

COSTA RICA

CARIBBEAN

KENYA

BRITISH COLUMBIA

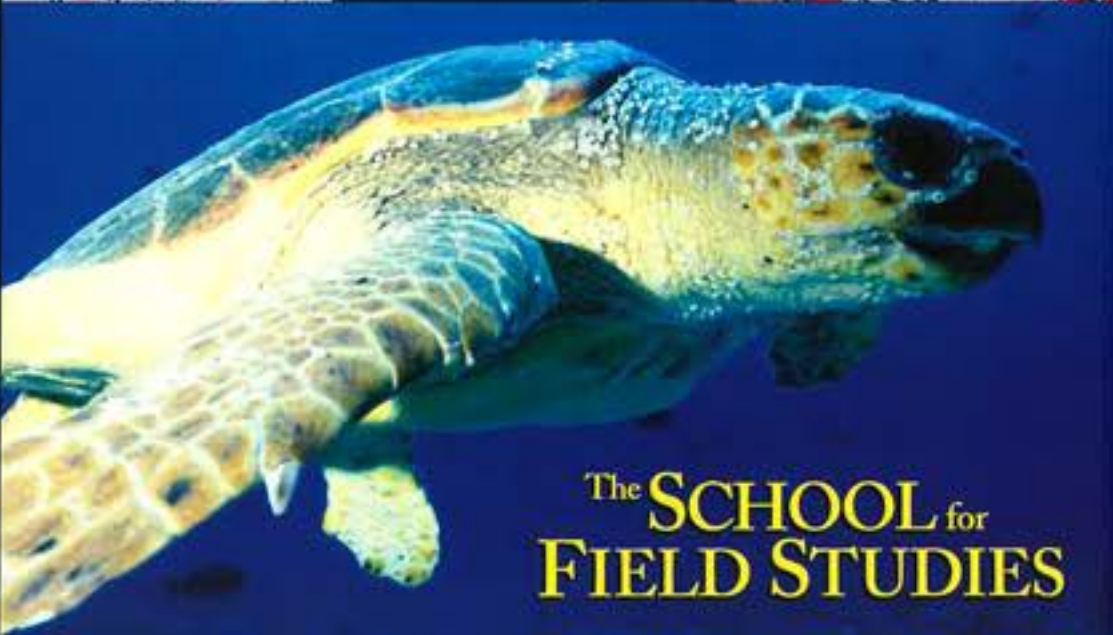
BAJA MEXICO

AUSTRALIA

2003 COURSE CATALOG



environmental field studies abroad



The SCHOOL for
FIELD STUDIES

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

The School for Field Studies

10 Federal Street, Salem, MA 01970

Phone: 800.989.4418

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www.fieldstudies.org



SFS Overview



Why study with SFS?

Because the world is our home. And we're working to protect it. Kenya, Baja, Costa Rica, British Columbia, Turks and Caicos, Australia. These aren't just exotic names on the map. They are the places where we have permanent field stations for ongoing research, places where our work helps communities solve environmental problems. And they are the places where you'll find the opportunity of a lifetime.

1. Learn field skills on a research team.

At SFS, you won't just read about field skills. You'll be living at a field station. Working on a research team with real scientists engaged in active field research. Restoring rainforests in Australia. Counting game in Kenya. Mapping forests in British Columbia. Tagging turtles in Baja. These are just a few of the field skills we'll teach you.

2. Work with a local community, help the environment.

With SFS, you'll be aiding a community, working on environmental issues important to them. Help Maasai develop wildlife policies. Help farmers transition to organic agriculture in Costa Rica. Learn to see and understand the world from a different point of view. You will present your work to the community and realize that you aren't just studying in an exotic place—you're truly making a difference.

3. Come away with the experience of a lifetime.

A chance to experience new cultures. To challenge yourself. To expand your perspective. We can offer you all this—and the chance to make the world a better place. Join SFS. We'll take you to places you've always wanted to go.

Choose to focus in one of the following research areas:



Caribbean: coral reefs, marine parks, fisheries management and economic diversification



Australia: tropical rainforest ecology and reforestation



British Columbia: coastal temperate rainforest, forest management and stream ecology



Baja, Mexico: marine mammals, sea turtles and coastal resource management



Costa Rica: tropical ecology and protected area management



Kenya: Maasai community wildlife management

About The School for Field Studies

Founded in 1980, The School for Field Studies (SFS) is one of the country's oldest and largest environmental study abroad programs. Through our network of field stations, SFS works on a diverse range of critical environmental issues in ecosystems around the world. SFS teaches students field-research skills through cooperative work with local communities, conservation organizations and government agencies. During our programs, we help our students make meaningful contributions toward the sustainable management of natural resources in our partner communities.

How do you choose a program?

SFS works with local communities to address environmental issues. No matter which program you choose, you'll gain relevant field experience and skills that will prepare you for a professional career. So how do you choose? Use our catalog and website (www.fieldstudies.org) to learn about the research at each of our field stations. Focus on programs that fit your personal interests as well as your academic and career goals. Then contact an SFS Admissions Counselor at 1-800-989-4418. They can offer advice and put you in touch with SFS alumni for a first-hand, student perspective.

Student Body

SFS welcomes a diverse student body and promotes an atmosphere open to different cultures and perspectives. Students come to us with a broad spectrum of backgrounds and experiences. In keeping with our interdisciplinary approach to environmental problem solving, we strive to build teams that represent a cross-section of the global student body, including liberal arts, science and economics majors.

What language preparation will you need?

All SFS courses are taught in English. However, your interaction with the local community will be greatly enhanced if you have local language conversation skills. We do offer informal language instruction at our Baja, Kenya and Costa Rica programs. Please note that you will need to have completed at least one semester of college-level Spanish or otherwise demonstrate a level of proficiency to participate in our Costa Rica semester program.

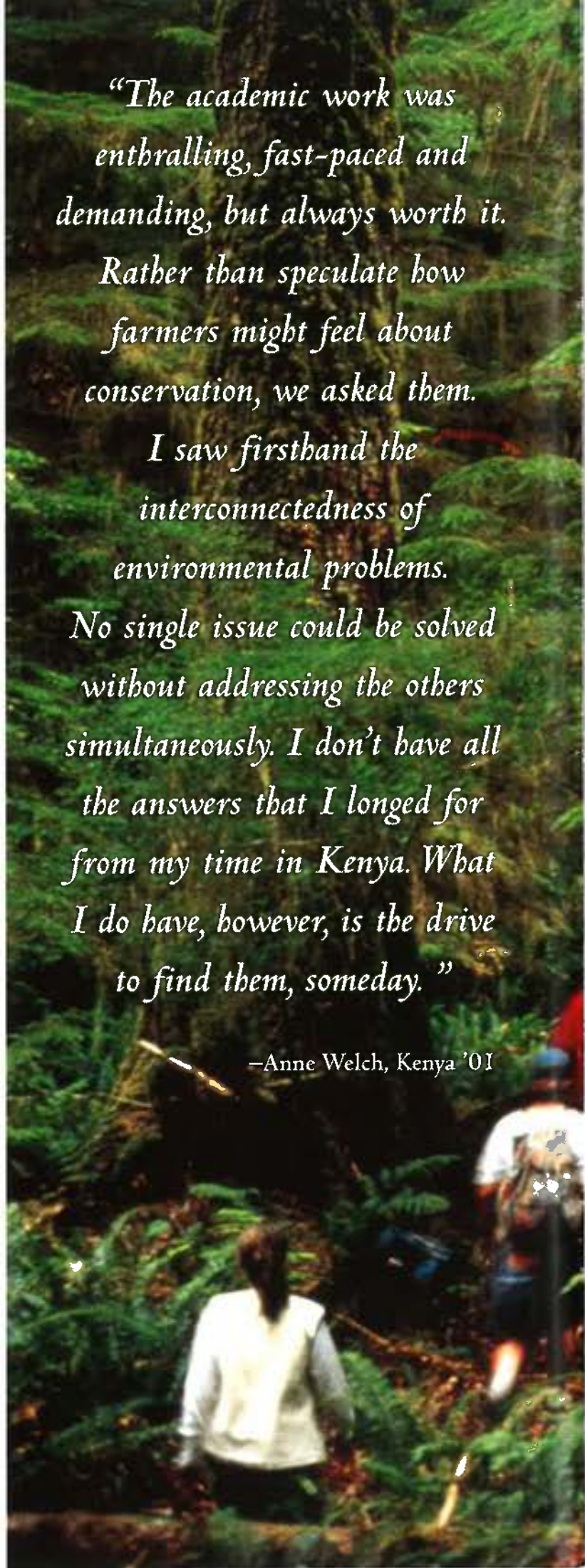
Safety

Studying abroad is not without its risks. At SFS, the safety and well being of our students is our highest priority. Our field stations offer a structured environment, which includes on-site Student Affairs Managers who are responsible for promoting safety and managing risk during our programs. A Safety Advisory Committee and a full-time Safety Director, who monitors worldwide safety issues on a daily basis, support their efforts.

"The academic work was enthralling, fast-paced and demanding, but always worth it. Rather than speculate how farmers might feel about conservation, we asked them.

I saw firsthand the interconnectedness of environmental problems. No single issue could be solved without addressing the others simultaneously. I don't have all the answers that I longed for from my time in Kenya. What I do have, however, is the drive to find them, someday."

—Anne Welch, Kenya '01





Faculty

SFS offers a guided learning experience where teaching and mentoring are the foundation of the student's experience. We believe that learning professional field skills requires highly qualified teachers. Each field station is staffed by a Center Director and two to three full-time, resident faculty. Professors are selected based on their teaching and research qualifications, leadership skills and commitment to field research and community-based environmental work. Most of our faculty are native to the country/region in which they teach.

Admission

Applications from qualified candidates are considered on a first-come, first-served basis. It is therefore to your advantage to submit a completed application as early as possible. Programs fill quickly, so we encourage you to apply early to ensure admission into the program of your choice. Applications are reviewed on a year-round, rolling basis. (For details, please refer to page 41).

Curriculum and Academic Credit

SFS students are registered at, and receive credit from, Boston University, which accredits our programs. Most students from SFS Affiliate and Consortium schools receive credit directly from their home institutions. (For details, please refer to page 44).

We offer challenging field research experiences in semester and summer programs at every SFS field station:

- **Semester programs:** Four courses of four credits each, averaging 95 days (including a five-day midterm break).
- **Summer courses:** Condensed, 30-day four-credit programs; like our semester programs, they include lectures, field exercises, research and field trips.

Financial Aid

Approximately one-third of our students receive SFS financial aid in the form of grants and interest-free loans. If you need financial assistance, we strongly encourage you to submit an SFS Financial Aid Application as soon as possible. Qualifying students may use a combination of federal financial aid (Stafford Loans, Pell Grant and PLUS Loans), home school grants, SFS financial aid and scholarships to participate in our programs. You must apply early to be considered for SFS financial aid and you should consult with your home school to determine whether you may use your institutional financial aid. (For details regarding financial aid and program costs, please refer to page 42).

Academic Program

Our academic programs are a unique approach to community-based environmental problem solving. They are designed to train students to engage in high-quality field research that addresses the needs of the local community.

Faculty Profiles

The SFS Faculty Team

Providing the context, knowledge and field skills necessary to understand and address complex environmental issues, as well as close mentoring by our faculty teams, are the basis of the SFS model. Every SFS field station is staffed with a Center Director and two or three full-time faculty who are trained in marine and terrestrial ecology, natural resource management, socio-economics and policy.



Simon K. ole Seno, Center Director, Ph.D., Wildlife and Fisheries Science, Minor in Cultural Anthropology, University of Arizona

Center for Wildlife Management Studies, Kenya

A Maasai from Narok, Seno went to school when most Maasai did not send their children to school. He wasn't a good livestock herder, so his father directed him to school instead. Seno earned a B.S. in Range Science and an M.S. in wildlife ecology from New Mexico State University and went on to earn his Ph.D. from the University of Arizona. He worked for the Kenyan government for over 7 years and taught at Moi University for more than 15 years. He has also taught Kiswahili language and has traveled extensively in Zambia, Zimbabwe, Botswana, Namibia and Uganda to study human related conservation problems. While most of Seno's training is in wildlife ecology and management, his recent focus is in human dimensions in natural resource conservation.



Leo Tak, Ph.D., Forest Policy and Economics, Forest Resource Management Department, University of British Columbia. M.Sc., Forestry, Lakehead University; B. Agr. Korea University

Center for Rainforest and Fisheries Studies, British Columbia

Trained in various areas in forestry, Leo considers himself a forest resource manager and forest policy developer. His current research focuses on forestry education, social and cultural forestry. Back in Korea, besides teaching forestry at universities, Leo was an active member of Forests and Culture Society, formed to promote the cultural aspects of forestry. Leo traveled extensively to conduct research in Asia and Europe. His travels include the Russian Far East, where he studied a conflict between foreign logging investment and aboriginal people's interests, Laxenburg in Austria to join the Siberian Forestry Project at the International Institute for Systems Analysis, and Korea for various forestry projects to promote the idea of cultural forestry.



Bruce Williams, Center Director, Ph.D., Biology, La Trobe University
Center for Rainforest Studies, Australia

Bruce's background is in agricultural extension, scientific research and small business. He has an impressive history of working with a wide diversity of people using his highly developed group facilitation and leadership skills. Bruce has also undertaken significant roles in industry and commerce and currently serves as a Board Member of Action Benalla, [Benalla Chamber of Commerce] and until recently with Goulburn Broken Waterways, [Goulburn Broken Catchment Management Authority]. His diversity of interests indicates an ability to understand and develop linkages between different community sectors.



Nolan Quiros, Center Director, Ph.D. Agricultural Economics, Oklahoma State University. LLM, International Environmental Law, American University; J.D., University of Costa Rica
Center for Sustainable Development Studies, Costa Rica

Nolan started his professional career as a lawyer in Costa Rica with a great interest in international trade issues. He later worked as a researcher for the Center for International Environmental Law and as a visiting scholar for the Environmental Law Institute focusing on the impact of trade in the environment. After returning to Costa Rica, his work concentrated on analyzing the influence of trade patterns and economic development and participated in the Costa Rica-Mexico Free trade agreement negotiation team. He later returned to the U.S. as a Research Associate at the Oklahoma State University Policy Center where he finished a Ph.D. in Agricultural Economics focusing on the effect of U.S. Agricultural Programs on the economy and the environment. He has collaborated with the U.S. Department of Agriculture in a variety of U.S. domestic projects and with the Organization of Economic Cooperation and Development in Paris on international environmental research.



Volker Koch, Ph.D., Marine Biology, University of Bremen (Germany)
Center for Coastal Studies, Baja, Mexico

Volker did the fieldwork for his Masters studies on population dynamics of mangrove snails in Costa Rica. His Ph.D. work was undertaken in a mangrove ecosystem in Northern Brazil, where he was involved in an interdisciplinary project to develop a sustainable management plan for the area. His work described and quantified the energy flow characteristics of the dominant benthic species within the mangrove forest. In the past few years, Volker has participated in several expeditions on research vessels to Antarctica, Costa Rica and Namibia. His research interests include the dynamics of marine invertebrate populations, energy flow characteristics in marine ecosystems and steady state trophic modeling.

David Wilson, Center Director, Ph.D., Marine Ecology, James Cook University & the Australian Institute of Marine Science
Center for Marine Resource Studies, Turks and Caicos Islands

Dave's education and fieldwork research have focused on coral reef and reef species ecology. His thesis focused on the patterns and processes of coral reef fish larval supply to the San Blas Archipelago, Caribbean Panama. Dave spent two years with the Smithsonian Tropical Research Institute in Panama City as a Pre-Doctoral Fellow. Before joining SFS, Dave worked as a project leader for the Department of Marine and Wildlife Resources in Pago Pago, American Samoa. His program, the 'Biology and Ecology of Key Reef Species,' was part of a territory-wide coral reef monitoring program that the Department committed itself to developing.

Alumni Profiles

Cynthia Fleming, Kenya '95
Ecologist, The Wilderness Society,
Boston, Massachusetts
B.A., Brown University
(Environmental Studies) & M.S.,
University of Vermont (Botany-Field
Naturalist Program)

As a regional ecologist for the The Wilderness Society, Cynthia is working with regional conservation biologists to refine maps of a proposed system of biological preserved and well-managed forests. The outreach components of Cynthia's efforts, including communicating this information to policy makers and the public, will help advance scientific arguments for conservation of wilderness in the Northern Forest. Before joining TWS, Cynthia taught environmental education at the Teton Science School, Yosemite Institute, and worked in the Sierras helping to identify subalpine meadows as 'Important Bird Areas' for conservation management.

An Interview with Cynthia

Why did you choose SFS as a study abroad program?

I wanted a real field science experience where I could learn about wildlife and ecology outside of the traditional classroom. SFS offered a multidisciplinary, hands-on approach to conservation science in a beautiful and diverse country.

Did your SFS experience help you with your career development?

SFS provided me with my first positive experience with conservation science. I was really interested in conservation and environmental issues, but I had been totally turned off by lab sciences. This program exposed me to opportunities where I could bridge my passion for conservation with my interest in natural history and wildlife.

Reflecting back on your time in the program, what did you gain from your SFS experience?

I had a great first experience abroad. I learned a tremendous amount of botany, ecology, wildlife behavior and management, as well as about the local culture and socio-economic issues. I also fell in love with birding. I made fantastic friends and enjoyed the staff and faculty a lot.

Did your experience change any of your perceptions?

I realized I could be a scientist and not be in a lab and I learned the realities of conservation efforts in a third world country.

What advice would you give to new SFS students?

Make the most of the experience. Learn Swahili, learn the birds, do the readings, travel before or after on your own or with friends.



Shannon Briscoe Campbell, Caribbean '83
Teacher, The Calverton School, Maryland
M.S., Biology, Northeastern University

Shannon had always wanted to study marine ecology, and the SFS Coral Reef Ecology course seemed like a great way to get some experience. With the help of a scholarship and family support, she would realize her dream.

An Interview with Shannon

Did your SFS experience help you with your career development?

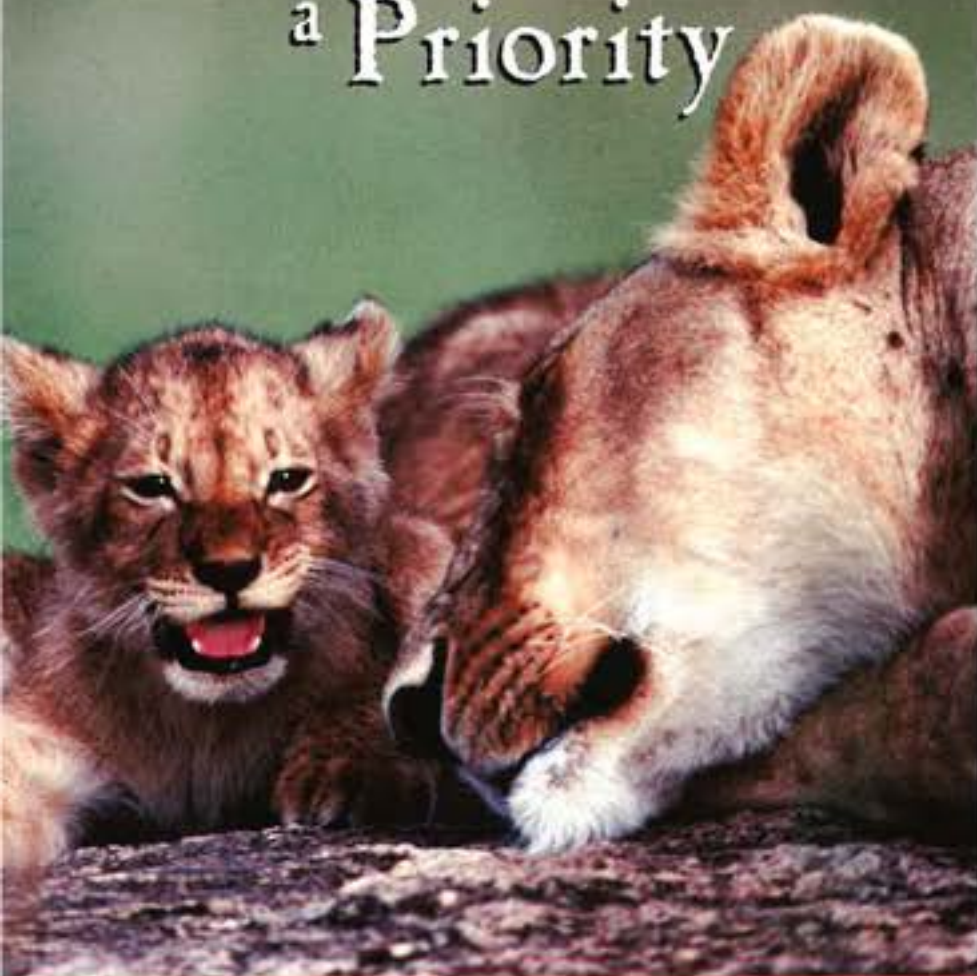
The course definitely provided experiences that helped me get my first job. I took the course in July 1983, and went on to work for SFS as an intern/assistant. It also provided me with an opportunity to meet and interact with experienced research scientists. Don Levitan, an SFS teacher, recommended me for a job at Harvard University, where I worked as a research technician for a benthic marine ecologist, Dr. Kenneth Sebens.

I once again had the opportunity to work with SFS giving several presentations to benefactors about my experiences. The Harvard job looked good, I guess!

My experiences with SFS certainly gave me a leg up. I obtained a Masters degree in Biology from Northeastern University in 1988 and went on to teach high school in Philadelphia for 8 years at the Agnes Irwin School, and now in my alma mater, The Calverton School, in Maryland. I have recommended several students to participate in SFS programs over the last 13 years. I think it is one of the best!

"My SFS experience gave me a true appreciation for the astonishing number of variables that need to be understood and tackled for conservation and environmental restoration to progress effectively and efficiently."

Safety is a Priority



Any educational experience, whether attending a college or university in the United States or studying abroad, carries with it inherent risks which could include injury, illness or even death.

SFS has a number of strategies in place designed to optimize safety, including providing students with safety information before they get to the field, minimizing risk while in the field and having contingency plans to effectively react to an emergency situation, should one arise.

Highlights of the SFS safety and risk management program

Safety Director: full-time professional focusing on managing the risks in our programs through information gathering and dissemination, staff training and a range of safety assessment methodologies.

Safety Advisory Committee: a network of experienced professionals with medical, international and outdoor program expertise.

Student Affairs Manager (SAM): responsible for promoting safety on-site at each field station. At a minimum, SAMs are trained as Wilderness First Responders (an 72-hour medical course). Other SAM training may include Wilderness EMT, Lifeguard, Emergency Water Safety, Rescue SCUBA Diver, British Canoe Union/American Canoe Association kayak training.

Safety Audit: a formal safety review process performed periodically at field stations.

Detailed Predeparture Information: includes information on risks, safety and health issues. Upon arrival students are given a thorough on-site orientation to the country and community in which they will be living. During the program students will receive ongoing education on potential hazards, both physical and cultural.

Student Life: live and learn where you can make a difference

With SFS, you'll contribute knowledge and research that benefits the community in which you live. In return, you'll gain memorable friendships, an appreciation of a different culture, first-hand knowledge of a unique ecosystem, academic credit and field skills.

On an SFS program you will:

- Study in some of the most beautiful and threatened ecosystems in the world.
- Make a real contribution while helping to solve environmental problems.
- Visit people and places that most tourists never see.
- Learn from accomplished researchers and local experts.
- Experience a new culture, develop friendships with local community members.
- Gain valuable hands-on field experience, analytical skills and earn college credit.

Make a Difference through Research

SFS Five-Year Research Plans

Engaging in long-term research that will directly benefit the communities in which we live is central to the SFS mission. The framework for directing our research is born out of what we call the Five-Year Research Plans. These Plans form the basis for the academic and community interaction program content and help students fully understand the scope and significance of the work they will be doing at each field station. SFS alumni can also track the progress of the work that they contributed to our on-going research.

Research Plans

Australia — The Center for Rainforest Studies is exploring the cost efficiency and ecological effectiveness of rainforest restoration site-management practices in a riparian zone. With the results of this research and our replanting projects, we will help to connect and create corridors between existing rainforest fragments, protect local drinking water sources and share best site-management practices with rainforest restoration researchers worldwide.

British Columbia — The Center for Coastal Rainforest & Fisheries Studies is exploring community-based resource management initiatives and techniques to help local communities restore salmon populations, recover from degradation linked to timber harvesting and promote ecosystem functions between forest, stream and marine ecosystems. With the results of this research, we will help produce a management plan for a local community forest and determine the most effective techniques for restoring salmon populations.

Costa Rica — The Center for Sustainable Development Studies is exploring means of promoting sustainable land use and effective land protection in response to pressure from population growth and a degraded natural resource base. With the results of this research (including our own transitional organic farm), we will help to develop protocols and training for farmers to help them obtain organic certification, select and monitor indicators of biodiversity, as well as provide information about improving national park operations and relationships between parks and local people.

Mexico — The Center for Coastal Studies is exploring ways to conserve the ecological health of Bahía Magdalena and improve the management of its exploited marine resources to sustain the socio-economic stability of the local community. Our research monitors marine resources, water quality and the protection and conservation of the gray whale and the highly threatened green sea turtle. Our goal is to provide sound stock management and species conservation advice to governmental regulators and the local community.

Kenya — The Center for Wildlife Management Studies is exploring ways to improve wildlife and rangeland management within national parks and promote co-habitation between humans and migrating wildlife. Our research investigates range and wildlife ecology, as well as human-wildlife conflict and competition around national parks. Our goal is to provide advice that will help maintain ecological balances in and around protected areas and sustainable co-habitation between human settlers and wildlife in regions surrounding the protected areas.

Turks and Caicos Islands — The Center for Marine Resource Studies is exploring ways to improve the sustainability of exploited marine resources and the protection of the near pristine coral reef ecosystem at South Caicos. Our research monitors the stocks of lobster and conch, the condition of coral reefs, and the populations of reef fish. Our goal is to provide the local community and tourism developers with advice that will help sustain the traditional fishing economy as well as minimize the environmental impacts of growing tourism on the terrestrial and marine environments.

Semester Programs

Semester Program Structure and Content

Semester programs run for approximately 95 days, including a five-day midterm break (an opportunity to travel on your own). We compress a 16-week semester into 14 weeks, so be prepared for a very intensive but rewarding learning experience.

Field Station Research Plan

SFS staff, working with the local community and local authorities, establish a multi-year research plan that drives the direction and timing of their own as well as student Directed Research projects and most course-related field exercises and excursions.

Elements of the SFS Academic Program

SFS semesters are designed to train students to become competent field researchers. We identify the Directed Research projects for each student and then train them to carry out the projects through three courses delivered through a case study format.

Courses and Field Exercises

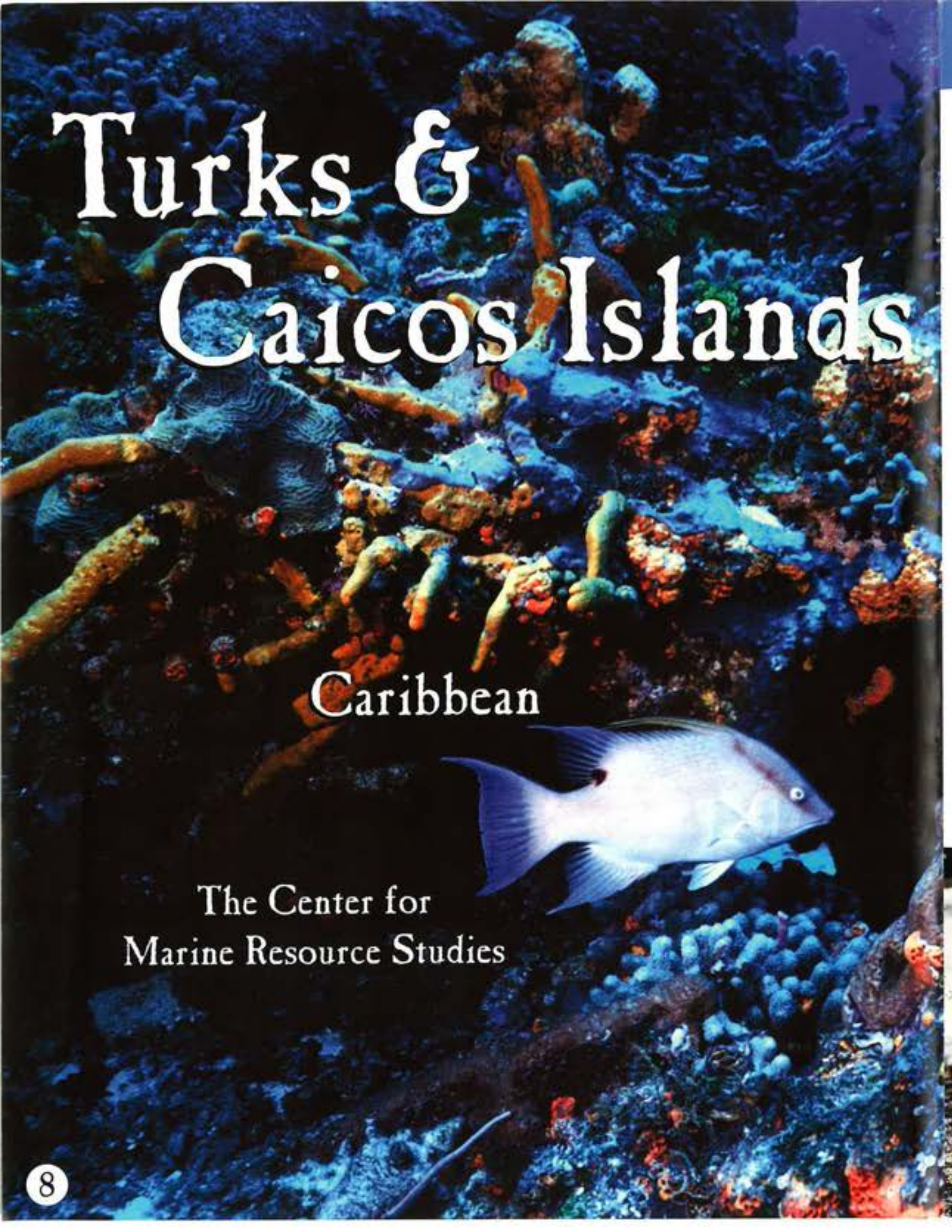
Faculty provide the core lectures needed to understand the content areas pertinent to the case study and research questions (ecology, natural resource management, socio-economics and policy, and directed research). Students are enrolled in four courses of four credits each, including the Directed Research project.

Daily schedules vary. The first half of the semester includes approximately fifteen 60-90 minute lectures a week plus 3-5 other academic activities (e.g. research/field exercise group meetings, presentations and guest lecturers). Afternoons are often filled with field exercises and field trips. Academic activities occur six days a week with at least part of one weekday devoted to a community service activity. Extended field trips, weather conditions and schedules of guest lecturers may impact the daily schedule.

There are fewer lectures and classes toward the end of the semester as more time is allocated for work on the Directed Research projects. Our Centers are run as cooperative field stations, so we ask for your help with daily chores and weekly site clean up.

Examples of field skills taught in our programs:

Animal behavior observations; population censusing; mark and recapture studies; radio tracking; habitat assessment; species (plant and animal) identification; geology and soil identification; water sampling methods; research mapping; timber estimation; transect and patch sampling; reef monitoring; data recording; etc.



Turks & Caicos Islands

Caribbean

The Center for
Marine Resource Studies



ive and snorkel in one of the most spectacular marine habitats in the Caribbean.

- Help find innovative approaches to fisheries, marine protected areas, and economic diversification.



- Get to know the friendly South Caicos island community known as “Belongers.”



“I was able to dive down to 80 feet, look up, and have the sun still hurt my eyes through water so clear. I saw sharks up to 10 feet long. I encountered schools of rays. I spent a week on an uninhabited tropical island camping with friends. I wrote a research paper, which may turn into a master's degree. I gained incredibly valuable research and field skills—most importantly, it reaffirmed my love and passion for my field of study.”

— Evan Larson,
Willamette University



Environmental Issues

The British-governed Turks and Caicos Islands (TCI) lie at the southeastern end of the Bahamian archipelago, 575 miles south-east of Miami and 100 miles north of the Dominican Republic. The turquoise waters surrounding the eight main and numerous small Islands are considered to be among the world's top 10 scuba and snorkeling locations. Nearly 50 species of corals and over 350 large fish



species, including spotted eagle rays, sharks, groupers, snappers and dolphin fish are easily spotted in the clear, warm waters just steps from our field station. Nearby sea grass beds, mangrove-studded woodlands, sandy shoals and deep reefs lend a patchwork appearance to the miles of shallow blue waters that surround the Islands.

The Turks and Caicos Islands are a major international exporter of conch and spiny lobster. South Caicos, a key role player in this export, is particularly dependent on conch and spiny lobster harvesting. Depletion of these resources would have a dramatic impact on employment and social structure on the island, therefore developing a sustainable conch and lobster fishery is essential for this community.

Many Caribbean communities have promoted economic diversification to improve economic and social stability. One option is tourism, but this can lead to detrimental social and ecological change if it is not carefully implemented and managed. The spectacular marine environment is what underpins tourism, but this environment can easily be degraded by uncontrolled and environmentally insensitive development. Other forms of economic diversification also need to be explored, such as sport fishing for bonefish.

SFS in South Caicos

We are assisting the TCI government's Department of Environment and Coastal Resources (DECR) and the National Park Service in their efforts to manage fisheries and

conserve critical marine and terrestrial habitats. Our goal is to help sustain the economic, societal and ecological stability of South Caicos and its island community. With so many local residents dependent on marine resources for their livelihood, and the likelihood of increasing tourism, there is an immediate need to find viable options for managing fisheries and conserving critical habitats.

Snorkeling and diving in waters surrounding South Caicos, students learn to identify a wide range of marine organisms and habitats, and learn about marine ecology and coastal ecosystems. Students confront the challenges of fisheries management and analyze the costs and benefits of potential new fisheries. Assessing the pros and cons of resource management and habitat conservation options, and the social and economic implications of these options brings students face to face with the real life dilemmas faced by the governmental regulators and the residents of South Caicos.

Recent research indicates that conch and lobster nursery areas in dense sea grass beds may be the most important sites in need of protection in order to promote stock enhancement and sustainability for these economically important resources. SFS students assist in researching the distribution and role of the sea grass habitats in the coastal environment of South Caicos. With the Admiral Cockburn Land and Sea National Park at their doorstep, students are able to evaluate the concept of Marine Protected Areas (MPAs) as a resource management option. Students help monitor the condition of the spectacular coral reefs, both inside and outside the MPAs, using the Atlantic and Gulf Rapid Reef Assessment (AGRRA) protocol. Based on their observations made in the field, students assess the validity of indicator species for reef health, the effects of diver tourism, marine species interactions, the impacts of coral diseases and many other issues related to marine natural resource harvesting, conservation and monitoring.



SFS Field Station on South Caicos

Our field station, located just steps from our ocean laboratory, is adjacent to Cockburn Harbor, a town of about 1000 residents. The field station sits on elevated land about 40 feet above the water and looks directly out over the sea. Within a three-mile radius are coral reefs, mangrove islands, sea grass beds, carbonate platform flats and deep water diving. The main facility has a dining area, kitchen, classroom, library/computer room and a veranda with spectacular ocean views. Students share living quarters in two residence wings. We are fully equipped for marine operations with access to docks, motor boats, a commercial compressor and plenty of tanks and weights for SCUBA diving and snorkeling.



Program in Marine Resource Studies

Field Trips, Lectures and Exercises

- Boiling hole and salinas (salt ponds): assess potential as ecotourism attractions.
- Bell Sound Bonefish Nursery and Marine Reserve boat trips.
- Long Key and Ambergris Key: camping trips to explore the rich biodiversity of these uninhabited islands.
- Meetings at government ministries in Grand Turk and Providenciales.



Recent Student Directed Research Projects

- AGRRA for reefs inside and outside Admiral Cockburn Land and Sea National Park.
- Population size assessment of potentially commercial finfish species around South Caicos.
- Best practices zonations and utilization of National Parks' resources in TCI.
- Queen Conch dispersal from nursery grounds: implications for designing no-take fishing reserves.
- Bonefish protection on the Caicos Bank in Bell Sound Nature Reserve.
- Spiny lobster assessment within the Caicos Bank.

Community Involvement

Students quickly become involved with the community spending time with local residents, fishermen and resource managers. Community activities may include:

- Weekly soccer and basketball matches, which attract enthusiastic crowds, as SFS teams challenge local teams (usually unsuccessfully) for the coveted tournament trophy.

- School volunteer projects such as tutoring, working with high school Science and Math Club.
- Hosting SEA DAY at our field station to introduce elementary students to the marine environment.

Recent Center Contributions

- Lobster, conch and finfish stock levels assessment, which have provided important information for government agencies.
- Natural resource workshop with the DECR and the National Park Service to provide TCI government workers with educational training about coral reefs, lobster biology, marine fishes and turtles, sharks, whales and navigation.
- Working with the DECR, National Park Service and local businesses to develop a protocol for coral reef monitoring and to share data about queen conch distribution.
- Hosting or supporting public forums and activities attended by government officials and community members to facilitate communal problem-solving.
- Applying baseline data collected with the AGRRA protocol survey to examine reef health trends, species interactions and impacts of coral diseases.

SCUBA Certification

It is not necessary to use SCUBA to participate in our program. However, 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 Program Dates:

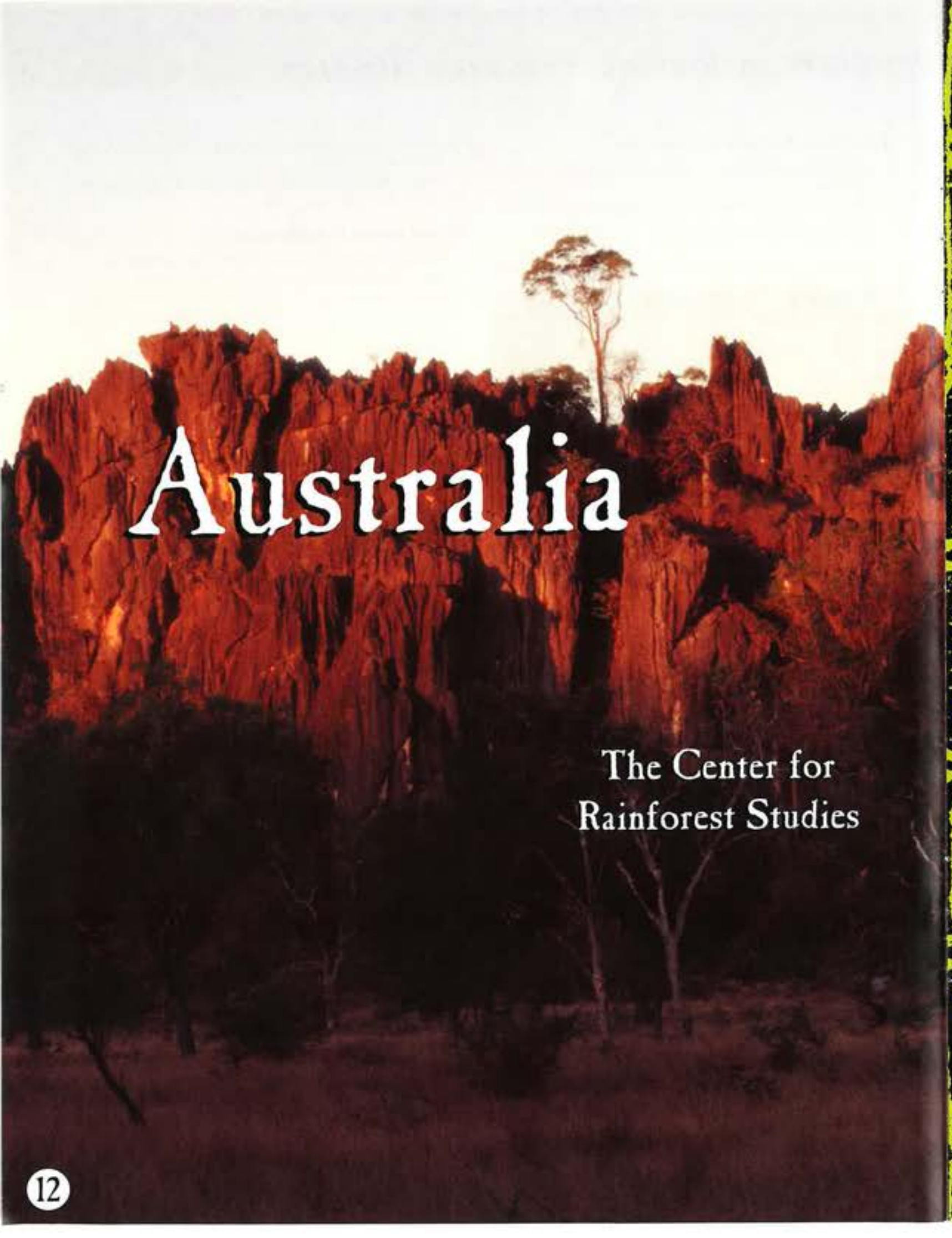
Spring 2003: February 8–May 8

Fall 2003: September 8–December 11

Summer: see page 35 for course descriptions

Semester students are registered in four academic courses accredited through Boston University:

BI/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 32 for course descriptions.



Australia

The Center for
Rainforest Studies

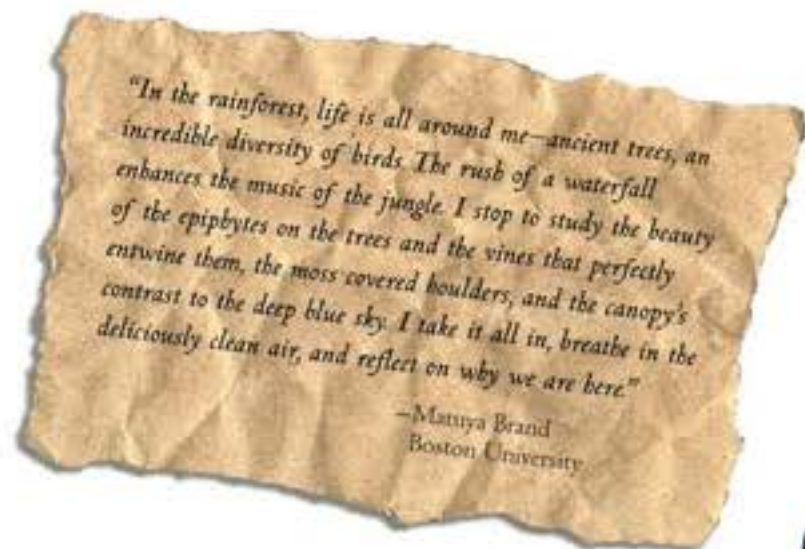


ive in a tropical rainforest amid an amazing variety of unique birds, plants and wildlife.

- Work with local tree-planting groups and research organizations to manage forest resources.



- Participate in research and community projects to restore tropical rainforests.
- Explore some of the most exciting natural wonders of Australia.



Environmental Issues



Australia's spectacular tropical rainforests are home to primitive plant species, birds and marsupials found nowhere else in the world. Giant strangler figs, crimson and green king parrots, sulfur crested cockatoos, rainbow lorikeets, bandicoots and tree kangaroos are just a few of the species filling these forests with color and sound.

Northeastern Queensland's ancient rainforests preserve millions of years of evolutionary history. Parts of Queensland were once covered in rainforests, but agriculture, ranching, mining and logging have destroyed and disrupted rainforest habitat, with only a narrow belt remaining along the eastern coast. Australia moved to confront these threats faster than most tropical countries, and most of its remaining forests were protected under World Heritage designation in 1988.

This decision continues to be quite controversial as the country struggles with conflict between preservation and the immediate need to use natural resources. Many farmers wish to utilize environmentally sound measures, yet face the possibility of going out of business in the next decade due to economic pressures. If efforts to restore the rainforests of Queensland are to succeed, they must also provide economic benefits for the local community.

SFS in Australia

While representing only a small percentage of the world's rainforest, the astonishing biodiversity of Australia's rainforest has unique significance in global conservation. Queensland presents an extraordinary laboratory to study this ecology and examine issues of rainforest management and restoration. A mosaic of protected lands, rainforests managed for sustainable use, reforested lands and cleared land used for agriculture are found here. Local governments, resource managers and conservation groups contend with revolving issues of land management, ecology and economics. Australia's rainforest restoration efforts are representative of where many of the world's tropical rainforests will be in 20 to 30 years. Conservation challenges and cutting edge management strategies developed here will likely serve as a model for the rest of the world.

The ecological and economic benefits of rainforests are increasingly well known, but much less is understood about the ability to restore rainforest once it has been cut. Our goal is to develop rainforest restoration strategies and practices that benefit both



ecosystems and human communities of the Atherton Tablelands. Our Five-Year Research Plan reflects a critical local and regional environmental problem—rainforest fragmentation and lack of connectivity between rainforest corridors. Conducted by SFS staff and students in collaboration with local landholders and stakeholder organizations, the project focuses on cost efficient and ecologically effective restoration site-management practices in a riparian zone.



Students collect data on land use, local resident involvement in restoration projects, and cost effective and ecologically beneficial methods of restoration. Student work contributes towards developing a restoration plan for selected sites within the Tablelands and developing maintenance practices to maximize rates of tree growth. In addition, students are actively involved in rainforest replanting with local landcare groups.

SFS Field Station in Australia



Our field station, the Center for Rainforest Management Studies, lies in the northern foothills of the Atherton Tablelands. Protected World Heritage forests and farmland surround the rolling, hilly site. A third of the property's 153 acres is mature rainforest, with the remaining area being forest regrowth. Student cabins are nestled within the rainforest, and sightings of tropical birds, bandicoots, pandemelon and other species of rainforest wildlife are common. Students share eight-person cabins. The main building has lecture, computer, and library rooms and a kitchen. Faculty live in cabins on site.

Field Trips, Lectures and Exercises

Our days are spent in a combination of lectures, field trips, field exercises and research. Potential examples include:

- Mission Beach: examine endangered Licuala palm forest, discuss casowary management and how rainforest issues impact coral reefs (trip typically includes a chance to snorkel off the Great Barrier Reef).
- Chillago: camp in the Outback and explore caves, rock formations and eucalypt forests. Learn firsthand about the history of the Barbaram people at Perford, examine land management issues with members of the Barbaram community.
- Cape Tribulation: visit local fruit farm and the Bat Center, where flying foxes are rehabilitated.
- Wet Tropics Tree Planting Scheme nursery.
- Geology of Atherton Tablelands.
- Tinnaroo Dam and agricultural industries, fragmentation of forest.
- Dairy, bananas and related agricultural industries.
- Seedling recruitment of restored tropical rainforest at experimental site.
- Growth and mortality of rare and endangered tropical rainforest species.
- Bird territory and GIS mapping within a restoration site along the lower Peterson Creek.



Recent Student Directed Research Projects

- Mapping soils and remnant vegetation along the lower Peterson Creek.
- Use of restored and natural rainforests by a rainforest bird community.
- Patterns of colonization of restored rainforest by small- and medium-sized vertebrates on the Atherton Tablelands.
- Survey of monitoring techniques used by local conservation groups.
- Development of a conservation and restoration plan for the lower Peterson Creek.
- Development of the Geographic Information System (GIS) mapping of the CRS property.

Community Involvement

Conservation, resource use and rainforest restoration are extremely important to the local community. We interact with farmers, resource managers, and members of community groups to help address these issues. We have established a professional Research Reference Committee to provide local academic and community access to SFS and its resources. We offer advice, based on our research, to local decision-makers on extension programs and networking between our staff and local stakeholders involved in rainforest restoration and management. SFS involvement in community volunteer and social activities may include:

- Working with local conservation groups and communities to plant rainforest seedlings.
- Sporting competitions with Aussies.
- Bush dances, community festivals, visiting the Malanda theatre and several local pubs.
- Short homestays that extend students' personal connections to the community.

Recent Center Contributions

SFS students come away with new perspectives, skills and friends, but perhaps more importantly, they have made an important contribution. SFS staff and students have addressed numerous environmental issues vital to the people of North Queensland including:

- Development of a management plan for the Tolga Scrub, (a rare and endangered rainforest fragment), including weed control, replanting canopy gaps and creating an education program.
- Ongoing monitoring of the floral and faunal succession of the Toohey's Creek Wildlife Corridor, representing one of the first scientific attempts in Australia to link forest fragments to facilitate the movement of wildlife.
- In the past 12 months planting of over 6,100 trees, most of which have been grown from seed in the shade house at our field station to restore degraded forests and improve water quality through plantings around watersheds.
- Development of nursery facilities to produce 8,000 seedlings annually.
- Restoration of one mile of rainforest from grassland along the lower Peterson Creek.



Semester Program Dates:

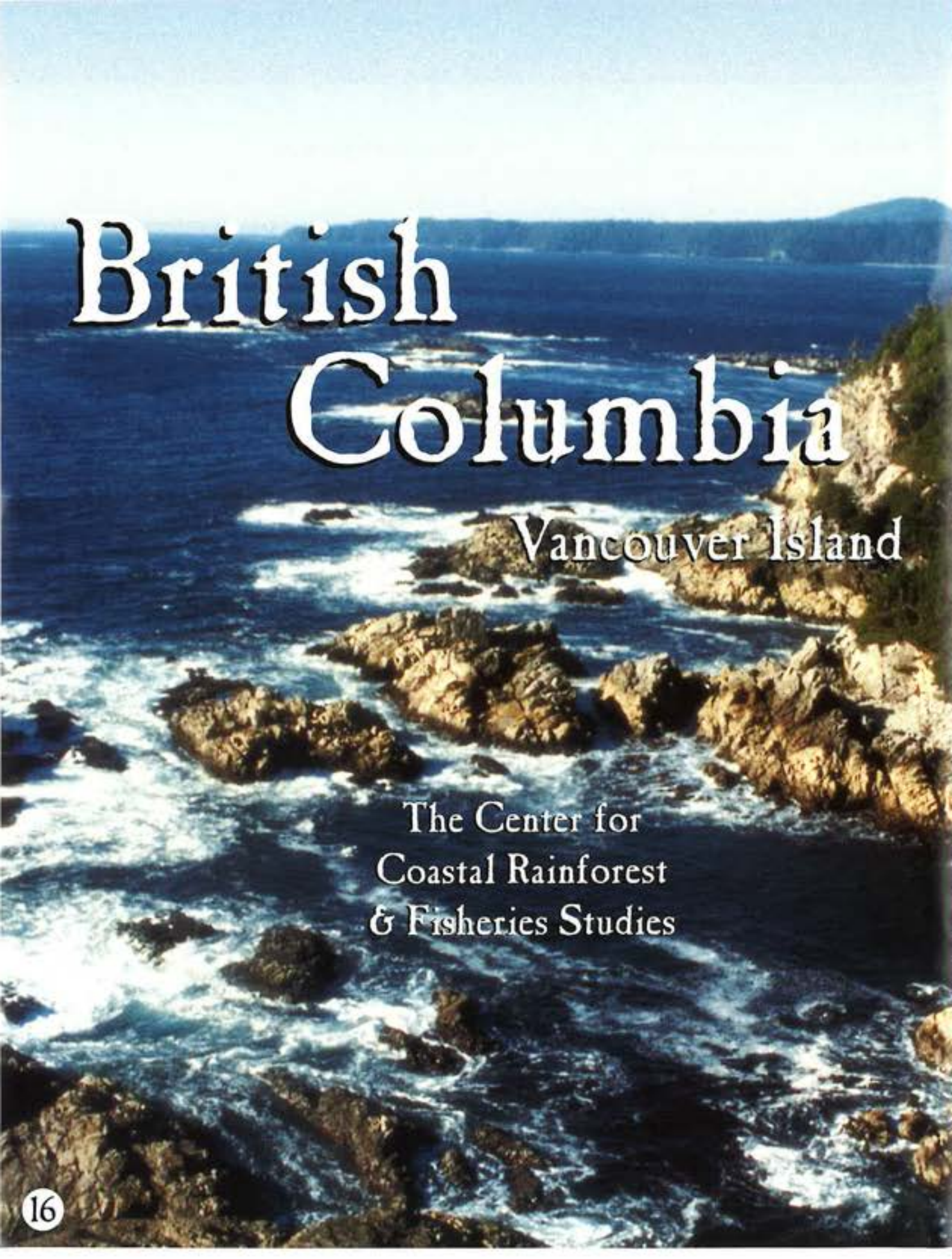
Spring 2003: February 8–May 8

Fall 2003: September 8–December 11

Summer: see page 36 for course descriptions

Semester students are registered in four academic courses accredited through Boston University:

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 32 for course descriptions.



British Columbia

Vancouver Island

The Center for
Coastal Rainforest
& Fisheries Studies



ive surrounded by a coastal temperate rainforest with a stunning ocean view.

- Experience a rugged outdoor setting in a unique environment steeped in First Nations history.
- Gain a holistic understanding of community stewardship of coastal rainforest resources.
- Work with land management initiatives and learn innovative field research and data gathering techniques.
- Work with local conservation and community groups to revive salmon populations through stream restoration.



"Every aspect of living in Bamfield and working with the community has taught me something I don't think I've ever felt such a connection with a place. We've learned about the ecology and how it affects the people here. We've come to understand the wind, rain and tides. We've all learned a little more about ourselves, our place in the world, and how we want to change it for the better."

*— Virginia Kelly
University of Notre Dame*



Environmental Issues



There is a growing urgency to protect and conserve the temperate rainforests in the Pacific Northwest. The future of this area is uncertain. These forests support some of the oldest and largest trees in the world and much of the world's remaining temperate rainforests are found along Vancouver Island's west coast. Forests of towering red-cedar, Sitka spruce and western hemlock are a haven for wildlife, including bald eagles, wolves and black bears. The coastal marine zone provides for abundant fish and seabird species, including five highly-threat-

ened species of salmon, as well as marine mammals such as orca, porpoises and sea lions. Our field station in British Columbia is one of the best places in the world to study global forest and coastal resource issues. The future of this area is also hotly debated—from logging camps and the homes of native peoples to the seats of local government. The Clayoquot and Barkley Sound regions, rich in natural resources, are being exploited for their extremely valuable tree species and for their fish populations, most notably salmon and shellfish. Timber and fisheries provide the economic base for many people of this region, thus creating a heavy dependence on logging and related industries. Conflict between resource conservation and utilization is of deep concern for the local community, which has only recently begun to gain control over local resources.



Controversial land-use decisions have polarized not only the communities of Clayoquot and Barkley Sounds, but people across Canada and around the world for more than a decade. There is a great need here for social, economic and ecological data, problem-solving strategies and training in community-based management techniques. The lessons learned here can help other communities face similar sustainability challenges.

Students explore whether or not current management initiatives promote sustainable use, conservation and restoration of temperate coastal rainforest resources. They examine the interrelationships between forestry practices and fisheries management, community-based economic diversification such as smaller-scale forestry and fisheries, and non-extractive uses of natural resources such as tourism and shellfish aquaculture. Novel techniques, such as stable isotope analysis, are used to determine the historical presence of salmon, and stream restoration structures are examined for their effectiveness. Fieldwork and research enable students to study these interrelationships first-hand and learn field skills such as Geographic Information Systems (GIS).

SFS Field Station in British Columbia

Our field station is located in the small town of Bamfield, a community of both native and non-native people along Vancouver Island's rugged west coast. Our research base, Aguilar House, is in a beautiful and remote location with pristine beaches and intertidal zones overlooking Barkley Sound. Our main house has a porch overlooking the Pacific; dining/study/lecture area; livingroom with fireplace; library; and computer rooms. Students are housed in four large rooms, each with a bathroom. Faculty and staff live in nearby houses.



SFS in British Columbia

The defense and conservation of coastal temperate rainforests is at the forefront of environmental commitment and controversy in the Pacific Northwest, as well as vigorous debate between the indigenous First Nations groups, logging industries and scientific teams. Our research station works with these



Field Trips, Lectures and Exercises

Examples include:

- Carmanah National Park: multi-day camping excursion to experience some of the oldest and largest trees in the world and one of the best-known examples of successful community activism.
- Sproat Lake: camping trip to experience first-hand how the logging and paper industry has affected the local ecosystem.
- Port Alberni: introduces the economic and ecological challenges faced by the logging and tourist industry.
- Tofino: field trip focusing on enhancement, mitigation and restoration options for fisheries and ecotourism.
- Sarita Watershed to learn morphology assessment techniques.



Recent Student Directed Research Projects

- Inventory of the Bamfield Community Forest.
- Sockeye salmon spawning habitat and stream morphology assessment.
- Monitoring stream restoration effectiveness in Sabrina Creek.
- Monitoring aquatic macroinvertebrates to determine water quality in Sabrina Creek.
- Testing the use of stable isotope analysis of marine derived nitrogen to examine historical presence of salmon.
- Examining biodiversity of Carnation Creek Estuary as baseline data for future development of shellfish aquaculture.



Community Involvement

Students truly value the numerous opportunities to integrate into the local Bamfield community. In addition to tutoring in schools, joining in local sporting events and participating in community recycling efforts, students have hosted a variety of events for local residents including guided forest hikes, coffeeshouses and picnics. Student research presentations, an open community event at the end of the semester, are frequently the highlight of their SFS experience.

Recent Center Contributions

SFS staff and students have addressed timely issues relevant to the Bamfield community including:

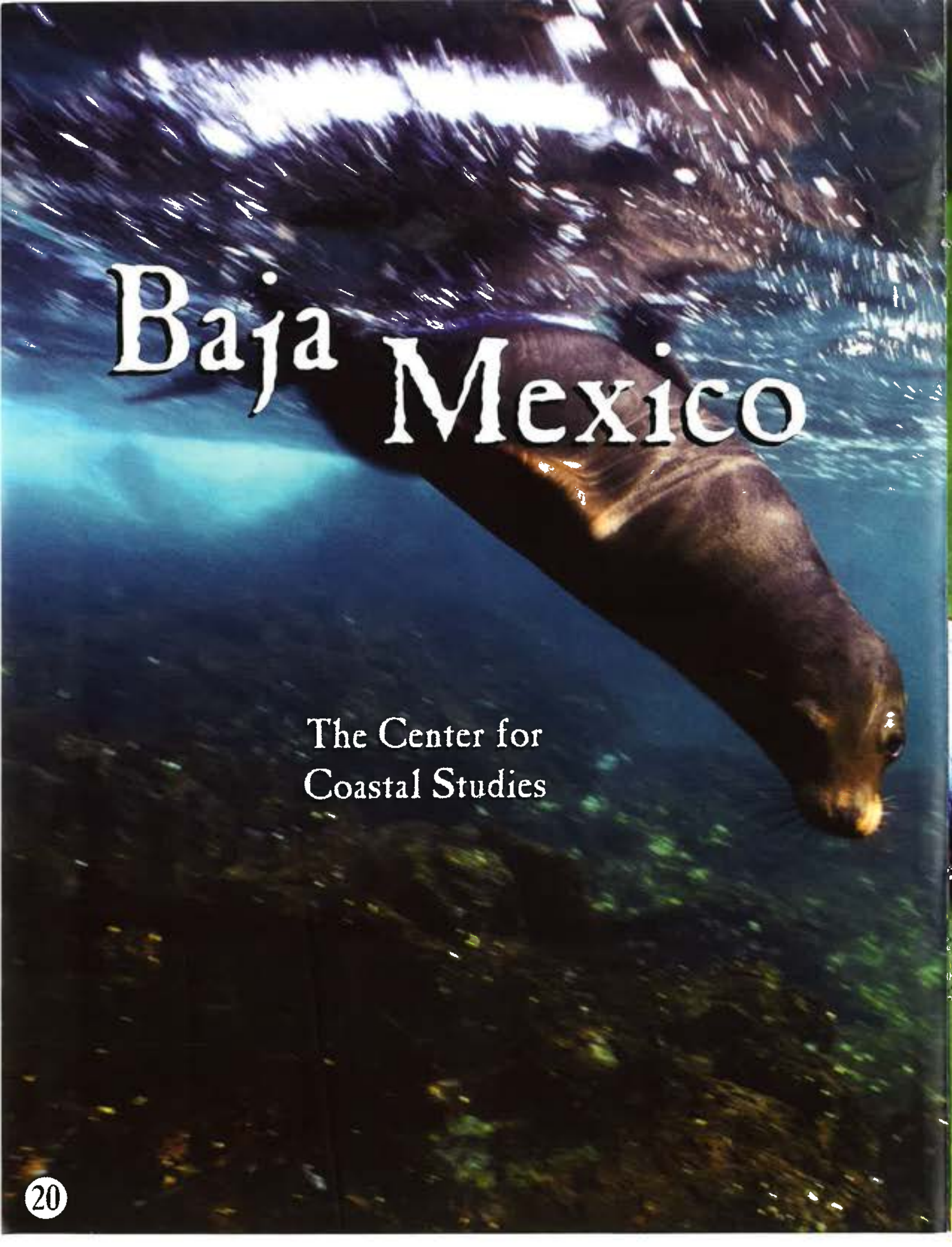
- Assisting the Bamfield Huu-ay-aht Community Forest in inventorying timber to determine an annual allowable cut, and developing future research in ecosystem mapping.
- Hosting a Community Forest forum at our field station to bring together researchers, technical experts and forest planners.
- Developing recommendations for a management plan for the proposed Huu-ay-aht National Historic Site.
- Creating guidelines for monitoring water quality in streams impacted by logging.
- Implementing stream restoration efforts to improve diminishing salmon habitat.



Semester Program Dates:
Spring 2003: February 8–May 8
Fall 2003: September 8–December 11
Summer: see page 37 for course descriptions

Semester students are registered in four academic courses accredited through Boston University:

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 32 for course descriptions.

A photograph of a seal swimming in the ocean. The seal is dark brown and is moving from the upper left towards the lower right. The water is a deep blue with some white foam and bubbles visible. The title 'Baja Mexico' is written in a large, white, serif font across the middle of the image.

Baja Mexico

The Center for
Coastal Studies



Explore incredible natural habitats ranging from flowering deserts to species-rich marine systems.

- Help the local community manage endangered sea turtles, marine mammals and harvested marine resources.
- Explore an incredible diversity of natural habitats, from flowering deserts to marine ecosystems.
- Live on the edge of cacti-strewn desert, mangrove filled lagoons, and the incredible biodiversity of Bahía Magdalena.



"After years of sitting in the classroom, I am finally getting the opportunity to exercise my knowledge and passion for the environment. A hard day's work here entails saving endangered sea turtles. Here we truly make a difference."

—Suki Kermes
Tulane University



Baja, Mexico Semester Program in Marine

Environmental Issues

Bahía Magdalena, an area of profound physical beauty, is among the largest remaining intact coastal wetland/lagoon systems along the Pacific coast of the Americas. Diverse habitats include extensive sea grass beds and mangrove stands, intertidal sand and mudflats, barrier islands and large rocky shore areas where rookeries of sea lions are common sights. The Bay is an important feeding ground and nursery area for East Pacific green turtles, Loggerheads, Olive Ridleys and rare Hawksbill turtles and is home to schools of bottlenose dolphins. Over 100 species of migratory and resident birds use the Bay at various times of the year. Perhaps the most spectacular of the Bay's inhabitants are the California Gray whales. Bahía Magdalena is one of the three most important calving areas for the entire California Gray whale population, and hundreds of these animals can be found here between January and April.



Bahía Magdalena has also played a critical role in supporting its human residents. A growing tourism industry, based on whale watching, provides income for many residents. Fishermen ply the waters for commercially important species, including shrimp, blue crab, lobster, scallop and fish. Unfortunately, critically endangered sea turtles get caught as by-catch in these fishing operations.

Most local residents are economically dependent on the Bay's marine resources, yet little research has been done on this ecosystem and the ways in which its resources may be sustainably utilized. Due to its high productivity and amazing biodiversity, the World Wildlife Fund has ranked the Bay as one of the nine most important coastal habitats needing protection in all of Mexico. There is consensus among researchers and U.S. and Mexican governments that protection of this unique ecosystem is urgent. The question remains—how can resource conservation and community economic development be balanced in a sustainable way, to the benefit of both?

SFS in Bahía Magdalena

In addition to our year-round interests in critically important fisheries management and water quality issues in Bahía Magdalena, our unique location allows us to focus on very different but equally fascinating species each semester. The spring semester focuses on applied ecology of marine mammals, specifically the gray whales. Since commercial whaling was banned in 1946, the gray whale population is thought to have recovered to around 20,000 whales. Only three calving and mating grounds for this species are known to exist and Bahía Magdalena is the only one not currently protected. The recovered population now drives a growing whale watching ecotourism industry, which creates all sorts of new problems and issues needing field research to understand and resolve them.

Students in the fall and summer semesters explore conservation strategies to protect several marine turtle populations reduced to near-extinction as a result of illegal exploitation and incidental capture. Marine turtles are exploited for their meat and eggs and are frequently harvested unintentionally as by-catch. In Bahía Magdalena, which is a key nursery and feeding ground especially for the green turtle, there is no comprehensive recovery or protection plan for sea turtles. SFS student research contributes to an understanding of sea turtle ecology and will be used in population recovery and protection plans proposed to various government agencies as well as the local community.

Our research also focuses on sustainable harvesting and management of important commercial marine resources. Resource dependent communities often find it necessary to increase their take of a resource in their quest for economic growth, as has been the case in Bahía Magdalena. SFS students are interviewing fishermen, exploring changes in fishing technology and collecting and analyzing catch data as part of our efforts to develop reliable advice for the regulators and harvesters on more sustainable management strategies for the fisheries of Bahía Magdalena. Our research also focuses on the effects of human and industrial water pollution in the Bay, which especially threatens the mollusk and crustacean fisheries.

SFS Field Station in Baja

Our field station, fronted by Bahía Magdalena and backed by the cacti-strewn desert, lies on the outskirts of the fishing community of Puerto San Carlos on the west coast of the Baja peninsula. Bahía Magdalena stretches for 124 miles along the coast and gets to be about 12 miles wide in places. Spectacular sunsets drape the mountains of the off-shore islands in orange and purple shadows. Students share 4-person, solar-powered cabins. Additional facilities include a computer room, library, classroom, laboratory, kitchen, dining and study areas and a bath/shower house serviced by our wetland waste water treatment system. Faculty live in small cabins on site.



Mammal Conservation & Coastal Ecosystem Studies

Field Trips, Lectures and Exercises

Examples include:

- Puerto Magdalena: visit traditional fishing families on a boat trip to this small fishing village island.
- Estero San Buto: experience examples of alternative fisheries at an aquaculture farm.
- Punta Santa Maria: intertidal zones illustrate the incredible diversity of local marine life.
- Offshore Islands camping trips: explore the area's rich biodiversity, stark dunes and sandy white beaches.



Recent Student Directed Research Projects

- Economic benefit and socio-economic analysis of whale-watching in Bahía Magdalena.
- Designing sea turtle protected area.
- Monitoring anthropogenic impact on the water quality of Bahía Magdalena.
- Gray whale abundance, distribution and behavior during breeding season in Bahía Magdalena.
- Regional environmental education model: marine mammals as a tool for getting teachers involved in curriculum development.

Community Involvement

This program is oriented toward helping the community conserve its natural resources and develop sustainably; therefore, students spend significant time working within the local community. In addition to working with local clients and interviewing community leaders, there are many opportunities to become involved in community social activities:

- Informal Spanish lessons throughout the program help sharpen conversational skills.

- Students join in local sports, community meetings, conservation activities and develop environmental education programs in schools.
- Participation in Mexican holiday celebrations.
- A short homestay to expand students' experience of a different culture.

Recent Center Contributions

Opened in early 1997, our field station was funded, in part, by one of the first-ever debt for environmental education swaps. As the only permanent field station on the Bay, ours has drawn many researchers from Mexico and abroad, involving SFS students in several important investigations such as:

- Gray whale population study, which led to a safe increase in whale watching permits for local boat operators.
- Management plan for regional sustainable development created by a student-initiated, community-based conservation plan.
- Joint SFS, government and local fishers' exploration of alternative shrimp net designs to reduce by-catch and destruction of the fragile bay bottom.
- Socio-economic analysis of blue crab fishery, providing valuable data to the Puerto San Carlos Office of Fisheries to assist in developing management strategies for this critical resource.
- Water quality analysis project, which resulted in the development of a monitoring program and alternative disposal recommendations.

Special note:

Due to our community focus and extensive interaction with the people of Puerto San Carlos, who appreciate attempts to converse in Spanish, applicants are strongly encouraged to develop their conversational Spanish skills.



Semester Program Dates:

Spring 2003: February 8–May 8

Fall 2003: September 8–December 11

Summer: see page 38 for course descriptions

Semester students are registered in four academic courses accredited through Boston University:

BI/EE (NS) 379 Coastal Ecology

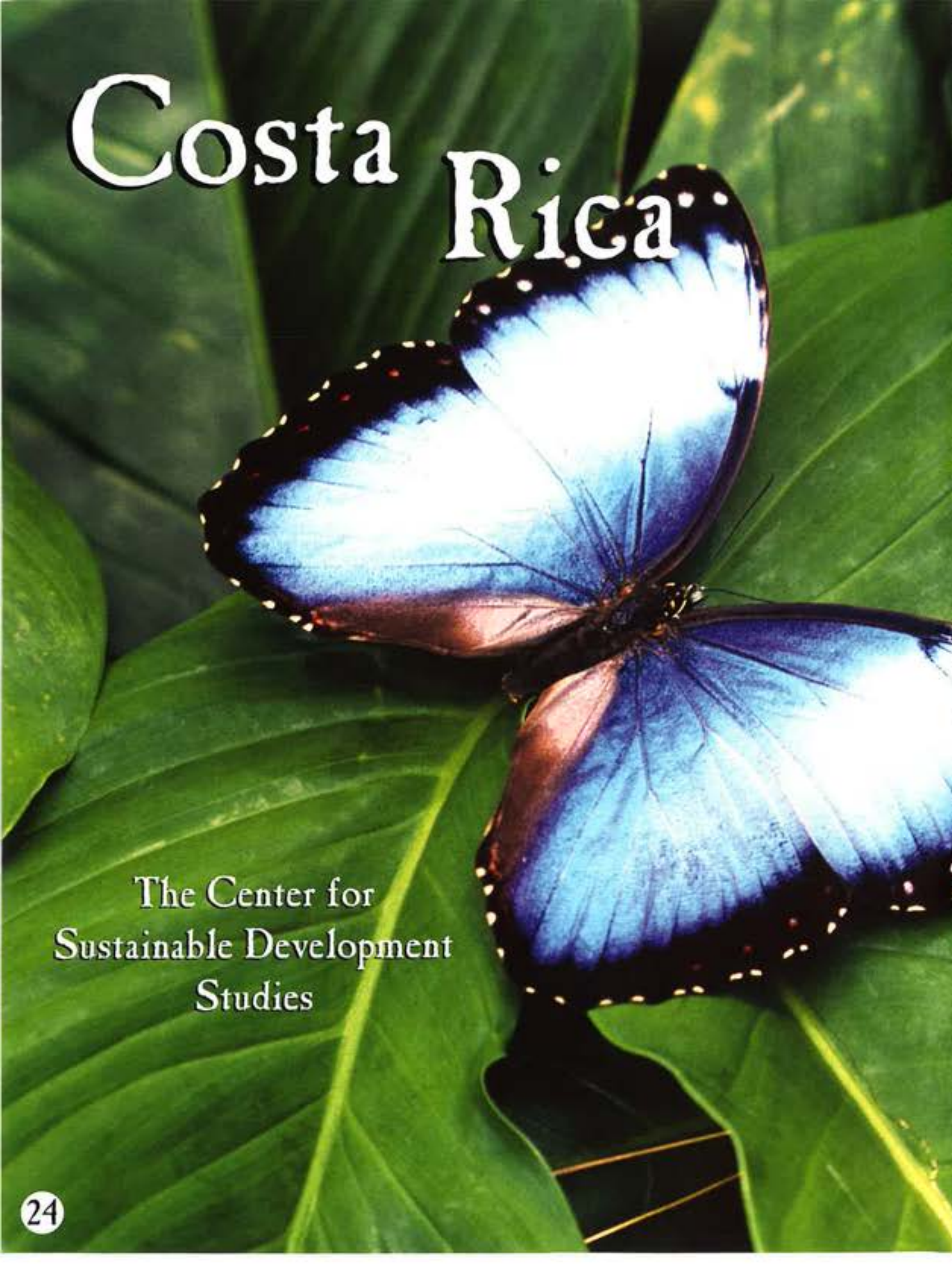
EE (NS) 374 Principles of Resource Management

EE (SS) 303 Economic and Ethical issues in Sustainable Development

EE 491 or 492 Directed Research

Please see Page 32 for course descriptions.

Costa Rica

A vibrant blue and black butterfly with white spots on its wings, resting on a large green leaf. The butterfly is positioned in the center-right of the frame, with its wings spread. The leaf is a deep green with prominent veins, and the background is a soft-focus green.

The Center for
Sustainable Development
Studies



Explore Costa Rica's incredible biodiversity and unique ecosystems.

- Investigate natural resource management challenges in world-renowned protected areas.
- Work with local cooperatives to identify innovative sustainable agriculture development options.
- Immerse yourself in the warm and welcoming community of Atenas.



"Each day brings many challenges—each experience is a chance to learn something new. Being involved in real field research and community projects is very satisfying. It leads to a deeper understanding of ecological, environmental, economical and social issues. I find the work not only more enjoyable, but I put more energy into the work that I am doing."

—David Berg
University of San Diego



Environmental Issues

Costa Rica is internationally recognized for its efforts to ensure biodiversity and protect natural resources. The country supports more than 5% of the world's biodiversity and boasts 230 different protected areas (about 28% of the country). The cloud forests, rainforests, volcanoes and mountain plains here shelter as many as 6,000 plant species, including at least 1,000 orchid varieties alone. The presence of over 500 species of butterflies has led to profitable "butterfly ranching" while more than 800 bird species—quetzals, toucans, hummingbirds, and scarlet macaws—are found in the wet and dry forests. The magnificent beaches bordering both coasts are among the world's largest-known nesting grounds for sea turtles.

Costa Rica now faces a struggle common to developing countries: how to preserve beautiful (and economically valuable) natural resources, while increasing prosperity and allowing for sustainable development. A particular challenge is maintaining biodiversity in the face of competing land use, such as agriculture. It is crucial that effective alternatives and strategies are developed to ensure long-term sustainability.



SFS in Costa Rica

Costa Rica is currently undergoing a period of great economic and social change. In ten years of field station operations here, the country has shifted from an economy predominately based on agriculture to an economy driven by eco-tourism and technology exports. This industrial and cultural transition creates a very exciting and rewarding time to be studying in Costa Rica.

Our goal is to develop sustainable management models that protect the biodiversity of Costa Rica's ecosystems. Our research focuses on determining the ecological and economic viability of organic agriculture and developing protected area management strategies that enhance biodiversity and protect natural resources.

Students quickly realize that agriculture is in a period of transition. While some residents pursue other occupations, agriculture, such as coffee farming, is still an important component of the Costa Rican economy. Groups of coffee farmers are organized into cooperatives, some of which have been working with SFS to explore the viability of organic farming as an alternative to traditional farming. Students work with the local coffee cooperative to investigate organic coffee production costs, marketing, pest management and species diversity. All of this information helps local farmers obtain national certification as organic farms, and measures the stability of organic farm ecosystems. Students also learn about and share organic farming practices with the local community, which they learn by working and studying the farm at our field station that is in the process of transitioning to organic.



Students also explore protected areas to develop and implement biodiversity monitoring programs and evaluate the success of different management strategies. Visits to cloud forests, dry forests, volcanic parks and lowland rainforests offer the opportunity to examine management schemes and identify the benefits local residents receive from protected areas, and determine which systems offer the best option for economic development, the maintenance of cultural norms, and the preservation of biodiversity. Our field station is collaborating with the Ministry of Energy and Environment to expand our studies of the Central Volcanic Mountain Range and Conservation Area. Students will help develop methodologies and information that will help park administrators make better decisions on managing natural resource in protected areas.

SFS Field Station in Costa Rica

Our field station is a small farm on a hillside with spectacular views overlooking the Rio Grande River in the fertile Central Valley. The property includes a large house surrounded by small faculty cabins, an outdoor classroom, an organic garden, orchards, a patio and pool. Students live in a brand new dormitory (up to 4 to a room) with bathrooms. There is a classroom, small laboratory and a library/computer room. We look out over green hillsides dotted with farms growing coffee, mangoes, bananas and citrus. The field station is part of the small neighborhood of La Presa/Los Angeles. The friendly town of Atenas is a short walk from the field station while Costa Rica's tropical forests, beaches, mountains and volcanoes are within a day's travel.



Field Trips, Lectures and Exercises

Examples include:

- Santa Rosa National Park: camping trip to explore a tropical dry forest ecosystem that is rarer and more threatened than better-publicized rainforests; site of one of the biggest forest restoration projects in Latin America.
- Volcan Poas National Park.
- Braulio Carrillo: national park encompassing a wide range of altitudes, ecosystems and a huge variety of plant and animal life.
- Carara National Park: Pacific coastal rainforests offer additional lessons in biodiversity; home to monkeys, sloths, scarlet macaws and crocodiles.
- Eternal Children's Rain Forest Private Reserve and Volcan Arenal National Park in addition to agricultural land surrounding the park.
- Local coffee plantations, farms, preserves, forests and the communities of Atenas.
- Rincon de La Vieja National Park: camping trip to the cloud forest and mud piles from volcanoes.

Recent Student Directed Research Projects

- Marketing organic products in Costa Rica.
- Use of organic versus chemical inputs in agriculture.
- Assessing the services of national parks in Costa Rica from the perspective of people who live in areas around the park (Volcan Poas National Park).
- Monitoring bird diversity in Braulio Carrillo National Park.
- Developing biophysical indicators of ecosystem health using aquatic invertebrates.
- Identifying medicinal plants and their uses in the local community.

Community Involvement

Students truly value the numerous opportunities to integrate into the local community and community land-use choices are among our chief concerns. Therefore, we spend significant time with local residents, farmers and agricultural cooperative members to better understand their perspectives and needs—this is key to our mission. In this area, our



academic focus and community connection allows students to become involved in local social activities such as:

- Informal Spanish lessons throughout the program to help sharpen conversational skills.
- Soccer games, community festivals, tutoring in schools, volunteering in orphanages, establishing recycling efforts.
- Costa Rican holiday celebrations; hosting local residents at our field station events.
- A short homestay to expand students' connections to the community.

Recent Center Contributions

Student research presentations, an open community event at the end of the semester, are frequently the highlight of their SFS experience.

Examples of the work done by our staff and students include:

- Developing and testing organic farming protocols with local coffee farmers, supported by a grant from Hewlett Packard.
- Environmental waste management and recycling education programs.
- Profile of customer awareness and attitudes towards organic products for use by NGOs and local farmers.
- Providing guidelines and protocol for organic certification to 16 farmers in the area.
- Developing water quality indicators for the National Park System.
- Assessing the problems of Braulio Carrillo Las Palmas trail.
- Documenting the effects of habitat fragmentation created by the highway that dissects Braulio Carrillo National Park.

Prerequisites

Applicants must have completed a college level course in ecology or environmental studies, and are encouraged to have taken coursework in international development, economics or anthropology. Students must have

completed at least one college level course in Spanish or otherwise demonstrate a working knowledge of conversational Spanish prior to participating.

Special note:

A portion of semester program spaces are reserved for applicants from University of Michigan and Allegheny, Colby, and Dickinson Colleges. These applicants should consult their Environmental Studies Department for application information.

Semester Program Dates:

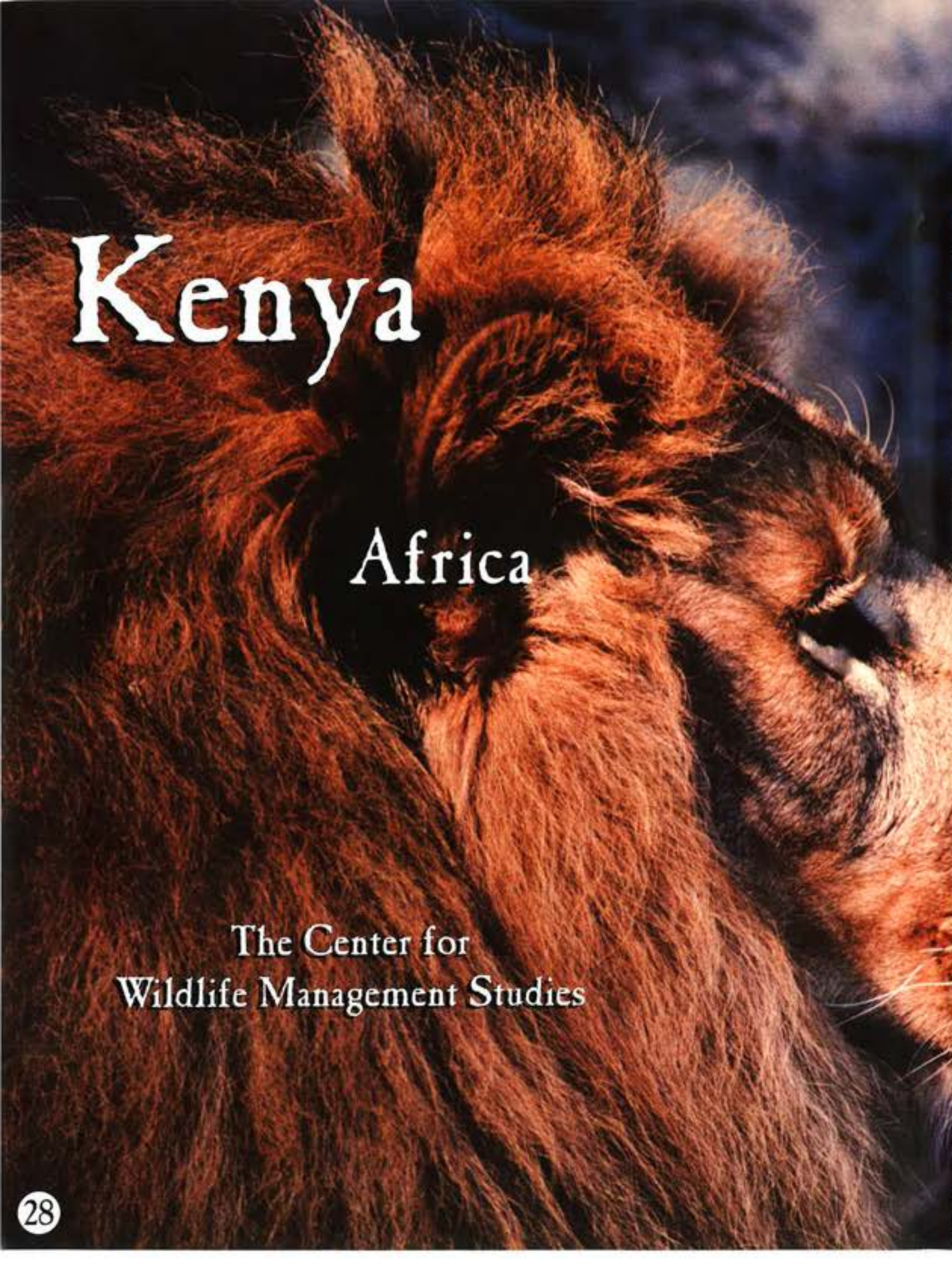
Spring 2003: February 8–May 8

Fall 2003: September 8–December 11

Summer: see page 39 for course descriptions

Semester students are registered in four academic courses accredited through Boston University:

- EE(NS) 377 Tropical Ecology and Sustainable Development (4 credits)
 - EE(SS) 303 Economic and Ethical Issues and Sustainable Development (4 credits)
 - EE(NS) 374 Principles of Resource Management (4 credits)
 - EE 491 or 492 Directed Research (4 credits)
- Please see Page 32 for course descriptions.



Kenya

Africa

The Center for
Wildlife Management Studies



ive in close proximity to wildlife and local Maasai communities on an African savanna.

- Learn field research skills at the base of Mt. Kilimanjaro and in famous national parks.



- Explore human-wildlife conflicts from the perspective of local ranchers, communities and park managers.
- Visit areas of Kenya and meet residents inaccessible to most tourists.

"One of my life's dreams was to study in Africa. ... SFS hosted an outstanding program. While the program allowed students to study and observe the animals we have grown to love, it also immersed us in Kenyan culture. The facilities, especially the location, finalized the experience of living a dream. Personally, my experience can be described by one word—amazing"

— Michael Simmons
Penn State University



Environmental Issues



Urban, industrial and agricultural expansion and the country's soaring population increasingly threaten the habitat required by Kenya's wildlife. Lion, elephant, giraffe, rhino, monkey, zebra and other indigenous wildlife are the country's most famous and economically valuable resource through a well-developed global tourism industry. Previously nomadic peoples, such as the Maasai, and the cattle herds they depend upon, have been confined to smaller plots of land, resulting in overgrazing and rangeland degradation. The wildlife, which has co-existed for centuries with these non-hunting peoples, are now seen as competitors for scarce water and grazing resources.

Parks and reserves that offer protection to wildlife are becoming more and more isolated. Buffer zones surrounding the protected areas are being converted to food production. 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 is urgent.

SFS in Kenya

Our current research focuses on exploring innovative ways in which Kenya's wildlife can be both conserved and utilized as an income source. Identifying appropriate land-use practices that enable local residents to maximize and sustain production without degradation of the environment is equally important.



While based at the National Park Camp, students focus on management strategies for Kenya's oldest and most profitable national park. Increased development around Nairobi National Park threatens its bio-

logical integrity and has led to the decline of large mammal populations. Pollution threatens the water supply and plays a role in the mortality of numerous birds and animals. Increased human and livestock populations in areas surrounding the Park are leading to intensified human-wildlife conflicts, including disease and destruction of crops by migrating wildlife. SFS students are assisting the Kenya Wildlife Service (KWS) and managers of the Park through a suite of research projects, including vegetation mapping; grazing and browsing impact surveys; large mammal population counts and distributions; educational facility upgrades; and human impact in the Park.

The diverse habitat surrounding the Kilimanjaro Bush Camp is used by wildlife as a migration corridor between Tsavo and Amboseli National Parks. The Maasai also use this area primarily as a communal grazing zone for livestock. As a result, they often face economic hardship due to crop damage and loss of livestock inflicted by migrating wildlife. Students will engage in ecological and land-use characterization of the area. Through interviews with the Maasai residents, students gain a perspective on the priorities and challenges of addressing wildlife conservation among resource-constrained communities. This research is a critical first step in developing integrated land-use strategies that will enable residents to derive optimal benefits from their land and forestall additional fragmentation of key wildlife areas.

SFS Field Stations in Kenya



The Center for Wildlife Management Studies offers students the incredible opportunity to learn and conduct research from two prime locations. Our National Park Camp is located on 60 acres of the Athi-Kapiti plains, on the southern border of Nairobi National Park. The combination of rocky outcrops, bushland and open grassland support an amazing biodiversity. From the plateau and ridge above the Camp one can look down into the Park and spot giraffe, buffalo, rhino, zebra, cheetah, lion and even leopard. The Ngong Hills and the Mbagathi River, where wildlife commonly crosses between the Park and the dispersal area, are also within view.

Our Kilimanjaro Bush Camp is located approximately 215 km southeast of Nairobi on 25 acres of fenced land at the foothills of Mt. Kilimanjaro, bordering a permanent river fed by natural springs. Adjacent to the river is a lush zone of yellow Acacia trees with clear undergrowth giving a perfect view of the magnificent vegetation mosaic. Across the river is Kimana High School, where SFS students enjoy a rare opportunity for cultural exchange with Kenyan youth and to visit nearby Maasai *bomas* (villages).

At both camps, students sleep in thatched-roof *bandas*, with a main building, or *chumba*, which houses a dining room, kitchen, classroom and library. Additional facilities include a *duka* (shop), bathrooms and open-air showers.



Field Trips, Exercises and Lectures

At both camps our days are spent in a combination of lectures, expeditions, field exercises and research. Field trips enable students to observe for ourselves the pros and cons of various management scheme alternatives. Field Trips might include:

- **Maasai Mara:** multi-day field trip-frequently includes sightings of lion, leopard and buffalo and a visit to the hippo pools. Hyena cries can be heard at night; by day, students conduct vegetation analyses comparing fenced and open grazing areas.
- **Manyatta:** rare opportunity to glimpse Maasai culture including rural settlements not usually visited by tourists. Recent trips have involved students in a musical ceremony by Maasai women, demonstrations in fire-making, dances by Maasai *morans* (warriors) and lessons in spear throwing.
- **Amboseli and Tsavo National Parks:** multi-day excursions illustrating the management implications of high concentrations of animals in a confined area. The impact of the elephants, whose trumpeting punctuates the night, are clearly visible by daylight.

Recent Student Directed Research Projects

- Population Dynamics, Distribution and Vegetation Preference of Specified Fauna Residing in Nairobi National Park.
- Rangeland and Grazing Capacity Assessment of the Grasslands of Nairobi National Park.
- Land-Use Patterns and Human-Wildlife Relations in the Southern Dispersal Corridor of Nairobi National Park.
- An Assessment of Land Productivity, Water-Use Efficiency, and Related Economic Implications within the Inkisanjani Agro-Pastoral Zone.

Community Involvement

Students truly value the numerous opportunities to interact with the local community. One of our primary goals is to understand community views

on wildlife, the challenges faced, and management policies employed by park managers. Therefore, involvement with Kenyans is key to our research. We maintain close ties to local community members, including park wardens, ranchers, farmers, pastoralists and others. In addition, students can take advantage of many opportunities for social interaction including:

- Discussions with field station staff who come from various regions of Kenya and belong to several Kenyan tribal groups including Kamba, Maasai and Luo.
- Informal lessons in Swahili and Maa.
- Manyatta visits with the Maasai in areas off the regular tourist routes.
- Community service work in local schools.

Recent Center Contributions

SFS has been in Kenya since 1981 and many hours of student research has contributed to management plans for game ranches, several Maasai group ranches, and national protected areas such as Nairobi National Park. Student Directed Research presentations and community projects are frequently the highlight of their SFS experience. A few recent contributions include:

- Assessment of the socio-economic impacts of the Kimana Wildlife Sanctuary, the first private reserve operated on a Maasai group ranch. Ranch managers are using these data to develop sustainable management policies.
- Collaboration with local Maasai and the KWS to conduct the first assessment of water and grazing resources in the Ngong Hills. Decisions regarding stock rotation and use of pasturelands were based on their findings.
- Assistance in building a library in the town of Magadi and teaching the local schoolchildren about the environment.
- Memorandum of Understanding between SFS and KWS concerning our research in Nairobi National Park.



Semester Program Dates:
 Spring 2003: January 31–May 8
 Fall 2003: September 5–December 11
 Summer: see page 40 for course descriptions

Semester students are registered in four academic courses accredited through Boston University:

- BI/EE (NS) 371 Techniques of Wildlife Management (4 credits)
 - BI/EE (NS) 372 Wildlife Ecology (4 credits)
 - EE (SS) 302 Environmental Policy and Socioeconomic Values (4 credits)
 - EE 491 or 492 Directed Research (4 credits)
- Please see Page 32 for course descriptions.

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 study habitat assessment, plant and animal identification, associations and distributions and other approaches to evaluating the savanna ecosystems. Behavioral, physiological and social responses of animals to a changing environment will be examined. Field and laboratory techniques 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 Africa savanna ecosystem. We will focus on the fundamental processes and inter-relationships between the biotic and abiotic environment. We begin with basic ecological principles, setting them against the background of East Africa. 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 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 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 structure and function of tropical rainforests including 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 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 principles learned.

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 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 & 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. 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 resources 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 interface between land and sea in order to understand how human perturbations impact both marine and terrestrial systems. The watershed concept will be used to explore nutrient flow, energy cycling, coastal circulation, productivity and biotic interactions. This course provides a basic understanding of how natural systems work in order to help guide resource managers toward ecologically sound and sustainable decisions. Fieldwork exposes students to techniques of surveying, monitoring and the study of biotic interactions in a complex physical/chemical milieu.

EE (SS) 302 Environmental Policy & Socioeconomic Values provides insight into the broad social context surrounding natural resources to determine effective approaches to resource management. Objectives are to understand 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; past and present uses of natural resources; economic factors (local, regional, external); ownership patterns; attitudes and other factors that affect change and their historical basis; and legal basis for enforcement of environmental policy. Introduction of major constituencies which effect conservation (NGO conservation groups, economic interests, etc.) and their underlying philosophies.

EE (SS) 303 Economic and Ethical Issues in Sustainable Development addresses 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, government, and private, national, and bilateral aid agencies will be examined as constraints for the implementation of sustainable development models. 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)

Summer Programs

SFS Offers **30-Day**
Summer Programs

Australia
Baja Mexico
Costa Rica
British Columbia
Turks & Caicos Islands
Kenya

- ✿ Gain hands-on field experience
- ✿ Experience new cultures
- ✿ Help work on critical environmental issues
- ✿ Learn field research skills that will last you a lifetime

Summer Programs

"Our dive at East Bay Spur was our deepest dive yet. We swam around lots of beautiful coral formations, with the spur being a large projection of coral from the coral wall. It is quite an experience to swim 70 feet underwater and observe all these amazingly colorful and stunning corals and fish."

– Sarah Plotezyk
Caribbean '02
University of Vermont

SFS offers 30-day summer programs combining lectures with field exercises, research and expeditions. Like SFS semester programs, summer courses are high-quality interdisciplinary academic programs offered for college credit. Our classrooms include coral reefs, rainforests, and African savannas; our research ranges from sea turtle conservation to rainforest restoration.

Students in summer programs join our faculty in conducting research to assist local communities with the wise management of natural resources. At the end of the program, students present the results from their research to members of the local community. The work conducted by SFS students has the potential of making a positive difference in the lives of individuals around the globe. In return, students can explore potential academic and career choices while developing decision-making skills.

Each course carries four semester college-level credits in Environmental Studies. In some cases, the summer course may fulfill a university's field study requirement. There are no course pre-requisites for summer courses, and programs are open to students from academic backgrounds ranging from environmental studies and biology to arts and languages. The majority of summer participants are college undergraduates, but motivated high-school seniors and recent college graduates may also participate.



Turks & Caicos Islands Summer Program

Marine Parks Management Studies



he reefs of South Caicos harbor an incredible array of marine life.

These marine resources have proven critically important for the people of this island. The reefs provide excellent habitat for spiny lobster and queen conch, whose harvest provides the mainstay of the South Caicos economy.

Increasingly, these reefs also attract

tourists who come to view coral,

spotted rays, barracuda, sea turtles,

grouper and sharks through water

renowned for its outstanding clarity. The importance of these reefs has not

guaranteed their survival, however, and the reefs face pollution, dredging,

dumping and damage from boats and divers. In 1992 the local government

Summer Program Dates:

Session I: June 9 - July 8

Session II: July 14 - August 12

Departure Point:

South Caicos Island, TCI, BWI

Course Number:

EE(NS) 373

Project Focus:

Assessing the Role of Marine Parks for South Caicos Island

Research will focus on the role of marine parks in enhancing the resource development potential of South Caicos. Issues of marine ecology, ecotourism, fish stock assessment and coastal zone management will all play a role in

our efforts. We will work closely with members of the local community, ranging from local fishermen to members of key government agencies. Our goal is to collect data from the field, which may lead to policy recommendations, marine parks management plans and community projects.



Field Work and Expeditions

The spectacular reefs and waters of South Caicos will serve as the laboratory for most of our field work. Students will snorkel or SCUBA, and gain valuable experience in the use of transects, techniques for population sampling and statistical analysis. Potential research sites and trips include: East Harbour Lobster and Conch Reserve (EHLCR); Bell Sound Nature Reserve; Fish Cay; Tucker's Point Reef Shark Alley; Long Cay; Dove Cay; The Point Admirals Aquarium and Mangrove Island.

Community Involvement

Our Center is located within the community of South Caicos, and students will have ample opportunity for cultural interaction. Fishermen and other residents may be interviewed during academic projects, and students may participate in sporting events and community service activities.

established a park system, which included marine parks intended to preserve important natural areas, conserve

economically important species and promote ecotourism. The management of these parks presents several challenges. The need for preservation and economic growth go hand-in-hand on South Caicos, and data are needed to determine the role of marine parks in stimulating the local economy.



Tropical Reforestation Studies



Australia's spectacular tropical rainforests are home to primitive plant species, birds and marsupials found nowhere else in the world. Giant strangler figs standing 70 feet tall, crimson and green king parrots, sulfur crested cockatoos, rainbow lorikeets, bandicoots and tree kangaroos are just a few of the species filling these forests with color and

Summer Program Dates:
Session I: June 9 - July 8
Session II: July 14 - August 12
Departure Points:
Cairns, North Queensland
Australia
Course Number:
EE(NS) 355



sound. The rainforests of northeastern Queensland preserve millions of years of evolutionary history. Parts of Queensland were once covered in rainforests, but agriculture, ranching, mining and logging have destroyed and disrupted rainforest habitat, with only a narrow belt



remaining along the eastern coast. Australia moved to confront these threats faster than most tropical countries, and protected most of its remaining forests under World Heritage designation in 1988.

Project Focus

Reforestation of the Atherton Tableland

Although the rainforests of the Atherton Tableland are protected as World Heritage sites, the pressures on them continue. The local community struggles with differing views about how these forests should be used and managed. Several local groups have focused on the concept of rainforest reforestation. The basic premises of reforestation, and the benefits they promise for endangered wildlife species such as the cassowary and tree-kangaroo, seem self-evident. Yet the realities of rainforest restoration are much more complex. Rainforest ecosystems are incredibly diverse, characterized by a slow rate of regeneration. It is not clear if degraded forest can ever be returned to its original state. In addition, given the differing views of the local community, any strategies for reforestation must be shown to have economic benefits if they are to be viable in the long term.

Lectures addressing relevant topics in conservation biology, forest ecology and tropical resource management provide the basis for our fieldwork. Students will monitor several past reforestation efforts and assess specific reforestation and site management strategies. These data will be used to develop a reforestation plan for a new plot in the Atherton Tableland.

Field Work and Expeditions

- Chillago: camp in the Outback and explore caves, rock formations and eucalypt forests in a region once covered in rainforest. At Petford we learn first hand about the history of the Aborigines, and examine land management issues with members of this community.
- Trip to past reforestation plots around the tablelands to assess the success of various tree species and planting techniques.
- Numerous field exercises in surrounding World Heritage rainforest, an area containing spectacular waterfalls, trees and wildlife.

Community Involvement

Conservation, resource use and rainforest restoration are extremely important to the local community. Students will have the opportunity to interact with farmers, resource managers, and members of community groups to help address these issues. Less formal activities for social interaction may include participation in sporting events and visiting local historic pubs.

Conserving Marine Resources & Coastal Rainforests



The forests in the Pacific Northwest support some of the oldest and largest trees in the world and much of the world's remaining temperate rainforests are found along Vancouver Island's west coast. Forests of towering red cedar, Sitka spruce and western hemlock are a haven for wildlife, including bald eagles, wolves and black bears.

The coastal marine zone provides for abundant fish and seabird species, including five highly threatened species of salmon, as well as marine mammals such as orca, porpoises and sea lion. There is a growing urgency to protect and conserve the temperate rainforests in the Pacific Northwest. Our field station in BC is one of the best places in the world to study global forest and coastal resource issues.

Summer Program Dates:
Session I: June 9 – July 8
Session II: July 14– August 12
Departure Points:
Vancouver Island, British Columbia
Course Number:
EE(NS) 353

Project Focus

Conserving Coastal Rainforests and Marine Resources

The ecosystems and communities of Vancouver Island are unlike any on earth. They present an exotic blend of environments, cultures, economics and politics. Visits to the old-growth rainforests are nothing short of awe-inspiring. At night, stars and the Aurora Borealis illuminate the night sky. The human community is diverse, with native First Nations people coexisting with non-native people who have been on Vancouver Island for generations. The local economy is strongly dependent on three industries—logging, fishing and tourism. With these complex factors, it is easy to understand why past conservation strategies have been hotly debated. Successful conservation strategies must contribute to the economic needs of the people, while also contributing to the long-term conservation of the incredible ecology and cultural heritage found here.

Our laboratory includes First Nation lands and other protected areas, including one of ten areas designated as community forest. By utilizing a watershed and ecosystem management approach, we will examine the interconnectedness of forestry and fisheries and discuss relevant management practices. We will examine areas from the top of the watershed to the ocean, with specific focus on the river continuum, forestry, stream restoration and estuary/intertidal ecology. The issues and solutions examined are critically important, and are frequent topics of current local and national news. Our goal is to design forest management strategies that do not negatively impact critical salmon fisheries.



Field Work and Expeditions

Potential Field Trips

- Carmanah National Park: multi-day camping excursion to experience some of the oldest and largest trees in the world and a classic example of successful community activism.
- Visit to the House of Huu-ay-aht to gain insight into First Nation history and culture.
- Trip to forest stands managed by industrial logging organizations and ecoforestry organizations.
- Numerous hikes to surrounding beaches and temperate rainforest.

Community Involvement

This area of Vancouver Island can present students with a cultural experience unlike anything in the United States with numerous opportunities to meet and work with local people. Students truly value the chance to integrate into the local Bamfield community. We help organize and participate in various community service projects, and students frequently host open houses. Less formal activities may include socializing at the local pub.



Conserving Coastal Diversity

Bahía Magdalena is an area of profound physical beauty. It is among the largest remaining intact coastal wetland/lagoon systems along the Pacific coast of the Americas. Habitat diversity in the Bay is high, including extensive sea grass beds, mangrove stands, and intertidal sand and mudflats. On the Pacific Ocean side of the

Summer Program Dates:
Session I: June 9 – July 8
Session II: July 14– August 12
Departure Points:
La Paz, Baja California Sur, Mexico
Course Number:
EE(NS) 356

Bay, there are rocky shores along the coastlines of the barrier islands of Magdalena and Margarita where large populations of sea lions are common sights. The many habitats of the Bay and the high productivity of the water

produce a high diversity of marine life. The Bay is also an important feeding ground and nursery area for several species of endangered sea turtles, and over 100 species of migratory and resident birds use the Bay at various times of the year.

Project Focus

Conservation of Marine Turtles in Bahía Magdalena

Bahía Magdalena has played an important role as a refuge (nursery and feeding ground) for several sea turtle populations, including Loggerheads, Olive Ridleys and the rare Hawksbill turtles. The endangered East Pacific Green turtle uses the Bay as a nursery area and feeding habitat. These turtles have a high degree of both natural and human-induced mortality. Despite strong regulations against their exploitation, Green turtles are still frequently poached and caught as by-catch in the harvesting of other marine resources. A complex interaction of community social and cultural factors, lack of protected area sanctuaries, lack of enforcement of existing regulations and economic hardship in local communities has led to the continued exploitation and the rapid decline of sea turtle populations throughout Mexico.

We will examine the ecological, societal and economic issues surrounding sea turtles in Bahía Magdalena. We will be exposed to a variety of environmental issues such as fishing cooperatives, who are over-harvesting the fisheries; a local cannery that is polluting the rich mudflats and seagrass beds; ranchers who are cutting too many mangroves for fence-posts; and poachers who continue to illegally take protected sea turtles. Using data collected during field work, our goal is to design protection and management strategies for the sea turtles in Bahía Magdalena.

Field Trips, Exercises and Lectures

- Camping trip to the off-shore Pacific island of Isla Magdalena to experience the incredible ecology of the Bay.
- Sea turtle population assessment by collecting biological data on live and stranded turtles in the Bay.
- Evaluating the social and economic importance of sea turtles by surveying local fishers and townspeople.

Community Involvement

Students will enjoy a warm welcome into the local community, with many opportunities to practice Spanish and learn about Mexican culture. Students will interview residents during academic research and may participate in community service projects, sporting events and spend time socializing at local taquerias and clubs.



Sustaining Tropical Ecosystems



Costa Rica's landscape is as varied as it is beautiful. Its cloud forests and rainforests are home to monkeys, sloths, jaguars and exotic birds. Dry forests, mountain plains and fields of coffee, bananas and pineapples help complete this stunning mosaic. Costa Rica has a long history of preservation and has developed an extensive national park system. However, with large-scale agriculture still playing a vital role in

Costa Rica's economy, it is clear that parks may not be enough to sustain this incredible biodiversity. Costa Rica struggles to balance environmental protection with the economic needs of its people. It is crucial that effective alternatives and strategies are developed to ensure long-term sustainability.

Summer Program Dates:
Session I: June 9 - July 8
Session II: July 14 - August 12
Departure Points:
San Jose, Costa Rica
Course Number:
EE(NS) 352

Project Focus

Developing Strategies for Sustaining Tropical Ecosystems

In our search for viable management strategies, we will examine issues of applied tropical ecology, ecotourism, protected area management and sustainable agriculture. We will work very closely with members of the local community, hearing from experts on federal protection schemes, the operation of privately owned reserves and alternative methods of agriculture. Using data collected during field work, we will attempt to design several strategies which provide for the long-term protection of Costa Rica's biodiversity, and the economic needs of the local community.

Field Trips, Exercises and Lectures

- Studying the incredible tropical ecology and assessing ecotourism efforts of several national parks, including expeditions to Braulio Carrillo, the most extensive rainforest national park in the country.
- Evaluating and comparing the efforts of private reserves like the Monteverde Cloud Forest Preserve and the Eternal Children Rainforest, home to jaguars, ocelots and quetzals.
- Visits to Volcan Poas, the second largest volcano crater in the world to study parks and people relations.
- Assessing the efforts of coffee cooperatives and organic agriculture ventures in the surrounding area.

Community Involvement

Students will enjoy a warm welcome into the community of Atenas, with opportunities to practice Spanish and learn about Costa Rican culture. Students will interview residents during academic projects and may participate in sporting events and spend time socializing at local cafes.



"Our interactions with local families provided a complete cultural experience...no classroom experience can provide that type of learning"

— Matthew Provost
Ithaca College

Community Wildlife Management



Urban, industrial and agricultural expansion and the country's soaring population increasingly threaten the habitat required by Kenya's wildlife. Lion, elephant, giraffe, rhino, monkey, zebra and other indigenous wildlife are the country's most famous and economically valuable resource through a well-developed global tourism industry. Previously nomadic peoples, such as the Maasai, and the cattle herds they depend upon, have been

Summer Program Dates:
Session I: June 9 – July 8
Session II: July 14– August 12
Departure Points:
Nairobi, Kenya
Course Number:
EE(NS) 350



confined to smaller plots of land, resulting in overgrazing and rangeland degradation. The wildlife, which has co-existed for centuries with these non-hunting peoples, are now seen as competitors for scarce water and grazing resources.



The culture and the people of Kenya have left an everlasting impression on me. Having to stop the Land Cruiser because a giraffe is crossing the road is not something that normally happens at home (nor is having an elephant charge your car!).

—Aimee Fourie
Santa Clara University

Project Focus

Community Wildlife Management Options

Students have the opportunity to examine wildlife management at one of our two new field stations—the National Park Camp just outside Nairobi National Park, or the Kilimanjaro Bush Camp near Mt. Kilimanjaro. Students based at the National Park Camp focus on management strategies for Nairobi National Park, Kenya's oldest and most profitable national park. Increased development and human settlement around the Park threatens its biological integrity and has led to the decline of large mammal populations. Pollution threatens the water supply and contributes to mortality in numerous bird and animal species. Increased human and livestock populations around the Park are leading to intensified human-wildlife conflicts, including disease and destruction of crops by migrating wildlife.

Students at the Kilimanjaro Bush Camp will study the diverse habitat of the wildlife migration corridor between Tsavo and Amboseli National Parks. The Maasai also use this area primarily as a communal grazing zone for livestock. As a result, residents often face economic hardship due to crop damage and loss of livestock inflicted by migrating wildlife.

At both field stations, students will study African climatology and geomorphology, plant and animal identification and theories of island biodiversity. We will meet wildlife managers and gain insight into cultural perceptions by speaking with members of the Maasai community. Data collected during field work will be used to assess the best land use and wildlife management options for the local community.

Field Work and Exercises

- Trips to National Parks, such as Amboseli, Tsavo and the Maasai Mara to camp and view the spectacular wildlife.
- Visits to cultural manyattas to gain insight into Maasai history and traditions.
- Field expeditions to conduct vegetation sampling, community surveys and wildlife abundance assessments.

Community Involvement

Students have many opportunities to interact with local communities, including the Maasai. Farmers, ranchers and park wardens may be interviewed during academic projects, and students often participate in sporting events and community service activities.

Admission Requirements and Instructions

At SFS, the most successful teams are comprised of students who are motivated, intellectually curious, enthusiastic, flexible, compassionate, socially concerned and ready to take advantage of our unique educational opportunities. Programs may fill quickly, so we encourage you to apply early to ensure admission into the program of your choice. Applications are reviewed on a year-round, rolling basis.

The SFS program will likely be very different from your traditional academic experience. We are setting off together on a journey and we ask you to consider yourself to be crew, not simply a passenger. We expect you to take a proactive role in all aspects of your experience including scheduling activities, choosing research projects, managing risk and facilitating the day to day operation of the field station.

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.

Admission Requirements and Pre-requisites

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

Applicants for summer programs must be at least 16 years of age, in good academic standing and have completed at least the junior year of high school.

- Students applying to the Costa Rica semester program have additional pre-requisites for Spanish language instruction.

Application Instructions

Before applying, please be sure you understand the program components and prerequisites and have carefully read the relevant program information.

Your completed application includes:

- Application form.
- \$45 non-refundable application fee, payable by check or credit card.
- Transcripts: submit official, current transcripts from all schools attended.
- References: submit two (2) reference forms.

The Academic Reference completed by a teacher, professor or academic advisor who is well acquainted with your current academic performance.

The Character Reference completed by someone who knows you well. This reference can be from another academic person, a job supervisor, a volunteer advisor, an athletic coach, etc. It may not be completed by a relative, peer or family friend.

Please call the Admissions office if you have questions regarding your reference selection.

Please ask each reference to complete the SFS form and return it to you in a sealed envelope, signed across the back. Supplementary letters of recommendation are welcome but at a minimum the SFS form must be completed for both references.

Acceptance

Applications for all programs are reviewed on a rolling basis once all required information is received. We strongly urge you to apply early to join the program of your choice. Waiting lists are maintained for programs that fill early.

Physical Examination and Medical Insurance

All acceptances are contingent upon medical approval. You must present a completed SFS Medical Form signed by a qualified medical professional within two weeks of acceptance. Please refer to the SFS website (www.fieldstudies.org) for a copy of the form. Students with late medical forms may forfeit their space.

All medical forms will be reviewed by the SFS Medical Review Team. 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 current medical insurance and a signed medical release.

Disability Information

Students with disabilities requesting accommodations are responsible for notifying SFS of their disability and any special needs they have within one week of acceptance. Students with physical disabilities should direct their correspondence to the SFS Safety Director and students with learning disabilities should direct their correspondence to the SFS Academic Dean. Please be aware that the level of accessibility, services, and accommodations to which you may have access to at your home campus may not be available overseas. Please refer to the SFS Academic handbook for more information.



Dietary Restrictions

If you have any special dietary restrictions, please contact the SFS Safety Director within one week of acceptance and document the restrictions on your SFS medical form.

- Students with dietary preferences (vegetarian, vegan, etc.) should discuss these with your Admissions Counselor.

Send your materials and application fee to:
The School for Field Studies
10 Federal Street, Salem, MA 01970

Tuition, Financial Aid and Scholarships

Tuition, Fees and Deposits

The School for Field Studies meets the expenses of our programs through a combination of program revenue, grants and donations. Our program fees cover room and board, program-related ground transportation and park entrance fees, field equipment, supplies, orientation and pre- and post-program advisory services. Total Program Cost does not include transportation to and from the program.

Full tuition is due sixty (60) days prior to program commencement. You will not be allowed to participate in the program with an outstanding tuition balance. Note: *The tuition fees listed in this catalogue are for Fall 2002 through Summer 2003. New tuition and program fees for Fall 2003 will be announced in March 2003.*

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

- Travel arrangements.
- Clothing and equipment.
- Physical examination, immunizations and medical insurance.
- Personal expenses (semester program break).
- Passport and Visa.

***You must have a passport that is valid for at least six months after the program ends.**

Financial Aid

SFS makes every effort to make programs affordable to all students. We are committed to involving as many qualified students as possible and will work with you to facilitate your participation. Do not let financial constraints stand in the way of submitting your application. Thanks to generous support from foundations, corporations and individuals, one in three SFS students received financial assistance through SFS in 2002.

SFS Financial Aid, in the form of scholarships and/or interest free loans, is available to qualified students based on need. Most applicants receive a combination scholarship/grant and loan. Many applicants receive aid through their home schools or other outside sources. 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 we strongly encourage you to complete an SFS Financial Aid Application as soon as possible. Financial Aid Applications are reviewed following acceptance. 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: A growing number of schools allow students to take 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 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 should 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 contact us and we will do our best to assist you.

** You must complete and return the financial aid application within 10 days of acceptance to qualify for refund status on the registration fee and deposit.*

Refund Policies

SEMESTER

Refund Policy for Semester Program Costs

If you withdraw by notifying SFS in writing the following amounts will be refunded:

- Withdrawal 61 days or more prior to the first day of the program = 100% refund of total program cost (less deposit and registration fee).
- Withdrawal 60-31 days prior to the first day of the program = 50% refund of total program cost (less deposit and registration fee).
- Withdrawal 30 days prior - 14 days after the start of the program = 25% refund of total program cost (less deposit and registration fee).
- Withdrawal 15 or more days after the start of the program, or if a student is asked to leave the program = NO REFUND.

Students may transfer the non-refundable deposit to an SFS course within the next 12 months subject to acceptance. Financial aid candidates: deposits and registration fees are refundable if withdrawal is less than 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 on the registration fee and deposit).

Application fees are non-refundable.

SUMMER

Refund Policy for Summer Program Costs

If you withdraw by notifying SFS in writing the following amounts will be refunded:

- Withdrawal prior to 60 - 22 days before the start of the program = 100% refund of total program cost (less deposit and registration fee).
- Withdrawal 21 - 0 days prior to the start of the program = 50% refund of total program cost (less deposit and registration fee).
- Withdrawal after the program starts = NO REFUND.

Financial aid candidates: deposits and registration fees are refundable if withdrawal is less than 10 days following financial aid offer.

Application fees are non-refundable.

SEMESTER COSTS 2002-2003

Program	Tuition	Program Fees	Total Program Cost
Kenya	\$9,975	\$3,975	\$13,950
Australia	\$9,975	\$3,695	\$13,670
Turks & Caicos	\$9,975	\$3,210	\$13,185
Costa Rica	\$9,975	\$3,210	\$13,185
British Columbia	\$9,975	\$3,020	\$12,995
Baja, Mexico	\$9,975	\$3,210	\$13,185

**All semester programs have an additional registration fee of \$150.*

Payment of \$650 (non-refundable \$500 deposit and \$150 non-refundable registration fee) is due no later than 10 days after acceptance in order to reserve a place in the program.

SUMMER COSTS 2002-2003

Program	Tuition	Program Fees	Total Program Cost
Kenya	\$2,610	\$1,385	\$3,995
Australia	\$2,610	\$1,200	\$3,810
Turks & Caicos	\$2,610	\$950	\$3,560
Costa Rica	\$2,610	\$800	\$3,410
British Columbia	\$2,610	\$570	\$3,180
Baja, Mexico	\$2,610	\$570	\$3,180

**All summer programs have an additional registration fee of \$100.*

Payment of \$450 (non-refundable \$350 deposit and \$100 non-refundable registration fee) is due no later than 10 days after acceptance in order to reserve a place in the program.

Expectations and Responsibilities

Student Conduct

You are expected to conduct yourself in a mature and responsible manner. The School for Field Studies (SFS) reserves the right to require any participant to withdraw from any program at any time if the field station staff deem the student's conduct to be detrimental to or incompatible with the interest, harmony, comfort, safety or welfare of the program—including abuse of alcohol or use of drugs not authorized by a medical doctor, or uncooperative or disruptive behavior. Should such a decision be made, SFS will notify your guardians and return you to the point of program departure, at which time any and all responsibility on the part of SFS will cease. Students who are expelled or depart early from the program will be withdrawn from all courses and receive no credit.

Responsibility

In organizing and managing these programs, SFS, its agents, employees and staff shall not be liable, financially or otherwise, for among other things, non-performance or unsatisfactory service, injury to persons including death, loss of, or damage to property, for accident or delay, and/or expenses arising from strikes, weather, quarantine, sickness, government regulations, or from any act or omission of its agents, contractors, and/or airline, railroad, bus company, automobile rental agency, hotel, or other suppliers of service.

SFS is a charitable corporation located in Salem, Massachusetts, U.S.A. All matters relating to, 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 s/he is deemed unsuited for the program for any reason and at anytime during the admissions process. All courses, fees, and dates are tentative until verified and confirmed in writing by SFS.

SFS 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 SFS 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.

Program Changes

SFS operates in a variety of environments. As a result, there are various factors that may effect a program such as tenuous weather conditions, access to highly regulated and sensitive environments or changes in political conditions. SFS reserves the right to make changes before or during a program. Indeed, part of your challenge lies in adapting to changing conditions and overcoming the obstacles they may present.



Academic Credit

SFS participants are registered at and receive transcripts from Boston University, which accredits SFS programs. The only exceptions are students from SFS Affiliate and Consortium schools who receive credit directly from their home institutions.

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-hour credits in biology or environmental studies from Boston University. Summer courses carry 4 semester-hour credits in environmental studies. Participants receive an official transcript from Boston University approximately six to eight weeks after the conclusion of the program for delivery to the office responsible for credit transfer at your home institution.

Students from over 275 colleges attend SFS programs each year and most are able to transfer credit for their participation. The final decision regarding credit and grade transfer rests with your home institution. Therefore, you should check with your advisor/registrar when applying to our programs to learn how your SFS course work will be applicable for credit in your degree program. If you have questions regarding credit transfer, please call the SFS Admissions Office (1-800-989-4418). In most instances, we can direct you to someone on your campus familiar with credit transfer for SFS programs.

Following is a *partial* list of home schools of previous SFS participants:

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

The SFS Affiliate Program

The SFS Affiliate Program assists students in maximizing 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. Affiliate schools typically provide direct academic credit for SFS participation and have curricular input into our programs. Each Affiliate school has an SFS liaison who is available to provide on-campus advising on our programs. Applicants from Affiliate schools must obtain permission to participate from their campus Affiliate Representative.

Current SFS Affiliate Members:

Adelphi University Dr. Gayle Insler	Miami University Dr. Robert Blair
Albion College Dr. Timothy Lincoln	Mount Holyoke College Ms. Joanne Picard
Bennington College Dr. Kerry Woods	Ohio State University Ms. Jeannie Bonner
Boston University Dr. Cutler Cleveland	Santa Clara University Dr. Dennis Gordon
Brandeis University Mr. J. Scott Van Der Meid	Scripps College Ms. Valerie Eastman
Clark University Dr. Todd Lindahl	Smith College Dr. Adrian Bracken
Colby College Dr. David Funnage	St. Michaels College Dr. Valerie Bauschbach
Connecticut College Ms. Shirley Parson	SUNY College of Environmental Sciences and Forestry Dr. Donald Leopold
Davidson College Dr. Michael Dorcas	Trinity College Dr. Daniel Blackburn
Denison University Dr. Jessica Rettig	University of Miami Dr. Dan DiResta
DePauw University Ms. Lesley Davis	University of Redlands Dr. Ben Dillow
Dickinson College Dr. Janet Wright	University of San Diego Dr. Michel Boudrias
Gonzaga University Ms. Wanda Reynolds	University of Southern California Dr. Linda Emma Duguay
Grinnell College Dr. Richard Bright	Wells College Dr. Thomas Vawter
Guilford College Dr. Lynn Mosley	Whitman College Dr. Robert Carson
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*Member of Sustainable
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*SFS Affiliate School

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