

# International Environmental Law Committee Newsletter

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Welcome to this very special joint newsletter for the SEER Marine Resources and SEER and SIL International Environmental Law Committees! The oceans have always had a very clear connection to international law, dating back to ancient custom. Attempts to conform the international rules that apply

to the oceans range from Hugo Grotius's 1609 *Mare Liberum* to the most recent incarnation of the United Nations Convention on the Law of the Sea and the United States's recurring debate over whether to ratify that treaty. Our three committees are therefore very happy to present this joint newsletter recognizing that connection.

The articles in this newsletter address a variety of current topics at the intersection of marine resources and international law. One article, for instance—"Papahânaumokuâkea Inscribed as World Heritage Site"—describes how the World Heritage Convention recently changed the status of an American marine resource, the Papahânaumokuâkea Marine National Monument. This huge marine reserve protects the coral reef ecosystem of the Northwestern Hawaiian Islands, and it is now one of the few World Heritage Sites that was designated for both its ecological and its cultural importance.

Other articles address emerging issues of global importance. In "Before the Sun Sets: Changing Ocean Chemistry, Global Marine Resources, and the Limits of Our Legal Tools to Address Harm," Mark Spalding discusses the increasingly recognized—and increasingly concerning—problem of ocean acidification, which has been described by some as climate change's "evil twin." Like climate change itself, ocean acidification requires a global solution—and it also provides perspectives regarding reliance on geo-engineering as a solution to more conventional climate change problems. Chad McGuire, in turn, takes up the

# BEFORE THE SUN SETS: CHANGING OCEAN CHEMISTRY, GLOBAL MARINE RESOURCES, AND THE LIMITS OF OUR LEGAL TOOLS TO ADDRESS HARM

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Mark J. Spalding

## Introduction

What we are about to see in the ocean is like the moments after the sun sets in the desert: the character of the mountains and landscape changes—losing their glow and warm colors, becoming gray and featureless. The ocean is receiving much of the emissions from cars, power plants, and factories in its role as our largest natural carbon sink, but cannot absorb all such CO<sub>2</sub> from the atmosphere in its plankton and plants. Thus in a simple chemical reaction, the CO<sub>2</sub> instead is dissolved in water, but not fixed in plants or animals, and decreases the pH of the water, making it more acidic. This has begun to change the pH of the ocean as a whole, and is expected to adversely affect the ability of calcium-based organisms to thrive. As the pH drops, we will see the loss of light under water, and our coral reefs will lose their color, our fish eggs, urchins, and shellfish will dissolve, the kelp forests will shrink, and our underwater world will become gray and featureless. There will be a new dawn when the color and life return, after the system rebalances itself, but it is unlikely that any of us will be here to see it.

While we are changing the ocean's chemistry at an unnatural speed and rate, we begin with the premise that we all want and would collectively benefit from restoring and maintaining the pH of the world ocean at a level that supports resilient and productive seas, under the terms with which we are familiar. What do we need to do to advance ocean acidification (OA) mitigation and adaptation strategies? The chemistry is straightforward. The predicted continuation of the trend toward greater acidity is broadly predictable, and harder to predict specifically. The effects on species that live in calcium bicarbonate shells and reefs are easy to imagine. Harm to oceanic phytoplankton and zooplankton communities, the basis of the food web and thus all commercial marine species harvest, is harder to predict, both geographically and temporally.

We know the “how” and the “why” but not a lot about “how much, where, or when.” We may learn more after a report is submitted from the January 2011 Intergovernmental Panel on Climate Change Workshop on Impacts of Ocean Acidification on Marine Biology and Ecosystems. In the absence of a timeline, absolute predictability, and geographic certainty about the impacts of ocean acidification (both indirect and direct), the members of the conservation community calling for precautionary and urgent action on ocean acidification to restore and promote a balanced ocean will be slowed up by some who want to know more specifics about when do we expect to reach thresholds that will affect certain species, and specifics about which parts of the ocean will be most affected and when. Some of those applying the brakes will be scientists who want to do more research, others will be those who want to maintain the fossil fuel-based status quo.

It is challenging to develop models for present and projected economic effects on the commerce in specific species and the people who depend on it. Likewise, we may not yet be able to fully evaluate the cost of inaction on affected communities, especially those whose coral reef resources are the basis of their economy, food security, and societal structure. However, we can begin to list the economically affected constituencies—among them coastal communities; the shrimp, lobster, and crab fisheries; and the commercial shellfish harvesters and farmers. We can thus start to quantify the damages, or the costs of adaptation, such as installing extensive filtering and pH balancing systems in the short term and moving to onshore closed system aquaculture of shellfish and other animals. We can also presume that it will be increasingly difficult for open ocean shellfish farmers to buy insurance or to obtain financing for their operations.

This is a globally important economic issue: ocean bivalve mariculture (scallops, oysters, and mussels) alone has skyrocketed in the past two decades—doubling in the United States and representing hundreds of millions of dollars in direct and indirect economic activity (Andrew 2009 (citations omitted)). Often promoted as a small-scale sustainable

community economic development tool, local bivalve, mussel, and pearl mariculture employs more than 200,000 people in coastal villages in India. Mariculture of the giant clam is an emerging industry in remote areas such as the Solomon Islands, where over-exploitation decimated the natural population of these mollusks on which communities depend.

Half the human population lives on or near a coast, and the ocean provides a substantial portion of the daily protein intake for hundreds of millions of people worldwide. Thus, ocean acidification presents a significant potential threat to food security. Food insecurity, in turn, can result in the various international security concerns that emerge from competition over basic food resources, forced migration, and growing numbers of refugees.

From an international marine resources law perspective, we have a bad balance of equities and insufficient development of facts. The cause of OA is global, as are the potential solutions. But most of the costs are local in the form of lost fisheries, lost diving/snorkel tourism, and eventually, local protein shortages due to a substantial loss of the productivity of the ocean. We do not have a specific international law related to OA. When we look to extant international marine resources treaties, we do not have many levers to use to force large CO<sub>2</sub> emitting nations to change their behaviors. In the United States, there *may* be a limited use of the Clean Water Act to declare certain water bodies as “impaired” as a result of pH changes. Likewise, we may be able to use the National Environmental Policy Act, the Endangered Species Act, etc., to protect habitat and species from OA. However, none of these laws really contemplated CO<sub>2</sub> pollution indirectly causing chemical shifts of pH in our nation’s waters, interpretation of law can go either way, and so the legal outcome is unpredictable. Thus, we get to the old saw that trial lawyers like to use: “If the facts are not on your side, argue the law. If neither is on your side, argue like hell.” So, we have to be prepared to address this chemical modification loudly and often and hope to heck that moral suasion will overcome mankind’s inclination toward inertia.

The Monaco Declaration (October 2008) was approved by 155 scientists from 26 countries, who are leaders of research on ocean acidification, including its impacts. The following is a summary of declaration’s headings, and is perhaps the beginning of a call to action: (1) ocean acidification is under way; (2) ocean acidification trends are already detectable; (3) ocean acidification is accelerating and severe damages are imminent; (4) ocean acidification will have socioeconomic impacts; (5) ocean acidification is rapid, but recovery will be slow; and (6) ocean acidification can be controlled only by limiting future atmospheric CO<sub>2</sub> levels.

In short, we can assume that there are significant commercial, antipoverty, and national security interests that should fall into line with ocean conservation interests to call for policy and law solutions that result in OA mitigation and adaptation strategies. We know that ocean ecosystems are very resilient, so if this coalition of the self-interested can come together and move quickly, it is probably not too late to proceed to a time and place in which we are promoting the natural re-balancing of ocean chemistry.

## **I. International Law and Marine Natural Resources**

Relevant international agreements establish a “fire alarm” system that could call attention to the problem of ocean acidification at the global level. Those agreements include the UN Convention on Biological Diversity, the Kyoto Protocol, and the UN Convention on the Law of the Sea. As a result, we have a process that could bring the issue to the attention of the parties to each of those agreements, using the power of moral suasion to embarrass the governments into acting. This is especially important because the harm is mostly anticipated and widely dispersed, rather than present, clear, and isolated. As we have already seen in looking at climate change effects more broadly, if there continues to be little or no collective global action, many of the most vulnerable will examine what additional legal rights they may have.

Obviously attempts should be made to reach agreement on acting on OA before any nation resorts

to international litigation against the biggest emitters of CO<sub>2</sub> in an effort to halt the trend toward OA. In the United States, misperceptions about the role of international treaties in domestic affairs abound. Any international litigation might galvanize the public to demand reduced U.S. participation in any international agreements such as environmental treaties. On the other hand, such litigation, plus a call to protect jobs related to the ocean, might give the sitting administration adequate cover to make urgently needed commitments.

The UN Convention on Biological Diversity does not mention OA, but its focus on conservation of biological diversity certainly is triggered by our concerns over OA, which has been discussed at various conferences of the parties. At the very least, we can expect the Secretariat to actively monitor and report on OA going forward.

The London Convention and Protocol and the MARPOL, the International Maritime Organization agreements on marine pollution are too narrowly focused on dumping, emitting, and discharge by ocean-going vessels to really be of much assistance in addressing OA.

The UN Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol are the main vehicles for addressing climate change. Neither the convention nor the protocol refers to ocean acidification. And, the “obligations” of the UNFCCC parties are expressed as voluntary. At best, the conferences of the parties to this convention will offer a time and place to discuss OA. However, the poor outcomes of the Copenhagen climate summit and the Conference of the Parties in Cancun do not bode well for action any time soon. And, a very small group of conservatives are bringing to bear significant financial resources in the United States, as well as in other nations, to make climate change a political “third rail” for which those who raise it can be summarily dismissed as extremists who are seeking to undermine the American way of life, choice, and capitalism itself.

Similarly, the UN Convention on the Law of the Sea (UNCLOS) does not mention OA. But it does

expressly cover the rights and responsibilities of the Parties in relation to protection of the ocean. Articles 194 and 207 in particular endorse the idea that parties to the UNCLOS must prevent, reduce, and control pollution of the marine environment. Perhaps when drafted these provisions did not have OA in mind, but this obligation, combined with provisions for responsibility and liability as well as for compensation and recourse to the legal system in each nation, may present some avenues to engage the parties to address OA. Thus, UNCLOS may be the strongest arrow in our quiver, but the United States has never ratified it.

Arguably, once UNCLOS came into force in 1994, it became customary international law and the United States is bound to live up to its provisions. But we would be foolish to say it would be that simple to pull the United States into the UNCLOS dispute settlement mechanism when calling upon it to answer to a vulnerable country’s demand for action on OA. In addition, even if the United States and China, the world’s two largest emitters, were engaged in such a mechanism, the complaining party might have a hard time proving harm, or that the two emitter governments specifically caused the harm, which are jurisdictional requirements for the UNCLOS dispute settlement mechanism.

## **II. U.S. Domestic Law, Opportunities to Address the Most Significant Emitter**

Ocean acidification is a global issue that requires domestic action. We can take proactive steps to address the issue, or we can fall into crisis-driven policy making (often with all-or-nothing outcomes). In 2009, following the efforts of many advocates including Stephen Lutz, Ph.D. (of the Ocean Foundation’s Blue Climate Solutions project), Congress passed the Federal Ocean Acidification Research and Monitoring (FOARAM) Act, which calls for the establishment of a federal ocean acidification planning process/program, which is to include (1) a robust observing network, (2) research to fulfill critical information needs, (3) assessments and support to provide relevant information to decision makers, (4) data management, (5) facilities and training of OA researchers, and (6) effective program planning and management. In this

manner, we have a start toward better understanding of the problem, but probably not a sufficiently preventative approach. (Unfortunately, funding cuts proposed in the House of Representatives would abolish NOAA's nearly completed integrated ocean acidification program and strategic research plan, eliminating essential research that helps protect the millions of jobs associated with marine fisheries and coastal recreation opportunities.)

Ocean acidification is not really tied back to a specific private firm or industry sector. Thus, we are really talking about government inaction to curb CO<sub>2</sub> emissions in general, which is not very easily addressed using domestic courts. In addition, because OA is not broadcast pollution sent across a boundary, but is pollution drawn inward by the ocean as a carbon sink (which we want it to be able to do, or else we would be much worse off), we may not be able to reach the direct harm causation threshold to gain jurisdiction. There may be problems of proof (absence of immediate damages—harm/costs), and it is unlikely that one can obtain real injunctive relief, or punitive damages. Lastly, almost every single government (or person) contributes to CO<sub>2</sub> emissions, so no one can really come to court with “clean hands” (and we will note that a similar no-harm principle would limit the use of the International Court of Justice).

The first domestic legal action in the country was brought under the federal Clean Water Act and was filed in U.S. District Court in Seattle in May 2009. The Center for Biological Diversity asserted that the U.S. Environmental Protection Agency (and the state of Washington) had failed to recognize the impacts of ocean acidification on waters off the state of Washington, as they are required to do under section 303(d) of the Clean Water Act. The CBD complaint looks to demonstrate that CO<sub>2</sub> is a pollutant that is causing a change in pH that falls within the definition of “impaired waters” that require remediation. The current standard which dates from 1976 (and which has been adopted by most states) requires a finding of impairment if waters deviate more than 0.2 pH units from natural variation. There is no question that the waters off Washington state exceed these criteria. As a result, OA has been blamed for failures of some

shellfish farm harvests, and, despite investments in specialized filtration systems, it has been predicted that one or more shellfish mariculture harvests in Washington will experience full commercial failure within the next 24 months (Personal conversation with Tony Haymet of Scripps Institution of Oceanography, Oct. 19, 2010).

CBD and EPA settled the May 2009 lawsuit and it was voluntarily dismissed by CBD in March 2010. In November 2010, to fulfill its settlement obligations in part, EPA released an official memorandum to assist regions and states in preparing, reviewing, and reporting the impacts of ocean acidification (thus formally acknowledging CBD's interpretation of the Clean Water Act). However, according to a December 1, 2010, blog posting by the Center for Ocean Solutions regarding the memorandum, there is a concern that while the guidance reinforces the requirement to list a water body as impaired upon the deviation from norm of 0.2 pH units, very few coastal states have the high-resolution instruments necessary to measure the baseline pH level, determine the natural level of pH variation, and actually track changes in pH.

Although the memorandum does not impose new regulations for pH in the ocean, it is still an important step in recognizing ocean acidification as a serious problem for ocean and marine resources. Importantly, it gives the go-ahead to states and territories that have access to reliable pH data to include acidifying waters in their 303(d) “impaired” lists. While this memorandum marks progress in regulation related to OA, it is likely to be caught up in the concerted attack by conservatives funded by fossil fuel industry donated dollars to question whether EPA even has authority to regulate greenhouse gas emissions.

Another avenue for using the rule of law to ensure that adequate attention is paid to OA is the Endangered Species Act, which covers listing species, the design of management plans to promote recovery, encourages international cooperation (something rare), and prescribing prohibited taking of such endangered species. On January 25, 2011, the Center for Biological Diversity “filed a notice of its intent to sue the National Marine Fisheries Service for the agency's

failure to protect 82 imperiled coral species under the Endangered Species Act. These corals, all of which occur in U.S. waters ranging from Florida and Hawaii to U.S. territories in the Caribbean and Pacific, face numerous dangers, but global warming and ocean acidification are the overarching threats to their survival.” (CBD, 2011).

Our National Environmental Policy Act, in addition to creating the President’s Council on Environmental Quality and promoting the enhancement of the environment, requires environmental impact statements that could now (with the November 2010 EPA memorandum on OA) be called upon to limit federal government action that might harm the environment in the context of ocean acidification.

Insurance against failure of harvested or farmed shellfish may be one answer to compensation for harm to commercial interests as the result of OA, but it is unlikely to be an affordable solution and only gets to the compensation issue, and not to prevention of harm.

## Conclusion

International marine natural resources really are part of the foundation of our economies and the stability of nations. Ocean acidification is a dire threat to those resources. Right now the probability of harm is high, and the consequences if they are allowed to occur are serious. We have no mandatory rule of law to trigger reduction of CO<sub>2</sub> emissions (and even our international good intentions expire in 2012), thus we have to use the laws we have to urge new international policy. Such an international policy should address:

- Restoration of marine plant communities like sea grass meadows, mangroves, etc., that will in turn restore the ocean’s capacity to naturally fix and sequester carbon
- Reduction of land-based and nonpoint pollution sources including nitrates, sulfates, and traditional pollutants that exacerbate and/or contribute to OA
- Increasing protected habitat and habitat connectivity

[These first three items could be paid for via a resilience fund consistent with the

precautionary principle (for example, we could substantially increase the cost of coal, oil, and gas leases to seed such a fund).]

- Adding the evidence of OA and the harm it is bringing to our efforts to reduce CO<sub>2</sub> output currently undertaken in the context of addressing global climate change
- Support for the inclusion of coastal and marine ecosystem carbon and OA in international climate change negotiation texts
- Identification of rehabilitation/compensation schemes for OA environmental damage (standard polluter pays concept) that makes inaction far less of an option
- Reduction of other stressors, such as overfishing and use of destructive fishing gear, on marine ecosystems to increase resilience in the face of ocean acidification
- Curtailment of subsidies for coal, oil, and gas exploration and development, and replacement with support for renewable wind, solar, and ocean energy sources
- Mitigation by reducing CO<sub>2</sub> emissions (to achieve less than 350 ppm concentrations).

In the absence of new policies (and their good-faith implementation), we can expect attempts at international litigation, and we have already begun to see domestic litigation. The cumulative effects of this litigation may eventually take its toll on resistance to change. But we have to remember that at the same time OA is just one stressor of many acting to harm marine natural resources, that it undermines resilience and that all the stressors cumulate in causing harm. In the end, the cost of inaction will by far exceed the economic cost of acting. We need to act before the sun sets. But that would require present-day sacrifice, which is up there with “eating less and exercising more” as an appealing choice to pursue.

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