

Tornado Destruction Video Helps Teach Storm Survival

—By Pat Slattery

NOAA Weather Service field offices are now using video footage of the rubble of a manufacturing plant in Roanoke, Ill., that was leveled by an F4 tornado to teach other manufacturers and businesses how to protect their employees from tornadoes and other severe weather.

Thanks to the Parsons Manufacturing Plant's severe weather plan, 150 employees and visitors rode out the July 2004 storm in reinforced shelters and escaped without a scratch, even though the plant was demolished.

As storm clouds developed during a tornado watch over central Illinois the afternoon of July 13, 2004, the Parsons Manufacturing severe weather plan was put into action by plant management. When NOAA All Hazards Radio broadcast a severe thunderstorm warning for the area, the plant's human resources manager, Craig Joraanstad, let employees, visitors and delivery people on site go about their business while he took on the role of in-house weather spotter.

Joraanstad watched the storm
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NOAA Forecasts an Active Atlantic Hurricane Season

—By Chris Vaccaro
and Carmeyia Gillis

Arlene, Bret and Cindy top the list of names to be given to this year's tropical storms and hurricanes in what likely will be another busy Atlantic hurricane season.

Warmer-than-average water in the Atlantic Ocean, which storms depend on for energy, and the absence of strong upper-level winds, which allows towering thunderstorms to grow, both signal an active hurricane season to come.

Forecasters with NOAA's Climate Prediction Center, Tropical Prediction Center and Hurricane Research Division have a high level of confidence that the Atlantic Ocean will produce 12 to 15 named storms, with top winds of 39 mph and higher, during the six-month hurricane season that begins June 1.

Of those, forecasters expect seven to nine to become hurricanes, with top winds of 74 mph or higher, of which three to five could become major hurricanes with top winds of at least 111 mph.

This outlook exceeds the average of 10 named storms, six hurricanes and two major hurricanes. It also continues the trend of above-average hurricane seasons that have been prevalent since 1995.

There is some good news in the forecast for the Pacific.
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Chris Miller/NOAA

After an F4 tornado destroyed the Parsons Manufacturing Plant in Roanoke, Ill., in July 2004, (left to right) NOAA meteorologists Dan Kelly and Ron Przybylinski join Parsons' manufacturing manager and county emergency management officials as they inspect debris outside one of the plant's storm shelters that saved the lives of 150 Parsons employees and visitors.

Former NOAA Ship *Whiting* to Survey Mexican Waters

—By Jeanne G. Kouhestani

The former NOAA ship *Whiting* now flies the flag of Mexico.

On April 28, officials and onlookers from the United States and Mexico stood side by side in Town Point Park in Norfolk, Va., as the former NOAA ship *Whiting* was officially transferred to and re-commissioned by the Mexican Navy.

The ship's new commanding officer, Lt. Cdr. Marco Diaz Mejia, assumed command by thanking "NOAA and the people of the United States for this generous gift to the people of Mexico."

Then ceremony participants celebrated the rebirth of *Whiting* as *Rio Tuxpan* at a reception hosted by Mexico that featured traditional Mexican food served by waiters in traditional dress.

Whiting was transferred by

authority of Congress and by order of the Secretary of Commerce.

Rear Adm. Samuel P. DeBow, Jr., director of NOAA Marine and Aviation Operations and the NOAA Corps, signed the transfer papers along with the senior representative of the Mexican Navy, Vice Adm. Edgar F. Narro y Quesada.

Though the day was windy and chilly, the sky was blue, portending clear sailing ahead. Behind *Whiting* and the Mexican ship *Durango*, a fire boat shot out a cannon of water to herald the occasion.

This is the first time a decommissioned NOAA ship has been transferred to a foreign government. Both Mexico and the United States will have much to gain from the transfer. *Rio Tuxpan* will continue *continued on page 7*

Storm Survival

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intensify as it drew closer to the plant, then saw a funnel cloud develop, disappear and come back again. Joraanstad radioed the plant office to sound the alert and get employees moving to three steel-reinforced concrete bathrooms designed as storm shelters.

"The storm and the tornado itself formed and intensified in sight of the plant," said central Illinois warning coordination meteorologist Chris Miller, "so Mr. Joraanstad was able to see the initial stages of tornado formation as we were issuing the tornado warning."

As the NOAA weather forecast office for central Illinois broadcast the tornado warning for the storm, Parsons Manufacturing employees were already moving toward their designated shelters.

Satisfied he could be of no more help outdoors, Joraanstad had time to check on employees in two of the shelters before taking refuge in the third indoor shelter. Less than two minutes after Joraanstad got to cover, the tornado swept the parking lot of vehicles and slammed into the plant.

Employees likened their experience in the shelters to being inside a giant blender chopping up sheets of metal.

As they found their way out of the shelters minutes later, employees found the plant almost totally destroyed. Materials, tools, machinery, walls and roof were twisted into piles of scrap metal and unrecognizable pieces of debris. Much of the building and equipment and some 60 cars that had been in the parking lot were simply gone.

Remarkably, nobody emerging from the shelters had so much as a scratch.

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Doug Smith/NOAA

The former NOAA Ship *Whiting* is transferred to the Mexican Navy and re-commissioned as *Rio Tuxpan* in a ceremony April 28 in Norfolk, Va.



John Kocik/NOAA

Ed Hastings.

Ed Hastings Is the May Team Member of the Month

—By Teri Frady

One million. That's how many young Atlantic salmon have been tagged by Team Member of the Month Ed Hastings' tagging teams in his three years of working for NOAA Fisheries in Orono, Maine, to better understand the travels of these rare and endangered fish. Hastings admits he didn't handle every one of those fish, "but I know quite a few of them personally," he said.

Hastings' tagging results in a robust and sound data set for researchers, one that is fast becoming one of the largest such collection efforts in the world. His tagged fish have been recovered in rivers as both smolts and adults, in marine trawl surveys and in commercial fishery samples in Greenland.

"Ed's conscientious efforts have provided a strong foundation for future investigations and contributed greatly to our knowledge of all U.S. Atlantic salmon populations," said John Kocik, the Northeast

Fisheries Science Center's Atlantic salmon task leader. "But I think what Ed's co-workers most admire is his upbeat and totally positive approach to his work. It's just more fun when Ed is in the field with you."

The smolts that Hastings tags are hatchery-reared and destined for Maine rivers that are home to endangered Atlantic salmon. The hatchery strains are derived from the endangered stocks.

Usually, Hastings works with color-coded, silicone-based tags. Tiny amounts of silicone are injected into an area around the smolt's eye or jaw. The color is coded to the place or time of release. The tag remains plainly visible throughout the life of the fish, an easy way for researchers to know where and when a returning adult fish entered a river as a youngster.

Hastings was lured to marine science through literature. "When I was a teenager, I read John Steinbeck's *Cannery Row* and was intrigued by the character Doc—who turns out to be Ed Ricketts," he said. Ricketts was a marine naturalist based in Monterey, Calif., a good friend of Steinbeck's and thought to be the inspiration for several of the famed author's characters.

Hastings hails from New York, and his family has roots in farming. He graduated from the State University of New York with a degree in agronomy. "I had an affinity for soils and plants," he said, "but never lost my interest in aquatic life, particularly saltwater fishes."

After college, Hastings worked as an environmental consultant for 15 years, in and around the Hudson River and Long Island Sound.

But the lure of the sea and Hastings' desire to "get away from the grind of consulting and get
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R.Z. Smith/NOAA

Allyson Ouzts.

Allyson Ouzts Is the May Employee of the Month

—By Brian Gorman

Biologists, especially fish biologists, are by their nature outdoorsy. After all, the outdoors are where their subjects are found. May Employee of the Month Allyson Ouzts is certainly a biologist who fits that al fresco mold. She's a scuba diver, a mountain biker and a formidable soccer player.

But, in fact, Ouzts spends a good portion of her time behind a desk in the NOAA Fisheries northwest regional office in Portland, Ore., working with the National Environmental Policy Act, a 36-year-old law whose intent is to create a national policy which will encourage productive and enjoyable harmony between people and the environment.

There's a strong connection between the goals of the act and Ouzts, who since she was a child has been interested in the social implications of science and how a deeper understanding of science
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Focus On...

NOAA Helps Restore an Oyster Reef in Tampa Bay

—By Chris Smith

Members of NOAA Fisheries southeast regional staff and the NOAA Aircraft Operations Center based at MacDill Air Force Base in Tampa, Fla., teamed up in April with more than 150 community volunteers to build an oyster reef in Tampa Bay for Earth Day and help make one local Eagle Scout candidate's dream become a reality.

Oysters are critically important for improving water quality because they filter excess nutrients and algae from the bay. In the process

of helping save the key's eroding shoreline, the volunteers learned first-hand about the importance and difficulties of restoring oyster reef communities in the Tampa Bay ecosystem.

Led by Commerce Department Deputy Assistant Secretary Tim Keeney and NOAA Fisheries Southeast Regional Administrator Roy Crabtree, the NOAA staff combined forces with members of Tampa Bay Watch, Audubon of Florida, Tampa Electric Company and Boy Scout Troop 339 to shovel



Leslie Craig/NOAA

Miles Croom, NOAA Fisheries southeast assistant regional administrator for habitat conservation, shovels shells.

21 tons of oyster shells into mesh bags and transport the shell-filled bags by volunteer and agency boats to the eroding shoreline of Whiskey Stump Key. Volunteers then set the bags along the island's shoreline to mimic a natural oyster bar.

This will allow the free-swimming larval stage of native oysters to settle onto and attach themselves to the oyster shell reef. If all goes well, the reef should support a self-sustaining oyster colony in about three years, filtering bay water and serving as a sanctuary for other marine life.

Whiskey Stump Key is a relatively small, county-owned island, but it serves as an important bird nesting area, managed by Audubon of Florida.

Eagle Scout candidate Rob Parrish provided the impetus to restore the oyster bar. "I've always been around the water and do a lot of boating, wind surfing and sailing. So I care a lot about keeping the water clean," Parrish said. "When I began planning my Eagle Scout project last year, my father, a NOAA meteorologist with Aviation continued on page 5



Tom Moore/NOAA

NOAA Restoration Center employee Laura Walko (center) and volunteers from Tampa Bay Watch and the Tampa Electric Company shovel fossilized oyster shells into PVC tubes that funnel the shells into net bags that will be used to create substrate to attract oyster larvae.

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Operations Center, suggested I contact the NOAA Restoration Center. Tom Moore with the Restoration Center, an Eagle Scout himself, suggested an oyster reef restoration and put me in touch with Tampa Bay Watch.”

Tampa Bay Watch suggested restoring the oyster bar on Whiskey Stump Key.

“The restoration center helped me design the reef and also helped me obtain some much needed funding,” Parrish said.

The Fisheries southeast office, the restoration center and Tampa Bay Watch helped spread the word, mobilized community members and helped identify the funding necessary to make the project a reality.

“Our staff provided technical guidance throughout the design phase of the project and were all on hand throughout the project’s implementation,” said John Iliff, the restoration center’s regional supervisor. “Our main objectives were to form the backbone of a new



Jack Parrish/NOAA

Boy Scouts join volunteers from NOAA, Tampa Bay Watch, Tampa Electric Company, Audubon of Florida, the Florida Fish and Wildlife Commission, and USGS at the oyster reef site.

oyster reef and to place the shell in ideal oyster growth depth on the island’s north and west sides to protect the shoreline from erosion by ship wakes and storms.”

Parrish said even he was surprised at the immense amount of enthusiasm and support this

restoration project generated.

“This was a magnificent way to celebrate Earth Day,” Crabtree said. “A lot of people did some back breaking work, but it was most gratifying to help Rob restore important oyster habitat in Tampa Bay.” ☺



Tom Moore/NOAA

Deputy Assistant Secretary Tim Keeney passes an oyster shell bag to the chain of volunteers.



Tom Moore/NOAA

Volunteers pass bags of fossilized oysters from a support boat, then lay them side by side along the shore of Whiskey Stump Key. Oyster larvae will eventually cover the whole surface of the oyster bags, creating one large oyster reef.

Hurricane Season

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“There tends to be a seesaw effect between the activity of the Atlantic and Pacific hurricane seasons,” said Jim Laver, director of NOAA’s Climate Prediction Center in Camp Springs, Md. “When one region is experiencing an above normal season, typically the other is often experiencing a below normal season.”

This is likely to be the case this year.

NOAA forecasters say there’s a high probability of a below-average hurricane season in the eastern Pacific, which begins earlier than the Atlantic on May 15 and doesn’t end until November 30. A total of 11 to 15 named storms are forecast with six to eight becoming hurricanes, including two to four major hurricanes. While the number of storms forecast for the eastern Pacific is close to that for the Atlantic, the Pacific total is below normal for a basin that averages 15 named storms, nine hurricanes and four to five major hurricanes in a season.

For the central Pacific, NOAA meteorologists forecast that two to three tropical systems will affect waters between 140 and 180 degrees west longitude, an area that includes Hawaii.

“Despite the forecast of below normal activity in the central Pacific, there is still a risk that Hawaii could be impacted by a hurricane,” said James Weyman, director of NOAA’s Central Pacific Hurricane Center. “Although rare, hurricanes do hit and cause considerable damage to the state. Hurricane Iniki in 1992 was a category 4 storm that caused billions of dollars of damage. For that reason we work closely with Hawaii civil defense agencies and take part in their yearly hurricane exercise to ensure

that the residents and visitors of Hawaii are properly prepared for the next hurricane.”

Unfortunately for much of the U.S. coastline from Texas to Maine and especially Florida, last year’s forecast of an above-average season was on the mark. NOAA’s 2004 outlook called for 12 to 15 named storms, six to eight hurricanes and two to four major hurricanes. By the end of the season, there were 15 named storms, nine hurricanes and six major hurricanes. Of these, nine named storms affected the U.S.—three as tropical storms and six as hurricanes. Three of the hurricanes made landfall as major hurricanes.

In August, a record eight systems reached at least tropical storm strength. The 2004 season also marked the first time since record-keeping began in 1851 that four hurricanes impacted Florida in a single year.

“There tends to be a seesaw effect between the activity of the Atlantic and Pacific hurricane seasons,” said Jim Laver.

Seasonal outlooks for the Atlantic basin—the Atlantic Ocean, Gulf of Mexico and Caribbean Sea—are produced in mid-May. The early Atlantic outlook, which NOAA has produced since 1998, is updated in August, just prior to what is historically the peak of the hurricane season from late August through early October.

Outlooks for the eastern and central Pacific are issued solely in mid-May.

These hurricane outlooks enable hurricane forecasters, broadcast meteorologists, emergency managers and local government officials to plan for the potentially critical months ahead.

NOAA scientists construct seasonal hurricane outlooks by first

analyzing and predicting the leading recurring patterns of climate variability in the tropics, then extrapolating the probable impacts on hurricane activity.

In particular, the outlooks focus on the net effects of two dominant climate signals—El Niño and La Niña—both of which can be highly predictable.

“Once we predict the strength of these signals, we use statistical methods to forecast the atmospheric conditions and associated levels of hurricane activity,” said Gerry Bell, lead Atlantic hurricane season forecaster at the Climate Prediction Center.

Each outlook projects the overall number of tropical storms and hurricanes, but does not indicate how many will hit land.

Long-range forecasts rely upon large-scale and slow-changing climate signals. But atmospheric factors that steer storms inland are subject to frequent changes and can be on a much smaller scale and therefore more difficult to accurately predict far in advance.

“The increased understanding of multi-decadal climate variability in the tropics in recent years has made NOAA’s seasonal hurricane outlooks possible,” Bell said. “It has provided solid observational evidence that the recent 10-year period is part of the active Atlantic and suppressed Pacific phases of the multi-decadal signal.”

“We can expect generally above-normal Atlantic hurricane seasons for perhaps the next decade or even longer, while the east Pacific seasonal activity will likely remain generally below normal,” said Muthuvel Chelliah, the Climate Prediction Center’s lead Pacific hurricane seasonal forecaster. “Since most of the storms in the central Pacific originate in the eastern Pacific, activity in the central
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Hurricane Season

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Pacific should also remain below normal.”

After the Climate Prediction Center produces its seasonal outlook, it's up to the forecasters at NOAA's National Hurricane Center in Miami, Fla., to monitor the storms that develop in the Atlantic basin and eastern Pacific.

NOAA's Central Pacific Hurricane Center is on watch for the Hawaiian islands.

During the hurricane season, forecasters at the National Hurricane Center and the Central Pacific Hurricane Center issue daily tropical outlooks for up to two days into the future and an assortment of text and graphical forecast products once a tropical depression, tropical storm or hurricane forms. These centers are also the source of tropical storm and hurricane watches and warnings.

Watches and warnings for subsequent severe weather, such as tornadoes and flooding, remain the responsibility of NOAA's Storm Prediction Center in Norman, Okla., and the local Weather Service forecast offices across the country.

Ongoing research at NOAA continues to improve the understanding of climate variability across the tropical region and its impacts on Atlantic hurricane activity. This research has also yielded important distinctions between the two recent active Atlantic hurricane periods 1995-2004 and 1950-1970, which has led to further refinements in seasonal hurricane predictions. These efforts show how accurate predictions of the underlying climate signals can greatly improve seasonal predictions. They also highlight the need for the improved Global Earth Observation System of Systems. ☺

Storm Survival

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“Anybody seeing the pictures would find it hard to believe 150 people walked out of that destruction,” said Dennis McCarthy, director of the Weather Service's central region. McCarthy said the foresight of owner Bob Parsons undoubtedly saved many lives that afternoon. He said he hopes the Parsons example will be followed by others in coming weeks and months.

“Bob Parsons created the severe weather plan when the manufacturing plant was first built in the 1970s,” McCarthy said. “He had seen a tornado go over the very spot that was the site for his new business and knew he had to devise a way to keep future employees safe from wild Illinois weather. By creating the plan and having employees drill for severe weather, he gave his employees an extra five to seven minutes to get to shelter when they needed it most. Confident that Joraanstad was watching the storm, people were able to remain productive up to the minute they were told to go to the shelters.”

McCarthy and other Weather Service officials are using the Parsons Manufacturing success as a training tool for a wide range of Americans in the public and private sectors. “Bob Parsons gives us an excellent example that minimal investment of time and money in teaching employees about severe weather safety can save lives,” McCarthy said.

Even as he and his employees work to rebuild their plant, Parsons said he now rests easier at night. “I don't have to kick myself because I failed at providing a safe place for my employees,” he said. “I would hate to think of living the rest of my life if I had made the wrong choices.” ☺

Whiting

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to serve as a hydrographic survey ship in support of nautical charting and will share its survey data with NOAA.

“Safe navigation and efficiency of maritime commerce are important objectives for both of our countries,” DeBow said. “Hydrographic surveys detect wrecks and obstructions and identify least depths to ensure the safe passage of people and goods through our waters. By working together, we can share data and make our surveying and nautical charting operations more compatible.”

The Office of Coast Survey initiated the transfer through the United States-Mexico Cooperative Charting Advisory Committee.

NOAA Marine and Aviation Operations, which operates, manages and maintains the NOAA fleet, took care of the logistics. The entire effort, including the ceremony, was the result of months of intensive work involving NOAA's Marine and Aviation Operations, Office of Coast Survey and General Counsel, the U.S. and Mexican navies, the Nautical Maritime Museum and the City of Norfolk, among others.

“*Whiting* will be Mexico's first dedicated hydrographic survey vessel and will significantly contribute to that country's mapping and charting capabilities,” said Capt. Roger L. Parsons, director of NOAA's Office of Coast Survey. “We are looking forward to collaboration in hydrographic activities between our two nations. The transfer is part of our cooperative efforts to share data and resources.”

Specific areas of collaboration include hydrographic survey data acquisition and exchange, tidal and current data harmonization, and hydrographic and cartographic personnel exchanges. ☺

Ouzts

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can lead to better conditions for both fish and people.

Ouzts grew up in Georgia in a family that's lived in the South for generations. A stint at a prep school in Connecticut stripped her of most of her Southern accent except, she said, when she goes home for a visit or talks to her mother on the phone.

Ouzts said she has long been interested in the self-sustaining aspects of the environment, especially fish, but also in the human condition and how to improve it. As an undergraduate at Vanderbilt University in Tennessee, she studied biology, earning a B.S. in 1996. She then set off for Honduras, not to do field work with fish, but to teach local children algebra, biology and chemistry.

Following a period teaching at the American School in Nicaragua, she headed back to the U.S. as a graduate student at Auburn University in Alabama, where she got her master's in fisheries and aquaculture.

Meanwhile, at the NOAA Fisheries northwest regional office, where the focus is on Pacific salmon, NEPA was becoming increasingly important, especially as it related to salmon hatcheries supported by a 1938 law known as the Mitchell Act.

"We really didn't have anybody in our Portland office to help with our NEPA obligations," said Rob Jones, head of the region's hatcheries branch. "We needed someone who could help develop a program."

When Ouzts was hired in 2002, she proceeded to do just that. With more than a dozen populations of Pacific salmon in the Northwest protected under the Endangered Species Act and with scores of state, tribal and federal hatcheries operat-

ing in the region, making sure that NEPA works can spell the difference between a program's success and failure.

For those who think salmon comes out of a can with no connection to the natural world, be advised: in the Pacific Northwest, salmon is huge.

One of Ouzts' main jobs is evaluating the environmental effect of 116 salmon and steelhead hatchery programs in the Puget Sound area. These programs are jointly operated by Washington state and the Puget Sound Treaty Tribes and have the potential to affect salmon listed under the Endangered Species Act.

"I just want to make sure when we help set hatchery policy that we make an informed decision and look at different alternatives," Ouzts said.

For a program that can mean \$11 to 17 million a year in federal funding, informed decisions are paramount.

Remarkably, it's Ouzts' personality, as much as her knowledge of NEPA, that makes her such an asset.

"It's her ability to engage groups that might otherwise be our adversaries that makes her so valuable," Jones said.

Although she spends her work days trying to integrate the intent of a 67-year-old law originally aimed at pumping lots of hatchery-reared salmon into Northwest Rivers with a 1969 statute aimed at making the government more environmentally friendly, Ouzts has retained her athletic edge.

When the Portland Fisheries office has its annual summer picnic and things turn athletic, "you want her to be on your team" one of her co-workers said. As Kathe Hawe, a lawyer and NEPA officer in the region's Seattle, Wash., office, put it, "She's a renaissance woman and a joy to work with." ☺

Hastings

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back to research and science" finally pulled Hastings and his wife, Krista, to mid-coast Maine.

This year, after apprenticing in past seasons, Hastings also became a "salmon surgeon," qualified to implant ultrasonic tags in smolts for a different facet of the research on smolt survival. This work requires not only precision, but a deft touch, as smolt survival is so critical in these endangered stocks.

Telemetry receivers placed in the Penobscot River and its estuary pick up the "ping" emitted by the ultrasonic tag carried by the smolt. The receivers record and stamp the signal with time and date information as well as the smolt's identity as it migrates down river and into the estuary.

Hastings spends the rest of the year "crunching numbers," he said with a sigh.

Hastings said his job is both fun and worthwhile. "Returning a magnificent fish like the salmon to these rivers is important," he said. "First, because you hate to see anything go extinct. But also, salmon have touched many lives here in Maine. The passion people have for salmon, it's quite something." ☺

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