Unexpected events and actions have a mysterious power to change lives, missions, and perspectives. This has been especially true for Dr. Ellen Hines, a professor of geography and human environmental studies and the director of the Marine & Coastal Conservation and Spatial Planning Lab at the Romberg Tiburon Center for Environmental Studies. Her life’s course has zigzagged unexpectedly from art to the geography of wildlife conservation, and her locale has changed from California to Southeast Asia.

In Asia, mainly along the azure coast of Thailand, she has used the sophisticated tools of modern geography—sophisticated tools to help save strange and endangered marine life. Hines’s first change was an unanticipated detour from dabbling in the art world to studying the world itself. Hines graduated in 1974 from Mills College with a B.A. degree in art, intending to work as a studio and visual artist. In 1989, Hines met a friend who was working on her M.A. in geography, and the subject captivated her. “I didn’t realize very much about it,” she recalls, but “I saw what she was doing and thought ‘Wow, that’s really interesting!’” By then, Hines was considering field biology and the study of wildlife. But once she learned that geography can encompass such field work, and she had also “discovered GIS [geographic information systems],” she realized that is really what she enjoyed. Over the next several years, Hines would pursue this interest through a Master’s degree at San Diego State University and a doctorate in geography at the University of Victoria, British Columbia.

Geographic Information Science (GIScience) is the umbrella term for the field of geographical data collection and analysis as well as its technology for mapping, and for data storage and analysis. GIScience employs three systems: A geographic information system uses software that analyzes spatial and map data. Remote-sensing equipment collects satellite or aerial images of earth’s surface. And the familiar global positioning system (GPS) provides real time location information to cell phones, car navigators, military instruments, and other devices.

Geography as a field involves much more than finding the highest mountain or the lowest valley. It integrates biology, politics, environmental science, economics, urban issues, agriculture, climatology, natural resources, and land use, as well as GIS. “Geography is a very interdisciplinary, all-encompassing science,” Hines explains,
“because it has to do with spatial relationships—the study of space—and the effect that we have on the environment and the effect that physical earth has on everything else.” 

An SF State graduate student who worked with Hines, Jennifer McGowan, (McGowan entered the University of Queensland in March of this year) describes her mentor as a typical geographer. “She does it all,” McGowan comments. “She is involved in high-resolution mapping technology and the very technical aspects of data collection, but she can also do community work and research in developing countries. I think she is your classic geographer.” McGowan goes on to describe geographers as “Jacks of all trades. We pull from a lot of disciplines,” she says, “and that is something I have learned in working with Ellen: I’m not a statistics person, I’m not a biologist, but I’m drawing from those in my research. Learning how to do it, I think, the characteristics of geography.

Hines agrees. “I am looking at species distribution and modeling in conservation issues, and it is much more interdisciplinary than regular biology. Looking at habitats and the distribution of species, working with local people on conservation is much more part of an interdisciplinary science such as geography.” Hines’s work falls into the category of zoogeography, which she describes as “looking at where animals are and at their habitats.” Zoogeography, in turn, is part of biogeography, which locates plants, animals, and offshore of the second. She began her own studies of the large cow-like marine vegetables called dugongs (Dugong dugon) that browse the sea grass beds along the coast of Thailand.

Hines had met an interesting Thai scientist named Kanjana Adulyanukosol and asked her about uninvestigated research topics around Phuket. Adulyanukosol described two: studying dolphins and whales off the coast, and studying the slow-moving dugongs in the coastal sea grass beds on which they depend. Although Hines had seen neither dugongs nor sea grass beds, she chose that research.

On its website, the National Geographic Society describes dugongs as relatives of manatees, similar in both appearance and behavior. Their average life span is 70 years in the wild, and they grow up to 8 to 10 feet in length and 510 to 1100 pounds in weight. A dugong’s tail has a flaked shape similar to a whale’s. The International Union for Conservation of Nature (IUCN) maintains a Red List of vulnerable species, including the dugong. States, the IUCN, “... the dugong is declining or extinct in at least a third of its range, of unknown status in about half its range and possibly stable in the remainder—mainly the remote coasts of the Northern Territory and Western Australia.”

After two months in Thailand, Hines returned to the U.S., but the experience left an indelible mark. She wrote grant proposals to two separate organizations, the Ocean Park Conservation Foundation and the International Development Resource Center in Canada, and received funding from both. Within a year, she was back in Thailand with a permit from the Thai government to pursue her research in three phases. The first phase was carrying out aerial surveys of dugongs in their coastal habitats. The second phase was looking at the extent and health of sea grass beds, the underwater flowering plant that forms the mainstay of the dugong’s diet. The third was investigating community members in local villages about the dugong’s current locations so she could evaluate the animal’s habitat and population numbers and compare them to its distribution in the past.

She carried out the first phase of the research in Phuket in 2000. Hines and coworkers rented a small aircraft called a micro-light for the aerial surveys, and also met with members of the local community. As she solidified ties with local residents, she received another interesting opportunity: The Thai Department of Forestry convinced the Thai Department of Agriculture to donate a helicopter to assist her with the research. She and her team were able to use the helicopter to conduct three days of aerial surveys along Thailand’s western coastline in 2000 and again in 2001. Looking down from the helicopter into the clear aqua blue waters, they discovered that the densest populations of dugongs resided near the coast town of Trang. In a 2005 journal article based on aerial surveys done from the micro-light aircraft around Trang, Hines and co-authors reported a count of 264 dugongs. Hines used a strip transect technique to estimate the relative population of dugongs in the Trang area. Although there had been previous aerial surveys, Hines explains, no others had ever reported a statistically derived population estimate. While interviewing local people for her research, Hines realized that she needed to examine conservation issues more closely. “That is what really changed everything for me,” she recalls. It also induced her to change her dissertation topic to include “How to take science and put it in a framework to make it useful for management, conservation, local people, and government agencies.”

Hines’s interviews revealed four important issues related
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to the hunting of dugongs. The first one involved the phenomenon of “bycatch,” in which fishermen accidentally catch dugongs in their nets. The second involved a lucrative trade in dugong body parts, in which some local residents harvest and sell the organs to make medicine or amulets. The “dugong has tusks,” Hines explains, “and they [were and still] are being sold to the people in Korea, Taiwan and China to use at Chinese medicine.” The third involved human consumption. Dugongs are big, slow-moving mammals. Hines learned that “People hunt dugongs and even manatees because they have so much meat and they are easy to catch.” The fourth problematical issue involved habitat destruction. Fishermen sometimes cut down mangrove forest in the area to build shrimp farms, and this process, in turn, destroys some of the area’s seagrass beds.

During her research, Hines learned the importance of sharing knowledge and working with other groups. “In order to achieve near-shore conservation,” she explains, “I had to work with a lot of people—local NGO’s, local people, local scientists, agencies and villagers, as well as academics from the country.” Being a typical geographer, Hines found herself looking for guidance and advice from human and cultural geographers as well as biogeographers. “I went to Thailand thinking, ‘I am just going to do research on the dugong’s habitat and distribution.’ But I began realizing that there is a lot more to their conservation.”

While she was in Thailand in 2001, Hines got word of a job offer from the SF State Department of Geography and Human Environmental Studies. “I was in a bus in Thailand with a bunch of chickens and goats,” she laughs. She accepted the post and has spent the past 12 years teaching, mentoring, and continuing her research. When asked, Hines’s graduate student Jennifer McGowan and Timothé Vincent spoke highly of Hines, describing her as a supportive professor and advisor, very willing to help and direct her students. “(Hines) really wants to help her students with any opportunity she can present to them,” McGowan says. Hines herself remarks, “The work I am most dedicated to is the work with my students.”

In 2002, Hines finished her dissertation but, still motivated to influence and expand conservation, she joined forces with Brian Smith, a friend and colleague she had met at a marine mammal conference four years earlier. Together they established a course to teach scientists from Southeast Asia how to study and protect marine mammals, and offered it at the Phuket Marine Biological Center in Thailand. She met scientists from around the world while preparing the curriculum for the course. Several of them joined her research team and today, are continuing to participate in her Southeast Asian research.

Around 2001, the Wildlife Fund of Thailand asked Hines to help them study dugong habitat in the eastern Gulf of Thailand, based on her considerable knowledge. Local people in that area had found dead dugongs on the beach but no one could explain the deaths. Hines and the research team spent the next three years conducting aerial surveys, and sea grass assessments, and interviewing local residents. They confirmed the deaths and low population numbers in the area. During that research effort, they discovered bigger groups of Irrawaddy dolphins—small marine mammals that look a bit like miniature beluga whales. These were also considered to be vulnerable. No one had closely considered the group before, Hines explains, “and so we started to study them.”

Once again, her train relied on interviews with the local community. The process helped her understand not only how people see the dolphins but also why they hunt them and other marine mammals. The interviews also helped her to evaluate the dolphin’s population’s history, distribution, and habitat to and analyze their sources of vulnerability.

From 2003 to the present, Hines’s team has continued studying Irrawaddy dolphins in the eastern Gulf of Thailand. She has also monitored the endangered Indo-Pacific humpback dolphins and fainless porpoises. Her current grants will allow her to spend at least two more years doing research in that area.

When she talks about her Southeast Asian research group, Hines conveys a sense of both pride and appreciation. “We have been a great team of researchers [from] Malaysia, Thailand, Japan, Vietnam and Sri Lanka, plus two American Ph.D. students.” The latter are from Scripps Institute of Oceanography and UC Santa Cruz. Working with these students, says Hines, “is so much fun!”

Local Thai scientists conduct the interviews with area residents, and Hines describes these young scientists as “very friendly and down to earth.” Her team stays in local housing, hines drives and other locals help to assist them, and rents boats from gulf-side villagers. “Last time we came,” she says smiling, “the person who rents us the boats even built a new boat for us with dolphins painted along the sides.”

Starting in 2005, Hines and her team began giving educational presentations in village schools and talking with the members of village councils up and down the coast. In 2012, they were continuing to create educational materials to distribute to local communities to raise awareness about cetacean coastal habitats and the animals’ survival needs.

Graduate student Jennifer McGowan has both observed and participated in some of these activities and has high regard for her educational experience. In some ways, McGowan’s history has shadowed Hines’s own serendipitous zigzagging. “Meeting Ellen shifted the course of my life,” she says. “Things and opportunities that she offered to me have resulted in the last year of my life being amazing. I got to go to Thailand,” says McGowan, and thanks indirectly to Hines, she was also able to study in Australia. The opportunities have “snowballed” from meeting her, says McGowan, and have been “really incredible.”

McGowan is uncertain about what additional opportunities lay ahead, and as is Hines herself. Unexpected events and unplanned actions led Hines to find her life’s calling, and she remains unsure where the road will take her next. “I am looking into doing more research in Myanmar,” Hines muses, “and possibly looking more into the finless porpoises in China.” No matter where she goes, her path and her efforts are likely to reflect the actions and words of George Shaller. This famous naturalist tracked baboons, pandas, snow leopards, elephants, mountain gorillas, and other terrestrial animals to their remote terrestrial environments. In one of his many volumes, he writes about his lifetime’s work and his dedication to helping “fragments of wilderness endure.” Someday, perhaps Hines will be noted for a similar effort in the realms of marine mammals and their often-fragile habitats.