

Written Statement of
Dan L. Ayres
Fish and Wildlife Biologist
Coastal Shellfish Lead
Washington State Department of Fish and Wildlife
before the
Subcommittee on Energy and Environment,
United States House of Representatives

Thursday, July 10, 2008

I am pleased to submit this prepared testimony to members of the Subcommittee on Energy and Environment of the United States House of Representatives. This testimony will provide members of the subcommittee detail on the impacts that the continued presence of harmful algal blooms have had on Washington State's ability to manage important fisheries.

As a Washington State coastal shellfishery manager, I am part of a large group of fishery and human health managers from around the nation who daily face the task of providing the citizens we serve with access to some of the most productive fish and shellfish resources and most beautiful, inviting beaches this nation has to offer, while still protecting those citizens from the threats posed by re-occurring harmful algal blooms.

Along the coast of Washington State our primary problems are associated with the naturally occurring algal species – the diatom *Pseudonitzschia*, which can produce dangerous levels of the neurotoxin domoic acid.¹ In the inland marine waters of Puget Sound, wide area closures are associated with another naturally occurring algal species – the dinoflagellate *Alexandrium*, which produces the neurotoxin saxitoxin.² The presence

¹ Eating of fish and shellfish containing domoic acid causes the human illness known as amnesic shellfish poisoning (ASP). Symptoms include vomiting, nausea, diarrhea and abdominal cramps within 24 hours of ingestion. In more severe cases, neurological symptoms develop within 48 hours and include headache, dizziness, confusion, disorientation, loss of short-term memory, motor weakness, seizures, profuse respiratory secretions, cardiac arrhythmia, coma. People poisoned with very high doses of the toxin can die. There is no antidote for domoic acid. Research has shown that razor clams accumulate domoic acid in edible tissue (foot, siphon and mantle) and are slow to depurate (purify) the toxin.

² Eating of fish and shellfish containing saxitoxin causes human illness known as paralytic shellfish poisoning (PSP). Symptoms include tingling of the lips followed by paralyzing of the diaphragm and possible death.

of these same species – along with a long list of others –has resulted in major problems for resource users in most of our coastal states.

Having grown up on the Washington coast, I am blessed to have spent a significant portion of my career working for the Washington State Department of Fish and Wildlife, (WDFW), managing a key shellfish fishery that occurs along the Washington coast – the harvest of the Pacific razor clam.³ This abundant and very delicious shellfish species has long been part of the lifeblood of the small communities that line Washington’s coast. Each year more than 250,000 avid razor clam harvesters are drawn to the small Washington towns like Long Beach, Ocean Park, Grayland, Westport, Ocean Shores, Moclips and Forks during the periods when this fishery is open between October and May, bringing with them millions of dollars spent on lodging, food, gas and entertainment.

One local restaurant owner left a message on my office phone – a message I have saved to remind me of the importance our work has. In the message he tells me that a recent morning razor clam opener meant an additional \$8,000 in sales – important income for him and his employees. Then just last week - as I sat in a small restaurant in the Pacific County town of Long Beach I overheard a conversation between the waiter and some out-of-town customers. He told them the only way the restaurant can survive the winter is the few days each month the state opens the razor clam fishery.

We are excited to see the results of a soon-to-be-completed NOAA- funded economic study by researchers at the University of Washington. This study was designed to update decades-old economic information regarding how much money was spent by each razor clam digger during a trip. It will give WDFW new and clearer insight to the true impact this shellfish fishery has on local economies.

In addition to the economic impact, one cannot overlook the significant role the ability to participate in this fishery plays in the lives of so many Washington residents. The joy of

³ Washington State has actively managed razor clam populations along 58 miles of its Pacific Ocean coastline for more than 70 years. <http://wdfw.wa.gov/fish/shelfish/razorclm/razorclm.htm>

joining with family and friends to brave the elements to harvest these shellfish and then return home to prepare a big meal of fresh razor clams cannot be overlooked. These kinds of activities have gone on for generations of coastal families and are a big part of the social fabric of these communities.

However, the opening of this fishery does not come cheaply to the State of Washington. Each monthly opener⁴ must be preceded by favorable results from regular sampling WDFW conducts to monitor for the presence of harmful algal species. Then, the Washington State Department of Health checks the levels of toxin in razor clam tissue. The tissue testing, which can take some time, must have good results before the go-ahead for a razor clam opener can be given.

Razor clams are also depended on heavily by tribal communities not only for subsistence but also for the income generated by the sales of razor clams through commercial razor clam harvests conducted by the tribes. My agency works closely with the Quinault Indian Nation to jointly manage razor clams along a portion of the Washington coast and we share the work we need to do to monitor for harmful algae. Researchers funded by the National Institute of Health are conducting an on-going study of subsistence users of shellfish that have low levels of some of these marine toxins. The results of this study could potentially require major changes in the way some fisheries are managed.

Amidst all the good news about successful harvests and positive economic impacts on small communities is the very real threat of closures as the result of significant increases in harmful algal species and the uptake of toxins by these tasty shellfish. These closures do not last just a few days they are devastating events that have lasted a year or more.⁵ These closures heavily impact the citizens who count on these shellfish for a portion of their livelihood.

⁴ WDFW opens razor clam fisheries for a few days each month between October and May depending on the number of clams available for harvest and safe levels of marine toxins in razor clam tissue.

⁵ HAB events first disrupted the harvest of Washington's razor clams in 1992 and have caused three major coast-wide year-long closures since then, with additional numerous smaller area closures.

Many other coastal managers from around this nation could tell you similar stories of how important our coastal resources are to the citizens of our nation and the devastating impacts HABs have had on the fabric of other coastal communities.

Over the last several years I have had the pleasure of getting to know many of these other coastal managers as we were brought together by NOAA to assist in the preparation of The National Plan for Algal Toxins and Harmful Algal Blooms – also known as HARRNESS – Harmful Algae Research and Response National Environmental and Science Strategy.⁶ This document was made much stronger by bringing together federal and academic scientists and the state level managers. The process was a unique opportunity for each of these groups to “teach” the other about their work, their struggles and the goals that they all share. This process and the resulting plan have spawned other important and similar endeavors. One of these, the Harmful Algal Research and Response; A Humans Dimensions Strategy⁷ brought key social scientists together with HAB researchers and coastal managers to define and address the impacts HABs have on what I described earlier – the social fabric of affected coastal communities. A more recent NOAA- sponsored workshop I participated in brought together a larger group of HAB researchers and coastal managers to provide input into the National Scientific Research, Development, Demonstration, and Technology Transfer Plan on Reducing Impacts from Harmful Algal Blooms, (RDDTT Plan).

In Washington State we have also followed this model by bringing Seattle-based NOAA HAB researchers, University of Washington oceanographers and algae experts, state and tribal fishery managers and human health experts to form a successful partnership we call the ORHAB – the Olympic Region Harmful Algal Bloom project. This endeavor that started in 2000 with funds from NOAA Monitoring and Event Response for Harmful Algal Bloom program is now solely funded by state dollars generated by a surcharge on shellfish licenses. Working together we are doing what we can to monitor our shellfish and our waters to ensure the safe continuation of the important fisheries I have described

⁶ <http://www.whoi.edu/redtide/page.do?pid=15075>

⁷ <http://www.whoi.edu/fileserver.do?id=24153&pt=10&p=19132>

earlier. In Washington State another large, nearly completed NOAA-funded study has also provided a better understanding of the oceanic processes that result in large algal blooms forming off of our coast and bringing them on-shore to affect the resources we manage. This multidisciplinary group of scientists from around the nation was brought together as part of the Pacific Northwest ECOHAB Project. While state fishery and human health managers were not directly involved in the project, we were invited into planning sessions to provide insight on what information would be most useful to our work.⁸

It is our hope you have a better understanding of what our nation's ocean resources mean to the citizens of our small coastal communities. We hope you see the impact HAB events have on these communities and how important the continued involvement of the federal government is in bringing the experts and the needed resources to better understanding and hopefully control of these events. And finally, we hope you see the value in using federal resources to continue to bring all the players – state, tribal, academic and federal – to the table to jointly address the issues presented by the presence of harmful algae.

⁸ Several federal agencies currently collaborate to sponsor the Ecology and Oceanography of Harmful Algal Blooms (ECOHAB), a national research program studying HABs in the coastal waters of the U.S. The 5-year ECOHAB Northwest project totals \$8.7 million and is specifically sponsored by the National Oceanic and Atmospheric Administration and the National Science Foundation.
<http://www.ecohabpnw.org/>