Stewardship - Making a Difference in the Gulf of Mexico

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During the week at your state's COSEE Summer Teacher Institute, you have increased your knowledge of ocean science, increased your skills in field-based activities, and broadened your perspective on the Gulf of Mexico. I hope that this new knowledge and skill set will be transferred to your students during the next school year. This online paper presentation will take a different approach; in addition to new knowledge and skills, I would like you to think about how these experiences and knowledge may inspire you and your students to develop a stronger environmental stewardship ethic for the Gulf of Mexico. From an environmental education perspective, the goal is for students to move from awareness to understanding to positive action on behalf of the environment. However, it is not as easy as it sounds; this does not just happen over-night.

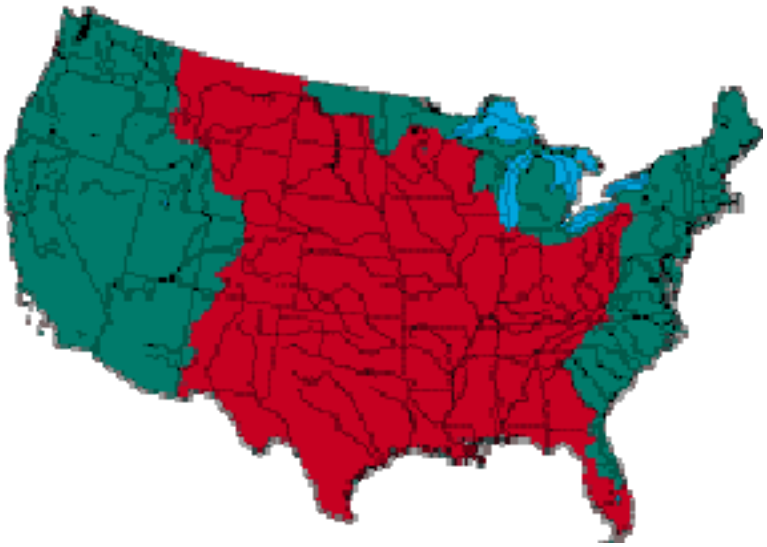
This presentation will provide you with some background, concepts and activities on environmental stewardship that you might utilize in your classroom. Our focus is on the Gulf of Mexico, a body of water that is undergoing significant change. In your COSEE Institutes each one of you has increased your awareness of the uniqueness of the Gulf of Mexico through hands-on, field-based activities. Through our online distant learning program, you will also develop a better understanding of habitats, processes and technologies. But will this knowledge alone lead you (and your students) to positive actions and to become a better steward of the Gulf of Mexico? Probably not. This presentation will take a philosophical and practical look at how you might move from an awareness to understanding to action state, and how you might instill this process in your classroom, home and community. Moving from an awareness to action state is a continual journey, especially in our technological, consumer-oriented world. Hopefully this presentation will have you and your students to think about how we interact with the environment on a daily basis, and what actions (or inactions) you take ultimately impact the Gulf of Mexico.

The Gulf of Mexico Watershed

Although we are studying ocean science and our focus is on the Gulf of Mexico, we cannot just turn our attention and eyes to the water. We need to think holistically, take an ecosystem-based approach, and be well aware of the entire Gulf of Mexico watershed and how our land-based activities affect the Gulf of Mexico's ecosystem. In your field-based studies, you may have learned about the issue of hypoxia and the "dead zone" that is found in the Gulf of Mexico. A majority of scientists conclude that this phenomenon is the result of increasing river borne nutrients from upstream land users entering the Gulf of Mexico, leading to a deterioration of coastal water quality. Thus, human activity on land, many living far away from the Gulf of Mexico in the heartland of the United States, has had a major impact on its water quality and health.

In order to truly study and understand the Gulf of Mexico, you and your students need to understand what a watershed is and how it functions. A watershed is a drainage area of land where water flows across, or under, on its way to a stream river, or lake. http://www.epa.gov/owow/watershed/whatis.html

The adage of water always flows downhill is clearly demonstrated. The Gulf of Mexico watershed is a landscape of interconnected basins (watersheds) with the water draining to its lowest point to a stream, river, lake, or seeping into the ground to a waiting aquifer. On its way, the water travels across urban, suburban, and rural lands. As it travels across farmlands, forests, city streets, suburban lawns, it may pick up chemicals, nutrients and pollutants that may eventually find their way into the Gulf of Mexico. The recent floods in the Midwest also provide testament to the fact of the interconnectivity between natural and human-made upstream actions and downstream impacts.



Gulf of Mexico Watershed

The Gulf of Mexico watershed is huge. It drains nearly two-thirds of the continental landmass of the United States that includes parts of 31 states. So, individuals living in Wyoming, Illinois or New York may even have an influence on the health of the Gulf of Mexico! It's not just those living in the coastal states of Texas, Louisiana, Mississippi, Alabama or Florida that have an impact on the health of the Gulf. As "America's Sea," much attention has been devoted to the linkages between the land and our coastal waters; there are many resources that teachers and students have to study these linkages

One excellent online resource is the U.S. Environmental Protection Agency's (EPA) "Gulf of Mexico Program." http://www.epa.gov/gmpo/index.html. Established in 1988, this program is a partnership among local, state and federal agencies, private industry and interested citizen. The mission is to " to facilitate collaborative actions to protect, maintain, and restore the health and productivity of the Gulf of Mexico in ways consistent with the economic well-being of the Region." The site provides information on latest research, policy issues, and regional updates. It also has an excellent educator resource section that provides a number of down-loadable student activities and curricula guides. http://www.epa.gov/gmpo/edresrc.html

Another source of online information is GulfBase. This is a database of resources about the Gulf of Mexico. The goal of this website is to regroup, synthesize, and make freely available Gulf of Mexico research information. The vision is that GulfBase will help researchers, policy makers, and the general public work together to insure long-term sustainable use and conservation of the Gulf of Mexico. http://www.gulfbase.org

The Governors of our respective states are also placing more focus on the Gulf of Mexico. They have created a Gulf of Mexico Alliance, a regional partnership among the U.S. Gulf of Mexico States (Alabama, Florida, Louisiana, Mississippi, and Texas) formed in 2004 to bring collaboration to a new level to improve the ecological and economic health of the Gulf of Mexico. The states have identified six priority issues that are regionally significant and can be effectively addressed through increased collaboration at local, state, and federal levels. These include water quality; habitat conservation and restoration; ecosystem integration and assessment; nutrients and nutrients impacts; coastal community resilience; and environmental education. For more information, see http://gulfofmexicoalliance.org

With all this attention on the Gulf of Mexico and its watershed, where do you fit into the picture? You and your students should recognize that all of you live in a watershed. You most likely live in the Gulf of Mexico watershed. But do you know what specific watershed you live in? Do you know your ecological address? Like your home address, you should know what your ecological address (watershed) is. Knowing your ecological address can help you to determine what impacts your land activities may have your marine and coastal resources? The EPA has made it easy to find your ecological address. You can "surf your watershed" at http://www.epa.gov/surf . This will help you determine what linkages you have with the Gulf of Mexico and begin the steps into being an environmental steward.

Stewardship

What does it mean to be a steward? One definition is that a steward is "one to whom a trust has been given." In reference to our natural lands, stewardship is an attitude of active care and concern for nature" (Nebel, 2000). In other words, it is that internal ethical and moral framework that leads us to both public and private actions. How does one become a steward? The noted wildlife ecologist and naturalist Aldo Leopold suggested if we just developed an awareness and understanding about the world in which we lived, it would come naturally and we would automatically make the right decisions. He stated:

> "…I am trying to teach you the alphabet of 'natural objects' (Soils and rivers, birds and beasts) spell out a story…once you learn to read the land I have no fear of what you will do to it, or with it…" (Flader, 1991)

Is this necessarily the case? In a Gallop poll, over 90 per cent of Americans stated that they considered themselves to be environmentalists. If this is the case, why then do we continue to have environmental issues and problems? It is beyond the scope of this presentation to delve deeply into the field of environmental ethics and how individuals act and behave. However, we should remember that ethics does depend on an internal value and belief system that we each have, and that not all individuals see the world in the same light. Look at the following picture. What do you see:

Did you see the young woman? Did you see the old woman? Can you see both? As with the case with this picture, individuals view the environment in various perspectives. There are a number of different opinions among environmentalists on how they view and value the world (their environmental ethic) in which they live and how individuals "ought to" act and behave.

Various environmental philosophers have developed classifications on how individuals perceive the environment. Yoder provides four classifications. ***Anthropocentrism*** presents the view that the environment is for human use and the primary reason to preserve it is for our use and consumption. In this perspective, the main purpose in stopping environmental degradation is to minimize harm to humans. ***Sentientism*** presents the view that rights should be given to those living things that are capable of experiencing pain or pleasure. Individuals who generally fall into the animal rights movement share this perspective. A third type of classification ***biocentric individualism*** is held by individuals who think that all animals (even those without a simple nervous system like clams, spiders and insects) have rights and deserve some moral consideration. A fourth type is called ***holism,*** where individuals view the welfare

of systems of living things (ecosystems) rather than individual animals. Thus the whole may be more important than the sum of its parts (Varner, 1988).

The point of this discussion is that there is a continuum of perspectives on how we perceive to use the environment that range from a human-centered view (Humans are superior to nature. What can it do for me and how can I best control it?) to an earth-centered view (humans share equal status with the rest of nature. How can I respect it?). A question you might ask yourself is what philosophical perspective do you have and where do you fit on this continuum? Do you have a consistent perspective and base for all your actions and behaviors? Most individuals hold an environmental ethic that is somewhere in the middle of this continuum. We find that we shift up or down this continuum, depending on the issue or situation. People who are serious about developing a strong environmental ethic attempt to minimize the inconsistencies between what they say they value and how they live.

In our teaching and daily decisions, we strive to insure that we utilize information and base decisions that are science-based. Yet decisions are not made on science alone. Conflicting values and beliefs all come into play. This is evident in a recent case study entitled “Beyond Science into Policy: Gulf of Mexico Hypoxia and the Mississippi River.” In this real-life situation, scientists, decision-makers and the public came together to develop a compromised management plan to improve the water quality within the Gulf of Mexico watershed. Science, politics, and corresponding values all played a role in the final decision (Rabalais, 2002).

In teaching about environmental problems and issues, one needs to think about the young woman/old woman picture. In teaching about issues, one needs to bring into play different perspectives (values and beliefs) and instill critical thinking and problem solving skills in our students. An excellent resource that

deals with how one approaches this in the classroom is *Investigating and Evaluating Environmental Issues and Actions* (Hungerford, 2003).

Let's return back to the question of how individuals develop an awareness and appreciation for the world in which they live, leading to becoming environmental stewards. Individuals are influenced by both people and place.

People

People are a big influence in our lives. We develop our heroes, heroines and mentors by observing the values and actions of others. These individuals serve as character models for our behaviors and set standards for us to follow. Who are the heroes and heroines of today's youth? Many come from the music, movie and sports world. But are these real heroes or heroines? A real hero or heroine is someone that does something above the norm for the greater good and provides leadership qualities for something just and fair. Are there other definitions and or traits that make a good hero or heroine? Recent current events have moved individuals from the fire fighting, law enforcement and military professions into the hero and heroine category. What traits and actions have caused them to move into the limelight of the mass media?

How does this relate to the environment and the Gulf of Mexico? Are there environmental heroes and heroines? We can generally rattle off some well-known names like Aldo Leopold, John Muir, Jacques-Yves Cousteau, Rachel Carson, Bob Ballard, and Sylvia Earle as individual who have worked on behalf of the environment. However, one should note that there are many thousands of individuals who are stewards on a much lesser scale. Think about where you live. Do you have individuals that have made a difference in your area on behalf of the environment? Would you consider them an environmental hero or heroine? In a number of workshops that I have presented, I have asked participants the question "who has been an environmental hero or heroine to you

that has influenced your life." After some reflection, answers come back that it was their parents, grandparents, or teacher that made an impact in their lives. These individuals provided the stimulus to pursue a particular profession or become active in an environmental issue.

Today there is a fatalism and pessimism expressed by many over the environment. These individuals believe that we have no control over the direction of society and consequently we can make little difference in society's use of its resources. Others feel that the world is moving much too fast, and that if they can't change the world quickly, they will not try to change any of it. Consider the following two quotes to counter this thinking.

> "…Almost anything you do will seem insignificant, but it is very important that you do it…" (Mahatma Gandhi)

> "…Never doubt that a small group of committed citizens can change the world. Indeed, it is the only thing that has…" (Margaret Mead)

Individuals can and do make a difference in our thinking and attitudes about the environment. Teachers are in a unique profession that can provide an both an awareness and understanding to their students of the world that they live in, as well has providing them with hope and inspiration about the future. We face large problems today, but we also have found solutions. These solutions rest upon many individuals taking positive actions.

One of the most powerful tools I've used over the years to demonstrate how individuals can and are making a difference is by using video and DVD clips from the Earth Communications Office (ECO). ECO is a non-profit environmental organization whose mission is to use the power of communication to improve the global environment. It was founded in 1989. For almost two decades the ECO has used the talents and expertise of the Hollywood community to create

inspirational environmental stewardship messages that show individuals are making a difference to live in a sustainable world. These videos have been seen by more than one billion people in more than 100 countries, and have been translated in 20 different languages. I have provided hundreds of these videos and DVDs to teachers over the years. Teachers can play a critical role in using these clips by providing examples of community and individual-based projects can be undertaken that can have a positive impact on their local community and environment.

To view one of the powerful videos "The Power Of One, go to the following site.
http://network.earthday.net/video/1734264:Video:15948

Another moving video is called "Mother." You can view this at
http://www.youtube.com/watch?v=qBH7uIjhlE4

For more information about all the videos available through the Earth Communications Office, see
http://www.oneearth.org

Place

Places also have a large influence on individuals that contribute toward developing a stewardship philosophy. Many writers have commented on the sense of place and individuals.

> "…The mechanism underlying human moral conduct is the desire for attachment or affiliation. (J.Q. Wilson, 1993)
>
> "…To know the spirit of a place is to realize that you are a part of a part and that the whole is made of parts, each of which is whole. You start with the place you are whole in…"
> (Snyder, 1990)

> "…We can only be ethical only in relation to something we can see, feel, understand, love, or otherwise have faith in…" (Leopold, 1949)

Think about those special places that are near and dear to your heart. Why do you feel these places are special? In most cases, it is because we have visited these places, we have learned about them, and they have been incorporated into our thought process. In today's world, our students are becoming prey of what is being called a "nature-deficit disorder." Because of our fast-paced, technologically-driven society; increased use of videos, entertainment centers, computers, and the internet that keeps our youth indoors; the fear of liability issues with school-sponsored field trips; and the increased urbanization of our lands that reduces the natural places we can visit, our youth are losing touch with the world in which they live. In his ground-breaking book, *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder*, journalist Richard Louv presents a case that links the absence of nature-based experiences to some of our most disturbing childhood trends: the rise in obesity, attention disorders, and depression. (Louv, 2006)

While living in the Pacific Northwest, I got to know Robert Michael Pyle, a noted naturalist and lepidopterist who suggests that unless our youth develop an early appreciation of the land and water around them – a relationship born of intimate and direct experience – they are unlikely to become stewards, willing to protect and preserve that which they never have know. Pyle points out we are in beginning to have an "extinction of experience;" not only are we losing the experiences of visiting far-off national parks and wilderness areas, but also nearby open spaces and vacant lots that both young and old can explore. He points out that vacant lots are an oxymoron, and that by losing these small, intimate places, we are also losing a part of ourselves.

> "…Had it not been for the High Line Canal, the vacant lots I knew, the scruffy part, I'm not at all certain I would have been a biologist. I might have become a lawyer, or even a Lutheran… How many people grow up

> with such windows of the world. Fewer and fewer, I fear, as metropolitan habitats disappear and rural ones blend into the urban fringe…
>
> …In the long run, this mass estrangement from things natural bodes ill for the care of the earth. If we are to forge new links to the land, we must resist the extinction of experience. We must save not only the wilderness but the vacant lots, the ditches as well as the canyon lands, and the woodlots along with the old growth. We much become believers in the world. (Pyle, 1993).

This theme of place and exploring close at home is also reflected in the writings of Richard Nelson, an anthropologist from Alaska who I met while involved in marine education activities in the Pacific Northwest. After many years of studying and living with the Koyukon Athabaskan people, he realized, over time, that there are many paths to developing an awareness and understanding of the world in which we live. He realized it was not the particular place he chose for his work, but that he had chosen a place to focus on and learn about. He stated what makes a place "special" for an individual is the way it buries itself inside the heart, not whether it's flat or rugged, rich or austere, wet or arid. Upon reflection, he further stated

> "…slow-minded Norwegian, it's taken me all these months to figure out what I'm trying to do here…I wonder what it would mean if each person, at some point in life, set aside a time to become thoroughly engaged with a part of the home community: a backyard, a woodlot, a pond, a stretch of river, a hillside, a farm, a park, a creek, a country, a butte, a marsh, a length of seacoast, a ridge, an estuary, a cactus forest, an island. How would it affect the way each person views herself or himself in relationship to the natural surroundings, or the earth as a whole? (Nelson, 1989)

Some writers suggest that developing a sense of oneself in relation to natural social ecosystems is a necessary foundation for the labor of stewardship and environmental advocacy. Mitchell Thomashow has found that adults, when asked to recount environmental experiences, were most interested in exploring their "childhood memories of special places, perceptions of disturbed places, and

contemplations of wild places" (Thomashow, 1995). Others have adults develop childhood maps of their special places when they were of middle school age to help them discover the experience and value of place in their lives (Smith, 1997).

Some are taking map-making to new levels by having youth and adults develop "green maps" that provide visual representations of their current local environmental and cultural sites. These mapping exercises provide experiences and reinforcement in geography, civics and science, promotes cooperative learning, and sharpens their powers of observation. Since 1995, more than 400 cities, villages and neighborhoods in 50 countries are involved in these type of mapping exercises. Individuals can get more information on green mapping by contacting http://www.greenmap.org.

Thus, the influence of place is an important link in how we view our world and establish our stewardship philosophy. How well do you or your students know your "place" around your home, school, or community? How does it fit into our investigations in the Gulf of Mexico?

The New Three Rs

In the environmental movement of the past 40 years, individuals considered themselves to be good environmental stewards if they practiced the three "R's" of recycle, reduce, and reuse. These continue to be important today, but are they the solution to our pressing problems? Perhaps it is time to reflect and change our thinking and actions in additional ways.

Milt McClaren, Professor Emeritus at Simon Fraser University identifies four flaws in the way humans think about the environment and themselves (Knapp, 1999). The first flaw is equating growth with progress and goodness. Many in our society assume that every thing done in the realm of commerce is

sustainable. McClaren suggests we also need to look at economic decisions based on principles on how our natural systems work.

The second flaw assumes that science and technology has all the answers to our problems without humans having to take actions or change their behavior. This is the "technological fix solution." McClaren points out that people must still decide among many alternatives in choosing the most responsible action to take. Technology alone will not provide a solution to our problems.

The third flaw in our thinking is caused by the confusing differences on number, quality, quantity and value. McClaren points out that not everything can be counted or assigned a number. Intangibles such as clean water or scenic views are very difficult to quantify. McClaren feels our schools have not done a very good job in this area. He states that essential components of an environmental ethic (steward) such as empathy for living things or respect for ecosystems cannot be measured by using standardized tests or measurements.

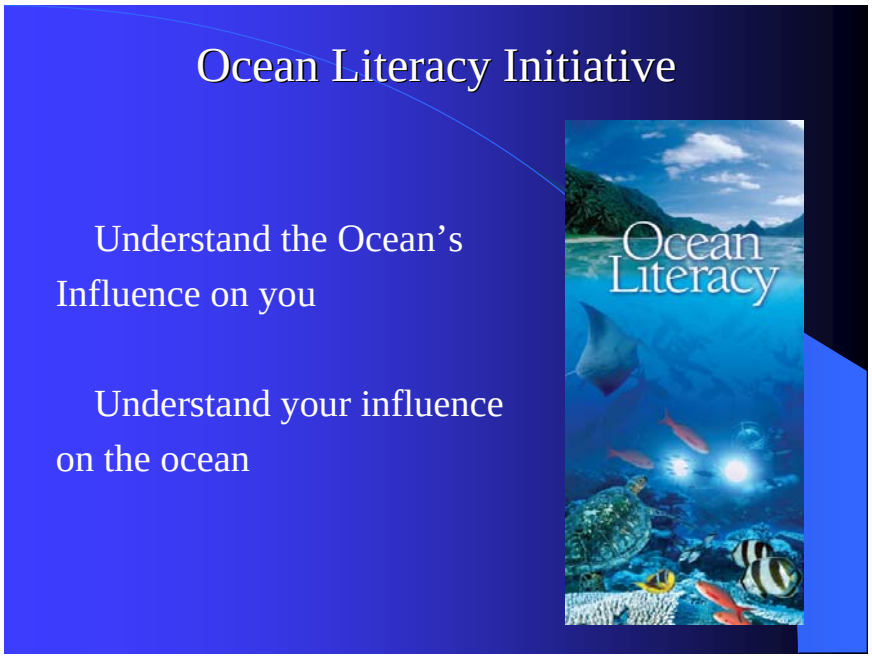
Finally, the fourth flaw in people's thinking is in how humanity views its place in nature and the current level of scientific understanding. He feels that many people disassociate themselves from the natural world in which they live and that they do not fall under the laws that govern how ecosystems work.

McClaren gives us much food for thought. It may be time to emphasis a new "three R's of responsibility, renewal and respect" for the world in which we live. In looking at the Gulf of Mexico, we have learned that human's activities and actions on the landscape can have major influences many miles from where they live. Having a better awareness and understanding about the habitats and processes of our ecosystems and developing positive actions through incorporating a new set of "three Rs" is something we need to think about as we develop a sense of stewardship and sense of place in the Gulf of Mexico watershed.

Finally, we may want to have 4th "R" in our new Gulf of Mexico vocabulary. We may want to bring "rethinking" into the way we work and live. As we turn to a global economy, we see that we are interdependent and connected on a worldwide scale. What we do in the Gulf of Mexico may affect other parts of the world and visa versa. We also have come to realize that our current lifestyle that we have taken for granted may now have to be "rethought" as such things as increasing fuel prices, loss of rural lands, possible sea level rises and temperature changes, invasions of new marine and terrestrial plants and diseases may impact us in the future. Individually and collectively we can make a positive difference in our homes, schools, and communities.

An Ocean Literate Society.

The end result of our education will hopefully be the development of an ocean literate society. An initiative that began in 2004 by marine educators from across the United States developed a set of "ocean literacy principles" that every person should know. They also are tied these to national educational standards.



These principles are both simple and fundamental, but through these you can teach all aspects of ocean and marine science in the classroom. Additionally, it is the hope that an ocean literate individual will be able to do the following. First, the individual will have a basic understanding of these essential principles and fundamental concepts of the ocean. Second, the individual will be able to communicate about the ocean in a meaningful way. Third, and most importantly, the individual will be able to make informed and responsible decisions regarding our marine and ocean resources.

To download the brochure that provides more background and information on ocean literacy: the essential principles of ocean science, K-12, go to:

http://oceanservice.noaa.gov/education/literacy.html

It also is the hope that this idea of an ocean literate society will not only permeate the United States, but be taken throughout the world. I recently attended a World

Ocean Conference in Indonesia. It was attended by more than 3,000 scientists, governmental leaders and managers from 80 countries I spoke on the idea of an ocean literate world. What was most encouraging was a field trip we took to Bunaken Island, off the coast of North Sulawesi. While there, we encountered 200 “sea scouts.” These youth were there to learn about the marine and coastal resources of their country, and then take positive action to make a difference. Following their training, they conducted beach clean-ups and mangrove restoration efforts. This reminded me that what we do is not only for ourselves, but for our future generations. It also provided me with hope that this idea of being a steward for our marine and coastal resources is reaching across the oceans and being practiced.

Concluding Remarks

We live in a rapidly changing world. Change is the norm. In order to insure that the Gulf of Mexico and other bodies of water are sustained, it will be necessary to continue to provide opportunities to increase awareness, and understanding that lead to positive actions among the citizens and adaptive management by the decision-makers who live within the Gulf of Mexico watershed.

It is important to realize that developing and living as an environmental steward takes all of us on a lifelong path that more often than not is an uphill battle. Living in our modern society does make it difficult to minimize our impacts on our environmental systems. Change also is not comfortable at first. Try this exercise. Step away from your computer and cross your arms across your chest. Does this feel comfortable? Now, cross your arms the opposite from what it is now. Does it feel strange and different? Doing something new and different for the first time may feel uncomfortable and awkward at first; however, through time new thinking and actions will soon become part of your daily life.

We will continually have to deal with trade-offs and compromises in the world in which we live. However, by better understanding your own individual environmental ethic and philosophy, you can use it as a guide to make your personnel decisions, and help your students develop their own ethic that leads to environmental stewardship becoming a more important part of their daily life.

I hope my brief paper has stimulated some thinking about “stewardship and a sense of place in the Gulf of Mexico” and that it will generate some discussion and debate. I thank you for the opportunity to share some of my thoughts and idea with you. I look forward to hearing from. Best wishes to you in COSEE, and what lays ahead for you in your home, school, and community!

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