BETWEEN the TIDES

Friends of Fitzgerald Marine Reserve

SEPTEMBER 2008

Long-Term Monitoring Provides Valuable Baseline Data

by Ellen Gartside and Jenna Kinghorn

Knowing when a coastline is healthy or unhealthy is difficult in part because it is subject to so many natural change cycles. The tide rises and falls daily, and seasonal variations in currents and weather-driven surf change the shape of beaches from broad and flat to narrow and steep. Heavy rain causes saturated bluffs to collapse and enlarges creek mouths into brackish lagoons. Masses of organisms such as By-the-Wind Sailors wash up on the beach during certain months as part of their natural lifecycle, and tar balls—some from natural sources and others from known sunken ships—wash up periodically in rough weather.

"So the question becomes, how clean is clean?" says Shannon Lyday, the coordinator of the Beach Watch monitoring program run by the Farrallones Marine Sanctuary Association (FMSA). When an event such as the *Cosco Busan* oil spill occurs, how do we know when the oil-stained beach has been returned to its natural state? "When can the cleanup crews leave? We realized in the wake of the *Exxon Valdez* oil spill in Alaska in 1989 that we needed baseline data against which to compare when such an event happens."

Ellen Gartside monitors the health of Montara State Beach as a volunteer in the Beach Watch program. "The best part of Beach Watch is getting to know the natural rhythm of Montara, one of my favorite places on earth." Ellen is one of five original volunteers still with the program.

So the question becomes, how clean is clean?

In 1993 the Gulf of the Farallones National Marine Sanctuary (GFNMS) started the Beach Watch program, which uses trained volunteers to monitor the health of beaches along the coast of central California from Bodega Head to Año Nuevo. (The San Francisco Bay is excluded.) Fitzgerald Marine Reserve (FMR) is part of the Beach Watch program.

"Our volunteers count living and dead organisms found on the beaches year round. They collect tar balls and oiled wildlife." The specimens are sent to labs for testing to reveal the source of the oil that formed the tar balls.

"We now have fifteen years of tar ball deposition data," says Lyday. That data was used to determine when area beaches had been returned to a normal state after the *Cosco Busan* oil spill. "That was the first time in the nation's history that baseline tar ball information was used that way."

Beach Watch data was also used to identify the locations of threatened species so that the *Cosco Busan* Incident Command could direct their resources to protect these critical areas.

A tar ball from spilled oil can be analyzed and traced back to its source, which might be from a fresh oil spill, a natural oil seep or a known sunken ship. Photo courtesy of GFNMS - Beach Watch.

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Our Mission:
To inspire the preservation of our unique intertidal environment through education and the support of research.

The graph displayed across the page bottoms shows tides for 9/1/08 to 3/30/09. Where the date appears is midnight. The reefs are accessible for exploring only during low tides. See: www.fitzgeraldreserve.org/resources.html and click on "high and low tides," for a more detailed tide chart. **Note:** the lowest tides this period are:

-1.01	10/17	7:22 pm
-1.69	11/14	5:18 pm
-1.89	12/13	5:07 pm
-1.69	1/10	4:06 pm
-1.17	2/8	3:49 pm

Beach Watch *continued from page 1*

"Our volunteers are also usually the first to spot a wildlife mortality event in which elevated numbers of dead animals of one species or another are found on the beaches. We alert the Marine Mammal Center, the Department of Fish and Game, and other agencies we collaborate with so that they can investigate the causes." (See *Beach Watch Data at Work* on page 5.)

Friends of Fitzgerald Marine Reserve's newest board member, Ellen Gartside, began volunteering with Beach Watch when the program began. At the time she was working as a Park Aide at FMR. Fifteen years later she is still enthusiastically walking Montara State Beach once a month to perform a detailed survey of the items washed up and note which organisms—humans included!—are using the beach. We asked her about her experiences as a Beach Watch volunteer, and here's what she had to say:

JK: What is the organization that runs Beach Watch? When did it start and what areas does it now cover?

EG: Beach Watch is a long-term monitoring program that was started in 1993. It is administered through the Gulf of the Farallones National Marine Sanctuary (GFNMS) and implemented by the Farallones Marine Sanctuary Association (FMSA). The goals of Beach Watch are to:

- Provide a baseline of information on the average presence of live and beach cast marine organisms.
- Assist Sanctuary management in the early detection of natural and human-caused environmental perturbations.
- Develop a network of expert shoreline surveyors who can respond during an oil spill.
- Educate the public about the coastal environment.
- Encourage the public that they can make a difference in protecting their beaches.

Beach Watch covers the outer coast of central California between Bodega Head in Sonoma County through Año Nueveo State Reserve in San Mateo County. Tomales Bay and Bolinas Lagoon are included; Bodega Harbor, Drakes Estero and San Francisco Bay are not included in Beach Watch.

The coast is divided into segments. In exchange for the training you commit to surveying a segment for one year.

JK: How did you hear about it and decide to get involved?

EG: I was working at FMR in 1993 and we were asked to participate in the program. I took the training with Bob Breen and Tim Sullivan.

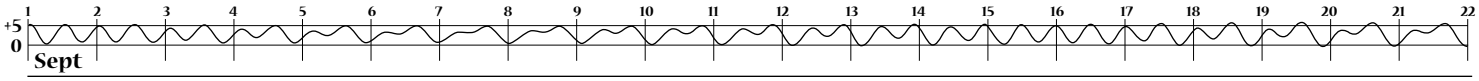
JK: What kind of training did you have to take?

EG: The training was over 10-12 weeks. It's now about 80 hours of classroom and field work. We learned how to identify birds and marine mammals (alive and dead), take photographs for beach profiles and document beach cast (dead) organisms. We are trained to collect oil following very specific protocols using specific materials so that the samples may be used as evidence if needed to identify the source.

JK: When and how often do you do a beach survey?

EG: I survey my beach once a month. The Beach Watch office creates a schedule for the surveys and sends a list of the dates for when your survey should take place. You have a five-day window to complete your survey; for example if your scheduled date falls on a Saturday and you can't do it that day you could do your survey as early as Thursday or as late as Monday.

Ideally you want to do your survey at low tide, and with some beaches you can only access them at low tide, but at Montara I can pretty much go at any low-medium tide height. Some beaches, including mine, are surveyed twice a month. I have a partner, ➤



Linn Johnson, who surveys the beach two weeks after me. It's great having a partner because we can trade dates if we are out of town during our scheduled survey.

Occasionally we are asked to do "special surveys." This fall after the *Cosco Busan* hit the Bay Bridge our Beach Watch volunteers were out surveying beaches every morning at first light to see how far the oil would spread down the coast.

JK: You and Linn survey Montara State Beach. Which other beaches in our area are surveyed by other teams? Did you get to choose a beach, or if not, how was one assigned to you?

EG: For the first year I helped with the sections that encompass FMR. For the second year I also did Pomponio to Pescadero. In 1995 (South) Montara Beach became available and I have been doing that beach ever since. This is my fifteenth year with Beach Watch! (Editor's Note: Ellen is one of only five volunteers to have stayed with the program since its very beginning.) Since I started so early in the program there were beaches to choose from. Right now I'm not sure how a new volunteer is assigned a beach or if they can choose.

Other beaches in our area that are part of Beach Watch include Gray Whale Cove, the entire marine reserve, Maverick's Beach, Princeton Harbor, Miramar, Roosevelt, Venice, Frances, Miramontes, and Cowell Ranch.

JK: How do you perform the survey? Do you collect samples of things you find?

EG: During a survey you walk the entire length of your section on the beach, recording information as you go on data sheets on a clipboard and photographing beach profiles and any dead organisms. Each beach is different, but to give you an idea of how a survey is done I'll explain the routine I have established for my survey.

- I always start at the south end of the beach. I note the time I begin my survey and start walking north.

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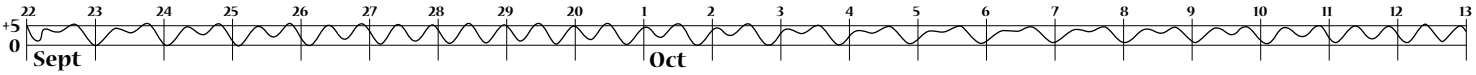
Ellen collects small oiled organisms such as birds and sends them to a lab for analysis. Because plastic is petroleum-based, using plastic gloves, plastic bags, or plastic wrapping would contaminate the specimen. Instead, oiled birds are wrapped in aluminum foil and paper for preservation and transportation. Photo courtesy of GFNMS - Beach Watch.

This photo of South Montara Beach shows the profile of the beach, including its width, rock formations that are covered by sand or revealed, locations of creek mouths, and the steepness from cliff base to surf line, all of which change seasonally. Photo courtesy of GFNMS - Beach Watch.

A dead common murre found on one of Ellen's surveys. If there's evidence of oil or if it's a rare specimen, the bird will be sent to a lab for analysis. Photo courtesy of GFNMS - Beach Watch.



The Beach Watch kit that Ellen carries with her on her monthly surveys includes a clipboard with one form to keep track of every dead organism she sees, another for live animals, a log to describe every photograph she takes, and special forms for documenting any oil she finds on the beach or on a dead or living organism. The kit also includes binoculars, a digital camera, identification guides for marine organisms and birds, gloves, plastic bags and foil for collecting specimens, and containers used to collect oil samples.

A dead California sea lion found on one of Ellen's surveys. Photo courtesy of GFNMS—Beach Watch.

As I walk back along the beach from north to south I look for, count and identify all living birds and marine mammals.

Beach Watch *continued from page 3*

- As I walk north I zig-zag back and forth between the cliff side of the beach and the water's edge. I am looking for any dead organisms and any oil that may have washed up. I also record any people on the beach and what they are doing; surfing, fishing, or just "on the beach."
- As I go I have several established photo points where I photograph the beach or the outlets of creeks.
- If I find anything dead, I identify it, photograph it, and check to see if there is any oil on it. I then mark it in some way so that if it is still on the beach when my partner or I return for the next survey we don't double count it. If it is a bird we clip the primary feathers; if it is a marine mammal we tie a piece of cloth around the flippers.
- As I walk back along the beach from north to south I look for, count and identify all living birds and marine mammals.
- Once the survey is completed I double check all of the information has been recorded correctly on the data sheets. An exciting advance in the Beach Watch data management this year has been the ability to enter our own data on-line.

JK: What are some of the man-made objects you've found?

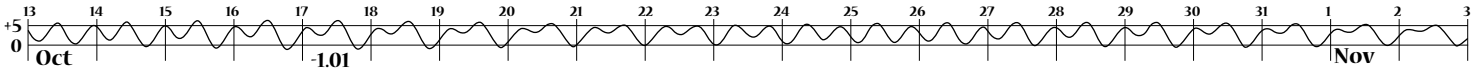
EG: I haven't found too many man-made objects but have found some interesting bottles from Japan and Russia. My favorite man-made beach finds are the art that people create with the sand. There was a very cool mermaid on the beach for a while and people do interesting things with algae and driftwood.

JK: What are some of the most interesting natural objects you've found?

EG: As macabre as it may sound, I have found some interesting dead marine mammals. Last fall there was a perfect sea otter and I have also found a Stellar's sea lion. Being able to examine them when they were dead really let me see some of the characteristics that I had only been able to read about or that are difficult to see on a live animal. And once there was a dead deer.

JK: What kind of seasonal differences do you see during your surveys?

EG: The biggest change I see at Montara is the movement of the sand. At the north end I have been photo-documenting a particular rock. At certain times of the year there is only 10-15 centimeters of rock exposed, then over a few months the sand gets washed out by the surf and there will be up to four meters of the rock exposed. The sand returns to cover it over another few months. ➤



JK: Do you see a lot more junk on the beach right after a big holiday? Do organized beach cleanups make a difference in what you see?

EG: The worst time for trash on the beach is at the end of the school year and after the Fourth of July. I find it hard to understand how people can visit such a beautiful place and then be so disrespectful to it by leaving their garbage on the beach.

Generally, Montara is a very clean beach because there is a very strong local presence on the beach on a daily basis. Over the years I have met the same people during my surveys and they are always picking up trash as they walk the beach.

JK: Do people come up and ask you questions when you are surveying?

EG: Most people ask me what I'm doing when I am dealing with a dead animal or collecting an oil sample, but for the most part walking the beach with binoculars is not that unusual for people to see on the beach.

JK: What's your favorite thing about doing the Beach Watch surveys?

EG: The best part of Beach Watch is getting to know the natural rhythm of Montara, one of my favorite places on earth.

JK: What's your least favorite thing about it?

EG: Windy days!

JK: Has working with Beach Watch changed the way you think about the beach or the ocean, or changed your behavior in any way?

EG: Doing a Beach Watch survey is very different from going to the beach to hang out and relax. You're kind of on heightened sensory alert because you are looking for oil or anything that might be dead. When I'm at the beach not doing my survey I find my eye still looks for the things I would look for on a survey.

JK: Any advice for people who want to become involved?

EG: This year's training just ended. If people are interested they should contact Shannon Lyday, Beach Watch Coordinator, (415) 561-6625 x302; slyday@farallones.org

Read more about Beach Watch online at http://farallones.org/volunteer/beach_watch.php. ◆

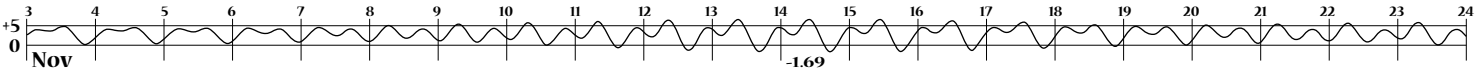
The best part of Beach Watch is getting to know the natural rhythm of Montara, one of my favorite places on earth.

Beach Watch Data at Work

Just a day after Beach Watch Coordinator Shannon Lyday told me, "We're never sure what (our data) will be used for until an event happens," the FMSA newsletter, *Upwelling,* arrived in my inbox with a story about how Beach Watch data has revealed a disturbing increase in harbor porpoise mortality.

"In the past two months, eighteen harbor porpoises have been found dead on beaches between Bodega Bay and Daly City," the article states. "This is an elevated rate for this area based on Beach Watch data… (which) indicates that June and July are the peak months for harbor porpoise strandings in the Bay Area. Since October 1993, surveyors have documented a total of 66 stranded harbor porpoises, 54% of which were stranded during the months of June or July. Unfortunately, the eighteen dead porpoises in the past two months are a concerning amount."

For more about this story, see http://www.farallones.org/e_newsletter/2008-07/HarborPorpoise.htm. ◆



Junior Ra

Fourteen kids ag
our annual week-long
camp. Ranger Sarah Le
help from Park Aide D
teers Linda Barre, Patti
Kumi Ishida, Arpi Hal
helped out.

We found a few dead animals (or parts thereof) on the beach and filled out Beach Watch forms about their species, age, and gender.

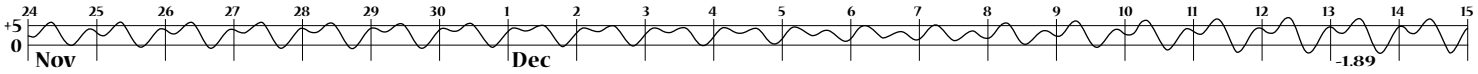
Dominic taught us fish anatomy and supervised our fish dissections.

Ranger Sarah and Dominic taught us how to do a Beach Watch survey (see cover story for more information). We found tar balls on the rocks and counted dozens of pelicans, several gulls, and a few cormorants.

We celebrated the beauty of fish and other sea creat
and reusable cloth shopping bags.

We got to touch and compare baleen and sperm whale teeth and sketch the different tooth shapes of marine mammals that eat different food.

Exploring the tidepools with a friend doubled the fun.



ngers 2008

ges 8 to 11 took part in Junior Rangers summer nz ran the program with ominic Marconi. Volun- Wood, Jenna Kinghorn, leblian, and Peggy Ruse

We learned about what can harm marine mammals, and found out how we can help them survive.

The shark mobile brought an impressive set of great white shark jaws and lots of other specimens to explore.

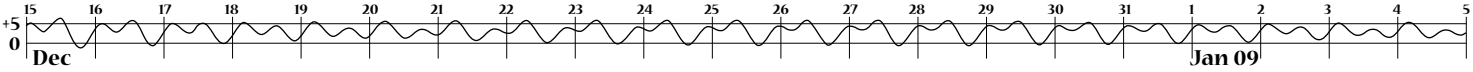
tures by incorporating their designs on our tee-shirts

We went from finding the tiniest tidepool dwellers to learning about the biggest pinnipeds in one day.

We learned that sea otters have the densest fur, and saw that the teeth of one sea otter had turned purple from eating lots of sea urchins!

A lot of activities, such as dissecting a fish, inspired teamwork.

for more photos, see page 10



Meet Tom & Linda Ciotti

by Kelly Huber

Both Tom and Linda grew up in the East, where they developed an affinity for the water. Tom was born and raised in Highland Park, Michigan; Linda grew up in Virginia Beach, Virginia. Whereas Tom spent all of his summer vacations on the Great Lakes or on the inland lakes in Michigan, Linda spent most of her youth taking day trips to the beach on the Chesapeake Bay or to the Atlantic Ocean.

Tom started visiting FMR and in 1989, became a member of FFMR. Tom says if he could have his wish, his "dream job" would have been to be the ranger at FMR!

By the age of eight, Linda had learned to water ski. Every summer, one weekend was spent on a lake in North Carolina where she says she was "in the water at sunrise and only out of it long enough for lunch most days." Most summer weekends with her parents were spent fishing and crabbing. Linda loves all seafood, but she adds quickly that "the seafood must be sustainable now, of course!"

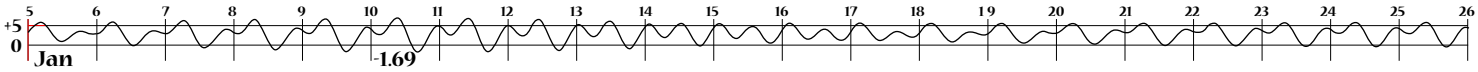
Tom attended the University of Michigan and earned degrees in chemical engineering and law. Upon graduating from law school in 1964, Tom came to San Francisco to work as a patent attorney for Chevron. He has worked forty-three years as a patent lawyer in both corporations and in private firms, including owning his own firm. Tom was one of the first biotech patent attorneys in the Bay Area, and represented Stanford University and the University of California. Something that may surprise you about Tom is that he was a serious video game trademark/copyright attorney, meaning that he was responsible for obtaining rights for all of the PacMan video games! At the beginning of 2006, he formed a green-tech group and earned himself the affectionate nick-name "the Jolly Green Giant." Tom retired from Morrison & Foerster, where he was a partner, at the end of 2007. He was known as the "Grand Fromage" around MoFo for his leadership skills. He will continue on as senior counsel on a limited basis.

Linda, after graduating from high school in Northern Virginia, began her career as a legal secretary. During the last eighteen years she worked, Linda was a freelance secretary and worked in many law firms from Menlo Park to San Jose, which she enjoyed very much. A mutual friend told me "Linda is extremely adept and a very quick study, she can do anything." Tom and Linda met at a law firm. Linda retired in 1996, four months after she and Tom married.

Prior to becoming involved with FFMR, Linda volunteered for four years assisting senior citizens by taking them to their doctors' visits and running errands for them. Linda said the volunteering was "very rewarding." She initially was surprised at the need for such a service in our community. Linda is very well-traveled, as is Tom. Linda's travels have taken her to Europe, Tahiti, Australia, the Caribbean, Alaska and the Grand Canyon. Tom's favorite hobbies are golfing, reading and you guessed it, volunteering at FMR!

Tom and Linda live in Los Altos Hills most of the time. In 1988, Tom purchased a home in Montara right on the ocean near the Pt. Montara Lighthouse hostel. They share their two homes with two very spoiled Norwich Terriers: Aly and Citsa. Tom started visiting FMR and in 1989, became a member of FFMR. Tom says if he could have his wish, his "dream job" would have been to be the ranger at FMR!

For many years, Tom had wanted to become a volunteer at the reserve, but the pull of his law career made it virtually impossible. Finally, in 2003, Linda and Tom took the training class from Bob Breen. Tom's interest in life sciences, chemistry and biology helped substantially. Their library of books on marine biology continues to grow, as does their enthusiasm ➤



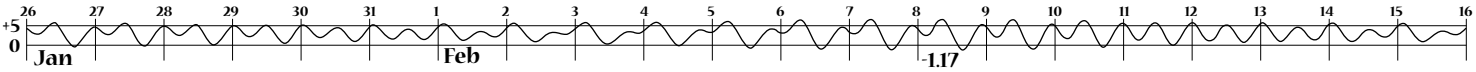
for the plants and animals of the rocky intertidal. Both Tom and Linda can be found at the tidepools many times each month. Leading school groups and educating people is a highlight for both of them. Linda is still amazed that so many students who come to the reserve have never seen the ocean before. Linda says, "If I had to pick, the chitons are my favorite invertebrates, I love the lined chitons." Those of us who know Tom know and understand his passion for the nudibranchs. He says, "They are interesting all-around. I like their colors, and it's always exciting to find them!"

Lucky for all of us, they both joined the FFMR Board of Directors in the fall of 2003, where Linda acted as secretary until last year. Both Tom and Linda have been extremely active Board members. They have attended and helped organize and manage every training class since 2003. Linda has been the docent training coordinator for the past several years. They have very much enjoyed meeting the other volunteers and making lasting friendships. Tom explained that his biggest positive surprise, while being on the Board, was simply "Mary DeWolf." Tom remarked that the Board has certainly evolved over time in very positive ways. Tom also serves on the Board of Directors for the San Mateo County Parks Foundation.

What is in store for the Ciottis? In the legal newspaper, the *Recorder*, Tom is quoted as saying "one of my financial advisers said, you're closing in on 68, and you've got to figure you've got about 10 more years: that's 3,500 more days." Both Tom and Linda will most definitely make the most of their days. Linda has said, "I don't think anyone could enjoy being retired as much as I have!" Tom is enthralled with the biochemistry of marine organisms. He is also interested in the chemistry of water (ie., salinity, PH, nutrients, etc.). It is a sure bet that a very high percentage of their time will be spent exploring the tidepools and educating more and more people at FMR. Additionally, Linda hopes to explore New Zealand early next year! I, for one, am very happy and thrilled to have made the Ciottis' acquaintance. ◆

Linda is still amazed that so many students who come to the reserve have never seen the ocean before.

A group of volunteers from Friends of Fitzgerald Marine Reserve marched in the annual Half Moon Bay Fourth of July parade dressed in tidepooling "uniforms" and hats adorned with cutouts of intertidal critters.



More Junior Rangers 2008

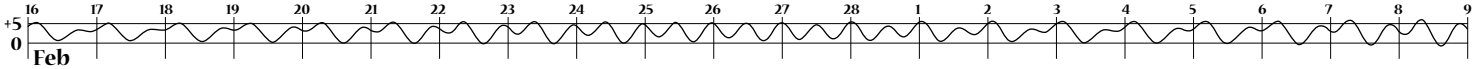
We got up close and personal with the bones, pelts, and skulls of elephant seals (pictured here), harbor seals, and sea lions brought to us by the Whale Bus.

We learned how to classify sharks by their body shapes and other physical attributes.

Shark Mobile exhibits taught us that some sharks have crushing teeth, other sharks have cutting teeth, and the saw shark slices through whole schools of fish with it's long tooth-edged snout.

Ranger Sarah showed her artistic side on fish-printing day.

We learned to measure the density of intertidal life by counting the number of one species in a quadrant, like scientists do.



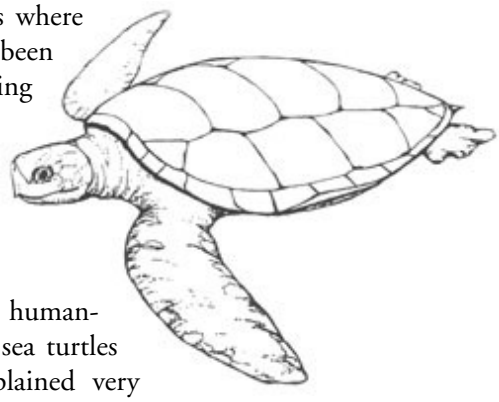
Sea Turtles *continued from page 12*

or more….Leatherbacks have even been seen swimming amongst ice!" I also learned about a sea turtle species I didn't know existed, the flatback sea turtle found in Australian waters. Icons indicate prey and predators and maps show the range of each species.

The photos included throughout the book range from beautiful shots of swimming turtles and adorable hatchlings; to amusing scenes such as a sea bird resting on a floating turtle's back; to disturbing pictures of tumor-riddled specimens and a turtle's shell sliced open by a boat's propeller.

Sea turtle life phases and various behaviors are described, always relating back to the sea turtle's ecology—its relationship with its habitat and other organisms. A special icon labels information that comes from untested scientific theories because, as the authors explain in Getting the Most from this Book, "OK, let's face it, if all we did was present to you that which we know to be absolute fact this would be a much shorter book. One of the most interesting things about studying ecology, and certainly this is true about sea turtles, is that there is still so much that we do not fully understand."

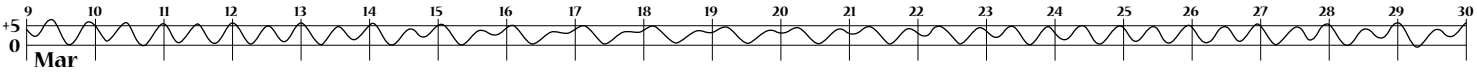
Untested scientific theories discussed include the sea turtle's importance in enriching nutrient-poor beaches, how it may absorb vitamin D by basking in the sun, and how "When juveniles recruit into grazing areas where subadult and adults have already been feeding, it may be that by ingesting the feces of the elders (the non-gross term for this is tactfully called scatophagy), they can inoculate themselves with the proper microflora."



Solutions for many human-caused problems are presented, and there's great information about the conservation efforts of nonprofit organizations and government agencies around the world and how tourists and turtle-watchers can make a difference.

Natural and human-associated threats to sea turtles abound and are explained very well. Solutions for many human-caused problems are presented, and there's great information about the conservation efforts of nonprofit organizations and government agencies around the world and how tourists and turtle-watchers can make a difference.

The book's major flaw is that the writing does not shine stylistically. Some sentences go "clunk," and many pages would have benefited from a closer scrutiny by a copy editor. I'm the kind of reader who generally abandons a book in which I quickly find spelling or grammar errors, but Sea Turtles provides such a wealth of information and inspiration that I'm making an exception—I expect to keep it on my bookshelves forever and refer to it often. ◆



Sea Turtles: An Ecological Guide

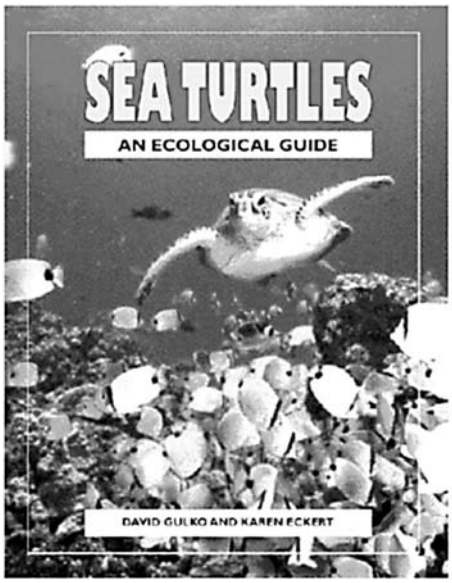
By David Gulko and Karen Eckert; Mutual Publishing © 2004; 122 pages; 8.5 x 11 paperback; $18.95

Reviewed by Jenna Kinghorn

The book is large in format and dense with graphics of all sorts—stunning photos, diagrams, cross sections, flow charts, graphs, icons and maps—but it's not your typical coffee-table book.

Largest of all sea turtles, adult males (leatherbacks) can exceed nine feet in length and weigh 2000 lbs. or more.

I've encountered sea turtles while diving all over the world, but it wasn't until my February 2008 trip to Maui that I started learning about them. The knowledgeable staff of Mike Severn's Diving went well beyond knowing at which dive sites we were likely to find turtles. They talked about how researchers have learned that individual turtles can be identified by the pattern of scales on their faces; how their population has increased during the 35 years they've been federally protected; how they vie for prime underwater resting spots and will often sleep piled one atop the other; and how nobody knows what to do to stop the spread of the tumor-like growths seen on so many of them.



These discussions made me realize that I knew almost nothing about sea turtles, and so I picked up *Sea Turtles: An Ecological Guide* hoping to remedy that.

The book is large in format and dense with graphics of all sorts—stunning photos, diagrams, cross sections, flow charts, graphs, icons and maps—but it's not your typical coffee-table book. When I sat down to read it cover-to-cover I quickly found myself on information overload, every page is so crammed with information in both graphical and text form. I found it all fascinating, but quickly realized I needed to pace myself and read just a few pages at a time to have any hope of letting the information sink in.

The book is well-organized and provides good overviews of ecological concepts as it goes into details about sea turtle evolution, adaptations, behaviors, geographic ranges, and threats to survival. A glossary defines scientific terms, an index gives quick access to information, and the bibliography looks like it provides a lifetime of reading for anyone wanting to explore sea turtles further.

Each of the seven species of sea turtles living today is profiled in one to two pages. "Largest of all sea turtles, adult males (leatherbacks) can exceed nine feet in length and weigh 2000 lbs.

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