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National Sea Grant College Program
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Sea Grant Research News: Big Fish Not Best; Sounds Mean Hurricanes; Tsunami Safety

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Description: Sea Grant Research News: The "biggest" fish may not be the best, report New York researchers. MIT researchers conduct underwater sound checks to predict hurricanes while Hawaii Sea Grant research is developing tsunami models for the islands. (Science, 5-Jul-2002)

Sea Grant Research News:

- Catching "Biggest" Fish May Not Be Best - Evolutionary Change May Be Impacted
- Acoustic Sensing Methods May Improve Hurricane Prediction
- Tsunami Forecasting Protects Hawaiian Residents, Islands
- Sea Grant Calendar Spot Light: State-of-Maine's Beaches Conference, July 15, 2002, Saco, Maine
- Sea Grant Website Spot Light: The Next Big Earthquake (in Alaska)

CATCHING "BIGGEST" FISH MAY NOT BE BEST - EVOLUTIONARY CHANGE MAY BE IMPACTED

Catching only the largest fish may be causing the average size of fish to decrease is the conclusion of a New York Sea Grant funded study appearing in the July 5th issue of the journal *Science*. Researchers David O.Conover and Stephan B. Munch posit that fishery management plans ignore evolutionary change in harvestable commercially important fisheries. They observed that in an experimental population of Atlantic silverside fish where large individuals were selectively removed, the average size of the silversides declined dramatically in just four generations. Conversely, when smaller fish were removed, the average size increased. Conover makes two suggestions to manage fisheries for sustainable harvest over the long haul: 1) A rethinking of the reliance of minimum-size restrictions as a basic management tool; 2) the establishment of no-take reserves or marine protected areas that may, if properly designed, provide for the maintenance of natural genetic variation of marine life.

CONTACT: David Conover, New York Sea Grant Researcher, Professor of Marine Science, Stony Brook University, (O) 631-632-8667, E-mail: dconover@notes.cc.sunysb.edu

ACOUSTIC SENSING METHODS MAY IMPROVE HURRICANE PREDICTION

False hurricane evacuations can cost coastal areas millions of dollars. Yet warnings that do not come in time can cost lives. Evacuation inaccuracies occur because satellites, which can accurately detect and locate storms, are less successful at determining the storm's destructive power and wind speeds. To improve hurricane assessment, MIT Sea Grant researcher Nicholas Makris is developing methods that will provide critical storm data. Based on the fact that underwater sound waves can provide useful information for hundreds of miles, Makris's project examines whether hydrophones deployed on the

ocean floor can gather acoustic data to better predict hurricanes. Single hydrophones, placed strategically under the ocean, could record the sound associated with high winds and then provide accurate information about the hurricane's power.

The research includes both modeling and at-sea experiments using hydrophones. First, Makris and his team developed a model for application in high-risk parts of the world, like the Bay of Bengal. They will also collect existing underwater acoustic data from the U.S. Navy's SOSUS underwater listening stations to see if that data can acoustically track and classify hurricanes. Finally, the team will deploy an autonomous underwater vehicle (AUV) during a hurricane to take measurements of its own. The AUV would travel to the bottom of the ocean, beneath the hurricane, and take various single-point measurements of the noise level. Since the intensity of underwater noise grows with wind speed, they could use this information to find the storm's power. It's important to know ambient noise levels first, and Makris and his team will begin by finding these levels in local waters. The collection of information should indicate whether using underwater acoustic sensing techniques is a reliable, inexpensive method for predicting hurricane strength.

CONTACT: Nicholas Makris, Associate Professor, Department of Ocean Engineering, MIT, (O) 617-253-3708, Email: makris@mit.edu

TSUNAMI FORECASTING PROTECTS HAWAIIAN RESIDENTS, ISLANDS

When tsunamis strike areas of the Pacific Basin, the results can be devastating. The huge floods endanger residents, homes and businesses with little or no warning. In the past decade, ten major tsunamis have killed more than 4,000 people in the Pacific Basin. Researchers from Hawaii Sea Grant are working to improve prediction methods for tsunamis in order to prevent the disruption and damage they cause. In the first phase of their two-part study, Michelle Teng and Kwok Fai Cheung developed a tsunami height forecast model specifically for Hawaii in collaboration with Philip Liu from Cornell University. This model was based on the existing Cornell COMCOT tsunami model and was modified to be specifically applicable to Hawaii by considering the steep drop off, terrain roughness and vegetation of the Hawaiian coast. This model may help add accuracy to the current warning in Hawaii. During the next step, Teng and Cheung will test the computer simulation models in order to develop a risk assessment methodology. Using the models, they will predict the risk of tsunamis to different coastal areas in Hawaii. Also identified will be the locations most vulnerable to tsunami attacks and the worst tsunami scenarios for locations throughout Hawaii. The results should help scientists government and emergency agencies to gather accurate information quickly should an attack occur.

CONTACT: Professor Kwok Fai Cheung, University of Hawaii, Department of Ocean and Resources Engineering, (O) 808-956-3485, Email: cheung@oe.soest.hawaii.edu

SEA GRANT CALENDAR SPOTLIGHT: State-of-Maine's Beaches Conference, July 15, 2002, Saco, Maine

Join residents, scientists, environmentalists and government officials for an update on the issues that face Maine's beaches. The conference includes discussions of beach variations along the Maine shoreline, coastal landform and shoreline management, Surfrider's State-of-the-Beaches Report, and new data from the Southern Maine Beach Profile Monitoring. Event sponsors include Maine Sea Grant, the Maine Coastal Program, the Maine Geological Survey, and the University of Maine. For more information, please visit <http://www.seagrant.umaine.edu> or call the Maine Sea Grant Extension Office at 207-646-1555 x115.

SEA GRANT WEBSITE SPOTLIGHT: The Next Big Earthquake <http://www.uaf.edu/seagrant/earthquake>

This website, created by Alaska Sea Grant with information from the U.S. Geological Survey, is aimed to ensure public safety in the event of an earthquake. Part of Sea Grant's national Coastal Hazards Mitigation effort, the site includes information on what to do and not do during an earthquake. It also explains how to reduce earthquake damage, the danger of tsunamis and provides earthquake history and facts. Also it contains links for more information.

Sea Grant is a nationwide network of 30 university-based programs that works with coastal communities. Sea Grant research and outreach programs promote better understanding, conservation, and use of America's coastal resources. For more information about Sea Grant visit the Sea Grant Media Center Website at: <http://www.seagrantnews.org>, which includes on-line keyword searchable database of academic experts in over 30 topical areas.

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