

DEPARTMENT OF MARINE BIOLOGY

**A FIVE-YEAR STRATEGIC PLAN FOR USE
DURING THE 21ST CENTURY**

2011 - 2015

June 2010

A PART OF THE TEXAS A&M UNIVERSITY'S GALVESTON COASTAL CAMPUS

Marine Biology Department Mission

The mission of the Department of Marine Biology (henceforth MARB) established in 1978 is to provide high quality undergraduate and graduate education in the biological sciences with an emphasis on the biology and ecology of marine organisms and coastal marine habitats to the Texas A&M University at Galveston (henceforth TAMUG) community. TAMUG is a special-purpose institution of higher education for under graduate and graduate instruction in marine and maritime studies in science, engineering and business and for research and public service related to the general field of marine resources.

Mission/Purpose

The Marine Biology program provides an excellent education in the biological sciences through studies undertaken in a unique coastal environment. The curriculum offers broad training in general biology, while emphasizing the local flora and fauna in estuaries and the marine environment. Students receive hands-on field sampling experience as well as internship opportunities.

Current Academic Programs

At TAMUG, undergraduate students are offered a sound and well-rounded Bachelor of Science degree in the biological sciences with an emphasis on marine systems and organisms. As a result, MARB students are well prepared to seek jobs in the fields of both marine and terrestrial biology, medical technology, and environmental technology or to continue with postgraduate or professional degrees. Recent surveys of past graduates reveal that 65% of graduates are employed in the field of marine biology and a further 20% are working in a closely related field.

The core curriculum for the degree of *B.S. in Marine Biology* includes courses in molecular, cellular, physiological and organismal biology. Seven areas of emphasis have been developed around the strengths of the Marine Biology Department faculty. Students enrolled in any of these areas of study can also register in the **U.S. Maritime Service License Option Program** through the Texas State Maritime Program and obtain a third mate's license upon graduation. (Due to the reduced biology course content of the **License Option Program**, graduates are not prepared to enter graduate school without further course work.) In addition, the department offers a separate *B.S. in Marine Fisheries*, which emphasizes both Fisheries Management and Mariculture.

There are presently between 500 and 550 undergraduates enrolled in the Marine Biology Department, with more than 90% of these seeking a B.S. in Marine Biology and a graduation rate of approximately 80 to 85 per year.

Undergraduate students also have the opportunity to enroll in courses offered on the College Station campus of Texas A&M University. The department currently has opportunities with faculty from the University of Texas Medical Branch and from the National Marine Fisheries Service (NMFS) – Galveston Laboratory to teach courses for our students. MARB students also gain invaluable experience through intern programs at other institutions (such as NMFS, Mote

Marine Laboratory, Sea Grant Fellowships, various Research Experience for Undergraduate (REU) Fellowships at TAMUG as well as other institutions) or with individual research scientists, both here and elsewhere. These sorts of cooperative programs are currently being expanded through working agreements with the Texas Sea Grant College Program and the Moody Aquarium, as well as other organizations.

Student Learning Outcomes, with Any Associations and Related Measures, Achievement Targets, Findings, and Action Plans

1. *Form good questions related to marine life*

Formulate good questions and or identifying problems in marine biology including marine ecosystems and organismal biology.

2. *Identify information related to marine biology issues*

Examine, identify, and gather information regarding questions or problems specific to the marine biology discipline.

3. *Analyze, interpret & present results*

Analyze, interpret & present results related to identified marine biology issues

4. *Formulate conclusions appropriate to field*

Formulate conclusions and/or select the best solution with appropriate justification

5. *Evaluate conclusions in marine biology context*

Evaluate the worth and importance of those conclusions (to place them in the wider social, environmental, and historical context).

Current Research Programs

Faculty within the MARB are actively involved in research programs dealing with coastal marine ecology, organismal biology, evolutionary biology, conservation biology, fisheries biology, wetlands ecology, benthic animal ecology, deep-sea biology and mariculture. Many of these programs focus on the impact of human activities on marine and estuarine animals and plants, and their environment. Some of the current programs include:

- Biodiversity and ecological dynamics of estuarine and offshore ecosystems;
- Recruitment in pelagic fish populations;
- Genetic studies of large pelagic fish populations;
- Invasive species;
- Phylogeny and population genetics of marine invertebrates
- Human health and the quality and safety of seafood products;
- Harmful algal blooms;
- Wetlands ecology and urban development;
- Sea turtle biology and ecology, especially endangered species;
- Oyster diseases, management and conservation;
- Marine mammal biology, including behavior, functional morphology, physiology, and conservation;
- Vertebrate ecological morphology and comparative physiology;

- Marine cave biology; and
- Deep-sea biology, related to oil and gas industry in deep water.

Within this research program framework are a number of existing specific research laboratories and programs including:

- Laboratory for Aquatic Animal Performance (R. Davis)
- Behavioral Ecology and Biodiversity Laboratory (B. Würsig)
- Ecological Morphology and Comparative Physiology (C. Marshall)
- Coastal and wetlands community ecology (A. Armitage)
- Sea Turtle and Fisheries Ecology Research Laboratory (A. Landry)
- Cave and Coral Reef Biology (T. Iliffe)
- Biospeleology (T. Iliffe)
- Seafood Safety Laboratory (J. Schwarz)
- Coastal Phytoplankton and Seaweed Studies (A. Quigg)
- TAMUG Algal Culture Facility (A. Quigg)
- Deep-Sea Biology (G. Rowe)
- Ecosystem-Based Fisheries Management (J. Rooker)
- Marine Fisheries Genetics (J. Alvarado)
- Evolution and diversity of marine invertebrates (A. Schulze)
- Wetlands Center facility (Daisy Daily, Sea Camp; J. Rooker, fisheries; J. Alvarado, mariculture; A. Armitage, wetlands)

The research faculty of the Department of Marine Biology includes a mix of individuals with expertise in vertebrate biology (Alvarado, Davis, Landry, Marshall, Rooker, and Würsig), invertebrate biology (Iliffe, Kanz, Ray, Rowe, and Schulze), marine algae (Quigg), microbiology (Schwarz), biogeochemistry (Rowe), and wetlands ecology (Armitage and Quigg).

In addition, there are also a number of associated programs and cooperative agreements that link MARB with governmental and other research entities including:

- Texas Institute of Oceanography (TIO)
- Institute of Marine and Life Sciences (IMLS)
- National Marine Fisheries Service Cooperative Agreement (NOAA)
- Minerals Management Service (MMS)
- Texas Marine Mammal Stranding Network (TMMSN)
- Sea Grant College Program
- Center for Texas Beaches and Shores (CTBS)
- Laboratory for Environmental Research (LOER)

Additionally, the TAMUG Scientific Diving Program, sanctioned by the American Academy of Underwater Sciences (AAUS), produces divers who are accredited as full AAUS and NOAA scientific divers. TAMUG scientific divers are currently assisting with research diving programs at EPA, NASA, NMFS, NOAA and with Texas Parks and Wildlife.

Marine Biology Department Vision

MARB is committed to enriching the educational, research, and service programs for our students, our educational research, and industrial constituencies, and for the citizens of Texas. As part of TAMUG, MARB is committed to being part of the premier university for ocean and coastal studies on the Gulf Coast by providing enriching educational, research and service programs.

The following MARB Goals, Strategies and performance measures support the 12 imperatives of the TAMU System Strategic Plan (Vision 2020) and the TAMU Academic Master Plan:

- 1 – Elevate Our Faculty and Their Teaching, Research, and Scholarship
- 2 – Strengthen Our Graduate Programs
- 3 – Enhance the Undergraduate Academic Experience
- 4 – Build the Letters, Arts, and Sciences Core
- 5 – Build on the Tradition of Professional Education
- 6 – Diversify and Globalize the A&M Community
- 7 – Increase Access to Knowledge Resources
- 8 – Enrich Our Campus
- 9 – Build Community and Metropolitan Connections
- 10 – Demand Enlightened Governance and Leadership
- 11 – Attain Resource Parity with the Best Public Universities
- 12 – Meet Our Commitment to Texas

GOAL 1 - Enhance the quality of undergraduate and graduate education in marine biology.

Strategy 1 - Improved recruitment of high quality students.

Project 1 - Continue to update and maintain an effective, informative home page on the Internet.

Project 2 - Advise administration on expanding summer programs which are directed at graduating high school seniors who score well on their SAT exams and express an interest in biology.

Project 3 - Advise recruitment personnel on visiting target high schools and junior colleges throughout Texas and surrounding states.

Project 4 – Stronger entrance criteria for students entering the MARB major in order to improve retention and graduation rates. This will be phased in as a stepped plan.

Project 5 - Development of competitive and well-advertised summer courses which complement the “Window to the Sea” role at TAMUG and which attract high-quality students from outside TAMUG. Summer courses at TAMUG are often an after-thought, are not competitive with those of other marine institutions and suffer from inadequate faculty salary structure. As such, bringing salary and prerequisite resources up to par is a project.

Project 6 - Cooperation with TAMUG's Honors Program to attract Honor's-eligible students from High Schools and Junior Colleges throughout Texas and nationally who have an interest in ocean/coastal-related science and the life-sciences in general.

Strategy 2 - Development of research and student intern opportunities.

Project 7 - Develop and improve connections with the Moody Aquarium, National Marine Fisheries Service (through the Cooperative Agreement), Sea World of Texas, National Oceanic and Atmospheric Administration, Sea Grant, Texas Parks and Wildlife, Texas Natural Resources Conservation Commission, other environmental organizations and industry. (ongoing)

Project 8 - Develop Memorandum of Understanding (MOU) with federal and state agencies which allow faculty and students to participate in research experiences such as research cruises, field trips and laboratory experiences. (ongoing)

Project 9 - Participate in the NSF REU program on campus by mentoring students and providing funds to support additional internal student fellowships. (ongoing)

Project 10 - Obtain resources such as charitable donations (e.g., McDaniel Foundation, Moody) to provide funds to senior thesis students to attend conferences.

Project 11 - Develop mechanisms to recruit and foster students in the TAMUG Honors program to MARB research activities. (ongoing)

Project 12 - Provide faculty and students with resources to improve experiences and opportunities for Undergraduate Research Scholars. (ongoing)

Project 13 - Develop and improve research experiences through Texas Institute of Oceanography undergraduate research fellowships. (ongoing)

Project 14 - Add Hands-on summer courses, package and market them as an “applied” or “practical” experience.

Strategy 3 - Development of a curriculum which is current with the technological advances in the fields of marine biology and fisheries.

Project 15 - Develop new courses which reflect changing fields, for example, course on stock assessment methods, applied ecology.

Project 16 - Regular improvement of teaching laboratory equipment and laboratory capabilities to maintain state-of-the-art teaching facilities. (ongoing)

Project 17 - Obtain PUF funds to obtain major instrumentation and/or replace aging equipment, particularly that in the Cell Biology and Comparative Physiology Laboratory. (ongoing)

Project 18 - Hire new faculty in the fields of marine biology and fisheries using new technological advances. (Expected in next 3-5 years)

Project 19 - Develop summer field course offerings that rival those at Duke, Woods Hole and other marine biology/oceanographic institutions (this will require a significant resource commitment from the TAMUG administration).

Project 20 - Increase hands-on field course offerings during both regular semesters and summer sessions.

Strategy 4 - Enhanced relationships with the College of Agriculture and Life Sciences, College of Geosciences and the College of Science, and the modification of teaching relationships with the College of Veterinary Medicine and the College of Education.

Project 21 - Propose MARB/BIMS certification program with other colleges in College Station.

Project 22 – Increase visibility of new IDP Graduate Program in Marine Biology (IDP) in College Station departments. (ongoing)

Project 23 – Increase visibility of MARB courses in College Station departments, particularly summer and inter-session courses. (although ongoing, this project suffers from an inadequate salary structure for summer course offerings as well as resource availability, i.e., vessel support)

Project 24 – Make as many as possible graduate student classes available to students in College Station and TAMU system schools via distance education. (ongoing)

Project 25 – Continue efforts to increase number of courses available to students in Galveston via distance education. (ongoing)

Project 26 - Improve opportunities for students to simultaneously enroll in classes on several campuses without additional expenses to the students.

Project 27 – Improve relationships with TAMU-CC through participation in student activities such as research conferences.

Strategy 5 – Graduate education strategy

Project 28 – Hire new faculty which will conduct research and teach in the major focal areas (see previous plan) of the new marine biology inter disciplinary program. In future, 3-5 years.

Project 29 – Develop program resources which will facilitate efforts at distance education in conjunction with the computer informational services. (ongoing)

Project 30 – Develop graduate student support systems in terms of scholarships and fellowships through intramural and extramural funding.

Project 31 - Develop program resources that facilitate and expand hands-on field experience through coursework as well as research.

Strategy 6 – Study Abroad courses

Project 32 – Develop and recruit students to officially sanctioned Study Abroad courses. Such courses provide students with both Marine Biology and International and Cultural Diversity credits. Currently, the only Study Abroad course regularly offered at TAMUG is a summer course in Tropical Marine Ecology (MARB 340 & 617) which involves a 2 week field trip to the Yucatan Peninsula of Mexico. (ongoing)

GOAL 2 - Achieve teaching and service excellence.

Strategy 1 - Improved faculty teaching skills .

Project 33 – Increase the number of undergraduate courses taught in MARB with the “W” writing designation. (ongoing) June 2010 Have 5 W courses in inventory.

Project 34 – Increase the number of faculty participating in Center for Teaching Excellence course offerings. (ongoing)

Project 35 – Improved Graduate Teaching Assistant skills through involvement in TA training clinics. (ongoing)

Strategy 2 - The achievement of faculty salary and workload parity with comparable TAMU departments (Oceanography, Wildlife and Fisheries Sciences, Ecosystem Science and Management) by 2020.

Project 36 - Need to increase faculty salaries allocation in budget.

Project 37 - Need to increase emphasis on adequate summer salary support.

Strategy 3 - Enhanced student retention rates through improved faculty/staff interactions with students.

Project 38 - Expansion of departmental student advising.

Project 39 - Increased technical expertise and inter-personal skills of MARB office staff through training seminars and courses.

GOAL 3 - Foster Research Enhancement.

Strategy 1 - Expansion of both education and research programs via the acquisition of new faculty.

Project 40 – Establish knowledge gaps in MARB department current undergraduate and graduate programs, specifically the new Marine Biology IDP program. [New faculty hires needed.](#)

Project 41 – Determine needs to develop and strengthen research foci areas described in previous strategic plan.

Strategy 2 - Increased level of research support through grants, contracts, and internal support.

Project 42 – Develop departmental list of requirements for new instrumentation to support research programs – target PUF funds.

Project 43 – Develop departmental list of requirements for new vessel and field efforts to support research programs – target PUF funds.

Project 44 - Increase support for faculty enhancement through attendance at national and international scientific meetings.

Project 45 - Increase number of graduate students supported by research grants and through NSF fellowships.

Strategy 3 - Enhanced cooperative international education and research programs.

Project 46 – Increase participation in CONAYCT and other international funding opportunities.

Strategy 4 - Enhance research infrastructure.

Project 47 - Outfit, and equip the Sea Life Center with mesocosms, aquaria, raceways, and associated life support systems. ([ongoing](#))

Project 48 - Microscopy imaging center by assisting faculty to purchase a state-of-the-art confocal microscope using PUF and other discretionary funds to match equipment grants and /or by providing funds to support a technician.

Project 49 - New technology and instrumentation.

Project 50 - Need adequate research vessels for both estuarine/bay and offshore research.

GOAL 4 - Undertake a program of Resource Development.

Strategy 1 - Developing a departmental Capital Campaign strategy in conjunction with the Office of Campus Development and External Relations.

Project 51 - Raise funds for developing resources for faculty research.

Project 52 - Raise funds for developing resources for teaching.

Project 53 - Raise funds for developing resources for scholarships for MARB students.

Project 54 – Raise funds raise funds for new faculty hires.

Performance Measures correlating to the above Goals

1. MARB will strive to continue to be a **pre-eminent academic department**.
 - a. Increase the number of graduate majors and increase the total number of graduates.
 - b. Maintain and increase retention of AMRN majors.
 - c. Demonstrate consistent improvements in financial indicators of research success by increasing research support through grants, contracts to faculty and students.
 - d. Demonstrate consistent improvements in non-financial indicators of research success, including peer-reviewed publications, leadership roles in scholarly organizations, involvement in national academy studies, and other similar indicators.
 - e. Increase numbers of underrepresented students, faculty and staff groups.
 - f. Increase participation in mentorships, professional development programs, and Faculty/Staff recognition.

2. MARB will maintain a **high quality & dynamic learning community**.
 - a. Increase number of teaching and research faculty.
 - b. Increase graduate student enrollment.
 - c. Increase the number of undergraduate students who participate in research.
 - d. Foster a diversity of student experiences by increasing the number of student sponsored activities.
 - e. Increase Faculty use of instructional support technology and the number of distance education courses available.

Previous Strategies (2005-2011)

A. Departmental Goals:

As stated in the Strategic Plan of Texas A&M University at Galveston, the Department of Marine Biology is committed to “enriching the educational, research, and service programs for our students, our educational research, and industrial constituencies, and for the citizens of Texas.” To achieve these goals, the Department of Marine Biology commits to the following:

1. Enhance the quality of **undergraduate and graduate education in marine biology** through:

- Improved recruitment of high quality students through use of an effective, informative home page on the Internet ([ongoing](#)), through expanded summer programs which are directed at graduation high school seniors who score well on their SAT exams and express an interest in biology, and by visiting target high schools and junior colleges throughout Texas and surrounding states;
- Development of a curriculum which is current with the technological advances in the fields of marine biology and fisheries ([ongoing](#));
- Regular improvement of teaching laboratory equipment and laboratory capabilities to maintain state-of-the-art teaching facilities;
- Development of competitive and well-advertised summer courses which complement the “Window to the Sea” role at TAMU and which attract high-quality students from outside TAMU ([no, need support from administration for forward planning and advertising](#));
- Development of research and student intern connections with the Moody Aquarium, National Marine Fisheries Service (through the Cooperative Agreement), Sea World of Texas, Sea Grant, Texas Parks and Wildlife, Texas Natural Resources Conservation Commission, and industry; Development of a senior thesis program for students with exceptional grade point averages and who might be considering entry into a post-graduate program ([not yet, add 491’s](#));
- Enhanced cooperative international education and research programs, such as with the newly developing institutions in Panama and Mexico ([yes](#));
- Enhanced relationships with the College of Agriculture and Life Sciences ([no](#)) and the College of Science ([yes](#)), and the modification of teaching relationships with the College of Veterinary Medicine and the College of Education (MARB/BIMS now a certification program; could propose this with other colleges in College Station)

2. Achieve **teaching and service excellence** through:

- Improved faculty teaching skills through involvement in the Center for Teaching Excellence ([yes, but continuing with new faculty](#));
- Improved Graduate Teaching Assistant skills through involvement in TA training clinics ([yes, some, but more needed](#));
- Increased technical expertise and inter-personal skills of MARB office staff through training seminars and courses ([yes](#));
- The achievement of faculty salary and workload parity with comparable TAMU departments ([yes, some, but need more](#));
- Expansion of departmental student advising and job placement capabilities ([yes](#));
- Enhanced student retention rates through improved faculty/staff interactions with students and through a more customer-oriented MARB office ([yes](#)).

3. Foster **Research Enhancement** through the:

- Expansion of both education and research programs via the acquisition of new faculty (yes – give plan);
- Development of new research and teaching laboratory space, marine animal holding facilities, experimental aquarium, seafood safety facility, marine pathology lab, and water flume (complete Summer 2010);
- Increased level of research support through grants, contracts, and internal support (yes);
- Increased support for faculty enhancement through attendance at national and international scientific meetings, and Faculty Development Leave (yes);
- Increased number of graduate students supported by research grants and through NSF (and similar) fellowships (Hmmmmm).

4. Undertake a program of **Resource Development** by:

- Developing a departmental Capital Campaign strategy in conjunction with the Office of Campus Development and External Relations to raise funds for developing resources for faculty teaching and research as well as scholarships for MARB students (Hmmmmm).

B. Previous Priority Programs, Initiatives, and Strategies for Accomplishment (1995-04):

To retain our competitive position among other Marine Biology departments, this department needs to develop programs critical to the current century. In addition to student retention; focus is needed on student quality. To achieve these goals, the department commits itself to the following:

- Create and support summer and intercessions offerings for currently enrolled MARB students as well as students who would attend from other institutions (yes, with some progress);
- Develop a relationship with the College of Education to create a **Teaching Certification Program** (yes, but is this being used?) (What is current status??)
- Create, through a departmental Capital Campaign Program, a series of scholarships to attract high quality students from anywhere in the country (good thing, but no progress to date); and
- Diversify and increase course offerings (abandoned, because at cross purposes with achieving teaching load parity with comparable departments in College Station).

C. NEW STRATEGIES – THE WAY FORWARD (2006-2011)

Academics (Undergraduate):

1. Continue to strive for “teaching load parity”
 - Decrease required undergraduate hours (ongoing)
 - Create better classroom teaching efficiency
 - Shift responsibilities of some core courses to other departments
2. Add faculty to achieve ratio parity with other departments
 - 1st priority – stock assessment and modeler (part of EBFM program, and fisheries degree)
3. Increase faculty diversity
4. Improve course offerings

Capstone courses (ongoing)
491 Research hours (ongoing)
Senior thesis (ongoing)

Add summer and intercession lab and field intensive hands on courses (ongoing)

5. Replace retiring faculty to cover continuing teaching needs and to complement research foci listed below (ongoing)

Academics (Graduate program)

1. Create a marine Biology graduate program in cooperation with College Station departments that house and support marine biology and marine biologists, but without the title 'marine biology'. (completed, MARBIDP graduate program, July 2008)
2. Add TAMU CC to the MARB IDP (completed July 2008)
3. Acquire a boat and truck (completed, added new trucks and 2 new vans)
4. Add faculty – see research foci below
5. Diversify faculty

Faculty Needs

1. Increase Diversity (ongoing)
2. Replace retirees
3. Add appropriate specialties (Stock assessment/ models)
4. Parity with comparable departments

Facilities

- Space – new building (Completed summer 2010)
- 5. Holding tanks and aquaria for Marine Mammals program (ongoing)
- Added space for Nitrox facility (purchased, to be installed) (Completed summer 2010)
- Wet labs for teaching field-oriented courses with live animals/plants
- Increase useable space and capabilities in the Wetlands center (ongoing)

RESEACH FOCI

The Oceans and Human Health

- Harmful algal blooms
- Seafood Safety Lab
- Food web transfers of toxicants
- Analytical chemistry (MARS) - contaminant analyses
- Genotoxicology (UTMB)
- Oysters diseases
- TX Marine Mammal Stranding Network (TX MMSN)

Ecosystem Based Fisheries Management

- NMFS NOAA cooperative agreement and teaching role
- Oceans Cons. Org. cooperative program
- Management and Policy
- Ecosystem food web analysis and modeling
- Recruitment
- Population genetics
- Stock assessment and modeling*

Marine Mammals

- Behavior
- Conservation
- Bioenergetics
- Functional morphology
- TX MMSN

Biodiversity of Gulf of Mexico Ecosystems

- Deep Sea
- Marine caves
- Estuaries
- Oyster reefs
- Coral reefs
- Hypoxic zones

Wetlands

- Wetlands Center
 - Mariculture
 - Outreach- elder hostel, Sea Camp
- Wetlands properties
- Creation, delineation and remediation
- NOAA programs

Previous Strategies (1998-2004)

A. Curriculum Development

1. Summer Program Offerings

Offering a well balanced and well-advertised summer program is necessary for MARB and TAMUG to function as a “window to the sea” for Texas and mid-west universities. Such field and lab-oriented courses could provide an opportunity for registered students to undertake intern, senior thesis, or field courses leading to research projects and theses. Currently, and at the time the prior plan was generated, summer course offerings are unpredictable, offer a meager selection of primary introductory level courses and do not pay faculty at a full-time rate (Is this true?).

Summer or intercession field and laboratory-intensive, hands-on courses need to be predictable and dependable, and well advertised. If a student cannot plan on a course being offered, then he/she will not come. For a competitive summer program to be conducted, a multi-year commitment is necessary from faculty and administration to develop a program which could rival that of Woods Hole, UT-MSI, Friday Harbor or Duke University’s Marine Lab. If our full-time faculties are not available, then college Station, outside faculty or senior level graduate students could participate. The summer program should be designed to encourage the enrollment of students from other universities and as credit for continuing education by public school educators. Courses suggested in the earlier Plan were to include:

- Research Diving (MARB 350)
- Physiological Ecology of Marine Mammals (MARB 401)
- Cetacean Behavior (MARB 489)
- Invertebrate Zoology (MARB 435)
- Animal Behavior (MARB 410)
- Field Ichthyology (MARB 312)
- Fish Physiology (MARB 335)
- Marine Botany (MARB 408)
- Tropical marine Ecology (MARB 489) (Completed prior to 2004)
- Special Topics in Sea Turtle Biology (MARB 300) (Completed prior to 2004)
- Field or Ocean Methods Course (MARB 489)

A magnet “head-start” program of courses to attract high quality, grading high school seniors to early admission might attract new students. Such courses must count towards their university degree plans. These could include:

- Introductory Biology (BIOL 112/113)
- How to Succeed in College (CAEN 101) or Science (MARB 101)
- Introduction to Marine Biology Techniques (MARB 300)
- Introductory Scuba Diving (KINE 199)
- Special cruise/Research courses
- Laboratory Rotation (MARB 486)

2. Minor in Marine Biology:

The Department of Marine Biology should offer a **Minor in Marine Biology** which could be achieved by students from other departments in Galveston, or from the College Station campus by relocating to Galveston for 1-2 semesters. Likewise, Marine biology majors should have the opportunity to do the same in College Station.

3. Teaching certification Opportunity:

A relationship with the College of Education (COE) enables students to receive **Teaching Certification**. Currently many Marine Biology students do not have to leave Galveston to pursue a Teaching Certificate. The ability to achieve both while registered in Galveston is a magnet for prospective students. This is accomplished through an arrangement with COE. These students generally take an additional year of courses (16 credit hours) which gives them teaching certifications upon graduation.

4. International Honors Program:

This program would partner and exchange marine biology students and faculty with Universities in Latin America, particularly the new City of Knowledge University in Panama. The City of Knowledge is creating a maritime training institute in partnership with TAMUG. In conjunction with the maritime institute, current plans call for setting up a marine biology and marine sciences honors program using TAMUG as a model. Under the International Honors program, outstanding upper division TAMUG MARB students would spend one semester in Panama, while a select group of Panamanian students would spend the following semester in Galveston.

B. New Faculty Hiring Priorities and Re-alignment of Current Programs:

Currently, the Department of Marine Biology offers a *B.S. in Marine Fisheries*. This is a program which historically has attracted small numbers of students (usually between 15-20). The Department of Marine Biology has added two faculty members who have interests in the areas of mariculture and fisheries management to strengthen this area (Alvarado and Rooker).

C. Graduate Program in Marine Biology

The Department of Marine Biology currently does not have its own graduate program, but instead its faculty enroll their graduate students through their graduate appointments in various departments on the College Station campus. At the writing of the previous Strategic plan, the faculty chose to retain the current arrangement and not pursue the development of an independent graduate program. This changed under Vice president and CEO Mike Kemp.

D. Marketing and Student Recruiting Strategies:

The most inexpensive and effective mechanism for attracting new students has been through the development of the MARB internet web page. This effort has required: 1) continuing input from all faculty, 2) professional advice on appearance and organization and 3) a designated web master to keep the site up to date. This page is a virtual “walk-through guided tour” of labs and classrooms, in addition to a set of photographs of faculty and students at work in the lab and on the water. This page is closely linked with the TMU and TAMUG home pages and with TAMUG’s on-going recruiting operations.

A second strategy, which has not been accomplished, should be development of a high-quality brochure which would highlight the degree offerings, the types of jobs into which our graduates are hired, and the different research programs in which students can become involved while in Galveston. The brochure should be advertised through the web page, such that a prospective student can request it via the Web. This will also give us the opportunity to add that student's name and address to a list of prospective people to follow-up with a more personalized approach.

A third mechanism we need to recruit students is a personal involvement and contact, including personal communication with colleagues and friends all over the country. This includes attendance at high school or junior college recruiting sessions or exposure to the public through our research programs and public service activities.

The Department of Marine Biology at Texas A&M University at Galveston should be generating newsworthy stories on a regular basis. These news stories need to be included on our web page and should be made available to all of the local Independent School Districts.