EXECUTIVE SUMMARY
Texas A&M University System
Campuses in Galveston, College Station, and Corpus Christi
Proposal to create the degrees of
Master of Science in Marine Biology
Doctor of Philosophy in Marine Biology

Marine biologists within the Texas A&M University System (TAMUS), including the Departments of Marine Biology (MARB), Marine Sciences (MARS), Wildlife and Fisheries Sciences (WFSC), Oceanography (OCGN) and Biology (Biol), Life Sciences (LSCI) at Texas A&M - Corpus Christi (TAMUCC), are proposing to initiate a graduate program offering both the M.S. and Ph.D. degrees in marine biology among three entities of the TAMUS. The need for this program is based on the expansion of the field of marine biology since the beginning of the environmental movement and the popularization of marine biology in the media. The demand for these degrees is high, based on the estimated 300+ inquiries from prospective graduate students in the past five years; the MARB Department at Texas A&M University at Galveston (TAMUG), for example, has received 160 inquiries (not counting inquiries received by individual faculty members) since late June 2002, an average of about 5 per month.

In 1998, the Department of Marine Biology at the Galveston campus produced a 5-year strategic plan (entitled “A Five-Year Strategic Plan for Entering the 21st Century”) in which one of the recommendations was to develop a graduate program in MARB. In 1999, the Texas Legislature granted TAMUG permission to begin the process of planning to offer graduate degree programs (HB 188, passed by the House on 8 April 1999 and by the Senate on 10 May 1999). Planning authority was granted by the Texas Higher Education Coordinating Board (THECB) in January 2001. The THECB Table of Programs states that the M.S. and Ph.D. degrees will be “in cooperation with Texas A&M University (TAMU) only.” These two proposed graduate degrees will be TAMU degrees, managed according to the existing framework at TAMU for “Interdisciplinary Degree Programs” (IDP, Appendix A). The IDP is a cooperative program involving the Departments of MARB, MARS, BIOL, OCNG, and WFSC at TAMU, and the Department of Life Sciences at Texas A&M - Corpus Christi (TAMUCC), with the MARB Department as the host department in this endeavor. All proposed faculty for the new program are already members of the graduate faculty within their home university. Once the program is approved, all the present graduate faculty will also become the Participating Graduate Faculty (PGF) of the TAMU Marine Biology Interdisciplinary Degree Program (MB IDP). There are numerous graduate degree programs in Texas with some marine biology related coursework, but there is no specific “marine biology” degree.

The principal strengths of the proposed MB IDP lie in the international recognition, scholarly productivity and extramural funding of its diverse faculty, as well as the strategic location of two campuses on the Gulf of Mexico. Students have access to a variety of marine habitats on the upper Texas coast at the Galveston facility, including the Galveston Bay system, with its open bay, oyster reefs and wetlands, and the open Gulf with its barrier islands, beaches and offshore habitats. The Corpus campus on the other hand accesses the distinctly different habitats of the South Texas coast, including Padre Island, a barrier island enclosing the hypersaline but fertile Laguna Madre. The popular undergraduate program in Galveston has been designed to complement a typical contemporary biology department by placing emphasis on the level of the organism and ecosystem. The Galveston researchers assembled to study marine mammals are, as a group, arguably the best in the world, participating in numerous international research projects in diverse and distant locations. The participating graduate faculty also includes a sizeable group of invertebrate ecologists who contribute to on-going, highly-funded studies of coastal ecosystems, the deep sea, the hypoxic zones of the continental shelf, oyster reefs, offshore rigs and natural coral banks, and the saline caves of the Bahamas and Yucatan, as well as mariculture and regional fisheries. The fisheries faculty use the latest in molecular and geochmical approaches to explore the recruitment and production of economically important species of both coastal and pelagic open-ocean populations. Plant biologists focus on the plankton, harmful algal blooms and wetlands restoration. Two new degree programs that complement the proposed initiative include the non-thesis professional degree in Galveston (Masters of Marine Resources Management in the Department of Marine Sciences, a participating department member) and the interdisciplinary program at Corpus Christi (PhD in Coastal and Marine System Science). The generic name “marine biology” applies to elements of all of the proposed programs listed and is important for marketing prospective students and their eventual employers.
A number of associated institutions outside of the TAMUS universities academic departments listed will also add to the IDP’s diversity. Research projects and undergraduate teaching are already supplemented by University of Texas Medical Branch (UTMB) and National Marine Fisheries Service (NOAA/NMFS) professionals in Galveston and by cooperating research centers in College Station, and these organizations will contribute to graduate student supervision and financial support when the new program is initiated. The Texas Institute of Oceanography (TIO) supplements graduate student research support directly and through additional facilities provided through the Institute of Marine Life Sciences (IMLS) and the Laboratory for Ocean and Environmental Research (LOER), both in Galveston. The Corpus campus houses the Center for Coastal Studies, The Conrad Blucher Institute and Harte Research Institute for the Gulf of Mexico Studies. In College Station, the Geochemical and Environmental Research Group (GERG), the Sustainable Coastal Margins Program (SCMP) and the Integrated Ocean Drilling Project (IODP) provide opportunities for graduate students to work with prestigious research scientists within interdisciplinary programs with international scope. Research professionals with the US Geological Survey and Texas Parks and Wildlife are co-located on the Corpus campus and participate in graduate education and research.

The goal of the proposed graduate program is to attract high-quality students interested in one or a combination of the subdisciplines of marine biology who wish to pursue careers in higher education, government, or private industry. The structure of the education provided by the program will ensure that highly qualified individuals will be sent into the job market or on to further education. Employment of graduates will be related to environmental and living resource regulation and management within all levels of government; industries related to or affected by resource utilization and management; and within all levels of academia, to teach and conduct basic and applied research. For the M.S. degree, this will be accomplished by providing a very strong curriculum, hands-on research experience in most courses and either a rigorous program of field and/or laboratory research for thesis option students. Non-thesis option students have a larger course load than thesis option students. Both thesis and non-thesis students will be supervised by graduate advisory committees responsible for development of the final degree plan. For the Ph.D. degree, in addition to coursework, a dissertation based on rigorous scholarly research will be required.

The Participating Graduate Faculty (PGF) from the combination of departments working together is an ideal organization for the proposed graduate program for the following reasons:

- there is a large undergraduate marine biology program (ca. 500 MARB majors in the Fall Semester of 2005) in Galveston, as well as traditional undergraduate biology degrees in College Station, Corpus Christi and other Texas universities, which are all training numerous students with potential interest in the proposed graduate program;

- there is an established, qualified marine biology faculty (> 30) at the three locations, in a wide range of specialties, with extensive experience in state-of-the-art marine research and graduate student advising;

- the PGF has a record of substantial extramural research funding;

- the PGF already have extensive experience in mentoring graduate students in each of their home departments on the three respective campuses;

- student financial support is available at all three facilities through more than 30 graduate teaching assistantships (GAT) and at least 20-30 research assistantships (GAR) per semester, along with various fellowships;

- there are state-of-the-art physical facilities for conducting graduate student education and research at all three campuses;

- participating departments are located in a geographic triangle that encompasses a high concentration of federal, state and local governmental agencies that manage living resources and the environmental quality of the Texas coast and Gulf of Mexico;

- two of the three participating campuses are located on the Gulf of Mexico, where coastal tourism, economically-important living resources, and petrochemical facilities are clustered;

- there is no other graduate program in marine biology in a state adjacent to the Gulf of Mexico.
The degree program will focus on independent supervised research complemented by formal coursework. Essential components of the program include the following:

- a highly diverse curriculum available on all three campuses;
- original, supervised scholarly research, to be written up and formally defended as a paper, thesis or dissertation;
- efficiencies obtained by sharing the diversity of courses already offered at the three participating entities facilitated by distance learning technologies;
- students in the M.S. non-thesis option will be able to pursue a majority of degree requirements “by distance;” M.S. thesis-option and Ph.D. students also will benefit from distance technologies in being able to avail themselves of courses offered at the alternative campuses and while they are doing research away from any campus, and in interactions with members of their committees and others from whom they are separated by distance.

Students will earn one of the following degrees:

- Master of Science, non-thesis option, with 36 total semester credit hours;
- Master of Science, thesis option, with 32 total semester credit hours including thesis; or,
- Doctor of Philosophy, with a minimum of 64 total semester hours beyond the M.S. degree or a minimum of 96 total semester hours beyond the B.S. degree, including dissertation.

The well-established rules and guidelines of the Office of Graduate Studies (OGS), TAMU, regarding admission, advising, course requirements, examinations, and thesis and dissertation research, production, and defense will be followed. Students admitted to the MB IDP through the TAMUCC campus will follow the well-established rules and guidelines for graduate education at TAMUCC.

Program costs are approximately $10.7 million for the first 5 years. Funds during the first five years will be used for hiring an estimated three new faculty members and providing administrative support for the program at the three campuses. These costs are relatively low because there is already a well-established infrastructure for research and education in the participating departments. It is estimated that the program will generate approximately $11.3 million in the first 5 years, principally from formula income derived from student credit hours, from research grants providing assistantships, and from reallocation of existing resources.