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April 2005

Researchers Find WWII Super Sub

—By Fred Gorell

For the Hawaii Undersea Research Laboratory, one of six centers funded by NOAA's Undersea Research Program, there is a hunting season. The hunt is on early each year when the laboratory's pilots take their two *Pisces* manned submersibles on test dives to prepare people and equipment for the upcoming season of undersea exploration and research.

But the training serves an important second purpose—to systematically hunt for historic shipwrecks and other submerged artifacts on the sea floor off Hawaii, where the lab has discovered shipwrecks both mini and monster in size.

This year, the researchers discovered the wreckage of *I-401*, a World War II Japanese Navy submarine capable of launching small aircraft. The highly advanced sub, the largest built until the era of nuclear submarines in the 1960s, had been on its way to bomb the Panama Canal when the war ended. The U.S. Navy brought it back to Pearl Harbor and scuttled it off Oahu after the war.

"It's a double value when training operations also search for and find pieces of history, and we get to see more of the mosaic of World War II," said Barbara Moore, director of the Undersea Research Program in Silver Spring, Md.

The discovery of *I-401* came on March 17 during the third day of *continued on page 2*

NOAA Investigates Florida Keys Dolphin Stranding

—By Connie Barclay
and Trevor Spradlin

On March 2, more than 60 Rough-toothed dolphins, which are protected under the Marine Mammal Protection Act, swam into the shallow waters off Marathon Key in the Florida Keys and stranded.

NOAA Fisheries scientists and their partners in the marine mammal stranding network immediately began working around the clock to rescue as many dolphins as possible, while conducting necropsies on the ones that died to investigate the potential causes for the stranding event.

"Anytime marine mammals strand, it's a very intense situation requiring marine mammal experts

from various organizations," said NOAA Fisheries biologist Laura Engleby, who worked with the news media covering the stranding. *continued on page 6*



Courtesy of Bob Care Photography

NOAA Southeast Fisheries Science Center pathologist Dr. Ruth Ewing and Scott Gearhart of Sea World Florida take a blood sample from the fluke of one of the dolphins in rehabilitation following a mass stranding off Marathon Key in March.

Super Sub

continued from page 1

test dives. Led by the lab's chief pilot and director of submersible operations, Terry Kerby, the sub operators steered the three-person submersibles *Pisces IV* and *V* to an area not previously searched. The submersibles' lights fanned out in front of the mini-subs as they moved slowly across the sea floor, pushed along by battery-powered thrusters, at a depth of more than 800 meters off Barbers Point, Oahu.

They saw what first looked like a huge pile of rocks rising four stories high. A closer look told them it was the wreck of a giant submarine, sitting upright but in two parts. Through their view ports the explorers clearly saw the Japanese sub's conning tower and 25-mm antiaircraft guns, which were in near-perfect condition. When they spotted the "I-401" hull number, they knew they found one of the important targets on their search list.

Built in secret by Japan in WW II to carry and launch three fold-up M6A1 *Seiran* attack float planes, *I-401* was one of the largest diesel-electric submarines ever built.

Kerby and Colin Wollerman in *Pisces IV* worked in tandem with Max Cremer, John Smith and Steve Price in *Pisces V* to illuminate the ripped and jagged metal in a debris field between the two sections of the broken submarine, and to pass safely through.

The two *Pisces* were guided by a new navigation system funded by NOAA's Office of Ocean Exploration. "We provided the research vessel with a state-of-the-art navigation system," said Justin Manley, technology lead in NOAA's Office of Ocean Exploration. "The high-accuracy, long-range tracking system gives the submersible pilots greater certainty

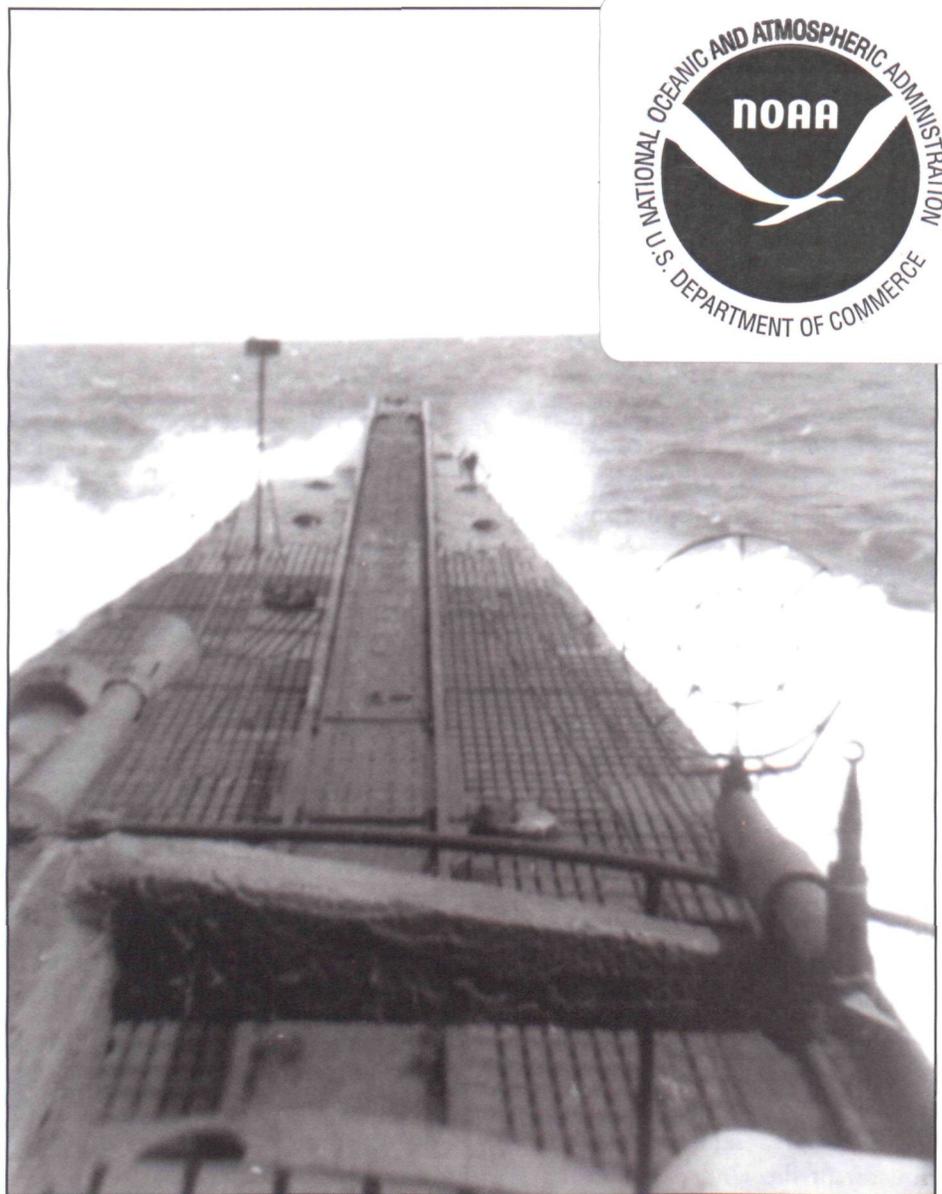
about where they are, and where they've been, making their methodical search process far more effective."

Not far from the wreck of *I-401* are more targets on the laboratory's search list—the remains of another Japanese super sub, *I-400*, and a smaller sub named *I-14*. All three submarines were sunk in May 1946 as post-war target ships for tests of the Navy's Mark-18 electric torpedoes.

Though designed to dive to the

relatively shallow depth of 382 feet—less than the length of the vessel—*I-400* and *I-401* were technologically far ahead of their time. With a full load of fuel, they could travel 37,000 miles and reach targets from San Francisco to New York. Once on target, the super subs could surface and quickly launch their attack aircraft.

"These float planes were rolled out through a massive hydraulic door onto an 85-foot pneumatic
continued on page 7



GM3 John M. Johnson/USN

The Japanese submarine I-401, discovered by the NOAA-funded Hawaii Undersea Research Laboratory scuttled on the sea floor off Oahu, Hawaii, could launch attack aircraft from its deck catapault, shown here during the sub's transport to Pearl Harbor by a U.S. Navy crew.



John Paul Tolson/NOAA

Kristen Crossett.

Kristen Crossett Is the April Employee of the Month

—By Glenda Powell

NOAA produces many reports that are critical to the nation's health and economic prosperity. April's Employee of the Month, Kristen Crossett, played an instrumental role in the development of one of these reports, *Population Trends Along the Coastal United States: 1980-2008*.

Crossett has been with the Special Projects Office of NOAA's National Ocean Service for more than two years, and has demonstrated the breadth of her skills by working on a wide variety of projects, ranging from developing high-quality reports and presentations to impressive mapping products. Her coworkers credit her with being extremely thorough, well-organized, responsive, dependable and a great team player.

"Kristen's responsibilities in producing the recent population trends report highlighted two attributes that any supervisor loves: a passion for getting things right—whatever it takes—and effective

communication," said Tim Goodspeed, deputy of special projects. "Those skills are reflected in the quality of the content and appearance of the report and all of her work."

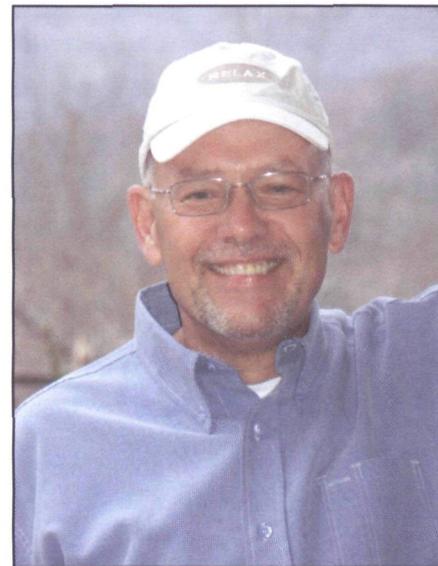
As a physical scientist, Crossett's daily responsibilities include a broad range of duties centering on population, including Geographic Information System and population assessments. She also assists with planning and process design projects and with office retreats and workshops. Her most recent accomplishment, and one that required her to use the full spectrum of her technical, organizational and people skills, was the population trends report.

"One of the best things about my job is that my managers allow me the freedom to work on a diverse number of projects," Crossett said. "They make an effort to expose me and my coworkers to other projects."

Crossett spoke about the report as the lead author in a recent NOAA press briefing that included NOS Assistant Administrator Richard Spinrad and Census Bureau Director C. Louis Kincannon. The Coastal States Organization also referenced the report in a recent press briefing on the importance of coastal areas to the nation. Articles related to the report were included in dozens of newspapers across the country. The report was prominently featured at NOAA's Ocean and Coastal Program Managers' Meeting this past March and will be presented at the upcoming Coastal Zone 2005 Conference in July.

"The population is growing in just a limited space in coastal counties," Crossett said. "This report is a great source of population information and is especially helpful to coastal resource managers."

continued on page 8



Tom Normand

Ron Redmon.

Ron Redmon Is the April Team Member of the Month

—By Dane Konop

April Team Member of the Month Ron Redmon is helping grow the next generation of NOAA leaders.

An adjunct professor at the Federal Executive Institute, Redmon has guided up-and-coming NOAA leaders through NOAA's highly competitive Leadership Competencies Development Program since 2000. The 18-month course combines about five weeks of classroom training at the institute's Charlottesville, Va., residential campus with individual mentoring and developmental work assignments in NOAA or in other government agencies.

"It covers all kinds of leadership skills," said Weather Service meteorologist Mary Erikson, "things like coaching, how to communicate succinctly, deal with the media, how to build rapport, team members and groups [and] different kinds of supervisory situations."

There have been four NOAA *continued on page 8*

Focus On...

Tracking Leatherback Turtles

—By Jim Milbury

During a break from his research near a remote village on the island of New Guinea, Scott Benson saw a snake slither under his cot but didn't pay much attention to it. Getting some rest in spite of the humidity and avoiding the relentless attack of mosquitoes, which had given him a case of malaria on a previous trip, seemed much more important at the time. "I didn't realize it was a poisonous snake until everybody was running around chasing it with a stick," said Benson, a research fisheries biologist from NOAA's Southwest Fisheries Science Center in La Jolla, Calif.

Poisonous snakes, crocodiles, heat, humidity, floods, impen-

etrable jungle and insects—24/7.

This was the environment Benson endured while trying to unravel the mystery of where a population of leatherback sea turtles migrates once they leave their remote nesting beaches on New Guinea and nearby islands.

NOAA scientists hope to learn more about leatherbacks by traveling to remote areas of the Western Pacific to locate their nesting beaches and place satellite tags on the female animals when they come ashore to lay their eggs. The tags allow scientists to track the turtles as they migrate across the Pacific Ocean.

"We know so little about leatherbacks in the Pacific," said Peter Dutton, a NOAA zoologist and the

leader of the sea turtle research program at the La Jolla science center. "We're trying to answer the basic questions about how many there are in the Western Pacific and are they declining or stable."

Not much is known about leatherback sea turtles because they spend nearly their entire life in the ocean. Female leatherbacks crawl up on beaches at night for just a few short hours to lay somewhere between 60 and 120 eggs in a nest, also known as a clutch. In just over two months the less-than-two-ounce hatchlings scramble to the ocean, not to be seen again until the females come back, weighing as much as 1,200 pounds, to lay their eggs.

Leatherback sea turtles are the largest, and oldest, living marine sea turtles. Although they've been around for over 70 million years, their survival is in serious jeopardy, especially in the Pacific Ocean.

There are two remaining leatherback sea turtle stocks in the Pacific Ocean. The Eastern Pacific stock nests on the beaches of Mexico, Costa Rica and Nicaragua. The Western Pacific stock nests in New Guinea, the Solomon Islands and Vanuatu. A population that previously nested in Malaysia is nearly extinct, with only two or three females nesting every year.

Leatherback sea turtles have been severely impacted by human interaction and pollution. The eggs of their nests are taken for food, they die from eating marine debris, such as plastic bags that they confuse with their natural prey of jellyfish, and they get caught in fishing lines and nets.

Dutton's scientific team began researching leatherback sea turtles and their migration patterns several years ago to determine where and when fishing restrictions could be implemented to reduce the number of turtles caught by fishermen. His *continued on page 5*



Bas Wurlianty/WWF

NOAA biologist Scott Benson (seated) speaks to Wau villagers to explain efforts to preserve leatherback turtles and obtain permission to sample leatherback turtles on their beach.

continued from page 4

initial genetic analysis of tissue caught him by surprise.

"When I started getting the first genetic data in," Dutton said, "I began scratching my head and saying, 'Wait a minute, this doesn't make sense.'"

Scientists had naturally assumed that leatherback turtles found off the coast of California came from the Eastern Pacific population of leatherbacks in Mexico. But that wasn't the case.

"The picture that we're coming up with is that most of the Eastern Pacific turtles are migrating down to the Southern Hemisphere," Dutton said. "And the majority of leatherbacks we find in the North Pacific are coming from the Western Pacific."

The research indicated that most leatherbacks that feed off the California coast are likely coming from New Guinea and other remote areas of the Western Pacific, a migration of over 6,000 miles.

"That's really why we turned our focus to the Western Pacific,"

Dutton said, "because the question became, 'If our fisheries are interacting with those animals, then we have a prerogative to figure out how we're impacting those stocks.'"

On this trip to New Guinea, Benson traveled for three days, including a nine-hour boat ride, to reach an isolated stretch of beach on the very northwest side of the island. There he worked with local villagers and the World Wildlife Federation to establish refuges for the leatherback nesting sites and place the satellite transmitters on the turtles.

Benson said the nesting sites aren't difficult to find. "The turtles are like little tractors, and on a good nesting beach it looks like someone has gone over it with a tractor and moved a bunch of sand around."

Placing the satellite transmitters on the turtles is very labor intensive and required assistance from local villagers, who were eager to help.

"They have ties that are spiritual and legends about the turtles as well, and so the turtles are a very



Bas Wurlianty/WWF

With a satellite transmitter attached to its back to track its movements, a leatherback turtle returns to the sea.

important part of their culture," Benson said. "I had about 15 guys from the village doing patrols of the beach looking for turtles, and if they found one I had them call me on walkie-talkies I had brought.

"On the nesting beach you have a window of opportunity when the animal is laying the eggs," he said. "Sea turtle biologists refer to this as the 'trance,' where she is laying the eggs and basically ignores or doesn't seem to be aware of the things that are going on around her."

It's during this time that the researchers dug around the animal and placed a temporary harness with a transmitter. Scientists will monitor the transmitter until the harness falls off the turtle some two to three years from now.

Despite the snakes and insects inherent to the turtle research, Benson plans to return with his colleagues to this site on an annual basis for the foreseeable future.

"If I don't take care of the stuff that goes on at the nesting beaches and help them conserve the animals there, well then there may not be anything left to study out here in California." ☺



Bas Wurlianty/WWF

With the help of local men, NOAA biologist Scott Benson (center) attaches a shoulder harness for a satellite transmitter to a leatherback turtle at Wermon Beach on New Guinea.

Dolphin Stranding

continued from page 1

“Our rescue teams are faced with very difficult work, sometimes standing in cold water, holding the animals upright through the night so the animals can breathe and be treated by the medical officials on scene. It is also a race against time, as the rescue team examines and treats the live animals immediately to keep them alive, while simultaneously trying to conduct dissections on the dead ones as quickly as possible so that important diagnostic data are not lost during the natural decomposition process.”

“Each stranding event is a valuable opportunity to learn more about what may be causing marine mammals to strand, and provides insights into the health and biology of these populations,” said Dr. Teri Rowles, NOAA Fisheries’ lead marine mammal veterinarian and the coordinator of the Marine Mammal Health and Stranding Response Program. “Each case is unique and requires the expertise and dedication of countless individuals and groups. It may take weeks, months or even longer to determine what may have caused a particular event. However, we work as quickly as possible to understand the circumstances behind an event so that adequate and appropriate treatments are provided to the live animals.”

The NOAA-coordinated stranding network includes veterinarians, marine mammal biologists, pathologists, toxicologists, infectious disease experts, animal care person-

nel and communications experts, to name a few. Members of the rescue team come from local organizations near the stranding location or, if needed, from organizations based in other parts of the country. The rescue efforts depend heavily on cooperation and teamwork among the responders, especially when live animals of such significant num-

Their top priority is always to provide humane animal care and minimize suffering as much as possible.

Marine mammal stranding events attract great public and media attention, and the dolphin mass stranding in the Florida Keys was no exception. “We try very hard to walk reporters through the investigation process and to explain the suite of analyses we have to perform in our effort to learn what causes a stranding,” Engleby said. “It is important that we explore all possibilities so we don’t inadvertently miss anything.”

Marine mammals strand for a variety of reasons, including disease, biotoxins such as those from harmful algal blooms, contaminants, ecological factors such as weather, tides and lack of food sources, entanglement in marine debris or fishing gear, collisions with vessels, acoustic trauma and old age and related diseases. In the past decade, only pilot whales have stranded more often in the southeastern U.S. than rough-toothed dolphins.

Rough-toothed dolphins are primarily found in tropical to warm waters in the open ocean, where they feed on fish and squid.

They are extremely social animals, forming groups of from a few dozen individuals to more than a hundred animals. They have even been observed in the wild assisting each other with feeding.

“These dolphins are off-shore animals. Anytime they are near
continued on page 7



William McLellan/UNCW

(top to bottom) David Rotstein, a University of Tennessee veterinary pathologist, Alex Costidis, a marine mammal biologist with the Florida Fish and Wildlife Conservation Commission, and Gretchen Lovewell, a fisheries biologist with NOAA Fisheries, begin the initial exterior assessment of a dead rough-toothed dolphin, one of more than 60 that stranded off the Florida Keys in March.

bers are involved.

The rescue team works to return healthy animals to sea as soon as possible, while trying to stabilize sick animals on site or at rehabilitation facilities. Rescue team members often face the difficult decision to euthanize animals that are suffering and cannot be saved.

Dolphin Stranding

continued from page 6

shore, in shallow coastal or estuarine waters, or stranded on a beach, we are concerned," Rowles said. "They are not used to the coastal environment, which has hazards that are unfamiliar to them, such as in this case, sand or mud flats, shallow banks combined with fringing mangrove networks."

Coastal and off-shore animals also often have different infectious diseases, which can be transmitted through interactions between species that don't normally come into contact with one another.

In the past few years, scientists have increased efforts to examine carcasses and live stranded animals and have discovered new diseases and new pathogens that affect marine mammal populations.

Despite this increased knowledge, the exact cause of most stranding events remains unknown.

"We need to gain a better understanding of population threats and pressures, and stranding events provide us with unique opportunities to do that," Rowles said.

Rowles said the key in responding to strandings is to take a measured forensic approach, beginning with investigating all possible causes, and discarding those possibilities not supported by evidence, until the most likely explanation is determined.

"It's frustrating when people prematurely implicate a single cause before looking at all the data," Rowles said. "We are doing everything we can to help these animals and to learn as much as possible about the health issues they face. However, there is still much we do not know about emerging diseases, biotoxins, contaminants and sound in the ocean and how they impact marine mammal populations. Over the

past several years, we have developed comprehensive protocols to objectively and systematically investigate stranding events to look at all potential causes. These investigations always take time in order for us to be thorough."

Rowles says that although there are a number of reasons why marine mammals strand, there are typically two types of stranding events—group strandings and single strandings.

In each type of stranding, the investigation starts by identifying exactly what species, stock and population is stranding.

Stranding response team members do a variety of tests on the live animals in rehabilitation, including taking blood samples, urine tests, ultra sound, biopsies and cultures, to name a few. Team members also do necropsies on the dead animals, including organ tissue analyses, histopathology, biotoxin analyses, genetics and more.

In the weeks following the March Marathon Key stranding, NOAA and its stranding network partners continued the care and treatment of the 18 remaining live animals. Scientists also continued to study the samples taken from both living and dead animals to learn about life history, overall health and possible cause for the stranding. This in turn may provide insights into the health of the ecosystem in which they lived.

"We try to identify the root causes so that we can institute possible mitigation measures in the future to reduce the impacts and ensure healthy marine mammal populations," Rowe said.

"Many of us dedicate our lives to studying marine mammals, and it's never easy to see an event like this where so many die," Engleby said. "But it's important to remember that these animals are a significant part of the ocean ecosystem and, as such, are barometers of ocean

health. Therefore, they can give us greater insight into larger environmental issues, which has important implications for marine conservation as well as human health." 🐬

Super Sub

continued from page 2

catapult where they were rigged for flight, fueled, armed, launched and after landing alongside, lifted back aboard with a powerful hydraulic crane," wrote the late Tom Paine in his journal describing his service as the U.S. Navy executive officer of the American crew that sailed the boat back to Pearl. Submariner Paine, who later became NASA's administrator, wrote that within 45 minutes of surfacing, skilled personnel could prepare and catapult all three aircraft.

One of the secret missions planned for *I-400* and *I-401* was for their float planes to deliver a bacteriological attack on U.S. West Coast cities. Paine wrote the plan was cancelled when it was determined such an attack would escalate into a war against all humanity.

The alternate plan was an air strike against the Panama Canal's Gatun Locks to interfere with the movement of U.S. Navy ships from the Atlantic to Pacific theaters of war. But Japan's Emperor Hirohito called for an end to hostilities before the attack took place, and the giant submarines were ordered to hoist a black flag of surrender. Before surrendering, *I-401* crew members fired all 20 torpedoes and catapulted their unmanned float planes into the deep sea.

The giant submarines came too late to influence the end of WWII. For nearly six decades, the super subs rested, nearly forgotten, not far from the wreck of the Japanese mini-submarine who's sinking marked the U.S. entry into the war. 🐬

Redmon

continued from page 3
classes of mostly GS 14s and 15s since the program began. Although training at the institute is somewhat standardized, Redmon has tailored each NOAA class to meet the individual needs of class members and NOAA.

Redmon teaches some classes himself and brings in various experts from the institute, NOAA and elsewhere in government, including members of NOAA's own leadership, Congressional staff, representatives of NOAA public and congressional affairs and the media. But even when others addressed the class, Redmon "was the master of ceremonies, the orchestrator," Erikson said.

Although reading books about leadership and leaders was a big part of the class, the class was "really about discovering the leader in yourself," Erikson said.

NOAA Corps Cdr. Michele Bullock, a member of the second NOAA Leadership Competency Development Program class, agreed. "Foremost, it got me to know myself better, which I think is the number one thing for being a good leader."

She said the training has helped her be a better leader. "I'm more tolerant. I'm now capable of finding alternative approaches to dealing with people to try to find solutions."

Judy Gray, acting director of NOAA's Atlantic Oceanographic and Meteorological Laboratory in Miami, Fla., was a member of the first leadership class when she was the lab's deputy director.

"I was going through the class the exact time employees here at AOML voted in a union," she said. "I used a lot of what I learned in my union negotiations. It really teaches you the fundamental tools of leadership, like how to reach

agreement."

She credits Redmon for the success of the class.

"He's been in the government such a long time. I think he's one of those people who've seen it all. And he can absolutely relate. He's the best coach I've ever met."

Redmon grew up in Alexandria, Va., first wanting to be a writer then later aspiring to be a pediatrician. But he switched directions during his senior year of pre-med at William and Mary College, graduated, then went on to get his masters in political science. A career in government followed, with service at the White House and half a dozen executive branch agencies, including as human resources manager for the Federal Emergency Management Agency, before retiring from government in 1994 as chief operating officer of the Federal Quality Institute.

Ron Redmon is a leader still in search of himself. The current NOAA leadership class will be his last. "My life has come full circle," he said. "If you ask me now what do I enjoy doing most, where do I find my greatest joy for my inner being, it's words. It's sitting and writing."

From his home in North Carolina's Blue Ridge Mountains, Redmon spends a great deal of time on the boards of three non-profit organizations, including working to help children from disadvantaged backgrounds. "For the past couple of years, I've felt something new arising in myself, pulling me in some slightly different direction," he said. "The most accurate words I can put on it are peace-building and social justice."

He said he found working with NOAA leaders to be "among the most gratifying experiences of my worklife. I don't know that I've met more dedicated and gifted people anywhere. It has been a pleasure every step of the way." 🐦

Crossett

continued from page 3

The report serves as the national reference for coastal population trends information, providing a valuable contribution to the public. It was Crossett's vision to develop a high-quality report focusing on recent major demographic trends along the nation's coasts. Crossett also produced a professional-quality poster focused on recent coastal population trends that will be provided to senior NOAA leadership and displayed prominently throughout NOAA.

Crossett's role in developing the report was critical and she had many responsibilities. She collected, organized and synthesized all information associated with this report. She also drafted the text, developed all graphics and maps, and designed the report layout. These maps and graphics have helped make the report a special and outstanding product. Crossett was also responsible for overseeing the printing of the report and poster.

"I love working in the Special Projects Office because it is such a unique environment," Crossett said. "There is such an incredible sense of camaraderie amongst the group." 🐦

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