

**Written statement by  
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Before the  
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION  
SUBCOMMITTEE OF OCEANS, ATMOSPHERE,  
FISHERIES AND COAST GUARD**

**Hearing on the Environmental and Economic Impacts of Ocean Acidification**

April 22, 2010

Chair Cantwell, Ranking Member Snowe, and members of the Committee, I would like to thank you for the opportunity to offer testimony of my concerns about ocean acidification and its possible effect on fisheries in the Gulf of Mexico and other US waters. And I would also like to express my appreciation for all the support that I have received in the past from my Gulf States Senators. It has been a privilege to work together to keep our fisheries sustainable.

I have been an owner-operator fisherman for most of my life, reef fishing for the better part of four decades. My home port is Pensacola, Florida. I currently fish for red snapper and king mackerel but have also worked the waters of the Gulf of Mexico for others species. People need to work hard on and off the water to keep our fisheries sustainable, so I am heavily involved in the fisheries management process, participating on both the red snapper and king mackerel assessment panels.

In this business we have to keep our eyes and ears open. When an issue comes up that could affect my fishery and livelihood, I learn everything I can about it. That's what I've done since I first heard about ocean acidification.

I don't pretend to be an expert on ocean acidification but I do know this problem is real, and we need to get on top of it. I first got word of ocean acidification not long ago, in December 2009, when I was in D.C. to talk with my Senators and Representatives about proposed changes to the Magnuson-Stevens Act. I ran into a group of fishermen and shellfish growers who were in D.C. to talk to their Senators about ocean acidification.

One of the shellfish growers I met was Mark Wiegardt from the Whiskey Creek Shellfish Hatchery in Netarts, Oregon. Three or four years ago, for no apparent reason, the oyster larvae that Mark grows for a living started dying in the first few days of their lives. The usual culprits, like marine bacterial infections, turned out to be innocent this time. After a few years of major larvae die-offs and barely staying in business, scientists working with Mark and his partners correlated the die-offs with upwelling deep water that is acidified by high concentrations of CO<sub>2</sub>. For juvenile oysters, the water was corrosive, and larvae simply couldn't survive in it.

The other people in the group I met in December were mostly fishermen from Washington and Alaska. They saw the problem of larval shellfish die-offs as a canary in a coal mine. It was a problem to get ahead of before it expanded to their fisheries. If the seawater that was pumped

into the hatchery from the ocean was killing the oyster larvae, what was going on in the wild? Wild larval shellfish and other tiny marine plants and animals are the food source for most commercially important finfish in their juvenile stages of life. The way these fishermen saw it, less food for juvenile fish would mean fewer adult fish to catch. Sometimes it doesn't take much to push a stock below the threshold for commercial production. No fish means no fishermen. I started to consider fisheries in the Gulf of Mexico and how ocean acidification might affect us.

I have learned since I started looking into ocean acidification that:

- Research shows that CO<sub>2</sub> emissions from burning of fossil fuels and other man made sources of CO<sub>2</sub> are absorbed into the ocean from the atmosphere. In the ocean, the CO<sub>2</sub> reacts to form carbonic acid. The acid changes the ocean's chemistry.
- As a fisherman I can tell you that a lot of us aren't sure where we stand on climate change, but ocean acidification is real. It has been documented by researchers all over the world and there is no doubt that the pH of the ocean is dropping, becoming more acidic. Measurements show that the open ocean, on average, is about 30% more acidic today than it was before the Industrial Revolution. In some places, like the West coast, local factors compound that change in seawater. With upwelling or the kind of conditions that produce nutrient-driven hypoxia like we get in the Gulf of Mexico, seawater can become corrosive to some of the fish and shellfish and to the species **they** eat.
- Mixing CO<sub>2</sub> into seawater doesn't just make it more acidic. The carbonic acid from CO<sub>2</sub> changes a lot of the ocean's chemistry. For one thing, it reduces the availability of nutrients in seawater that clams, oysters, crabs, lobsters; corals need to build and maintain their shells and skeletons. They absorb nutrients from the seawater. The increased acidity depletes those nutrients. That makes it harder (and sometimes impossible) for a lot of these shell-builders to survive.
- Even small changes in the ocean's chemistry can disrupt the marine food web and cause trouble for fish higher in feeding order. For fishermen to make a living, we need fish stocks that are abundant and dense enough so we can harvest them efficiently.
- Cold water absorbs more CO<sub>2</sub> than warm water. The oceans in high latitude places like Alaska are more acidic than the warmer waters nearer the equator.
- For a lot of species, it looks like they are most vulnerable in early life, especially their larval stages.
- Even adult shellfish, corals and other calcifiers show slower rates of shell building, diminished reproduction, muscle wastage, and other problems when exposed to acidified seawater.

What does ocean acidification mean for fisheries in the Gulf of Mexico?

In the Gulf of Mexico, we already experience serious impacts from the dead zones that are usually attributed to hypoxia. The coastal communities that rely on the shrimp and oyster industries and fishing are beginning to recover from the devastation caused by Hurricane Katrina and the other storms that followed on her heels. New management tools that fishermen and managers put in place have helped to rebuild fish stocks. The last thing we need is to have our recovery efforts threatened by something we didn't even see coming.

I have invested a lot of my time and money to participate in reef fishing. I don't go out to sea unprepared for whatever might come up while I am on the water. Right now I feel like those of us in the Gulf States have no idea what we may be up against with ocean acidification. So far, it looks like there isn't much research yet on this problem in the Gulf I found out about one study by USGS that's meant to create baseline data on ocean chemistry for the West Florida shelf. That's a start, but it's not enough. We ought to be monitoring the Gulf so we can recognize changes when they come our way. For instance, if this is affecting coral, we need to know. We need healthy reefs to have a healthy reef fishery.

Commercial fishing and the shellfish industry in the Gulf of Mexico are not only important to the fishermen and the coastal communities that they live in. Inland regions of the Gulf States also receive the benefits of the seafood industry. I offload fish in both Florida and Louisiana so let's consider the State of Louisiana. Commercial saltwater fishing has a dockside value of \$264.9 million in Louisiana. Once that seafood leaves the fishing boat, hits the dock and gets into distribution that dockside value turns into retail sales of \$1.8 billion with a total economic impact that is ripples out to \$2.3 billion. Shellfish and commercial fishing support 26,345 jobs from the dock to inland in Louisiana. Every person who touches that fish from ocean to plate sees the economic benefit. The state and local tax revenues that result from the seafood industry are \$166.9 million in Louisiana. These numbers show that commercial fishing and the shellfish industry play a big part in the providing jobs and a viable economy in Louisiana.

If the fisheries of the Gulf States went away the impact would be felt nationwide. The money from our healthy fisheries works its way through marinas, repair shops, gas stations, fish gear shops, grocery stores, lodging, seafood restaurants – the list goes on. So you can see a lot of people have an economic interest in keeping our fisheries strong. And we haven't even considered the revenue and jobs from recreational fishing or the saltwater tourist industry with people who want to walk on beaches or dive on reefs.

I've talked about the Gulf of Mexico because that is where I work, where I live, and what I know. The 2008 edition NOAA's annual document called "Fisheries of the United States" looked at fisheries landings and how the value is amplified as our catch moves from the fisherman to the consumer. Nationwide, the revenues swell from the dock to the dinner plate:

- Fishermen \$4.5 billion
- Processors \$7.6 billion
- Exporters \$23.4 billion
- Importers \$28.5 billion
- U.S. commercial marine fisheries industry \$35 billion (producing and marketing fishery products for domestic and foreign markets)
- Consumers: \$69.8 billion (about two thirds in food service venues, one third in stores)

Fishing is a way of life for me and a whole lot of other people from coast to coast. Fish and shellfish provide jobs and food. The ocean that makes all this possible needs to be taken care of. People are seeing changes on the water and we don't yet know why. Without increased research and monitoring we are not going to find out if ocean acidification is eating our lunch. Looking the other way and hoping for the best is not the way I respond to challenges to my livelihood. It's

not the way we should respond as a country, either. I think that it would better to be proactive than reactive.

I want to thank the chair and members of this subcommittee for taking a good hard look at this problem and how it might affect the country. In closing I hope that you can supply adequate funding for monitoring and research on ocean acidification. Let's keep our eyes open.

Sincerely,

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