Center is based at Game Ranching Ltd., an 81 square kilometer ranch forty

minutes outside Nairobi. Students sleep in grass thatched bandas. An open dining/lecture hall, library, separate student center, outhouses and open-air showers complete our base camp. Our setting is rustic. A generator powers

the main building where computers are available, and vehicle access is usually by four-wheel drive. Student teams help prepare meals with the aid of a local cook. Foods are Western with an African influence. Game meat from animals raised and slaughtered on the ranch provides our usual non-vegetarian meal options; fruits and vegetables are usually available. Despite our equatorial location, the climate is temperate. Days can be hot, with temperatures in the high 80s; nights are cool enough for sweaters and blankets.



Center faculty have over 40 years of combined experience in Africa and as professional practitioners in their areas of expertise.

Center Director: Elizabeth Nicholson, Master of International Management, American Graduate School of International Management (Thunderbird)

Program Directors: Wayne T. Vos, Ph.D., University of Natal (Botany)
Abdelwahab Sinnary, M.Sc., University of Nairobi (Biology of Conservation)

Resident Faculty: James Kiyiapi, Ph.D., University of Toronto (Forest Ecology and Management)

Photo: Wayne Vos



We will visit conservation areas with lush vegetation, high biodiversity, and large herds of grazers as well as areas where large populations of feeding elephants have left a stark and lunar-like landscape and dramatically decreased biodiversity. We will also talk with Kenyans living adjacent to these areas who must deal with marauding wildlife which threaten crops and lives.

Center Clients/Partners

Recent clients and partners include Maasai group ranches such as the Kimana Group Ranch in Amboseli and the Kisaju Isinye Group Ranch in Kajiado. We also work with the Kenya Wildlife Service and the Wildlife Clubs of Kenya. Game Ranching Ltd., on which our Center is based, and other privately owned ranches in the Machakos Wildlife Forum, have also utilized our research involving the ecological impacts of game ranching.

Recent Center Contributions

SFS has been in Kenya for over fifteen years and has contributed to the management plans for several Maasai groups ranches as well as national protected areas such as Nairobi National Park. Using GPS and computer digitization, students and staff created maps of Game Ranching Ltd. that will serve as a base on which geographical and biological data can be layered for use in making future management decisions on stocking rates and cropping quotas. Other management

decisions will be facilitated as a result of student research on the declining populations of Thomson's gazelle and wildebeest and the effects of seasonal rainfall on wildebeest recruitment and pregnancy rates. Students recently constructed a wetland at the Center to naturally purify and absorb grey water. A highlight of recent programs has been our visits to the town of Magadi where we have helped build a library and teach the local schoolchildren about the environment through skits, songs, and readings.

ALUMNI PROFILE



Robert Fuhrmann
Gardiner, Montana
Park Ranger

Almost ten years have passed since I went to Kenya with SFS. I've worked as a park ranger and naturalist at Yellowstone National Park for the past five years. The park is really beautiful and I'm outside quite a bit. I manage the visitor's center at Mammoth Hot Springs where we do public education, slide shows, evening campfires and field walks and talks.

I grew up in Deerfield, Illinois. Before coming to Yellowstone, I did wildlife research in Alaska and studied marine biology at Woods Hole (Mass.) I always knew I wanted to do this kind of work, and it's great. I received my bachelor's degree in biology from Lawrence University, as well as teaching certification. Now I'm finishing my master's in fish and wildlife management at Montana State University.

Working in the park lets me use my background as a naturalist. When I'm not at the visitors' center or doing other official park ranger duties, I study wildlife. Right now I'm studying red fox habitat use and distribution in northern Yellowstone Park, so it's not much different than what I was doing in Kenya. The only noticeable difference is that in Africa, the wildlife was larger. But I still get excited by the field trips.



Photo: Jonathan Vlahos

Managing animals requires managing the land they live on and migrate through. As part of our community wildlife management studies, we will be based at a Maasai group ranch and will work with community members to determine optimal ways for wildlife and humans to coexist on shared lands.

Semester & Summer
Course Details
Continue on Next Page

K E N Y A

WILDLIFE ECOLOGY AND MANAGEMENT

Our focus in the semester program is on wildlife management in areas that are not currently protected. This where up to 70% of all Kenya's wildlife is reportedly found and where there is the most to lose and therefore the best chance to have a positive impact. We begin with a week of orientation and preliminary lectures. Course material is integrated and presented in 2 interdisciplinary case studies focusing on local environmental problems and resource conflicts. Case studies change as problems are solved and new clients and issues are identified.

"We spent a lot of time with the Maasai people, talking to them and visiting their homes. Our objective was to get a good understanding of their position on wildlife management and then help them design a management plan. I would never have understood the problems, such as elephant overpopulation and destruction, if I hadn't visited Kenya and met these people."

Andrea Michlovitch,
East Syracuse, NY -
SUNY College of Environmental
Sciences and Forestry

Recent case study questions include:

- ◆ Is rangeland degradation on Ol Doinyo Nyokie Maasai Group Ranch reversible?
- ◆ How can we reduce the conflict between elephants and the Maasai people living adjacent to Amboseli National Park?
- ◆ How do we manage rangelands resources for optimal and sustainable wildlife production?
- ◆ Is game cropping an environmentally sustainable, economically viable, and socially acceptable land use option in Machakos District?

Faculty lectures are supplemented with guest lectures. Fifteen to twenty local experts including wildlife researchers, government officials, park and resource managers, local professors and conservation representatives lecture and meet with students during the course of the semester.



Photo: Michele Gadd

Field Work and Field Trips

Days are spent in a combination of lectures, field exercises and research. Our field work sites include the acacia thickets, and extensive rangelands and savanna of the GRL and a Maasai group ranch. Field trips enable us to compare conditions on the ranches with those in protected areas and in the heavily impacted areas just outside the parks. Field trip destinations may include Nairobi National Park, Amboseli National Park, or the Maasai Mara, manyatta visits to several Maasai villages, farms at Magadi and Kimana, the markets at Machakos, and a climb to explore the microclimates of Mt. Lukenya.

Semester Program Dates:

September 8 - December 11, 1999

February 2 - May 6, 2000

Departure Point:

Nairobi, Kenya

Students will be registered
in four academic courses:

B/E (NS) 371

Techniques of Wildlife Management

B/E (NS) 372

Wildlife Ecology

EE (SS) 302

Environmental Policy and
Socioeconomic Values

EE 491 or 492

Directed Research

Please see page 36 for
course descriptions.



Photo: Gregg Tivnan

Radio-tracking is used to assess flight distances and ranges of giraffe, impala and antelope on the ranch. Understanding vegetation analysis, herbivore effects, niche partitioning and plant succession helps us with the ecological assessment and monitoring that are key elements to any range management plans. "We had to count herds of Thomson's gazelle that refused to stand still and blended into the grass. Another mystery of the difficulties of wildlife management was illuminated - no one knows the exact status and viability of any one species because they are so hard to see (except maybe elephants!)."

Elizabeth Derryberry, Asheville, NC -
Princeton University



Directed Research

Every student will complete and present the results of a directed research project chosen from a list of projects requested by local clients. An introduction to research techniques, statistics and scientific writing precedes the projects.

Recent projects have included:

- ◆ An assessment of vegetation damage by elephants in Kimana Community Wildlife Sanctuary;
- ◆ Developing a management plan for the Ngong Hills Forest Reserve;
- ◆ An investigation of possible negative effects of cropping on Thomson's Gazelle populations;
- ◆ Development of an ecotourism plan for Isinye Group Ranch;
- ◆ Assessment of rangelands to establish sustainable livestock stocking rates.

Faculty member Wayne Vos prepares for a lecture. "Every day we were immersed in new and conflicting ideals as one of the guest speakers, professors, or even students threw a new angle in our discussion. My mind was turned inside out with conflicting reasoning from morality to economics. I had never been forced to question my ideals this way. The professors never once let us get away with blanket generalizations, without pushing us to make those ideals applicable to the real world."

Amielle DeWan, Huntington, NY -
Binghamton University

Involvement in the local community

Members of the Center staff come from various regions of Kenya and belong to several Kenyan tribal groups. Our field trips and discussions with local farmers, pastoralists, park wardens and management officials bring us into contact with other tribal groups and indigenous communities, providing exposure to the multifaceted Kenyan society. Manyatta visits with the Maasai in areas off the regular tourist routes enable us to meet and spend time with the people who are most impacted by wildlife interactions. Our community service work in some of the local schools has been very well received as students teach us songs and stories and we respond in kind.

COMMUNITY WILDLIFE MANAGEMENT

During the 30 day summer program, we will focus on a single issue:
How can wildlife using communal lands be managed to minimize conflict with the local community?



Photo: Ed Slashko

Program Dates:

Session I: June 9 - July 8

Session II: July 15 - August 13

Departure Point:

Nairobi, Kenya

Course Number: EE (NS) 350

Field Work Focus

- ◆ Determining whether current land-use strategies are ecologically sustainable;
- ◆ Evaluating existing wildlife densities and distributions in relation to land-use patterns;
- ◆ Exploring community decision-making;
- ◆ Conducting socio-economic surveys;
- ◆ Exploring viable approaches and options from a community perspective.

Summer Course Objectives

At the invitation of a local group ranch or other communal interest, we will research potential solutions to the conflict between current wildlife management practices and traditional land-use practices. Reconsidering wildlife as a source of income generation may provide a sustainable land-use option. We will explore possible commercial uses of

wildlife from game cropping to regulated sport hunting to eco-tourism. We will then weigh the potential benefits of utilizing wildlife with alternative land-use options such as agriculture.

Faculty lectures introduce African climatology and geomorphology, plant and animal identification, socio-economic parameters, animal social organization, legal and policy issues, plant/herbivore interactions, and theories of island biogeography and biodiversity. Guest speakers may include experts in ecology and Maasai culture as well as managers discussing range management issues and techniques.

Field work exposes us to ecological assessment techniques, mapping, vegetation analysis, animal population censusing, biometry, behavioral observation and sampling. During field trips to parks, group ranches and critical wildlife areas, we will meet with wildlife managers and have an opportunity to compare behavior and productivity of wildlife in protected areas with that of animals on game ranches or in protected areas. Interviews with community members provide insight into cultural perceptions that may influence our recommendations and their ultimate implementation.

Semester Course Descriptions

BI/EE (NS) 371 Techniques of Wildlife Management introduces students to the questions, principles and tools used by resource managers in the Kenyan savanna ecosystem. Students will study habitat assessment, plant and animal identification, plant and animal associations and distributions, and other approaches to evaluating the savanna ecosystems. The behavioral, physiological, and social responses of animals to a changing environment will be examined. Selected field and laboratory techniques useful for monitoring ungulate populations and optimizing management practices will be presented. Decision-making processes on which wildlife management programs are based, will be addressed.

BI/EE (NS) 372 Wildlife Ecology presents students with the information and conceptual background necessary to understand the underlying ecological principles of the East African savanna ecosystem. We will focus on the fundamental processes and inter-relationships between the biotic and abiotic environment. We begin with a discussion of basic ecological principles, setting them against the background of East Africa. The factors underlying distributions, population biology and behavioral ecology will be examined along with competition and predation using African examples. Theoretical models will be discussed in light of our observations on the ranch and on field trips.

BI/EE (NS) 373 Tropical Marine Ecology discusses the interactions that determine the distribution and abundance patterns of tropical marine organisms, with emphasis on the ecology of near-shore areas. Basic principles of ecology are integrated with an understanding of the sea as a habitat for life. Physical, chemical, and geological oceanography are discussed. Major groups of dominant marine organisms of the region are described and examined in the field. Major near-shore marine habitats are examined, along with their associated biotic communities. Coral reef ecosystems are emphasized to illustrate basic concepts. Applications to the management of indigenous marine resources are discussed and demonstrated.

BI/EE (NS) 369 Rainforest Ecology introduces the structure and function of tropical rainforests including the floral and faunal components. Ecological processes that maintain biodiversity and the evolutionary processes that generate it will be presented. We will examine the dynamic relationships between plants and animals including pollination and seed dispersal. On a larger scale, we will examine tropical vegetation patterns along climatic gradients and then discuss mechanisms for preserving and restoring tropical ecosystems.

EE (NS) 370 Principles of Forest Management presents the ecological and analytical tools used in the management of terrestrial, living resources. We will use examples from the tropics to stress the theories and skills that provide the foundation for land management worldwide. The assessment and minimization of adverse environmental impacts caused by resource development, as well as the restoration and rehabilitation of areas suffering from chronic human induced disturbances, provide key foci for applying the principles learned in this course.

EE (NS) 374 Principles of Resource Management introduces practical tools used in addressing complex environmental problems including coastal zone planning, guidelines for ecologically sustainable development, environmental impact assessment, fisheries management techniques, and protected-area planning and management. We will review these tools in terms of their application to local issues and to case studies from the Caribbean, the United States, Central America, and East Africa.

EE (NS) 377 Tropical Ecology and Sustainable Development examines the ecological impact of human activity, especially agriculture in a tropical country. The agroecology of important crops will be studied with emphasis on biodiversity as the source of production means and materials. Students will identify renewable and nonrenewable resources and examine their historical use by people in the region. We will study the long term and large scale impact of local agricultural and other practices on the national and global environment (e.g. *water pollution, waste management, climate change*). Options for alternative resource use, land restoration and preservation will be examined from ecological, socio-political and economic viewpoints. Factors that constrain or promote particular options will be included. Basic field techniques and measurements will also be covered.

BI/EE (NS) 379 Coastal Ecology examines the ecological processes at the interface between land and sea in order to provide an understanding of how human perturbations can impact both marine and terrestrial systems. The watershed concept will be used to explore nutrient flow, energy cycling, erosion, coastal circulation, productivity, and biotic interactions. This course is designed to provide a basic understanding of how natural systems work in order to help guide resource managers toward ecologically sound and sustainable decisions. Field work exposes students to techniques of surveying and monitoring and the study of biotic interactions in a complex physical/chemical milieu.

EE (SS) 301 Socio-Political Systems and Sustainable Development examines the historical development of Costa Rica within an international context to understand the stages of economic, political and social development that have taken Costa Rica from social and economic isolation to a position of political and social leadership in the Central American isthmus. Topics to be discussed include 1) pre-Columbian Central American and the Meso-american influence; 2) social and economic development during the colonial period; 3) the foreign presence in Costa Rica; 4) the banana republics; 5) coffee and economic development; 6) social and economic development during the 1980s-90s.

EE (SS) 302 Environmental Policy & Socioeconomic Values provides insight into the broad social context which surrounds the natural resources under study and which will determine, in part, which approaches to resource management are practiced. Objectives include the development of an understanding of: sociocultural context including hierarchies and power structures; formal and informal decision making processes, value systems relevant to natural resources including religious factors and environmental ethics, and past and present uses of natural resources; economic factors (*local, regional, and external*); ownership patterns; attitudes and other factors that affect change and their historical bases, and legal basis for enforcement of environmental policy. The course also introduces subjects such as the major constituencies which affect conservation (*NGO conservation groups, economic interests, etc.*) and their underlying philosophies.

EE (SS) 303 Economic and Ethical Issues in Sustainable Development develops the principles and applications of Ecological Economics, or the scientific and management aspects of sustainability. Allocation, distribution and scale will be presented as parameters to assess the sustainability of development models (*at a macro and micro level*). Basic concepts of ecological economics cost-benefit valuation techniques will be presented and applied. The roles of local people, the government, and private, national, and bilateral aid agencies will be examined as constraints for the implementation of sustainable development models. We will address the problem of designing and setting up sustainable development models with communities. The empowerment of local people and their reaction to non-local proposals for sustainable development will be examined through the review of specific case studies.

EE 491 (Fall) EE 492 (Spring) Directed Research prepares students to distinguish hidden assumptions in scientific approaches and separate fact from interpretation, cause from correlation, and advocacy from objectivity. Specific tools will include experimental design, field techniques, basic descriptive statistics and parametric and non-parametric quantitative analysis. Succinct scientific writing, graphic and tabular presentation of results, and effective delivery of oral presentations will be emphasized.

BI/EE (NS) —
Students choose to register for either Biology or Environmental Studies credit

EE (NS) —
Environmental Studies (*Natural Science*)

EE (SS) —
Environmental Studies (*Social Science*)

All SFS participants are registered at and receive credit from Boston University in Boston, which accredits SFS programs. The only exceptions are students from SFS Affiliate and Consortium schools who receive credit directly from their home institutions. *(Students from these schools should see sections regarding Affiliate schools and on Page 29 regarding Consortium schools).*

A non-refundable registration fee of \$150 for semester programs and \$100 for summer courses is due from all SFS students 10 days after acceptance into the program.

All SFS courses are approved and assigned course numbers by Boston University. SFS semester programs incorporate four courses and carry a total of 16 semester credits in biology or environmental studies from Boston University. Summer courses carry 4 semester credits in environmental studies. Approximately six weeks after the conclusion of the program, you will receive an official transcript from Boston University. Many students have arranged either to transfer credit from Boston University or to receive credit directly from their home school.

The following is a partial list of the home schools of previous SFS participants. Over 200 institutions, including the majority of these schools, have accepted or awarded credit for SFS participation. As the final decision regarding credit transfer rests with your home institution, you should check with your advisor/registrar before going into the field. If you have questions on credit, please call the SFS Admissions Office and we may be able to direct you to someone on your campus who is familiar with credit transfer for SFS programs. Many schools award credit on a case by case basis and credit granted to previous students does not imply automatic credit approval.

Allegheny College*	Macalester College	University of Cincinnati
American University	McGill University	University of Colorado
Alma College	Miami University*	University of Connecticut
Amherst College	Michigan State University	University of Florida
Auburn University	Middlebury College*	University of Georgia
Barnard College	Mills College	University of Iowa
Bates College	Mount Holyoke College*	University of Kansas
Baylor University	Muhlenberg College	University of Maryland
Bennington College*	New York University	University of Massachusetts
Binghamton University	Northern Arizona University	University of Miami*
Boston College	Northeastern University	University of Michigan**
Boston University*	Northwestern University	University of Minnesota
Bowdoin College	Oberlin College	University of New Hampshire
Brandeis University*	Occidental College	University of North Carolina
Brown University	Ohio State University	University of Pennsylvania
Brigham Young University	Ohio University	University of Pittsburgh
Bryn Mawr College	Ohio Wesleyan University	University of Puerto Rico
Bucknell University	Oregon State University	University of Puget Sound
Carnegie Mellon University	Pacific Lutheran University	University of Redlands*
Case Western Reserve University	Pennsylvania State University	University of Rhode Island
Claremont McKenna College	Pepperdine University	University of Richmond
Clark University*	Pitzer College	University of San Diego*
Colby College*	Pomona College	University of Southern California*
College of Charleston	Providence College	University of Tennessee
College of the Holy Cross	Purdue University	University of the South
College of Wooster	Reed College	University of Utah
Colorado College	Rice University	University of Vermont
Colorado State University	Rutgers University	University of Victoria
Connecticut College*	Saint Lawrence University	University of Virginia
Cornell University	Saint Michael's College	University of Wisconsin
Dalhousie University	Saint Olaf College	Vanderbilt University
Dartmouth College	Salem State College	Vassar College
Davidson College*	Santa Clara University*	Villanova University
Denison University*	Scripps College*	Wake Forest University
DePauw University*	Skidmore College	Washington University
Dickinson College**	Smith College	Washington and Lee University
Drake University	Stanford University	Wellesley College
Drew University	S.U.N.Y. College of Environmental Sciences and Forestry*	Wells College*
Duke University	Swarthmore College	Wesleyan University
Earlham College	Texas A&M University	Wheaton College
Emory University	Trinity College	Whitman College*
Franklin and Marshall College	Trinity University	Willamette University
Georgetown University	Tufts University	William Woods College*
George Washington University	Tulane University	Williams College
Gettysburg College	University of Alberta	Wittenberg University
Gonzaga University	University of California/Berkeley	Yale University
Grinnell College*	University of California/Irvine	
Hamilton College	University of California/Los Angeles	
Hamline University	University of California/Santa Barbara	
Hampshire College	University of California/Santa Cruz	
Harvard University	University of California/San Diego	
Humboldt State University		
James Madison University		
Kenyon College*		
Knox College		
Lehigh University		
Lewis and Clark College		

The SFS Affiliate Program

The SFS Affiliate Program was initiated to help students maximize their SFS experience by building better linkages to the academic community from which SFS students are drawn. Students from Affiliate institutions receive preferential admission and financial aid from SFS. The home schools provide direct academic credit for SFS participation and have curricular input into the SFS program. An SFS liaison has been identified at each affiliate school who is available to provide on-campus advising on SFS programs. Applicants from Affiliate schools must obtain permission to participate from their campus Affiliate Representative. The current SFS Affiliate Members are:

Bennington College - Dr. Keny Woods	Scripps College - Ms. Valerie Eastman
Boston University - Dr. Collier Cleveland	SUNY College of Environmental Sciences and Forestry - Dr. Neil Ringler
Brandeis University - Dr. Anita Klein	University of Miami - Dr. Dan Dilesta
Clark University - Dr. Todd Livdahl	University of Michigan School of Natural Resources and Environment - Dr. Jane Liu
Colby College - Dr. David Fennage	University of Redlands - Dr. Ben Dillow
Connecticut College - Ms. Shirley Parsons	University of San Diego - Dr. Michel Boudrias
Davidson College - Dr. Anna Miller Case	University of Southern California - Dr. Sheldon Kamieniecki
Denison University - Dr. Juliana Mulvey	Wells College - Dr. Tom Vawter
DePauw University - Dr. Ann Ralst	Whitman College - Ms. Susan Brick
Dickinson College - Dr. Janet Wright	William Woods College - Dr. David Schmidt
Grinnell College - Dr. Richard Bright	
Kenyon College - Dr. Ray Heithaus	
Miami University - Dr. Dan Kaplan	
Mount Holyoke College - Dr. Christopher Rivers	
Santa Clara University - Dr. Dennis Gordon	

Home School of 5 or more SFS participants in 1998

* Member of Sustainable Development Studies Consortium (please see page 29 for details)

** SFS Affiliate School

Requirements for Admission

We are seeking a body of curious students with a thirst for learning and the maturity and personal initiative to make use of our unique educational opportunities. Our goal is to create well balanced teams of students who will best benefit from and contribute academically and socially to this experience. Applicants should also exhibit enthusiasm, character, compassion, flexibility and social concern, as well as a willingness to, at times, put the needs of the group ahead of your own. The essay in which you define your motivation for participating in an SFS program is a strong determining factor in the admission process.

Participants are screened by the Admissions Committee to insure that they are choosing the appropriate course for the right reasons and that they have the background necessary for a successful academic and personal experience. The Committee strives to bring together students from diverse academic, economic, cultural and social backgrounds, with varied interests and talents, who support the mission of The School and are committed to working with others toward a common goal. If you are willing to commit your emotional, intellectual, and physical energies to working toward a better understanding of critical environmental issues, we encourage you to apply to join us.

Before completing your application for admission, carefully consider the fact that this experience will likely be very different from your academic experience to date. We are setting off together on a journey during which we ask that you consider yourself to be crew not a passenger. We expect and encourage you to take a proactive role in all aspects of your education from scheduling activities to choosing research projects to managing risk.

Admission to SFS is open to qualified students without regard to sex, race, sexual orientation, color, national or ethnic origin, economic status, physical or mental disability or other protected status.

Acceptance

Applications for all programs are reviewed on a rolling admission basis, as soon as all required information is received. The Admissions Committee meets on the 1st and the 15th of every month, and more often during peak application periods. Teams fill quickly. We strongly urge you to apply early to join the course of your choice. Waiting lists are maintained for courses that fill early.

All acceptances are contingent upon medical approval. Course syllabi will be sent to all accepted applicants and are available upon request.

HOW TO APPLY

An Application for Admission and SFS Reference Form can be found at the back of this catalogue.

All applicants for admission are required to submit an SFS application form and essay, a \$35 application fee and an SFS reference form before the application will be reviewed. In addition, all applicants must submit an official, current transcript to complete their application.

Applicants for semester programs should be 18 years of age and have completed at least one college-level ecology or biology course and, preferably, at least one semester of college.

Applicants for summer courses should be at least 16 years of age and have completed at least the junior year in high school.

For further information regarding admission, please call the SFS Admissions Office at

1-800-989-4418

Financial Aid

We are committed to involving as many qualified students as possible in SFS programs and will work with you to facilitate your participation. **Thanks to generous support from foundations, corporations and individuals, one in three SFS students received financial assistance through SFS in 1998.**

SFS Financial Aid, in the form of scholarships and/or interest free loans, is available to qualified students based on need. For the 1999-2000 academic year, we expect to have over \$300,000 in scholarship and \$275,000 in loan funds to make the SFS experience accessible to over 225 students facing financial challenges. Some applicants receive a combination grant and loan while others receive only loan funding. In addition, many applicants receive aid through their home schools or other outside sources as well. You may qualify for SFS assistance even if you are not receiving aid from your home school.

If you will need financial assistance in order to participate in a summer or semester program, we strongly encourage you to request, complete and return an SFS Financial Aid Application as

soon as possible. **For an application or more information on how to qualify for assistance, please call the SFS Admissions Office at 1-800-989-4418.**

Semester students: We expect that you and your parents will contribute at least the same amount that you are paying per semester at your home school, and more if you are able. A growing number of schools allow students to take some or all of their institutional financial aid off-campus. Check with your financial aid office to see what aid you can apply to your SFS program. **We encourage you to investigate applying for federal financial aid funds including Stafford Loans through your home school.** Because the credits you earn for your SFS participation will, in all likelihood, be applied toward your degree, your school may be able to process a Stafford Loan to assist your SFS participation. If you encounter difficulty in arranging to use federal financial aid funds for your SFS program, please ask your financial aid officer to give us a call and we will try to help you out.

Expectations and Responsibilities

Changes and Cancellations

SFS programs are obviously different from travel or adventure programs. We have tried to give accurate portrayals of every program in this catalogue. All course descriptions have been written in consult with faculty members. However, each project is unique and often cannot be implemented exactly as planned for a variety of reasons. There are factors which, although monitored closely, are beyond our control. For example:

- ◆ Over half of our projects take place in highly regulated and sensitive environments, usually requiring special permits, such as in Kenya and Mexico.
- ◆ Some projects depend on the goodwill and generosity of individuals and institutions which lend support.
- ◆ Tenuous weather situations, natural disasters or changes in political conditions in another country may require last-minute changes in sites or research plans.

You are advised that these or other variables (*including staffing*) may result in changes before or during a course. As the course catalogue is often written up to a year before a program actually goes into the field, students should rely on their program syllabus for up-to-date course descriptions. Indeed, part of your challenge lies in adapting to changing conditions and overcoming the obstacles they may present. In other words, the elephants are not always where we want them to be, so please be flexible.

Student Conduct

You are expected to conduct yourself in a mature and responsible manner. SFS reserves the right to require any participant to withdraw from any program at any time if the faculty deem the student's conduct to be detrimental to or incompatible with the interest, harmony, comfort or welfare of the course — including use of alcohol or drugs not authorized by a medical doctor, or uncooperative or disruptive behavior. Should such a decision be made, SFS will notify your parents and return you to the point of course departure, at which time any and all responsibility on the part of The School for Field Studies will cease.

Responsibility

In organizing and managing these courses, The School for Field Studies (SFS), its agents, employees, and staff give notice that they act solely on behalf of and for the benefit of the participants, on the express agreement that SFS shall not be liable, financially or otherwise, for non-performance or unsatisfactory service; for injury to persons including death; for loss of, or damage to property; for accident or delay; and/or for expenses arising from strikes, weather, quarantine, sickness, government regulation, or from any act or omission of its agents or employees, and/or airline, railroad, bus company, automobile rental agency, hotel, or other supplier of service.

The School for Field Studies is a charitable corporation located in Beverly, Massachusetts, U.S.A. All matters relating to or arising out of or involving in any way your relationship with SFS shall be governed by Massachusetts law and any legal dispute shall be determined by a Massachusetts court.

SFS reserves the right to refuse any applicant admission to any program if he/she is deemed unsuited for the project for any reason. All courses, fees, and dates are tentative until verified and confirmed in writing by The School for Field Studies.

The School for Field Studies admits students of any sex, religion, race, color, national or ethnic origin, sexual orientation, or economic status 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, sexual orientation, national or ethnic origin, physical or mental disability or other protected status in the administration of its educational policies, admissions policies, scholarship loan programs, and other School-administered programs. SFS is an equal opportunity institution.



Photo: Jonathan Viehos

"What a first-rate, first-hand experience it was. Culturally, academically, socially, personally and spiritually I can honestly say I'm enriched. I am now able to state more clearly the reasons conservation is so important and also the complications that come along with it."

Sanjeev Martyn, Winchester, MA -
Cornell University

Scholarship Donors

Generous support from numerous individuals and the following have made the SFS Financial Aid Program possible:

The Andreas Foundation
The Charles Engelhard Foundation
The Hunt Foundation
The Merck Family Fund
The Curtis and Edith Munson Foundation
The Laurance S. Rockefeller Trust
The Explorers Club
Archer Daniels Midland Company

"I would like to thank the SFS Student Scholarship Fund and its donors. Without the financial aid I was awarded I would have been sitting at home and missing out on the greatest summer of my life."

Matthew Finer,
Lancaster, PA -
University of
Pittsburgh

Tuitions, Costs and Refund Policies

Fees, Tuitions and Deposits

Like other non-profit, tax exempt educational institutions, SFS meets its expenses with a combination of tuition charges and income from grants and donations. Your tuition pays for instruction, room and board, and ground transportation during the course. It also covers group equipment, medical supplies, scientific instruments and material. **It does not include transportation to and from departure point.**

A non-refundable deposit of \$350 for summer courses or \$500 for semester programs is due no later than 10 days following acceptance in order to reserve a place in the program. All students will be registered for academic credit. A non-refundable registration fee of \$100 for summer courses or \$150 for semester programs is due with your deposit. *(Deposits and registration fees for financial aid candidates are non-refundable 10 days following financial aid offer. You must complete and return the financial aid application within 10 days of acceptance to qualify for refund status.)*

Full tuition is due sixty days prior to course departure. You will not be allowed to participate in the program with an outstanding tuition balance. *Note:* The tuition fees listed in this catalogue are based on estimates made up to a year in advance of departure and involve many variables - currency rate, outside project support, enrollment projections, etc. - all of which may change. The tuition for each program is tentative until confirmed in writing by SFS.

In addition to tuition charges, please also consider the following to determine the total cost of participation:

Transportation and Travel

Arrangements: To insure orderly arrival at the site as well as low fares, we work with one travel agency to handle all travel. This agent will arrange travel to the program, with any special arrangements you require. If you do not use the SFS agent, you **must** have your travel plans approved by the SFS Admissions Office. You will receive specific travel details after your acceptance. You are responsible for passport/visa fees as well as all transportation costs to and from the departure point.

Tuition

SFS Fall and Spring Semester Programs:

Marine Resource Studies/BRITISH WEST INDIES	\$11,970*
Tropical Rainforest Studies/AUSTRALIA	\$12,360*
Conserving Coastal Ecosystems/BAJA, MEXICO	\$11,970*
Coastal Rainforests and Marine Resources/CANADA	\$11,970*
Sustainable Development Studies/COSTA RICA	\$11,970*
Wildlife Management Studies/KENYA	\$12,810**

* Tuitions listed are for Spring 1999 programs. Fees for Fall 1999 and Spring 2000 will be announced in Spring 1999.

* Includes \$200 park fee

(All semester programs have an additional \$150 registration fee).

Summer 1999 Programs (30 Days)

(All summer programs have an additional \$100 registration fee)

Marine Parks Management/BRITISH WEST INDIES	\$3,175
Tropical Reforestation/AUSTRALIA	\$3,475
Conserving Coastal Diversity/BAJA, MEXICO	\$2,880
Conserving Marine Resources and Coastal Rainforests/CANADA	\$2,880
Alternative Strategies for Sustaining Tropical Ecosystems/COSTA RICA	\$3,060
Community Wildlife Management/KENYA	\$3,695

For Financial Aid Information, see Page 38.

Clothing and Equipment: SFS will provide food, cooking equipment, tents and all scientific and research equipment. You are responsible for personal gear including sleeping bags, backpacks, clothing, SCUBA gear (if applicable). You may find you already have much of what you need.

Physical Examination and Medical Insurance: You must present a completed SFS Medical Form, signed by a doctor, no later than 30 days before program departure. Students with late medical forms may forfeit their space. All medical forms must be approved by the SFS Medical Committee. You must be able to meet the physical challenges presented by SFS programs without undue risk to yourself or others. Academically qualified individuals may be disqualified from participating on medical grounds. You will not be allowed to join an SFS program without proof of up-to-date medical coverage and a signed medical release.

Refund Policies

Summer Courses: Registration fees are non-refundable and non-transferable. Deposits are non-refundable. If you withdraw prior to 21 days before the start of the course, it may be possible to transfer your non-refundable deposit to another SFS program within a 12 month period. If you withdraw 21 days or less before the start of your course, SFS will retain 50% of the course tuition. No refunds are made once the course has begun.

Semester Programs: Registration fees are non-refundable and non-transferable. Deposits are non-refundable. If you withdraw more than 30 days prior to the start of the program, SFS will retain 50% of the program tuition; it may be possible to transfer your non-refundable deposit to another SFS program within a 12 month period. If you withdraw from a course 30 days prior to the program commencement to 14 days after the program departure, SFS will retain 75% of the tuition. No refunds are made after the second week of the program or to students asked to leave the program.

THE SCHOOL FOR FIELD STUDIES

THE SFS ORGANIZATION

BOARD OF TRUSTEES

Terry L. Andreas, Chair
New York, New York

George Bevis
Chestnut Hill, MA

G. Randolph Bevis, L.L.B., Clerk
Baker & Company
Dallas, Texas

Kenneth R. Locklin
Energy Investors Funds
Washington, D.C.

James F. Millinger, Ph.D.
Sea Education Association
Woods Hole, Massachusetts

David W. Orr, Ph.D.
Oberlin College
Oberlin, Ohio

Richard R. Rivers
Washington, D.C.

W. James Tozer, Jr.
Vectra Management Group
New York, New York

Richard B. Wilson
Ocean Challenge, Inc.
Boston, Massachusetts

Judy Winslow
Winslow Associates
Greenwich, Connecticut

Trustee Emeritus

F. Whitney Hatch, III
Ipswich, Massachusetts

Founding President

James L. Elder

BOARD OF ADVISORS

Cutler Cleveland, Ph.D.
Boston University
Boston, Massachusetts

Astra Davis
Baltimore, Florida

James Elsc
Uganda Wildlife Project
Kampala, Uganda

David Hales
USAID
Washington, DC

Thomas Kunz, Ph.D.
Boston University
Boston, Massachusetts

George Lamb
Jackson Hole Preserve, Inc.
New York, New York

Rick Mrazek, Ph.D.
The University of Lethbridge
Alberta, Canada

Arthur Page
Palmer and Dodge
Boston, Massachusetts

George Patterson
Tofino, British Columbia

Ala Reid
York Harbor, ME

F. James Rutherford
AAAS
Washington, D.C.

Crocker Snow, Jr.
World Paper
Boston, Massachusetts

MEMBERS OF THE CORPORATION

Martina Lee Albright
Brookline, Massachusetts

Inez Andreas, Ph.D.
Baltimore, Florida

Susanna Colloredo Mansfield
South Hamilton, Massachusetts

Sumner Gerard
Fort Lauderdale, Florida

Enid Gort, Ph.D.
New York, New York

Terry Hunt, Ph.D.
Cambridge, Massachusetts

Charles McKee
Portland, Maine

Emil Mosbacher, III
Greenwich, Connecticut

Rolando Perez
New York, New York

Susanne LaC. Phippen
Wenham, Massachusetts

Carlos Riva
Hamilton, Massachusetts

Jo-Ann Watson
Marion, Massachusetts

ADMINISTRATIVE STAFF

Terry L. Andreas
Chair of the Board and President

Paul Houlihan
Vice President for Program

Andrea C. Walgren
Vice President for Student Affairs

Daniel Adam
Recruiting Manager

Mary Jane Albanese
Senior Program Coordinator

Karen Andreas
Program Coordinator

Adrian Boney
Director of College and
University Relations

Douglas Brown
Risk Manager

Diana Callahan
Enrollment Services Assistant

Paul Coombs
Information Services Manager

Trudy Cullen
Director of Human Resources

Colleen Cusick
Admissions Assistant

Michael T. Daley
Finance Director

Margaux D'Auteuil
Admissions Assistant

Jane Dickson
Director of Staff Recruitment
and Training

Donna C. Dowal
Associate Director of Admissions

Neal Fire
Student Recruiting Coordinator

Jane Flinn
Finance Coordinator

Kirsten Geisel
Admissions Counselor

Ron Guevin
Accounting Manager

John Johnston
Copy Center Operator

David Liscio
Public Relations Manager

Richard Malatesta, Ph.D.
Associate Academic Dean

Gina Marsella
Receptionist/Administrative Assistant

Jacqueline Odell
Development Coordinator

Rob Robinson
Enrollment Services Manager

Susan P. Sanchez
Staff Recruiting and Training Assistant

Rosalind Slawson
Finance & Operations Coordinator

Cathie Southwick
Management Information Assistant

Edward Stashko, Ph.D.
Academic Dean

FOUNDING DONORS

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

Terry L. Andreas
Astra Davis
F. Whitney Hatch, III
Margarette and Marlen Johnson

Andreas Foundation
Archer-Daniels-Midland Foundation
Boston Globe Foundation
Cabot Family Charitable Trust
Compac Computer/Digital Equipment
Corporation

Darden Restaurants Foundation
Educational Foundation of America
The Charles Engelhard Foundation
Arnold D. Frese Foundation, Inc.
The George Gund Foundation
Hewlett Packard Corporation
Homeland Foundation
The Hunt Foundation
Island Foundation, Inc.
Richard King Mellon Foundation
Merck Family Fund
Curtis and Edith Munson Foundation
The David and Lucile
Packard Foundation
Amelia Peabody Charitable Trust
The Laurence S. Rockefeller
Charitable Trust
National Science Foundation
RJR Nabisco

SFS is a 501(C)(3) non-profit educational institution.

Cover Photos: David Barron/Oxygen Group,
Toni Jackman, Paul Masaki, Michael Quinn,
David Silverberg, Ken Weagle

Design: Ken Gray

Pre-Press: Linda Mansfield

Film Prep: Graphics Express

Printing: Calendar Press

The SCHOOL for FIELD STUDIES

16 Broadway, Beverly, MA 01915-4499

Phone: 1-800-989-4418

Fax: (978) 927-5127

e-mail: sfshome@igc.apc.org

Web Site: www.fieldstudies.org

NON-PROFIT ORGANIZATION
U.S. POSTAGE PAID
BOSTON, MA
PERMIT NO. 55476



The world is your classroom



SFS CENTERS AND PROGRAMS

The Center for Marine Resource Studies –
BRITISH WEST INDIES

Semester Program: *Marine Resource Management*

Summer Course: *Marine Parks Management*

The Center for Rainforest Studies – AUSTRALIA

Semester Program: *Tropical Rainforest Management*

Summer Course: *Tropical Reforestation*

The Center for Coastal Studies – BAJA, MEXICO

Semester Program: *Conserving a Critical Coastal Ecosystem*

Summer Course: *Conserving Coastal Diversity*

The Center for Coastal Rainforest and Fisheries Studies –
PACIFIC NORTHWEST CANADA

Semester Program: *Coastal Rainforests & Marine Resources*

Summer Course: *Conserving Marine Resources &
Coastal Rainforests*

The Center for Sustainable Development Studies – COSTA RICA

Semester Program: *Studies in Sustainable Development*

Summer Course: *Alternative Strategies for Sustaining
Tropical Ecosystems*

The Center for Wildlife Management Studies – KENYA

Semester Program: *Wildlife Ecology & Management*

Summer Course: *Community Wildlife Management*

