The Ocean And Issues
Of Science, Technology
And Society

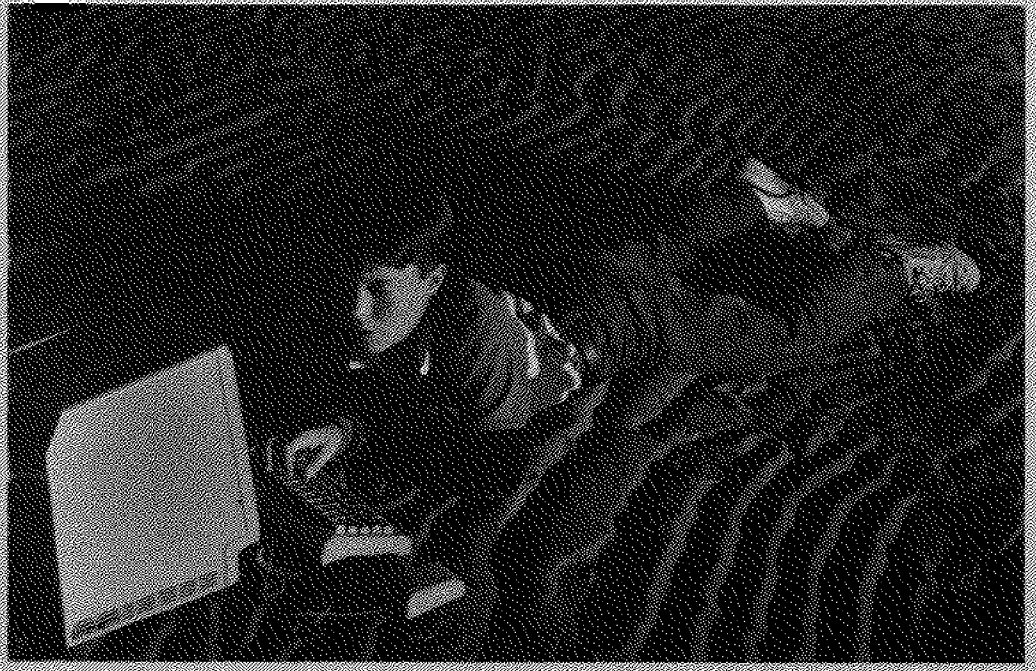
Saturday, March 8, 1987
8 a.m.-5 p.m.
Rudder Conference Center

Texas A&M University
Sea Grant College Program
College Station, Texas

For More Information, Call:
Marine Education Program
(409) 845-7969



MARINE EDUCATION SYMPOSIUM



# SEA THE FUTURE

The eighth annual Marine Education Symposium is intended to acquaint Texas high school students and teachers with current research in the marine sciences, as well as to provide an introduction to some of the more general concerns in marine affairs. The speakers represent a variety of disciplines -- science, social studies, literature, health and education -- in recognition of the diverse interests of high school students.

All students in grades 9 through 12 are encouraged to attend, along with their teachers, parents or other interested adults. Elementary, middle school and junior high school teachers are also invited.

## Location

The 1987 Marine Education Symposium will be Saturday, March 7, 1987, in the J. Earl Rudder Conference Center on the Texas A&M University campus. Participant check-in will be in the first floor lobby, late registration will be in the second floor lobby and all conference sessions will be elsewhere in Rudder Tower.

## Exhibits

Exhibits representing various units of Texas A&M University and marine-related service organizations will be displayed in the first floor lobby of Rudder Tower from 8 a.m. until 5 p.m. All participants are encouraged to visit these exhibits, to learn more about the University's departments and about marine animal conservation efforts.

*Sponsored by the Texas A&M University Sea Grant College Program, its Marine Education Program, and the Department of Educational Curriculum and Instruction.*

Exhibitors represented in these displays include:
- Galveston County Sheriff's Department Beach Patrol (in Rudder mall)
- HEART (Help Endangered Animals--Ridley Turtles)
- Institute of Nautical Archaeology
- SeaArama Marineworld
- Texas A&M University at Galveston
- Texas A&M University Ocean Engineering Program
- Texas A&M University Sea Grant College Program
- Texas A&M University Departments of
  - Educational Curriculum and Instruction
  - Oceanography
  - Wildlife and Fisheries Sciences
- Texas Marine Mammal Stranding Network
- Texas State Aquarium

## Program at a Glance

The Symposium schedule includes concurrent general sessions for all participants and two 45-minute sessions featuring a variety of speakers, followed by an afternoon of tours of various facilities on the Texas A&M campus or by hands-on workshops for students and teachers.

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| Registration | 8:00 - 9:00 a.m. |
| General Sessions (Panels) | 9:00 - 10:00 a.m. |
| Seminar Session A | 10:15 - 11:00 a.m. |
| Seminar Session B | 11:15 - 12 noon |
| Lunch Break | 12:00 - 1:00 p.m. |
| Tours/Workshops | 1:00 - 5:00 p.m. |

## Registration

All participants--students, teachers, accompanying adults--must register. A name tag will be issued to each registrant as a ticket of admission to all sessions. The preregistration deadline is February 6, 1987; the $4.00 registration fee covers all Symposium sessions, handouts, tours and workshops. Registrations received at the door on March 7, 1987, must be accompanied by a $5.00 fee. Teachers wishing to receive an AAT certificate must include an additional $3.00.

Speakers, topics and a brief description of each presentation are listed in the following pages. Each registrant should indicate the first, second and third choices by number for each session. Several sessions are restricted to 25 participants due to space limitations; prompt preregistration will increase participants' chances of receiving their first choices.

Registrants should also indicate first, second and third choices (by number) for tours or workshops. Because of space limitations, participants will be registered for **only one tour or one workshop**.

Further information is available from Dr. Marla Stone, Symposium coordinator, (409/845-7969). Registration forms and fees should be returned to Marine Education Symposium, Marine Education Program, Department of Educational Curriculum and Instruction, Texas A&M University, College Station, Texas 77843-4232.

## Panel I

**1. Ocean Debris: A Worldwide Dilemma**
*Panel Moderator*.....*Dr. Lauriston R. King*
*Deputy Director, Sea Grant College Program*

What are the issues involved in this serious international topic? Texas suffers worse than any Gulf coast state from human refuse washed up on the beach. Increased numbers of people are living on or near the ocean, from crew members on ships at sea to weekend beachcombers, and are producing the tons of litter that threaten our coastline and the lives of many marine animals. The purpose of this panel is to define several aspects of the dilemma and suggest some solutions.

**Symposium Announcements**.....*Dr. Marla Stone*
*Program Director, Marine Education Program*

## Panel II

**Symposium Announcements**.....*Dr. Marla Stone*
*Program Director, Marine Education Program*

**2. Texas Red Tide**
*Panel Moderator*.....*Dr. Robert James*
*Director, Center for Mathematics and Science Education*

A panel of scientists will discuss its observations regarding the recent red tide phenomena. Observers from various areas of the Texas coast have seen the red tide from different perspectives and will report their findings. The discussion will focus on the red tide organism, its predictability, and preparations that can be made for further outbreaks.

Session A 10:15 - 11 a.m.

1. **The Texas State Aquarium, Marine Science and Society,** Quenton Dokken, Director, Texas State Aquarium.

   Man's past, present and future is inseparably bound to the vast oceans that cover our planet. New discoveries are making marine resources more accessible, and it is essential that society as a whole better understand the concepts of wise utilization. This session will focus on how the Texas State Aquarium will contribute to existing knowledge of the oceanic realm and how the aquarium will support wise utilization of marine resources by promoting a more informed society.

2. **Learning About the Sea Through Stories and Songs,** Dr. James B. Kracht, Professor, Department of Educational Curriculum and Instruction, Texas A&M University, and Dr. Donna Wiseman, Chairperson, Elementary Education, Department of Educational Curriculum and Instruction, Texas A&M University.

   Traditional songs and stories shared by seamen on the sailing ships of the 19th and early 20th Centuries reveal much about their lives, their interests and their beliefs. The presentation also will illustrate how the songs and stories reveal the level of technology used aboard the ships of the time and how it differs from that used today. The presenters in this session will share examples of these stories and songs.

3. **Shrimp Mariculture - A Potential New Agricultural Crop for Texas,** Dr. Addison Lawrence, Professor and Project Leader, Department of Wildlife and Fisheries Sciences, Texas Agricultural Experiment Station.

   The harvest of shrimp from the oceans is either at or very near the maximum sustainable yield. This natural catch cannot satisfy the existing market, resulting in the high price of shrimp. As the market continues to increase, and as more than $1 billion worth of shrimp are imported each year, one solution appears to be to produce shrimp by farming. A description of the present technology will be given to describe the present status of shrimp farming in Texas.

4. **Port "A" or Bust! The Impact of Man on Mustang Island Beach and Vice Versa,** Anthony Amos, Research Associate, The University of Texas Marine Science Institute at Port Aransas.

   The 18-mile long Gulf beach on Mustang Island is one of the most popular tourist attractions on the Texas coast. What impact does Spring break, beach driving, litter, camping, jogging and fishing have on the beach environment? Conversely, how do natural events, such as the recent red tide outbreak, affect man's efforts to make a living there?

5. **From Sea Monsters to Research Models: The Development of Man's Interest in Squids and Octopi,** Dr. Phillip Lee, Assistant Professor, Human Biological Chemistry and Genetics, The University of Texas Medical Branch at Galveston.

   This session will examine the characteristics that have led scientists to be interested in cephalopods (squids, cuttlefishes and octopi) for centuries. Cephalopods have several unique adaptations that separate them from other invertebrates: camera eye, developed nervous system, closed circulatory system, rapid locomotion, camouflage capabilities and advanced behaviour patterns. The uses of these fascinating animals and the signficance of the research will be discussed. The differences between squids, octopi and cuttlefish will be contrasted and live specimens exhibited.

6. **Coral Reefs -- What, Where and Why Care?,** Christopher L. Combs, Research Associate/Assistant to the Director, Sea Grant College Program, Texas A&M University.

   Coral reefs are found worldwide in warm, clear, shallow tropical seas, frequently on the eastern shores of continents. Reefs differ in form and complexity as environmental factors vary between geographical locations. This slide-illustrated talk will review reef ecology, and discuss the impact of man's activities on reefs, such as anchor damage, dredging and pollution.

7. **Birds of the Texas Coast,** Karen L.P. Williams, Graduate Student, Department of Wildlife and Fisheries Sciences, Texas A&M University.

There are more than 150 different species of birds found in or near marine habitats in Texas. Many of these species are seen by visitors to the Texas coast. This program will introduce you to 25 of the more common birds. Their distinguishing features and their varied ways of "making a living" in the marine environment will be highlighted.

8. **Exploring the Commercial Uses of Marine Algae,** Kari Cobbey, Graduate Student, Department of Biology, Texas A&M University.

Marine algae are found both in the open sea and along the shore. There are three main groups of marine algae with commercial uses. Diatomaceous earth is derived from deposits of the skeletons of golden-brown algae, and has such varied uses as polishes and insulation and glass. The brown algae are used as a supplementary food for animals. The red algae contain the species eaten in many Far Eastern countries. Derivatives from red algae are ingredients in such diverse products as ice cream, toothpaste and shoe polish.

9. **Hydrolab: Manned Underwater Habitat,** Dr. Andre M. Landry, Jr., Associate Professor, Department of Marine Biology, Texas A&M University at Galveston.

Hydrolab is a manned habitat used by diving scientists who live underwater and study marine life for extended periods of time. A typical research mission conducted by a team of Texas A&M scientists living underwater for seven days is described. The benefits and limitations of underwater living is discussed.

10. **Man vs. Marine Turtles: Can We Coexist?,** Dr. David Owens, Associate Professor, Department of Biology, Texas A&M University.

Man has a long history of utilizing the marine turtle species as a food source. Where man has become abundant, marine turtle populations have suffered. In several cases we are causing intense pressure on these turtles in completely accidental ways. We will discuss the unique life history characteristics and some current research projects dealing with these endangered species.

11. **How the Ocean Affects World Climate,** Dr. Gerald North, Distinguished Professor of Meteorology and Oceanography and Director of Climate System Research Program, Texas A&M University.

Climate changes on many time scales from months to millions of years. The oceans affect the transport and storage of heat near the surface of the Earth; and therefore, they can control the distribution of temperature. The oceans also store and release gases such as carbon dioxide which can affect climate. Examples of how the climate can be changed through oceanic influence will be given.

12. **Oceanic Zooplankton: Open-Ocean Animals Adrift in an Azure Sea,** Dr. Douglas Biggs, Associate Professor, Department of Oceanography, Texas A&M University.

A slide show and VCR presentation will introduce students and teachers to animal plankton, their life histories, and their life styles. For teachers, information about scholarships for a three-week, hands-on, lecture-lab-field experience with "Marine Zooplankton Ecology" to be offered June and July 1987 at the Bermuda Biological Station.

13. **The Kemp's Ridley Sea Turtle Restoration and Enhancement Program,** Pamela Plotkin, Graduate Student, Department of Biology, Texas A&M University.

This session will be an overview of the biology of the Kemp's ridley sea turtle and what we are doing to save this endangered marine reptile.

**14. The Old Ocean and the Extinction of the Dinosaurs,** Dr. Stefan Gartner, Professor, Department of Oceanography, Texas A&M University.

The extinction of the dinosaurs is just one aspect of a much larger episode of extinctions that occurred about 65 million years ago. Ocean sediments offer the best evidence for this extraordinary event.

**15. Predicting Weather: Can It Make Your Day?,** Dr. Lauriston King, Deputy Director, Sea Grant College Program, Texas A&M University.

Marine and atmospheric science have developed rapidly over the last several decades, improving the ability to predict weather. What are the broader social implications of better predictablity of weather?

**16. Viewing the Hydrosphere from a Different Perspective,** James A. Zuhn, Associate Program Director, Marine Education Program, Texas A&M University.

Space-age technology has allowed us to look at bodies of water from higher and higher viewpoints. From low-angle aerial photography to weather satellite reception, all give us different perspectives on how the hydrosphere changes and affects the rest of the earth.

**17. Footprints in the Sand: People and Animals of Sandy Beaches,** Dr. Mary K. Wicksten, Professor, Department of Biology, Texas A&M University.

Surf-swept beaches extend along the coast of Texas. Changing weather, surf and wind make these exposed areas harsh for animals, yet hardy crabs, clams, ghost shrimp and other species are found only on such beaches. The numbers of these animals change naturally from season to season and year to year. What happens when human activities -- oil spills, dumping garbage, traffic, or efforts to stop movement of sand-- alter the beaches? We are trying to find out what affects beach animals, and to advise interested people on what can be done to maintain or restore natural conditions along the coast.

**18. Texas Coastal Clean-Up,** Linda Maraniss, Director, Regional Office, Center for Environmental Education.

Beach Buddies collected 124 tons of litter in three hours during the Texas Coastal Clean-Up, September 20, 1986. This seminar will focus on representative samples of beach litter and their effect on the environment and wildlife. Slides of the clean-up will also be shown.

**19. An Overview of "Hands-On" Marine Science Teacher Training Programs and Opportunities,** Nathan Veatch, Marine Science Teacher, Pasadena Independent School District.

This session for **teachers only** will be presented on various accredited curricula and teacher workshop training programs, such as the High School Marine Science Studies (HMSS), Marine Science Project: FOR SEA, Marine Education Services (MES) Teacher Workshop Program and Sea Grant curricula materials. Handouts and schedules available.

1. **The Texas State Aquarium, Marine Science and Society,** Quenton Dokken, Director, Texas State Aquarium.

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**16. Whales and Dolphins of the Texas Coast,** Barbie Anderton, Graduate Student, Department of Wildlife and Fisheries Sciences, Texas A&M University.

This session will provide a general overview of Texas' two best-known marine mammals, whales and dolphins. Dolphin physiology is greatly related to the cetacean's special abilities such as echolocation, deep diving and "stunning guns." Special emphasis will be given to the natural history of the Atlantic bottlenose dolphin. Additionally, the feeding mechanisms of some of the great whales will be discussed.

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**19. Using E.S.P. in the Classroom,** James A. Zuhn, Associate Program Director, Marine Education Program, Texas A&M University.

The Marine Education Program is developing an **Earth Sensing Project**, which includes activities for using satellite sensing devices to gather data about the ocean. Inexpensive equipment exists for the classrooms to allow firsthand observation and exploration of data regarding ocean currents, geographical changes, and even tracking marine vertebrates. The use of the equipment and accompanying activities will be explained. This session is for **teachers only**.

The afternoon workshops, for both students and teachers, are designed to offer new information or to provide an opportunity for hands-on activities. You are asked to preregister for the workshops. Due to space limitations, registrations will be accepted for **only one tour or one workshop**. Workshops listed in Rudder Tower rooms begin at the time indicated. Workshops scheduled elsewhere on campus will depart from the second floor lobby of Rudder Tower at the time indicated. A guide will be provided.

**1 p.m.**

1. **How to Set Up a Saltwater Aquarium...and What to Do with it Next**, Gil Naizer, Graduate Assistant, Marine Education Program, Texas A&M University.
   Participants will learn how to set up a saltwater aquarium, maintain marine organisms and tips on solving problems that may occur. The demonstration will be followed by an opportunity to perform activities with living marine organisms.
   Workshop Length: 1 hour 30 minutes
   Capacity: 30
   Location: Room 401, Rudder Tower

2. **Making Your Day with the Marine Environment**, Carole Crain, Lecturer, Department of Educational Curriculum and Instruction, Texas A&M University.
   Experience a fun-filled afternoon in activities that relate to the marine environment. The workshop includes experiments plus linterdisciplinary activities, as well as suggestions for marine education resources.
   Workshop Length: 2 hours
   Capacity: 30
   Location: Room 308, Rudder Tower

3. **Down on the Shrimp Farm in Texas**, Granvil Treece, Marine Advisory Service, Sea Grant College Program, Texas A&M University.
   This workshop will compare procedures used on shrimp farms in Texas with other areas of the world, such as Belize, Ecuador, Panama, Java and the Virgin Islands. Differences occur in every aspect, from a total reliance on nature during the growing season to specialized harvesting techniques. Participants will see slides as well as handle shrimp specimens.
   Workshop Length: 2 hours
   Capacity: 30
   Location: Room 510, Rudder Tower

4. **Gathering Data from Stranded Marine Mammals**, Barbie Anderton, Graduate Student, Department of Wildlife and Fisheries Sciences, Texas A&M University.
   The Texas Marine Mammal Stranding Network is a volunteer organization to save live stranded animals and collect all information possible on theories of stranding from those that do not survive. This workshop will demonstrate the techniques and processes used. If available, a recently stranded dolphin that did not survive will be dissected.
   Workshop Length: 2 hours 30 minutes
   Capacity: 20
   Location: Veterinary Medicine Anatomy Laboratory

**1:30 p.m.**

5. **It's for the Birds**
   This workshop focuses on coastal birds. Study skins of various birds will be available for "detective" work. Through several simulation games and activities, participants will come to understand how birds are adapted to life near the sea.
   Workshop Length: 2 hours
   Capacity: 25
   Location: Room 504, Rudder Tower

6. **Investigating the Marine Environment from Above**, James A. Zuhn, Associate Program Director, Marine Education Program, Texas A&M University.

This workshop will focus on photography from many altitudes that provide us data about the earth, especially its bodies of water. Participants will view aerial and space vehicle photographs and learn to make interpretations. Equipment to receive satellite information directly in the classroom will also be used.
Workshop Length: 2 hours 30 minutes
Capacity: 30
Location: Analytical Services Building (depart from Rudder second floor)

7. **Shark Biology,** Steve Branstetter, Marine Biologist and Consultant in shark biology.

   The workshop will begin with a slide presentation of various shark species throughout the world, particularly those of the Gulf of Mexico, and a discussion of current research on age and growth. This will be followed by a laboratory session including a dissection to examine morphological adaptations to the environment.
Workshop Length: 2 hours 30 minutes
Capacity: 20
Location: Nagle Hall (depart from Rudder, second floor)

8. **SCUBA-Tips and Techniques,** Jim Woosley, Lecturer, Department of Health and Physical Education, Texas A&M University and Master SCUBA Trainer, Debbie Dorsey, Assistant SCUBA Instructor and Aquatics Director, City of Bryan, and Frank Ashley, Assistant Professor, Department of Health and Physical Education, Texas A&M University.

   Who can have fun with skin or scuba diving? Everyone. This workshop will offer an introduction to and demonstration of skin and scuba diving, and an overview of the equipment involved, physical ability needed and safety procedures.
Workshop Length: 1 hour 30 minutes
Capacity: 50
Location: P. L. Downs Natatorium (depart from Rudder, second floor)

9. **Science Fair Projects,** Terry Hehr, Graduate Assistant, Department of Educational Curriculum and Instruction, Texas A&M University.

   Discover how to integrate science fair projects into the regular science curriculum. With prior planning and organization, creation of science projects can be fun as well as a learning activity during the entire school year. Introduction to this idea will include discussion, handouts with guidelines, and marine-related science project ideas. This session is for **teachers only.**
Workshop Length: 2 hours
Capacity: 30
Location: Room 404, Rudder Tower

**2 p.m.**

10. **Sampling Techniques for the Marine Environment,** Texas Sea Grant Marine Fellows.

    Participants will see a slide show of oceanographic sampling methods and data analysis systems. A demonstration of some of the chemical, biological, physical and geological sampling gear will follow.
Workshop Length: 2 hours 30 minutes
Capacity: 30
Location: Oceanography/Meteorology Building (depart from Rudder, second floor)

11. **Identification and Preservation of Vascular Plants,** Dr. Stephen Hatch, Associate Professor, Department of Range Science, Texas A&M University.

    The use of morphological characters for keying plants will be demonstrated. Students will each identify plant materials using specimens found in the local area. Collection, pressing and mounting techniques will be demonstrated.
Workshop Length: 2 hours
Capacity: 30
Location: S.M. Tracy Herbarium (depart from Rudder, second floor)

12. **Investigating Tropical Storms**, Robert Swift, Research Associate, Marine Education Program, Texas A&M University.

    Learn how to track hurricanes and discover just how predictable they can be. Examine the effects of storm surges. Learn to make a beach profile and view slides of how beaches appear before and after storms.

Workshop Length: 2 hours
Capacity: 30
Location: Room 301, Rudder Tower

**2:30 p.m.**

13. **A Menagerie of Marine Games.**

    Have fun learning about the marine environment with gaves and simulations from Investigating the Marine Environment and Its Resources. Activities will include Who's for Dinner, Who Eats Whom, Make a Dolphin and Shark Bingo.

Workshop Length: 1 hour 30 minutes
Capacity: 50
Location: Room 302, Rudder Tower

14. **How to Set Up a Saltwater Aquarium...and What to Do with It Next**, Randy Cooper, Graduate Assistant, Marine Education Program, Texas A&M University.

    Participants will learn how to set up a saltwater aquarium, maintain marine organisms and tips on solving problems that may occur. The demonstration will be followed by an opportunity to perform activities with living marine organisms.

Workshop Length: 2 hours
Capacity: 30
Location: Room 501, Rudder Tower

A variety of tours has been scheduled, including some that will introduce Texas A&M facilities other than those involved in marine education. You are asked to pre-register for all tours. Due to space limitations, registrations will be accepted for only one tour or one workshop. Space will be reserved for you and tickets will be included in your registration packet. The times given for each tour indicate when it will depart from Rudder Tower. The tour length includes both the actual tour and transportation time. Guides will be provided for each tour.

**1 p.m.**

**Tour 1 - Biology of the Endangered Marine Turtles**
A slide show will introduce the basic biology of sea turtles, followed by a tour of the laboratory and an examination of the three species common to Texas.
Tour length: 1 hour 15 minutes
Capacity: 30

**Tour 2 - Hydromechanics Laboratory**
Tour the Hydromechanics Laboratory and observe the operation of the wave tanks, towing tank and other hydraulic test facilities.
Tour length: 1 hour 45 minutes
Capacity: 20

**1:15 p.m.**

**Tour 3 - Electron Microscopy**
Tour the University facility for high-resolution ultrastructural investigations in life and physical sciences. Capabilities of transmission and scanning electron microscopes and a demonstration of x-ray microanalysis will be shown.
Tour length: 1 hour 15 minutes
Capacity: 18

**Tour 4 - Hydrogen Research Center**
Tour the center where new, far-reaching developments in hydrogen research have recently been made. See an engine run from hydrogen fuel and drink the water from its exhaust. Observe an electric train run off a hydrogen fuel cell.
Tour length: 2 hours 15 minutes
Capacity: 15

**Tour 5 - Texas Cooperative Wildlife Collection**
Tour this unique collection, a part of the Texas A&M Department of Wildlife and Fisheries Sciences, and receive an introduction to a research collection of mammals, birds, fish, amphibians and reptiles. Because of the collection's physical location, this tour is not accessible to the handicapped or to persons in spike-heeled shoes.
Tour length: 1 hour 30 minutes
Capacity: 30

**Tour 6 - Hyperbaric Medical Laboratory**
Tour the hyperbaric laboratory to see the chambers used in diving research and in treatment of various diseases.
Tour length: 1 hour 45 minutes
Capacity: 45

**Tour 7 - Forestry in the Eighties**
Tour the new Forest Science facilities and greenhouses. See demonstrations of the new technologies used in forestry in the 1980's.
Tour length: 1 hour 30 minutes
Capacity: 25

**Tour 8 - College of Veterinary Medicine**
Tour the clinical facilities, veterinary anatomy facilities and the pathology museum.
Tour length: 1 hour 30 minutes
Capacity: 30

**1:30 p.m.**

**Tour 9 - Animal Science**
Tour the Meat Science and Technology Center, as well as the Horse Center.
Tour length: 2 hours
Capacity: 50

**Tour 10 - Aquaculture Research Center**
Tour the facilities used to conduct research with aquatic animals. Research at the facility is conducted with various species, including red drum, catfish, crawfish, bass and tilapia.
Tour length: 2 hours
Capacity: 40

**Tour 11 - Nautical Archaeology**
Tour the Conservation Laboratory and see artifacts recovered from ancient shipwrecks and underwater archaeological sites that are being restored. A visit to the Ship Reconstruction Laboratory also will show the process of ship reconstruction.
Tour length: 3 hours
Capacity: 80

**Tour 12 - Department of Meteorology's Weather Station and Radar Facility**
A brief overview of data available to the meteorologist, preparation of forecasts and opportunities in meteorology. Tour the radar facility and the Meteorological Education Center.
Tour length: 1 hour 40 minutes
Capacity: 25

**2 p.m.**

**Tour 13 - Biology of the Endangered Marine Turtles**
A slide show will introduce the basic biology of sea turtles, followed by a tour of the laboratory and an examination of the three species common to Texas.
Tour length: 1 hour 15 minutes
Capacity: 30

**Tour 14 - Electron Microscopy**
Tour the University facility for high-resolution ultrastructural investigations in life and physical sciences. Capabilities of transmission and scanning electron microscopes and a demonstration of x-ray microanalysis will be shown.
Tour length: 1 hour 15 minutes
Capacity: 18

**Tour 15 - Hydromechanics Laboratory**
Tour the Hydromechanics Laboratory and observe the operation of the wave tanks, towing tank and other hydraulic test facilities.
Tour length: 1 hour 45 minutes
Capacity: 20

**2:15 p.m.**

**Tour 16 - Texas Cooperative Wildlife Collection**
Tour this unique collection, a part of the Texas A&M Department of Wildlife and Fisheries Sciences, and receive an introduction to a research collection of mammals, birds, fish, amphibians and reptiles. Because of the collection's physical location, this tour is not accessible to the handicapped or to persons in spike-heeled shoes.
Tour length: 1 hour 30 minutes
Capacity: 30

**Tour 17 - Hyperbaric Medical Laboratory**
Tour the hyperbaric laboratory to see the chambers used in diving research and in treatment of various diseases. .
Tour length: 1 hour 45 minutes
Capacity: 45

**2:30 p.m.**

**Tour 18 - Hydrogen Research Center**
Tour the center where new, far-reaching developments in hydrogen research have recently been made. See an engine run from hydrogen fuel and drink the water from its exhaust. Observe an electric train run off a hydrogen fuel cell.
Tour length: 2 hour 15 minutes
Capacity: 15

**Tour 19 - College of Veterinary Medicine**
Tour the clinical facilities, veterinary anatomy facilities and the pathology museum.
Tour length: 1 hour 30 minutes
Capacity: 30

**2:45 p.m.**

**Tour 20 - Forestry in the Eighties**
Tour the new Forest Science facilities and greenhouses. See demonstrations of the new technologies used in forestry in the 1980's.
Tour length: 1 hour 30 minutes
Capacity: 25

**Tour 21 - Department of Meteorology's Weather Station and Radar Facility**
A brief overview of data available to the meteorologist, preparation of forecasts and opportunities in meteorology. Tour the radar facility and the Meteorological Education Center.
Tour length: 1 hour 40 minutes
Capacity: 25

**Tour 22 - Hydromechanics Laboratory**
Tour the Hydromechanics Laboratory and observe the operation of the wave tanks, towing tank and other hydraulic test facilities.
Tour length: 1 hour 45 minutes
Capacity: 20

**Tour 23 - Biology of the Endangered Marine Turtles**
A slide show will introduce the basic biology of sea turtles, followed by a tour of the laboratory and an examination of the three species common to Texas.
Tour length: 1 hour 15 minutes
Capacity: 30

## TEXAS SEA GRANT COLLEGE PROGRAM

The Texas A&M University Sea Grant College Program is a partnership of university, government and industry, focusing on marine research, education and advisory service. Nationally, Sea Grant began in 1966 with the passage of the Sea Grant Program and College Act. Patterned after the Land Grant Act of the 1860s, the Sea Grant concept is a practical, broad-based scientific effort to better the world for all those living in and out of the sea.

## MARINE RESEARCH

From laying the seeds for a new shrimp farming industry in Texas to tracking response to killer hurricanes roaring out of the Gulf of Mexico, Texas Sea Grant strives to increase knowledge across a broad spectrum of marine-related fields. Indeed, research is the largest of Texas Sea Grant's components, accounting for approximately 40 percent of the annual budget. The research program areas include fisheries, engineering, mariculture and coastal environment. Research grants, which are awarded on a competitive and peer-review basis, are the foundation for the future of our coast.

## MARINE EDUCATION

The philosophy behind the Sea Grant marine education program at Texas A&M is to develop awareness and understanding of the ocean's place in our environment and its influence on our lives, and to foster wise use of the ocean and its inhabitants today and in the future. There are no age or subject boundaries. Marine education is available for all students--pre-school through adult--and at all levels of learning--from highly technical scientific studies to sea-related music and literature to safety practices.

## MARINE ADVISORY SERVICE

A joint program of the Texas Agricultural Extension Service and Texas Sea Grant and supported by the county commissioners' courts in nine coastal counties, the Marine Advisory Service is a centerpiece in an effort to get information to user groups here in the state. Against this background, marine research that ripples through the academic community is transmitted to the general public. Whether it's through workshops, publications or just one-on-one down on the docks, the goal is to help people deal more effectively with the marine environment without harming it.

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*Photograph by Norman Martin.*





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