

Corps Capt. Honored: Captain Evelyn Fields of the NOAA Corps has been named by the National Technical Association (NTA) as one of 50 top minority women in science and engineering. Selected for her outstanding contribution to government, Capt. Fields exemplifies what the 71 year old NTA is all about. She currently heads up the Commissioned Personnel Center in Silver Spring, and is the highest ranking female officer in the Corps.

NMFS Researcher Honored in Alaska: Sharon L. Hawkins, a research geneticist at the NMFS Auke Bay Labo-

News Briefs

ratory (ABL) of the Alaska Fisheries Science Center, was selected as the Juneau, Alaska, 1995 Federal Employee of the Year. The Juneau Federal Executive Association, which represents 34 Federal agencies with offices in Alaska's capital city, presents this award annually to the nominee selected by a panel of prominent non-Federal Juneau residents. Nominees were judged on performance of duties, community service, and self-development.

A five-year ABL staffer, Hawkins is the lead investigator in pink salmon genetics and has developed a new project detailing rockfish genetics. She also acts as lead person to work with visiting foreign geneticists, particularly those from Russia, and has taken Russian language courses to help her with this duty.

continued on page 8



The new NOAA ship Ka'imimoana at its Honolulu home port. The Ka'imimoana replaces the NOAA ship Discoverer, which was decommissioned.

New NOAA Ship to Support Ocean & Climate Research

A new NOAA research ship based in Hawaii will be used to help scientists better understand the forces in the equatorial Pacific Ocean that drive the world's climate.

Ka'imimoana received a traditional Hawaiian blessing last month as it was officially welcomed to its home port in Honolulu.

The NOAA ship Ka'imimoana, Hawaiian for Ocean Seeker, and its mission was introduced to members of Hawaii's congressional delegation, oceanographic research community, other federal agencies, and local businesses during the welcoming ceremony and to the general public during a subsequent open house.

"This addition to the fleet will help NOAA continue its important research on the El Niño phenomenon and other seasonal climate variations," said Rear Admiral William L. Stubblefield, NOAA Corps director. "Ka'imimoana, which has replaced the 30-year old Discoverer, will be used primarily to deploy, recover and service our approximately 70 deep ocean buoys that measure wind direction and speed, air temperature and humidity, and temperature of the ocean in the equatorial Pacific. The new ship and the support it provides will help ensure that this critical program can continue to provide NOAA and other agencies, both domestic and

continued on page 7

River Forecast Centers Set to Mark 50 Years of Flood Protection & Research

The first two National Weather Service River Forecast Centers—the Ohio River Forecast Center, and the Missouri River Forecast Center—are poised to celebrate their 50th anniversaries, marking a half-century of protecting the public from floods and helping local officials in emergency planning.

Created to provide information about potential flooding on major streams, the 13 River Forecast Centers operated by the Weather Service's Office of Hydrology play a major role in the protection of the American public. As was demon-

strated throughout the Plains states during the Great Flood of 1993, hydrologic specialists at these centers provide vital information used in Federal, state and local efforts to mitigate flood damages and prevent loss of life in flooded areas. Center hydrologists again provided vital information to help emergency planning in smaller-scale floods along the Missouri and its tributaries in 1995 and 1996.

Long History of Ohio Flooding

The Ohio River and its tributaries have a long history of flooding. One of the earliest records of a flood on

the Ohio River was at Cincinnati in 1775 when the river reached 76 feet, 24 feet above the present flood stage of 52 feet. Records of floods at Evansville, Ind., and Louisville, Ky., began in 1832; at Wheeling and Huntington, W. Va., and Warsaw, Ky., in 1884, and in Paducah, Ky., in 1867. The granddaddy of all floods on the Ohio River occurred in late January and early February 1937.

The long history of flooding and its impact on navigation, commerce and industry made the Ohio River Basin a natural selection for the development and testing of the river forecast center concept.

The Ohio River Forecast Center was established in September 1946 and was first housed in the Post Office and Federal Building in downtown Cincinnati. In February 1994, under the National Weather Service's Modernization and Restructuring Program, the OHRFC was moved to Wilmington, Ohio, and co-located with the new Weather Service Office.

Many Changes Over 50 Years

Over their 50 years of operation, the two River Forecast Centers have undergone many significant changes, according to Missouri River center Hydrologist in Charge Larry D. Black. Changes in location, staff size, area of responsibility, hours of operation, flood forecast techniques and available technology have presented challenges and opportunities, Black said.

"The responsibility of the River Forecast Centers hasn't changed all that much over the years," Black said, "but the way we operate certainly has. Like meteorologists at weather forecast offices, weather service hydrologists used to plot everything by hand on paper and had very few tools available to help them make flood forecasts. Time and

continued on page 7



President Visits Calif. Marine Sanctuary

President Clinton and Senator Dianne Feinstein visited the Gulf of the Farallones National Marine Sanctuary office in San Francisco recently. Sanctuary Manager Ed Ueber hosted the President, California Senators Feinstein and Barbara Boxer, Congresswoman Nancy Pelosi, Chief of Staff Leon Panetta, and San Francisco Mayor Willie Brown on a June visit to the Golden Gate National Recreation Area.

Workshop Examines the Role of Environmental Data in Fisheries

NOAA's stewardship responsibilities for fisheries and protected species encompass a broad range of activities, such as sustainable fisheries, recovery of protected species, and conservation of marine habitats. The diversity of the environment affects each of these areas.

A workshop, funded by NOAA's ESDIM program at the agency's Pacific Fisheries Environmental Group in Pacific Grove, Calif., examined how environmental data is applied to NOAA's environmental stewardship mission. The objectives of the workshop were to:

- assess the current and future needs for environmental databases (oceanographic, atmospheric, remote sensing, model output, geological) in fisheries and fisheries-related ecosystem research,
- identify data sources and formats, and
- recommend ways to facilitate access to the data.

The workshop brought together over 50 fisheries scientists, physical scientists and environmental data specialists representing most line offices of NOAA, NASA, the Navy and National Science Foundation, as well as representatives from Canada, Great Britain and seven academic institutions. Presentations by fisheries scientists described how environmental data are used, while physical and computer scientists described environmental data available, including that from ocean models and geophysical investigations. Internet and video-based



Attendees of the NOAA-sponsored fisheries data workshop in Pacific Grove, Calif., focused on how that data applies to the agency's mission of environmental stewardship.

demonstrations described ocean model output and data management systems.

Open discussions were a very important element of the workshop, and four working groups addressed specific scientific topics within the general theme of the meeting. Since scientists from many different organizations participated in the workshops, an additional working group addressed opportunities and mechanisms for cooperation among them in fisheries oceanography.

The working groups developed more than 40 recommendations. A common thread among the working groups was the need for improved communication among fisheries scientists, oceanographers, and the physical and computer scientists who provide model and environmental data. There was also consensus that follow-up workshops, focused on specific topics such as model data applications, remote sensing and fisheries be developed. Applications of new environmental technology, including remotely sensed data,

multi-beam sonar technology and numerical model output were highly recommended. Parallel efforts among different agencies were identified at the meeting, leading to suggestions to promote collaboration and increase the inter-operability among existing environmental data access systems. The working group dealing with partnerships for fisheries oceanography recognized the critical need for cooperation and collaboration to identify and fully utilize all environmental data and model output that could be beneficial to NOAA's environmental stewardship mission.

Although the meeting occurred in the foggiest July on record on the Monterey Peninsula, it ended with sunny weather consistent with the positive tone of cooperation developed at the meeting. The workshop proceedings will be published as a NOAA Technical Memorandum before the end of the year. In the interim, a short workshop report along with the full text of recommendations is available at <http://www.pfeg.noaa.gov/workshop>.

—George Boehlert & Jim Schumacher ☺

Focus On...

NOAA's Teacher at Sea Program

You don't just tell us about it from a book. You've actually done it," said a student to Teacher at Sea participant Todd Tarrant during a lesson in which Tarrant applied his experiences aboard a NOAA research ship to his classroom curriculum, and made ocean science come alive for his students.

The enthusiasm for learning generated between teachers and students is the biggest payoff of NOAA's Teacher at Sea program, where teachers from elementary school through college go aboard NOAA hydrographic, oceanographic and fisheries research vessels to work under the tutelage of scientists and NOAA Corps officers and crew. Now in its sixth year, the

program has enabled 180 teachers—45 in 1996—to gain first hand experience of science at sea. Teachers can enrich their classroom curricula with a depth of understanding made possible by living and working side-by-side, day and night, with those who contribute to the world's body of scientific knowledge.

"I cannot imagine any other experience that could equal the Teacher at Sea program for learning how marine scientists work and how people live aboard working ships," said Betty Moellenberg, an elementary school teacher in Colorado. "Living on the ocean while studying it carries an impact that will direct you to share

with others exactly how and why these studies need to be done. Working with scientists daily and seeing their dedication influences your understanding in a way that will communicate itself to those you talk to about your experiences."

To participate in the program, teachers must be willing to submit a detailed report of the cruise and ideas for implementation in the classroom, including a mini-unit of lessons based on experiences at sea and data collected. They must also submit an article for publication or conduct a presentation at an educators' conference for colleagues. And although the program itself is free of charge, teachers are responsible for paying their own transportation to the ships' departure points. These arduous requirements eliminate all but the most committed teachers.

Most teachers who have participated in the Teacher at Sea program have only positive experiences to report. However, many have had to battle severe seasickness, and for some, the problem doesn't abate after a couple of days at sea. In one instance, a teacher flew all the way to Alaska and boarded the hydrographic survey ship *Rainier* before realizing he was claustrophobic, and wouldn't be able to bear being confined to a ship at sea.

Todd Tarrant, who teaches both high school and college science classes, considers learning about the physical hardships inherent in working at sea and the effect on lifestyles as part of the education he passes on to his students. As a "tri-peater," he went on one cruise last year, and two cruises this year—covering two types



NMFS scientist Dr. Michael Bowers (left) and teacher-at-sea Todd Tarrant (right), set a "Bongo Tow" net on the NOAA ship David Starr Jordan.

of fisheries research and hydrographic surveying and charting.

During the past school year, Tarrant used slides taken during his 1995 cruise aboard the NOAA ship *David Starr Jordan* not only to illustrate the science he was teaching and to pass along cruise research data, but to get his students thinking about future careers. “The slides helped my students understand what kinds of jobs are available at sea. I told them what they had to do to prepare for those kinds of jobs, and how to go after summer jobs that would give them the experience needed to make good career choices,” he said.

Teacher at Sea is coordinated by Judy Sohl through the Office of NOAA Corps Operations. ONCO Director Rear Admiral William Stubblefield, an ardent believer in the program, believes it offers a “win-win situation where teachers gain valuable field experience and research skills, and the ships gain eager volunteers who, through their enthusiasm for learning, boost the morale of everyone on board.”

Perhaps most importantly, the program serves NOAA’s mission by promoting among teachers and their students a greater awareness of the need to understand and protect the ocean and its resources. As Betty Moellenberg put it, “At the least you will begin to understand why we need to know so much more in order to protect and safeguard this largest of our natural resources, and to understand the ways in which we can learn this. I went into this project with a lot of hesitation and fears, and came out with a deep feeling for the sea and a sense of commitment to

share with my kids and other teachers—respect and awe, and the knowledge we must learn what we

can in order to save both the sea and its inhabitants.”

—Jeanne Kouhestani ☺



21 teachers dove in the flower Garden Banks Marine Sanctuary as part of their first annual Teachers Cruise in June.

Texas Teachers Down Under Out Yonder

Being a teacher in Texas definitely has its ups and downs. The 1996 First Annual Teachers Cruise went down to the Flower Garden Banks National Marine Sanctuary from June 10-12. Twenty-one teachers of kindergarten through high school went “Down Under” in the Flower Garden Banks, a remote coral reef located 100 miles off the coasts of Texas and Louisiana. The teachers only had to pay a \$125 tuition fee to spend three days living and diving at sea. Remaining expenses were covered by the Shell Oil Company Foundation.

This was no Carnival Cruise however. Between dives, scientists from

an accompanying research vessel visited to give extensive lectures on their research projects. Teachers dried off and took notes on such topics as environmental chemistry, sharks and rays, sea turtles, and even the National Marine Sanctuary Program.

Dr. W. Stanley Wilson, assistant administrator of the National Ocean Service, addressed the teachers on the ocean service and its future. “We have to educate the young generation that what they do on land directly impacts what is happening in the water,” he said.

Teachers dived up to four times a day, and even once at night, allowing
continued on page 8

Co-sponsored with Howard University

NWS Promotes Science to DC Area Educators

The ABC's of weather forecasting were presented to a group of educators during a teacher's workshop, sponsored by the National Weather Service and Howard University earlier this summer.

About 35 grade and middle school teachers learned effective ways to communicate science to students. The day-long workshops were held at the NOAA Silver Spring Metro Center campus, and included tours of the offices of Hydrology and Meteorology.

Teri Bell of NOAA's Office of Civil Rights encouraged teachers to push more science into the classrooms to remain competitive.

"The American public must be proficient in math and science, or else we will be left behind," Bell said. "We have a crisis in science and math. Many students are not doing well in these subjects, especially women and minorities."

Bell said the NWS and NOAA are working with schools to educate instructors on the resources available from NWS such as brochures, maps and guides. Among the topics discussed were meteorology and the Internet, hazardous weather emergency and NWS communication systems.

Dr. Georgiana Aboko-Cole, a Howard University instructor, said a partnership between NWS and educators benefits not only the students, but also the teachers.

"Our objective is to motivate students to pursue science careers," she said. "In order to reach them we must provide updated information to our teachers. These NOAA science workshops are an enrichment program for our teachers."

Necolle Mayhew, equal employment opportunity manager at NWS, said the seminars help educate teachers on the resources available within NOAA.

"The purpose of these programs is to provide workshops to science related

government and private industries to observe the application of scientific functions," she said. "We hope that teachers can integrate the science into classroom curricula and encourage more people to pursue this field."

—Michael Vega ☺



Science Projects Win Awards for Kids

Eighth grader Brett Hamilton (*left*) from Broomfield Heights Middle School, Broomfield, Colo., and fourth grader Molly Ericson (*right*) from Columbine Elementary in Boulder, were the recipients of the NOAA Award For Atmospheric Science at the Boulder Valley School District Science Fair recently. Their prize included plaques for their schools, a certificate of achievement, lunch and a tour of the labs. Teachers and parents also were invited to the lunch and tour. Brett's project was a study of air pollution outside his school, while Molly's was entitled "The Magic and Mystery of Clouds." ☺

New Research Ship Replaces Discoverer

continued from page 1

international, with the information needed to understand how the warm water of the equatorial Pacific affects climate not only in the Hawaiian islands, but worldwide, and to predict El Niño events and future climate changes.”

The 224-foot long Ka'imimoana carries modern computer and laboratory facilities that will enable NOAA and collaborating scientists

to conduct additional investigations and collect oceanic and atmospheric data for climate studies while underway to the buoy arrays. The ship's computer systems collect data from a multitude of ship and mission sensors, then integrate and store the data for presentation. High speed communications between the ship and shore facilities allow datasets to be transferred ashore on a near-real-time basis. These data and other information about the ship's current

activities, as well as a high-resolution picture of the ship, are also available via Internet at: <http://rho.pmel.noaa.gov/atlasrkt/kaimi.html>.

(Further information about the Ka'imimoana and its mission can be found on the Internet at <http://www.wrc.noaa.gov/pmcl> and <http://www.pmel.noaa.gov/toga-tao/home.html>. For information about the NOAA Corps, visit their home page, <http://www.noaa.gov/nchome>.)

—Jeanne Kouhestani ☺

Teachers Dive to Coral Reefs in Flower Garden Banks Sanctuary

continued from page 5

them to experience the world of the Flower Garden Banks.

“The purpose was to give teachers a first hand experience into coral reef ecology,” said Shelley Du Puy, education coordinator at the sanctuary. “The teachers get excited about what they saw on their dives and they take that enthusiasm back to their students. If you multiply how many students they will have in say, five years, then you have a whole new generation of students with a greater appreciation for their marine environment.”

One project the teachers and researchers worked on was a coral reef fish census. A three hour lecture on fish identification was held before the boat even left port. Researchers gave more lectures concerning sharpening one's fish i.d. skills at sea.

“I was really surprised at the numbers of fish,” said Mary Helen Cornish, a first and second grade teacher at the Rountree Elementary school in Allen, Texas. “We saw chocolate sea hares, a fish that only visits the Banks three weeks out the year.”

In keeping with the Flower Garden Banks' education mission, the visit

strengthened the relationship between the teachers and the sanctuary. “We need to relate what we learned to Texas,” said Cornish. “What is happening in other coastal areas could easily happen to us.”

The teachers plan to keep in touch via the Internet through the Flower Garden Banks' homepage so they can share educational activities and find out when the next dive is.

—Bill Hurd ☺

River Centers Mark 50 Years of Service

continued from page 2

experience have taught us many new and better ways of doing things that let us make more accurate flood forecasts and to spread the word of impending floods much more quickly. Advances in computer technology have made us much more efficient and accurate.

“Originally the only source of information was a small network of observers who lived on major rivers and streams. We still have the observers, but we also use telemetry, satellite images and radar data to collect rainfall and river levels from 3,500 locations across the drainage basin.”

As its name would indicate, the Missouri River Forecast Center's area of responsibility has always centered around the Missouri River basin, but the area of responsibility at one time included both the Missouri and

Upper Mississippi river drainage areas. In 1966, the office was consolidated with the St. Louis River Forecast Center with an area of responsibility that included most of the upper Mississippi River basin above New Madrid, Mo. In 1979, Black said, the North Central River Forecast Center was created in Minneapolis and assumed responsibility for the Upper Mississippi, Red River and Souris River basins.

“Until the 1993 flood, not that many people knew about River Forecast Centers, because we don't issue products to the public,” Black said. “That's the job of our weather forecast offices and we work closely with them. Otherwise, most of our work is providing precipitation data, flood forecasts and river stage levels to the Corps of Engineers, the U.S. Geological Service, river authorities and the like.”

—Bob Chartuk & Pat Slattery ☺

Hawkins also serves as an intermediary between visiting scientists and members of the lab and community.

Sail Away: NOAA Corps officers and crew bid a sad farewell to two oceanographic research vessels last month. *Discoverer* was decommissioned on Aug. 16; *Malcolm Baldrige* on Aug. 23. The ships, about 30 years old, are being replaced by *Ronald H. Brown* and *Ka'imimoana*.

Buyout Program For Northeast Fishermen: Northeast fishermen adversely affected by the collapse of traditional groundfish stocks off the coast of New England can now apply for federal financial assistance through a \$25 million vessel buyout program.

"We are committed to rebuilding New England groundfish stocks to ensure op-

News Briefs

portunities remain for both a sustainable resource and a sustainable economy," Commerce Secretary Mickey Kantor said. "This administration is resolute on the economic recovery of this vital region, and this program is an integral part of that effort."

"The buyout program has been successful in part because fishermen helped design it," said John Bullard, director of the Office of Sustainable Development.

Hurricane Path Now a Computer Graphic: New computer graphics that illustrate a hurricane's path, from areas already affected to areas expected to be struck, have been developed by the National Hurricane Center. Graphics help overcome some misconceptions--providing a ready, unambiguous description of what's going on, said Bob Burpee, National Hurricane Center director. The new graphics are available on the National Hurricane Center's Internet home page, <http://www.nhc.noaa.gov>. ☺

Employees Aid Families of Lost Colleagues in Commerce's Operation Help

When their colleagues at the Department of Commerce were lost in a plane crash over Croatia last April, Administrative Services Division (ASD) employees from NOAA's Procurement, Grants, and Administrative Services Office responded to Commerce Secretary Kantor's call to help. They hosted a breakfast and lunch benefit on August 22 and contributed all benefit proceeds to the Commerce Department Committee's Operation HELP Program.

ASD employees combined their efforts to cook a number of breakfast and luncheon delicacies. Participants feasted on breakfast burritos, barbecue chicken, potato salad, baked

beans, and assorted cakes and pastries. The employees wanted to show their support for families who have exhausted their financial resources and who are faced with enormous expenses. Since Government insurance is voluntary and private insurance policies have limitations concerning civilians in war zone regions, the need for assistance was especially urgent.

Employees in ASD decided to work together as a team to show the surviving families that their loved ones were truly appreciated by the Commerce family and will be dearly missed.

"It is important for all of us to remember just how fortunate we are—and the obligation we have to share that good fortune with others less fortunate," says Rita Argueta, a Division employee.

"Although we are deeply saddened by the loss of our colleagues, it is especially important to remember the children."

—*Maria C. Krug* ☺

Students Feted by Blacks in Gov't

NOAA's chapter of Blacks in Government (BIG) held its first annual scholarship awards program recently, and honored two D.C. area high school students. The BIG Scholarship Program awards \$500 or more to two metropolitan area high school students who have achieved excellence in six areas of scholastic achievement, school activities, leadership, community outreach, special talents and moral character. In keeping with the scientific mission of NOAA, scholarship candidates must also indicate a desire to major in a science or science-related discipline in college.

This year's recipients were Jermaine Johnson of D.C.'s Calvin Coolidge High School, who plans to attend the University of Hawaii, and Donness Duncan of Theodore Roosevelt High School in the District of Columbia who plans to attend Lincoln University in Pennsylvania. ☺

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