

### *Personal Education and Career Goal Statement*

I chose to pursue a PhD in Coastal and Marine System Sciences (CMSS), and focus on marine ecotoxicological research, because I want to conduct research that provides relevant scientific information to policy-makers. The CMSS program emphasizes a system-sciences approach, and has prepared me to manage large datasets, interpret complex models, and understand several coding languages. My coursework included an introductory ocean law and policy course, which covered important federal and state policies and court cases. Over the past few years I have successfully designed and completed several experiments, presented at scientific meetings, passed my qualifying exams, mentored students, taught Principles of Ecology, and organized outreach events. I was also awarded a student research grant from Texas Sea Grant to complete physiological experiments. Since beginning my degree, my interests have broadened beyond empirical research to include understanding how data is accessed, analyzed, and then implemented to form science-based policies. I am dedicated to completing my research, but recent experiences have inspired me to pursue a career that will blend my marine-policy interests with my knowledge of aquatic systems, ecotoxicology, chemistry, statistics and experimental design. The Knauss Fellowship would allow me to accomplish this, and offers a unique training opportunity that I am unable to receive elsewhere.

I first became interested in research while at the University of North Texas (UNT), where I graduated *summa cum laude* in three years. As a UNT Ronald E. McNair Scholar and Emerald Eagle Scholar, I worked on a research project with marine fishes for two years (manuscript *in prep*). My time at UNT has continued to influence me, as this is where I first learned the importance of camaraderie among women and other groups because it can inspire others to become involved in science. To complete my research, I have mentored and supervised several undergraduates, many of whom were women and were participating in summer REU programs, McNair, or similar programs. Whether it's research, teaching, or volunteering, working with others energizes and motivates me and I plan to foster that same camaraderie throughout my career.

My current research investigates the effects of several common vector-control toxicants on an important ecological and commercial species, the blue crab (*Callinectes sapidus*). This work provides policy-makers with necessary data needed to understand and predict how certain toxicants, at low doses and in mixtures, can alter the physiology, behavior and predator-prey interactions of blue crabs. I am currently preparing my first manuscript for publication and I have presented this work at several meetings, including the North American 2013 Society of Environmental Toxicology & Chemistry (SETAC) last November.

Two SETAC workshops profoundly affected me, and ultimately inspired me to pursue this fellowship. The first involved a game designed to introduce and challenge common resource management approaches. And though it was just a game, it was also eye-opening because I was able to speak with many experienced, knowledgeable people that were unaware of scientific theories relevant to resource management. This might not sound incredibly profound, but it was, because I found myself wanting to explain the science rather than just play the game .... and then it dawned on me ... *I can do this for a living!* I want a career that revolves around science, and requires me to keep learning and solve problems; and until recently, that always translated into academia. There are many talented scientists publishing policy-relevant research, but there seems to be a deficiency of scientists with my background that have the time (or desire) to track how their work influences public policy. It also seems that some research is overlooked or missed, and I want to understand why and help remedy this problem. Another SETAC session, which

discussed conflicts of interests, gave me a similar impression and made me realize that research is not unlike a tree that falls in the forest when no one is around; if the right people never hear about my research, it's like it never happened. I have thought about my experiences at SETAC a great deal, and sought guidance from my peers, husband, and graduate advisor. I also met with my ocean law professor, who advised me to apply for this fellowship and to add a dissertation chapter discussing relevant policies to my research.

I have also taught for four years and I actively pursued the opportunity to teach a junior-level Principles of Ecology course. Teaching 50-60 students is challenging, but it's also rewarding; I have learned to manage and speak to large groups, plan an entire course, coordinate laboratories and teaching assistants, adjust to feedback, and discuss science in an accessible way. I am also an officer in a student organization that hosts an annual workshop series, called "Get into Grad School Month", that promotes undergraduate research and prepares students for graduate school. I helped create this series and have been the event coordinator for three years. I also helped organize a graduate research symposium and a successful petition to increase the master's students' salary. Like my research, it's rewarding to see an idea grow into something tangible that can positively impact others.

With the support of my advisor I have accomplished many of my goals, and the Knauss Fellowship will further help me refine and build new skills that are otherwise unavailable. As a researcher, I have primarily participated in the beginning steps of converting scientific knowledge into policy. If selected, this fellowship would afford me the opportunity to be involved in the later stages of this process, and collaborate directly with officials and scientists. I am also interested in participating in the process of data acquisition and interpretation to better understand how this information is selected and applied. Lastly, I am interested in exploring ways to improve communication between scientists and government officials and to engage the public. I am strongly committed to my goals, and the mission of the Knauss Marine Policy Fellowship. Moving forward, I hope to pursue science from a new perspective and experience opportunities like those offered by the Knauss Fellowship.

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Changes in Environmental Policy can only occur if stakeholders are aware, educated, and supportive of the cause. My experiences have created a desire for the challenge of engaging both youth and adults in science education and thus, my desire to work in marine policy and public outreach. My goal is to be in a position where I can relay scientific information to the public and legislators in a way that is understandable and that can create an atmosphere for public concern and involvement in policy decision making.

Instead of staying out of the mud as a child, I embraced it and knew that one day I would get my chance to become like the late Steve Irwin and work with reptiles. In 2005, I moved to southeast Louisiana for graduate school and began my research working with alligators. I am ambitious and tenacious, but only five foot one, which prompted a professor to confess, "We've got a poll going to see how long it takes you to pick a smaller, less dangerous research animal." I defied his expectations and repeatedly delved into the marsh, catching six-foot to eight-foot female alligators and collecting eggs from nests. Two weeks after arriving in Louisiana, I was witness to Hurricane Katrina, one of the largest natural disasters this country has ever faced. In addition to massive urban damage, Katrina heavily impacted coastal marshes. The storm surge created an exceptional increase in salinity within these marshes, where I saw fish and nutria kills, and alligators forced to congregate in high numbers farther inland than normal. Growing up in the Midwest, I was used to the destruction of tornadoes and ice storms, but I had never seen anything of this magnitude.

This experience was my first major wake-up call to the catastrophic damage that can occur through natural or anthropogenic environmental alteration. Discussion about the importance of coastal wetland restoration started immediately; unfortunately, the majority of the public is unaware of the true importance of environmental conservation and how it affects their lives. It was at this time I realized the role public education plays in environmental policy and I chose to dedicate my career to this field. When I moved to Louisiana, I fell in love with the culture, people, food, and coastal ecosystems. The resiliency that I witnessed by a devastated region was something that I will never forget and it inspired me to help understand and create preventative measures to reduce potential damage to a community.

I have spent my academic life in applied science and am transitioning my career to marine policy and public outreach. The greatest asset that I bring to this field is my ability to interpret and translate complex scientific information for application in marine policy. My background involves freshwater ecosystems, but I understand the main ecological processes that are similar to marine systems. The knowledge, experience, and skills I possess are invaluable to obtaining and developing a career in marine policy and enhance my ability to succeed. I am currently a doctoral candidate and have spent the last three years working in a freshwater, isolated wetland system in the Texas panhandle. My focus is on how surrounding land use affects wetland characteristics (e.g. hydroperiod, sedimentation, water loss rates) and resident amphibian communities. I have had the unique opportunity to converse closely with landowners and to provide information to communities about the importance of conserving these seasonal wetlands. I am fortunate to work with farmers who are interested in the resources on their property and are



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willing to consider my recommendations.

Participating in the Knauss Marine Policy Fellowship Program will enable me to enhance my policy knowledge and gain a better understanding of federal level opportunities. Throughout my education I have had the desire to work at a federal scientific organization, and this fellowship will provide that opportunity. Because of my background in applied science I believe I will be most successful within the Executive Branch. Working with an agency will allow me to engage in and utilize my knowledge of wetland ecosystem services, functions, and management. It will also permit me the opportunity to develop a unique set of professional connections that will complement my current ones. The experience I will gain from this fellowship will be a major stepping stone for my career transition into marine policy. Because my goal is to work with a federal agency, I cannot imagine a more appropriate and advantageous opportunity than this fellowship.

With this fellowship I will utilize my outreach skills on a larger scale than previously possible. Throughout the past ten years, I have been involved in environmental education and outreach at varying levels. Much of this experience has been from internships (zoo and aquarium), wildlife societies, public presentations, teaching assistantships, and personal communication with stakeholders. In all of these experiences I have been delighted at the challenge of creating excitement in others about wildlife, ecology, and science in general. While my experience at local levels and with individuals has been paramount to my realization of how much I enjoy educating the public in scientific issues, I want to work at a level where I have the potential to have a wider impact and further develop my skill set. I have the ability to both understand scientific information and successfully interact with and convey that information to the public. My combination of these two skills is invaluable and not always found among applied scientists. Through this fellowship I will be able to bring that to my selected host for mutual benefit.



Knauss Marine Policy Fellowship Application  
Personal and Career Statement

I have always been interested in science, but I did not discover my fascination with policy until just after high school as an intern working for the Environmental Programs Division of the Maryland State Highway Administration. I combined my interests in science and policy in college by pursuing two majors: one in environmental policy and the other in biology with a minor in chemistry. I had many research experiences as an undergraduate, including field work on Maine lakes, laboratory analysis of nutrients, and compiling large water quality data sets. I gained advocacy experience as well, working to promote the Maine Kids Safe Product Act that phased out known toxic chemicals from children's products, and later testified at the state house to defend that act from a rollback. My coursework in negotiation and dispute resolution gave me great ideas on how to use consensus building to make policies that everyone can be on board with, solidifying my commitment to a career that spans both science and policy.

The graduate program in Marine Science at the University of Texas at Austin has strengthened my scientific background. Courses and workshops have fortified my understanding of statistics, GIS (geographic information systems), and computational programming. My primary focus in this program is on research, which has given me a whole new understanding of the frustrations and rewards of science. I quickly learned that my optimistic timelines were a fantasy. For instance, over the summer I extracted data from published papers to perform a meta-analysis. What I didn't realize is that the analysis would reveal confounding variables, different experimental methods, and non-independent observations that threw my data for a loop I am still untangling. These small issues have been valuable experiences where I have learned how to analyze complex data, and how to have realistic expectations for the progress of science. Not all scientific questions can be answered in a timely fashion, and sometimes policy must be made even in the face of this uncertainty.

I have also gained experience in environmental policy in my graduate program, where my research is funded by the NERR (National Estuarine Research Reserve) Science Collaborative on freshwater inflows. The project was initiated so minimum flow standards could be established for estuaries, mandated by Texas Senate Bill 3. Freshwater inflows are necessary for estuarine health, but can become limited by climate and population growth in Texas. While it is well established that some level of freshwater inflows are necessary to maintain the functions of estuaries, the exact amount of water needed is hard to quantify. Even deciding exactly what functions should be protected is a difficult question that walks the line between science and policy.

The collaborative also funds a mediated modeling effort led by Texas A & M researchers. The mediated modeling process brings diverse stakeholders together to define the important scientific questions and create a model of how the system works, bridging science and policy.

This process is just like the consensus building approaches that had inspired me in my undergraduate coursework, and being able to participate in this process has been a great learning experience. This project has helped me realize the utility of modeling, especially interactive models that can be easily modified by stakeholders trying to understand a system and make policy decisions. I am grateful to be participating in this process here at the Mission-Aransas NERR and see collaboration of scientists, managers and policy makers facilitated skillfully.

My activities here at the University of Texas have not been limited to my research and participation in the NERR science collaborative. I recently took over and completed a short term position to coordinate volunteers for the National Ocean Sciences Bowl held at the University of Texas Marine Science Institute. This position also included facilitating the competition, acting as a liaison between the regional coordinator and the campus, and coordinating logistical planning for on campus activities. I am also actively involved in planning the annual Texas Bays and Estuaries meeting with a group of graduate students, further enhancing my teamwork and meeting planning experience.

My career goal is to use my scientific background to help shape policy that is in sync with science and stakeholders using models, technology, and consensus building. I want to be a part of this process by either working at an agency or for a private consulting firm that works with several agencies. I have developed the skills necessary to reach my career goal by participating in collaborative processes, planning meetings, conducting research, and through coursework. I bring skills in statistical analysis, spatial analysis, field research, laboratory research, communication and meeting facilitation to the Knauss fellowship. The Knauss fellowship is an opportunity to expand my policy experience by working within a federal environmental agency. Experience working within an agency is necessary as I achieve my career goals, so I can understand and work within the culture and framework of these environments effectively. I prefer placement in the executive branch, so I can gain experience in the process of implementing legislation as policy. The critical policy experience and networking that I will gain from the Knauss fellowship will help me reach my career goal of shaping policy with science.

For as far back as I can remember, I have always been captivated by the ties that bind human activities to their natural environment, even if I couldn't always find the words to describe my observations. I recognized that questions involving stewardship of natural resources could not be solved through an ecological framework alone. Instead, a broader understanding that incorporated human components and questions of exploitation was necessary. As I gained experience and was drawn toward marine systems, I began attempting to answer the question: How can the seemingly discordant fields of ecology, social sciences, and resource economics be joined into a coherent approach for managing our vital marine resources? The 2012 Dean John A. Knauss Marine Policy Fellowship provides a unique opportunity for me to address this question at a fundamentally new and important scale. In applying for this fellowship, I look forward to applying fifteen years of training and research in marine resource policy and management in a real and meaningful way while building a career in developing sound fishery management policies.

I came to marine resource management and policy at the University of Southern California in 1994, where I designed a dual degree program focusing on human-environment connections in marine systems. My senior research project examined the fate of petroleum hydrocarbons from outboard motors in a low circulation embayment that housed a small-scale commercial fish farm off Catalina Island and was popular both with divers and pleasure cruisers. Evaluating potential solutions required both ecosystem and socio-economic impact studies. The research allowed one of my earliest opportunities to demonstrate that disparate academic fields could be approached simultaneously and considered as a whole through the over-arching lens of resource stewardship. My dissertation research has continued to highlight this holistic, multi-disciplinary approach for addressing fishery issues. For the past year, I conducted research in St. Croix, United States Virgin Islands, as a fellow with the National Science Foundation-funded Virgin Islands Experimental Program to Stimulate Competitive Research. My approach incorporates fisher interviews, market and discrete choice surveys, economic analyses, subject bias tests, and spatialized observations of fishing effort to quantify the local ecological knowledge (LEK) of St. Croix's commercial fishers through their words and fishing behaviors. These data are compared against the biophysical parameters that define daily and seasonal fishing grounds and represent informed yet biased responses toward the management frameworks under which these fishers operate. I propose in my alternate hypotheses that fisher

LEK can be used to test the effectiveness and durability of management policies. In particular, I assert that sound, ecosystem-based regulations that incorporate fisher LEK will be preferred by broad local stakeholder groups and therefore represent preferred policy alternatives. This hypothesis is relevant because, as I observed first-hand in St. Croix, policy discussions that invest in equitable stakeholder participation and develop incentives encouraging a sense of mutual ownership tend to reach workable solutions much more frequently than those that are strained by entrenched animus between parties. As a tool for policy development, fisher LEK represents a pathway for expanding our understanding of the dynamics that affect fisheries while simultaneously increasing the role of fishers as management partners.

My dissertation work is not my first experience in seeing policy development in progress. As an intern with the Sierra Club in 1999, I had the responsibility of forming the local chapter's position on habitat rehabilitation for the then recently listed southern steelhead trout (*Oncorhynchus mykiss*). Despite evidence of increasingly large economic and ecological impacts caused by defunct dams, I was surprised to see how vocal opposition to dam-dismantling programs could silence scientists and discourage efforts to build consensus. In contrast to my Sierra Club experience, I was heartened to see a concerted effort by Caribbean Fisheries Management Council scientists and fishers to build working relationships as they jointly considered the range of management alternatives. While the Magnuson-Stevens Fishery Reauthorization Act will continue to rely heavily on biological criteria, I was encouraged by good-faith efforts to understand the connections between these criteria and their economic and social impacts. In the past 15 years, I have witnessed policy development move toward a multi-disciplinary process highlighted by stakeholder partnerships. While my dissertation work examines the value of maximizing these partnerships, the Knauss Fellowship Program would be the culmination of my academic training, offering an unparalleled experience coupled with the responsibility of knowing that my work will be applied in lasting ways.

My scientific career has and will continue to focus on creating stakeholder partnerships as the foundation of marine resource policy. Strong partnerships are investments in the long-term health and stewardship of resources. In requesting placement, I believe that I am best suited for the Executive Branch and in particular offices such as NOAA Fisheries, the National Marine Sanctuary Program, and the National Park Service Ocean and Coastal Resources Program. These offices focus on stewardship and ecosystem-based management and are therefore logical choices



for me to gain practical experience in policy development and implementation, but I would be honored to serve any agency that selected me.

I believe that a multi-disciplinary, fully invested approach is vital if we are to truly develop fishery policies that ensure both long-term ecological health and economic sustainability. Central to successful policy development is the formation of partnerships between fishers, resource managers, and scientists. It is this belief that will continue to drive my research questions and guide my career. I believe adamantly in solving fisheries management issues with an urgency that will demonstrate to our future generations that we can reap economic benefits without mortgaging the health of our marine resources or the communities that depend on them. For these reasons, the Dean John A. Knauss Marine Policy Fellowship represents the ideal opportunity to actively apply my years of preparation in a real and highly relevant capacity.

## Goal Statement: Knauss Fellowship Applicant [REDACTED]

### Objectives

Humans interact directly with a variety of marine species through commercial and recreational fisheries, aquaculture, ecotourism and when competing for the same limited coastal space. We also interact indirectly with marine species through factors like noise and substances released into the oceans. To ensure long-term survival of marine ecosystems and the economies that depend on them, it is important to understand the complexity of these interactions and how science can be used to inform the policies governing these interactions. The Knauss Fellowship will provide me with a unique opportunity to learn how science is blended with the needs of the community to form effective marine resource policies.

### Background

When I was eight years old, I saw my first manatee and told my mother that I wanted to be a marine biologist. Since then, I have focused on achieving that goal, moving across the country for school and jobs. I have spent the past seven years working as a field assistant, and then pursuing a Master of Science degree at Texas A&M University. I have worked for not-for-profit organizations, local government agencies, and universities while developing research skills and learning how research can influence conservation measures. During this time, I gained practical work experience by studying marine mammal behavior and fisheries monitoring and management. In the process, I have gained a variety of laboratory and field skills, achieved familiarity with computer programs such as ARC GIS and SPSS, and earned a Department of the Interior Motor Boat Operator's certification. In the process, I learned how to balance the needs of simultaneous projects so that all work is completed on time.

While working for the Florida Fish and Wildlife Conservation Commission's (FWC) Florida Wildlife Research Institute (FWRI), I worked with the spiny lobster marine reserve team. We conducted regular surveys to determine abundance, size and sex distribution of spiny lobsters (*Panulirus argus*) residing inside marine reserves, and those living in nearby fishable waters. I was gratified to see that in the Florida Keys, where marine reserves have been protected and monitored for more than a decade, there are more large lobsters inside the reserves than outside. The reserves appear to be successful in helping protect spiny lobsters and may allow for "spillover" of larger lobsters into the fishery.

While working for a state agency, I had the opportunity to see how research with which I assisted helped to inform policy decisions. I participated in workshops that brought fishermen, researchers and managers together to discuss lobsters and the lobster fishery. When discussing timing, length and bag limits for the recreational lobster season, managers referred to research conducted by FWRI. When "casitas," an efficient but unregulated type of lobster fishing gear, began to appear in Florida waters by the tens of thousands, research conducted by FWRI and FWC law enforcement was used to establish

a moratorium on fishing with casitas until further work could determine the gear's impact on the lobster population and the surrounding environment. Marine research may be most powerful when it is applied to current conservation problems.

As a master's student at Texas A&M University's Marine Mammal Research Program (MMRP), I designed a project examining dusky dolphin (*Lagenorhynchus obscurus*) occurrence and movement patterns near Kaikoura, New Zealand. I conducted systematic shore-based surveys using a theodolite, or survey transit, to track dolphins. I described the dolphins' occurrence and movement patterns over seasonal, diel and tidal scales. This type of basic information is needed to successfully monitor and manage potential impacts of the local dolphin tourism industry on dolphin attendance patterns, and ultimately, population viability.

MMRP members have maintained good relationships with Kaikoura's dolphin tour operators, enabling me to establish my own good working relationship with the owners of the primary dolphin tourism company, Encounter Kaikoura. The owners provided me with hand written datasheets detailing 12 years of dusky dolphin occurrence patterns near Kaikoura. From these records I created a digital database of dolphin sightings that the tour operators continue to update daily. This dataset comprises the longest continuous sightings record of duskies anywhere in the world and is a valuable resource for researchers and managers alike. I presented a paper examining long-term dusky dolphin occurrence patterns, as documented by this dataset at the 60th meeting of the International Whaling Commission (IWC), in Santiago Chile. As an invited participant to the scientific committee meetings, I shared our success story of working with tour operators for the betterment of the animals. I also saw how research and political efforts of committee members and invited participants improved conservation measures for cetaceans around the world.

Through my years working and studying, I have developed numerous research skills. I have successfully completed line transect surveys and designed shore based tracking studies. I am a competent boat handler and an experienced theodolite operator. I have seen first hand the benefits of working together with policy makers and local stake holders to design conservation measures and develop resources for monitoring marine species.

## **Expected Benefits**

To design the most effective marine resource policies, lawmakers must have access to, and understand, current research findings. To have the greatest impact on creating conservation measures for their study species, scientists must understand the process of designing and ratifying legislation. Through my fieldwork with spiny lobsters in Florida, dusky dolphins in New Zealand, and several assistantships around the world, I have gained broad experience working in marine ecosystems. As a master's student, I realized the importance of publishing my work. I have three peer reviewed publications in press, with more manuscripts in development. I hope to use what I have learned to be a productive team member of an executive agency in Washington, D.C. and contribute to creating effective marine resource policies. From this experience, I hope to learn about the process of policy making and implementation so that I can better aid the conservation of valuable marine resources.

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Growing up, I spent summers on Shelter Island, NY, home of tidal marshes, protected beaches, inlets and creeks. As a budding scientist and fisherman, I took pride in knowing size and take restrictions of local fish species. By following these regulations, I believed I was contributing to the larger goal of sustaining fisheries for future generations. Now, as a graduate student studying marine science, I know responsible management and conservation of marine resources is becoming increasingly important, especially as the world's population exceeds seven billion.

After proving to be a patient research assistant, counting, measuring, and identifying shells in the intertidal zone on those New York beaches, I accompanied my aunt, Dr. Mary Droser, UC Riverside, to the outback of Australia where she works with an international team of scientists on 555 million year old marine fossils. I have spent ten summers on a remote station in Australia piecing together a picture of Ediacaran marine life. I assist with all aspects of research and fieldwork and often teach groups about the field site. Over the last few summers, I have been in charge of all excavations and mapping of fossil surfaces; leading a group of South Australia Museum volunteers.

I have since become somewhat of an expert on Ediacaran fauna, presenting research at national meetings and even co-authoring one published journal article with other articles in preparation. This upcoming summer I will be Director of Education and Outreach for the Ediacaran Project, which is a collaborative effort with the South Australian Museum and the Australian Nature Conservancy to create an education center focused on natural history of the area.

Although I am still deeply involved in paleontology and fossil exploration, my real passion continues to be related to the modern marine world. When I entered the University of Maine as a marine science major, Dr. Gayle Zydlewski hired me as a research technician. I worked in various rivers and coastal environments throughout Maine tagging, tracking, and studying the ecology of sturgeon. I have done fieldwork at all hours of the day - in winter bundled with layers of water proof clothing and in the summer trying to find shade while on a hot aluminum boat - and every moment, has lead me closer to understanding what I want to do.

By my third year, I had a much-expanded role and led netting and tagging operations with volunteers. This task is quite a responsibility as these are federally protected endangered species and special protocol is required for the handling of these fish. In the same year, I started my honors thesis and conducted my own research on the diet of sturgeon and prey availability within the Penobscot River in order to better define their critical habitat. During some of my river outings I had the opportunity to give talks about the conservation of sturgeon to schoolchildren traveling with the Penobscot Riverkeepers.

In my junior year, I took a semester at sea and traveled on an 112ft schooner in the Caribbean. This nontraditional global classroom strengthened my marine skills, my leadership, and expanded my international experience. I took advantage of every opportunity. I conducted independent research on the ecologically important long-spined sea urchin; I received my PADI rescue and research diver certifications, 200 Ton First Mate License and Marine Navigation Certificate. I returned to UMaine and enrolled in two graduate school classes and a marine invertebrate course at the Darling Marine

Center, UMaine's marine lab, while finishing my honors thesis. This course work and experience gave me academic and empirical knowledge needed to excel in this field, and ultimately led me to pursue a graduate degree.

Now, working on my master's degree at the University of Texas Marine Science Institute, I take an ecosystem approach to fisheries. Through my work, I develop yearly growth biochronologies using growth-increment widths in fish otoliths, or ear bones. The growth chronologies span multiple decades, and can be integrated with climate records to demonstrate growth responses to environmental variability that would otherwise remain unknown. The study species include red snapper, gray snapper, black drum, and king mackerel, which have commercially and recreationally important fisheries throughout the Gulf of Mexico. This study will provide much needed baseline data on how these species respond to climatic drivers.

This multispecies approach is relevant to ongoing efforts to move toward ecosystem-based management in the Gulf. Specifically, my research will contribute toward the implementation of Integrated Ecosystem Assessments (IEA), the next generation of fisheries management that interprets fisheries stock and their management in broader ecological context including climate impacts, food webs, human influences, and the interactions among these variables. IEA requires developing ecosystem indicators, establishing climate-biology relationships, and estimating baselines and historical ranges of variability, all of which are addressed by biochronologies and their integration across species and instrumental climate records.

I bring my fieldwork skills with endangered species, and my experience and academic research on developing ecosystem-based fisheries data to the Knauss Fellow position. In turn, I believe the Knauss Fellowship would be instrumental in introducing me to the policy and advocacy side of marine science. I want to learn how to translate what science discovers about fish and ecosystems into strategies and regulations to prevent them from being overused or abused. Unfortunately, we can already see the impact of climate change, overfishing, and coastal pollution on ecosystems. The good news is that there are conservation efforts that can mitigate the damage. As a career, I would like to continue to work with fisheries, ideally combining field and lab work. I plan on pursuing a job in applied fisheries science where I can manage resources either as a consultant or directly through policy. The analytical skills I am gaining in graduate school allow me to accurately assess changes in fisheries through time and are applicable to the entire ecosystem. The Knauss Fellowship would increase my understanding of policy development and implementation and advance my advocacy skills, all of which will help me become more effective in protecting coastal and ocean resources.

## **I. PERSONAL EDUCATION AND CAREER GOAL STATEMENT**

Many individuals, organizations and agencies are working tirelessly to improve the lives of coastal dwellers, while also keeping them safe and secure from hazards. Among the most notable are the professionals within NOAA and Sea Grant. Through my recent experiences and research, I have noticed just how passionate and dedicated they are, not only as public servants, but also as coastal stewards. I share their commitment to the coast. I am dedicated to improving the health and well-being of our coastlines, both its residents and the surrounding environment. Currently, at the University of Houston – Clear Lake, I am directing this passion into my education and research, which focuses on coastal community resilience and sustainability. I hope to continue to work in this arena, as it is the central aim of my professional career.

I feel empowered by Sea Grant's mission to deliver solutions coastal residents can use through trust, reliable science and connectivity. More than ever in my life, I have noticed a deep disconnect between people and their environment. Many people simply do not understand the dynamic nature of our coastlines, ecosystems, and oceans. Since I was raised on the coast and have an abiding passion for all things coastal, it has become a quest of mine to change that mindset. I wish to enable coastal dwellers to not only enjoy their natural environments but also understand it in the deepest sense and embrace their responsibilities to care for it.

Throughout my graduate degree program, I have integrated this passion into my education as a graduate research assistant. I improved my overall research skills and learned to ask pertinent questions related to real-world problem solving. I was able to advance my technical skills, including GIS capabilities, spatial and statistical analysis, and analytical problem solving. I've obtained a deeper knowledge of policy, law and regulations. I have also incorporated the practical application of my work into my community. All of my educational goals are directed towards helping coastal communities thrive, which is just another objective I share with Sea Grant and NOAA.

Also while at UHCL, I had the great opportunity to train as a field research assistant at the Environmental Institute of Houston, a leader in the Gulf for building partnerships in research, education and outreach. In this position I worked on local and regional environmental research projects and learned the intricacies of quality environmental sampling, data collection and laboratory work. This training served me well towards my knowledge of environmental and coastal issues and concerns, and it has helped me to understand why there continue to be gaps between science and management. This first-hand experience inspired me to explore the integral relationships and roles between estuarine ecosystems, coastal society and the built environment.

In addition to these academic activities I've taken on while at UHCL, I have also sought out many other ways to work with communities on the coast. I achieved this through volunteering, educating and opening lines of communication. For example, in 2011 I was elected by my peers to serve as the Student Body President of the University. This position and platform allowed me to work with the students, administration, faculty and staff to create a more sustainable campus. I am proud to say that the initiatives developed under my leadership, including a new sustainability policy and recycling program, are being implemented this Spring semester. Since 2009, I have had the privilege of serving on the board

of my local US Green Building Council. In my early role as Education Director, I worked with the City of Galveston after Hurricane Ike to develop "Galveston Green Guidelines," a publication that was recently printed for use throughout the region. Today I am Vice-Chair of the Galveston County Branch where I work with local coastal communities to better understand coastal issues and advocate on their behalf. Further, I am an avid participant in my local Surfrider Foundation Chapter where we are working to enhance public understanding of coastal resources through our beach clean ups and educational campaigns. It is through these roles that I have endeavored to translate a vision of thriving coastal communities into reality, and the reality is that we need to prepare and educate our nation's coastal communities now more than ever.

Acceptance into the Sea Grant Knauss Fellowship Program and assignment within the Executive Branch of the Federal Government will be an incredible opportunity for me to expand upon my educational foundation. The Knauss Fellowship Program will most certainly take my knowledge and skills to the next level, and the experience will allow me to apply my understanding on a national scale and discover how all of this work feeds into an overarching National context. It will also place me in a position to learn and know where the important gaps between science and management are for coastal policy. I am certain that my time spent in Washington D.C. will introduce me to a side of coastal service that I have yet to experience. I get joy and satisfaction out of volunteering and helping communities, and working with a governmental department through this Fellowship will teach me how to become an effective public servant.

Upon graduating with my Master's Degree I aim to have a robust career in coastal resilience. I intend to develop and apply my leadership skills and work towards addressing the needs of coastal communities. Participation in the Knauss Fellowship will expand my experiences, opportunities and knowledge of the possible ways that I can progress in this field. Since I was a child, coastal communities and the issues that affect them have always been important to me, and because of this, I will constantly improve myself and stay abreast of the ever-changing challenges facing these critically vulnerable areas. My primary personal goal is to always incorporate this passion into my work and feed my enthusiasm with new challenges. As you can see, all of my professional and personal goals revolve around making our Nation's coastal communities more healthy, sustainable and resilient.