

SEI NOW

Sustainable Ecosystems Institute

Spring, 1997

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MARBLED MURRELETS

You have to catch them first...

The Marbled Murrelet flies up to 100 mph at dawn from the sea, where it feeds on small fish, to the darkest Pacific Coast forests, where it nests 150' up in old growth trees. It was the last species to have a nest discovered in North America (in 1975 by accident). Only 70 nests have been observed subsequently. In studies of the threatened Marbled Murrelet, (*Brachyramphus marmoratus*), scientists have been greatly challenged to find its nests, primarily because they have been unable to catch them and attach radio transmitters. Last fall, SEI scientists, led by Dr. Steven Courtney, refined a successful method of catching the elusive (and well-camouflaged) seabird.

Over the years, persevering biologists tried numerous methods to solve their biggest technical problem in the study of Murrelets:

- Nets in tree canopies caught "a few".
- Nets floating on the water worked, but this method required convenient land formations to provide a blind corner.
- Net guns yielded poor results. Only four birds were caught by two groups in one whole summer.
- One group even tried having U.S. Navy Seals sneak up on the birds from below. Unfortunately, Marbled Murrelets can swim faster than the most determined diver.

SEI's method of catching Murrelets builds on a technique developed for swans and other water birds. In the first trial, 12 birds were caught in only two and a half nights. "We really didn't know whether it was going to work," says Courtney. "Several organizations were represented, and after we got the first bird, we just let loose. We knew we could make it. In all the field work I've done in the Pacific Northwest, this absolutely was the most fun."



In the technique perfected by Courtney, a "blacked-out" boat sails to the Murrelets' location while there is still enough light to see clearly. "Our method requires a navigator who absolutely knows the area. We are very reliant on teamwork because working at sea in pitch black is quite dangerous," says Courtney. After full darkness, one scientist wearing a cold-water survival suit hangs tethered over the bow looking for the birds with a bright light. A fellow scientist (also in a survival suit) stands ready with a large salmon dip net. After the birds are spotted, the crew brings the boat up as slowly and quietly as possible. (SEI's research vessel, *The Murrelet*, has an inboard engine which facilitates this sneak approach.) When the boat is three to five feet away, the birds are quickly scooped up with the net — usually one at a time. Scientists then take the Murrelet below for a blood sample and banding before release.

Unbelievably, one of the 12 caught by SEI in September 1996 in the San Juans (Washington, USA) had already been banded in Canada in 1995. It was the first banded Murrelet ever caught. There are only 300 to 400 banded Murrelets in the world; about 90 percent (including this one) are from the same location — a blind-cornered fjord in Desolation Sound, British Columbia. "Catching the banded bird was also significant," says Courtney, "because it clearly indicates that the Canadian Murrelets come south for the winter."



President's Column

by

Dr. Deborah Brosnan



Life is exciting at SEI's headquarters. We are developing new ways to better meet our goal of using scientific knowledge to serve the needs of ecosystems and the human communities that depend on them. In January, we were joined by a new executive director, Mariann Koop and a new office manager, Tracey Corbett. Last October, biologist Rick Merizon came on board to work with Dr. Courtney on threatened birds of forests and oceans.

SEI has been gearing up to make better use of the electronic medium. The Institute has moved to a faster web site and can now be reached at <http://sei.org>. This issue of our newsletter launches us into the electronic publishing world, will be mailed electronically to subscribers, and will be available on the web. To subscribe to the electronic version e-mail sei@sei.org or subscribe through the web page. The newsletter is published four times each year, but you can also stay current with SEI's activities by regularly checking the web site. Each issue will update you on SEI's activities, and bring you news and results from SEI's scientific work. You will also be able to read about how our work relates to real world concerns of communities, corporations and governments. Our Spring issue takes you on site to visit a range of our key

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SEI What? Q & A

Rachel W., Meg C. and Brian M., 5th graders at Oregon Episcopal School, asked how tidepools were made, how big did they get and how many species did they contain?

Tidepools are unique habitats. These crevices and holes in rock are made by natural weathering, wave action, and even the movement of sea urchin spines can enlarge a tidepool. They range in size from a few inches across to the size of large room (The great tidepool in Monterey, California, made famous by author John Steinbeck is at least 50 yards across). People swim and fish in many of the larger pools. Hundreds of species inhabit tidepools (over 700 species in the Pacific Northwest!) but they're not all found in the same pool. Tidepools high up on the shore fluctuate widely in temperature and salinity. For instance, during winter rains, rainwater forms a freshwater layer on the top of tidepools so the species living there must be able to tolerate low salinity. Lower down the shore conditions are more constant and different animals and plants e.g., sea urchins and many red seaweeds live in this zone. There is a trade-off, upper shore tidepools are stressful habitats but fewer marine predators come up to the high tidepools: Plants and animals in the lower zone are faced with a more constant onslaught of predators, but they don't have to deal with high temperature and rainwater in the same way. When you next visit the shore



Yaquina Head tidepools, Oregon - where SEI has carried out extensive research.

look at the different species in the high and low tidepools and try to figure out why you find them in their unique habitats. Good tidepooling shores in Oregon include: Yaquina Head (including the new wheelchair accessible tidepools), Strawberry Hill, Boiler Bay and Otter Crest, (central coast). Canon Beach in northern Oregon, and Bandon in southern Oregon also have good tidepools and a docent program. A good book to help you identify what you see and to teach you more about marine life is *Seashore Life of the Northern Pacific Coast* by Eugene Kozloff (U. Washington Press).

President's Column, continued...

programs and people. Our opening article is about one of our most exciting projects which began last fall. In a cooperative project, run by Dr. Courtney, SEI pioneered catching techniques for the **Marbled Murrelet**. This has already helped provide vital information about the bird's biology for use in sustaining the species and Pacific Northwest forest resources. Coral reefs, one of the most diverse and important habitats, are in trouble. 1997 has been designated the **International Year of the Reef** as a way of reminding us that we need to pay attention to these resources, and that it is up to us to sustain the biological diversity that we depend on. SEI has a range of activities planned for IYOR, and you can read about some of these in this issue of the newsletter. D. Kent Backman

provides us with our first article on reef research and conservation. **Songbirds**, particularly migrant species, are declining at an alarming rate in US forests. Newspaper articles, scientific papers, TV and radio features constantly bring this to our attention. SEI has an extensive migrant bird program which is run by Dr. Rex Sallabanks of SEI, Idaho. You can read about his innovative program in this issue, together with a related article exploring how changes in coffee growing are affecting the survival of these species.

Thank you to all of you who have supported the Institute and we hope that you will continue to join with us in finding cooperative ways to sustain biological and human communities.

SEI SNIPPETS

The Loss of America's Songbirds... Is Your Java Bird-friendly?

The decline of America's songbirds is a cause for concern among scientists, bird lovers and conservationists. Many of the declining species are neo-tropical migrants (birds that over-winter in Central and South America and the Caribbean). The loss in numbers of these birds is dramatic. For instance, Golden-winged Warblers are down by 46% since 1972, and the Orchard Oriole has dropped 29% in the same period.

Researchers believe that the loss of natural forests is partly to blame. This includes fragmentation and cutting of northern forests where the birds breed and cutting and burning of tropical forests where birds overwinter. Now it appears that there is a new threat to songbirds in their winter habitat, only this time the threat comes from destruction of a human-made habitat, the traditional coffee plantation.

Every fall, for millions of years, songbirds have migrated from North America to the




Wilson's Warbler

forests of Latin America and the Caribbean. As agricultural fields have replaced native forests, these migrant birds have increasingly sought refuge in traditional coffee plantations. Here coffee is grown under the shade of canopy trees. Lianas, epiphytes, mosses, and other plant life provide the structural framework for a complex ecosystem. Traditional coffee plantations support a high density of mammals (including monkeys and bats), snakes, birds and insects. But this diversity seems to be

disappearing as traditional shade plantations are being replaced by modern sun farms. In modern farms, coffee is grown in rows (resembling rows of vines) in full sun. When treated with fertilizers these modern coffee farms can outperform traditional farms by a factor of 3. For example, a typical yield for a modern plantation is 1600kg/hectare compared to 550 for a traditional plantation. Further, the new farms can cram 3 to 7 times as many coffee trees into the same area.

The loss of habitat complexity coupled with increased use of fertilizer and pesticides leads many researchers to suspect that modern coffee farms are contributing to songbird loss. But it is difficult to show clear cause and effect because so many other factors are affecting songbird declines. However, some evidence suggests that sun-coffee plantations may be significant. Between 1980 and 1994, a time of rapid modernization of coffee plantations, the Baltimore Oriole, which overwinters in coffee plantations, declined by 2.2%.

Recently the Rainforest Alliance became the first environmental group to give a green seal of approval to coffee from a forested farm in Guatemala. This will inform consumers whether their coffee is "bird-friendly". To gain this ECO-OK seal, farmers must adhere to an ecological code of coffee growing. Farms are approved by biologists. The hope is that market forces will promote traditional coffee plantations.

For more information on neo-tropical migrant birds contact Dr. Rex Sallabanks at SEI Idaho (see page six). He runs SEI's neotropical migrant program. 

Monitoring Avian Productivity and Survivorship in Idaho: SEI is currently operating the only MAPS station in the state of Idaho. MAPS, which stands for Monitoring Avian Productivity and Survivorship, is a national program run by the Institute for Bird populations. A station involves constant-effort mist-netting and bird banding at select sites throughout the breeding season. Opportunities for volunteers/training/education are significant. You can contact Dr. Rex Sallabanks at SEI Idaho (e-mail rsallaba@sei.org) for more information.

Of Crows and Goshawks: Dr. John Marzluff Senior Scientist at SEI-Idaho has just completed a stint on the National Academy of Sciences panel to develop the scientific bases for the conservation of the Mariana Crow which took him to the Mariana Islands on several occasions. He has also just completed a 10 year research plan for the Northern Goshawk, which includes a SEI supported graduate student, Sean Finn, at Boise State University. Last year SEI searched 30 forest stands and found that 6 were occupied by Goshawks. Three had nests. Biologists radio tagged 2 adults and their nestlings and determined that adults have large 25sq kilometer home ranges and concentrate their activities in patches of mature forest. This year SEI will focus on habitat necessary for foraging and begin to support a second graduate student Doug Yonkin.

Stellars Jays: Once SEI figured out how to capture the feisty Stellars Jay this project evolved into a radio-telemetry study. A total of six jays were captured in both the Elliott State Forest and on Menasha Corporation lands in Oregon, all within a 15 miles of Coos Bay. After tagging and releasing about 25-30 relocations were taken on each bird. This data will be useful in determining home range size, and habitat use in relation to edge proximity.

Puget Sound Update: In Northern Puget Sound SEI carried out marine transect surveys throughout the fall on our research vessel *R.V. Murrelet*. All marine birds and mammals were recorded, with special emphasis on Marbled Murrelets. This was the second field season, and SEI is beginning to see some interesting and important trends in the ecology of these animals.

Coral Reefs and the International Year of the Reef

1997 has been designated the International Year of the Reef (IYOR). With 10% of the world's coral reefs already lost, and a further 10-20% at risk of disappearing over the next thirty years, it is more than time for a call to action. Coral reefs are at risk from a range of factors, many of them human induced. Habitat destruction, development, nutrient runoff, anchor damage, and visitor impacts all contribute to degradation of fragile reef ecosystems.

Natural disasters also affect reef ecosystems, especially hurricanes and major storms, and of course volcanic eruptions which SEI is currently studying in Montserrat. These natural events are part of the life and death cycle of a reef, and can contribute to maintaining high biological diversity. When a reef is destroyed by a hurricane, a recovery or succession process starts whereby new species gradually colonize the substrate. Over time the number of species increases, and later colonists take the place of the early arrivals. The successional cycle allows new species to colonize and persist. This cycle repeats itself over time and space.

Recently, human activities have so stressed reef ecosystems that is now questionable whether reefs can recover from natural disturbances and from human induced changes. Many reefs which have been degraded by natural or human activities are not recovering and are being replaced by low diversity seaweed communities. Once these seaweeds establish, the reef ecosystem does not recover. One of the key questions of the Global Coral Reef Monitoring Network (of which SEI is a member) is to find out the status of reefs worldwide and to investigate if these reefs can and are recovering from stress.

As part of the International Year of the Reef, each issue of SEI's newsletter will have a regular feature that brings you up to date on an aspect of coral reef ecology. The Institute will also feature information and articles on its web page. These will highlight SEI's and other researcher's and organizations'

activities which further our understanding of reef ecosystems and the conservation of these fragile resources.

SEI launches the IYOR with a host of activities

- SEI Announces publication of its report "The Coral reefs of Montserrat West Indies: Diversity, Conservation and Ecotourism". A summary of the main results and conclusions can be found at the SEI website (<http://www.sei.org>), and a copy of the report can be ordered from SEI. This report accompanies the reef video "Under Emerald Waters: The Coral Reefs of Montserrat, West Indies"

- SEI recently started a monitoring program on the island of St. Barthelemy, in the Caribbean to support the island's new Marine Reserve. The program involves the actions and support of local dive operators, who helped to set up and monitor the reefs. Watch upcoming newsletters, and our web page for details of this new and exciting program.

- SEI is now an official participant of the Global Coral Reef Monitoring Network with responsibilities for some of the Caribbean's reefs.

- SEI recently began a coral transplant and monitoring project, designed to conserve the reefs in Little Bay, Montserrat. Montserrat is currently experiencing a volcanic eruption and the port area has been evacuated. Little Bay is the island's emergency jetty for local supplies and the only evacuation route. This unique project is on an island under threat from a major natural disaster and an economy suffering hardship. Close to half the population have been evacuated from their homes. Yet, even at this crucial time

conservation action is maintaining the reefs for survival and local use. Dr. Deborah Brosnan leads a team of researchers including Tim Grubba and Alan Cooper in Montserrat who are working on this project, which involves training local people in reef monitoring. Stay tuned to the web page and upcoming newsletter for new developments.

- Each issue of SEI's newsletter will feature an article on the ecology and conservation of coral reefs. In this issue, Kent Backman (University of Hawaii) describes his research and finding on the effects of divers touching corals.

CORAL REEFS:

- Are among the oldest ecosystems, having existed for 500 million years.
- In productivity, are second only to tropical rainforests.
- Occupy only 2% of the world's oceans but, contribute up to 12 % of the world's fishery.
- Provide a habitat for 25% of all living species.
- Are inadequately protected. Only 6% of reefs are under protection but, at least 20% need to be protected to ensure survival.

Hands Off Diving: Research on the Effects of Touching on Corals

A tourist boat pulls up to a mooring at a shallow tropical reef, and begins the daily ritual of introducing the splendors of a coral reef to people for the first time. "Coral is a living animal", explains the guide, "so don't touch...it will die" The guide continues with a brief lecture, and stops to let the beginners discover on their own. Some are timid at first, but then squeals of awe cajole the rest of the passengers to join in the fun; soon the deck is empty and several dozen bodies are in the water with snorkel gear, pointing out a colorful fish or an interesting coral formation. Inevitably, many of the inexperienced snorkelers make contact with the reef—most not on purpose. Some stand in the shallow water to clear water from a mask or to scope for their companions. Others make a hasty grab with a hand to avoid being shoved into the reef with the surge of a wave.

This scene could be from any one of the hundreds of popular coral reef destinations the world over. But as more and more remote tropical destinations open up to the ecotourist, we must question the effects that people have on the very thing they gain so much pleasure in visiting.

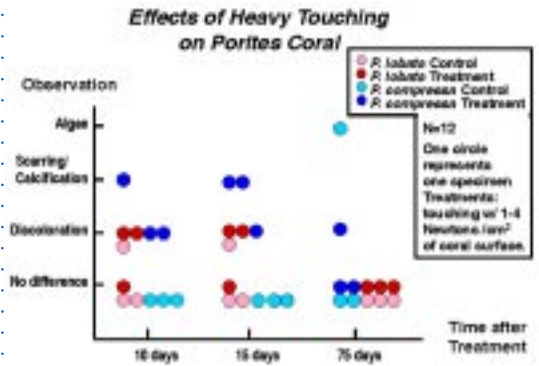
"What happens to corals when you touch them?", is a common question asked by countless reef visitors, and is often answered by an assumed "corals die" response. Yet, in reality, we don't fully know the direct or indirect impacts of touching corals. For instance touching a coral may not directly kill it but it may weaken it and leave it vulnerable to overgrowth, or predation. How much touching does it take to affect the health of a coral species? Understanding these questions is vital to protecting coral reefs. While there have been many studies on reef-wide coral damage from pollution, storms, trampling, sedimentation, and even experimentally inflicted breakage. I have not found one on the effects of touching on corals. In this ongoing research, we are experimentally applying touching treatments to two species of *Porites* (one of the most common genera

in Hawaii) *Porites compressa* and *Porites lobata*. We are experimentally touching the corals with different levels of applied pressure (heavy and light). Biologically, the main difference between light and heavy treatments is that heavy treatment tends to remove the mucous membrane from the coral surface. Light treatment leaves the mucous membrane on the treated area largely intact. What are our results? To date, we have discovered that resistance to human touch varies between species, and between treatment types. Some of the heavily touched specimens of *Porites compressa* developed visible scarring, which is still evident after three months (see figure). *Porites lobata* specimens, on the other hand, showed little visible effects several weeks after the initial treatment. Light touching seems to have little noticeable effect on either species after 75 days. Corals on heavily visited reefs are often subject to being touched, brushed, and leaned against many times a day. Our preliminary results showing some impacts has led us to pursue a more intensive and detailed examination. Among the experiments now in progress is one to test the effects of multiple treatments (long-term repeated touching) on *Porites sp.* corals.

We hope that the results of this and other research will be an incentive both to the tour companies to create effective management strategies that minimize impacts, and to the individual reef visitor who wishes to return to the same healthy reef. Conserving reefs is everyone's business remember as a diver:

- Be correctly weighted and use good buoyancy control
- Avoid damaging reefs with anchors, diving equipment, and poor diving skills
- Don't collect plants or animals

D. Kent Backman is a marine biologist and underwater videographer currently at U. Hawaii, Hilo. He was a biologist and videographer on SEI's Montserrat project.

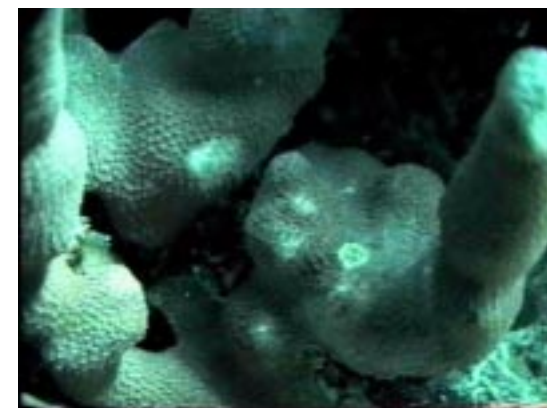


Changes on coral's surface over time



Porites compressa
November 23rd, 1996: before treatment and

December 3rd, 1996



The same coral after heavy finger-touch treatment (1-4 kg/cm²) on >1cm of coral surface showing circular scarring.

SEI and the Neotropical Songbirds Migrant Program

SEI has an extensive and fully-funded program on American songbirds. The goal of this program is to study the effects of forestry and other land use practices on songbirds and to link these effects directly to management recommendations. SEI Idaho is the central base for this program and projects are carried out in Idaho, Washington, Oregon, and Montana under the directorship of Dr. Rex Sallabanks.

(1) *Effects of wildfire and salvage logging on breeding bird communities in NE Oregon.* This study is occurring in the Pine Ranger District of the Wallowa-Whitman National Forest and examines the effects of the 1994 "Twin Lakes Fire" on the birds that breed in high elevation subalpine fir forests. To date, two years of post-fire bird and habitat data have been collected; a third will be collected in 1997. Salvage logging began in 1996 and we will have pre and post-logging data as well as data on how different burn intensities influence avian community composition.

(2) *Relationships between forest structural classes and bird communities in the Oregon Blue Mountains* This study is occurring on Boise Cascade lands in the Umatilla and Wallowa-Whitman National Forest, also in NE Oregon. To date we have three years of baseline bird and habitat data that have allowed us to develop relationships between avian community composition and the various forest structural stages that occur east of the Cascades. Among other things, these data have been used in the Interior Columbia Basin Ecosystem Management project (ICBEMP) that was chartered by President Clinton several years ago. A fourth year of data will be collected in 1997. The next stage of this work is to implement a number of logging prescriptions in several stands and document the response of bird communities.

(3) *Birds of the Ecosystem Diversity Matrix for the Idaho Southern Batholith* is a project in its fourth and final year. Bird and habitat data will allow us to map the distribution of bird species across the forest landscape of southern Idaho; intensive analyses will determine bird-habitat functions that will help us better understand which forest characteristics are acting as mechanisms for habitat selection by forest-breeding songbirds.

Other smaller projects in Southern Idaho include a comparison of riparian vs. nonriparian bird communities in forested landscapes and a study of how bird communities vary among several different silvicultural treatments (including fertilization).

A new project that will start in 1997 promises to be some of the most important work SEI Idaho has done yet. The study will investigate the effects of forest fragmentation on songbird productivity in the inland Pacific Northwest. Three study regions have been selected: southern ID, northern ID, and NW Montana. Each region will have replicated study plots that vary with respect to fragmentation by both agriculture and silviculture. Our intent is to pool data after 2-3 years of work to identify source and sink habitats/landscape types across the entire region.

Contact Dr. Rex Sallabanks at SEI Idaho for more information or if you want to participate (rsallaba@sei.org).



Lazuli Bunting

SEI's Upcoming Book: Setting the agenda for avifaunal research in the 21st century—symposium and edited book.

SEI Idaho is organizing a special symposium as part of the annual Wildlife Society Conference at Snowmass, Colorado. The symposium, titled *Contemporary Research on the Effects of Forest Management on Bird Populations*, is scheduled for September, 1997.

The symposium arose from the concerns of Dr. John Marzluff and Dr. Rex Sallabanks that while much information has now accumulated on the effects of forest management on bird populations, the information is largely weak when it comes to making management recommendations.

The majority of studies have been short-term, correlative, and have not identified mechanisms of change, or allowed for pre and post effects. Many documented relationships between forest avifauna and timber harvest are, for example, based entirely on indirect assessments. Studies that address more relevant factors and have robust experimental designs are sorely needed. In the symposium results were presented from studies that have begun to tackle these important issues, and indeed the symposium could be viewed as a showcase for setting standards for avifaunal research in the 21st Century. Details of this symposium can be found on the SEI web page (<http://www.sei.org>).

This symposium will form the basis of an upcoming book which will be edited by Marzluff and Sallabanks, *Avian Conservation: Research and Management*, due out Spring 1998 Island Press. We will keep you informed in the newsletter and web site as publishing date approaches and give you details on how to order the book.

SEI WHO?

Mariann Koop recently joined SEI as our executive director. A third-generation Oregonian native, Mariann grew up spending much loved times in the forests and on the beaches of the Northwest where she developed a passion for birding. Mariann is a talented and creative administrator, who has 15 years experience in non-profit administration and public relations. "I already know that working for SEI will be the most exciting career opportunity of my life. It is a dynamic organization with the potential to make a significant, positive difference in the world – everyday. Bringing diverse groups together to solve critical problems is an important part of life for me" she says. Prior to joining SEI, Mariann most recently coordinated and administered grants, and wrote funding proposals for Marylhurst College. While there, she also coordinated a highly successful science education program for Head Start teachers. Previously she served in administrative positions in both education and healthcare. As a public relations director she developed expertise in planning, organizational communications, and crisis management. An individual of many talents, Mariann also has a background in graphic arts, and in her first month with us, she designed SEI's new logo. In the spare time allowed by two children, Mariann enjoys reading science fiction, watercolor painting, quilting and, of course, birding.



Rick Merizon is a '95 graduate of the Wildlife Ecology program at the University of Maine in Orono. He grew up in Wisconsin, worked in Alaska while still in college, then came to Oregon via employment with the Menasha Corporation. While working on salmon restoration projects and monitoring salmon runs in southern Oregon, he was introduced to Steven Courtney by the vice-president of the Menasha Corp. In the summer of '96 Rick came to work for Steven on a corvid project and continued in the Fall of '96 doing survey work in Puget Sound on Marbled Murrelets. Rick likes skiing, climbing, biking and kayaking. He is currently enrolled at PSU, working on a Master's in Biology. His thesis topic is community relationships between birds and mammals in Puget Sound.



Tracey Corbett came on board in January as SEI's office manager. She has brought her creativity and much needed skills to our headquarters in Portland. Prior to joining SEI, Tracey spent 10 years as office manager for the Biology Department at Lewis and Clark College, Portland. She recently completed two masters degrees, one in Public Administration and a second in Counseling Psychology. She has traveled extensively and last year spent six months in Oaxaca, Mexico. "I came to work at SEI because I liked the energy. I was attracted to the way SEI people tackle problems with enthusiasm and a "can-do" attitude that produces results. I saw great opportunities to work on a variety of jobs and issues and saw a role for my skills at SEI", she says. Tracey has a daughter who recently completed a year with IUCN in Switzerland and now works in resource management in Washington DC and a son in college in California. In her spare time Tracey enjoys painting, building and restoration projects.



SEI Thanks....

We are beginning to increase awareness on the importance of coral reef ecosystems, and to make progress on conserving these reefs. Every year more people become involved in some activity to monitor or conserve reef ecosystems. Progress could not happen without the support of committed individuals and organizations: SEI acknowledges the following key sponsors without whom we could not have accomplished so many of our goals in reef conservation.

AMERICAN AIRLINES
COCHRAN UNDERSEA TECHNOLOGY
PADI PROJECT AWARE
NATIONAL SCIENCE FOUNDATION
NEW ENGLAND BIOLABS
FOUNDATION
USDIVERS

A special thank you to Dr. DON COMB whose long term commitment to conservation and environmental education worldwide has lead directly to conservation of coral reefs and other ecosystems.

SEI has a strong forest ecosystem program. Thanks to the following for support and assistance with this program:

RAYONIER
WASHINGTON DEPARTMENT OF
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U.S. FISH AND WILDLIFE SERVICE
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Sustaining natural environments needs your support. SEI is a non-profit institute, and all donations are tax-deductible as allowed by law. Thank you for your support.

SEI Moment : SEI Biologist Alan Cooper, relocates corals and sponges in Montserrat to a safe zone away from jetty construction and volcanic destruction (photo by Tim Grubba).



Sustainable Ecosystems Institute

SEI works to sustain ecosystems and the people who depend on them. We focus on areas of current or potential conflict and bring about science-based cooperative solutions.



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The International Year of the Reef

After a memorable free dive in 1936, Jacques-Yves Cousteau wrote “*Sometimes we are lucky enough to know that our lives have been changed, to discard the old, embrace the new and run headlong down an immutable course. It happened to me on that summer’s day, when my eyes were opened by the sea.*” Those of us lucky enough to experience coast and ocean habitats can empathize with Cousteau, for we too know the beauty and diversity of the underwater world. But now that world, first glimpsed by early adventurers and scientists, is in trouble. Fisheries are collapsing, plankton the very basis of life is declining off some coasts. The world’s beautiful and diverse coral reefs are disappearing.

(See article on page four)