NC STATE UNIVERSITY

CMAST COMMUNICATOR

THE CENTER FOR MARINE SCIENCES AND TECHNOLOGY

discovering coastal solutions

VOLUME 1 NUMBER 2 SUMMER 2007

FIRST CMAST OPEN HOUSE A SUCCESS

CMAST held the first annual open house on July 5, with approximately 100 people attending. Comments of the visitors were extremely positive, with many people in awe of the diversity of the work being conducted at the facility.

On the right (top to bottom): Greg Bolton, Seafood Laboratory, demonstrates fish handling and safety; Seafood Laboratory Test Kitchen offers samples of Lab-assisted products on the market and consumer safety information; Dr. Craig Harms performs a "Dolphin C.S.I." for curious guests; (l-r) Jim Morley, Adam Stephenson, and Tim Ellis, of CMAST provide "critters" from the waters behind the building for visitors to see; Sea Grant display in conference room with ongoing video on fishing techniques. Below: Carteret Cooperative Extension provides Bee Keeper and Master Gardener information.

CURRENT EVENTS

CMAST SEMINARS
ROOM 205 • 11:00 AM - 12:00 PM

Friday, September 28
Molecular Keys Unlock Variation in Blue Crab Survival Under Hypoxia
Geoff Bell, Department of Marine, Earth, and Atmospheric Sciences, NCSU

Friday, October 5
Using Zebrafish as a Model to Identify Candidate Biomarkers
Dr. Jeff Yoder, Department of Molecular Biomedical Sciences, NCSU

Friday, October 12
Hidden Process Models for Animal Population Dynamics
Dr. Paul Conn, NOAA Beaufort Lab

Friday, October 19
Bioacoustics of Estuarine Fishes
Dr. Joe Luczkovich, Department of Biology, ECU

Friday, October 26
Emerging Technologies: The Benefits and Risks of Nanotechnology to the Aquatic Environment
Dr. Patricia McClellan-Green, Department of Environmental and Molecular Toxicology, NCSU

Friday, November 2
Hypoxia, Fish and Fisheries: Building Towards an Ecosystem Perspective
Dr. Kevin Craig, Florida State Coastal and Marine Laboratory, FSU

Friday, November 9
Beach Nourishment and Sea Turtle Reproduction in North Carolina
Dr. Matthew Godfrey, NC Wildlife Resources Commission

Friday, November 16
CarteretCatch™: Promoting Local Seafood Through Community and Business Partnerships
Barry Nash, NC Sea Grant Seafood Technology and Marketing Specialist

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From the Director

Welcome to the CMAST Communicator. In this issue, we highlight the collaborative nature of fisheries research between resident CMAST faculty and their counterparts on NC State University's main campus in Raleigh, as well as active and diverse K-12 educational outreach by CMAST.

North Carolina has entered a new era of fisheries planning and management yet, in many cases, has limited information and technology to address problems of declining catches in certain species as well as habitat loss. Drs. Jeff Buckel and Joe Hightower, along with their graduate students, are applying new mark-recapture and sonar technologies to identify critical habitat for red drum, migratory shad, and river herring that will better inform fisheries management.

CMAST faculty and graduate students often actively integrate K-12 students into their research, which can substantially improve students' critical thinking skills, as well as their understanding of the environment and the process of scientific research. Integration of public school students and teachers into research also provides an important and unique resource for field ecologists to sample over much larger spatial scales and finer time-scales than funding would normally allow.

Lastly, we update you on many of the diverse research and community activities by CMAST faculty, students and staff, including our Open House, injured sea turtle rescue, marine mammal unusual mortality events, mobile animal surgery unit, and CMAST and Marine Fisheries Fellowship programs at CMAST. I invite you to visit our web site (www.cmast.ncsu.edu), our beautiful facility located on Bogue Sound in Morehead City, or contact any of our faculty, staff or students with questions.

Best wishes,
Dave Eggleston

SPOTLIGHT ON CMAST FACULTY AND NCSU DEPARTMENTS

Red Drum Tagging Program

Jeff Buckel, Department of Zoology, Morehead City

Red Drum sporting a red tag offering a $100 reward.

Have you ever caught a fish with a red tag to be returned and wondered what happens with the information you provide? Read on about what the information is used for in research and fish management.

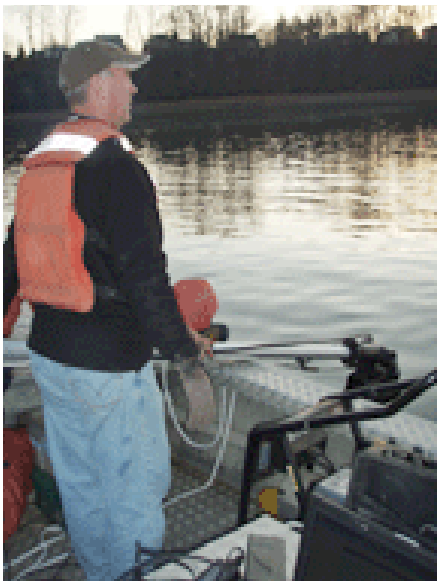
Since January 2005, North Carolina State University researchers **Jeff Buckel** (CMAST), Joe Hightower and Ken Pollock (both NCSU Raleigh) and graduate student **Nate Bacheler** (CMAST), along with assistance from NC Division of Marine Fisheries (DMF) biologist Lee Paramore, are tagging red drum in North Carolina waters to obtain data used to determine fish movements, estimate rates of death, determine the size selectivity of various gear types, and sometimes even allow estimation of population size. The results of the tagging program, concluding next year, will ultimately help DMF in managing the harvest of the North Carolina state fish, Red Drum.

Decline in numbers over the years was the impetus for choosing Red Drum for the tagging program. A favorite among fishermen and chefs alike, the research on the Red Drum is important to North Carolina's fishing and recreational industries.

Tagging methodologies have improved dramatically over the last ten years and CMAST researchers are applying these new approaches. With funding from NC Sea Grant, two types of tags are being used: conventional 'spaghetti' streamers and the newer 'sonic' tags. Sonic tags emit sound pulses that are unique to each fish. A research team can then monitor the location of these tags at regular intervals. Both tagging methods are used to complement the data received from each. The sonic tags provide information on fish mortality rates, migration patterns and more, whereas the conventional tag provides researchers with information on when, where and how a fish was caught.

Tag returns by commercial and recreational fishermen are vital to the success of the project. Recreational anglers and commercial fishers are rewarded from NC State University and DMF. A yellow NCSU tag is worth $5, a cap or a T-shirt. Returning an NC-State-Red tag brings a higher reward of $100. For returning a blue DMF tag, an angler receives a cap or $5. If you catch a Red Drum with an NCSU tag, please call 800-790-2780. For DMF tags, please call 800-682-2632. Provide the date of the catch, location, how the fish was caught, its length and whether it was kept or released.

Dr. Jeff Buckel is Associate Professor with Zoology and is located at CMAST



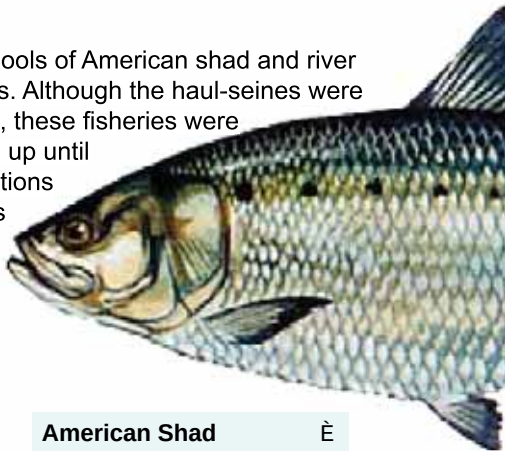
Hightower at work with underwater sonar device.

What's Driving the Decline of Anadromous Fish in North Carolina?

Dr. Joe Hightower, Department of Zoology, Raleigh

One could say that anadromous fish are driven - somehow biologically driven - to migrate from their ocean home to upstream coastal rivers to spawn. There's a decline in numbers of these types of fish in North Carolina and NCSU researcher Dr. Joe Hightower is driven to find the reasons why.

Back in the 1800s, North Carolina had vast schools of American shad and river herring that supported large haul-seine fisheries. Although the haul-seines were eventually replaced by gill nets and pound nets, these fisheries were economically important for North Carolina even up until the later part of the 1900s. Today, these populations have declined greatly and a goal of Hightower's research is to understand what factors have caused those declines. Once his team identifies the key factors, they can develop plans for rebuilding these stocks and hopefully rebuild an industry.

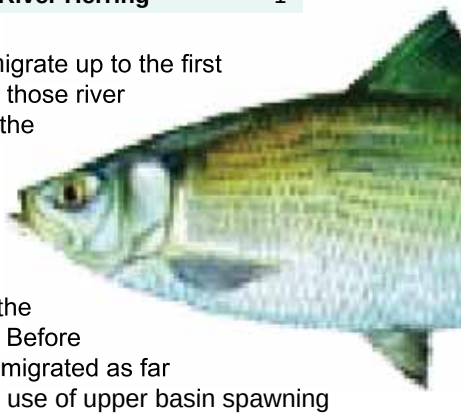


American Shad È

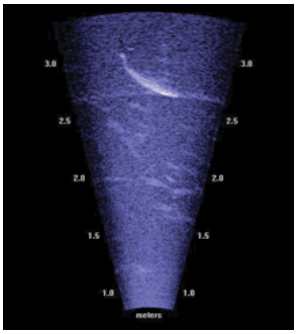
River Herring Í

There are several causes suggested for the decline in anadromous fish populations, two of which are dam construction along fish spawning routes and water quality of the spawning areas.

To understand how dams affect these fish, Hightower's team places radio or sonic transmitters in small numbers of fish and tracks their spring spawning migration. If the fish migrate up to the first dam in the river, it implies the fish would take advantage of upstream habitat if available. On those river systems, fish passageways or the removal of derelict dams might be beneficial. However, if the fish migrate to spawning sites well below the first dam, it implies that habitat loss due to the dam is probably not the issue.



One example of dam effects on migration is on the Roanoke River, where striped bass spawned near Weldon, NC, located several miles downstream of the first dam in the dam system. In contrast, American shad migrated up to the base of the first dam and mostly spawned just a mile or so below the dam. Before any dams were built, historical records indicate American shad migrated as far upriver as Salem, Virginia, so their biological instinct is to make use of upper basin spawning habitats. Because it appears that shad might benefit from the upstream habitat, Hightower is working with Dominion Power and state and federal agencies on a study to see if American shad that are relocated above the first three dams will find good spawning habitat and reproduce successfully.



Sonar image.

Hightower is using different types of sonar to survey anadromous fishes as they migrate. For the past four years, he has counted upstream-migrating fishes on the Roanoke River during their spring spawning migration. The sonar system provides an estimate of how many fish migrate past the sonar site. He then he uses other kinds of sampling such as electrifying to estimate the variety of fish in the area. Hightower experimented with a new multibeam sonar called a DIDSON (sometimes called an acoustic camera as the data files are stored in video format). The images look like ultrasound images you might see at a doctor's office. Hightower believes there is real potential for its use in estimating the size of spawning runs, because the images not only allow him to count fish, but also show the size and shape of each passing fish. The equipment even allows the observation of swimming behavior and interactions among species - for example, a large fish (striped-bass sized) chasing small fish (herring-sized) was captured on sonar recently. *(See photo above left.)*

As the technology improves, Hightower hopes to provide better answers about the factors affecting these anadromous fish populations, which should result in better management and healthier fisheries.

Dr. Joe Hightower is Professor and Assistant Unit Leader of NC Cooperative Fish and Wildlife Research at NCSU in Raleigh.

Marine Fisheries Fellowship

North Carolina Sea Grant (NC SG) and the North Carolina Division of Marine Fisheries (DMF) co-sponsor the NC Marine Fisheries Fellowship at CMAST. This annual fellowship places a recent post-graduate (M.S. or Ph.D.) at CMAST to work with **Dr. Jeff Buckel** (Zoology, NCSU) and a mentor from NC DMF.

Warren Mitchell, 2006 Marine Fisheries Fellow.

Former directors of NC DMF and NC SG, Preston Pate and Ron Hodson, hatched the idea of the fellowship with the philosophy that the agency would provide frontline management experience to the fellow and in turn the recent graduate would bring state-of-the-art expertise to the agency. Past fellows have addressed timely questions for management of NC marine and estuarine fishes using historical data sets. Recent topics have included: movements and mortality rates for striped mullet; recruitment time series for white perch and yellow perch; selectivity and mortality rates on red drum; and larval fish ingress patterns through Beaufort Inlet over an almost 20-year time span. Much of this research has fed directly into management - for example, tagging data collected by Marine Fisheries Fellows at CMAST filled key information gaps in the 2007 NC DMF Assessment of the red drum population.

The one-year Marine Fisheries Fellowship provides a $28,000 stipend. It is open to graduate or post-graduate students at southeastern universities and colleges from Maryland to Texas and is usually advertised in late Spring of each year. “Our future success in resolving complex issues in marine fisheries will depend on training and preparing the best and brightest students for that task,” says Michael Voiland, North Carolina Sea Grant executive director.

OUTREACH AT CMAST

Students Learn About Estuaries First-Hand

It’s not your ordinary classroom: there’s no desks, no chalkboards or windows to gaze out, but rather sea life, marsh grass, water, sand, and mud to discover. It is a classroom, nonetheless, as students from local schools can attest.

At the water’s edge behind the Center for Marine Sciences and Technology (CMAST) building, the NC Coastal Federation (NCCF) teaches students about the estuarine system and the important role it plays in the world’s ecosystem using a successful shoreline restoration project adjacent to the CMAST building.

As part of the NCCF Student Wetland Nursery Program, staff from NCCF develop pertinent lessons and work with teachers throughout the school year; they culminate a year of learning with a field trip to an estuarine area such as that behind the CMAST building. Students receive hands-on lessons here as they trudge through the water discovering sea life and planting marsh grasses grown in their own classrooms.

CMAST offers the area behind the building for study in collaboration with NCCF and Carteret Community College (CCC). With funding from the NC Clean Water Management Trust Fund (http://www.cwmtf.net/) and Restore America’s Estuaries (http://www.estuaries.org/) students are learning important lessons about the coastal area they live in while helping to restore an area of the shoreline along the CCC campus on Bogue Sound. Sarah Phillips, NCCF Education Coordinator, is the lead instructor and directs the planting of marsh grass by the students. **Meg Rawls**, CCC Faculty (Biology), is Shoreline Project Director and works with the students as they work along the shore. For more information on the project visit NCCFs website at: http://www.nccoast.org/education/wetlandnursery.html/index_html.

Science teacher Tanya Scott of Newport Middle School remarked, “It’s a great program. My students have learned about the importance of estuaries and wetlands and how development of coastal areas can have an impact on these areas. This program has also taught many of these kids about their own backyards – even though they live at the coast, they might never have learned about the important role these nursery areas play in a coastal area.”

Top: Students from Newport Middle School “storm” the beach behind CMAST in search of sea life. Middle: Sarah Phillips (NCCF) helps students identify a catch. Bottom: Parent volunteers, teachers and students work planting marsh grass to restore an estuarine area. This group planted 2000 “plugs” during their field trip.

CMAST Hosts Mobile Animal Surgery Unit

Homeless felines in Carteret County received much-needed attention when CMAST hosted a mobile, animal surgery unit on June 29 and 30. The "Community Practice Mobile Unit," an outreach program of the NCSU College of Veterinary Medicine (CVM) in Raleigh, working with the Beaufort Community Cat Project (BCCP), traveled to Morehead City to set up a spay and neuter clinic at the CMAST building. Dr. Kelli Ferris, director of the mobile unit, **Dr. Craig Harms** of CVM at CMAST, and other faculty and staff, along with fourth-year veterinary students performed surgeries in the mobile unit utilizing facilities at CMAST, including power, staging areas, locker rooms and showers. About 50 cats received operations, wellness checks, and vaccinations.

The project was a collaboration between Beaufort Community Cat Project (BCCP), Island Cat Allies, the NCSU College of Veterinary Medicine, and CMAST. The all-volunteer BCCP has been working in the Beaufort area since 2006 to reduce the number of kittens born to abandoned and homeless cats by using a trap-neuter-return (TNR) method. Volunteers from BCCP and Island Cat Allies rounded up the feral cats and brought them to the mobile surgery unit, after which they were released where they were captured.

Dr. Ferris started the community practice and mobile spay/neuter unit in 1999 as a way to help students receive much needed surgical training, as well as assist animal shelters, welfare and rescue groups. CVM students are allowed to participate on a volunteer basis once they have completed the second year surgery courses. The college recently added a clinical rotation with the mobile unit in a student's fourth year course.

Top left: Mobile Unit, over 25 feet long.

Above top: A litter of kittens, only a few of the fifty cats and kittens captured, await their turn for surgery.

Above left: Dr. Harms ready for next patient in the operating room of the unit.

Above right: Dr. Ferris scrubs before surgery inside the mobile unit.

CMAST Summer Fellows Complete Work for 2007

Top: (l-r) Andrew Flynt, Matthew Stallsworth, and David Bennett. Inset: Matt Gildner

It's back to regular studies for four undergraduate students who spent the summer at CMAST as part of the CMAST Summer Fellows program. Their ten week fellowship culminated in a research presentation to CMAST faculty, staff and students.

Andrew Flynt, a 2007 NCSU graduate majoring in Marine and Coastal Resources, worked for Dr. Jeff Buckel (Zoology, CMAST). His final project was titled "Pilot Survey of Deepwater Reef Fishes off North Carolina Using a Two-Stage, Adaptive Design." The purpose of the project was to develop a cost-effective and efficient, fishery-independent method to determine an accurate stock assessment of deepwater reef fish to assist in setting appropriate harvest limits. The two-stage design used sonar to find aggregations of fish and then hook and line sampling of the aggregations. Andrew is beginning law school this fall at UNC-CH and hopes to specialize in environmental law.

Matt Stallsworth, a sophomore at NCSU studying Biology, finished up his second summer as a CMAST Fellow. Matt worked for Dr. David Green (Seafood Laboratory) and Ph.D. candidate Kristín Björnsdottír on a project titled "Comparative Study of Histamine-Producing Bacteria from Yellowfin Tuna (*Thunnus albacares*) and Mahi-Mahi (*Coryphaena hippurus*) in Pacific and Atlantic Waters." The objective of his project was to identify and compare histamine-producing bacteria found in yellowfin tuna and mahi-mahi from Hawaii and North Carolina. Matt found that most types of bacteria were found in one location or the other, with few similarities between the bacteria from Hawaii and North Carolina. The isolates that Matt identified will be used in evaluation of a molecular method being developed by Björnsdottír. This was Matt's second season with the CMAST fellows program. After completing his work at NC State, he is considering future studies in medicine.

continued

CMAST Fellows (continued)

David Bennett, a 2007 graduate of West Carteret High School, took on an existing project with Dr. Pat McClellan-Green (Toxicology, CMAST). David was asked to continue research that had been conducted by former graduate student Dr. Jocelyn Romano on "The Effects of Organic Biocides on Sea Urchin Development." By exposing sea urchin embryos to sub lethal levels of biocides, David's objective was to observe and find out why development of the embryo was affected. He concluded that the biocides used in the study, herbicides Diuron and Copper Pyrithione (CuPT), were responsible for abnormal cell development and retardation in the early stages of embryo development. David is attending Carteret Community College this fall in a college-transfer program. He remarked that he learned much in Dr. McClellan-Green's lab, working on new equipment and learning new experiments to perform. He hopes to study Biology in college and possibly medicine in the future.

Matt Gildner, a 2007 graduate of the North Carolina School of Math and Science in Durham and alumni of West Carteret High School in Morehead City, was assigned to work with Dr. David Eggleston on a two-part project titled "Settlement in Oysters and Coral Reef Fish: Shell-Strings to Underwater Noise." Matt's project involved studying the settlement of oyster larvae throughout the Pamlico Sound area. Eight sites were chosen near Pamlico oyster reserve areas where strings of oyster shells were placed in the water and collections and counts were taken weekly by area high school students of the number of "spat" (juvenile oysters) which had attached to the shells (see following article). The purpose of the project was to determine why oyster settlement varies within the Pamlico Sound area and be used to test hydrodynamic model predictions of where oyster larvae are dispersed in Pamlico Sound. Matt also worked in marine protected areas in the Florida Keys where he examined the relationship between reef noise and coral reef fish recruitment. Matt is a freshman entering MIT in Boston, Massachusetts for Fall 2007 and hopes to study robotics and ocean engineering.

Oyster Restoration

Populations of eastern oysters (*Crassostrea virginica*) in North Carolina have reached historic lows, and the NC Department of Marine Fisheries (NC DMF) is building new oyster reefs in Pamlico Sound to be used as unfished, broodstock spawning sanctuaries for oyster restoration. It is not yet known whether the new sanctuaries will support self-sustaining populations, seed other areas in Pamlico Sound, or both.

High school students sampling oyster settlement at (left to right) Ocracoke, Cedar Island, Hobucken, and Engelhard.

Dr. David Eggleston, marine ecologist and Director of CMAST, is working with Ph.D. student Brandon Puckett and high school students throughout the Pamlico Sound region in NC to determine why some oyster sanctuaries created by the NC DMF are more productive than others. From mid-May to mid-November, 2007 oyster spat (larval) settlement and water quality were measured at seven locations in Pamlico Sound using weighted strings of oyster shells suspended off of docks. The data suggest that settlement is highest near Ocracoke and Hatteras, and lowest in the southwestern portion of Pamlico Sound near Oriental and Hobucken. Peak oyster settlement occurred in early June. This data will contribute to a oyster dispersal and population dynamics model being developed to assist in placing oyster broodstock sanctuaries in North Carolina. An interactive oyster website with lesson plans for teachers is being developed and modeled after a similar blue crab interactive website for teachers and students (see http://www4.ncsu.edu/~dbeggles/bluecrabs/index.html).

Camp Seafarer and MEAS Researcher Collaborate on Crab Study

Underneath the calm of the Neuse River blue crabs are on the move, or hopefully so for Ph.D. student **Geoffrey Bell** of NCSUs Marine, Earth and Atmospheric Sciences Department (MEAS). Bell has been studying the movement of blue crabs for the past several years – or more specifically their lack of movement when low dissolved oxygen (hypoxia) areas occur in the river. When Bell was completing his Master's Degree, he observed how the crabs didn't relocate when their oxygen supplies were low, unlike other marine life that sought water with greater oxygen content. Intrigued by this phenomenon, Bell has made this the work of his doctoral studies with Dr. David Eggleston.

Now in his fifth year of dissertation research, Bell has established a unique method to study crab movement. About seven to eight crabs at any given time wear sonic tags that send signals to receiver buoys moored in a triangular fashion on the Neuse River, covering an

continued page 7

area of about one square mile. The buoys “hear” the signal sent from the crab’s tag and sends this information to Bell’s computer, which tracks their positions in real-time. This research will hopefully bring some answers to how this low oxygen affects crabs and why they are essentially being trapped in these areas. This research may also provide information on low oxygen events and their effects on the entire estuarine ecosystem.

At left: Campers discover marine life. Right: Receiver buoy. Inset below: Crab with sonic tag attached.

Bell, working at CMAST in the summers, collaborates with Camp Seafarer, situated along the Neuse River in Arapahoe, NC. The Camp provides Bell with office space for his computer and research equipment and a boat dock to use during his summer research. He in turn provides occasional lessons for the campers, teaching about marine life in the estuarine area where they swim and play. Bell is also working on an “Adopt-A-Crab” program for the campers and staff, where they can watch on a computer screen their named crabs as they move in the river.

Report on Working Group on Marine Mammal Unusual Mortality Events

Dr. Suzanne Kennedy-Stoskopf (CVM CMAST) attended a four-day meeting of the Working Group on Marine Mammal Unusual Mortality Events (WG-MMUME) in Silver Springs, Maryland at NOAA headquarters, July 16th-19th. Their primary charge was to determine whether a marine mammal stranding event constitutes an Unusual Mortality Event (UME) within 48 hours of notification through the National Marine Fisheries Services (NMFS) Office of Protected Resources.

Among the many findings, there have been a total of 41 UMEs since 1991, with 11 between July 2005 and July 2007, marking a noticeable increase in a two-year period. Dr. Kennedy-Stoskopf also participated in a two-day meeting on marine morbilliviruses following the conclusion of the WG-MMUME meeting. Diagnostic capabilities for marine mammal morbilliviruses and other marine mammal infectious diseases remain problematic. Guidelines will be forthcoming to address morbillivirus outbreaks in rehabilitation facilities from this two-day workshop.

Injured Sea Turtle Rescued at CMAST by Veterinarian

Loggerhead turtle at time of rescue, covered in mud and vegetation.

There’s something to be said for being in the right place at the right time. A young loggerhead turtle recently found out what that and good luck means.

On a Sunday afternoon in June at the CMAST building, Dr. Craig Harms of CMAST (NCSU CVM) and a colleague were kayaking in Bogue Sound behind the building when they spotted a loggerhead turtle near one of the rock walls along the shore of the building.

After observing the turtle over a two-hour period, Dr. Harms decided the turtle was in need of assistance when seeing him struggle to breath and not strong enough to escape the area. Dr. Harms enlisted help from CMAST’s Tim Ellis (NCSU Zoology) and colleague Melisa Wong to deploy a beach seine net and bring the turtle to shore for inspection. Weighing approximately 40 pounds, the underweight young turtle had suffered two major fractures to his carapace (shell) that was heavily covered with vegetation, mud, and barnacles.

“CMAST” after two months of medical care and cleaning.

Arrangements were made to have the turtle transported to the Sea Turtle Rescue and Rehabilitation Center in Topsail Beach. Wendy Cluse, NC Wildlife Resources Commission’s Assistant Sea Turtle Biologist, arrived that afternoon to complete the stranding report and transport the newly named “CMAST” to the Center.

When first brought to the rehab center, “CMAST” was cleaned of the mud and vegetation but was not eating, and needed to be put on a course of antibiotics to prevent infection of the fractured shell. Originally thought to need surgery, Dr. Harms reports two months later, “CMAST” is looking great, eating well, gaining weight, very vigorous and now off antibiotics. Since he is healing so well, we decided not to perform any surgery at this time.” It was hoped “CMAST” would be released

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Loggerhead Rescue *(continued from page 7)*

this fall, but although the shell is healing, it is a slow process. Rehab center staff hopes he may be ready in time for the spring 2008 release held each year.

Luck was not enough for this young turtle to be stranded at CMAST, but he happened to choose a day when a veterinarian who specializes in sea turtles would be there. Dr. Harms' veterinary specialty is sea turtles and is one of the veterinarians in the area called on to help the rehabilitation center's patients. He also serves on the center's board of directors.

Visit http://www.seaturtlehospital.org to see photos and updates on "CMAST."

NCSU DEPARTMENT NEWS

Where are they now?

Dr. Chris Taylor, Post Doctoral Research Associate with NCSU Zoology at CMAST, has accepted a Research Assistant Professor position with the UNC Institute of Marine Sciences in Morehead City. Chris will be conducting research similar to his work at NCSU, focusing on human and climate impact on estuarine fisheries in coastal NC and abroad.

Dr. Kevin Craig, Post Doctoral Research Associate with NCSU Zoology at CMAST has relocated to Florida after accepting a faculty position at Florida State Coastal and Marine Laboratory south of Tallahassee. Kevin plans to expand ongoing work investigating linkages between habitat and estuarine and coastal fishes and fisheries to grouper populations in the northeastern Gulf of Mexico.

Ms. Meaghan Darcy graduated with a M.S. from NCSU (MEAS) in 2003 under the direction of Dr. David Eggleston and conducted research on the use of seagrass habitat corridors by marine benthic organisms. Meaghan is currently a Ph.D. student at the University of British Columbia's Fisheries Center in Vancouver, BC working on management strategies for multi-species ground-fish fisheries in the northeastern Hawaiian Islands. Meaghan will be getting married in August 2008.

College Connections

College of Agriculture and Life Sciences
harvest.cals.ncsu.edu/indexmain.cfm

Environmental and Molecular Toxicology
www.tox.ncsu.edu

Food Science
www.ncsu.edu/foodscience/

Zoology
www.cals.ncsu.edu/zoology

College of Physical and Mathematical Sciences
www.pams.ncsu.edu

Marine, Earth and Atmospheric Sciences
www.meas.ncsu.edu

College of Veterinary Medicine
www.cvm.ncsu.edu

Clinical Sciences
www.cvm.ncsu.edu/docs/index.html

Population Health and Pathobiology
www.cvm.ncsu.edu/dphp

CURRENT EVENTS *(from page 1)*

NCSU/CMAST COURSES • ROOM 105

Sound in the Ocean (MEA 591-D/ 493-D), taught by Dr. Del Bohnehstiehl on Wednesdays, 3-5:30 pm, will record, analyze and interpret sound in the ocean spanning a variety of disciplines including Environmental Science, Solid Earth Geophysics, Marine Ecology and Global Climate Change.

Conservation Ecology (ZO 592M), taught by Dr. Nick Haddad on Tuesdays and Thursdays, 10:15-11:30 am, will cover general ecological principles and applications to contemporary conservation issues across a broad range of ecosystems.