OCEAN ACIDIFICATION COMMUNICATIONS PLATFORM

Brief Description:

Ocean acidification (OA) is a problem that poses grave risks to the ocean, starting with animals at the bottom of the food chain. Given the massive scale of the problem of the problem and the political and communication challenges if ocean acidification continues to be associated with climate change, Ocean Conservancy has developed this communications platform to help guide and inform groups working on this issue. The below information is grounded in the latest public opinion polling on ocean acidification. Based on the results of this research, communication on ocean acidification requires a carefully deliberate approach: highlight personal stories and demonstrate local impacts (such as food production and economic impacts to coastal communities), informed by the best available science and everyday language in order to engage the public and generate support for addressing this critical threat to a living ocean.

Objectives of this Platform:

- Provide guidance to groups communicating on ocean acidification, informed by the latest market research, to:
    - Elevate ocean acidification as an issue in its own right, separate and distinct from climate change, showcasing actions that exist locally and regionally, in the absence of a national framework to address carbon emissions.
    - Tell the stories of local impacts to American food production, jobs, and livelihoods – utilizing the latest science on this issue, for example, oyster populations in the Pacific Northwest are being negatively impacted.
    - Articulate specific messages on ocean acidification for industry and scientific communities to carry to their respective audiences;
    - Build capacity and understanding among key coastal target audiences of the root cause of ocean acidification – increased carbon emissions – prior to advocating for a specific policy solution.

Strategy:

- Engage scientists to explain to target audiences in everyday language the basics of ocean function and in turn, the fact that ocean acidification is real, measurable, happening now – with impacts today.
- Elevate the messages of people whose daily lives and livelihoods are affected by ocean acidification and empower them to tell their stories.
- Empower communities to take action to address local causes of ocean acidification, such as the Washington Blue Ribbon Panel process as a model for state action and capacity building on the issue.

- Create a climate of concern that generates political will for policy-maker/elected official engagement and action on the root cause of ocean acidification – reduction of carbon emissions.

Messaging Research:

A 2011 national survey on ocean acidification commissioned by Ocean Conservancy found that:

Ocean acidification is an evocative problem that needs to be established for the public before advocating for a national solution:

- Ocean acidification currently has a low profile (only seven percent of Americans have heard anything about it, according to data from *Six Americas*, June 2010).
- The term ocean acidification intuits concern, and a "just the facts" definition increases that concern.
- Given the issue's low profile, people impacted and scientists are the credible voice to raise it.

The role of a living ocean is not well understood:

- Quickly establishing the functions of the ocean and its absorption of carbon pollution is a needed first step in explaining the science – and before the impacts can be explained in a way that resonates with key audiences.
- Making the connection between "changing the ocean's chemistry," and the source of the emissions (factories, power plants, etc.) causing that change helps people understand that excessive air pollution is impacting ocean.

Climate change, natural cycles and an assumption of ocean resilience are roadblocks to understanding:

- The interest groups, solutions and messaging around climate change are established, polarized and divisive. When polled, people do not immediately connect ocean acidification to climate change. Rather than starting a conversation about ocean acidification with climate change, begin by establishing OA as its own issue.
- Emphasizing the rate of change occurring in the ocean as a result of carbon emissions can override "the ocean is too big to fail" beliefs. Explaining the measurable change and the rate at which we are driving the change, overcomes the barrier that "nature will adapt."

Messaging Implications

Based on the research findings, people understand the notion of "what comes up must come down." In this case we are talking about the emissions we put into the atmosphere being

absorbed by the ocean and having negative impacts on ocean life. This is understandable to people and this concept does not rely on "believing" in climate change or having a clear understanding of ocean chemistry.

A second implication is the need to establish the role of the ocean and why it is important to us – in understandable terms. Finally, ocean acidification is real, it is happening now and it has impacts to people today. Climate change as an issue has yet to establish these three concepts – which are critical to compel people to act.

Messaging Challenges – Climate Change, Scientific Uncertainty, Global v Local Solutions, Natural Cycles

Climate Change
First and foremost are the numerous associations with climate change and the political baggage they entail. Some people confuse the symptoms of acidification with the symptoms of warming of the ocean. But more importantly any discussion of carbon pollution runs the risk of triggering prejudiced responses to climate change.

"Not all corals victims of CO_2." A great deal of Australian media coverage has recently focused on the angle that some species can benefit from increased CO_2 , meaning people who are looking for recent information in an internet search will find stories providing mixed messages.

People can also point to dying microscopic plants and corals themselves as releasing carbon dioxide. This only adds to the problem of CO_2 in the water, and people can point to this as a nature-made problem and not manmade.

When articles and editorials do come out, there is backlash in the form of comments.
For example, below are some comments from an Economist article (*spelling and grammatical errors appear as written*):

> *-It is an empty scare. The pH of the oceans is variable, not constant. There are regions which emit CO_2 and are presumably already saturated. There are some organisms which like it. Increase in atmospheric CO_2 will merely alter the ratio between the saturated and unsaturated regions, encouraging some organisms, discouraging others, encouraging adaption by natural selection. There is no crisis and no risk.*
>
> *- The thing is... We just haven't been able to study these sort of problems long enough to draw conclusions - for all we know this could just be part of a greater historical trend.*
>
> *- The IPCC is ONLY accepting human caused explanations to fully explain ocean acidification (I wonder who coined that phrase) --- oh, acidification has not been proven*

you say? NO MATTER!! It's real because the IPCC says it's real and the Economist is writing about it. It has to be CO_2 *from human sources only and it's real - Al Gore has a documentary coming out on it. That's it - end of discussion.*

Simply put, talking about "climate change's evil twin" will stop us dead in our tracks. We advocate an approach that effectively illustrates the problem of ocean acidification that minimizes the overblown associations with climate change and the political alignments that tend to form. Focusing on the science and local impacts of ocean acidification, as well as the root cause – carbon emissions – is a way to avoid the buzz saw of climate change when talking about this issue.

Scientific Uncertainty

Much of the success of the ongoing climate change debate (from the perspective of skeptics) can be attributed to the near-constant level of debate and uncertainty they were able to imbue into almost any discussion on the issue. The science around ocean acidification and related impacts on species is complicated; the fact that ocean acidification is happening is not in doubt.

Keeping the discussion at a 50,000 foot level and focusing on the rate at which we are driving change in the ocean is a way to rise above skeptics' charges.

Global cause of ocean acidification versus local solutions

As the trend on ocean acidification solutions moves towards local and regional solutions, there is scientific uncertainty on the impact and benefit on action that can be taken to address local causes of acidification. The best course of action is to acknowledge that the science on these local exacerbating factors is still young and focus on the efforts being made to move this issue through locality. Focus on what you do know:

- Let's be clear – the root cause of ocean acidification is carbon emissions.
- Local pollution makes the acidity worse.
- States and regions are looking at what influences have the most impact on coastal communities and economies and are prescribing action, including research, based on what we know.
- We're focusing on the stuff that we can fix, control or change. The health of coastal industries is too important to our [state's] economy.

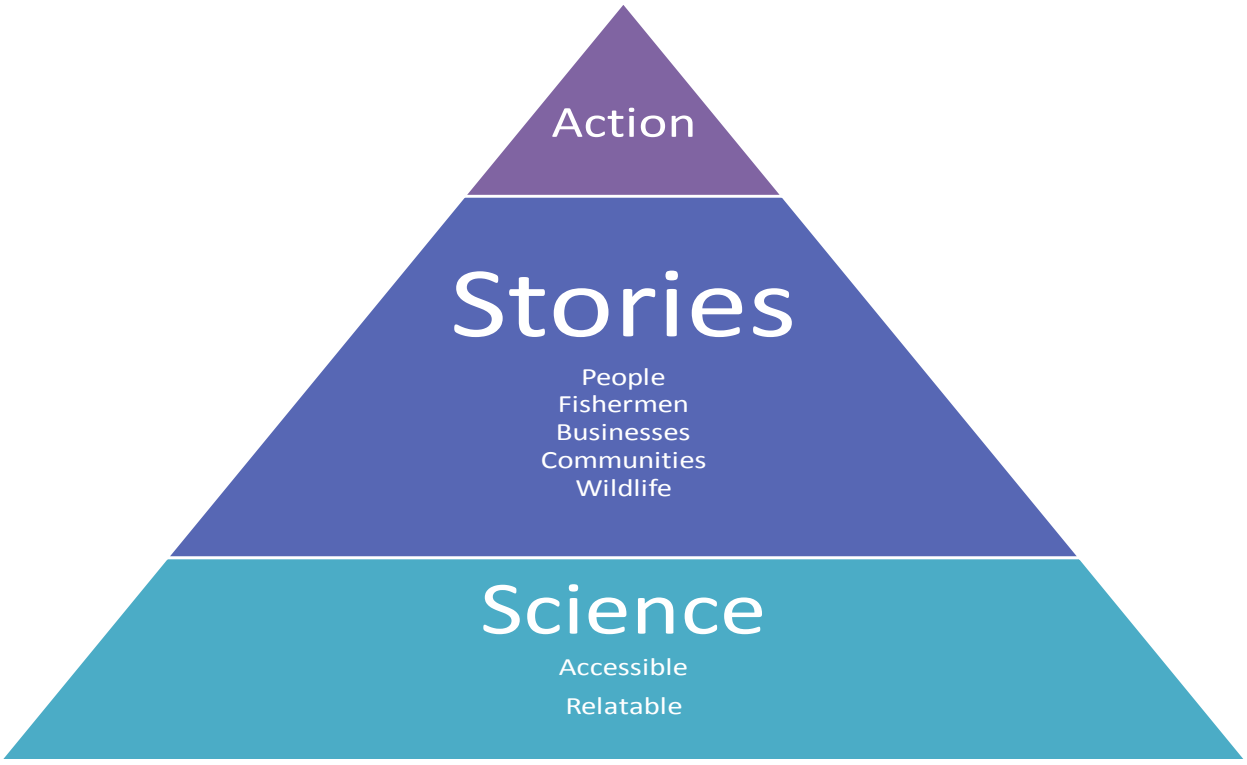
Natural Cycles

Natural cycles such as upwelling along the West Coast can be used as a barrier to understanding the very real problem of ocean acidification. Upwelling is a vector, not a root cause of ocean acidification and the way to overcome charges that this issue is overblown ("there are areas of the ocean that are much more acidic than what we're experiencing today," "the ocean is resilient; it can adapt, we experience upwelling every year that brings highly acidic

water to our shores, etc.") The way to rise above these debates is to focus on the *rate* of change that we are currently driving in our oceans. The pH is changing so rapidly that species and crucially, industries that depend on those species, are unable to adapt. This issue is too important to ignore. The health of the ocean equals the health of economies and communities in our coastal states.

Message Platform

With a solid foundation of relatable, accessible science, ocean acidification messaging should focus on the stories of people, communities, businesses and wildlife that will be directly impacted—including both economic and environmental effects. Most people do not think in abstract terms. Stories such as, "Coral Reefs Extinct by 2100 Because of Rising Acidity" does not move people to care. Instead, our research reveals they "shut down." While research shows that people understand the impacts on the environment when acidification is explained to them, you have to work to make it clear that it is having impacts TODAY.



To effectively communicate ocean acidification to <u>any target</u> audience, three things must be established.

- Establish the Problem
- Establish the Urgency of the Problem
- Establish that Action Can Be Taken and People Have a Role To Play

Below are the foundations of a message platform on ocean acidification. These are not messages or talking points; they are foundational concepts on which to basis communication materials.

1. **Remind the audience of the role and function of the ocean.** The ocean makes life on earth possible. A critical function of the ocean is to absorb CO_2. Over millennia this function has created the ocean chemistry responsible for marine life as we know it today; as well as much of the oxygen in the air we breathe.

2. **Do not open the door to debate; OA is real and happening now.** Ocean acidification is not an abstract problem and does not depend on theories or models to prove it is happening. The chemistry of the ocean is known and established; the interaction between carbon dioxide and the ocean is known and established. As we increase the amount of CO_2 in the air, the ocean absorbs more and more, changing its chemistry.

3. **A living ocean matters; OA is a real danger to the basis of the food chain.** This is not just a chemistry lesson. A living ocean with abundant marine life is necessary to support the ocean's functions for life as we know it today. The ocean as we know it today has evolved with relatively stable chemistry, allowing the small shelled organisms that make up the basis of the food chain to survive. The rapid change in ocean chemistry threatens the basis of the food chain.

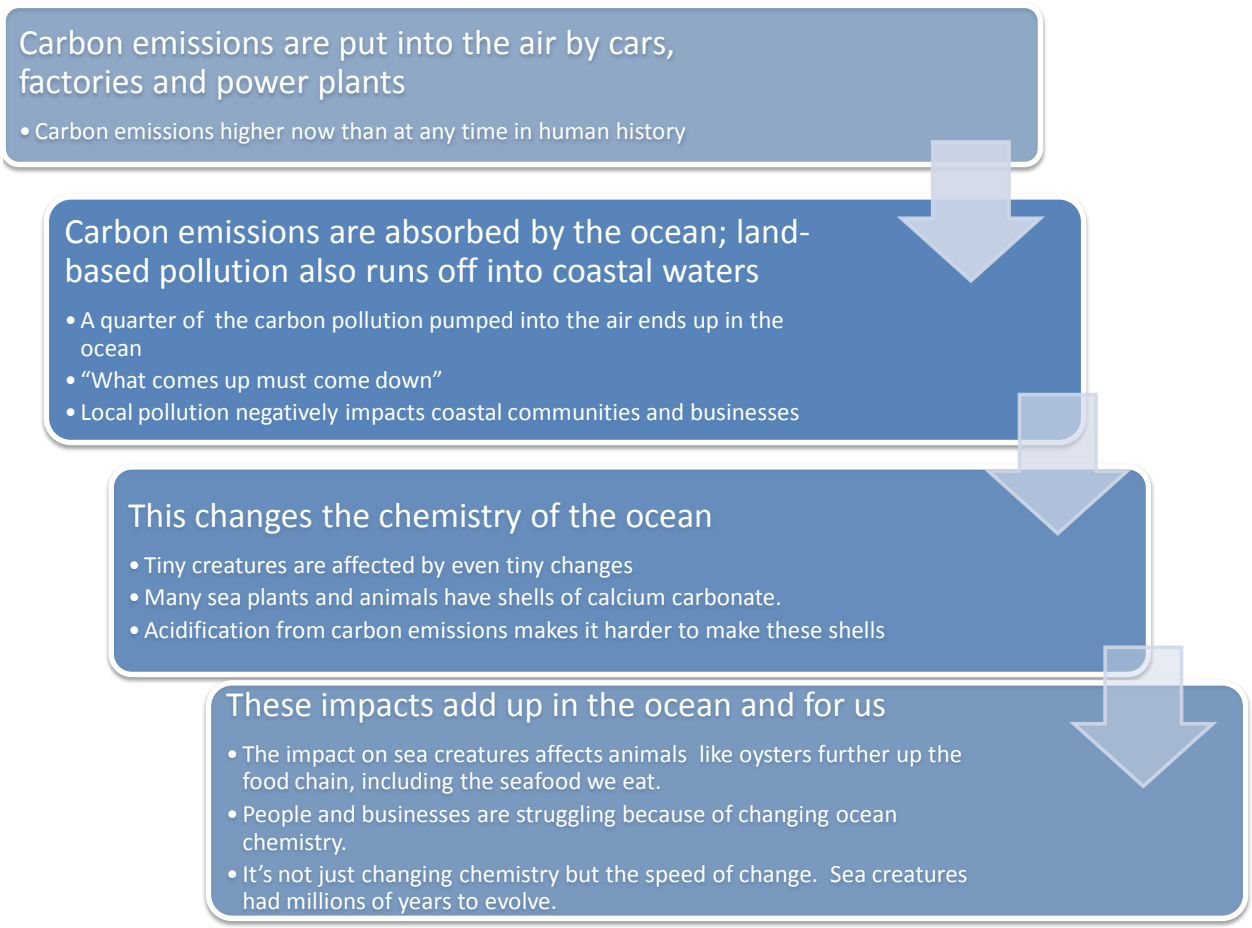
4. **This is not a future problem; it is a problem for people today because the rate of change is so fast**. The increases in ocean acidity are measurable and the rate of change is rapid. This rate of change is one of the main reasons scientists have become concerned that marine life cannot adapt quickly enough.

5. **Coastal states need to be concerned.** Ocean acidification highlights the land-sea connection. First, it is the production of CO_2 emissions from power plants, factories, cars, buildings etc., which has tipped the balance in ocean waters around our world. With much more CO_2 to absorb, the chemistry of the ocean is changing to become more acidic. In

coastal areas, we also understand that run-off of chemicals from land into the coastal waters makes matters even worse. Coastal waters are economic engines and environmentally important areas. Declines in shellfish critically impact clean water and water quality. This is why coastal states should be very concerned.

6. **People have a role to play. Support for science, local initiatives and personal action are all needed.** Scientists are working to understand how our local waters are being affected and what we can do to head off the worst impacts. With our support, scientists can monitor ocean chemistry and work with local communities and governments to identify the worst problems of ocean acidification and strategies to address them. We can help more by continuing to do the things that reduce our CO_2 emissions and minimize the chemicals that run-off or are discharged into coastal waters.

Keep it as simple as possible



Ocean Conservancy

Language:

The science and language of ocean acidification is a double-edged sword. The good news is that the public can fairly easily latch on to the general concepts and, as the Edge Research demonstrates, the term ocean acidification itself does a good job of elevating and explaining the problem to a degree where attention is merited. The bad news is that the mechanics and language of ocean acidification sound similar to climate change, which currently carries a considerable amount of political baggage. The minute details of the science also lend themselves to obfuscation, misdirection and misinformation.

There are already examples of traditional climate skeptic questioning: the difference between acidification and acid; the range and rate of change compared to natural fluctuation (the noise is stronger than the signal); whether the degree of change would have any impact; whether ocean life cannot adapt to new conditions and that some species may thrive; the causes of acidification; and whether rising ocean temperatures might negate acidification because of reduced solubility for CO_2.

The best defense against these smears will be to focus on the people impacted by acidification, not the process---remain rooted in the physical world of personal stories, images and documented evidence of impacts. The back and forth of whether the ocean will ever really become an acid, or below a pH of 7, is much less effective in the face of images and evidence of concerned fishermen and threatened businesses.

Use

- Stories of impacted communities
- Ocean Acidification
- Carbon emissions/land-based pollution (chemical runoff)
- Vital Signs, Health analogies
- Food Chain connections

Avoid

- Climate Change/Global Warming comparisons (evil twin)
- pH scale
- Definition of acid vs acidification
- Using “nutrients” to describe land pollution
- PPM, other acronyms, chemistry minutae
- Describing upwelling as a “cause” – it’s a vector

Key Points to Establish in Any Narrative

What is it? What causes it?
How do we know it's real?
What does it mean for me/my area/my country?
How can it be fixed?
What will it take?

Example Narrative:

Seeing is believing: shellfish growers confront ocean acidification

By Mark Wiegardt

My family has been farming Pacific oysters for five generations. We know good and bad seasons are normal. But we never dreamed that the seawater itself would start killing our oysters in their first days of life.

At that age, oysters, clams and mussels are tiny and vulnerable. That's why scientists and shellfish farmers learned to rear young shellfish in tanks until they are hardy enough to survive, when they are then transferred to the wild. At the Whiskey Creek Shellfish Hatchery in Oregon, we sell larvae by the tens of millions to growers up and down the West Coast. When wild oysters have a bad reproductive season, a handful of hatcheries like ours have kept farms in business. The tasty shellfish end up on dinner plates all over the country—perhaps even yours.

But in 2007, batch after batch of oyster larvae died in our tanks. Our business was on the verge of bankruptcy. Shellfish growers feared they would be next; without seed, a farm can last only a few years. Nobody knew what was clobbering the young oysters.

Alan Barton, an oceanographer by training and manager at Whiskey Creek, solved the mystery. He knew the fish in his home aquarium tank were sensitive to changes in water chemistry, so he began measuring pH in the water we pumped into our hatchery from the ocean. When the acidity was high, our larvae died.

I was skeptical at first – how could the very water we depend on now bring us to our knees? But scientists from Oregon State University and the National Oceanographic and Atmospheric Administration (NOAA) confirmed Barton's insights. Their findings appear in a new scientific paper, published last week.

Thanks to this experience, I've learned that our business is on the front line of what scientists call ocean acidification. Carbon dioxide from smokestacks, tailpipes and chimneys is pumped into the air and absorbed by the ocean, reacting with the sea water and making it more corrosive. The scientists have showed us that the acid resulting from increasing fossil fuel emissions combines with natural acid in the deep, carbon-rich water that upwells along the Pacific Northwest. The combination kills young oysters.

Lately some writers are looking for ways to dismiss ocean acidification as no big deal. I wonder how good these experts are at keeping tiny young oysters alive in corrosive water. This isn't theory or speculation—this is happening right now, to my livelihood. And it's not just one business. In Washington alone, the shellfish industry employs 3,200 people and is worth $270 million to the state's economy.

At Whiskey Creek, we've learned that when you're fighting to save your business—and your seafood supplies— it helps to know what you're up against. We now carefully monitor the acidity of the water, and avoid spawning oysters when carbon dioxide concentrations are high enough to kill them; we also treat the water to reduce its acidity. This has enabled us to stay in business for now.

But there are other signs of concern. Barnacles and wild mussels used to clog our pipes so fast that we had to replace them three times every summer. Now the pipes barely need cleaning; a worrying sign that changes in ocean chemistry impacts more than oysters.

We need more states to learn from those of us on the front lines of ocean acidification. The governor of Washington recently convened an expert panel of scientists, stakeholders and policymakers to advise the state's leaders on how to understand, mitigate and adapt to acidification. That's a good beginning and it's a model that other states can follow, to address ocean acidification head on.

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Mark Wiegardt and his wife Sue Cudd run the Whiskey Creek Shellfish Hatchery near Tillamook, Oregon.

Next Steps

As additional polling and research efforts are conducted, next steps include building out tailored narratives and messages for target audiences—industry, scientists, and specific media in key regions, taking into account the different stories, science and impacts in different states.

Considerable work still needs to be done in the realm of actionable steps to address this problem. At the current time advocating for national and/or international economy-wide carbon reductions is close to a non-starter (although there could be some progress made on clean energy, energy efficiency, and state or regional approaches). Instead, this approach focuses on local action to address local impacts of ocean acidification (such as runoff and hypoxia by leveraging existing local land, water and air regulations, or advocating for monitoring and research initiatives for businesses), and building up a cadre of concerned stakeholders to talk effectively and emphatically about this issue.

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