

## Hundreds Saved By NOAA Satellites

—By John Leslie

In January, NOAA satellites relayed a distress signal to the U.S. Coast Guard from two fishermen adrift in a life raft after their fishing boat sank 30 miles east of Atlantic City, N.J.

When the Coast Guard rescued them just before their life raft sank, the pair became the latest to owe their lives to the international search and rescue system that last year used NOAA satellites to help save 222 people throughout the United States and in surrounding waters from potentially life threatening emergencies.

Alaska led the nation with 65 rescues in 2005, followed by Florida with 49. Louisiana, California and Hawaii rounded out the top five with 13, 12 and 10 saves, respectively.

The NOAA satellites are part of the sophisticated, international Search and Rescue Satellite-Aided Tracking System, called COSPAS-SARSAT, established in 1982 by the United States, Canada, France, the former Soviet Union, Norway and Sweden.

Since its creation, COSPAS-SARSAT has been credited with more than 18,500 rescues worldwide, including 5,107 within the U.S. and surrounding waters. Most of the rescues each year happen at sea.

The system uses a constellation of NOAA's polar and geostationary satellites along with Russia's  
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## Scientists, Citizens Respond to Mass Dolphin Stranding

—By Teri Frady

It's not a good day when Mendy Garron hears that a winter storm is expected to hit Cape Cod.

"Storms scare me, especially nor'easters. After them, we always find dead things on the beach," she said. Garron is the NOAA Fisheries Service's marine mammal stranding response coordinator in the northeastern U.S. Her region covers U.S. waters from the Canadian border to Cape Hatteras.

Cape Cod is an epicenter for so-called "mass stranding events," when groups of marine mammals come ashore distressed and alive, but with slim prospects for survival even with swift intervention by

trained responders.

"We usually get a 'heads-up' for a mass stranding if people are reporting groups of small marine mammals in or near Cape Cod Bay and we are expecting a storm, high tides, wind or any combination of these," Garron said.

Thursday, Dec. 8, 2005, was not a good day. That afternoon, Garron got a call from Cape Cod Stranding Network Coordinator Katie Touhey: Atlantic white-sided dolphins, usually found offshore, were seen in Cape Cod Bay.

Neither Garron nor Touhey could have known that the storm's winds would knock out much of  
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*Connie Merigo/New Eng. Aq.*

*A juvenile dolphin found struggling near death in shallow waters on Cape Cod is captured and examined by NOAA marine biologist Mendy Garron (left) and National Marine Life Center Director Kathy Zagzebski with the help of a local fisherman. The dolphin was later euthanized.*

## Mass Stranding

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the power and clog roads with debris on the mid-Cape for the next few days, or that the 71 mass-stranded animals they struggled to reach over that time were just the beginning.

The "Holiday Mass Strandings of 2005," as it's called, stretched into February 2006 and comprised 11 separate events. By the end of January, over 125 animals had stranded, and 35 more had been herded away from near-certain demise in the shallow bays around Wellfleet, Mass., a town at the far southeastern reaches of Cape Cod Bay where mass strandings often occur.

The response effort eventually involved staff from the NOAA Fisheries Service, stranding centers from Cape Cod to the Mid-Atlantic, the New England Aquarium and the Woods Hole Oceanographic Institution, plus local officials and businesses.

The Brewster, Mass., Police Department helped move stranded animals into the Cape Cod Stranding Network trailer for evaluation and transport. The Dennis, Mass., Department of Natural Resources helped place identifying markers on the dead animals. The town also provided support for necropsies.

The efforts to save live stranded dolphins was assisted by staff and volunteers from the International Fund for Animal Welfare, the National Marine Life Center, the New England Aquarium and the International Wildlife Coalition.

Teams of volunteers spent long hours waiting out the tide over the next 56 days, looking for dead animals when it was low and live animals when it was high. In the end, 22 stranded animals returned to the water alive are believed to have survived.

"Every event is different," Garron said. "I have to immediately think about what logistical support a responding team is going to need and where I can get it." That can mean anything from people to equipment, to interacting with concerned local officials and the general public, she said.

"I try to stay current on where the most typical things we'll need can be found, so that during a mass

triaging them for treatment and sampling. Touhey's organization also works closely with the New England Aquarium.

The Fisheries Service's National Marine Mammal Health and Stranding Response Network is a nationwide program that uses federal assets to manage and support a direct response by partner institutions. It's part stewardship for animals covered under the federal Marine Mammal Protection Act and part conservation research, since the data gathered are important for assessing overall health in these populations and for finding health problems that may be serious or influence other marine life. Although dol-

phins and pilot whales are not listed under the federal Endangered Species Act, they are protected under the act.

Some partners in the network, such as the New England Aquarium and Woods Hole Oceanographic Institution, are well known. But the majority are smaller, private, non-profit organizations like Touhey's.

Until very recently, partners in the network received little direct financial support from the Fisheries Service for their work. Since 2001, however, the John H. Prescott Marine Mam-

mal Rescue Assistance Grant Program has provided a way for partners to compete for Fisheries Service funds to defray costs.

Last year, the Cape Cod Stranding Network was awarded \$100,000, the New England Aquarium \$150,000 and the Woods Hole Oceanographic Institution just under \$100,000



*NOAA Fisheries Service veterinarian Dr. Rogers Williams and New England Aquarium biologist Belinda Rubenstein look for evidence of disease during a necropsy of a pilot whale that stranded on Cape Cod.*

stranding I'm only tracking down things that are uniquely needed for that event. It's not always easy to find bulldozers that are readily available at short notice."

Network responders like Touhey have different priorities: getting the right team together, then getting that team on the road and to the site. Once there, they assess the condition of animals and start

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Valerie Mickelsen/Raytheon

Mark Hyde.

## Mark Hyde Is the Team Member of the Month

—By John Leslie

NOAA's new Satellite Operations Facility, a high-tech hub for the agency's space-based information gathering for weather forecasting and emergency rescues, is nearly finished in Suitland, Md.

Mark Hyde, a Raytheon contractor and NOAA's Team Member of the Month for February, played a critical role in the installation of a communications system at the facility to support the next generation National Polar-orbiting Operations Environmental Satellite System, called NPOESS for short.

NPOESS, which is several years away from reality, is being planned as the satellite system of the future for its ability to combine the existing polar-orbiting satellite systems of NOAA and the Defense Department into one efficient, high-performing space-based program. NPOESS is expected to improve weather and climate forecasting and assessments and help mitigate natural hazards, such as wildfires and drought.

A principal systems engineer, Hyde is the Satellite Operations Facility's deployment manager for the Integrated Program Office, the NOAA-DOD team leading the effort to build the satellite system. He oversaw the successful installation of the communications system, which included 17 computer equipment racks and 60 computer workstations. It was a \$40-million endeavor that was finished on time and under budget.

But it was not without challenges.

"The most difficult part [of the installation]—the first communications system to be installed in the new building—was staying out of the way of the construction team, while at the same time trying to use the resources they were using," Hyde said.

In addition to the NPOESS activity, when complete, the Satellite Operations Facility will house government and contractor staff to operate NOAA's Satellite Operations Control Center and the Satellite Processing Center. It will also maintain the U.S. Mission Control Center for the Satellite-aided Search and Rescue program, commonly known as COSPAS-SARSAT, the National Ice Center and other critical NOAA satellite operations.

While his team was busy with the communications installation, Hyde said there were two significant errors in the electrical grounding and floor spacing that could have caused a major headache later.

"We brainstormed for awhile and created a new floor layout that was functional, yet it met the space allocation and the facility code requirements," he said. "Implementing these changes, we were able to recover our space and not jeopardize future NPOESS and Satellite Operations Facility installations."

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Roger D. McCollum/NOAA

Jason Manthey.

## Jason Manthey Is the Employee of the Month

—By Chris Smith

As Hurricane Katrina made its way inland across southern Mississippi this past August, 100-mph winds, upwards of six inches of rain and a 12- to 16-foot storm surge pummeled Pascagoula, home to the NOAA Fisheries Service's Seafood Inspection and Mississippi Laboratories and home port for the NOAA Ships *Gordon Gunter* and *Oregon II*.

"Nobody visualized how bad it was going to get. We expected that Katrina would have the greatest impact further to our west," said Perry Thompson, NOAA's southeast fisheries vessel coordinator. "But we had nine feet of water above the dock and at least four feet in all the buildings that survived. Every building in the facility was destroyed or gutted. One of the worst problems was that the sewage plant next door overflowed and flooded our entire main building. It's unlikely that we'll be able to salvage the building or

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# Focus On...

## Counting Humpback Whales



*Jean Souza/NOAA*

On Kauai, Boy Scouts (left to right) D. J. Herr and Darren Valencia and (left) parent David Herr scan the ocean for passing humpback whales and review instructions and forms with assistant Boy Scout leader Stewart Burley.



*Kevin Brammer*

Hawaiian Islands Humpback Whale National Marine Sanctuary staff members (left to right) Breena Martin and Christine Brammer review humpback sighting forms while volunteers at Waimanalo Beach Park record whale sightings on the windward side of Oahu.

—By Dane Konop  
Observations of humpback whales off the Hawaiian Islands by over 650 volunteers Jan. 28 and later this winter may help confirm that the population of these giant but endangered marine mammals is increasing.

The volunteer members of the public participated in the annual humpback whale ocean count sponsored by the Hawaiian Islands Humpback Whale National Marine Sanctuary, which is administered by NOAA and the state of Hawaii.

Scientists estimate two-thirds of the entire North Pacific population of 4,000-5,000 humpback whales congregate in Hawaiian waters each winter to breed, calve and nurse their young before migrating back to the waters off southeastern Alaska in the spring to feed.

The volunteer observers, who were stationed in groups at 61 sites on the islands of Kauai, Oahu, Hawaii and Kahoolawe, included local residents and visitors, some of whom return to Hawaii every year to participate.

Humpback whales, which can be nearly 50 feet long and weigh upwards of 50 tons, are found in all of the world's oceans. They were hunted by whalers nearly to extinction before an international ban on commercial whaling went into effect in 1964. Studies by NOAA and other whale researchers indicate that their worldwide population, estimated to be between 5,000 and 7,500, appears to be increasing about seven percent per year, an encouraging sign.

At each viewing location, volunteers documented the location and behavior of humpbacks they observed, led by site leaders. The site leaders and many of the other volunteers are trained by the sanctuary staff about how to collect and record the observations and about the behavior of humpback whales.

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whales and other marine mammals.

“The site leaders are collecting census data, counting the numbers of calves and adult humpback whales that they see in a specified period,” said Christine Brammer, NOAA’s Oahu programs coordinator. “They start at 8 o’clock in the morning and observe in 15-minute increments. It’s 15 minutes on and 15 minutes off to avoid counting the same whale twice. And they don’t quit until 12:15.”

The general volunteers count the number of whales they see in a 30-minute period from 8 a.m. until noon, as well as the number of blows, breaches, dives and flaps of any type that they observe.

“If one site continually reports that they see fluke-up dives, that is indicative of a whale diving deeply, which could mean they’re resting in the area,” Brammer said. “If you see a lot of blows and a lot of dorsal fins, whales are probably traveling through an area, not hanging out there. If they’re slapping or breaching, it’s thought that has to do with communicating with other whales.”

At each site, volunteers are also mapping the location where humpbacks were spotted to help answer basic questions about their movements. “Every year, are the whales always the same distance off shore? Are they closer? Are they farther? How does this relate to depth of water, for instance,” Brammer said.

“[The volunteers] end up learning about a lot of other things. Off Kauai and the Big Island and even off Oahu, we also see sea turtles, Hawaiian spinner dolphins and Hawaiian monk seals, the most endangered seal in the U.S.,” she said.

Since the observers tend to draw a crowd, volunteer naturalists are on hand at most of the more popular sites to explain the behav-



*Kevin Brammer*

*Ocean Count coordinator Christine Brammer spots humpback whales off Oahu’s Lanai Lookout.*

ior of the whales and other animals seen.

“People who are park visitors will stop by and ask what’s going on,” said Kauai programs coordinator Jean Souza. “At a beach park on the south side [of Kauai], where there were two naturalists on hand, we had over a hundred and fifty people come by.”

The January count and two others on the last Saturday in February and March will complement scientific studies by NOAA and other researchers. But they also serve a public education purpose.

“I think it’s a way for us to get the word out about humpback whales to a group of folks who are interested but may not know that much about whales,” said Souza, who called the ocean count an “incubator” for public participation. “It’s a nice combination of social interaction with fellow counters as well as watching whales. [The volunteers] have a good time and they become more involved with our program, perhaps offering to do other things with us. Many of our long-term, serious volunteers actually started out as ocean count volunteers.”

It’s a win, win, win situation for the volunteers, NOAA and the whales.

“The sanctuary was designated to protect humpback whales and their habitat in Hawaii,” Brammer said. “We think it’s a great opportunity to teach humpback whale awareness while also teaching the community an underlying marine conservation ethic.” ☺



*Jean Souza/NOAA*

*Ocean Count site leader Gary Hoover counts humpbacks at the Navy’s Pacific Missile Range on Kauai.*

## Search and Rescue

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COSPAS spacecraft to detect and locate distress signals from emergency beacons onboard aircraft, boats and from hand-held personal locator beacons. Once the satellites pinpoint the location of the distress within the U.S. or surrounding waters, the information is relayed to the SARSAT Mission Control Center in Suitland, Md., and sent to a rescue coordination center operated by either the U.S. Air Force for land rescues or U.S. Coast Guard for water rescues.

"The SARSAT program is doing exactly what it was intended to do, save lives," said NOAA Administrator Vice Adm. Conrad C. Lautenbacher, Jr., U.S. Navy (Ret.). "NOAA satellites and the quick responses of the U.S. Air Force and Coast Guard continue to be the difference between life and death."

On June 10, 2005, U.S. Coast Guard crews, in two separate incidents, rescued five people from choppy waters off the eastern Florida coast. These rescues pushed the total number of lives saved in the U.S. through SARSAT past the 5,000 mark.

Last year saw a slight rise in the number of people buying and registering emergency beacons with NOAA; 19,282 beacons were registered in 2005, compared to 18,343 in 2004. The total number of registered beacons now stands at 142,222.

"The more emergency beacons that are registered with NOAA, the better able SARSAT will perform to save lives," said Gregory W. Withee, assistant administrator of NOAA's Satellite and Information Service.

"Beacons remain one of the most reliable means of signaling a distress to search and rescue personnel," said Lt. Cdr. Jay Dell, COSPAR-SARSAT liaison officer

with the Coast Guard's Office of Search and Rescue. "The timeliness and accuracy of SARSAT alerts are extremely valuable to search and rescue planning and response."

All U.S. emergency beacon owners are required to register their units with NOAA. In addition to registering by mail or facsimile transfer, the NOAA SARSAT Program operates a Web-based system that allows for faster and more up-to-date registrations over the Internet.

The National Beacon Registration Database provides a convenient, secure way for beacon owners to provide their name, phone numbers and other critical information without having to mail or fax the information. The system also allows the beacon owner to revise their registration information as it changes over time.

"Registration is not only required by law, but it is perhaps one of the most important responsibilities to owning an emergency distress beacon," said NOAA SARSAT Operations Lead William Burkhart. "Without this critical information, the search and rescue centers cannot respond to a potential distress as quickly. That delay may be the difference between life and death."

"We've seen tremendous growth in 24 years in the number of beacon registrations and in the number of lives that have been saved," said NOAA SARSAT Operations Support Officer Lt. Jeffrey Shoup. Shoup travels around the country, educating audiences of pilots, boaters and others who work or participate in recreation outdoors about emergency beacons, including the planned phase out of 121.5- and 243-megahertz frequency beacons.

Beginning in 2009, NOAA satellites will only detect the 406-megahertz distress signals. The basic reasons, Shoup said, are

safety, accuracy and timeliness.

"Beacons using the 121.5-megahertz frequency lack a unique identifier, which enables search and rescue teams to quickly determine whether the distress signal is legitimate, and not a false alarm," he said. The 406-megahertz beacons "have plenty of [user] registration information, which makes it easier for the search and rescue responders to verify whether the activation was an accident or the real thing. There's always precious time lost with 121.5-megahertz beacons, which may prove to be a matter of life and death."

By contrast, NOAA satellites can instantly detect signals from the newer 406-megahertz beacons. Many of these new beacons have a built-in global positioning system feature that helps satellites and rescuers zero in on the location of the distress signal faster and more accurately than 121.5-megahertz models.

Another advantage is accuracy. The GPS feature of the 406-megahertz model can help pinpoint the location of someone in danger to within 100 feet of their location in a matter of minutes. At best, the 121.5-megahertz models have a 12-mile accuracy range.

The move to deactivate the satellite detection of 121.5-megahertz signals was an international agreement, endorsed by the United Nations. "This means users of the older beacons should begin now to transition to the newer 406-megahertz models, because on Feb 1, 2009, our satellites won't be able to pick up your distress signals," Shoup said.

The newer Personal Locator Beacons, which can be carried by individuals at work or play in the outdoors, come equipped with the 406-megahertz frequency and the GPS technology. In July 2003, the

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## Mass Stranding

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through the program for stranding response and research during 2006.

Sometimes stranded animals are ill or injured. Other times, they are just unlucky.

The shape of Cape Cod, the currents within the bay it forms along its northern side and the bay's extremely broad but very gently sloping near-shore bottom create dangerous conditions for some marine mammals, even if they're healthy.

The animals involved in the Holiday Mass Strandings were pilot whales, common dolphins and Atlantic white-sided dolphins. There's a long history, even to Colonial records, of mass pilot whale strandings on Cape Cod.

"They're very social and tend to become even more so, bunching up into tight groups if they get disoriented," Garron said.

Once in Cape Cod Bay, particularly in the near-shore areas around Wellfleet, it's easy for them to get caught as the tide starts to go out.

"The same thing happens if we

have a storm event," Garron said. "The wind strengthens the current, which can then pin animals in water that is too shallow for them when the tide is out."

Stranding events involving mixed groups of common dolphins and Atlantic white-sided dolphins are unusual, since both species are usually found offshore.

Garron said there's speculation that the warmer water temperatures this year brought their prey inshore and they got caught in the current. "Once in Cape Cod Bay, they were disoriented and couldn't find a way out."

Many of the dead animals were also necropsied—a postmortem examination by researchers to gather biological information and try to determine how healthy the animal was and what caused its death. Since one important function of the network is to track the health of marine mammal populations, necropsies are an important component of that effort. Dr. C. Rogers Williams and Dr. Bridget Dunnigan, both staff veterinarians at the NOAA Fisheries Service Woods Hole Science Aquarium in

Woods Hole, Mass., necropsied some of the animals.

"We didn't find anything obvious that looked like the strandings were caused by illness," Dunnigan said, "but we took samples to check for things like diseases and toxins."

"Also, we looked at stomach contents and for parasites, which may yield some clues," Williams said. "Although not related to the stranding, we did find one parasite that may not have been reported yet in Atlantic white-sided dolphins."

Some relatively healthy animals that stranded were captured and released after being fitted with satellite tracking tags.

"We do have satellite tracks for two of the animals released. They have moved offshore," Garron said. "It's very encouraging." ☺

## Search and Rescue

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Federal Communications Commission authorized PLBs for use across the country, following their successful demonstration in Alaska, where more than 200 lives were saved from 1993 to 2004 with the help of PLB technology. This led *Popular Science Magazine* to name the PLB one of its "Best of What's New" in 2003.

So far, the public seems to agree. The number of PLB registrations received at NOAA has skyrocketed. In 2004, users registered 2,092 new PLBs. In 2005, there were 6,160 new registrations.

"What's encouraging is the more beacons that are registered increases the chances that a person will be rescued if a life-threatening emergency arises," said Ajay Mehta, NOAA's SARSAT program manager at the SARSAT Mission Control Center in Suitland, Md. "That's what the SARSAT program is all about." ☺



Jamison Smith/NOAA

NOAA environmental specialist Jennifer Cucksey examines a live common dolphin that stranded in Wellfleet, Mass. The animal, which was near death, was later euthanized.

## Manthey

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much of its contents. It was a horrible mess and we're all doing what we can to get things back to normal in about two years."

From his home in Kansas City, Mo., Jason Manthey, an electrical engineer and project manager for NOAA's Eastern Region Project Planning and Management Division and the February Employee of the Month, realized from newscasts that Katrina had profoundly impacted the Pascagoula facilities where he had spent considerable time supervising projects and contracts for the past seven years. After getting an update from Thompson, Manthey left immediately for Pascagoula.

"When we dispatched Jason, we asked him to take on the task of stabilizing the area," said Manthey's supervisor, Roger D. McCollum. "By going into the ruins of the lab after the storm, Jason put himself at considerable risk. Although he had all the protective clothing and other gear necessary to assess the damage and develop an estimate of what it would cost to stabilize the area and remove debris, the area was strewn with dangerous remnants of the buildings and there were many live wires, gas leaks and hazardous materials at the site."

Manthey spent more than 60 days in two trips to Pascagoula. On his first visit, he immediately set to work stabilizing the facilities by disconnecting electrical feeds, securing natural gas lines and taking other steps to prevent further damage and ensure personnel safety.

Working closely with the directors and others at the labs, he then produced an initial evaluation of damages, determined immediate needs and actions, and prepared a cost analysis for funding required.

He next turned to managing and supervising emergency contracts for debris removal, removal of hazardous materials and placement of temporary storage and office facilities. This enabled the staffs to return to a safe work site after attending to their own storm-damaged homes.

"They're a great bunch of folks and have become just like a part of my family," Manthey said. "When I arrived in Pascagoula on Sept. 3, I was stunned by the devastation. The entire community and most of the staff's homes were in a shambles, almost as if the entire area had been bombed. I felt compelled to do all I could to restore some normality and I wanted to give them a sense of hope that things were going to get better."

"The guy is just unbelievable," Thompson said. "He worked at least 80 hours a week, frequently for almost 20 hours a day, to get us up and running. We had two vessels here that needed to get underway on research cruises and there was still a tremendous amount of work to be done ashore to keep them on schedule. After supervising the site's stabilization, Jason was responsible for ensuring that our new building extension and seven temporary modular buildings were set up with power, water, sewage and furniture. It's nearly impossible to imagine what he had to do to get us operational. We couldn't have done it without him."

"Mr. Manthey's energy and dedication were the major reasons why the Pascagoula lab got up and functioning so quickly after Hurricane Katrina," said Scott Nichols, director of the Fisheries Service's Mississippi Laboratories. "We've known Jason for years, and he's always provided superb support. But this time his efforts were nothing short of astounding." ☺

## Hyde

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Another challenge the Utica, N.Y., native faced was installing the NPOESS network cables at the same time other cabling work was occurring in the building. Hyde said he realized that the NPOESS fiber cables that ran from their racks of equipment in the various communications rooms could be damaged while the other work was in process. The solution was to run the NPOESS fiber optic cables in a flexible conduit, which would protect them from accidental damage.

"We knew there was a lot at stake with the importance of this program, with an eye to the budget and the schedule to finish our work on time. We could not afford any setbacks, especially those that we could have prevented with a little initiative on our part," Hyde said.

"As a result, since we were the first system to install in the Satellite Operations Facility, we were able to provide our staff with on-site Internet connectivity, which gave them the feel as though they were in their office," he said. "They didn't have to wait until they got back to the hotel to check their email or perform other program tasks that were computer based." ☺

*The NOAA Report is a monthly publication for NOAA employees about the NOAA mission from the NOAA Office of Public, Constituent and Intergovernmental Affairs, Washington, D.C.*

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