Paddy O’Donnell: Yes good morning or afternoon. Paddy O’Donnell, Kodiak Alaska commercial fisherman. And reading through this Executive Order and listening to the testimony I think you’ve – well, I mean so my first, I guess, response to this, this is a knee jerk reaction. This is the Biden Administration reacting to four years of the Trump Administration. And it’s politically driven and that’s all it is. It’s a good feel measure. It stands on the side of a lot of people in this country that oh yes, let’s protect stuff.

So we have 155,000 square miles of critical habitat in Alaska here. And I know you guys at NOAA know that. Instead of reliance, they’re not doing any better because we have 155,000 square miles coastal. They’re not improving. We have all these king crab savings areas closed to fisheries around Alaska and particularly Kodiak here. And guess what, the king crab are not thriving.

The grounds that we do have that are thriving are the grounds that are being harvested, that we are falling in. It’s like tilling the soil if you’re a farmer. If you leave the ground and the ground remains dormant, then the ground will die. If you consistently turn the soil then you will have productive soil. That’s what we have in the ocean.

Closing down areas like we have in Alaska and it’s been proven in Alaska. The sea lions are still dying off, 155,000 square miles closed off. So to what end, I mean, where are we going with this. We got to stop this madness. I mean this is politically driven. It’s just a political agenda. And there is no scientific-based information that has proven that this has been to the positive.

I don’t believe in climate change. The earth is shifting on its axis. It’s been proven by a British scientist. And we need to get off that bandwagon. The earth has shift, the rotation of the earth on its axis has shifted throughout time and that will continue to be the case.
So anyhow that’s all I have to say. We’ve been taking from the ocean forever. And we will continue to do it forever. And that’s what it is. Thank you.

Kate Naughten: Thank you for your comment Mr. O’Donnell.
Marty Scanlon: Yes. Marty Scanlon, I’m the President of Blue Water Fishermen’s Association. I also serve on the Pelagic Longline Take Reduction Team as well as the HMS Advisory Panel on behalf of the pelagic longline industry in this country.

And if you want to talk about climate change and the research of climate change and how to deal with and how it would apply in helping protected species, one of the big handicaps that we have right now that we’re up against there is the U.S. pelagic longline fleet is the research platform for highly migratory species on all levels within the Atlantic Ocean.

And when you put static closures, which we already have plenty of static closures in existence today, it creates black holes in the scientific data especially as it pertains to climate change. And we’re working in the HMS to try to alleviate those – that problem with these black holes.

We will have extensive comment written there, Blue Water, and we’ll submit it to you before the proper date.

As far as, you know, the 30x30 one of the arguments on the 30x30 is that 90% they claim of the ocean is unregulated. But what we have to remember in this country is within the EEZ 100% of our waters are sustainably managed. And even when a vessel that is U.S. flagged fishes outside our EEZ we still must fish sustainably.

So realistically like a few of these stakeholders have already claimed, there’s quite a bit of stakeholder, you know, closed areas and there’s very many levels of regulations that are in place right now. And whether you’re recreational or commercial fishing you should have access to these waters, you know.
When you contract, you know, you can’t contract the oceans blindly and eliminate the regulatory process that exists today, and take that out of the equation, just blindly close off 30% of our oceans and displace all of that effort into already regulated and accountable areas and expect that to be the answer. You know if there is a problem, all that you’re doing is compounding the problem in a smaller area.

So the answers to 30x30 as it applies to this nation, we’ve already have 100% of our oceans 100% sustainably fished. That’s my comment. Thank you.

Kate Naughten: Thank you for your comment sir.
Dennis Moran: Thank you. Yes. My name is Dennis Moran. I’m the President of Fisherman’s Finest. We’re an M80 company fishing in the Bearing Sea and North Pacific. And a couple of comments.

First of all, the, you know, at least challenging climate change, I think the issue is whether this 30x30 is helpful. And I think it’s pretty clear that there’s some negative consequences over it. The – a lot of people and I’m one of them says that this 30x30 is a solution to something that’s based on pretty dubious if not pseudo-science at least in the stuff we’ve read thus far.

But the consequences of something like this are pretty significant. Specifically we know from history and our fishing, my fishing, everybody’s fishing in the Bearing Sea that when you do broad area closures you actually drive your carbon footprint up because you send boats. Boats have to spend more time looking for fish in a compressed area. And they have to spend more time driving around for bycatch avoidance.

So we know that. So, you know, if we’re going to start another closure we need to recognize that that closure is likely going to cause a significant carbon footprint increase because of the compression of the fleet.

Then the last point I want to make is there’s nothing in the MSA that relates – involves carbon footprint at all. And so if we’re going to start regulating with carbon footprint being some kind of criteria and we expect the councils to even look at it or create, you know, sustainable regulations, I mean legally sustainable, there needs to be some connection in the MSA with carbon as some kind of criteria. Or that we’re just not going to even have the discussion there. Thank you.

Kate Naughten: Thank you sir.
Jerry Redden: Okay. I’ll introduce myself. I’m a farmer and retired Economic Development Director. I’m ecstatic about this RFP that you got, this listening session you have going. I was the Director, excuse me, I was on the Board of Directors for the Northeast Regional Aquaculture Center and Executive Committee for many, many years.

And I do believe there’s an opportunity here and would like to be involved in it demonstrating in our coastal blaze the improvement of the – of what’s happening in terms of function on the bottom and on the water column itself by combining the efforts of both fisheries and the expertise of aquaculture.

I would recommend and would encourage a demonstration project starting this summer, spring if possible in Johnson Bay right here in Maryland. It’s ideally suited for doing a demo and getting hard scientific numbers from.

If that were done I think we would have hard numbers by this fall and this following spring showing the value of that in terms of production both in terms of oxygen and the overall water quality and health of the coastal bays. And as you know, we’re heavily dependent upon oxygen from our coastal bays.

Toward that end, I would recommend several people joining in this effort, the experts from Auburn as well as some from Cornell. Mike Timmons is down there in Florida now. So I would like to be involved in such an effort. And if I have the opportunity would love to talk more about it later. That’s all I have to say.

Kate Naughten: Thank you Jerry for your comment.
Coordinator: All right, and I would like to just give a moment. If you do have a comment please dial star 1. And I’ll just wait a few moments while any comments come through here.

All right, I am not showing any comments coming through. If you would like to, I can turn the call back over.

Kate Naughten: (Amber), let’s just give it another minute or two. If somebody hasn’t spoken up yet and would like to give us a verbal comment that would be welcome. And as (Amber) said, you hit star 1. We’ll just give it another minute or two.

Coordinator: Thank you very much Kate. I will give it just a moment here.

Kate Naughten: Any takers (Amber)?

Coordinator: Yes. Just now. We do have Jerry Redden back in queue. Jerry, your line is now open.

Jerry Redden: Thank you very much for hearing me again. I was a little out puff. I just picked up my wife from the hospital so I was running upstairs to get this call in.

The purpose of this Johnson Bay demonstration I talked about is to reduce the anoxic mud from the bottom being created both from erosion and from dying algae that settles down to the bottom.

And I think we can demonstrate that on a very – because water transfer in that particular area is only 256 days that it actually turns over. So it’s a great opportunity to demonstrate how we can reduce that by using standard aquaculture practices that are well-defined and using our fishermen who understand how to apply practices to the fishery itself.
So I think combining those two parts of our industry along with science that’s been defined will allow us to demonstrate significant improvements in overall water quality health within a matter of months, not years. And then because it’s – I’m suggesting, you know, and it’s been done. We’re not talking about research, basic research. We’re talking about applied work.

And if that – once the numbers and the costs come in then that I could be looked on a larger scale and hopefully on a national scale to improve the water quality in all of our coastal bays because they have suffered dramatically over the last 100 years for a lot of reasons. And we all know that. So I’m not going to go into the reasons why.

But now it’s time to correct that. Use the opportunity where politicians are listening to us, demonstrate what it takes with known practices, get a budget for it. And then actually accomplish it instead of doing another study and another study and after decades of funding studies and applied work I’d much prefer funding applied work.

So I think that’s all I have to say. If anybody has any questions please call me. I’d be glad to talk to them.

Kate Naughten: Thanks for your comment Jerry.
Yes. Thanks very much. Just one comment after listening to all of the other comments that were being given. It seems that it would be helpful to have more information especially some of the issues coming up regarding the 30/30 proposal. What I’m hearing is that there doesn’t seem to be a good understanding as to what’s trying to be accomplished.

And I just quickly gone through trying to search in various places for information regarding the, kind of the rationale behind what’s being recommended.

And I had a really hard time finding it. So this is not a for or against but just a comment to say it seems like better explanatory information needs to be put out especially prior to holding your next information gathering or public feedback gathering session. Because it doesn’t seem – it didn’t seem to me to be clear to the folks who were trying to respond as to exactly why and what was the science behind and what was the rationale for what’s being proposed.

So that’s all I had to say. And I did send in some written comments as well.
So thank you very much. Bye-bye.

Kate Naughten: (Holly) thank you for your comment. Paul hopefully you’re there at this point.
Archie Soliai, American Samoa, Dept of Marine and Wildlife, Council Chair:

Thank you Sam, appreciate the presentation. I do have a preliminary question before I open it up to the Council family. Would you say from the information generated from NOAA MPA Center that the Pacific Islands is already carrying much of the burden of 30 by 30 because of the marine national monuments? I think we are already beyond 50 percent.

Sam Rauch:

MPA Center is part of NOS and they do have an inventory of MPAs that they keep track of. They have a particular definition. It is not at all clear that Interior will adopt that definition nor that is what it meant by conserve. But, under the way that the MPA Center looks at it, the vast majority of acreage in the Center’s network is covered by monuments in the western Pacific. They consider the monuments to be MPAs and that is a huge portion of the acreage that they account for in terms of what are U.S. MPAs. I don’t have the exact figure but it certainly a large portion of the U.S. MPAs.

Soliai:

I’ll open it to questions and comments. We will start with CNMI.

McGrew Rice, CNMI, Ihu Nui Charters, Council member:

Sam, in section 216c it states recommendations in improving science monitoring and cooperative research, the science for managing data-limited stocks is not adequate because of problems with monitoring. Will NMFS provide additional resources to support our region’s monitoring improvements, especially for bottomfish?

Rauch:

I’m a long-time advocate of additional investments in applying our science endeavors to the territory needs. We have made investments over the years for that prospect and plan to do it again. This executive order is not a budget document. It is taking input. To the extent that monitoring is important to help make sure species are resilient to climate change I am sure we would take that into consideration. I personally continue to look for additional ways to invest in science in the territories and Hawaii. I think it is important.

Soliai:

Any other questions, CNMI?

John Gourley, CNMI, Micronesian Environmental Services, Council member:

Thanks for joining us, Sam. Too bad you couldn’t come to Hawaii personally. Conserving and conservation is undefined. I’m worried about it. The Micronesia Challenge had the term “effective conservation”. It sounds really good. It’s something I could sink my teeth into. But, over time, the term has been hijacked. Effective conservation turned into preservation. You brought up that conserving is not truly defined. I’m hoping the Interior will listen to the fishermen
and the people that actually conserve the resources without preserving them. There is a balance we need to recognize. There are a lot of people that want to set up large expanses of no-take areas, and they don’t even want you in there, which is defeating the purpose.

The other statement I wanted to make is: 30 by 30. If you look at conserving 30 percent of marine waters for conservation purposes, to me the scientific value simply of taking a percentage of broad expanse of marine environments without looking at habitats you are looking to preserve or protect has very low scientific value. What if we conserve 30 percent and it is all one habitat type that supports a couple of fish species? You are defeating the whole purpose of what you are trying to do. I see us going down the road of paying more attention to the percentage of lands or rivers that we wrap up than the types of habitats that are being conserved and the types of animals that these support. These are more statements than questions. Let me know if I’m wrong.

**Rauch:**
I would never tell you, you are wrong. I would encourage you to put those in written form that we could share with the Interior Department.

**Gourley:** Thanks Sam.

**Soliai:** Guam, any questions?

Michael Duenas, Guam, Guam Fishermen's Cooperative Association, Council member:
I would like to echo what John Gourley said. Being a little familiar with the Micronesian Challenge here on Guam. Things weren't clear here about effective management. Did they take into consideration private property that is not easily accessible to the public, military bases, existing MPAs, firing ranges - the whole thing just wrapped up in one big package. Is that going to be looked at and taken into consideration?

**Rauch:** This is an Interior report and don’t know what will be in it or not. If you have concerns, I encourage you to reach out to Interior directly, or share them with us and we will share with Interior.

No questions from American Samoa.

**Soliai:** Hawaii, any questions?

Edwin Watamura, Hawaii, Waialua Boat Club, Council member:
As a fishermen and advocate for fishermen, I’m also interested in how fishermen will be engaged in this process. Down to specifics, will there be meetings to address this? 30 by 30 is already in existence here in Hawaii and I attended a couple of meetings. It was interesting that there was not a preservationist attitude, but instead an actively managed attitude and I hope this would be true at the national level as well. The areas in Hawaii designated for 30 by 30 to actively manage and conserve interestingly were areas that were already pristine and not that accessible to the public (fishermen on the pier, for example) and I wondered about things like that. In the 30 by 30 Hawaii meetings, the representation by fishermen was pretty slim, maybe only a couple fishermen in meetings. I hope fishermen get to have a voice in this process.

**Rauch:**
I should have mentioned that part of what is required by the report is an engagement strategy and to determine how to reach out to constituents and bring them into the process. I don’t see the report doing this, I see it setting up a process: where you would evaluate areas, what conservation means, where we are relative to the 30 by 30 goal, and how we would engage the public to get further along. I don't see this being areas that would close, but rather a conceptual framework of the process. But, I reiterate that this is the Interior’s report and I don't know for sure.

Soliai: Any other questions?

_Chelsea Muña-Brecht, Guam, Guam Dept. of Agriculture, Council member:_
On the input you are seeking from the fishery councils and fishers: I know I’ve seen emails asking for our agency input and we’ve tried to share it across our wide network. I’d ask that you consider to have social media posts or advertisements that will afford NOAA the opportunity to reach out to the fishing community. We don’t have them on emails or listserves. In order to get more public input, could your staff put together social media-ready flyers or ads? Some of our agencies would be happy to help share those on our social media websites or on whatsapp. I don’t see anyone readily reading the Federal Register or email blasts. Something quick to provide information and ask for their input? We would be happy to help NOAA share that.

_Rauch:_
We have resources on our website and will have another meeting in the future. I think on April 1st. Our staffer Heather can reach out to you to distribute more widely.

_Soliai:_ Moving along, any questions from NMFS?

_Mike Tosatto, PIRO:_ - I'm good.

_Soliai:_ Non-voting members? Kitty?

_Kitty Simonds, Council Executive Director:_
Yes, obviously I wanted to tell Sam that Council members and staff have been developing letters to Interior and copying you folks. We are describing all our ecosystem work beginning in the 1990s with coral reef ecosystem plan and over the years had climate change committees. We’ve worked with regions and the Center on this topic. We have an SSC group that will contribute to this letter. They have 10 to 11 things that should happen in terms of models, harvest control rules, etc. that should assist the department to help all of us address the resiliency to fisheries and protected species. So, look forward to our letter.

_Rauch:_
I should have said at the outset. We are aware that the councils have had some resiliency in their management objective since their creation. One of the things we have been trying to do. Most councils have done a great deal of work addressing climate change. I know you have been working on this for a while.

_Simonds:_ Actually for 30 years, thanks.

_Rauch:_
We are interested if you still have additional ideas for how we can do things better.
Simonds: Yes, we are not asking for additional funds. It's work that the science centers around the country can develop. Cooperative research with organizations outside fisheries and NOAA.

Soliai: Any other questions? Hearing none, thanks Sam for the presentation. Please expect the Council letter to come up. We look forward to collaborating with you.

Rauch: Thank you.
March 24, 2021

Benjamin Friedman
Deputy Under Secretary for Operations and
Acting Administrator
National Oceanic and Atmospheric Administration
Via Email: [REDACTED] and OceanResources.Climate@noaa.gov

Dear Acting Administrator Friedman:

The Executive Order (EO) 14008 section 216(c) Conserving Our Nation’s Lands and Waters states that “The Secretary of Commerce, through the Administrator of the National Oceanic and Atmospheric Administration, shall initiate efforts in the first 60 days from the date of this order to collect input from fishermen, regional ocean councils, fishery management councils, scientists, and other stakeholders on how to make fisheries and protected resources more resilient to climate change, including changes in management and conservation measures, and improvements in science, monitoring, and cooperative research.” On behalf of the North Pacific Council, I am writing to provide you with initial comments on this section, and an update of our current and future efforts to make fisheries and protected resources more resilient to climate change.

The regional fishery management council process established by the Magnuson-Stevens Fishery Conservation and Management Act is the most effective mechanism for ensuring that fisheries and protected resources are resilient to climate change. For the North Pacific, NOAA should 1) continue to support the North Pacific Council’s proactive efforts to incorporate climate resiliency into our conservation and management process, and 2) provide consistent funding and support for the multiple fisheries and ecosystem surveys that form the fundamental basis of fisheries management in the North Pacific.

The North Pacific Council develops conservation and management measures for the fisheries operating in the EEZ off Alaska; the stated foundation for our fishery management is preservation of the healthy, productive marine ecosystems in our EEZ, even in the face of climate change. The EEZ in our region is expansive, covering over 1 million square nautical miles, and includes the large marine ecosystems of the Gulf of Alaska, Bering Sea, Aleutian Islands, and the Arctic. These areas support subsistence, sport, and commercial fisheries, and subsistence harvests of marine mammals. The Council develops management plans under an explicit, approved vision statement to achieve ecosystem-based management goals and envisions sustainable fisheries that provide benefits for harvesters, processors, recreational and subsistence users, and fishing communities, which (1) are maintained by healthy, productive, biodiverse, resilient marine ecosystems that support a range of services; (2) support robust populations of marine species at all trophic levels, including marine mammals and seabirds; and (3) are managed using a precautionary, transparent, and inclusive process that allows for analyses of tradeoffs, accounts for changing conditions, and mitigates threats.

The North Pacific Council has a successful record of science-based, sustainable fisheries management, including identifying and managing thousands of nautical miles of conservation areas. Critical to our success has been identifying a specific conservation objective and tailoring a closure or restriction to that particular objective, while analyzing and considering the tradeoffs to the affected fishing community.
We adopted the above ecosystem policy, including the ecosystem vision statement in 2014, and ecosystem considerations are incorporated into the analysis and development of all fishery management measures.

The North Pacific Council has invested in this approach and process while continuing to support the fishermen, processors, and communities dependent on fisheries under its jurisdiction. Nearly all of the fisheries in the North Pacific are certified as sustainable by the Marine Stewardship Council and the Responsible Fisheries Management Certification Program. Each year, vessels homeported in coastal communities in Alaska, Washington, and Oregon harvest over 2,200,000 metric tons of groundfish in the North Pacific, worth approximately $2.5 billion first wholesale. This is a fraction of the biomass that could be harvested sustainably in the Alaska EEZ. Fish harvests off Alaska annually account for about 60% of the total U.S. catch, and are critical to ensuring food security for the nation. These fisheries support over 90,000 jobs and provide economic opportunities in coastal communities that are particularly vulnerable to the effects of climate change. The abundance of groundfish stocks is high, and most stocks are well above the abundance levels that produce maximum sustainable yield. In the past 40 plus years, no groundfish stocks have been overfished or have been subject to overfishing.

To achieve this conservation success, the Council relies on a mix of conservation and management tools that provide resilience and flexibility, which marine scientists have noted many times are critical to adapting to climate change. Some of the major tools include:

- **Precautionary harvest limits** – Scientifically established annual limits on harvests that incorporate ecosystem concerns and provide food security and economic activity for the long-term, while protecting marine ecosystems from adverse impacts. The total annual catch of all species in the Bering Sea is also capped as an ecosystem conservation measure.

- **Ecosystem policy** – An explicit policy that fisheries management take into account environmental variability and uncertainty, changes and trends in climate and oceanographic conditions, and fluctuations in productivity for managed species and associated ecosystem components, such as habitats and non-managed species, and relationships between marine species.

- **Conservation areas** – Over 65% of the Alaska EEZ is closed to some or all fisheries to conserve habitat, sustain fisheries and coastal communities, and protect marine mammals. These closures were carefully established through the Council’s public process to protect ecosystem productivity and integrity while still providing for sustainable fisheries and viable coastal fishing communities. These areas can be modified as new scientific information becomes available, fish stocks shift their distribution, the environment changes, or other reasons as needed to adapt to unforeseen events.

- **Effective monitoring, accounting, and enforcement** – A comprehensive observer and electronic monitoring system ensures that all harvesters follow the requirements for fishing in areas protected by Council action, catch is accounted towards the annual catch limits to prevent overfishing, and potential impacts on seabirds and marine mammals are monitored.

- **Strong scientific base and adherence to scientific advice** – Scientific information underpins all management decisions. Fisheries surveys and environmental data collection are critical and used for stock assessments and development of models to understand, prepare for, and be resilient to climate change in the North Pacific.
In addition to these management tools, the Council and the NOAA Alaska Fishery Science Center have already enacted a number of procedures, research and monitoring activities, and management actions to make our fisheries more resilient to climate change. Each year, scientists from the Science Center working with cooperating agencies, produce an Ecosystem Status Report for each major fishery management region, which provides status and trend information for ecosystem components and ecosystem-level attributes, with indicators of current ecosystem conditions and an assessment of how fish stocks might respond to these conditions. The Council and its advisory bodies review the Ecosystem Status Report, and adjust annual catch limits and targets should the information indicate additional caution is warranted. The Ecosystem Status Report information is also used in environmental assessments that evaluate proposed changes to fishery regulations. All of the information used to produce the Ecosystem Status Report requires continued major investments in scientific research surveys and analysis.

Fish populations, including important fishery resources with the highest biomass, are expanding into the northern Bering Sea and the high Arctic as a direct response to climate change. These regions are under surveyed and will require our focus as climate change continues and gets more pronounced in the Alaska region. As the resource expands, the Council also needs data from our international partners to better understand how climate change is affecting our cross-boundary stocks (e.g., Alaska pollock). There is also the need for increased focus on expanded at-sea fisheries and ecosystem surveys to support management approaches that consider climate change, so vulnerabilities can be identified and addressed. Examples of climate-based vulnerabilities include monitoring the ecosystems services that support key commercial fisheries. For example, environmental monitoring and modeling revealed that the recent marine heatwaves in the Gulf of Alaska drastically reduced the forage base available to Pacific cod, a vitally important fishery resource in Alaska. Additionally, we now understand that the loss of sea ice can greatly impact the distribution and production of Pacific cod and Alaska pollock. These examples illustrate the importance of continued support for scientific surveys, environmental monitoring and modeling to understand, mitigate, and anticipate the impacts of climate change.

In cooperation with the NOAA Alaska Fishery Science Center, the Council is further evaluating how to make fisheries and protected resources more resilient to climate change, including changes in management and conservation measures, and improvements in science, monitoring, and cooperative research. We approved a Bering Sea Fishery Ecosystem Plan in 2018 and one of the first significant efforts under that plan is our Action Module for Climate Change. The goal of the Climate Change Module is “to facilitate the Council’s work toward climate-ready fisheries management that helps ensure both short-term and long-term resilience for the coupled social-ecological system of the Bering Sea.” As a first step to achieve this goal, the Council established a Climate Change Taskforce, consisting of federal and non-federal scientists (including social science, biological, ecological and marine mammal specialists), fishing representatives, tribal organizations, NGOs, and research organization representatives, to collect input from a diverse group of stakeholders and develop tools to make fisheries more resilient to climate change. The Climate Change Taskforce workplan spans the next five years, and builds a process for operational delivery of climate-informed and ecosystem-based management decision support tools for the management of living marine resources in the Bering Sea. We believe that this process and workplan could provide a model for other regions in addressing emergent climate change impacts and planning for fisheries.

The Climate Change Taskforce aims to build a three-step process (i.e., collect, synthesize, communicate) to operationalize the delivery of climate change information to the Council and address the intent of EO 14008 including summarizing climate change information, tools, and providing recommendations to improve fisheries resiliency to climate change in all aspects of our management process. Through the course of the 5-year work plan, the Climate Change Taskforce will also create a regular process for the synthesis and delivery of management strategy evaluations of measures that can:
a) help preserve livelihoods, economies, health and well-being across fisheries and dependent coastal communities; b) support near- and long-term adaptation to climate change; and c) ensure the continued productivity and sustainability of the Bering Sea system.

Increasingly, the Council recognizes that management of commercial fisheries in federal waters is linked at an ecosystem level with the subsistence fisheries of the coastal communities that border these four large marine ecosystems. In recognition of this overlap of interest and dependency on healthy ecosystems, another focus of the Bering Sea FEP is formation of a Traditional Knowledge/Local Knowledge Task Force with the objective of incorporating the long time series of observations of our marine ecosystems that is held by the indigenous peoples and the knowledge of experienced commercial fisher with the NOAA survey efforts to expand our understanding of the impacts of climate change. The Council also established the objective of establishing communication with subsistence dependent communities, so both the communities and the Council can share, in real time, concerns about the impacts of climate change on our respective stakeholders and seek to avoid creating problems for each other as we adapt to climate change impacts. The Council is excited about this effort, and believes that it merits support from NOAA.

We appreciate that NOAA and the Alaska Fisheries Science Center are collaborating with the Council on our effort to improve and provide climate resilient fisheries management. NOAA can best carry out the goals of the EO by continuing to participate in these Council efforts rather than focusing resources on development of additional regulatory and administrative requirements that have less meaningful impact. Continued scientific, financial, and management support from NOAA will be necessary to advance this work. One of the most crucial aspects of continued climate resiliency that NOAA can directly provide is long-term, consistent funding and support for the multiple fisheries and ecosystem surveys that form the fundamental basis of fisheries management in the North Pacific. However, NOAA should also recognize that while climate is an important driver, it should not become the singular management consideration. Other biological, social, and economic factors that directly impact fish and protected species abundance may be more immediate than climate change impacts and should be addressed by resource managers as needed.

Thank you for the opportunity to provide initial comments on the EO section 216(c) regarding approaches to make fisheries and protected resources more resilient to climate change. We are already working hard to meet this shared goal and have committed significant time and resources to a comprehensive approach. We look forward to continuing this dialog as you receive additional input, and we welcome any opportunity to provide more detail on our approach.

Sincerely,

Simon Kinneen
Council Chair

cc: Mr. Paul Doremus, Acting Administrator, NOAA Fisheries
Dr. James Balsiger, Assistant Administrator, NOAA Fisheries Alaska Region
Dr. Bob Foy, Director, NOAA Fisheries Alaska Fisheries Science Center
Subject: Comment on Section 216(c) of the Executive Order on Tackling the Climate Crisis

NOAA,

I appreciate the opportunity to comment on Section 216(c) of the Executive Order on Tackling the Climate Crisis at Home and Abroad. I am an avid saltwater angler and am seriously concerned about the impact climate change is having on our marine fisheries. As a resident of Federal Way, Washington, I experience the impact of climate change whenever I am out in the salt chasing sea-run cutthroat and salmon as well as when I am in the river casting for wild steelhead and salmon.

I have been a resident of Washington for nearly two decades and for the first time in those many years, I made the conscientious decision this year to not fish for wild steelhead. This decision was due to the abysmal state of wild steelhead numbers in Washington. And while there are many historic issues – hatcheries, harvest, habitat loss, and hydropower – that have coalesced to drive steelhead decline, it is now abundantly clear that climate change is an emerging threat that is becoming increasingly dangerous to the future of wild steelhead and salmon.

As you know all too well, our nation’s once-great wild steelhead and salmon runs are in serious decline. In fact, of the fifteen distinct wild steelhead populations in the Lower 48, twelve are listed as endangered, threatened, or as areas of concern. Making matters worse, despite billions of dollars in investment in steelhead and salmon recovery, on the whole, our salmon and steelhead populations continue to slide ever closer to extinction. I am gravely concerned that unless we mitigate the impacts of climate change on these wild fish, their future will be in serious jeopardy.

Mitigating the worst impacts of climate change on steelhead and salmon will require quick and bold action by NOAA. As a starting point, I believe climate considerations should be incorporated throughout the management process and that the agency should ramp up the production of climate-relevant science. Additionally, it is vital the agency take a precautionary approach with management, as our history of managing steelhead and salmon populations with a Maximum Sustainable Yield approach has led to catastrophic losses and will be even more destructive moving forward with increasingly inhospitable ocean conditions.

I am glad to see the Administration is recognizing the serious threat that climate change poses to our marine fisheries and is taking action to address this grave issue in Section 216(c) of EO 14008. For years we have known that climate change is imperiling our marine fisheries, but we have yet to take the necessary steps to address this threat. Hopefully, that delay will end with this Executive Order because further postponing action is not an option, especially for many wild steelhead and salmon runs that are teetering on the brink of collapse and even extinction.

Thank you for your consideration of my comments and all you are doing to implement smart, strategic management practices that will mitigate the impact of climate change on our fisheries.

Brian Bennett

Brian P. Bennett
NOAA can make the Pacific Coast Salmon fishery more resilient to climate change by following its own science for the last 20+ years and breach the four lower Snake River dams. The dams are clogging the fresh water artery that is the lower Snake River. The dams obstruct migratory fish passage and are the engine of extinction for Snake River wild salmon and steelhead.

The dams kill millions of Snake River juvenile salmon every year. Breaching the dams would re-create a free-flowing Snake River for natural fish passage. This would result in far greater numbers of healthy juveniles making it the ocean to mature to adult salmon. More healthy juvenile salmon in the ocean means more adult salmon in the ocean for fisheries, and more adult salmon returning from the ocean to spawn in the fresh water Snake River. This would be a positive feedback loop.

Selected relevant NOAA research over the last 20+ years:

- In 1999 the National Marine Fisheries Services (NMFS), aka NOAA Fisheries, determined that to recover Snake River spring/summer Chinook, the most risk averse action would include dam breaching, a harvest moratorium, and vigorous improvements in habitat and hatcheries.

- In 1999 NMFS’ results demonstrated that for Snake River fall Chinook and steelhead, dam breaching by itself would likely lead to recovery.

- In 2001 the Plan for Analyzing and Testing Hypotheses (PATH) analyses, commissioned by the federal agencies, suggested that breaching was more likely than any other change in the hydropower system to meet survival and recovery criteria for the listed species across the widest range of assumptions and scenarios.

- The Corps’ 2002 Lower Snake River EIS showed that breaching the dams had the highest probability of meeting the government’s salmon survival and recovery criteria. **In comparison, the other so-called “reasonable” alternatives would be slightly worse than doing nothing.** Further improvements in spill and bypass systems or in transportation were deemed unlikely to be adequate to rebuild the threatened and endangered Snake River salmonid populations. Nevertheless, the Corps chose the other alternatives, which included spill and bypass improvements. NOAA’s research proved to be correct. Snake River salmon are worse off now than they were in 2002.

- In the 2020 CRSO EIS and Executive Summary, NOAA along with the other federal action agencies, concluded that, “Model estimates for MO3 (lower Snake River dam breaching) showed the highest predicted potential smolt-to-adult returns (SARs) for Snake River salmon and steelhead among the alternatives.” (Executive Summary, p. 29.)
The International Game Fish Association’s Comment on Section 216(c) of the Executive Order on Tackling the Climate Crisis at Home and Abroad

Status quo management has been insufficient in sustainably conserving a number of pelagic predators, which is a problem that may be exacerbated by climate change for already imperiled species such as the striped marlin (Kajikia audax). This billfish species is currently listed as both decreasing and near threatened by the International Union for the Conservation of Nature, and the most recent global assessment estimated that the striped marlin has experienced 20-25% decreases in abundance over the course of three generations - this was attributed, at least in part, to its regular occurrence as bycatch in pelagic longline fisheries targeting tunas (Collette et al. 2011). Furthermore, the National Marine Fisheries Service continues to classify western and central North Pacific striped marlin as both overfished and experiencing overfishing (Department of Commerce 2020). The interaction of US fisheries with this imperiled billfish largely occurs in the central North Pacific in the region around the Hawaiian Islands, where numerous studies of the long-term temporal trends in longline fishery catch rates there have identified significant decreases in striped marlin relative abundance since the mid 1990s (Polovina et al. 2009; Gilman et al. 2012; Polovina & Woodworth-Jefcoats 2013; Walsh & Brodziak 2015). During this time, a number of other apex predators have declined as the fishery has expanded and shifted in distribution (Woodworth-Jefcoats et al. 2018). This problem is highlighted by predictions for tunas to become increasingly important to maintaining food security and nutritional health in Pacific Islands nations and communities (Bell et al. 2015), and for the largest ocean biome occupied by tunas and striped marlin to experience widespread climate-related effects (e.g., Polovina et al. 2008) - meaning more tuna than already are being caught will be needed and striped marlin bycatch may increase in parallel if nothing changes about the current management approach. The future of striped marlin and other pelagic species, that are either already similarly imperiled (e.g., oceanic whitetip shark - Carcharhinus longimanus) or data-deficient (e.g., shortbill spearfish - Tetrapturus angustirostris), depends on management strategies that can rapidly respond to climate change, corresponding changes in fish distribution and abundance, and responsive fishery behavior.

To achieve a sustainable future for the open ocean, NOAA should embrace dynamic ocean management (DOM), which will enable more effective conservation of pelagic species, their ecosystems, and the fisheries that rely on them. DOM is a near real-time, multispecies approach that relies upon quantitative species distribution models informed by species occurrence data (e.g., satellite tagging, conventional tagging, fishery observer) and concurrent environmental data (e.g., satellite altimetry, 3D ocean-state models), enabling the prediction of target and bycatch species occurrence so as to identify the conditions under which fishing effort would most likely yield the target species but reduce the capture rate of imperiled bycatch (Maxwell et al. 2015). This approach both achieves biological sustainability and minimizes opportunity loss to fishers, simultaneously maximizing the ecological, economic, and social outcomes of fisheries management, and is inherently capable of responding to climate change due to its assimilation of high-resolution environmental data enabling dynamic prediction and management response (Hazen et al. 2018). DOM is, thus, a method for enacting more timely and targeted management measures in what is an inherently dynamic ocean landscape (Dunn et al. 2016). Developing species distribution models for striped marlin and other predators in the North Pacific, and employing those models in a DOM framework, would improve the chances of recovery for such imperiled species while maintaining commercial and recreational fishing opportunities. The IGFA has acquired satellite tagging data on hundreds of billfishes around the world (including on striped marlin) as part of the IGFA Great Marlin Race (IGMR), and is interested in sharing this unparalleled dataset to help inform NOAA’s future management efforts of these species in a changing climate.

Dr. Martin C. Arostegui
Conservation Committee Chairman
IGFA North America Council

The International Game Fish Association is a nonprofit organization committed to the conservation of game fish and the promotion of responsible, ethical angling practices through science, education, rule making, record keeping and recognition of outstanding accomplishments in the field of angling.
References:


Good morning. Thank you very much. My name is Amy Trainer. I am the Environmental Policy Director for the Swinomish Indian Tribal Community. The Swinomish Tribe is located at the mouth of Skagit River in Puget Sound. The Skagit is the largest river that drains into Puget Sound and fortunately or unfortunately depending on how you look at it, it’s the only river on the west coast that still has all six species of wild salmon spawning in its waters.

That said, the Skagit like all of our other rivers in Puget Sound is in trouble and, you know, the tribes have been engaged with NEMS and all of our federal family for a number of years. And in fact in 2011 the tribes through the Northwest Indian Fisheries Commission published the Treaty Rights at Risk document.

And so my hope is that if current staff at NEMS and other federal agencies are not familiar with that document that perhaps as we all more forward in our relationships and working together to improve salmon habitat in the face of climate change, we can use that as a reference point.

One of the requests in Treaty Rights at Risk was that federal agencies - NEMS specifically take the approach of the harvest of salmon which is very quantitative and methodical and very specific, that they take that same approach with habitat and strengthen the regulatory requirements across federal agencies but also across state programs that have a federal nexus.

In the Skagit I will say there are a couple of specific climate resilience programs we are very focused on. One is ensuring that our salmon streams are climate resilient.

We have roughly 1,700 miles of salmon streams in the Puget Sound region including some in the lower Skagit Basin that are already polluted from temperature. So they are legally too warm under Section 303D of the Clean Water Act.

We know what needs to happen. We know trees need to be planted and we need those at a science based standard. And so we are hoping that NEMS can continue to bring its regulatory strength under the Endangered Species Act to help us protect ESA listed Chinook and ESA listed Steelhead habitats that are in dire need of trees to be planted in order to someday, decades from now probably, meet water quality standards for temperature pollution -- but also to buffer against the climate warming that is absolutely here and is going to increase.

Another piece is ensuring estuary habitat is adequate for our ESA listed salmon. So we know from best available science that our Chinook need enough estuary habitat so that our juvenile are healthy and strong enough and are grown enough before they take off out into the ocean.

Estuary habitat is a prime limiting factor in this lower Skagit Basin and that has a direct cause or link to the highly endangered southern resident killer whale.
So we need NEMS leadership, regulatory strength to whether it’s through ESA Section 7 Consultations but to take a hard fresh look at all of the programs and consultations that exist and ensure that they adequately are making that direct causal link between adequate estuary habitat, the recovery of our Chinook as well as the recovery of our killer whales because Skagit Chinook are a primary prey source for southern resident killer whales.

And I will just close by saying, you know, all of this is coached in tribal sovereignty. Locally we have good relationships with NEMS staff. We welcome the opportunity to talk further about specific steps that are needed to recover not only our salmon but to ensure that our shellfish which are also a vital fast food and part of our tribal sovereignty are (upheld) and able to just kind of make it in the face of climate change and climate warming.

So with that I think you can very much and look forward to further engagement. Thank you.

Samuel Rauch: Thank you for the comment.
Coordinator: As a reminder, if you would like to make a comment, please press star 1 and clearly record your first and last name for your comment to be introduced. Again that is star 1. Our next comment comes from Doug Vincent-Lang, your line is now open.

Doug Vincent-Lang: So we start with three fish, right? (Unintelligible).

Coordinator: Mr. Doug, your line is now open.


Coordinator: Doug, your line is open.

Doug Vincent-Lang: I have got to take a break here. Hold on. This is Doug, can you hear me?

Samuel Rauch: Yes, we can hear you, Doug.

Doug Vincent-Lang: Okay. Let me turn up my phone here a little bit. Good morning. For the record my name is Doug Vincent-Lang and I’m a Commissioner for the Alaska Department of Fish and Game which is the principal manager of Alaska’s fish and game resources.

Thank you for the opportunity to provide oral comments on the recent Executive Order on climate change. My staff have been reviewing the Executive Order and we will be providing detailed comments by the deadline established with the NOAA’s request for information.

Let me begin by saying that Alaskans are proud of the rich resources in our state and off our shores which support robust populations of fish, shellfish, plants, birds and wildlife.

We successfully manage our diverse resources sustainably to provide for the utilization, development and conversation in the best interest of the economy and the well-being of the people of the state. This is required by the Alaska Constitution and was a primary impetus for our statehood.

Alaska’s approach is highly effective. Our fish and game management programs are lauded around the world.

Our management has maintained vast interconnected ecosystems with healthy populations of fish and wildlife species that provide food, recreation and economic benefits.

For example, Alaska produces more than half of the fish caught in the waters off the coast of the United States with an average wholesale value of nearly 4.5 billion a year.
Alaska fisheries are among the best managed, most sustainable in the world. Alaska resources provide jobs and a stable food supply for the nation while supporting a traditional way of life for Alaskan natives and rural fishing communities.

Section 216A of the Executive Order outlines a goal of conserving 30% of land and 30% of water by 2030. In determining how to implement this directive I urge you to recognize that conservation includes the management of human use of natural resources for public benefit and sustainable social and economic utilization.

The key point to establish at the beginning of your process, conservation is not preservation. The methods used for conservation in Alaska should be the model for establishing guidelines for determining whether lands and waters qualify for conservation under the Executive Order.

National Parks preserve forests, monuments and wildlife refuges currently cover nearly 40% of Alaska and much of the remaining areas outside of these is well conserved already.

We do not need more land set aside in Alaska. We have exceeded the goals. One need only to look to the various provisions that congress included in the Alaska National Interest Lands Claims Act over 40 years ago to see that it is not only address conservation designations for our great state but also amended the Alaskan Native Claims Settlement Act and the Statehood Act.

This was to ensure the conservation designation would not interfere with the fulfillment of state and native corporation land entitlement or the ability to have access to and use lands and waters for a variety of purposes. Such as rural community access and infrastructure needs and opportunities for a responsible resource development.

When you look at section 101D is clear on congressional intent that no further legislation or regulation designating new conservation system units, national recreation areas or national conservation areas are warranted because ANILCA struck a proper balance between protection of national interest in the public lands of Alaska and future economic and social needs of the State of Alaska and its citizens.

Congress confirmed this by taking additional steps in ANILCA 1326 to deliver the power of the executive branch to use its authority to offset that proper balance.

Section 1326 provides clear and unambiguous restrictions on future executive branch actions with respect to future withdrawals and future studies or reviews without congressional approval.

Inclusion of this language was not unintentional nor was it done without considerable effort. These no more clauses in ANILCA were a critical step to striking necessary balance for ANILCA successful passage. With the passage of ANILCA, Alaska not only
met but exceeded the intent of the 30 by 30 goal (and) the Executive Order over 40 years ago.

Currently 137 million acres or nearly 40% of Alaska is already designated for conservation purposes. ANILCA was and remains to date the single largest expansion of protected lands in US history and more than double the size of national parks system.

Yet despite the no more clause of ANILCA, the federal government continues to create new terms of art such as wilderness study areas, areas of critical environmental concern or aquatic resources of national importance that further the effect of diminishing access to share state resources by Alaskan citizens.

As with land, we do not need more water set aside in Alaska. Over 65% of Alaska’s economic exclusive zone is close to all or some fisheries to conserve habitats, sustain fisheries in coastal communities and protect marine mammals.

Over a million square miles of Alaska’s coast has been selected as proposed and designated critical habitat for a variety of ESA listed species. The proposed and designated critical habitat off Alaska is the size of the seven largest low 48 states combined. This compares to less than a half million miles of proposed and critical designated habitats off the entire lower 48 states.

Management programs for Alaska’s waters and lands are developed through well-established processes that provide for healthy and intact ecosystems and ensure that nature is conserved.

Setting aside additional lands and waters in Alaska solely to hit a numerical, not a biologic goal would be a disservice to other parts of the country where restoration and conservation is sorely needed.

Not conserving those areas would set up the 30 by 30 approach as a failure for conserving nature. In sum, we do not need to conserve more of Alaska, we need more of the nation to look more like my state. And we need more of the rural to look like Alaska.

The Biden Administration should look behind the United States and encourage through all available mechanisms the set aside of lands and waters in other countries that have poor environmental regulations of their lands and waters compared to Alaska and the United States.

Section 216C of the Executive Order directs NOAA to gather input on ways to make management of fish and wildlife and their habitats more resilient to climate change. Climate change is certainly one of the largest and headline grabbing challenges facing our fish and wildlife management systems. However, cannot and should not become the single driving force of management.
Other biologic, social and economic factors that directly impact fish and wildlife and their habitats may be more immediate than climate change impacts and should be addressed by resource managers as needed.

Simply put, we cannot become myopic in our focus on climate change. A focus on climate change should not blind us to other issues especially when other issues might be more pressing.

For example climate change-driven Endangered Species Act listings in Alaska for species ring fields and bearded fields which number in the hundreds of thousands to millions is prioritizing resources away from species with higher conservation needs such as the North Pacific white whale with a population size of around 30.

Based on experience in Alaska, existing management processes are best suited to ensure that fish and wildlife resources are resilient to changes in climate and other environmental factors. Through the Alaska Board of Fisheries and Game the North Pacific Fishery Management Council and other bodies, Alaska Fish and Wildlife Management Programs use a variety of conservation tools to adapt to social, environmental and economic changes including climate related variables.

In addition, the North Pacific Management Council has already begun the process of evaluating how to make fisheries more resilient to climate change through initiation of an action module for climate change within the Bering Sea fishery ecosystem management plan.

These well-established management processes are science based, flexible and stakeholder-driven and they provide for a successful model to address climate change impacts in marine ecosystems that support fisheries.

A critical aspect of resilience of protected resources to climate change is ensuring connectivity and low levels of other stressors. When an area is closed off, effort intensifies elsewhere. What is less certain is what happens to fish and wildlife stocks outside of protected areas?

NOAA should recognize the success of current conservation and management processes and ensure that additional conservation efforts are not simply regulatory and administrative hurdles and burdens that do little to make fisheries in protected resources more resilient to climate change.

Ongoing science and monitoring are critical to Alaska’s conservation and management programs. NOAA should continue to support fisheries and ecosystems surveys to provide best available information to assess and manage fisheries and protected resources.

I cannot overstate the importance of maintaining baseline data collections in the face of changing environmental conditions, although science and research need to evolve over
time, it is critical to maintain support for existing surveys and monitoring programs rather than shift substantial resources to reduce climate change efforts.

States should have access to robust grant opportunities to address federal initiatives that affect their ability to prosecute fisheries empowerment activities.

Adequate funding for states to improve science, monitoring and research on climate change impacts to fisheries and marine mammals is critical for robust management of these shared resources.

Too often federal agencies decrease external funding opportunities as an easy way to pay for new federal initiatives. In such cases the new initiatives tend to fail because states are not viewed as true partners.

In closing, any 30 by 30 effort needs to be focused on conservation, not preservation and unlike other states and nations, recognize the vast amounts of habitat are already in some type of conservation status in Alaska, far more than the 30% specified in this initiative. Simply put, we do not need additional set asides in Alaska. Efforts should be focused elsewhere.

Regarding climate change, any effort needs to recognize that our climate is an important driver, it should not become the most important management consideration as the other factors that can affect fish and wildlife and the habitats they occupy may be spatially and or temporarily more important.

Biologic systems are definitely complex and we simply cannot become myopic in our quest to address climate impacts.

Thank you for the opportunity to share my concerns and comments with you today.

Heather Sagar: Thank you, Doug for your comment on 216C. For the sake of time I would just like to remind folks that the Department of Interior is responsible for 30 by 30. There is no one online here from the Department of Interior. The email address for comments on 30 by 30 is oie@ios.doi.gov. Thank you very much. And we can go on to our next speaker.
Garry Moshima: Thank you. We need more than a listening session to gather input for others to consider and make decisions. Tribal governments want and need to be poll participants in developing and implementing real solutions to the climate crisis and the problems that are confronting people in the US and worldwide.

With global change we are dealing with many complex and compelling issues that result from accumulated impacts of actions and decisions that were taken years ago in various places for the manifestations today locally in unique ways.

I recommend that we establish a collaborative tribal, state and federal inter-governmental process to develop, evaluate and implement measures to address the climate crisis. Engagement in respectful dialogue between sovereigns to share knowledge, worldviews and values would be vital to reach effective and lasting solutions that are consistent with reserved and legal rights, judicial decisions, laws and political interactions.

Indigenous ways of knowing and science coupled with a profound commitment to stewardship for future generations are needed to compliment western science and inform decision-making.

Additionally, the intimate tribal understandings of place-based environments, resources and socioeconomic and political relationships will be crucial to the ability to formulate and employ local actions to address the climate crisis. Thank you.

Samuel Rauch: Thank you for your comment.
Osten Azmark: Yes. Good morning from (unintelligible) Alaska (unintelligible). I’m a lifelong resident of Nome, Alaska here in western Alaska. Thank you for the opportunity to provide comment on NEMS (unintelligible) fisheries.

Here in western Alaska in the northern Bering Sea (unintelligible) for now or over a couple of decades climate change has been building more and more. More accurately warming has been occurring which has changed the Icelandic nature of our traditional waters to a choragic system.

And that change has come with some really significant problems, really significant impacts to our people, really significant impact to our subsistence way of life.

And again with wide scale and really dramatic declines in salmon initially in the 1990s, western Alaska is still recovering from those salmon declines as a result of climate change and perhaps other factors even large scale commercial fishing.

And then in the last decade or so a significant number of impacts to marine mammals have started to show up. Unusual mortality events, the disappearance of primary prey species at the lower end of the triangle, (unintelligible), you know, and such. And then recently in the last several years a really dramatic decline in (unintelligible).

These changes resulted in obvious, measureable and clear marine mammal declines over the last decade that have occurred in response to sea life declines. And lifelong hunters like myself, you know, we are contemplating that in fact the possibility of localized extinctions of ice seals, you know, ice associated marine mammals.

And for well over several decades people in my region who were in western Alaska in fact are critically divided politically separate from the urban portions of Alaska.

Alaska is in fact a strongly politically divided along the urban and rural lines and this has created a really significant problem -- because political appointments come from the urban centers and so fish and game management there as opposed to the previous speaker from the State of Alaska isn’t really science-based at all. It’s politically motivated. It’s politically based. It’s not based on science.

Well, they call it science but it’s not based upon input from a wide range of people. It’s not based upon, you know, subject to objective evidence, subject to collaboration. In fact the State of Alaska routinely ignores rural residence, rural (unintelligible) advisory committees.

Then when you look at the federal government, it’s even a more especially the North Pacific Fishery Management Council, the National Fishery Services and the Alaska Fishery Science Center, folks in rural Alaska who are, you know, very concerned about the ecosystem and fisheries management we have a very poor, extremely poor relationship with the National Fishery Service and the Alaska Fishery Science Center.
The North Pacific Fishery Management Council has one of the poorest public processes that exists probably in the entire nation. The North Pacific Fishery Management Council routinely in its agenda routinely submits written documents past the written comments’ deadline and so members of the public are extremely frustrated with a process that does not allow a good public involvement.

Folks from rural Alaska submit significant testimony in regards to the impacts of climate on fisheries. We plead our case for more conservation even protection and routinely the North Pacific Fishery Management Council ignores concerns from rural Alaska residents.

In fact, at this last, this most recent North Pacific Fishery Management Council meeting we in the region have expressed really string concerns about the recent king crab declined the local or commercial fisheries are not even buying king crab for the winter commercial fishing.

And despite these really strong concerns that the North Pacific Fishery Management Council heard from the advisory committee and the Subsistence Regional Advisory Council, they ignored the concerns and said go somewhere else with your problem. Go to the Board of Fisheries. And so we went to the Board of Fisheries - the State of Alaska Board of Fisheries and they ignored the request for a special agenda item to address the decline of king crab.

You know, all of these, you know, is really complicated political problems that we have that could make fisheries management climate really are burdened by some, you know, really profound problems that exist within the change (unintelligible) within the National Fishery Service.

Since 2018 the National Fishery Service has allowed large scale commercial fishing to occur north of St. Rhodes Island in my region in the northern Bering Sea and not a single one of those large scale commercial fishers have been on AIS. We have never seen these vessels on AIS.

And so of course that provides and immediate safety concern but it also doesn’t provide us as members of the public with much ability to be able to provide narratives about the impact of large scale commercial fishing in the northern Bering Sea.

In order for climate ready fisheries or even for an industry to even consider the notion of enacting or proposing or considering (unintelligible) fisheries a suite of things need to occur.

One of those things that must be considered that must be part of the equation is a notion where the possibility that large scale commercial fishing north of 60 degrees must be stopped, must be halted. That has to be part of the solution package. If it’s not then we are not subjecting the possibility of (unintelligible) fisheries to enforce
certification, we are not subjecting the Board of Fisheries to, you know, objective evidence taking.

And so we don’t know if we cannot consider all the possibilities including stopping and halting large scale commercial fishing north of 60 degrees whether we are doing the right thing.

And so obviously (unintelligible) should also consider the impact of global warming, greenhouse gases. Right now as of this moment the US fishing fleet is only 150 miles from the Bering Sea ice. These fishing vessels as well tankers and our cargo vessels are emitting black carbon. Black carbon is a really strong climate forcing agent. It’s one of the stronger climate forcing agents. It reduces (elbido) of snow and ice.

Black carbon tends to live in the atmosphere for a relatively short time frame a couple of weeks but based upon the wind current that exist now in the Bearing Sea, the US fishing fleet is only like I had mentioned only 150 miles from the ice which means it only requires less than - that carbon from those fishing ships and those tankers and cargo vessels only need three days transit time to omit black carbon onto ice, onto snow at this time of the year with increasing sun contributing to earlier and more rapid meltdown.

And so black carbon needs to be part of the suite of solutions to make public fisheries (unintelligible) ready and our world ready so that we can be good stewards of the environment.

And lastly, you know, Alaskan native people in rural Alaska we depend very heavily upon fish and wildlife from the ocean. We harvest fisheries and wildlife resources that NEMS manages and we now are under the consideration our US critical habitat for ice seals or even (unintelligible) seals and (unintelligible) already sort of tipped its hat to not being to instill or put in place quite a variety of options.

The NEMS is considering providing an exclusion for the military ice exercises which is a really small exercise that occurs for five weeks every year as an exclusion to critical habitat.

NEMS needs to really change its demeanor, change its attitude towards (unintelligible) emissions and not in (unintelligible) preclusions or exclusions such as with the military for (unintelligible) which are now under consideration via the public comment period for critical habitat.

And so again in closing we in rural Alaska are very thankful for this opportunity. There is a long way to go to make climate ready fisheries climate ready because of as I mentioned the North Pacific Fishery Management Council, National Fishery Service in the State of Alaska have some of the poorest public processes that are not very well backed by science, science that is not objective and science that is arbitrary and precocious when it comes to the ecosystem as a whole. Thank you.
Heather Sagar: Thank you, (Osten).
Debra Esotyne-Nielson: I apologize, I was on mute. This is Debra Aseltine-Nielson. Can you hear me okay?

Heather Sagar: We sure can.

Debbie Aseltine-Nielson: Great. I’m a Senior Environmental Scientist with the California Department of Fish and Wildlife and I just have a few comments. First of all, we will be submitting written comments so I just want to highlight a few items right now. In particular we at the state have put together our Readying California Fisheries for Climate Change. That report came out in 2017 and so I will provide you my written comments reference for that.

We also have within our various climate strategic plans for the state have listed fisheries actions for state managed species and I will provide some of that information as well.

And I would also like to reiterate that definitely baseline data and research is critical to the work that’s going forward. There is still a lot that we need to learn about climate and how it’s impacting our fisheries. And that is all I’m going to do and I will forward my comments.

Heather Sagar: Thank you very much.

Coordinator: And there are no further comments in queue.

Heather Sagar: Okay. Let’s take a couple minutes here and see if any folks - press star 1 to get in the queue to comment.
Hi, can you hear me? This is (Lorraine Devine).

Yes, we can hear you.

Excellent. Thank you. My name is (Lorraine Devine) and I work for the Aleut community at St. Paul Island which is located in the Bearing Sea of Alaska so good morning and good afternoon.

I would like to just provide brief comments really specifically speaking to section 216C and what the Department of Commerce could really help improve to address climate ready fisheries.

And I think there should be a significant focus on strengthening the Magnuson-Stevens Act and the national standards regarding indigenous access to fishing opportunities. Not just commercial but in Alaska we have a very special case earlier about, you know, the bounty and opportunities Alaska provides for the nation’s fisheries.

And these are incredibly important to our indigenous groups in Alaska, in the Bearing Sea in particular where huge, world (unintelligible) commercial fishery level activities are occurring.

And the system that governs those fisheries the North Pacific Fishery Management Council is quite broken as you heard Mr. (Amosik) speak to in the public commenting process in how documents are provided and really a lot of the system it is virtually inaccessible to our tribal fishermen, to our rural community members that livelihoods and cultures are inextricably hived to fishing and fishery resources.

And in order to really make this process available to our rural citizens, to our small scale fishermen our subsistence and recreational fishermen beyond just those engaging in commercial fishing, we need to have direction and clear improvement regarding the Magnuson-Stevens Act and the national standards around the trust responsibility to Alaskan native tribes.

We have so many populations in decline, ecosystems in decline, however there are incredible indigenous-led conservation efforts such as the Northern Bearing Sea (unintelligible) area and other types of conservation acts that do not require setting aside or keeping things off limit or, you know, removing all economic benefits from the State of Alaska to address climate and the impacts that we are feeling right now and have been feeling regarding our fisheries.

And one of the areas that I really would like to focus on or see a focus on is having our federal agency work with our fishery management councils particularly I’m speaking for Alaska is that the council that we work with and that I’m involved with so the North Pacific Fishery Management Council in particular we would like to see the Department of Commerce specifically NOAA work with our council and council
bodies to make tribal consultation meaningful, timely and encourage consistent and ongoing tribal consultation through these processes.

As I said, the council process is virtually inaccessible to tribal members. Council members tell us that tribal consultation is a mandate of our National Fishery Service and not the council itself and thus we have a disjointed process whereby actions are taken, policies are made, management decisions are finalized without inclusion of any results that come from tribal consultation without tribal consultation being initiated.

And this really highlights the brokenness of the system that we are operating in. I think that if we are to continue to benefit economically from Alaska’s bountiful fishery resources, we must first fix the very broken institutional processes that govern those resources.

And I would really like to see some (unintelligible) strengthening of those national standards to improve this so that we can be ready for the impacts of climate change on our fisheries and ensure sustainability and access to our user groups long into the future. Thank you.

Samuel Rauch: Thank you for your comment.
Paul Williams: Hi, thanks for this opportunity to comment. I’m a Shellfish Biologist for the Skokomish Tribe located in Puget Sound side of Washington. And I have managed shellfish there for 30 years. The species I manage include crabs, shrimps, sea cucumbers, sea urchins and several different clamp species.

Climate and ocean change are impacting these species in ways we are just beginning to understand. But for many we still manage these species as if nothing is changing. We are not really taking climate change into consideration and we are managing using information that’s really inadequate.

Spot shrimp are a good example. We don’t have methods to assess the size of shrimp populations. We manage based on past catch.

And also we have set quarters but when individuals reach their tax limits we ask them to release the shrimp they harvest but we don’t know how many of those shrimp survive.

Now these have been persistent problems ever since for the last 30 years and the shellfish are co-managed between the State of Washington and the Treaty Tribes in Puget Sound but neither the tribes nor the state have the capacity to conduct some of the basic research on these species.

We really need help developing a fisheries independent method to assess spot, crab, shrimp population size and assess mortality after release. Now these are some things that the scientists at NOAA could really help with and I have asked in the past and they tell me that, you know, Puget Sound, things within Puget Sound are not in the jurisdiction of the federal waters that NOAA is, you know, has jurisdiction in.

However, you know, the federal government does have a trust responsibility to the tribes and unless we start managing these species responsibly they are not going to survive climate change. You know, these are small fisheries but they impact tribal members and other community members really, you know, this is their lives we are talking about, you know, climate change impacts people’s lives.

So I guess my question is, who is going to, you know, help manage these species?

I have been out on NOAA cruises, $35,000 a day, you know, to go access ocean acidification difference and ocean conditions and that’s very important research. But it’s also very important to do research on the basic life history parameters of these species that are important to the lives of tribal members and all the citizens of the State of Washington. And then we will also, you know, submit comments online. Thank you very much.

Samuel Rauch: Thank you for your comment.
Coordinator: If you have a question - excuse me, a comment at this time please press star 1 and clearly record your first and last name for your comment to be introduced. Again that is star 1 if you have a comment at this time.

Heather Sagar: Okay. (Beth), do we have any additional comments?

Coordinator: There are no comments in queue.

Heather Sagar: Okay, Well, I think we should wrap up today. I want to thank everybody for joining this call and remind you that all the information on - for sending comments in to either NOAA or DOI are on our Web site. And we look forward to hearing from you and we appreciate everybody taking the time out of their day to comment for us today.

Coordinator: Thank you for your participation. That concludes today’s call. You may disconnect at this time.
Dear NOAA Ocean Resources,

As Alaskan fishermen and fishing community members we are on the frontlines of climate impacts to Alaska's oceans and fisheries. We are grateful for the opportunity to provide recommendations on climate resilient fisheries. As you work to implement Executive Order 14008, "Tackling the Climate Crisis at Home and Abroad" we recommend the following:

1. Processes established to implement EO 14008 should be driven by the people and communities who are most heavily impacted by both climate change and the forthcoming government policies that seek to address those impacts.

2. It is critical that ocean-based solutions be locally-defined and crafted to support local livelihoods, for both commercial fishing and traditional user groups. The definition of "conservation" must include sustainable fisheries as an allowable activity.

3. Ocean-based climate solutions that are ecosystem- and science-based, as well as informed by the knowledge of local and traditional users of our oceans, will increase the durability and effectiveness of solutions.

4. Any policies or actions affecting fisheries management must include a commitment to social justice and protecting public health, while simultaneously spurring economic growth.

5. Climate must be considered in all fisheries management decisions and managers should be directed to address climate-related challenges head on and given the tools to respond quickly to extreme events.

6. The Magnuson-Stevens Act should be improved and reauthorized to ensure fisheries management is science-based and uses the precautionary approach in all fisheries management decisions.

7. Fundamentally, carbon emissions reductions are necessary to achieve the goal of climate resilient fisheries by slowing the trajectory of ocean acidification, marine heatwaves, coastal erosion and lower oxygen levels in the ocean.

Sustainable, community-based fisheries are part of the solution to the climate crisis, and conserving the ecosystems that we rely upon for our livelihoods while simultaneously allowing those fisheries to continue to be executed in line with sustainable management practices is critical to successful implementation of climate resiliency policies.

Thank you,

Sincerely,

Mr. Jeff Stephan
South Atlantic Fishery Management Council Special Session (online)
EO 14008 Tackling the Climate at Home and Abroad (216(c))
March 29, 2021

Sam Rauch, NOAA Fisheries, presented background information.

There are a number of provisions – this is just one.

For example, there is 216A – DOI is to present a report in how conserve 30% of water and land. Commerce is required to consult with DOI.

First 60 days, how to make more resilient to climate change.

The first step is to ask the Council for input on how to meet mandate.

Climate is affecting in species and communities and affecting regions in different ways. Reaching out to the general public and States and tribes.

We have the MSA, ESA, Marine Sanctuaries Act, Coastal Zone Management that can inform rulemaking.

We will share all information with rulemaking, policies, and Regional Action Plans with the public and Councils.

Public can email comments by 4/2/2021.

Questions:

Steve Poland: Timing. CCC meeting is coming up in May which is after the comment period. Will NMFS take comment from the CCC even though after the due date? Sam Rauch: Can’t speak for CCC. If CCC wants to provide comments as a whole, NMFS will accept them. NMFS does intend to be flexible depending on when we get the comments from the Councils. There are other ways that NMFS can use the comments. We do not know if CCC will have this on the agenda.

Comments:

Chester Brewer: Not put together by administration people. Very concerned with 30% idea. As far as fisheries, US already conserves 100%. Concerned about additional constraints being considered. Other initiatives have gone at break neck speed and had unintended consequences and still trying to work out today. How will conservation be defined? Sam Rauch: This is DOI’s report. They don’t know how they intend to define conserve at this point. Hope the report will give us something to gauge where we are and what is the process to analyze new areas if below goal. Long-term goal. How to bring stakeholders
into the process. Does not think this report will map out areas, but will define process to gauge where we are and how to define conservation.

**Chester Brewer:** Not something that is new, the 30%. In the past, idea was to close areas off to fishing. Seems that groups talking about years ago have input within the administration. **Steve Poland:** Shares concerns how conservation is defined and expects our Council will comment on 216A and C.

**Tony Dibernaria:** Presented his own comment, not a position of MAFMC. Many of the NE states seeing Mid-Atlantic species. Limits to states to vote. Shared idea before: Section 302 of the MSA should be amended so State can petition to have a voting authority for a particular species. DOC to determine if State has voting authority. And would sunset after 5-10 years. Mimics what happens at ASMFC.

**Jessica McCawley:** What level do we want to offer comments? One comment is to have proper research to conduct adaptive management. Do we want to make list of needs? Or are we giving feedback like Tony is suggesting. **Steve Poland:** This is a general first crack. High level down to specific actions. The floor is open to everything. **Sam Rauch:** That is right and we will take any comment and there are other venues for comment. The decision is up to the Council.

**Chris Conklin:** Set aside time in June Council meeting. Hard to comment on something so vague. Agrees with Chester that we protect all of our Federal waters. **Steve Poland:** Agrees with Chester and Chris.

**Spud Woodward:** Wears two hats: GA and ASMFC. Dealing with shifting stocks and changing allocations. We have to sustain the funding for fishery-independent survey. The most useful tool to measure change in fish in time and space. Shows us whether a species in an area where not normally is a new normal or not. Need strong science-based information to give us answers. **Steve Poland:** Would like to see NMFS Leadership continue to prioritize fishery independent surveys and expand where appropriate. Such as the bottom line that was expanded North of Hatteras. Science Centers in different regions should work together more to have baseline information. Prioritize broader regional work.

**John Carmichael:** Could consider doing initial comments now in the next week or two. Then as we learn more, such as at the CCC meeting, we could discuss more in June. Sounds like NMFS is fine with allowing comments along the way. The two comments he is hearing at this meeting: One comment – under MSA we conserve all resources that we manage. The other comment, is that we need information. Information for science, monitoring, and research is the same that we need for accountability and sustainably manage the stocks. We could provide comments immediately on these two comments. May not get in by the 4/2 deadline.
**Jessica McCawley:** Ask DOI how does 30X30 work. We work to provide sustainable access to fishery. Maybe we take back in June on more specifics. Provide overarching now. FWC will provide comments. A lot of this is about collaboration and making sure we have the data to make decisions.

**Steve Poland:** Staff will draft letter for Council to review to send up in a week or so and we will take up in June to discuss. State that we need information and data. And we need to provide more flexibility for governance. We will comment on 30X30 to DOI.
NOAA Seeks Comments and Recommendations to Make Fisheries More Resilient To Climate Change

Thank you for forwarding, I was unaware NOAA was seeking input. I do want to comment on two levels, preferably as the counties fisheries representative. Comments and wording inputs are welcome as I will be forwarding these ideas to others with great interest.

1. **Water Diversions in Tributary Streams**
   I would like to suggest that NOAA build a bridge of dialog between State and Private in reducing water withdrawals from spawning tributaries of salmonids; and to facilitate in making it easier for private water diverters to access stored water from reservoir storage under federal management. Some ways this could happen is reduction of diversion costs to diverter, cost share in pumping or diversion costs especially if electrical generation is a feature of federal managed reservoirs in the region as salmonid fisheries are a regional resource and economically important. As we face Climate Change predictions it is forecasted that water flows in tributary streams will drop and warm to the detriment to salmonid fishes using these tributaries, a pro-active approach is called for in stabilizing in stream water flows.

2. **Incubation Boxes**
   I would like to encourage NOAA to support and contribute to funding in stream Incubation Boxes for aid to the spawning of salmonids in what is forecasted to be a challenging time for salmonids facing climate change. As we face Climate Change predictions it is forecasted that water flows in tributary streams will drop and warm to the detriment to salmonid fishes using these tributaries, a pro-active approach is called for.

   Incubation Boxes are placed in the stream gravel and left unattended and subject to all the natural water flows and conditions naturally-produced eggs are subject to but with protection from predators, gravel scouring and siltation for the first period of their lives. Not all predators are “natural” these days. There are many invasive species which have been found in our rivers that native salmonids have not, traditionally, encountered. Emerging fry are the same size as naturally-produced fry that emerge from the gravel at the same time, and, like naturally-produced fry, they are not artificially fed.

   **ODFW** - “The benefits of this strategy are a) lower costs and b) far fewer “domestication” traits of the offspring, which can develop rapidly in hatchery populations. Domestication traits can lead to behaviors that reduce survival or fitness once the hatchery fish are released into natural systems, and can be “transmitted” to naturally-produced (“wild”) fish through spawning”. “Considering funding and hatchery space limitations for longer-term rearing, egg incubation could be a cost effective approach in locations without existing hatchery programs.”
3. **Toxic Blue Green Algae Blooms**

Many Federal Managed Reservoirs have Toxic Blue Green Algae Blooms. One such reservoir is Lost Creek Lake on the Rogue River a extremely important salmonid river in Southwest Oregon. Lost Creek Lake is plagued with two Blue Green Algae Blooms; one in summer another in winter that last a combined 6 months of the year. The Environmental Impact Statement of 1972 indicated there would be no Toxic Blue Green Algae Blooms on Lost Creek Lake. These blooms were identified in 2005 and have been unaddressed by USACE and Oregon DEQ. Toxic Blue Green now impacts the entire river below Lost Creek Reservoir, having been found 150 miles downriver in tide water at Gold Beach, Oregon. Many Oregon lakes, including Corps reservoirs, are not regularly tested for presence of blue-green algae toxins.

**Washington Department of Health Website**

Some blue-green algae produce toxins or poisons. In their toxic form, blue-green algae can cause illness in humans, pets, waterfowl, and other animals that come in contact with the algae. Toxic blooms can kill livestock and pets that drink the water. ... Skin rashes on humans after being in the water.

**Neurotoxin (Nerve) Poisoning**

- In people signs may include numbness of the lips, tingling in fingers and toes, and dizziness.
- In animals signs include weakness, staggering, difficulty breathing, convulsions, and death.
- Signs appear within 15–20 minutes after ingestion.

**Hepatotoxin (Liver) Poisoning**

- Signs include abdominal pain, diarrhea, and vomiting in humans and death in animals.

From USACE Portland District Website FAQ's

**What are the dangers of blue-green algae?**

Harmful blue-green algae toxins can cause diarrhea, nausea, cramps, fainting, numbness, dizziness, tingling and paralysis if swallowed or inhaled. Skin contact can cause rashes or irritation. Risk increases with greater exposure or ingestion. Visit a medical care provider if you or someone you know becomes sick. Children, pets and people with compromised immune systems are at greatest risk. Eating fish caught during a bloom poses an unknown health risk.

**What precautions should visitors take to protect themselves?**

Stay out of the affected water. Keep children and pets away. Never drink or cook with the affected water. Professional treatment is required to safely use affected water. If you touch the affected water, wash thoroughly with another source of water. Eating fish caught during a bloom poses an unknown health risk. If you choose to eat them, remove all fat, skin and organs before cooking because toxins are more likely to collect in these tissues.
If Toxic Blue Green Algae can cause weakness, staggering, difficulty breathing, convulsions, and death, how does it affect salmonid fry and rearing juveniles, the food chain of salmonids such as insects and plankton? What ecosystem impacts are being placed on entire river basins? (Could these Toxic Blue Green Algae Blooms be considered a take by NMFS rules as it very well may kill listed rearing juvenile Coho and their food source by USACE actions or lack of action?)

Harmful algal blooms (HABs) (from NOAA Website)

“HABs are a national concern because they affect not only the health of people and marine ecosystems, but also the "health" of local and regional economies”.

NOAA can help find solutions to Toxic Blue Green Algae Blooms on our rivers and lakes. In the case of the Rogue River and the USACE managed Lost Creek Reservoir the USACE seems un-motivated to seek a reason for neither the blooms nor a solution or mitigation for the Toxic Blue Green Algae Blooms. State of Oregon DEQ seems likewise un-interested as it is a USACE managed project.

The impacts to juvenile salmonids and insects are un-known and ODFW has no entomologist on staff or ever has had one. Oregon DEQ had an entomologist in Rick Hafele now long retired and not replaced.

“As they say the devil is in the details and in this case the un-known details can kill our salmonid populations.”

As we face climate change scenarios these blooms will likely get worse not better and when the Lost Creek Lake Project was built the Environmental Impact Statement gave all impacts of the project responsibility to USACE, today they are un-interested. NOAA can change this lackadaisical approach with both the State of Oregon and the USACE.

4. Insects (salmonid food)

Besides the impacts of Toxic Blue Green Algae Blooms insects below tall USACE Managed reservoirs in Oregon; a few with their height are listed.

- Detroit Lake on the North Santiam River 463 ft. in height
- Lost Creek Reservoir on the Rogue River 327 ft. high
- Applegate Dam tributary to the Rogue River and is 242 feet high.
- Cougar Dam on the McKenzie River 426 ft. in height

Dams and reservoirs USACE Website

Congress originally authorized the construction of 15 dams in Portland District to reduce the risk and damages from flooding. While flood damage reduction remains the dams’ highest priority authorization, Congress also authorized the Corps to store and release water from these projects for additional uses, such as irrigation, municipal and industrial uses, water quality, fish and wildlife enhancement and recreation.
The point is there are many dams on our salmonid producing rivers that are managed by the USACE with one of the managing purposes to be fisheries enhancement. There are good points to all of these dams but there is one common problem that all these dams share. They block terrestrial insect migration and egg laying. Most all terrestrial insects hatch and migrate upriver to lay their eggs after spending up to 4 years in the waters; thus reproducing another generation of insects in our salmonid producing rivers and streams that feed juvenile rearing salmonids that can rear and feed in stream for up to 2 years; this natural food source is a base for their survival and their survival. Native Salmon and Steelhead runs depend on good to great food source to do well.

Terrestrial insects migrate many miles upriver to lay their eggs in moving waters, Stone Flies, Caddis and Mayflies are a few to do so. These migrating water born insects do not generally fly very high in their migrations upriver to lay their eggs.

Caddis Fly Larva

Large dams of over 100 to 150 foot pose a considerable obstacle to terrestrial migrations not to mention the lakes behind these dams that can back very deep still water 10 miles or more.

I believe we are seeing a decline in terrestrial insects below large dams and this decline in terrestrial insects has a negative effect on rearing salmonid populations. One more nail in the coffin sort of speak.

To combat foreseen climate change impacts NOAA should promote terrestrial insect supplementation to expand the food sources for salmonids going forward. USACE and State fisheries managers should develop programs to expand food sources below large dams or in local tributaries.

ODFW has a pat answer to this problem, there were no studies of insect populations or densities prior to building dams so there is no proof there are less insects. Common sense folks please. I have fly-fished the Rogue River for 60 years and I remember the blinding Caddis and Stonefly hatches of the Upper Rogue, almost to thick to breath – not anymore. I recently fished a high Eastern Oregon hidden creek in a canyo you could where you could jump the creek in places. The May Fly hatch was nearly un-bearable as they were so thick. Millions of Mayflies in a stream that popped from the ground and was likely less than 5 miles long. You won’t find that on the Rogue, McKenzie, Umpqua or Santiam Rivers.
The ocean is earth's buffer to climate change. Preserving its integrity through greater use of no fishing zones, reducing the plastic epidemic and pollution contaminating sea life and increasing inland aquaculture. This would greatly improve the ability to buffer Climate Change until a solution is found. Sealife have been found to be a major component in carbon sequestration. Algal blooms and red tide have caused massive fish kills in Florida, my home state. Methane from rotting waste and organic runoff adds considerably to climate gas production. An example of the magnitude of runoff pollution is the great Mississippi dead zone at the mouth of the Mississippi-Gulf of Mexico interface. Closed fishing zones like that in Hawaii will allow fish stocks to increase and provide healthy overflow into commercial zones. Inland aquaculture with increase water recycling (My experience) can offer the aquaculture industry greater impact toward meeting seafood security for restaurants nation wide. Overall the oceans need to be revitalized to better support industry, conservation of variety of species and a goal towards a national desire to end the dumping of waste and overexploitation of this valuable natural resource. The degradation of the ocean is contributing to climate change. This must be stopped and become a common goal for the USA.

Thank you for this opportunity

Respectfully,

Peter Dalton

Sent from Mail for Windows 10
Subject: HSM fisheries

arthur lorton to OceanResources.Climate

You are viewing an attached message. National Oceanic and Atmospheric Administration Mail can't verify the authenticity of attached messages.

closing 30% more of the ocean to American fishermen will do nothing good for climate change only push everyone into same spots
Putting windmills off the coast of Calif. would hurt the environment kill seabirds push more whales into ship traffic this is Calif.
put solar panels
NOAA,

Thank you for your work on Section 216(c) of the Executive Order on Tackling the Climate Crisis at Home and Abroad and for the opportunity to comment on this important Executive Order. For the last thirty years, I have witnessed the negative impact that climate change is having on our saltwater fisheries, and I strongly encourage NOAA to take action now to prevent the climate crisis from continuing to destroy our marine fisheries.

I am a lifelong angler and have spent much of my life chasing saltwater fish from the Gulf of Mexico to Western Australia to the Seychelles to the coast of South Africa. In my time on the water over the last thirty years, the impacts of climate change have become increasingly apparent and worrisome.

These impacts come in many forms and varieties – from mangrove ecosystems disappearing off the coast of Florida, to wetlands disappearing in the Gulf of Mexico, to islands shrinking in the Florida Keys due to rising water levels. All of this destruction of vital habitat has a devastating effect on the health of these special ecosystems and the fish populations that rely on these healthy coastal environments to survive and thrive.

These deleterious impacts are not only being felt by recreational anglers like me who are experiencing shorter and less productive seasons but also by commercial fisherman and coastal communities that rely on healthy fish stocks for their economic well-being. Not to mention that all other saltwater species from manatees to whales to saltwater crustaceans are suffering the consequences of climate change, as their health is intrinsically tied to the health of their ecosystems.

I have personally seen and experienced the horrific effects of climate change for more than thirty years, and it is time that our federal policies catch up with the pace and scale of change that has been occurring for decades. Ignoring this growing threat is no longer an option. We must take action now before it is too late, and we do irreparable harm to our marine fisheries.

I commend the Biden Administration for recognizing the severity of this threat and taking action to mitigate the impacts of climate change with this Executive Order. As an initial step to protect our fisheries and make them climate-ready, we must first ensure that fish stocks are healthy by ending overfishing and rebuilding weakened stocks to sustainable levels.

Additionally, I strongly encourage NOAA to ramp up production of needed scientific information and incorporate climate change considerations into all management decisions as soon as possible. I also urge NOAA to take a comprehensive, ecosystem-based approach that works holistically not to just protect one species but to work systematically to maintain the health of ecosystems as a whole.

Thank you for the opportunity to comment on this important Executive Order and best of luck with your critical work.

Pierre Marais,

Sent from my iPhone
Subject: Response to "Give Us Your Input on Making Fisheries and Protected Resources More Resilient to Climate Change"

Scott Bonar  
to OceanResources.Climate@noaa.gov

Fri, Mar 26, 6:48 PM (4 days ago)

You are viewing an attached message. National Oceanic and Atmospheric Administration Mail can't verify the authenticity of attached messages.

Dear NOAA Scientists,

Thank you for the opportunity to comment on ideas for climate "resiliency" for fisheries within NOAA. I really appreciate you working to address the climate issue! With all due respect, I will suggest a slight modification of your approach. I have seen some organizations push "resilience" or "adaptation" to climate changes. You are a science organization, and unfortunately the science shows that unless we rapidly curb greenhouse gas emissions, no amount of resilience or adaptation will protect our fisheries from drastic changes. Controlling emissions should be our focus, occurring simultaneously with sequestration and adaptation – I suggest this should be clear to your constituents.

Please consider modifying any NOAA climate communications to state right at the front: "Science shows us that rapid curbing of greenhouse gas emissions is key for fighting climate change if we wish to preserve our fisheries and aquatic environments for ourselves and future generations. We can also assist by protecting carbon-sequestering environments such as peatlands, forests, seagrasses and adapt to changes already occurring." I believe communicating this and encouraging others to "Talk, email and write often with friends, family, policy-makers and others about the need to follow the advice of specialists in green energy technology, carbon sequestration, marketing, education, socioeconomic principles, fisheries and aquatic sciences and related disciplines to enact climate-friendly changes to protect our fish and fisheries" will have the ultimate positive impact. No reputable science organization can dodge strong greenhouse gas emissions prevention communications now, any more than science organizations of the 1930's could dodge communication about modifying farming practices during the Dust Bowl. We shifted from steam engines to internal combustion in the early 20th century. We can do the same now, shifting energy sources and practices to those that don’t emit GHG.

To introduce myself, I am a Natural Resources professor and Immediate Past-President of the American Fisheries Society, where I pushed a climate action agenda hard within AFS during my presidency. Furthermore, I coordinated a statement from 111 aquatic science societies representing >80,000 aquatic scientists from all seven continents on the need for immediate climate change action. This entire statement is here [https://climate.fisheries.org/world-climate-statement/](https://climate.fisheries.org/world-climate-statement/) and was reviewed by several hundred aquatic biologists worldwide and covered by many outlets including both Nature and Nature Briefings. I put the scientist’s recommendations below in the body of this email. Best wishes and thanks for the opportunity to comment!

**From World Aquatic Science Societies Climate Statement:**

**The Needed Responses**

- We assert that rapid action is necessary to drastically curb release of greenhouse gas emissions and to remove and store CO2 from the atmosphere to prevent the most calamitous consequences of human-caused climate change to marine and freshwater ecosystems on which all humankind depends.
- Global and national targets are necessary to protect and restore carbon dense ecosystems, such as peat, sea grasses, and other wetlands to sequester carbon, prevent greenhouse gas emissions, and reduce the impacts of climate change.
- Governments, the public, industry, academia, and all other sectors of society must prioritize actions and act in a concerted way to halt human-caused climate change if they are to prevent dire consequences.
- A rapid transition towards energy sources and other products and services that do not release greenhouse gases, and research and policies that favor an efficient transition to a low carbon world is required to slow the degradation of aquatic systems, as above. Such a transition could be accomplished by all governments by immediately acting on the advice of specialists in green energy technology, carbon sequestration, marketing, education, socioeconomic principles, and related disciplines.
- Robust adaptation measures; identification and easing of other environmental stressors that act synergistically with climate change; and additional resources for data collection, mapping, and research to better understand potential impacts and to arm natural resources agencies with the tools to mitigate these impacts are essential to better understand and plan for changes in aquatic ecosystems.
- Done intelligently, movement to curtail human-caused climate change can result in advanced, novel technologies; strong economies; healthier aquatic ecosystems; greater food security; and human well-being.

It is time to acknowledge the urgent need to act to address climate change. Delaying action to control greenhouse gas emissions is not an option if humankind wishes to conserve the aquatic resources and environmental safety of the world.

Thank you for considering my input, which represents my opinion and not necessarily that of my employer or the American Fisheries Society.

Scott A. Bonar, Ph.D.
Unit Leader and Professor

https://mail.google.com/mail/u/0/?ui=2&view=btop&ver=1ut5hpk7a1i9s&msg=%23msg-f%3A1695649938556343589&attid=0.7
April 1, 2021

Ms. Gina Raimondo  
Secretary of Commerce

Mr. Benjamin Friedman  
Acting NOAA Administrator

Submitted electronically to oceanresources.climate@noaa.gov

Dear Secretary Raimondo and Administrator Friedman,

On behalf of the Alaska Longline Fishermen’s Association (ALFA), I am providing comment on section 216(c) of Executive Order 14008: tackling the climate crisis at home and abroad, which calls for input on how to make fisheries more resilient to climate change, including changes in management and conservation measures, and improvements in science, monitoring, and cooperative research.

Thank you for providing the opportunity to comment on these vitally important issues, which are central to ALFA’s mission and our work to promote sustainable fisheries and thriving fishing communities. ALFA is a non-profit association of independent vessel owners and deckhands who share a common commitment to durable triple bottom line solutions that advance conservation and the socioeconomic success of small-scale community-based fisheries. To our members, fishing is both a livelihood and our way of life.

First and foremost, ALFA strongly recommends that your approaches to ocean governance and fisheries resilience broadly define the term conservation as inclusive of “other effective area-based conservation measures” (OECMs) and to cast a wide net in your evaluations of existing conservation measures taken by our public process-based regulatory systems. This fundamental approach to conservation should be used in your efforts advancing Section 216(c) as well as Section 216(a) of Executive Order 14008.

Coastal communities throughout the US have consistently voiced strong support for collaborative bottom-up design processes for spatial management tools in the ocean, and we have united in opposition to no-take Marine Protected Areas as a tool to conserve fisheries or
marine biodiversity. The science behind MPAs in well managed fisheries is controversial at best, with benefits easily swamped by warming oceans, ocean acidification, and reduced food security in adjacent communities.\(^1\) The regional fishery management councils created by the Magnuson Stevens Act have 35 years of management history based on OECMs. OECMs are widely used by councils to achieve science-based conservation and management goals for sensitive species and habitats. These approaches have included meaningful large-scale conservation action, as in the case of the Southeast Alaska trawl closure, which promoted sustainable community-based fisheries by eliminating a non-compatible high impact gear. This highly effective approach to fisheries management should serve as a model for future action by Commerce to build resilience into fisheries management, and existing OECMs should be carefully inventoried, evaluated, and respected. Each has been developed through the science-based public process that informs council actions and many, the Southeast trawl closure being a prime example, were identified, promoted and enacted with overwhelming local community support.

Second, ALFA asks that Commerce recognize that creating climate resilient fisheries is inseparable from creating climate resilient fishing communities. The Magnuson-Stevens Fishery Conservation and Management Act (MSA) defines a fishery as “one or more stocks of fish which can be treated as a unit for purposes of conservation and management and which are identified on the basis of geographical, scientific, technical, recreational, and economic characteristics; and any fishing for such stocks”.\(^2\) Thus, the MSA links the biological components of a fish stock with the human activity of fishing in this fundamental definition; in a fishery, the biological and economic attributes are interrelated, and one cannot exist without the other. It follows that efforts to increase the resilience of fisheries to climate change must simultaneously increase the resilience of the biological and human systems that comprise them. In short, building resilience into fisheries requires building resilience into fishing communities, an interconnection that underlies our work as well as our recommendations on section 216(c).

Over the past four decades our country has built a world-leading fishery management system under NOAA and the regional fishery management councils. These systems are science-based and regionalized to enhance stakeholder access and participation. Despite these accomplishments, our nation’s fisheries are under a tremendous amount of pressure from external forces, including climate change, and from an internal agenda that favors large scale industrial operations with access to capital and political leverage. Each of these forces, which are discussed in more detail below, are increasingly undermining the resilience and viability of fishing communities, which in turn reduces the resilience of local food systems and coastal economies. Seafood is a nutritious and low carbon-footprint protein; sustainable fisheries are part of the climate solution. It is essential that governance structures be adapted to protect sustainable fisheries and fishing communities, and that climate solutions address ecosystems without externalizing impacts.

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2. 16 U.S.C. §1802
Defining the challenges: Climate variability and jurisdictional authority

Increasing climate variability rapidly alters the physical environment and opportunity to fish. Extreme events such as Alaska’s “warm blob” have caused catastrophic declines in some fish stocks and dramatically changed the distribution of others. Many of these negative forces disproportionately impact small-scale, community-based fishermen, who are by definition place-based and less mobile than industrial fleets. Other climate impacts, such as increased freshwater temperatures and thermal pollution, are compromising the health of anadromous fish stocks, but the changes are happening in areas outside the jurisdiction of regional fishery management councils. As a result, anadromous stocks (e.g., salmon) are in rapid decline but councils have minimal authority to protect fish habitat that is not in federal waters. In short, the existing fishery management system is challenged by the rapidity of ecosystem change and by climate impacts to fish and fish habitat occurring outside the council’s jurisdiction. These challenges are translating directly to ecosystem stress and diminished access for the coastal residents who have historically depended on these fisheries.

In Alaska, the management response to the climate-driven decline in abundance and distribution of fish species has been to curtail directed fisheries while allowing high volume bycatch fisheries to continue. For example: directed fisheries for pacific cod and red king crab have been closed while industrial trawling continues to harvest these species as bycatch. Likewise, halibut and sablefish bycatch are driving de facto reallocation from directed community-based fisheries to non-local bycatch fisheries. These impacts will predictably intensify as climate change reduces ocean productivity. Congress established the MSA’s National Standards and guidelines that highlight the importance of small fishing businesses and coastal communities, but the promise of those mandates has not yet been realized. As a result, America’s small-scale fisheries and fishing communities are struggling against a host of challenges intensified by climate change.

ALFA recognizes an urgent need to course correct fisheries governance. We believe increasing resilience in fisheries in the face of climate change demands enhanced and forward-thinking science, increased management efficiency to respond quickly to climate driven change, ecosystem connectivity across jurisdictional, geographic and disciplinary boundaries, and a deep commitment to locally identified solutions that enhance sustainable fisheries while supporting coastal economies. Each of these issues is discussed in more detail below.

ALFA Recommendations

I. Incorporate the best available science into fishery management

ALFA strongly supports science-based management of U.S. fisheries, including incorporating the best available science in stock assessments and actively engaging local and traditional knowledge to test baselines and identify ecosystem change. Well-funded, comprehensive and annual stock assessments become increasingly important in the face of climate change, as does comprehensive catch accounting—across commercial, charter and recreational sectors. We
recommend that NOAA adopt policies that encourage or require federal fishery managers to consider the impacts of climate change in fishery management plans, and to include strategies to mitigate those impacts on the resource and on fishery dependent communities. The agency should also recognize the growing reality of climate change emergencies resulting from extreme events or sudden shifts in fish stocks and establish new policies and processes for quickly implementing contingency plans to ensure the health and resiliency of fish stocks in the face of these uncontrollable events.

**Specifically, we recommend that NOAA establish guidance for Councils on how to adapt Fishery Management Plans (FMP) to incorporate climate impacts.** FMPs should be amended to anticipate the impacts of climate change on managed fisheries and ecosystem components and to mitigate impacts to the extent possible. Councils are nearly always managing reactively; proactive management will allow the governance process to anticipate challenges and respond flexibly and adaptively, enhancing outcomes for fisheries, stakeholders and fishery dependent communities.

**ALFA also recommends that NOAA work with the councils to establish processes for using its emergency regulatory authority under MSA §305(c) during emergencies that are attributable to climate change.** Often the speed at which acute climate-related events impact fisheries is too rapid for FMP amendments to be enacted or regulatory actions taken. The Secretary of Commerce should have the ability to enact emergency regulations or interim measures during a fishing season or fishery management cycle to prevent overfishing while maximizing access for fishery dependent communities. ALFA recommends that such a process be enacted under specific new regulatory guidance under the existing authorities granted to the Secretary in the MSA. Under such a framework, relevant regional fishery management councils would be consulted prior to setting regulations or interim measures and should be directed to work closely with stakeholders through an expedited process.

ALFA STRONGLY supports expanded mandates for government agencies to consult with the Secretary of Commerce on fish habitat and to then utilize their authorities to further the conservation and enhancement of such habitat. Climate change is exacerbating the loss of fisheries habitat and depleting fish stocks, yet regional councils have limited authority to address non-fishery causes. ALFA supports expanded definitions of “adverse impact” and “Habitat Areas of Particular Concern” (HAPC) to strengthen the councils’ role in protecting fisheries habitat that is beyond their immediate jurisdiction. To achieve the MSA conservation mandate and build resilience into fisheries, the Secretary must be vested with appropriate levels of consultative authority over fish habitat whether that habitat falls in State, federal or private lands or waters, and the authority to require mitigation of identified impacts.

Likewise, prohibitions on adverse modification of HAPC without appropriate mitigation should remain in place. Such protections increase in importance as oceans species attempt to adapt to changing conditions driven by climate change. Protecting fish habitat should be the cornerstone of climate-proofing U.S. fisheries, with that protection reaching across jurisdictional boundaries to achieve conservation connectivity. Such consideration is particularly important in protecting
the habitat of anadromous fish species that range from the open ocean to in-shore lakes, rivers and estuaries.

Specifically, we recommend that you work with your counterparts at the Department of the Interior, the Army Corps of Engineers, the Environmental Protection Agency, The Department of Agriculture, and any other relevant agency to establish a policy requiring the adoption of EFH conservation recommendations contained within NOAA’s EFH consultations by action agencies before final action under the National Environmental Policy Act may be taken.

Although the Councils have acted to protect benthic habitat from the impacts of trawling, ALFA continues to be concerned by the short and long-term effects of this high impact/high volume gear on ocean ecosystems, sustainable fisheries and fishery dependent communities. While trawling may be sustainable in sand, silt or mud substrates, it is highly destructive in hard bottom substrates that support complex benthic communities. The high-volume indiscriminate nature of trawl gear means bycatch of non-target species is significant and ecosystems impacts are considerable. Our membership maintains that reducing the trawl footprint in US waters will contribute ocean and fishing community resilience.

II. Support and strengthen our fishing communities and working water fronts

Coastal fishing communities and working water fronts are intricately linked to the marine ecosystem on which they rely, and thus play a critical role in fisheries management. They support a suite of community-based fishing related activities and sustain the intergenerational fishing culture that forms the economic and social fabric of the coastal United States. These fishing activities support industries and infrastructure, processors, chefs, restaurants, seafood retailers, as well as generate an economic multiplier effect when revenue stays within a community. Recent studies establish that the benefits are greatest when both harvesting and processing capacity is locally owned.

Beyond the economic effects are the conservation and food security benefits of sustaining access for fishing communities. Community-based fishermen are fierce advocates for sustainable fisheries and hold a deep commitment to handing to the next generation the same productive fisheries inherited from the previous generation. Alaska rural communities include strong indigenous populations with stewardship principles steeped in cultural traditions. Taken as a whole, these fishery dependent communities play a vital role in building ocean and climate resilience.

To secure meaningful change, ALFA recommends that National Standard 8 be strengthened to instruct councils to provide for the sustained participation of fishery dependent communities, within resource limits, rather than simply take into account the impacts of management decisions on these communities. The North Pacific Council’s prioritization of bycatch users over

3 https://doi.org/10.1016/j.jeem.2021.102419
directed community-based fisheries is decimating coastal economies, decreasing food security, and reducing the resilience of both fishing communities and fisheries.

**ALFA further recommends that National Standard 8 guidance be comprehensively updated to modernize Councils’ and the agency’s approach to fishing community resilience to climate change.** NOAA has not meaningfully updated its guidance for National Standard 8 since the 1990s. Since that time, coastal communities and working waterfronts across the country have significantly deteriorated, reducing the resilience of these communities to climate change by reducing their capacity to respond and eroding their sense of place. By definition, these communities depend on access to fishery resources, and on access to a diverse suite of fisheries. **National Standard 8 guidance should require Councils to establish clear measures to assess and minimize any adverse economic impacts to fishing communities while achieving conservation goals, and to take other regulatory actions that secure sustainable community participation in fisheries.**

**III. Strengthen bycatch provisions**

Bycatch, the incidental catch of a fish stock while targeting another, is a persistent problem in US fisheries that is often exacerbated by climate change. In Alaska, bycatch fisheries have been prioritized over directed fisheries in management and decision-making. This has led to a decline in the directed fisheries and the communities that depend on them, reducing their resilience to climate change. Many of these are Native communities with unique cultures and languages. Many of the community-based directed fisheries that are subject to bycatch, including anadromous and groundfish species, are also being rapidly impacted by climate change.

ALFA maintains that a conscious effort needs to be made to stop and reverse these trends and maintain coastal communities that are vital and diverse by protecting them from bycatch-related impacts. **NOAA should update its National Standard 9 guidance to require greater reductions of bycatch in fisheries management and to prioritize directed fisheries over bycatch uses.** This could be achieved in part by clarifying NOAA’s interpretation of language in National Standard 9, “reduce bycatch to the extent practicable,” or by eliminating that qualifying language in order to reduce the exposure of directed fisheries and the communities that depend on them to bycatch impacts.

NOAA can also issue guidance and develop programs to reduce bycatch impacts directly. **The agency should, as a matter of policy, prioritize and promote traditional directed fisheries over bycatch uses.** It should require (and provide institutional support for) consistent improvements to monitoring and reporting systems to better quantify bycatch and provide guidance to encourage councils to establish full retention requirements for species with high catch mortality rates.
IV. Support local food systems and a more robust public process

Our collective experience during the COVID-19 emergency clearly shows that our fisheries are highly vulnerable to severe disruptions, whether those disruptions are ecologically, politically or economically driven. The pandemic underscored that access to local fisheries, working waterfront infrastructure, diversification and innovation are key to the resilience of fishing communities to adapt and survive through changing conditions.

In 2020, ALFA and our partner organization the Alaska Sustainable Fisheries Trust, secured private philanthropic support that allowed us to purchase seafood “stranded” by restaurant closures for regional distribution to families in need. We were able to support prices to fishermen, support local processors, and work through our established community supported fishery distribution network to provide over 400,000 meals to rural and indigenous communities, as well as to Anchorage military bases. This local connection to seafood and regional distribution network provided essential support to community-based fishermen, which prevented excessive fishing pressure on local resources. The regional distribution system also helped meet rapidly escalating need and food insecurity in Alaska’s rural and remote communities. Again, commerce can build resilience into fisheries and fishery management systems by supporting community-based fishermen’s access and co-management of local resources along with innovative and regionally based seafood distribution infrastructure. The climate is not well served by seafood harvested off Alaska, transported internationally for processing, then transported back to the US for distribution or sale. Climate, ocean and fishing community resilience are strengthened through policies that strengthen local access and ownership to fisheries. **ALFA recommends that NOAA establish stronger collaborative programs with the USDA to support distributions of seafood purchased from small scale community-based fishermen and processors to meet regional food needs.**

Likewise, durable solutions to climate change demand engagement of local and particularly rural, indigenous and community-based fishermen in the management process. The Council system remains opaque and impenetrable to many rural residents, yet these residents know best how climate change is affecting local resources and what management changes will increase resilience. Appointment to advisory bodies to regional councils of rural and/or indigenous leaders is essential to improve management outcomes. If councils are not receptive to this change, then the Department of Commerce will need to play a more active role in soliciting engagement and amplifying the voice of these residents in the decision-making process.

V. Catch accounting and catch Monitoring

Representative catch accounting and monitoring is fundamental to sustainable fisheries, particularly as climate change places more pressure on stocks. Monitoring should be comprehensive across major sectors—commercial, charter and recreational—but should be scaled to meet the needs and operational constraints of specific sectors. For example, most small boats cannot accommodate an observer, but they can support a camera system. **ALFA**
played a lead role in advancing electronic monitoring in the North Pacific to ensure small boats could affordably and logistically comply with “observer” requirements. From this work we learned that **EM systems and programs must be developed in-region and designed to address the goals, operating capacity, and structural limitations of each specific fleet and fishery**. Catch accounting systems should also be focused on those sectors with the greatest impact on the resource and on other stakeholders. In other words, **where resources are limited, at sea monitoring should focus high coverage rates on high impact fisheries.**

**VI. Cooperative Research and Management**

ALFA has a long history of cooperative research engagement with scientists, federal and international agencies and fishermen. Cooperative research brings together the problem-solving ability of fishermen with the rigors of science to improve resource management and resilience. Cooperative research also improves communication between stakeholders and scientists, which contributes to resource stewardship. We would note that Alaska is working hard to encourage and integrate climate change information for remote fishing communities, whether that data is statistical in nature or local and traditional knowledge from indigenous or non-indigenous rural residents. This information uniquely informs the limited timeline of western science relative to shifting baselines and the more immediate impacts of climate change. **ALFA recommends regulating agencies work with rural and indigenous communities to collect and integrate local and traditional knowledge into the decision-making process.**

**In conclusion,** ALFA members are deeply concerned by the impact of climate change on our nation’s oceans, and we are committed to meaningful action. We support carbon pricing and nature-based solutions to climate change; we are also eager to work with the Biden Administration to build resilience into fisheries management. We believe increasing resilience in fisheries in the face of climate change must encompass increased resilience in fishery dependent communities. Climate policy also demands enhanced and forward-thinking science, increased management efficiency to respond quickly to climate driven change, ecosystem connectivity, and a deep commitment to locally identified solution that enhance sustainable fisheries while supporting coastal economies.

We would be happy to work with you and your teams to clarify or develop the approaches that we suggest here. Thank you for considering these comments as we continue to work together to secure a climate resilient future for the nation’s fisheries.

Sincerely,

Linda Behnken
(Executive Director, ALFA)
On Fri, Mar 26, 2021 at 5:19 PM marcos hankefish <oceanresources.climate@noaa.gov> wrote:

Good afternoon,

My name is Capt. Marcos Hanke charter operator for more than 25 years and B.A. Marine Biology, my entire life dedicated to the ocean and fishery.

Those are my comments and some personal analysis on President Biden’s EO 14008.

Section 216 (c), to ensure and promote more resilient resources when facing climate change:

Support local researchers and local fishermen by creating a program of National Adaptive and Sustainable Fishery Program. This community base initiative seeks to adapt fishing practices and methods to new fishing areas as consequence of global warming effects. Fishing at different depth and/or target species is already a reality locally and around the world. This Adaptive and Sustainable Fishery Program represents an opportunity to redesign the gears, methods and management requirements that promote and educate under the new sustainable requirements. This is a new pathway for the local communities to adapt the new reality while including local and scientific input. It is an historical opportunity.

Also comments on President Biden’s EO 14008, Section 216 (a)

To include all managed areas on the analysis of, “one size don’t fit all” regions. Include on the analysis areas already closed or with spatial management specially the ones that were created with extensive public input over the years, like MSA managed areas. There is no point to arbitrarily close more areas just to meet a potentially arbitrary 30% of land and water closures, knowing that not all areas are the same or include the same habitats or resources. Appropriate management while respecting the expertise of each Federal or Local agency is at minimum appropriate. The U.S. Caribbean has already a major percentage of its fishable grounds and areas closed or fully managed by different agencies. Any decisions must be based on science and on the social-economic effects of its creation.

Solution: Add more and new resources to research and enforcement to the U.S. region, especially the Caribbean. This will result in great benefit to the natural resources and stakeholders.

I invite to consider multinational efforts that protect or manage the natural resources. This will be more desirable and will result in greater environmental benefit. The U.S. cannot fix the missed practices of the other nations, but we can manage ours using science. Always recognizing that U.S. local communities and fishermen are responsible stewards of the sea.

Thank you for your attention,
Capt. Marcos Hanke
Marine Biologist
Subject: Comments on Making Fisheries and Protected Resources More Resilient to Climate Change

The facts tell us that seabirds (along with countless other species) are in crisis due to human activities. Threatened by climate change, overfishing, and habitat loss, seabirds around the world have declined by 70% since 1950. As climate change continues to wreak havoc on fisheries, anglers, coastal communities, and wildlife, there is a dire need for flexible and adaptive policies to make our country's fisheries more resilient to climate change.

I regularly travel to the Oregon coast, which is a short one-hour drive away and a step into another world. Every time I am there, I am awed by the fascination and wonder that fills visitors' eyes, especially those of children, when they stop to stare at the natural wonder of our ocean wonderland. Seabirds are a key component of that world. How short-sighted and foolish would we be to destroy their home, along with ours, and the respite we receive from having unspoiled nature around us.

To ensure our fisheries are "climate-ready," it is imperative that NOAA now invests in upgrades to climate-related fishery science, boost protections for coastal habitats, enhance ecosystem-based fisheries management, and increase the resilience of and expand upon marine protected areas before it is too late.

I support the following recommendations by the National Audubon Society:

* Ensure regional fishery management councils have the tools necessary to incorporate climate change science into fisheries management plans, stock assessments, enforcement, and more.

* Address gaps in fisheries data collection related to changing ocean conditions.

* Conduct an assessment of how climate change impacts coastal habitats like marshes and mangroves that are essential for fisheries around the country.

* Ensure Regional Fishery Management Councils implement ecosystem-based fisheries management plans where they are not already, and ensure those plans include precautionary approaches to managing forage fish, habitat protection and restoration, and climate change.

* Better understand the impacts of climate change on marine protected areas established under the National Marine Sanctuaries and Antiquities Acts, and identify gaps in the marine protected areas system and how filling those gaps will enhance climate resilience.

Thank you for considering my comments.

Jeanette Schuster
March 31, 2021

The Honorable Gina Raimondo  
Secretary of Commerce

The Honorable Deborah Haaland  
Secretary of the Interior

Dear Ms. Haaland and Ms. Raimondo:

Marine Conservation Alliance (MCA) appreciates the opportunity to provide comments on Section 216(a) of Executive Order (EO) 14008 on Tackling the Climate Crisis at Home and Abroad. MCA represents seafood harvesters, processing and fishing companies, coastal communities, and Community Development Quota groups based in the Pacific Northwest and Alaska.

Section 216(a) of the EO directs you to submit a report to the National Climate Task Force by April 20 recommending steps to work with State, Tribal, and Territorial governments, fishermen, and other key stakeholders to achieve the goal of conserving 30 percent of America’s lands and waters by 2030. We support the Administration’s focus on climate change and especially appreciate the initiation of a stakeholder process to gather input on the EO as well as recommendations on how to make fisheries and protected resources more resilient to climate change.

The North Pacific Fishery Management Council (NPFMC) manages federal fisheries in the EEZ off of Alaska which is approximately one-third of the entire EEZ of the United States, including islands and territories. Federal fisheries under management of the NPFMC comprise approximately 60% of the fish harvested in the U.S. employ over 60,000 individuals and generate over $5 billion in economic activity annually.

MCA members have participated in the fisheries management process through the North Pacific Fishery Management Council and Pacific Fishery Management Council for decades. We strongly support the Regional Fishery Management Council (Council) process and believe that the existing statutory framework through the Magnuson-Stevens Fishery Conservation and Management Act (MSA) provides the appropriate regulatory process to consider climate change impacts, ecosystem based fishery management, time and area closures and other fishing restrictions.

Under the requirements of the MSA, the Councils protect essential habitat, minimize bycatch, and comply with protections for species listed under the ESA, MMPA, Migratory Bird Treaty Act and other mandates within the U.S. EEZ. Through implementation of the MSA, the United States is the global leader in the successful conservation and management of fishery resources and associated ecosystems through a proactive, sustainable, and transparent fishery management process.

**Habitat** - The MSA includes provisions to identify and conserve Essential Fish Habitat (EFH). The MSA defines EFH as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” The National Marine Fisheries Service (NMFS) and Councils must describe and identify EFH in fishery management plans (FMPs), minimize to the extent practicable the adverse effects of fishing on EFH, and identify other actions to encourage the conservation and enhancement of EFH. Federal agencies that authorize, fund, or undertake actions that may adversely affect EFH must consult with NMFS, and NMFS must provide conservation recommendations to federal and state agencies regarding actions that would adversely affect EFH.
Each FMP contains the following EFH components: EFH identification and description for managed species, fishing and non-fishing activities that may adversely affect EFH, conservation and enhancement recommendations for EFH, and research and information needs. The EFH provisions in each FMP must be reviewed, and if appropriate, revised, every 5 years.

**Ecosystem-Based Fisheries Management** - The NPFMC has also been a leader in the development of ecosystem based fishery management (EBFM). In 2007, the NPFMC developed a Fishery Ecosystem Plan (FEP) for the Aleutian Islands. The FEP describes ecosystem processes, and physical, biological, socioeconomic, and management interactions in the area, and includes a qualitative ecosystem risk assessment and description of how risk associated with these interactions is currently being addressed by managers.

The NPFMC further underscored its commitment to EBFM with the adoption of an ecosystem approach for the Bering Sea in 2014, and with adoption of a Bering Sea FEP in 2018, the Council has progressed on the continuum of EBFM and established Alaska as an international leader in fishery management. The Aleutian Islands and Bering Sea FEPs provide a clear record of the NPFMC’s ecosystem-based policy decision making, while still applying policies that are suited to Alaskan circumstances.

The Bering Sea FEP is a living document that will be updated over time and used to guide policy options and associated opportunities, risks, and tradeoffs affecting FMP species and the broader Bering Sea ecosystem in a systematic manner. The adopted “Core” document for the Bering Sea FEP documents current procedures and best practices for EBFM, provides brief, targeted, and evolving descriptions of the interconnected physical, biological, and human/institutional Bering Sea ecosystem and through ecosystem thresholds and targets, and directs how that information can be used to guide fishery management options.

**Climate** - To date, the NPFMC has initiated two Action Modules under the framework of the Bering Sea FEP, and taskforces have been created to accomplish their tasks over the course of 2-3 years. The first action module developed was climate. The goal of this climate project is to evaluate the vulnerability of key species and fisheries to climate change, and to strengthen resilience in regional fisheries management.

The Climate Action Module was initiated by the NPFMC in December 2018, and the Taskforce was formed after a solicitation for nominations in October 2019. The goal of this climate project is to evaluate the vulnerability of key species and fisheries to climate change, and to strengthen resilience in regional fisheries management. The Action Module will address the following objectives: (1) coordinate to synthesize results of various ongoing and completed climate change research projects; (2) evaluate the scope of impacts on priority species identified in initial studies; and (3) strategically reevaluate management strategies every 5-7 years; (4) include synthesis to evaluate climate-resilient management tools. Results will inform “climate ready” tactical and strategic management measures, which will help ensure a productive Bering Sea marine ecosystem and healthy fisheries for decades to come.

**Fishing Restrictions** - The NPFMC has a long history of proactively protecting habitat through the existing statutory requirements of the MSA. We have attached a brief list of some of the most significant closures the NPFMC has implemented to protect vulnerable habitat and biologically critical areas such as nursery areas for groundfish and shellfish. We have developed an interactive map, available on our website ([http://ebfm.marineconservationalliance.org/](http://ebfm.marineconservationalliance.org/)), that demonstrates each closure area in the North Pacific that the NPFMC has implemented to protect potentially vulnerable areas when conditions require such protection.
In closing, we appreciate your consideration of the comments and recommendations herein and stand ready to engage with your administration to achieve our mutual desires for continued success in the management of our nation’s fisheries and protection of the habitat and ecosystem which support them. Councils are at the forefront of that successful management and we believe that the existing public, collaborative Council process is the best venue to address ecosystem consideration, climate change impacts and conservation of marine resources.

Sincerely,

Anne Vanderhoeven
Sample Actions taken by the North Pacific Fishery Management Council in Alaska

(for additional information see out interactive map at: http://ebfm.marineconservationalliance.org/ )

Seamounts and Corals

The Alaska Seamount Habitat Protection Area encompasses all 16 seamounts in Federal waters off Alaska, named on NOAA charts, of which one occurs in the Aleutian Islands (Bowers). Bottom-contact fishing is prohibited in this HAPC. The Aleutian Islands Coral Habitat Protection Area designates six areas where submersible observations of high density coral have been made. All bottom-contact gear (longlines, trawls, pots, dinglebar gear, etc.) is prohibited in these areas. Additionally, the relatively unexplored Bowers Ridge is also identified as a HAPC. As a precautionary measure, the Council prohibited mobile fishing gear that contacts the bottom within this 5,286 nm² area.

Additionally, the Alaska Seamount Habitat Protection Area encompasses fifteen seamounts in the Gulf of Alaska (Brown, Chirikof, Marchand, Dall, Denson, Derickson, Dickins, Giacominini, Kodiak, Odessy, Patton, Quinn, Sirius, Unimak, and Welker). Bottom-contact fishing is prohibited in all of these HAPCs, an area which totals 5,329 nm².

Aleutian Islands

In February 2005, the Council adopted several new closure areas to conserve EFH. To minimize the effects of fishing on EFH, and more specifically to address concerns about the impacts of bottom trawling on benthic habitat (particularly on coral communities) in the Aleutian Islands, the Council took action to prohibit all bottom trawling in the Aleutians, except in small discrete “open” areas. Over 95% of the management area is closed to bottom trawling (277,100 nm²). Additionally, six Habitat Conservation Zones with especially high density coral and sponge habitat were closed to all bottom-contact fishing gear (longlines, pots, trawls). These “coral garden” areas, which total 110 nm², are essentially marine reserves. To improve monitoring and enforcement of the Aleutian Island closures, a vessel monitoring system is required for all fishing vessels in the Aleutian management area.

Bering Sea

In June 2007, the NPFMC adopted precautionary measures to conserve benthic fish habitat in the Bering Sea by “freezing the footprint” of bottom trawling by limiting trawl effort only to those areas more recently trawled. Implemented in 2008, the new measures prohibit bottom trawling in a deep slope and basin area (47,000 nm²), and three habitat conservation areas around St Matthew Island, St Lawrence Island, and an area encompassing Nunivak Island-Etolin Strait-Kuskokwim Bay. The NPFMC also established the Northern Bering Sea Research Area that includes the shelf waters to the north of St. Matthew Island (85,000 nm²). The entire Northern Bering Sea Research Area will be closed to bottom trawling while a research plan is developed.

Gulf of Alaska
In February 2005, bottom trawling for all groundfish species was prohibited in 10 designated areas along the continental shelf of the Gulf of Alaska. The GOA Slope Habitat Conservation Areas, which are thought to contain high relief bottom and coral communities, total 2,086 nm².

In Southeast Alaska, three sites with large aggregations (“thickets”) of long-lived Primnoa coral are also identified as HAPCs. These sites, in the vicinity of Cape Ommaney and Fairweather grounds, total 67 nm². The Gulf of Alaska Coral Habitat Protection Area designates five zones within these sites where submersible observations have been made, totaling 13.5 nm². All bottom-contact gear (longlines, trawls, pots, dinglebar gear, etc.) is prohibited in this area.

In 2010, the NPFMC adopted area closures for Tanner crab east and northeast of Kodiak. Federal waters in Marmot Bay are closed year round to vessels fishing with nonpelagic trawl. In two other designated areas, Chiniak Gully and ADF&G statistical area 525702, vessels with nonpelagic trawl gear can only fish if they have 100% observer coverage. To fish in any of the three areas, vessels fishing with pot gear must have minimum 30% observer coverage.

The Kodiak red king crab closures, Type 1 and Type II, were established in 1993 because of the poor condition of the king crab resource off Kodiak. Type I areas have very high king crab concentrations and are closed all year to all trawling except with pelagic gear. Type II areas are only closed to non-pelagic gear from February 15 through June 15, during the molting period, as trawl bycatch and crab mortality rates are highest during the spring months when king crab migrate inshore for reproduction.

Year-round scallop closures to scallop dredging, dating from 1995, were intended to reduce high bycatch of crab and avoid and protect biologically critical areas such as nursery areas for groundfish and shellfish.

A year-round Southeast Alaska no trawl closure, which prohibits trawl fishing east of 140° W. was implemented in 1998.

In 2000, the State of Alaska implemented a State water no commercial bottom trawling closure to protect nearshore habitats and species in State waters (0-3 nm).

The Cook Inlet bottom trawl closure, implemented in 2001, prohibits non-pelagic trawling in Cook Inlet to control crab bycatch mortality and protect crab habitat in an area with depressed king and Tanner crab stocks.

**Arctic**

In 2009, an **Arctic Fisheries Management Plan** was implemented by the NPFMC. The plan covers the Arctic waters of the United States in the Chukchi and Beaufort seas. Warming ocean temperatures, migrating fish stocks and shifting sea ice conditions from a changing climate may potentially favor the development of commercial fisheries. The plan establishes a framework for sustainably managing Arctic marine resources. It initially prohibits commercial fishing in the Arctic waters of the region until more information is available to support sustainable fisheries management (an area roughly 150,000 sq nm²).
March 31, 2021

To: NOAA Fisheries

I am writing as an avid fisherman and president of the Cape Cod Salties Sportfishing Club to comment on the Executive Order on Tackling the Climate Crisis at Home and Abroad (EO 14008). I appreciate the efforts to provide both immediate and forward-looking attention to fisheries management and climate change.

Having fished on the Cape and Martha’s Vineyard for several years, I have seen the effects of climate change first-hand. We see much greater numbers of such warm water fish as black sea bass, scup, and flounder, and we also see an increase in false albacore, bonito, and Spanish mackerel. Last year the bonito were in Wood’s Hole, then Chatham, then up the coast as far as Marshfield, MA, where the water is usually much colder. That was unheard of three years ago. Just this past month, we saw otters while cleaning out the herring run, and a King Eider was seen by the Cape Cod Canal. There is no doubt that something is going on in the environment and confusing many species.

We need strong science-based management to assess the stocks and prevent overfishing. With the ice cap melting from both top and bottom due to warmer waters, the scientists need to be listened to and followed. This is not a democrat or republican issue. It is a worldwide crisis and must be addressed as such. We need strong evidence from fisherpeople, too, both recreational and commercial, through research gathering and electronic data collection. We need to first educate all participants – all anglers, shellfish gatherers, and boaters. Their knowledge and actions can make a difference.

Recent disagreements among the Atlantic seaboard states on striped bass issues show that if states cannot make the right decisions, NOAA must step in to protect the fishery. This precious resource is not being equally protected by all. It is time for politicians to leave the environment to the scientists for the protection of the seas for future generations.

I strongly support this legislation.

Sincerely,

Jack Creighton, Cape Cod Salties
Atlantic Scientific Review Group

Atlantic Scientific Review Group

James A. Powell, Chair
Clearwater Marine Aquarium Research Institute

Richard Merrick, Vice Chair
NOAA, Retired

Robert D. Kenney
University of Rhode Island, Graduate School of Oceanography

John Lawson
Department of Fisheries and Oceans Canada

Michael J. Moore
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Texas A&M University Galveston

Erin L. Summers
Maine Department of Marine Resources

Yong Chen
University of Maine

Randall S. Wells
Chicago Zoological Society

Established under the Marine Mammal Protection Act to advise the National Marine Fisheries Service and U.S. Fish and Wildlife Service on the status of marine mammal stocks off the Atlantic and Gulf Coasts.

31 March, 2021

The Honorable Gina Raimondo
Secretary of Commerce
U.S. Department of Commerce
1401 Constitution Ave NW
Washington, DC 20230

Dear Madam Secretary:

The Atlantic Scientific Review Group (ASRG) is charged under the U.S. Marine Mammal Protection Act (MMPA) with advising the Secretary of Commerce on marine mammals that occur in waters off the Atlantic coast, Gulf of Mexico, and U.S. Territories in the Caribbean that are under the jurisdiction of the United States. The MMPA’s Section 117(d)(1)(E) specifically charges the SRGs to advise the Secretary on “The actual, expected, or potential impacts of habitat destruction, including marine pollution and natural environmental change, on specific marine mammal species or stocks, and for strategic stocks, appropriate conservation or management measures to alleviate any such impacts.” With this charge in mind, the ASRG provides the following comments on the Presidential Executive Order on “Tackling the Climate Crisis at Home and Abroad (EO 14008).”

We commend the Administration for issuing EO 14008 Section 216(c), and specifically the call for recommendations on “how to make … protected resources more resilient to climate change, including changes in management and conservation measures, and improvements in science, monitoring, and cooperative research.” This represents an important step forward in the nation’s efforts to deal with the impact of a changing ocean environment on marine mammals.

We endorse climate-focused marine science because of the impacts increased ocean temperatures, changing salinity, loss of sea ice, expected sea level rise, modified ocean circulation, and increased fresh water runoff will have on marine ecosystems. For many marine mammal species, climate change is truly a crisis driven directly and indirectly by these factors.

The habitat of many marine mammals will be irrevocably altered by warming oceans and loss of sea ice. Direct effects may be less than experienced by fish and invertebrates, but numerous marine mammal
species will still be impacted. In the Gulf of Mexico, changing water flows threaten many of the 31 coastal bottlenose dolphin stocks. In the Northwest Atlantic, species like Florida manatees will see their range extended farther to the north making them vulnerable to thermal stress during winter. The migratory patterns of large whales, like North Atlantic right whales and humpback whales, and the timing of pupping for grey and harbor seals may shift. Species whose life cycles are associated with sea ice, like walrus and harp seals, will see the loss of pupping habitat, leading to declines in pup survival and ultimately, population declines.

Changes to marine ecosystems will have profound indirect impacts on marine mammals. Warming seas and increased acidity have already been shown to significantly change the abundance and distribution of key forage, including sea grasses, zooplankton, and fish that serve as prey for marine mammals. The physical health of species reliant on such forage will be compromised, and some marine mammal species will shift distribution in search of adequate food. Recent declines in the approximately 370 remaining North Atlantic right whales appear to be a result of their northward shift in distribution searching for prey in areas without adequate measures in place to minimize ship strike and fishery-related entanglement mortalities. As well as the death of hundreds of Florida manatees during the current Unusual Mortality Event as a result of the decline of sea grasses in coastal Florida waters due to changing estuarine conditions and algal blooms.

Indeed, interactions between marine mammals and fisheries/shipping represent one of the few areas that NOAA can directly mitigate climate change impacts. In particular, the dynamic nature of these interactions (where both marine mammal and marine fisheries/shipping are shifting distributions) makes this an important area to focus management efforts.

Furthermore, human activities will also respond to changing climatic conditions, leading to new adverse interactions with marine mammals. For example, fisheries may expand into new areas, responding to shifts in the distribution of target species that are driven by a changing climate. Shipping will expand to polar regions that serve as primary habitat for many marine mammal species bringing new risks to the fauna of the region. Development of offshore renewable energy may preempt marine mammal habitat and increase vessel strike mortalities. NOAA needs to anticipate such conflicts and proactively manage interactions with Arctic marine mammal species.

The ASRG believes NOAA can mitigate the interactions between human activities and marine mammals by:

1. Providing sufficient funding to regularly monitor marine mammal distribution and abundance, including temporal changes in both population distribution and the timing of pupping/calving, as well as to support surveys collecting the oceanographic and ecological data necessary to understand how marine mammal’s habitats are changing.
2. Supporting research into how the health and condition of marine mammals change in response to changes in their ocean ecosystems.
3. Expanding use of the NOAA protected species climate vulnerability assessment tool to all marine mammal stocks.
4. Expanding the cross-NOAA Climate and Fisheries Initiative to include protected species and their habitats.
5. Supporting the science needed to develop operational ocean modeling and decision support systems dedicated to providing physically focused ocean forecasts and projections necessary for support of ecosystem and stock projections, and the risk assessments needed for sound marine resource management decision-making under future conditions.
6. Reviewing and increasing the flexibility of management measures designed to mitigate impacts:
   a. Working with NOAA scientists, NOAA managers should evaluate how climate change-driven marine mammal redistribution will interact with human activities, especially fisheries, vessel traffic, and ocean development.
   b. Incorporating climate scenario planning into NOAA manager’s evaluations of marine mammal status, and, in particular, NOAA should incorporate scenario planning into its status reviews (every five years) of ESA listed species.
   c. Working with local, state, and other Federal agencies to develop approaches to reducing harmful freshwater and associated effluent inflow into marine systems.
7. Developing a strong outreach and education program to promote stakeholders’ engagement in addressing the challenges the Nation faces in marine conservation in changing ecosystems.

Note that while we only comment here on the impacts of climate change on marine mammals, we (as marine scientists) are also concerned about the impacts of climate change on all protected species.

We thank NOAA for the opportunity to comment on this Executive Order.

Sincerely,

[Signature]

James A. Powell, Chair

Cc:
Dr. Paul Doremus
Mr. Sam Rauch
Dr. Cisco Werner
Ms. Donna Wieting
Dr. Evan Howell
March 29, 2021

Paul Doremus  
Acting Assistant Administrator  
NOAA Fisheries Directorate  
1315 East-West Highway  
14th Floor  
Silver Spring, MD 20910

RE: Comments pursuant to President Biden’s Executive Order on Tackling the Climate Crisis at Home and Abroad

Dear Dr. Doremus:

I am writing to provide recommendations in response to President Biden’s Executive Order on Tackling the Climate Crisis at Home and Abroad (January 27, 2021) (“EO”). These recommendations focus on how the federal government can partner with states to make coastal areas, marine fisheries, and protected resources more resilient to climate change. Overall, I urge the Administration to consult and work closely with coastal states in developing and advancing climate change-related initiatives that may affect state and local ocean and coastal resources, uses, and coastal communities.

Background.

Maine Governor Janet Mills is leading a broad-scale, multi-faceted state climate change initiative. In June 2019, she signed into law legislation which created the Maine Climate Council. In January 2021, following an extensive public process, the Council reported its recommendations, which include steps to reduce carbon pollution; make coastal areas more resilient to climate change and help our coastal and marine dependent industries transition to a renewable energy-based economy. The EO offers the opportunity to work synergistically together to meet the serious challenges of climate change confronting marine resources and coastal communities.

Section 216(c)

Advancing the Administration’s 30X30 Goals Using Appropriate Input from Affected Communities

Commercial fishing and allied businesses are the foundation of Maine’s coastal economy and vital components of its overall economy. Despite market losses due to the COVID-19 pandemic and extraordinary challenges to marine harvesters, aquaculturists, and dealers, the ex-vessel value of Maine’s
commercially harvested marine resources was about $517 million in 2020, the ninth highest on record. One of the country’s most valuable, Maine’s lobster fishery alone had landings valued at about $406 million in 2020. These landings values provide significant, statewide economic benefits. Moreover, marine businesses and industries are integral to the State’s cultural heritage and identity.

The State recognizes the value of well-targeted conservation and preservation of discrete ocean areas in federal waters of unique biological significance in helping make marine fisheries and protected resources more resilient to climate change. However, it is vitally important to Maine’s natural resources-based economy that decisions regarding ocean conservation and management are based on thorough consideration of their potential effects on commercial fishing and allied businesses and industries. Timely and meaningful opportunities for input from affected industries, stakeholders, and the general public are needed to avoid and minimize adverse effects on these interdependent marine-dependent industries. The following recommendations regarding assessment and designation of ocean areas for preservation are grounded in these objectives.

- **Maintain access to fishing grounds within any area designated for preservation to the maximum extent practicable consistent with the purposes of such designation.** In considering preservation of an ocean area where there is an existing, established fishery, the federal government should assume the burden of showing, subject to public review and comment as outlined below, how continuation of that existing fishery is incompatible with stated preservation goals.

- **Use the regional fisheries management council process established under the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), as opposed to the Antiquities Act in isolation, to provide the federal statutory framework for assessment of ocean areas under consideration for preservation as well as development and establishment of management measures for those areas.** Regional fisheries management councils’ open, public process has opportunity for extensive stakeholder and public involvement and ensures consideration of the economic as well as biological implications of resource management actions. Such an approach is necessary and appropriate when considering resource management-related actions with potential to affect commercial fishing activity and thus the economic well-being of Maine’s fishing families and their communities.

- **Ensure that management plans for ocean areas designated for preservation take an adaptive management approach.** Ever-changing environmental conditions associated with a changing climate necessitate flexibility to assess, re-visit, and fine-tune over time the management measures for any ocean area designated for preservation. Notably, the MSFCMA regional council process provides for such flexibility.

- **Consider the effect of preservation of ocean areas and related management measures together with those of other actions which may limit commercial fishing activity.** Closure or limitation of fishing in an area has potential to move that displaced effort elsewhere, increase the density of effort in the receiving areas, and thereby increase the potential for gear conflicts with other existing ocean uses and adverse gear interactions with marine mammals. Care must be taken to ensure that ocean conservation measures do not exacerbate existing problems and challenges facing both protected resources and the commercial fishing industry.

Section 214
Working in partnership to support state and local coastal resiliency efforts.

Section 214 of the EO recognizes the "essential role" of coastal communities "in mitigating climate change and strengthening resilience by protecting and restoring coastal ecosystems, such as wetlands, seagrasses, coral and oyster reefs, and mangrove and kelp forests, to protect vulnerable coastlines, sequester carbon, and support biodiversity and fisheries." Increased federal support for Maine’s coastal resiliency-related efforts can ensure achievement of mutual federal and state goals to protect and enhance coastal resources outlined in the EO.

As noted above, the Maine Climate Council has recommended measures needed to make Maine’s coastal areas better able to adapt to anticipated sea-level rise and storm surge related effects resulting from climate change. These measures focus in part on the protection and restoration of coastal ecosystems, including wetlands, beaches, eel grass and other submerged aquatic vegetation for their multiple benefits including shoreline protection, flood control, fisheries habitat, habitat connectivity, and carbon sequestration benefits. The following recommendations outline how the Administration can work in partnership with and support Maine’s efforts towards shared state-federal objectives.

- Provide sustainable funding for existing and new coastal and marine monitoring and observation programs, enhanced research and modelling, and improved data distribution to help marine dependent industries, state and federal agencies, and local governments make decisions informed by accurate, up-to-date information on climate change.

- Coordinate federal data portals and provide continuing funds for regional data portals (e.g. the Northeast Ocean Data Portal) to ensure that the information they provide is accessible and usable by marine related industries and the public.

- Support state coastal zone management programs’ efforts to coordinate and facilitate federal, state, and local coastal resiliency-related efforts. The Maine Coastal Program and other state coastal zone management programs approved by NOAA under the Coastal Zone Management Act are well-positioned and constituted to facilitate and coordinate collaborative work among federal, state, and local governments, conservation groups, the development community, and other interested parties addressing coastal resiliency issues. Additional CZMA funding to coastal states is needed to support and build on on-going state and local coastal resiliency efforts and ensure they are well-coordinated with federal initiatives.

- Optimize use of nature-based solutions (green infrastructure) to address shoreline stabilization needed to protect coastal resources as well as coastal infrastructure and other development. The Administration should review existing federal statutes, regulations, and agency policies to identify and remove barriers to use of well-sited nature-based solutions. Additional federal support for state and local pilot projects is needed to demonstrate the efficacy of nature-based solutions and to help identify refinements in federal laws and policy to facilitate their siting and development where appropriate.

- Review and revise the steep requirements (often 1:1 federal/state cost share) for habitat restoration, nature-based infrastructure and shoreline resiliency projects. For many key federal habitat restoration and resiliency funding programs, matching requirements put federal assistance
out of the reach of applicants otherwise ready and able to put that assistance to work, such as income challenged and rural coastal communities.

***

Thank you for this opportunity to provide suggestions on the bold, ambitious, and much-needed federal initiative set in motion by the EO. We look forward to working in partnership with the Biden Administration to address the many challenges climate change poses to Maine’s coastal and marine resources, to continued sustainable and economically beneficial use of those resources, and to our coastal communities.

Respectfully submitted,

[Signature]

Patrick C. Keliher
Managing for RADical Ecosystem Change: Applying the Resist, Accept, or Direct (RAD) Framework

Key points:

- Ecosystem transformations represent the emergence of new ecological states that diverge dramatically from prior structure and function.
- Such transformations are occurring at unprecedented rates and spatial extents because of global pressures, such as climate change, habitat conversion, harvest, pollution, and invasive species.
- Management under ecosystem transformation can consider multiple strategies to resist, accept, or direct trajectories of ecosystem change.

NOAA Fisheries and their management partners should strive to:

- **Be deliberate. Avoid delay. Proceed intentionally.** Summarized from Lynch et al. (In Press)
- **Avoid paralysis** - Paralysis can equate to higher cumulative economic costs and greater losses of ecosystem services and incalculable consequences of irreplaceable natural systems as they transform. Explicitly acknowledging that an ecosystem is at risk of or already undergoing transformation, and proceeding intentionally with a deliberative RAD approach can help managers make informed decisions and be better prepared for surprises.
- **Conduct experiments and use pilot testing** - Pilot studies and experiments are ways to reduce uncertainty and paralysis, and can provide data to improve performance and reveal problems, thereby advancing managers’ information base prior to implementation.
- **Consider multiple strategies** - A portfolio of approaches implemented across space can improve managers’ ability to assess the ecological, social, and financial feasibility of competing options.
- **Identify tipping points** - There may be tipping points whereby the costs of resistance are no longer affordable or accepted by society.
- **Maintain management flexibility** - Present-day decisions have future implications, and effective management of ecosystem transformations may seek to avoid decisions that inadvertently preclude future options as circumstances change (especially rates of directional change).

Background:

Ecosystems are transforming under climate change and other powerful anthropogenic drivers, with substantial shifts in ecological processes and important ecosystem services occurring at unprecedented rates and scales. As systems approach socio-economic and ecological thresholds, our current management toolbox has proved to be incomplete for conservation and the sustainable provision of ecosystem services, including fisheries production and the protection of habitats. Multiple approaches are therefore needed to address the varying uncertainties we face in this increasingly non-stationary world. Managers stewarding transforming systems can benefit from considering broader objectives beyond a traditional focus on resisting ecosystem change, by also considering whether accepting change or directing it along a preferred pathway might be more appropriate (RAD framework).

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1 Points of Contact:
Abigail (Abby) Lynch, USGS National Climate Adaptation Science Center, (office)
Laura M. Thompson, USGS National Climate Adaptation Science Center, (office)
Figure 1. The RAD framework: management strategies and contexts for when one might resist, accept, or direct the ecological trajectory to promote a preferred outcome. These strategies are all-encompassing (i.e., nothing is left outside the decision space) and can be implemented simultaneously on different components of an ecosystem (Thompson et al. 2020).

Marine ecosystems are rapidly changing. Many mobile species are shifting their distributions at rapid rates (e.g., poleward shifts of lobster and Black Sea Bass along the US East coast, Pollock in the Bering Sea; see Pecl et al. 2017), while less mobile species such as corals and affiliated reef species are dying off. The loss of species and shifts in distributions can mean lost opportunities for some and new opportunities for others. It also means changes to species interactions and other ecosystem dynamics, and the potential for the system to transform into one that looks and functions differently than in the past. Having a better understanding of what is changing, why it is changing, and what the system may look like in the future is key to better management.
Case Study: Florida Reef Tract

The Florida Reef Tract, the only tropical coral reef system in the continental US, is undergoing transformation. The reef is inhabited by over 500 fish and thousands of invertebrate species and provides ecosystem services (e.g., coastal protection, sand supply for beaches and fisheries) that are crucial to the economy of South Florida where coastal tourism and fishing generate $6 Billion USD per year. Sufficient coverage of reef-building (i.e., hard, stony) corals is essential for reef biodiversity and ecosystem services, but their coverage has decreased dramatically over the last 30 - 40 years. Coral losses are attributed to increasing ocean temperatures, nutrient pollution, sedimentation, and overfishing, but the synergistic effects of extreme temperature-induced coral bleaching and diseases may be the major cause of coral declines. Thus, reefs are shifting to an octocoral (i.e., soft corals, sea fans) and sponge-dominated community structure.

Efforts to resist change include implementation of nutrient pollution and fisheries regulations, and restoration of reef building species via coral propagation and outplanting. At the same time, climate related mass mortality events and associated shifts in community composition have been largely accepted. Two back-to-back mass-bleaching events during summertime warm temperature anomalies in 1997-1998, and 2014-2015, and a cold-water event in 2010 have caused recent mass-mortality. Octocorals, while susceptible to many of the same stressors as the historically abundant hard coral species, are less prone to bleaching in warm temperatures and appear to recover more quickly so their relative abundance may increase following major bleaching events.

Directed transformation to an alternate benthic community is not a current management strategy or goal in the Florida Reef Tract and to our knowledge has rarely been considered as a management option for coral reef ecosystems. However, directed transformation of an adjacent temperate community via managed relocation is a theoretical option. Given the 'tropicalization' of marine coastlines and the widespread decline of corals in many parts of their current distribution, choices will likely be made about whether to facilitate the poleward spread of corals into temperate systems.

Recommendations:

In supporting natural resource management that seeks to make strategic, forward-looking decisions in an era of rapid change, recognizing and addressing ongoing or prospective transformation in an intentional and strategic manner benefits all people. Still, there is great uncertainty in the changes to come and the path forward is unclear. Collaboration between the scientific community and decision-makers will improve understanding of how ecosystems will transform. Future ecological conditions and trajectories will be much different and traditional management practices using historical ranges and assumptions of environmental stationarity may have limited utility for conservation and management planning under future states. Experiments and pilot
testing can help reduce uncertainty in outcomes; identifying tipping points where resisting future change is futile and adapting or directing is the best option to reduce economic and ecosystem costs.

Today’s leadership and decision making can improve our ability to respond to ecosystem transformation by supporting efforts to understand the trajectories of change, the efficacy of current management approaches, and the best design practices for intervening to resist or direct transformation in order to achieve desired ecosystem goals. It is important to keep options on the table for not only resisting change, but also accepting and directing change towards a specific alternative state that will better function under anticipated conditions. After identifying both the desirable and unacceptable potential outcomes, managers can develop appropriate actions, all the while remaining flexible in their approach as they learn more. Be deliberate. Avoid delay. Proceed intentionally. Summarized from Lynch et al. (In Press):

- **Avoid paralysis** – Paralysis can equate to higher cumulative economic costs and greater losses of ecosystem services and incalculable consequences of irreplaceable natural systems as they transform. Explicitly acknowledging that an ecosystem is at risk of or already undergoing transformation, and proceeding intentionally with a deliberative RAD approach can help managers make informed decisions and be better prepared for surprises.

- **Conduct experiments and use pilot testing** – Pilot studies and experiments are ways to reduce uncertainty and paralysis, and can provide data to improve performance and reveal problems, thereby advancing managers’ information base prior to implementation.

- **Consider multiple strategies** – A portfolio of approaches implemented across space can improve managers’ ability to assess the ecological, social, and financial feasibility of competing options.

- **Identify tipping points** – There may be tipping points whereby the costs of resistance are no longer affordable or accepted by society.

- **Maintain management flexibility** – Present-day decisions have future implications, and effective management of ecosystem transformations may seek to avoid decisions that inadvertently preclude future options as circumstances change (especially rates of directional change).

**Recommended resources:**


30 March 2021

RE: Tackling the Climate Crisis at Home and Abroad

Dear Administrator of the National Oceanic and Atmospheric Administration,

American Bird Conservancy is grateful for the opportunity to submit recommendations on how to make fisheries and protected resources more resilient to climate change. Marine ecosystems are under siege: overharvesting, pollution, ocean acidification and climate change are all contributing to a decline in ocean health (Halpern et al. 2008). Seabirds are an incredibly important but an under-appreciated component of marine ecosystems, and account for a disproportionate 25% of all marine extinctions (Spatz et al. 2013). Seabirds are also among the most threatened of all marine animals, with 28% of the ~350 seabird species listed as threatened by the IUCN Red list and global populations of all seabirds are estimated to have declined by 70% since 1950 (Paleczny et al. 2015). One of the most significant actions we can take to protect our oceans now is to prevent additional marine extinctions in an effort to maintain intact marine ecosystems.

The majority of seabird declines can be attributed to invasive species on their breeding islands and bycatch in fisheries. More recently, climate change is posing increasing, and significant risk to seabirds. Rising seas are causing breeding habitat loss and warming oceans are impacting food resources.

Seabirds are not simply a protected resource to manage. They are also critical parts of the marine ecosystem that can help maintain ecosystem resilience in the face of a changing climate. Seabirds are key top level predators in our oceans; their annual food consumption is equivalent to commercial fishery landings globally (Brooke 2004). As part of the marine ecosystem, seabirds play a key role in nutrient cycling. Seagrass beds, which are important fish nurseries, are known to be larger and more productive when seabirds add nutrients via their guano (Powell et al 1991). On Palmyra Atoll, marine nutrients transported to land by seabirds increase plankton abundance in the nearshore environment leading to an increase in manta rays (McCauley et al. 2012). Recent data have shown that corals adjacent to seabird islands grow faster than those without seabirds (Savage 2019) and that corals adjacent to seabird islands are more resistant to bleaching from marine heatwaves (Benkwitt et al. 2020). Further, seabirds are an excellent, and visible, indicator for overall ecosystem health in marine environments. For example, seabird breeding productivity is a predictor of future fishery catches in the Gulf of California, Mexico (Velarde et al. 2013).

Considering the relationship between seabirds and humans, they provide further services as indicators of fish schools for human fishers (Hebshi et al. 2008), food for indigenous harvesters
(Klein et al. 2010), guano for fertilizer (Sekercioglu 2010), and attractions for ecotourists (Sanson 1994; Wilson & Tisdell 2002) (extracted from Spatz et al. 2013).

Given that seabirds are a resource threatened by climate change, an important part of marine ecosystems that can assist in climate resilience in those ecosystems, and a powerful indicator of marine health, American Bird Conservancy strongly supports efforts to expand conservation measures for seabirds, while also expanding investment in monitoring and cooperative research.

We support the following actions:

1) Increase funding and other support for removing invasive species, particularly predators, from islands. Work with the National Invasive Species Council; USFWS Invasive Species, Island Restoration, and Cooperative Recovery Initiative; USFWS Coastal Program; signatories on the 2015 USFWS MOU calling for government agency and NGO collaboration on island restoration signed by then USFWS Director Dan Ashe1; and others to identify, plan and implement restoration actions.

2) Invest in seabird translocations and colony creation on high islands immune to sea level rise, such as the effort to move species from the low lying NW Hawaiian Islands to predator proof fences or predator free islands in the main Hawaiian Islands.

3) Support greater investment in reducing seabird bycatch in fisheries:
   i. Add seabirds to the definition of bycatch in Magnussen Stevens Act reauthorization.
   ii. Implement greater implementation of bycatch reduction measures across all US fisheries.
   iii. Increase observer coverage for all fisheries and develop technological observer alternatives such as video monitoring.

4) Support 30 x 30 goals and focus on protecting seabird breeding habitat and critical marine habitats as part of this goal. Further, we believe the 1/3 for the birds effort to maintain a sufficient base level of forage fish availability to support healthy seabird populations is critical and recommend specific policy to support healthy forage fish populations.

5) Support green energy infrastructure buildout that minimizes impacts to seabirds
   a. Develop inclusive decision processes for siting offshore wind that prioritize sites that do not pose significant risk to seabirds.
b. Develop tools to predict risk prior to siting decisions and to measure actual take after construction.
c. Invest in robust projects to mitigate take – compensatory mitigation - that is unable to be minimized through proper siting and other measures (turbine feathering, undergrounding associated power lines and infrastructure, shielding lights on turbine platforms, etc.). Invasive species control on islands, social attraction and translocation are all proven approaches that could be supported to mitigate for seabird mortality that remains after robust minimization efforts.

Thank you again for the opportunity to comment.

Regards,

Brad Keitt
Oceans & Islands Program Director
American Bird Conservancy

Literature Cited:


Subject: comment on EO "Tackling the Climate Crisis," making marine ecosystems more resilient

Richard Steiner to OceanResources.Climate

Tue, Mar 30, 5:44 PM (20 hours ago)

Dear NOAA Ocean Resources,

RE: the 1/27 Climate E.O., I would like to offer a few comments, and submit the attachments below as part of the record.

In response to the EO, the administration should design and establish several Marine National Monuments (MNNs) in Alaska's federal waters, encompassing several productive, but threatened, Large Marine Ecosystems in Alaska: Arctic Ocean, Bering Strait, Aleutian/Pribilof Islands, Northwestern Gulf of Alaska, and Eastern Gulf of Alaska. These monuments should be established under the President's Antiquities Act authority. The administration should expect opposition from the State of Alaska, various industrial interests, etc., but it needs to move forward with this regardless. The bottom line here is doing what is in the national interest, not getting lost in local parochial politics.

Each Alaska Marine National Monument should establish a clear mandate for conservation, protection, and climate resilience, as well as a stakeholder Advisory Council (with tribal governments well represented) to advise and participate in development of a detailed conservation management plan for each monument.

Importantly, these Alaska MNNs should not be subject to management by the North Pacific Fisheries Management Council (NPFMC), but develop their own conservation and climate resilience management plan.

In establishing these MNNs, the administration must focus on productive, but threatened, coastal seas on continental shelves, not simply blue water areas with little threat, as has been done previously.

See:


Sept. 25, 2016. Obama's Marine Monuments Are Good, But Ignore Important Coastal Seas. [http://www.huffingtonpost.com/entry/57e742b9e4b05d3737e5f54d?timestamp=1474777401965](http://www.huffingtonpost.com/entry/57e742b9e4b05d3737e5f54d?timestamp=1474777401965)

Unfortunately, the Obama administration failed on this and the Biden administration must succeed.

In addition to the administration establishing these Alaska Marine National Monuments, the NPFMC/NMFS should establish a climate resilience buffer for the Total Allowable Catch (TAC) of each fishery it manages, and reduce the TACs accordingly. For pollock, cod, and Atka mackerel, the TACs should immediately be reduced by 50%, to provide a climate resilience buffer for other populations in the marine ecosystem (marine mammals, seabirds, etc.).

Further, NPFMC and NMFS should explore use of the NOAA fleet capacity reduction programs to reduce the factory trawl fleet by 50%.

Thanks, and we look forward to the Biden administration going big on this urgent need.

Regards,

Rick Steiner, Professor
University of Alaska, ret.
Oasis Earth

4 Attachments

[Alaska Ocean Co..](attachment:Alaska%20Ocean%20Co..)
[Alaska MNM prop..](attachment:Alaska%20MNM%20proposed)

https://mail.google.com/mail/u/0/hi/?r=1&v=show&ui=2&ftv=1&osd=%3a%3a&rs=%3a%3a&sfar=0&sfav=0&sfes=0&sfsh=0&sfquery=comment%20on%20EO%20"Tackling%20the%20Climate%20Crisis,"%20making%20marine%20ecosystems%20more%20resilient%2c%20%281/27%29&aj=1&pli=1&貴=0.8
Alaska Ocean Conservation Issues for Biden Administration

Nov. 24, 2020

Tony Knowles, Governor of Alaska, 1994-2002; former member of Pew Oceans Commission and North Pacific Fisheries Management Council; Chair, National Park System Advisory Board, 2009-2017

Jim Ayers, Alaska Strategies Conservation Consulting (clients have included Pew Environment, Ocean Conservancy, NGOs, municipalities); former VP Oceana; Chief of Staff, State of Alaska; Executive Director Exxon Valdez Oil Spill Trustee Council; advisor to US Coast Guard on Deepwater Horizon Oil Spill

Rick Steiner, Oasis Earth, conservation consulting for the U.N., governments, IUCN, and NGOs; Professor of Marine Conservation, University of Alaska (ret.); former Alaska commercial fisherman; author of Oasis Earth: Planet in Peril

Alaska’s Exclusive Economic Zone (EEZ) comprises a third of the U.S. total, and supports more marine mammals, seabirds, fish, and shellfish than the rest of the U.S. EEZ combined. However, many marine species and habitats in Alaska are in significant decline, and Alaska’s seas and coasts are suffering severe impacts from climate change. This vast national treasure has yet to receive the federal conservation attention it urgently needs. Below are some policy actions that the Biden administration can take to protect and restore Alaska’s offshore ecosystems and develop its sustainable Blue Economy.
**Background:** Alaska’s seas and coasts are unique and globally significant for their diversity, expanse, abundance of fish and wildlife, as well as historical, cultural and economic importance.

Half of the nation’s entire shoreline and three-fourths of our total continental shelf are in Alaska. Alaska’s 200-mile EEZ covers 1.45 million mi² (more than twice the land area of the state), and an area larger than the EEZ of all of the contiguous lower 48 states combined. This vast Alaska offshore area hosts the most abundant populations of fish, shellfish, seabirds and marine mammals in the nation, and some of the most abundant in the world.

Alaska waters also support thousands of jobs and a multibillion-dollar economy, including seafood landings larger than those of all other states combined, a growing marine recreation and tourism industry and subsistence of coastal residents.

**Emergent Conservation Challenges:** Most of Alaska’s threatened & endangered species are marine animals, and many seabird and marine mammal populations throughout Alaska are in decline – the result, scientists suspect, of excessive harvests of certain fish populations in combination with long-term changes in the ocean environment.

At the same time, climate change is reducing sea-ice cover and leading to unprecedented marine ecosystem impacts, including ocean acidification, warming waters, changes in distribution and abundance of marine species, subsistence impacts, and coastal erosion. Unusual mortality events in marine organisms are becoming more frequent and extensive; persistent organic pollutants are now found in Alaska’s marine mammals; marine debris continues to accumulate and kill indiscriminately; bottom trawling is damaging seabed habitat; invasive species are a growing concern; and the ecological injury from just one grounded oil tanker (*Exxon Valdez*) persists 30 years later.

Increased ship traffic - oil tankers, freight vessels, and cruise ships - produces underwater noise, oil spill risk, whale-ship strikes, and invasive species introductions. The Alaska *Outer Continental Shelf* (OCS) is one of the last remaining large offshore hydrocarbon prospects in the nation, and is the target of both current and future leasing plans. The federal government estimates that the Alaska OCS may contain 50 billion–100 billion barrels of oil equivalent.

**Immediate Alaska Ocean Conservation Needs:** The current transition represents an opportunity for the federal government to “re-set” its policies for Alaska’s ocean ecosystems and economy, and begin a new focus on untapped, sustainable ocean potential. A new paradigm of Alaska ocean management is needed.
1. A Marine Ecosystem Framework

The U.S. lacks any coherent assessment of Alaskan current and changing marine conditions. The absence of any framework will limit policymaking to a piecemeal ad hoc approach dominated by political pressure to preserve the status quo despite rapidly evolving regional and global developments.

A. Commission National Academy of Sciences/National Research Council to conduct a one-year, independent, comprehensive assessment of Alaska’s federal waters (3-200 miles offshore), Gulf of Alaska, Bering Sea/Aleutian Islands, Arctic Ocean. The assessment should identify all Ecologically or Biologically Significant Marine Areas (EBSAs) in federal waters off Alaska -- marine areas with high biodiversity; high biological productivity; uniqueness or rarity; special importance for life stages of species; importance for threatened, endangered, or declining species and/or habitats; and vulnerability, fragility, sensitivity, or slow recovery from disturbance. The assessment should identify all current and future threats to Alaska marine ecosystems, and specific management tools to remedy such threats.

B. Based on the assessment above, formulate an Alaska National Interest Oceans Conservation Initiative (ANIOCI), examining (in consultation with coastal and marine stakeholders) the need to establish Sanctuaries and Marine National Monuments in Alaska federal waters by Executive Authority under Antiquities Act (e.g. Aleutian Islands/Unimak Pass/Pribilof Islands; Bering Strait; Chukchi Sea/Beaufort Sea), OCSLA withdrawals, etc. Monuments should prioritize protections for Alaska Native subsistence; small-boat coastal fisheries (salmon, herring, crab, halibut, etc.); marine recreation and tourism economies. The ANIOCI goal is: “Protect the best, Restore the rest.”

C. Ensure the Biden administration not only rejoins the U.N. Paris Climate Accord, but also advocates for a two-fold increase in Nationally Determined Contributions (NDCs) to emissions reductions. This is critical to long-term restoration of ecological integrity of Alaska’s offshore ecosystems.

D. Reestablish the Northern Bering Sea Climate Resilient Area by Executive Order. Additionally, appoint a new Assistant Administrator for National Marine Fisheries Service and establish a Tribal Liaison position in that office.

E. Develop robust program in NOAA for reduction of marine invasive species introductions, partnering with ship owners and State of Alaska.

F. An example of an EBSA in Alaska waters in need of greater conservation focus is the Pribilof Island Ecosystem (there are several others as well, including the Aleutian Islands, Unimak Pass, Bering Strait, North Gulf of Alaska, etc.). The Pribilof Island Domain is one of the most spectacular marine ecosystems in the world; providing communities and Tribes healthy
marine resources since time immemorial; climate change and industrial activities threaten ecosystem health, community and tribal food security, cultural continuity, physical wellbeing, and economic and ecological viability.

a. Specific action must be taken in Partnership with Pribilof communities and Tribes to address the depletion of northern fur seals, and rapid decline of seabirds that rely on the Pribilof Island Ecosystem and the Indigenous peoples that depend on them.

b. The 2007 Northern Fur Seal Conservation Plan should be reviewed and updated per current science and stakeholder input, and consideration of renewing an annual report to congress and President.

c. Update the St. George Marine Sanctuary Nomination in light of new science, highlighting the unique and threatened nature of this region.

d. Develop a comprehensive community program to reduce marine debris, as a pilot for other marine debris hotspots in Alaska.

2. Develop Alaska’s Blue Economy

The current extractive industry (petroleum/factory trawler) approach to Alaska’s offshore economy will increasingly leave Alaska with diminishing economic options. The growing “Blue Economy” movement around the world focuses on sustainable use of marine resources, while preserving and restoring ecological health of marine ecosystems. This is precisely the new paradigm needed for federal waters off Alaska.

A. Develop Alaska Blue Economy Initiative to identify, subsidize, and enhance sustainable jobs and economy in Alaska’s federal waters – Alaska Native subsistence, marine recreation and tourism, small boat coastal fisheries, low-carbon ocean energy development (wave, wind, non-barrage tidal, geothermal, etc.), while considering the reduction or prohibition of fossil fuel leasing on the Alaska Outer Continental Shelf.

B. Develop Alaska Climate Change Coastal Resilience Initiative to financially support Alaska coastal villages and subsistence users with climate adaptation needs, including relocation, storm buffering resilient infrastructure, etc.

C. Prioritize the recovery of vital Alaskan fish stocks by reducing Total Allowable Catch (TAC) for Bering Sea pollock and other bottom fish to enhance prey abundance for seabird/marine mammal populations.

D. Fully fund the U.S. Fish & Wildlife Service walrus artificial raft pilot project in Chukchi Sea (at Hanna Shoal) to assess opportunity to enhance walrus survival with reduced summer sea ice.

E. End federal permitting for Alberta-Alaska Railway (proposed to ship Alberta tar sands oil to marine export from Alaska, significantly raising spill risks).
3. **International Cooperation**

The U.S. should reestablish cooperative partnerships with our regional neighbors.

A. Establish rigorous transit ship safety protocols through Aleutians and Bering Strait, rescue tugs, routing agreements, Areas-to-be-Avoided; nominate both areas as Particularly Sensitive Sea Areas (PSSA) in U. N. International Maritime Organization.

B. Establish Russia/U.S. scientific working group to harmonize conservation management of the Bering Sea and Chukchi Sea marine ecosystems across the international border.

C. Develop robust program in NOAA for source reduction of marine debris, working closely with Asian coastal solid waste management efforts to reduce sources of persistent debris into the North Pacific and Alaska.

D. Re-engage with the Arctic Council to advance all marine conservation needs across circumpolar Arctic, in particular work to establish a network of Marine Protected Areas across the Arctic Ocean.

4. **Ocean Governance Realignment**

The federal posture with respect to both Alaska and Alaskan resource needs has changed little since the state’s admission to the Union.

A. Appoint a Special Representative for the Secretary of Commerce for Alaska (in parallel with DOI Special Assistant for Alaska).

B. Appoint a Federal Oceans Liaison to Alaska Native Tribes.

C. Establish *Alaska Ocean Advisory Council*, representing all stakeholders in Alaska offshore management, advising government and industry.

D. Establish U.S. Seabird Commission (to function like, or join with, the U.S. Marine Mammal Commission).

E. Restructure NOAA Alaska, segregating fisheries management from ecosystem components (marine mammals, seabirds, habitat and ESA components), to eliminate the conflict between competing interests; form NOAA Marine Ecological Services as separate, integrated agency alongside NOAA Fisheries.

F. Reauthorize federal *Oil Spill Liability Trust Fund* (OSLTF); develop formula to share 50% of its annual revenue (thus roughly $250 million/year) with states for spill prevention and response efforts.
G. Establish Arctic Regional Citizens Advisory Council (RCAC) based on the Prince William Sound model, funded out of OSLTF, to provide authentic engagement of coastal Alaska Native tribes on all offshore issues in Arctic.

5. Marine Research and Outreach

A. Increase federal funding for Alaska marine ecosystem research across all components of the marine ecosystem, particularly focused on climate change, endangered species, and fisheries.

B. Designate marine Long Term Ecological Research (LTER) sites in Alaska’s federal waters. Specific focal areas include impacts of fishery harvests on overall marine ecosystem, ocean acidification, and climate change.

C. NOAA/NMFS should prioritize development of a comprehensive community based integrated monitoring, observation, research and response program intended to further ocean management; community involvement opportunities and conservation including indigenous “Sentinel” networks. This program should be coordinated with the USCG and could be funded via the Oil Spill Liability Trust Fund (OSLTF).

D. Salmon Research - Many salmon species, especially Chinook (king) salmon, are experiencing precipitous declines. Salmon occupy a unique ecological niche representing the overall health of pelagic, coastal and terrestrial systems. An important yet poorly understood component of salmon productivity is their open ocean life stages. This needs focused federal attention.
   a. Develop a comprehensive research program to understand the mechanisms for salmon declines in size and productivity in the North Pacific.
   b. Identify actions to minimize the negative impacts of salmon declines on Indigenous communities.

E. NOAA should adopt a robust scientific integrity policy that includes protections for the right of its funded scientists to publicly express their professional scientific opinion without fear of agency reprisal.

F. Publish annual State of the Seas – Alaska report for the public, summarizing all relevant marine issues over the year; marine research results, fishery performance, threatened and endangered species status, unusual mortality events, oil spills, marine debris and invasive species issues, ship traffic, sea ice cover, and climate change impacts; identify a spectrum of specific management remedies policymakers may consider to help sustain Alaska’s marine ecosystems.
August 11, 2014

TO: Ocean conservation colleagues

FR: Rick Steiner, Oasis Earth, Anchorage, AK (Professor, University of Alaska ret.)
     Jeff Ruch, Executive Director, Public Employees for Environmental Responsibility (PEER), Washington, DC

RE: Marine National Monuments in Alaska

Summary:
A network of grassroots advocates, current and former government experts and scientists are developing proposals for designating Marine National Monuments under the Antiquities Act in Alaska. This effort centers on four proposals: three specific regions in the Alaska Exclusive Economic Zone (EEZ), and one to be negotiated with other nations in international waters of the High Arctic. The proposed areas are spectacular, unique, productive, and threatened, and their permanent protection would add significant, and much needed, diversity to the nation’s portfolio of federal marine monuments and sanctuaries.

Background:
Alaska’s seas and coasts are unique and globally significant for their diversity, expanse, abundance of fish and wildlife, as well as historical, cultural and economic significance. Although more than half of Alaska’s lands receive permanent federal protection, none of Alaska’s federal waters receive comparable, permanent protection.

Half of the nation’s entire shoreline and three-fourths of our total continental shelf are in Alaska. Its 200-mile EEZ is more than twice the size of Alaska’s land area. This vast area hosts the most abundant populations of fish, shellfish, seabirds and marine mammals in the nation, and some of the most abundant in the world. Alaska waters also support thousands of jobs and a multibillion-dollar economy, including seafood landings larger than those of all other states combined, a growing marine recreation and tourism industry and subsistence of coastal residents.

By any measure, Alaska’s seas and coasts are a crown jewel of our nation’s maritime assets, of global significance, and contain several unique areas that deserve permanent federal protection. But, aside from inside waters within Glacier Bay National Park, to date there is not one permanently protected area of federal waters (e.g. National Marine Sanctuary or Marine National Monument) in Alaska.

Urgent Need:
Most of Alaska’s threatened & endangered species are marine animals, and many seabird and marine mammal populations throughout Alaska are in decline – the result, many scientists suspect, of excessive harvests of certain fish populations in combination with long-term changes in the ocean environment. Climate change is reducing sea-ice cover
and leading to unprecedented marine ecosystem impacts, including ocean acidification
and coastal erosion. Persistent organic pollutants such are now found in Alaska's marine
mammals; marine debris continues to kill indiscriminately; and the ecological injury from
just one grounded oil tanker (Exxon Valdez) persists 25 years later.

Increased ship traffic - oil tankers, freight vessels, and cruise ships - produce underwater
noise, oil spills, whale-ship strikes, and invasive species introductions. The Alaska Outer
Continental Shelf (OCS) is one of the last remaining large offshore hydrocarbon
prospects in the nation, and is the target of both current and future leasing plans. The
federal government estimates that the Alaska OCS may contain 50 billion – 100 billion
barrels of oil equivalent (oil & gas).

Meanwhile, the state's approximately 218 Marine Protected Areas (MPAs) -- including
various fishery-management closures, buffers around sea lion rookeries, research reserves,
state marine parks, critical habitat areas, game sanctuaries and recreation areas -- offer
few meaningful safeguards against these rising threats. These MPAs are mostly limited
to inshore waters, provide minimal protections, and are often temporary. Recent attempts
to secure permanent federal protections in Alaskan waters have been unsuccessful.

Marine National Monument Candidates:
The three areas in Alaska that we propose for consideration as Marine National
Monuments (MNM) are –

1. Aleutian Islands
2. Bering Strait
3. Arctic Coastal

These Marine National Monument designations in Alaska would provide the following:

- Protect Alaska Native subsistence;
- Prohibit all oil, gas, and mineral development;
- Develop specific regulations to reduce risks from ship traffic – e.g. Areas-To-Be
  Avoided (ATBAs), routing agreements, vessel traffic systems, real-time vessel
  tracking requirements, rescue/escort tug requirements, emergency tow packages,
  etc. In addition, the Aleutians and Bering Strait should be designated as
  Particularly Sensitive Sea Areas (PSSAs) under the U.N. International Maritime
  Organization (IMO); and
- Institute a spectrum of targeted fisheries management regulations to provide
  fishery reserves; protect small boat, shore-based fisheries; protect marine
  mammals and seabird foraging habitat and prey species; and limit certain
  destructive on-bottom fishing gear, such as longlines and bottom trawls. Pot
  fishing gear (for king crab, tanner crab, cod, etc.) should not be restricted in the
  Monuments, as these gear types have relatively less impact on marine habitat.
  We also note that many of Alaska’s most valuable fisheries (e.g., salmon, herring)
  are conducted largely in state waters (from 0-3 miles offshore), and thus would
  not be directly affected by the Monument protections in federal waters, indeed
should benefit from the federal designations as by-catch of their target species is reduced.

It is to be expected that the State of Alaska, its congressional delegation and certain industrial interests will oppose such Monument designations, and that state waters (0-3 miles) would almost certainly not be afforded corresponding protections. But it is clearly in the national interest to provide permanent protection to the federal waters and resources as proposed.

While all relevant local stakeholders should be consulted (especially Alaska Native interests in the areas proposed, including federally recognized tribes, corporations, Community Development Quota groups, the marine mammal co-management commissions, and others as appropriate), there is also a need to look beyond local parochial politics of Alaska in order to protect these precious federally-managed marine ecosystems as an historic national legacy for all Americans, present and future. This is what occurred on Alaska’s lands with the bold leadership of the Carter administration leading to the Alaska National Interest Lands Conservation Act (ANILCA) in 1980, which was accomplished over the strident objections of many interests in Alaska. And this is precisely what the Obama administration can, and must, do now for Alaska’s unique and productive marine ecosystems.

In a July 2009 letter to the NOAA administrator, we proposed two of the above-cited areas (Unimak Pass/Eastern Aleutians and Bering Strait) for protection, but at the time the NOAA Administrator responded (Sept. 2009) that the agency had no “plans to initiate an assessment” of potential marine sanctuaries “in the immediate future.” However, the administrator further wrote:

“NOAA will, however, take your recommendation under advisement, and consider conducting such an assessment as soon as circumstances allow. My hope is that assessment of the Unimak Pass and Bering Strait would be conducted as part of a comprehensive review of our Nation’s marine waters, including a review of the need for additional protected areas, as you suggest in your letter.”

Today, the posture of NOAA on new marine sanctuaries and protected areas has changed, and the agency recently reopened the Sanctuary public nomination process. We have attached the 2009 correspondence, which provides a brief background on some of the resource values and threats in Unimak Pass/Eastern Aleutians and Bering Strait. But to be clear, the current proposals are an expanded version of that earlier request, specifically:

Aleutian Islands: Federal waters along the entire Aleutian Islands archipelago, to 50 nautical miles north and south of the islands, should be designated a Marine National Monument. This is significantly larger than just the Unimak Pass/eastern Aleutians proposed in 2009. The reason for the proposed expansion is to incorporate the unique cold-water coral communities of the western Aleutians, additional marine mammal and seabird pelagic habitat, and east of Unimak Pass
to incorporate all North Pacific Right Whale (*Eubalaena japonica*) critical habitat and the *North Aleutian Basin* OCS planning area. The Aleutian region includes some of the richest and most unique marine habitat in the world ocean. In fact, this region received one of the very first marine protective designations in U.S. history, when in 1913 President Taft reserved the Aleutians and its offshore waters, from Unimak to Attu, as a wildlife sanctuary (Executive Order 1733: “Establishing Aleutian Islands Reservation as Preserve for Native Birds, Animals, and Fish” March 3, 1913).

The eastern boundary of the proposed *Aleutian Islands Marine National Monument* should encompass critical habitat for the North Pacific Right Whale (the most critically endangered cetacean globally), and the *North Aleutian Basin* (NAB) OCS Planning Area, to *permanently* exclude these areas from oil and gas leasing. The current presidential withdrawal for the NAB is set to expire June 30, 2017, and we feel that even a “permanent” presidential withdrawal by the Obama administration will not provide certainty that the area will remain withdrawn in subsequent administrations. Thus, the NAB and Right Whale habitat area should be included in the Aleutian Islands MNM, to *permanently* exclude oil and gas leasing, and to impose more stringent shipping safety protocols (e.g. measures to reduce whale-ship strike risk). And, the Aleutian Islands MNM should be nominated by the administration as a PSSA in the IMO process.

Targeted fishery/marine ecological reserves should be established in the western part of the Monument, restricting certain trawl and longline fisheries. These reserves will enhance marine mammal and seabird populations, protect coral and other benthic communities, and enhance small-scale, shore-based fisheries in the region.

**Bering Strait:** As described in the 2009 proposal, the federal waters of the Bering Strait area should be designated a Marine National Monument. Ideally, this should be done in a cooperative fashion with the Russian Federation, seeking to manage waters and lands across the Bering Strait in a cooperative, ecosystem-based regime. There are currently at least two areas in the region identified by NOAA as marine “biological hotspots,” and part of the Distributed Biological Observatory, as well as Biologically Important Areas (BIAs) identified for marine mammals. The boundaries of the MNM should extend south to St. Lawrence Island in the northern Bering Sea, and north to Point Hope in the southern Chukchi Sea.

The Bering Strait MNM should prohibit oil, gas, and mineral development, and prohibit trawl fisheries (which do not exist at present). The region proposed as Monument encompasses two current OCS planning areas: the Norton Basin (south of the Strait), and Hope Basin (north of the Strait). The Monument would permanently withdraw both of these planning areas from leasing. And the prohibition of trawl fisheries in the Monument (federal waters) will protect the small boat, shore based king crab fishery operated from Nome, as well as the
small-scale village halibut fisheries. Most other commercial fisheries in the region – e.g., salmon and herring - are conducted within state waters, would thus remain unaffected by the federal Monument restrictions. As well, subsistence activities would remain unaffected. And, the Bering Strait MNM should be nominated by the administration as a PSSA in the IMO process.

**Arctic Coastal:** The current near shore federal OCS lease withdrawals along the Arctic coast of Alaska – the 25-mile “buffer” along the Chukchi Sea coast, together with a proposed 25-mile offshore buffer along the Beaufort Sea coast – should be designated an Arctic Coastal MNM. This MNM will afford federal waters of the Arctic Coastal ecosystem (3-25 miles offshore) permanent protection. The existing Chukchi buffer was established to protect Alaska Native subsistence uses and this should be expanded to include a similar withdrawal in the Beaufort Sea, and these withdrawals would be made permanent with Monument designation. This will reduce the many impacts associated with oil and gas exploration and development, including the substantial risk of major oil spills in the coastal region. As well, the area should remain off-limits to large-scale commercial fisheries, particularly trawl gear. The Arctic Coastal MNM should encompass the two large-scale marine “biological hotspots” identified in the region, as well as the Biologically Important Areas (BIAs) identified for marine mammals. The Arctic Coastal MNM establishment will provide a model for other Arctic nations to follow, to protect Arctic coastal ecosystems and residents.

**High Arctic Marine Sanctuary:** In 2015 when Secretary of State Kerry assumes the Chair of the Arctic Council, the U.S. should take the lead in negotiating the establishment of a High Arctic Marine Sanctuary on all international waters of the Arctic Ocean beyond coastal state EEZs. Many NGOs, as well as the European Parliament, endorse this proposal. The High Arctic Marine Sanctuary should be managed much as the Antarctic Treaty nations manage the Antarctic, at a minimum permanently prohibiting oil, gas, and mineral development; commercial fisheries; and military activities. The High Arctic region should be reserved for peaceful, scientific purposes. The administration should negotiate establishment of an International Arctic Marine Environment Council, convened under the auspices of the U.N., to provide constructive engagement between all nations in governing the High Arctic Marine Sanctuary, including, but not limited to, the eight state members of the Arctic Council.
January 27, 2015

NOMINATION OF ALEUTIAN ISLANDS MARINE NATIONAL MONUMENT

Section I - Basics

- Nomination Title

Aleutian Islands Marine National Monument (AIMNM)

- Nominator Name(s) and Affiliation(s)

Public Employees for Environmental Responsibility (PEER) – a national 501(c) (3) nonprofit environmental organization (tax number 93-1102740) dedicated to assisting current and former public servants better protect the planet and headquartered in Washington, DC. This nomination is made on behalf of Alaskan members of PEER who have dedicated their careers to the protection of that state’s and the Arctic marine environment.

- Nomination Point of Contact

The point of contact in this matter is Richard Steiner, a member of the PEER Board of Directors, a retired University of Alaska professor of marine conservation, and a marine conservation consultant who has worked periodically in the nominated region since the 1970s in marine education, conservation, research, fisheries development, shipping safety, and commercial fishing.

His contact information is as follows:
Richard Steiner

An alternate point of contact is:
Jeff Ruch
PEER Executive Director
Section II - Introduction

- Narrative Description

Alaska’s seas and coasts are unique and globally significant for their diversity, expanse, and abundance of fish and wildlife, as well as their historical, cultural, and economic significance. Although more than half of Alaska’s lands receive permanent federal protection, virtually none of Alaska’s federal waters receive comparable protective status.

All federal waters along the entire Aleutian Islands archipelago (from 3 to 200 nautical miles north and south of the islands) to the Alaska mainland, including federal waters off the Pribilof Islands and Bristol Bay, are proposed for designation as a Marine National Monument by the President, using executive authority under the Antiquities Act.

The monument will incorporate extensive, highly productive fish and crab habitat; unique cold-water coral and sponge benthic communities; unique hydrothermal vent ecosystems; seamount habitats; much of the Aleutian Trench; part of the Aleutian Basin; extensive marine mammal and seabird pelagic foraging habitat; endangered North Pacific Right Whale (*Eubalaena japonica*) critical habitat; Steller sea lion critical habitat; Southwest Alaska sea otter critical habitat; crab, halibut, herring, scallop, and salmon “savings (protection) areas;” and the seven Outer Continental Shelf (OCS) Planning Areas in the region, including the North Aleutian Basin (NAB) Planning Area [map attachment 1].

This monument designation would encompass an offshore area of approximately 554,000 square nautical miles (nm²), an area larger than the recently expanded Pacific Remote Islands Marine National Monument, which covers approximately 370,000 nm². As such, the proposed Aleutian Islands marine monument would constitute the nation’s largest marine protected area, and one of the largest in the world. It should be noted that in much of the proposed area, no new management restrictions are proposed herein, but all protections existing as of the date of nomination are to be enshrined permanently in regulation.

In further comparison with the Pacific Remote monument, the Aleutian Islands marine ecosystem is more biologically productive, has been more extensively exploited for commercial fisheries and marine mammal harvests for centuries, and is currently at greater immediate risk from overexploitation of marine resources, shipping, and offshore oil and gas development. In addition, the Aleutian Islands region has several thousand local residents who rely on the marine ecosystem.

- Goals Description
The Aleutian region includes some of the richest and most singular marine habitats in the world ocean. In fact, this region received one of the very first marine protective designations in U.S. history, when in 1913 President Taft reserved the Aleutians and its offshore waters, from Unimak to Attu, as a wildlife sanctuary (Executive Order 1733: “Establishing Aleutian Islands Reservation as Preserve for Native Birds, Animals, and Fish” March 3, 1913).

The Aleutian Islands Biosphere Reserve was designated by UNESCO in 1976, and the 1980 Alaska National Interest Lands Conservation Act (ANILCA) established the Alaska Maritime National Wildlife Refuge and the 1.3 million acre Aleutian Islands Wilderness, which pertains to the islands in the region.

Yet as detailed in Consideration 3 (below), Aleutian waters face rising threats on many fronts, with scant protection.

Through designation of the Aleutian Islands Marine National Monument (AIMNM), we propose the following management goals:

1. Protect seabird, marine mammal, and fish habitat, and restore populations and marine ecological resilience;
2. Protect and enhance Alaska Native marine subsistence;
3. Protect and enhance coastal small-boat fisheries;
4. Identify, monitor, and protect unique seabed habitats, including cold-water corals;
5. Reduce environmental risks from shipping, including oil and hazardous cargo spills, and whale-ship strikes;
6. Eliminate environmental risks from offshore oil and gas development;
7. Monitor and manage risks of marine invasive species introductions;
8. Reduce and manage marine debris;
9. Enhance marine eco-tourism development; and
10. Enhance scientific understanding of the region.

To achieve these overall management goals, we propose the following objectives:

- Permanently prohibit offshore oil, gas, and mineral leasing – All waters within the AIMNM would be permanently excluded from oil, gas, and mineral leasing, including waters in the Department of Interior’s North Aleutian Basin (NAB) OCS Planning Area. In addition, the permanent prohibition on oil and gas leasing will apply to the Shumagin, St. George Basin, Aleutian Arc, Bowers Basin, St. Mathew-Hall Basin, and Aleutian
Basin OCS Planning Areas. Even though the presidential withdrawal of the NAB area was extended by the December 16, 2014 Presidential Memorandum under section 12(a) of the Outer Continental Shelf Lands Act (OCSLA), the risk remains that Congress or a future administration may eliminate the withdrawal and reopen this, or other Planning Areas, to oil and gas development. The AIMNM designation will specifically preclude such action, and permanently prohibit offshore petroleum exploration and development in the entire region.

- **Protect Alaska Native subsistence and coastal fisheries** – The AIMNM will work with coastal residents of the region, particularly Alaska Natives, to protect marine subsistence activities; provide a substantial protected fishery reserve; and protect and enhance small boat, shore-based fisheries in the region.

- **Protect marine mammal and seabird foraging habitat and prey species.** While much of the *reproductive habitat* for seabirds and marine mammals on islands of the Aleutian region is currently protected (e.g. by the Alaska Maritime National Wildlife Refuge and National Marine Fisheries Service), most marine *foraging habitat* is not adequately protected. This has contributed to the alarming decline of many seabird and marine mammal populations throughout the Aleutian region, and an overall decline in the ecological health and integrity of the marine ecosystem. Filling this gap is a primary goal for the AIMNM.

- **Enshrine in regulation, and expand, habitat and species protections existing as of the date of nomination, December 22, 2014** – The eastern edge of the proposed Aleutian Islands Marine National Monument (AIMNM) would encompass critical habitat for the North Pacific Right Whale (the most critically endangered whale globally). In addition, the AIMNM would make permanent the many laudable habitat and species conservation measures which have been implemented by the North Pacific Fishery Management Council (NPFMC) and National Marine Fisheries Service (NMFS) throughout the region, including closures of some (but not all) deepwater coral and sponge habitat in the Aleutian Islands Coral Habitat Protection Areas; Aleutian Islands Habitat Conservation Area (AIHCA); Bowers Ridge Habitat Conservation Zone; Alaska Seamount Habitat Protection Areas; Bering Sea Habitat Conservation Area; Nunivak Island, Etolin Strait, Kuskokwim Bay Habitat Conservation Area; Southwestern sea otter critical habitat; Walrus Islands federal closures; Gulf of Alaska Slope HCA; crab, halibut, herring, and salmon “savings areas;” all marine mammal conservation measures, including all Steller sea lion critical habitat; Scallop Conservation Areas; skate egg concentration Habitat Areas of Particular Concern (HAPC); Pribilof Island Habitat Conservation Area; the non-pelagic trawl closures along the south side of the Alaska Peninsula; and the Nearshore Bristol Bay Trawl Closure (map attachments 2, 3, and 4).

However, the current fishery restrictions were implemented by the NPFMC and NMFS without full consideration of the full range of ecological habitat conservation measures necessary. Many feel that the fisheries agency and fisheries council have not adequately balanced and protected non-commercial components of the marine ecosystem, such as seabirds, marine mammals, other fish species, cold-water corals, etc. As example,
despite a continued decline in the sea lion population in the western Aleutians, a November 25, 2014 final rule from NMFS weakens sea lion protections in the region by opening areas previously closed to trawling for pollock, cod, and Atka mackerel. The AIMNM will prohibit actions to remove or weaken existing protections, but will allow additional species and habitat protections to be established.

Thus, if NMFS or NPFMC reduce or eliminate any of the existing marine habitat or species protections in the region, the AIMNM will revert to the precise habitat and species protections that existed on November 1, 2014. As such, the November 25, 2014 NMFS rule on Aleutian sea lions would be voided by the AIMNM designation. The AIMNM will permanently enshrine all existing marine habitat and species protections across the entire region in regulation, so that a future fisheries council or agency may not act to eliminate them.

On the other hand, NPFMC and NMFS would be able, and encouraged, to add to or increase any of the existing habitat and species protections in the region, as appropriate, based on the best science. Greater fishery restrictions in the region are clearly necessary to protect and rebuild important components of the marine ecosystem – fish, shellfish, seabirds, and marine mammals.

It is proposed that, west of 170 W and south of 55 N, the AIMNM will extend the existing non-pelagic (bottom) trawl closure (the Aleutian Islands Habitat Conservation Area) to include all federal waters out to 200 nautical miles offshore, thus eliminating the current areas open to bottom trawling in federal waters west of 170 W. As well, the AIMNM will expand the AIHCA trawl closure west of 170 W and south of 55 N, to apply to all trawls, including pelagic trawls, out to 20 miles offshore. The area from 20 – 200 miles offshore in the existing AIHCA will remain as is – all non-pelagic (bottom) trawls will continue to be prohibited, and pelagic trawls permitted.

The AIMNM will also expand, as appropriate and as the science suggests, other fishery and habitat restrictions in the region. These will include additional critical seabed habitat protection closures in areas identified by additional benthic habitat surveys. As well, areas that should be considered for additional protections - in consultation with local Tribal governments, NMFS, and NPFMC - include the Seguam Pass and Bogoslof foraging areas for Steller sea lions; the Pribilof Island HCA; and the Nunivak, Etolin Strait, Kuskokwim Bay HCA. The AIMNM will monitor the recovery of benthic habitat damaged by bottom trawls, and explore the potential for aiding its restoration.

As a significant portion of the commercial fishery catch from the Bering Sea/Aleutian Islands (BSAI) management region comes from Bering Sea sector, outside of waters proposed for inclusion in the AIMNM, the AIMNM will serve as a fishery reserve for rebuilding lucrative Bering Sea fisheries (e.g., crab, pollock, halibut, salmon, cod), protecting and rebuilding seabird and marine mammal populations, reducing by-catch of important "prohibited" species (crab, halibut, salmon), reducing marine debris from bottom hang-ups of bottom trawls, and protecting and enhancing small boat coastal fisheries in the region.
**Regulate transit merchant shipping** – Require all transit ships (e.g. those not calling at Aleutian ports) to route outside of 50 miles offshore, except when transiting North or South between the Bering Sea and North Pacific, through the Aleutian passes such as Unimak Pass, Amchitka Pass, and at Buldir Island. This will affect some 4,000 – 8,000 merchant ships/year (many on “Innocent Passage”) transiting the region between North America and Asia ports. This routing restriction will reduce risks of groundings, heavy fuel oil spills, spills of hazardous cargo (e.g. chemicals, crude oil, petroleum products, etc.), invasive species introductions, and will reduce underwater noise generated from shipping into nearshore waters.

This ship routing restriction, along with others measures to reduce the risk of oil spills or whale-ship strikes, will require designation of the region by the International Maritime Organization (IMO) as a Particularly Sensitive Sea Area (PSSA), as proposed in 2009, and currently in consideration in the Aleutian Islands Risk Assessment process. To date, the only two PSSAs in US waters are the Florida Keys and Papahānaumokuākea Marine National Monument (Northwestern Hawaiian Islands). Until PSSA designation is secured for the Aleutian Islands region, all transit ships should be requested to voluntarily avoid waters within 50 miles of shore within the AINMS, and adopt other safety precautions. For Unimak Pass, a Vessel Traffic Service (VTS) and standby rescue tug should be required.

**Reduce risks from transit ship traffic in offshore waters (50-200 miles) of the AINMS – AINMS designation will facilitate development of the PSSA designation, including the 0-to-50 mile Area-To-Be Avoided (ATBA), other traffic routing agreements, vessel traffic systems, reporting agreements, real-time vessel tracking requirements, rescue/escort tug requirements, emergency tow packages, and more robust in-region oil spill response capacity. Additionally, measures to reduce the risk of whale-ship strikes will be identified and implemented as appropriate, including ship speed limits, marine mammal bow lookouts, night vision systems, active sonar, enhanced automated whale detection systems, acoustic “pingers” on ship bows, and so on.**

This nomination is consistent with, and helps fulfill, Executive Order 13547 issued July 19, 2010 entitled: “Stewardship of the Ocean, our coasts, and the Great Lakes.” As well, it further strengthens the goal of the December 16, 2014 Presidential Memorandum extending the NAB/Bristol Bay leasing withdrawal.

**Location Description**

The Aleutian Islands Marine National Monument (AIMNM) is proposed to include all federal waters (from 3 to 200 miles offshore) north and south of the Aleutian Islands, extending from the US-Russia Maritime Boundary in the west (170 E.), east to 157 W. (a total of 33 degrees Longitude).

The northern boundary of the AIMNM will extend from the US-Russia boundary along the offshore EEZ boundary, to the southeast corner of the Bering Sea “donut hole,” then
in a direct line north of the Pribilof Islands to Nunivak Island, then due east to the 3-mile boundary of Alaska state waters.

The southern boundary will extend from the US-Russia boundary along the offshore EEZ boundary to 157 W.

The AIMNM will encompass and make permanent all habitat and species protections in the region that existed on December 22, 2014, including the entire existing Aleutian Islands Habitat Conservation Area (AIHCA); the southern edge of the Bering Sea Habitat Conservation Area (BSHCA); the Bowers Ridge Habitat Conservation Zone; the Aleutian Islands Coral Habitat Protection Areas; the Alaska Seamount Habitat Protection Area; all Steller sea lion critical habitat; Southwest Alaska sea otter critical habitat; the Pribilof Island Habitat Conservation Area; Nunivak Island, Etolin Strait, Kuskokwim Bay Habitat Conservation Area; Pribilof Island Habitat Conservation Area; skate egg concentration Habitat Areas of Particular Concern; and other habitat and species protections (crab, halibut, salmon, herring, scallop protection areas) established by the North Pacific Fishery Management Council (NPFMC), the National Marine Fisheries Service (NMFS), and US Fish & Wildlife Service (USFWS); and will include the entire Department of Interior (DOI) North Aleutian Basin (NAB) Outer Continental Shelf (OCS) Planning Area (map attachments 2, 3, 4).

The AIMNM would protect a total maritime area of approximately 554,000 square nautical miles.

Section III – Criteria Information

Criteria 1 Ecological Significance

The area's natural resources and ecological qualities are of global significance, and contribute significantly to biological productivity and diversity, maintenance of ecosystem structure and function, maintenance of ecologically and commercially important species and species assemblages, maintenance of critical habitat, representative biogeographic assemblages, and maintenance/enhancement of connectivity to other ecologically significant resources.

The Aleutian Islands marine ecosystem is one of the most biologically productive in the world ocean, supporting the largest populations of marine mammals, seabirds, fish, and shellfish in the nation, and one of the largest anywhere in the world. The marine ecosystem has supported the subsistence needs of coastal Alaska Native people for millennia, has experienced excessive marine mammal harvests by commercial marine mammal hunters and whaling fleets, and more recently has experienced excessive commercial fishery harvests and oil spills from transit shipping.

Of the 450 or so fish species in the region, some 25 are commercially exploited, including pollock, cod, flatfish, sablefish, rockfish, Atka mackerel, halibut, salmon, and herring. Shellfish harvested in the region include king crab, tanner crab, and shrimp.
The Aleutian region is one of the most important seabird habitats in the world, supporting tens of millions of seabirds each summer, including shearwaters, fulmars, petrels, kittiwakes, murres, auklets, albatross, and puffins. The whiskered auklet is endemic to the Aleutians. And the Aleutians serves as a significant spring and fall staging area for migratory waterfowl, including black brant, Taverner’s Canada geese, emperor geese, and Steller’s eiders. The recovery of Aleutian Canada geese is one of the most encouraging bird recovery stories in the world. Once feared extinct, a small remnant population was discovered on Buldir Island in the western Aleutians in the 1960s, from which the USFWS conducted a successful recovery program throughout the Aleutians.

As well, the Aleutian region is one of the most important marine mammal habitats in the world ocean, supporting over 20 species of marine mammals, including sea otter, fur seal, walrus, harbor seal, Steller sea lion, porpoise, killer whale, beluga whale, sperm whale, beaked whales, North Pacific Right whale (the world’s most endangered whale), Humpback whale, Sei whale, Blue whale, Minke whale, Fin whale, and Gray whale. Some of these are year-round residents (sea lions, seals, sea otters), and others are summer migrants (whales, etc.). Many of these are listed as threatened or endangered under the ESA. The western Aleutians region was the only habitat for one of the only marine mammal species to become extinct – the Steller’s sea cow.

From Aleutian Subarea Contingency Plan, US DOI. Threatened &Endangered species in Aleutian region

<table>
<thead>
<tr>
<th>Listed species</th>
<th>Stock</th>
<th>Latin Name</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short-tailed albatross</td>
<td></td>
<td>Phoebastria albatrus</td>
<td>Endangered</td>
</tr>
<tr>
<td>Steller’s eider</td>
<td>Alaska breeding</td>
<td>Polysticta stelleri</td>
<td>Threatened</td>
</tr>
<tr>
<td>Spectacled eider</td>
<td></td>
<td>Somateria fischeri</td>
<td>Threatened</td>
</tr>
<tr>
<td>Blue whale</td>
<td></td>
<td>Balaenoptera musculus</td>
<td>Endangered</td>
</tr>
<tr>
<td>Humpback whale</td>
<td></td>
<td>Megaptera novaeangliae</td>
<td>Endangered</td>
</tr>
<tr>
<td>Fin whale</td>
<td></td>
<td>Balaenoptera physalus</td>
<td>Endangered</td>
</tr>
<tr>
<td>Sei whale</td>
<td></td>
<td>Balaena borealis</td>
<td>Endangered</td>
</tr>
<tr>
<td>Sperm whale</td>
<td></td>
<td>Physeter macrocephalus</td>
<td>Endangered</td>
</tr>
<tr>
<td>Northern right whale</td>
<td>Southwest</td>
<td>Eubalaena glacialis</td>
<td>Endangered</td>
</tr>
<tr>
<td>Northern sea otter</td>
<td></td>
<td>Enhydra lutris kenyoni</td>
<td>Threatened</td>
</tr>
<tr>
<td>Steller sea lion</td>
<td>West of 140 degrees N</td>
<td>Eumetopius jubatus</td>
<td>Endangered</td>
</tr>
</tbody>
</table>

**Designated Critical Habitat**

<table>
<thead>
<tr>
<th>Species Group</th>
<th>General Reference Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whales</td>
<td>Northern right whale in Bering Sea waters north of False Pass</td>
</tr>
<tr>
<td>Birds</td>
<td>Spectacled eider critical habitat has been designated at Nelson and Izembek lagoons</td>
</tr>
<tr>
<td>Sea otters</td>
<td>Aleutian Islands</td>
</tr>
<tr>
<td>Sea lions</td>
<td>20 miles seaward around each major haulout</td>
</tr>
</tbody>
</table>

Benthic habitats along the Aleutians also harbor the highest diversity and abundance of cold-water corals (some that can live up to 200 years) in the world, in addition to sponge habitat and unique hydrothermal vent ecosystems. Scientists have identified 101 cold water coral species in
the region (about half of which are endemic to the Aleutians), and 136 sponge species, many of them new to science.

Regarding ecological connectivity, Unimak Pass, for example, is recognized as one of the most important migratory bird and marine mammal corridors in the world ocean, and can be fairly considered a “marine ecological gateway.” Much of the migration of whales, seals, seabirds, and fish (e.g. Bristol Bay red salmon) pass seasonally through this Aleutian pass. Aleutian Island passes are also a vital areas for zooplankton (euphausiids and copepods), squid, and forage fish, particularly young-of-the-year pollock and lanternfishes, and thus are critically important feeding areas for seabirds and marine mammals from throughout the North Pacific. The passes area also transition zones between the polar seas of the Bering and the Arctic and the temperate waters of the mid-latitude, northern Pacific Ocean.

Criteria 2 Historic Resources

The area contains submerged maritime heritage resources of special historical, cultural, or archaeological significance in that individually and collectively it contains many resources that are consistent with the criteria of eligibility for listing on the National Register of Historic Places; have met or which would meet the criteria for designation as a National Historic Landmark; or have special or sacred meaning to the Indigenous People of the region and nation. Uncontrolled access to archeological or paleontological sites can be damaging. Many of these resources are in areas protected only by their remoteness, and severe weather conditions.

Coastal sites in the Aleutians currently listed as National Historic Landmarks include:

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adak Army Base and Naval Operating Base</td>
<td>Adak</td>
</tr>
<tr>
<td>Anangula Archeological District</td>
<td>Nikolski vicinity</td>
</tr>
<tr>
<td>Attu Battlefield and U.S. Army and Navy Airfields</td>
<td>Attu</td>
</tr>
<tr>
<td>Cape Field at Fort Glenn</td>
<td>Umnak Island</td>
</tr>
<tr>
<td>Chaluka Site</td>
<td>Umnak Island</td>
</tr>
<tr>
<td>Dutch Harbor Naval Operating Base and Ft. Mears</td>
<td>Amaknak Island</td>
</tr>
<tr>
<td>Holy Ascension Orthodox Church</td>
<td>Unalaska</td>
</tr>
<tr>
<td>Japanese Occupation Site</td>
<td>Kiska</td>
</tr>
<tr>
<td>Seal Islands Historic District</td>
<td>Pribilof Islands</td>
</tr>
</tbody>
</table>

Notably, the Aleutian region is the only place in the U.S. that has been invaded and occupied by a foreign military (Japan, WWII). In addition, the Aleutians were the site of the Amchitka nuclear tests in 1965, 1969, and 1971 - the largest underground nuclear test in US history.

Moreover, there are more than 180 known shipwrecks and groundings in or adjacent to Aleutian waters. [See Attachment 5, with known wrecks organized by island].

Finally, it is highly likely that many yet to be identified marine archaeological and historic sites exist in the Aleutians. The AINMS will seek to identify such sites.
Criteria 3 Economic Value

The Aleutian Islands are home to the largest fishing port in the U.S. Each year nearly a billion pounds of fish and shellfish are landed at Dutch Harbor. Altogether, the sustainable fishery resources in the area are worth over $2 billion dollars annually:

<table>
<thead>
<tr>
<th>Gross Commercial Fishery Values for State and Federal Waters of the Bering Sea and Aleutian Islands Management Area, 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salmon $449.8 million</td>
</tr>
<tr>
<td>Halibut $43.3 million</td>
</tr>
<tr>
<td>Herring $26.6 million</td>
</tr>
<tr>
<td>Crab $236.4 million</td>
</tr>
<tr>
<td>Other $1.4 million</td>
</tr>
<tr>
<td>Groundfish $1,580 million</td>
</tr>
<tr>
<td>TOTAL $2.34 billion</td>
</tr>
</tbody>
</table>


A substantial portion of this fishery harvest derives from waters proposed for inclusion in the AINMS. In particular, of critical importance to the coastal economy of the proposed region is the Bristol Bay red (sockeye) salmon fishery, which is the largest sockeye run in the world.

In addition to commercial fishing, subsistence fishing is extremely significant to local residents. All five species of Pacific salmon use waters of the Aleutian Islands. The species and number of salmon harvested for subsistence varies greatly among communities. Other than salmon, subsistence fisheries in the area include crab and halibut.

While marine tourism is not yet a major industry in the region, it is steadily growing, and has significant growth potential. The number of charter boats and hotels is on the rise, as are flights into Unalaska / Dutch Harbor, as well as other areas.

Criteria 4 Public Benefits

The publically derived benefits of the area proposed for inclusion in the AIMNM include commercial value, seafood production, aesthetic and intrinsic value, public recreation, and tourism, and all depend on conservation, recovery, and sustainable management of the area's unique and productive marine resources.

As discussed above, the Aleutian Islands region is a critical component supporting the world’s largest groundfish fisheries, as well as the world's largest red salmon fishery. In addition, the region hosts the most abundant marine mammal, seabird, shellfish, and fish populations in the world ocean. It is truly one of the last great maritime wilderness areas in US waters. Conserving such marine ecological resources is of paramount importance to our national ocean policy.
Even if the general public finds it difficult and expensive to visit this region, conserving the ecological resources is important to all Americans. If a non-use, contingent valuation economic study were to be conducted for the Aleutian region, we are confident it would estimate the intrinsic value of protecting the region in the range of billions of dollars per year.

Section IV – Consideration Information

Consideration 1. Opportunities for research in marine science.

The AIMNM will expand marine biological research in the Aleutian region, and the region will be nominated for designation as a marine Long-Term Ecological Research (LTER) Site within the National Science Foundation network. There are currently no marine LTERs in subarctic or arctic waters of the U.S. A focus of the LTER will be marine ecological resilience and recovery from excessive fishery harvests and impacts.

While the Aleutian Islands are a biologically diverse and productive marine ecosystem, little is known about its internal dynamics. Marine population declines and extinctions have occurred in the region. Several species of seabirds and marine mammals residing in or utilizing the Aleutian Islands are listed under the Endangered Species Act. In addition, severe economic losses have resulted from the collapse of economically valuable species, such as red king crab.

Conferring monument status would allow researchers the opportunities to better understand a myriad of still largely unmet information needs, such as –

- The effects of climate change, including acidification, in cold water marine ecosystems;
- Species abundance trends;
- Contours and dynamics of the foraging, spawning, and nursery habitats of marine species;
- The recovery of seabed habitat damaged by bottom trawling, and the potential to aid in its restoration;
- The role of deep passes in limiting the distribution of species;
- Linkages between fish and invertebrate populations in the Aleutian Islands to the open ocean ecosystem and to the Bering Sea and Gulf of Alaska;
- The relationship between deep ocean ecosystems of the Western Aleutian Islands and shallower Bering Sea;
- Whether the Aleutian Islands are a wholly separate ecosystem;
- The distribution of unique habitat features such as cold-water corals and sponges, as well as kelp and other macroalgae; and
- The functional roles of commercial species in marine food webs.
- Marine ecological resilience and recovery from overexploitation (trophic cascade hypotheses, etc.)

Besides these and other biological research opportunities, as noted above, the Aleutians contain many yet to be identified marine archaeological and historic sites. Cataloging and documenting these sites is a vast undertaking which would further marine archaeological research.
Consideration 2. Opportunities for education, understanding, and appreciation of the marine environment.

The region proposed for inclusion in the AIMNM offers world-class opportunities for public education, understanding, and appreciation of productive, sub-arctic marine ecosystems. While the region is remote, has notoriously inclement weather, and is very difficult to access, the unique region can, and should, be presented more effectively to the public via media, such as television, and print media. The AIMNM will expand such public educational outreach efforts.

In addition, marine ecotourism can, and should, be enhanced and expanded in the Aleutian region. This will be a goal for the AIMNM.

Consideration 3. Adverse impacts and threats from current or future uses.

The area of the proposed AIMNM is at risk from four main threats: overfishing, oil and gas development, invasive species, and increasing shipping. These threats are, in turn, aggravated by the growing effects of climate change.

A. Pattern of Excessive Harvest Drives Species and Habitat Decline. Most of Alaska's threatened and endangered species are marine animals, and many seabird and marine mammal populations throughout Aleutians are in decline – the result, many scientists suspect, of excessive harvests of certain fish populations in combination with long-term changes in the ocean environment. While some laudable habitat and species conservation restrictions have been implemented by NMFS/NPFMC (as discussed above), some populations continue to decline, and many are not recovering sufficiently. It is clear that existing restrictions are not sufficient to restore the ecological integrity of the region.

B. Risks from Offshore Oil Development. The Alaska Outer Continental Shelf (OCS) is one of the last remaining large offshore hydrocarbon prospects in the nation, and is the target of both current and future leasing plans. The federal government estimates that the Alaska OCS may contain between 50 billion and 100 billion barrels of oil equivalent (oil & gas).

The Department of Interior's North Aleutian Basin (NAB) Planning Area covers the majority of the eastern edge of the proposed AIMMS area, including Bristol Bay. But as many local communities and commercial fishermen strongly oppose offshore oil and gas leasing in this region, the NAB area was removed from the proposed leasing schedule in March 2010 by presidential withdrawal under section 12(a) of the Outer Continental Shelf Lands Act (OCSLA). And even though the OCSLA withdrawal was extended by the December 16, 2014 Presidential Memorandum, the risk remains that Congress or a future administration could eliminate the OCSLA withdrawal and reopen the area to oil and gas development. The AIMNM designation would specifically preclude such.

In addition, other OCS Planning Areas in the proposed AIMMS boundaries include the Shumagin, St. George Basin, Aleutian Arc, Bowers Basin, St. Mathew-Hall Basin, and Aleutian Basin Planning Areas. The AIMMS designation would permanently prohibit opening of these Planning Areas as well.
There are significant concerns among many local people, and people across the U.S., regarding offshore development of oil and gas in the region through which the largest red salmon run in the world migrates. Each summer, juvenile Bristol Bay salmon migrate outbound, and adult salmon migrate inbound, directly through the NAB region. Beyond the normal operational impacts of potential offshore drilling and production in the NAB region (waste discharge, noise, habitat disturbance, etc.), there is a very real concern regarding the risk of a major oil spill. Regardless of how safely government and industry intend to develop offshore petroleum resources, the risk of a catastrophic oil spill cannot be eliminated. Many see this as an unacceptable risk to impose in such a biologically productive marine ecosystem.

Fishermen and local communities are keenly aware of the Deepwater Horizon disaster in the Gulf of Mexico, and are worried that such a blowout in the NAB area would devastate the Bristol Bay salmon fishery and other coastal resources. Fishermen are also aware that the ecological injury from the 1989 Exxon Valdez Oil Spill in Alaska's Prince William Sound persists today, over 25 years later. One fish population in the oil spill region - Pacific herring - is still listed today by government agencies as "Not Recovering."

C. Invasive Species. Another risk from oil and gas development and shipping is the introduction of invasive marine species. One international expert, Dr. Gregory Ruiz based at the Smithsonian Environmental Research Center, warned of vulnerabilities in current approaches in an email exchange with federal and state officials in March 2006. Dr. Ruiz cited “many gaps” in anti-invasive safeguards, including:

- **Vague Standards.** Hull cleaning standards are “largely undefined… the frequency of cleaning or magnitude of fouling is not explicit. Unlike ballast water, there are few contemporary studies of hull fouling on commercial vessels to define the effect of time, hull husbandry, and vessel type on biofouling – so there is a clear lack of information that would be useful in setting quantitative guidelines or regulations in this area”;

- **Rig Loopholes.** “Of great concern to me is the transport of drilling platforms/rigs. When a rig is moved from a prior deployment, it is likely heavily fouled – much more so than commercial vessels, which are in motion (having limited residence time for colonization) and move quickly (sheering off organisms)”;

- **Ballast Water.** “Coastwise, or domestic-source, traffic arriving to Alaska are not required to treat ballast – and hence the door is wide open for non-native species transfers from such ‘invasion hotspots’ as San Francisco Bay and Long Beach, source ports for many tankers.” While dedicated tanker traffic to Prince William Sound does manage ballast water, other transit ships through the Aleutians do not effectively manage the potential for invasive species introductions. Some ships likely conduct open ocean exchange of ballast water in the region.

One analyst from the U.S. Department of Interior, Jeffrey Childs, proposed to integrate invasive species concerns into environmental assessments and mitigations for permitting activities,
warning that “The introduction of non-native species to Alaska waters that subsequently become invasive may very well yield much greater significant adverse impacts than a large oil spill.”

Indeed, in its 2009 comments to the Obama administration’s Outer Continental Shelf Oil and Gas Strategy, NOAA recommended buffer zones that would bar drilling “around… Habitat Areas of Particular Concern, Critical Habitat for endangered and threatened species, [and] major fishing grounds,” due in part to invasive species risk.

D. Ship Traffic on the Rise. The Arctic has witnessed a much faster than anticipated decline of sea ice and this trend will transform the Arctic Ocean into a navigable seaway over the coming decades. Commercial shipping companies are plotting new shipping lanes across the “opening” Arctic. Besides freight vessels (e.g. bulk freighters, container ships, car carriers), we expect increased ship traffic along the Aleutians from oil and chemical tankers, and cruise ships.

This increased traffic produces more underwater noise that is known to cause impacts to marine populations. Negative impacts of underwater noise have been reported for more than 50 marine species in scientific studies to date. These adverse effects include disruption of normal behavior patterns, such as feeding; temporary loss of hearing or inability of marine mammals to communicate; and disorientation leading to stranding events. While the long-term or cumulative effects of heightened underwater sound levels remain unclear, there is growing concern that living in a noisy environment may push already highly stressed marine animals into population decline, with subsequent effects on marine communities and biodiversity.

Increased ship traffic also increases the risks of whale-ship strikes. Globally, fatal collisions with ships have become a significant threat to whale survival. Ships strikes are on the rise, due to a combination of increasing coastal ship traffic, smaller crew size, larger vessels, and faster speeds. As ships grow larger, the propeller/engine noise is localized far aft (e.g. 300 meters) of the bow of the ship, rendering the relatively silent approaching bow an even greater collision risk to marine mammals.

As well, there is insufficient protection from ship collisions, groundings, and fuel oil and hazardous cargo spills. As the Aleutians have some of the most severe maritime weather in the world, and ship traffic between Asia and North America is increasing in the region, this increases the risk of ship casualties. The passes in Aleutian waters have limited vessel tracking, no established traffic lanes, no vessel traffic system, no speed limits, no mandatory pilotage, no weather restrictions, inadequate or no rescue tug capability, and limited spill response capability. There is immediate risk of oil and other hazardous cargo spills each day in the Aleutians, with potentially catastrophic consequences.

For example, due to the water currents from Unimak Pass into the Bering Sea, a spill at Unimak Pass could spread widely across the southeastern Bering Sea ecosystem. The December 2004 grounding of the Malaysian bulk freighter Selendang Ayu on Unalaska Island gives a hint of the destructive potential. The ship lost engine power in a winter storm and grounded, costing the lives of six crewmembers, spilling over 300,000 gallons of heavy fuel into nearshore waters, and killing thousands of seabirds. Had the ship lost power and grounded at Unimak Pass during
spring or fall, or had this been a chemical or oil tanker, the ecological injury could have been far worse.

E. Climate Change Multiplies Adverse Impacts. Climate change is reducing sea-ice cover and leading to unprecedented marine ecosystem impacts in Alaska, including ocean acidification, warming sea temperatures, altered distribution, and coastal erosion.

Changes in climate and the oceans are causing changes in marine migrations, which threaten to exacerbate the effects of excess fish harvests. Retreating sea ice and warming temperatures enable more Arctic oil and gas activity and increases in ship traffic. The waters of the Bering Sea/Aleutian Islands are more acidic than any other marine waters in the world, due to CO2 absorption. Many in the marine science and fishing community are justifiably worried about acidification.

Summing up the thrust and seriousness of the threats to this ecoregion, the words of the National Research Council its 1996 report on the Bering Sea Ecosystem were prophetic:

“It is extremely unlikely that the productivity of the Bering Sea ecosystem can sustain current rates of human exploitation as well as large populations of all marine mammals and bird species that existed before known exploitation – especially recent exploitation – began.”

Arguably, no place in the American marine environment is more productive, or more at risk, than this area nominated for Marine National Monument protection.

Consideration 4. Unique conservation and management value for this area or adjacent areas.

Alaska's approximately 218 Marine Protected Areas (MPAs) – including various fishery-management closures, buffers around sea lion rookeries, research reserves, state marine parks, critical habitat areas, game sanctuaries and recreation areas – offer few meaningful safeguards against these rising threats. The existing MPAs are mostly limited to inshore waters, provide minimal protections, and are often temporary. Recent attempts to secure permanent federal protections in Alaskan waters have been unsuccessful.

Conserving the region as proposed will relocate some fishing effort, and thus provide a fishery reserve to rebuild harvested fish and shellfish populations in adjacent areas. It will also protect critical feeding and reproductive habitat for many seabirds and whales that migrate to the Aleutians each summer from more southerly waters of the western, central, and eastern North Pacific.

The Aleutian Islands MNM will protect feeding habitat for many seabirds (e.g. albatross) that nest on the Papahānaumokuākea Marine National Monument (Northwestern Hawaiian Islands). Additionally, the AIMNM will protect feeding habitat for whales that winter in US waters further south. For instance, protecting Unimak Pass from shipping and oil spill risks will directly protect the population of Gray whales that migrates along the Pacific coast of the U.S., through
other National Marine Sanctuaries. The AIMNM will also protect feeding habitat for some of the Humpback whales that winter in the Hawaiian Islands Humpback Whale National Marine Sanctuary.

In addition, the AIMNM will work with the State of Alaska to develop corollary protections in state waters (0-3 mile) throughout the region, where appropriate.

**Consideration 5. Supplements existing regulatory and management authorities.**

Even though the December 16, 2014 Presidential Memorandum extends the NAB OCS withdrawal indefinitely, the risk remains that Congress of a future administration may reopen the region to offshore drilling. Thus, the entire NAB OCS Planning Area and North Pacific Right Whale critical habitat area would be included in the AIMNM, to permanently exclude oil and gas leasing, and to impose more stringent shipping safety protocols (e.g. measures to reduce whale-ship strikes and oil spill risks). The AIMNM would facilitate designation of other critical habitat in the region, as appropriate. And, as discussed above, the Aleutian Islands MNM would be nominated by the federal administration as a PSSA in the IMO process, to better manage transit shipping through the region.

As discussed, the AIMNM will complement the existing fishery management regime of the NPFMC and NMFS, by enshrining the existing habitat and species protections in regulation, and encouraging additional fishery management measures that will augment species and habitat protections in the region.

In addition, the AIMNM will complement the Alaska Maritime National Wildlife Refuge (AMNWR) management of seabirds nesting on the Aleutian Islands, by protecting foraging habitat, reducing invasive species, and reducing marine debris.

**Consideration 6. Potential commitments or partnerships to aid conservation.**

Alaska Native Tribal governments in the region will be important co-management partners, as will the Alaska native marine mammals co-management commissions.

The Alaska Maritime National Wildlife Refuge (AMNWR) of the U.S. Fish and Wildlife Service is responsible for managing much of the land area contained within the proposed AINMS, and will be an important partner in AIMNM management. While the management goals for the AMNWR call for protection of foraging habitat for seabirds which nest on the Aleutian Islands, the USFWS has little authority to actually do so. The AIMNM will provide such capability.

The NMFS Alaska Regional Office and the NPFMC will also be important partners. These fisheries management organizations will be encouraged to work with the AIMNM to implement more effective fishery management protocols in the region in order to enhance marine ecosystem recovery and sustainability.

The State of Alaska and local governments will also be important governmental partners in the development and operation of the AIMNM.
**Consideration 7. Community-based support for the nomination.**

The nomination will facilitate a wide-ranging discussion among community organizations, governments (including Tribal governments), industry, and the public regarding the proposed designation of the region. The several Alaska-based and national marine conservation and science organizations joining as co-nominators indicate broad initial support.

Several other local and regional organizations are still formulating positions on this nomination. We believe that its publication on the NOAA National Marine Sanctuaries website will greatly enhance public review and comment on the nomination.

We are confident the nomination will attract significant support of the American public – the co-owners and co-managers of the federal waters and resources of the region.

It is also expected that any proposed federal restrictions in Alaska will attract opposition. As example, the 1980 Alaska National Interest Lands Conservation Act (ANILCA) attracted a great deal of political opposition in Alaska, but today is viewed by many as an important federal management decision that has significantly aided Alaska’s economy. We expect the AIMNM designation to experience a similar political evolution.

As stakeholders review and consider the nomination, it is likely that additional conservation management measures will be suggested, and we urge that all such suggestions be seriously considered in final designation.
March 29, 2021

Honorable Debra A. Haaland
Secretary
Department of the Interior

RE: Comments of the Western Pacific Regional Fishery Management Council on the implementation of Executive Order 14008

Dear Secretary Haaland:

The Western Pacific Regional Fishery Management Council (Council) wishes to be a partner in developing a process to address the ‘30 x 30’ provisions in Executive Order 14008 that focus on “conserving at least 30 percent of our lands and waters by 2030.” The Council is one of the eight Regional Fishery Management Councils established in 1976 by the Congress. The mission of the Regional Councils as mandated by the Magnuson Fishery Conservation and Management Act is to develop U.S. fishery policies for their respective regions. Our region includes the State of Hawaii, the Territories of American Samoa and Guam, the Commonwealth of the Northern Mariana Islands, and US uninhabited islands in the Pacific Ocean.

The Council fully supports the goals of Executive Order 14008 and respectfully requests that we are included in all aspects of the process. The history of stewardship in the Western Pacific Region, including conserving and preserving our resources, goes back Millennia. Sustaining the life and well-being of Pacific Islanders translates to sustaining natural resources, especially the resources from the ocean. The Council has been fully involved in insuring the heritage of Pacific Islands and the use of area-based management for the conservation of living marine resources since its inception in 1977; therefore, the Council should be integrally involved in implementing the ‘30 x 30’ process as the Department of Interior moves forward under EO 14008.

The Western Pacific region has already met the 30% conservation goal set forth in EO 14008 with the designation of the Papahanaumokuakea, Pacific Remote Islands, Marianas Trench, and Rose Atoll Marine National Monuments. National waters under the Council’s purview carry the conservation burden of the nation in this regard by encompassing 27% of the national 30% goal. To date, 53% of the 2.24 million square miles of waters of the Western Pacific Region include fishery closures, spanning 1.19 million square miles (map attached).
Area-based management is very important for the Council and to the many Pacific Islands fishing communities whom have limited secure access to fishery resources. These communities contain low income, disadvantaged populations that will suffer severely if their ways of life are further constrained. The Council seeks to assist in developing science-based guidelines or ‘best practices’ for spatial management in both insular waters and in oceanic ‘blue water ecosystems’. The Council convened an International Workshop on Area-Based Management of Blue Water Fisheries in partnership with the United Nations Food and Agriculture Organization (FAO) in June 2020 (http://www.wpcouncil.org/Blue-Water-ABMT-workshop/) to link management objectives with appropriate area-based management tools, including adaptive dynamic management, to face shifting environmental baselines. The workshop was the first of its kind to bring together worldwide expertise to summarize the state of knowledge of area-based management tools in blue water ecosystems. Management objectives discussed ranged from biodiversity targets to social objectives, including food security for island communities. Recommendations were shared with the 34th United Nations Committee on Fisheries by the U.S. delegation.

Archipelagic ecosystems and associated insular fishery resources are also subjected to area-based management, presumably under the ‘30 x 30’ initiative. Access to fisheries for community subsistence and social objectives need to be considered when implementing spatial management under ‘30 x 30’, which renders the need for Council involvement in the ‘30 x 30’ process. The Council’s advisory bodies and its Science and Statistical Committee (SSC) consider holistic approaches to managing marine resources, including social, economic, and biological objectives. The Council’s science-based approach to area-based management, as advised by its SSC, make it an ideal partner in formalizing a ‘30 x 30’ process.

The Council recognized the need for an ecosystem approach to managing the diverse fisheries of the vast Western Pacific Region. The Council applied the NMFS Ecosystem Principles published in 1999 with the integration of ecosystem-based considerations into its fishery management plans. This led to the completion of the Coral Reef Ecosystems Fishery Management Plan in 2001 and transition of all species-based plans to the nation’s first Fishery Ecosystem Plans in 2007. The Council also incorporated climate-related projects and activities into its MSA Five-Year Research Priorities in order to evaluate management measures in the context of a changing marine ecosystem. The Council’s Scientific and Statistical Committee (SSC) Research Plans include pelagic fishery priorities focusing on shifting species distribution and dynamic spatial management to minimize non-target catch while optimizing targeted fishery performance.

Our Climate Change Committee established Climate Change Modules in its Annual Stock Assessment and Fishery Evaluation Report, which is the foremost source of monitoring fisheries in the Pacific Islands. Oceanographic parameters such as atmospheric CO₂, oceanic pH, El Niño Indices, Pacific Decadal Oscillation, sea surface temperature anomalies, chlorophyll-a anomalies, and sea-level rise are summarized annually in the module. This effort will combine fisheries data with environmental information through an integrated framework with the goal of accounting for the effects of climate change into fishery management tools such as annual catch limits, vessel prohibited areas, and a potential focus of the Executive Order’s provision for area-based management.
The Council, because of its geographic and cultural breadth, is the agency to embrace on marine resource management in the Western Pacific region through its advisory bodies, and based on its sustainable record. The Council is willing and able to support the ‘30 x 30’ process through implementation. We represent a range of diverse populations across the Pacific which enables us to effectively communicate with local populations that have local knowledge on these matters. This will enable the Council to assist the Administration in achieving the objectives of the Executive Order to include coastal communities that have an essential role to play in mitigating climate change and strengthening resilience by protecting and restoring coastal ecosystems that support biodiversity and fisheries.

In closing, the Council stands ready to assist the Administration in implementing the Executive Order and engaging impacted native communities. This includes promoting fishing practices in line with sustainability and local island culture, supporting international agreements, protecting essential habitat, developing underutilized or underrepresented fisheries, allow fair and equitable access to participate in management processes, promoting a ‘bottom-up’ approach to resource management, and optimizing sustainable use of resources through its management plans.

Sincerely,

Taotasi Archie Soliai
Council Chair

Kitty M. Simonds
Executive Director

CC: Honorable Gina M. Raimondo, Secretary, U.S. Department of Commerce
Paul Doremus, Ph.D., Assistant Administrator, National Marine Fisheries Service
Martha Williams, Principal Deputy Director, U.S. Fish and Wildlife Service
Ralph D.L.G. Torres, Governor, Commonwealth of the Northern Mariana Islands
Lemanu Peleti Mauga, Governor, American Samoa
Lourdes Aflaguc Leon Guerrero, Governor, Guam
David Y. Ige, Governor, State of Hawaii

Attached: Map of US EEZ Regulated Areas within the Western Pacific Region
Dear NOAA, I am terrified by the changes being wrought in our oceans, due to human-caused climate change. Coral reefs around the world are bleaching themselves dead. Overfishing has weakened the resilience of numerous food stock fish species, to the point where even a minor change in habitat has the power to cause extinction, both of fish and the seabirds that depend on them. Northern seabirds are at risk of starving to death because warm water is driving the birds' fish prey too deep for the birds to pursue. Development along our streams is polluting the waters and destroying the cover that cools the streams. Puget Sound is polluted, both by contaminants and by excessive noise. Seattle's sewer system is overstrained because of rampant population growth without concomitant infrastructure growth, leading to stormwater mixing with sewage being dumped directly into the Sound.

I am no expert, but it seems to me that NOAA could take the following steps to help slow or eliminate the human activities that are making everything so dire (among other steps I'm sure you can think of!):

• Advocate for more marine sanctuaries around the world, and particularly in US coastal waters. Experience shows that nature, especially ocean nature, has a remarkable ability to spring back to a healthy state when given a chance.

• Ban commercial fishing in marine sanctuaries. A sanctuary should be just that: a safe haven for wildlife.

• Ban the use of drag nets, which cause harm to coral reefs already stressed by warmer water.

• Work with local communities to remove dams that prevent salmon from returning to traditional breeding streams. The removal of the Elwha Dams has shown how effective - and how quickly - dam removal can be in restoring salmon runs.

• In the Puget Sound area, make a stronger push to control runoff that pollutes the water and stresses all the wildlife that lives in the Sound. Such a push should include working more closely with municipal water companies such as Seattle Public Utilities (which could use help in building more sewers that use natural controls to reduce runoff and purify the water before it ever reaches the Sound).

• Make it clear to the public (via a major information campaign) that global climate change does not just affect how hot the atmosphere becomes, but also how hot the oceans become. Make sure people realize how all our lives are going to be affected by such changes.

• Be a leader in enlisting the cooperation of stakeholders in the above: hunters, fishermen, environmentalists, divers, birders - there are hundreds of these groups. You and they should be talking about this all the time so whenever our political representatives hold a town meeting or a press conference, global climate change should be at the top of the list of citizens' concerns. Help school districts develop a K-12 curriculum that engages children in helping to save the seas. Laurelhurst Elementary School's first-graders used to raise baby salmon that were eventually released into the water (I believe at the Montlake Cut in Seattle). The kids bonded with the fish while they were caring for them in class, and were thrilled to release them into the wild when the fish were old enough. These kids remembered the experience all their lives, and along with it, developed the belief that even children could care for the planet and make a difference. The program has been cancelled. Why? It and others like it should be revived. We need future generations of people who care.

Sincerely,

Constance Sidles

Master birder, nature writer, member of Seattle Audubon's Conservation Committee, trustee for the environment on the Laurelhurst Community Club's board, University of Washington continuing education teacher, member of board of directors for Friends of Yesler Swamp
Subject: response to NOAA's request for public comment re Sect. 216(c) of the Presidents E.O. on climate change

Robert Hofman to OceanResources.Climate@noaa.gov, pthomas@mmc.gov, george.watters@noaa.gov, ppenhale@nsf.gov

Tue, Mar 30, 10:23 AM (1 day ago)

You are viewing an attached message. National Oceanic and Atmospheric Administration Mail can't verify the authenticity of attached messages.

To Whom it Concerns:

I was the Marine Mammal Commission's Scientific Program Director from Sept. 1975 through June 2000. From Feb. 1978 until my retirement I was the Commission's representative on the State Department's Inter Agency Working Group on the Antarctic. I was a member of the U.S. delegations that negotiated the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR), and was the first U.S. representative on the CCAMLR Scientific Committee. Although long retired, I have maintained an interest in the ongoing efforts to meet the intent and provisions of the CCAMLR Convention. In this regard, I believe it is clear that climate change is likely to exacerbate the population and ecosystem effects of the Antarctic krill and toothfish fishery unless they are detected, monitored and appropriately accounted for in the management of the fisheries. In the attachment I provide some background, note relevant parts of the U.S. CCAMLR implementing legislation, describe the current stat-of-affairs and the need for better science to assure the resiliency of the fisheries of protected resources to climate change, and recommend several measures that I believe necessary and appropriate to meet the need to acquire and use better science.

If there are questions regarding the attachment, please let me know.

[Attachment]
The Need for Better Science to Assure the Resiliency of the Antarctic Krill and Toothfish Fisheries to Climate Change

**Background**

The overexploitation and near extinction of most stocks of krill-eating whales in the Antarctic following WWII led to the Krill Surplus Hypothesis that there were hundreds of thousands of tons of Antarctic krill (*Euphausia superba*) previously eaten by whales that could be harvested for human uses (c.f. Gulland 1970). Because of declines and denied access to more tradition fishery resources elsewhere, the former Soviet Union and Japan initiated exploratory fisheries for Antarctic krill in the 1960s (c.f. Bakus et al. 1978; Sahrhage 1984). In addition to being the principal prey of several whale species, Antarctic krill is the principal prey of crabeater seals, several species of penguins and flying birds, and several species of fish and squid. Some of these in turn are the principal prey of higher trophic level species including sperm whales, killer whales and leopard seals (c.f., Bengtson 1985).

The Antarctic Treaty Consultative Parties (ATCPs) recognized that Antarctic krill is a keystone species in the Antarctic marine web and that, absent effective regulation, the krill fishery could both impede recovery of depleted stocks of krill-dependent whales and have cascading adverse effect on other krill and higher order predators. The ATCPs therefore initiated negotiations in 1978 that resulted in agreement in 1980 and the entry into force in 1982 of the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR). The Convention is unique in that, while it defines and provides for rational use of living resources in the Convention Area, its objective is the conservation of the structure and dynamics of the marine ecosystems in the area (c.f., Hofman 2016).

**Legislatively mandated U.S. Involvement**

The U.S. CCAMLR implementing legislation is the Antarctic Marine Living Resources Convention Act of 1984. Among other things, the Act provides that NOAA’s National Marine Fisheries Service (NMFS) shall designate the U.S. representative to the CCAMLR Scientific Committee. It further directs that the Service undertake a directed research program in support of the Convention, and that the National Science Foundation (NSF) continue to support basic marine research in the Antarctic. In response, the Service initiated an Antarctic Marine Living Resources (AMLR) Research Program and designated the head of the program to be the U.S. representative on the CCAMLR Scientific Committee. The AMLR program and its staff have played lead roles in formulating, supporting and pursuing U.S. policies and positions in both the CCAMLR Scientific Committee and Commission. As directed, the NSF has continued supporting
basic marine research in the Antarctic. Efforts are made to coordinate planned research and exchange research results.

Most of what is known about the structure and dynamics of the Antarctic’s krill-centric ecosystem is a product of studies begun in the 1920s as part of the British Discovery expeditions (c.f. Marr 1962) and subsequent studies by the British Antarctic Survey (BAS), Argentina, Chile and NSF-supported researcher that began in 1956-57 as part of the International Geophysical Year (IGY). Ongoing studies being done by the NSF-funded Palmer Long Term Ecological Research (LTER) program are providing a complex of up-to-date information. The AMLR’s directed research program has been focused on two particularly important tasks: (1) establishing a multi-national ecosystem monitoring program to detect possible fishery-caused changes and trends in the presence, abundance, productivity and behavior of representative populations/colonies of krill predators in the Peninsula area, and (2) determining how the distribution and abundance of krill varies seasonally and annually, and how the location of fishing effort is likely to affect the feeding success and productivity of regional breeding colonies of krill-dependent penguins and fur seals.

Since the early 1990s, NSF-supported researchers and those from NOAA, NASA and other ATCPs have been conducting studies to determine how climate change is affecting the Antarctic ice cap, the movements of glaciers, and the break-up of coastal ice sheets, focused primarily on predicting likely sea level rises as the rate of glacier movements to the sea and the break-up of coastal ice sheets increase. Among other things, imagery from NASA satellites and ground level observations have found that annul sea ice in the Peninsula area is declining due to ongoing climate change-caused increases in air and water temperatures. Although it is known that sea ice is essential to the survival of juvenile krill, available data are insufficient to determine the extent to which the loss of sea ice is affecting the distribution, abundance or productivity of the fished krill population. It is clear, however, that the loss of sea ice is allowing fishing vessels to fish further south in areas previously impassible due to extensive sea ice, including into what is believed to be the primary spawning area for Antarctic krill.

In the mid-1990s, a fishery for Antarctic toothfish (Disostichus mawsonii) was initiated in the Ross Sea. Toothfish are marketed in the United States and elsewhere as Chilean sea bass. Although no U.S. vessels participate in the fishery, nearly half of the toothfish caught in the Ross Sea are marketed in the U.S. The head of the AMLR program and his senior staff have played a key role in the efforts of the CCAMLR Scientific Committee to assess and provide advice to the Commission on measures needed to assure that the fishery has no avoidable adverse population or ecosystem effects. Among other things, they have successfully
advocated the establishment of The Ross Sea Regional Marine Protected Area (RSRMPA) and a companion Research and Monitoring Plan (RMP).

The intent of the MPA and the RMP is to establish special research, management and protection zones and promote directed research and monitoring to help assure that the combined effects of climate change and the fishery do not have avoidable adverse effects on either the regional toothfish population or other components of the Ross Sea ecosystem. However, there is no incentive or requirement to implement the RMP and CCAMLR members are asked to volunteer to carry out priority tasks listed in the RMP. Although the United States has been a leading proponent of the MPA and played a lead role in the formulation of the RMP, the AMLR program has not had the funding or ship-support to do more than cooperatively undertake several tasks with ship-support provided by other countries. It has not had the funding or ship support to initiate and thus lead by example to encourage other CCAMLR members to volunteer to conduct particular priority research and monitoring tasks.

Likewise, while the United States has played a lead role in the CCAMLR Scientific Committee’s efforts to determine and recommend appropriately conservative toothfish catch levels, the AMLR program has not had sufficient funding to both continue its directed research in the Peninsula area and to initiate a directed research program in the Ross Sea. Conversely, much of what is known about the life history of toothfish and its functional relationships with other components of the Ross Sea ecosystem has been the product of basic research carried out by NSF-supported researchers who have been working out of McMurdo Station in the southern Ross Sea since the IGY in 1956/57 (c.f., Ainley and Brooks, in prep.).

**Critical uncertainties**

Catch limits for both the krill and toothfish fisheries are determined based in part on decision rules developed and adopted by the CCAMLR Scientific Committee in the 1990s. The central tenet of the decision rule regarding Antarctic krill is that limiting the annual catch to no more than 25% of its estimated pre-exploitation biomass will provide 75% escapement and enable the suite of krill-dependent whales, seals, penguins and other species to be restored and/or maintained at or near their maximum net productivity levels (MNPLs) in accordance with CCAMLR Article II(3)(b). The central tenant of the decision rule regarding toothfish is that there are no dependent or ecologically associated species that could be adversely affected by the toothfish fishery in the Ross Sea and it therefore can be managed for maximum sustainable yield (MSY) by establishing constant catch levels that will cause the toothfish spawning biomass in the Ross Sea to be reduced to 50% of its pre-exploitation level over 35 years, beginning in 1997.
Although a reasonable assumption, the uncertainties concerning the population and ecosystem effect of climate change make it questionable whether as much as 25% of the pre-exploitation Antarctic krill biomass can be taken annually without causing either the krill population or any populations of krill-dependent or ecologically associated species to be reduced or maintained significantly below their MNPLs. Further, NSF-supported research in the Ross Sea is providing clear evidence that toothfish are significant components in the diets of Weddell seals and killer whales so that it is at best questionable whether MSY management of the toothfish fishery will not cause those populations and possibly others to be reduced and maintained significantly below their MNPLs.

As noted earlier, climate change–caused declines in seasonal sea ice in the Peninsula area no doubt are affecting the survival of juvenile krill, which in turn may be affecting the distribution, abundance and productivity of the krill resource in ways that could be exacerbating the effects of the fishery. It likewise is likely that the changing climate in the Ross Sea region is affecting ocean currents, sea ice, weather conditions and other drivers of ecological processes that will have to be determined and factored into the management of the toothfish fishery if the fishery is to be sustained without having avoidable adverse effects on either the toothfish resource or other components of the regional ecosystem.

Recommendations to improve the science

From the preceding it is clear that (1) uncertainties concerning the current and future effects of climate change on the structure and dynamics of Antarctic marine ecosystems will be a major impediment to efforts assure that fisheries do not have avoidable adverse ecosystem or population effects, (2) not enough currently is known about the possible combined effects of climate change and the krill and toothfish fisheries to confidently determine measures needed to meet the intent and provisions of the CAMLR Convention, and (3) much of what is known about the structure and dynamics of Antarctic marine ecosystems and changes being caused by climate changes have been the product of academic research supported by the NSF and other entities. It therefore follows that –

1. the NSF should be encouraged to continue and, if possible, expand its support of basic marine and climate change research in the Antarctic;
2. meetings or workshops should be cooperatively structured, funded and held annually or as needed by the NMFS and NSF to assure that (a) NSF-supported and other non government researchers conducting relevant research are aware of how their research can contribute to determining and meeting United States interests in Antarctic marine resource and ecosystems conservation, and (b) the results of relevant NSF-supported and other non government research are routinely made available to U.S. CCAMLR
decision-makers sufficiently in advance of annual and intersessional meetings of the CCAMLR Scientific Committee and Commission to enable the data to be used in the development of positions concerning issues expected to be addressed at the meetings; and

3. the NMFS should continue its directed krill-related research in the Peninsula area / Scotia Sea, and increase funding of the AMLR program to enable chartering a research vessel and development of a directed research program, possibly including a cooperative LTER program, to support differentiating and assuring that the combined effects of climate change and the toothfish fishery do not have avoidable adverse effects on the conservation of the Ross Sea regional ecosystem.

**Literature cited**


The Scallopers Campaign submits these comments in response to President Biden’s Executive Order on Tackling the Climate Crisis at Home and Abroad, dated January 27, 2021. Sec. 216(c) of that Order directs NOAA to collect recommendations on how to make fisheries more resilient to climate change, including changes in management and conservation measures. The following comments focus on the vulnerabilities of the Atlantic sea scallop fishery and provide recommendations on how to make this nationally important fishery more resilient to the mounting impacts of climate change.

Climate change is not just an over-the-horizon problem; its effects are impacting the U.S. Atlantic sea scallop fishery today.

Climate change poses a dual threat to the U.S. sea scallop fishery. First, ocean acidification interferes with the healthy calcification of scallop shells, imperiling long-term prospects for the species. Second, ocean warming has destabilizing effects on the distribution and productivity of the stock. The long-term threats posed by climate change to the fishery are well documented and warrant a thoughtful, immediate, and effective response.

A climate vulnerability assessment conducted on invertebrates and finfish for the Northeast U.S. Continental Shelf concluded that sea scallops are highly sensitive to climate change and are projected to be negatively impacted (Hare, et al. 2016). Modeling conducted on the Atlantic sea scallop fishery indicated that biomass, expected harvest, and revenues will steeply decline under RCP 8.5 emissions scenarios, due to the sensitivity of sea scallop population dynamics to ocean acidification (Cooley, et al. 2015). The long-term projections of the assessment suggest the sea scallop resource is likely to endure more variability within its population dynamics, and productivity is expected to decline due to climate effects and the biological sensitivity of the species to ocean acidification and ocean warming.

Importantly, these effects are already being observed on the southern end of the stock distribution. Dredge survey estimates conducted in the Delmarva management area show a massive 97% decline in scallop biomass, from 10,923 MT in 2015 to 251 MT in 2020 (VIMS, personal correspondence March 19, 2021). Notably, the Virginia Beach rotational area, closed in 1999 to protect a cohort of sea scallops, is no longer commercially productive. As productivity declines in the southern periphery of the stock resource area, the fleets homeported in the mid-Atlantic region will have to incur additional operating costs, including fuel burn, to harvest their annual allotment of trips and days at sea (DAS).

The fleet has solutions to offer, but regulatory support is key.

Faced with these predictable threats, scallopers need adaptive economic and regulatory mechanisms that allow them to maintain long-term economic resiliency. New management approaches are needed that provide flexibility to help overcome the effects of climate change in this fishery.

The sea scallop fishery operates under very defined and inflexible rules. In accordance with the current Fishery Management Plan (FMP), each vessel in the limited access (LA) sea scallop fishery is restricted to harvesting only the allocation assigned with the permit assigned to that particular vessel. All full-time
and part-time LA permits receive the same allocation within their permit category. Permit allocations are made on an annual basis in the form of a number of fishing trips with poundage limits in designated sea scallop access areas (AA trips) and a number of DAS that can be fished without poundage limits in open areas. For fishing year 2020, the allocations for full-time scallop vessels were 24 DAS and several AA trips, representing about 100 days of fishing. If the quota declines in a given year, the AA trips and DAS allotted to each vessel are similarly reduced through an annual regulatory framework process.

An April 2008 Commerce Department study entitled, “Excess Fishing Capacity in U.S. Fisheries: A Report to Congress,” identified the Atlantic sea scallop fishery as having the second highest excess harvesting capacity in the nation. Since that time, the number of scallop vessels and permits has remained stable, indicating excess fishing capacity remains a major problem in the fishery. What has changed, however, are the number of fishing days vessels remain in port. Today, a full time LA vessel remains tied to the dock approximately 75 percent of the year. When not in use (approx. 250 days/year), those vessels must still be maintained and all systems operated via shore power or vessel generators.

Currently, the U.S. sea scallop fishery is among the most valuable of all U.S. fisheries, with an ex-vessel value of $570 million in 2019 (NOAA, FOSS landings database, accessed 03/19/21). This reflects successful management in biological terms, as the resource management was improved through a combination of regulatory measures, including rotational access areas, effort limitations, and gear modifications to improve escapement of juvenile scallops.

While these past successes improved the management of the stock and the overall economic output of the fishery, these measures alone will not prepare the fishery—or the communities that depend on the resource—for the mounting biological and socioeconomic effects of climate change. Positioning the fishery for continued success in the face of climate change will require the development of strategies for economic and geographic adaptation within the FMP, which currently lacks much-needed flexibility.

**Leasing would give the fleet climate-friendly options.**

The current FMP restricts LA vessels from harvesting more than the annual allotment of AA trips and DAS allocated to the permit assigned to that vessel. Unlike the general category sea scallop fishery, LA vessels are not allowed to add to their allotment through a voluntary leasing program. Leasing up to one full permit allocation onto another vessel would significantly enhance the economic and operational flexibility in the fishery, provide the fleet with a mechanism to adapt to climate change, and position the fishery for future health.

For example, this change would incentivize vessel owners to upgrade and maintain fewer and newer vessels, quickly improving the fleet’s emissions profile. On its own, these changes would have positive effects on the climate. Leasing would further allow LA permit holders to improve the economic resilience of the fishery, substantially strengthening its ability to withstand changes in harvest levels in the fishery or changes in geographic stock distribution. This is true across permit holder demographics within the fishery, including single permit and multiple permit owners and operators.

Currently, owners of a single LA permit—therefore operating one LA vessel—lack any ability to offset the impacts of a reduction in the quota. For example, if the quota of harvestable AA trips and DAS allocated to their permit decreases by 20 percent in a given year, they have no option but to use the one assigned vessel to pursue the decreased allocation. However, under a leasing program, a single permit/vessel
owner would have the flexibility and opportunity to lease in AA trips or DAS from another scallop vessel. Leasing would give the permit holder the option of offsetting the decrease in the quota in the scenario above.

Most owners of multiple LA permits/vessels currently use one captain and crew to operate two vessels during the fishing year. Despite the fact that one vessel could easily harvest the AA trips and DAS allocated to two permits, the current FMP does not allow for such flexibility. However, a leasing program would enable these owners to harvest the allocation of up to two permits on one vessel. This would eliminate redundant capital costs on the second vessel and all of the insurance, maintenance and operational expenses of the second vessel. Leasing would eliminate redundant economic inputs and reduce unnecessary costs, thereby preparing the fleet for the effects of climate change and ensuring a sustainable future for the fishery.

**The administration can make climate-friendly changes in the fishery, today.**

In summary, adding a voluntary leasing mechanism to the Atlantic sea scallop FMP would bring flexibility to the sea scallop fishery, allowing LA vessel owners to reduce operating costs, eliminate redundant economic inputs, and improve capital and operating efficiencies. Leasing would substantially improve the fleet’s overall economic resiliency and prepare it to withstand the changes in the performance and distribution of the sea scallop resource that are expected to occur as climate change impacts this iconic resource.

The case is clear: there are proven options available today to address climate change and strengthen the resiliency of the Atlantic sea scallop fishery. The Biden-Harris administration has an opportunity to set an early and strong example across all U.S. fisheries by introducing flexibility in the scallop fishery. NOAA can implement the recommendations outlined above by working through the New England Fishery Management Council to amend the Atlantic Sea Scallop FMP, or through secretarial action to develop a leasing program within the fishery.

Regards,

Jeffrey Pike
References


Thanking you in advance for considering my comments re Section 216(c) of the Executive Order on Tackling the Climate Crisis at Home and Abroad (EO 14008 Issued by President Biden on January 27, 2021).

I have been in the fly-fishing business in the Yellowstone area for over 40 years so this critical issue is very important to me not only as a fisherman who cares about conservation of fishery resources but also the importance of strong and sustainable management in response to THE most challenging and defining issue facing our planet, climate change.

Economically In Montana, a sparsely populated state with just over one million residents, outdoor businesses contribute over $7 billion to the economy and provides over 71,000 permanent jobs. the second largest economic driver just behind agriculture.

Montana’s world class fisheries are an integral part of this healthy outdoor sector. But, there are serious climate change challenges to this healthy fishery and vibrant economy. Ongoing drought, rising average temperatures both air and water, earlier spring snowmelt, increased wildfires and longer wildfire season, lessened winter snowpack, siltation to rivers and streams and loss of native and wild cold water habitat all contribute to the challenges created by climate change. Still, if we act now, in strong partnerships, we can mitigate many of these challenges.

Partnerships include all of us, including the agency, speaking up louder, more frequently and clearly about these challenges and solving them with education and science, while leading by example and strong-sustainable management.

We’ve seen the importance of innovative approaches to increased water flows during times of drought by incorporating in-stream flow water leases. More efficient monitoring of irrigation draws from rivers and streams through new-innovative water flow measuring gauges. Regenerative-organic certification agriculture practices including holistic grazing and no-till farming will save huge amounts of water when implemented. Recycling wastewater and underground water storage reservoirs will conserve water while allowing water in rivers and streams to remain in-stream. preserving wild and native fisheries.

It will take all of us, working together in partnership to educate while protecting and preserving the cold water habitat to defeat the negative impacts of climate change in the challenging times ahead. Let’s get to work.

I remain,

Respectfully-

Craig Mathews
One of the guiding principles of the Fisheries Management and Conservation Act of 1976, later to become the Magnusson/Stevens Act, was that fishermen would be involved in the management of the species off of their coasts. Each of the eight regional fishery management councils was assigned species to manage based on the distribution of the stocks in 1977. Many stocks have shifted since then.

In 1977, black sea bass were abundant in the waters of Virginia to New York. They were rarely seen in the waters of Southern New England. Today, black sea bass are more abundant than cod in Connecticut, Rhode Island and Massachusetts waters. Data from the Northeast Fisheries Science Center has demonstrated a two hundred and fifty-mile northeastern shift of the center of the summer flounder population and scup stocks continue to grow and expand in New England waters.

These species—which were always found in Southern New England in limited quantity—are now quite plentiful and have expanded their range from the offshore waters of Virginia and Maryland, to include the region of New Jersey to Massachusetts. Yet, the fishermen of Connecticut, Rhode Island and Massachusetts do not have a vote when the final federal recommendations for these species are transmitted to the U.S. Secretary of Commerce. True, the New England Fishery Management Council liaison is permitted to represent the Southern New England region at meetings of the Mid-Atlantic Fishery Management Council and meetings of the Demersal Committee. However, that same liaison is not permitted to vote in full Council when the final recommendations are transmitted to the Secretary of Commerce. It is for this reason that, in recent years, Rhode Island has requested to be added to Mid-Atlantic Fishery Management Council.

Other stocks have a southern distribution. Virginia and New Jersey have significant scallop fisheries. Yet neither state, as a member of the Mid-Atlantic Council, can vote on the final recommendations of scallop fishery—it is the New England Council that has been assigned scallops. The Mid-Atlantic Council has voting representation on the New England scallop committee, but when final scallop recommendations to the Secretary of Commerce are decided members of the Mid-Atlantic Council are not permitted to vote, just as the New England representatives on the Mid-Atlantic Demersal committee cannot vote on the final recommendations.

The list of states and fishermen unable to participate in the final decisions of species found in the Federal waters off of their shorelines continues to grow as climate change results in stocks expanding or shifting their range. Two additional Mid-Atlantic examples include, Surf Clams and Ocean Quahogs, originally distributed from Maryland to New York, are now currently harvested in the federal waters.
offshore of New Jersey to Massachusetts, and the squids both, Loligo and Illex, primarily New Jersey and New York fisheries, have now expanded to Rhode Island waters.

In addition, current landings information shows that many species managed by the South Atlantic Fishery Management Council such as Mahi-Mahi, Spanish Mackerel, and Blue Line Tile Fish, are now shifting into the Federal waters offshore of the Mid-Atlantic states.

As climate change progresses species will continue to expand, shift or change their ranges and it is clear that shifting stocks are creating situations where fishermen are not involved in the final recommendations of the fisheries off of their shores. To date, fisheries management has not been adaptive to changes in stock abundance and distribution.

How to solve this dilemma without adding more states to each of the regional councils?

One solution would be to change the voting structure for the final recommendations of each species. For example, when the Mid-Atlantic Council meets to manage black seabass, summer flounder or scup, the members of the New England Council representing the states of Connecticut, Rhode Island and Massachusetts would have equal authority at the Council table and be included in all discussions and votes. The same process could be applied to the scallop fishery. The fishery would continue to be managed by the New England Council but all discussions, debate and final recommendations would include the states of New Jersey and Virginia and as southern stocks shift to the Mid-Atlantic Virginia and Maryland may wish to have voting representation at the South Atlantic Fishery Management Council.

Should this process be adopted it could also be applied to the joint plans for monkfish and spiny dogfish. The joint plans could be eliminated and each Council would administer one of the plans, as they do now; New England would continue to manage monkfish and the Mid-Atlantic would continue to manage spiny dogfish. The only change would be that the final monkfish actions at the New England Council would include the Council members from the states with an active monkfish fishery, such as New York and New Jersey. The final spiny dogfish actions at the Mid-Atlantic council would include those New England states with active dogfish fisheries, currently Rhode Island and Massachusetts.

The costs associated with members attending meetings outside of their Council region would be assumed by the Council to which the members are primarily assigned; the same as the current process associated with liaisons attending meetings of their neighboring Councils.

For this process to occur the current language in the Magnusson/Stevens Act would have to be changed; how?

Section 302 of the Magnusson/Stevens Act (16 U.S.C. § 1852) defines voting members of a Council as: 1) the principal state official for marine fishery management in each constituent state of the Council, 2) the National Marine Fisheries Service Regional Administrator or designee, and 3) members required to be appointed by Secretary of Commerce. Language
would have to be added to the Act stating that for actions regarding a particular species, the Secretary of Commerce would have the authority to temporally, for a period of five to ten years, add a state or states with an active fishery for a particular species to the Council managing that species for decisions regarding management actions. The Secretary would add a state only after a request by the governor of a particular state and upon a successful review of yet to be determined qualification criteria, perhaps a combination of landings data and survey data demonstrating the distribution of the species.

This change would preserve each of the individual Councils’ autonomy and at the same time allow fishermen to have the ability to manage the fishery that occurs offshore of their state. As stocks continue to shift their ranges changes must be made to allow effected fishermen to participate in the management process.
April 1, 2021

To: NOAA Fisheries

I am writing in response to NOAA’s request for input on Section 216 (c) of the Executive Order on Tackling the Climate Crisis at Home and Abroad (EO14008).

In my short (so far) lifetime I have seen, and am experiencing, dramatic environmental impact resulting from climate change, including warming water, increasingly high levels of acid in the water, lower oxygen, rising sea level and habitat deterioration. Fish species, abundance, and stock health are noticeably changed, and a matter of real concern.

Winter flounder are now non-existent. Warm water fish, like black sea bass, are so abundant they are overwhelming, and threaten the lobster population, as evidenced by the observation of baby lobster in their stomachs when I clean them. Those same lobsters are further threatened by the warming waters.

These shifting stocks changes, and the environmental changes causing them, demand better scientific research, fisherpersons input (based on observation), and analysis to help protect our resources.

Harvest allocations and reallocations need to be considered on a more global level, with greater collaboration between states and regions. As a nation, we must restore commercial and recreational allocations sustainable levels.

With multiple regions and sectors vying for the same fish, NOAA needs to step in to make decisions if regional councils cannot agree on allocation issues.

Now, more than ever, we must move to:

- strengthen standards,
- define ecological reference points such as biomass threshold and targets,
- rebuild and protect fish stocks, and,
- mediate the differing opinions of stakeholders.

To do so, we need:

- increased funding,
- enhanced surveys,
- frequent assessments,
- eco-based management, and,
- science-based stock management.

These actions will enable us to anticipate climate impacts and protect our natural resources and the economic sectors that rely on them, both commercial and recreational. Only by protecting the fish that exist now, can we ensure the survival of the fish that might, someday.

Thank you for your consideration and commitment to the health and well-being of our oceans.

Respectfully submitted,

Steven Brustein
RE: NOAA Request for Recommendations and Information on More Resilient Fisheries and Protected Resources Due to Climate Change

To Whom It May Concern,

Climate change is the defining issue of our time. The impacts of climate change as described in New Jersey’s first-ever *Scientific Report on Climate Change* released in 2020, will affect every sector, resource and community in the state. Reducing and responding to these impacts is critical work that all levels of government must undertake using the best science available to protect public health, support its diverse natural resources and create vibrant and sustainable communities that provide economic opportunity for all. We are therefore thankful that the National Oceanic and Atmospheric Administration (NOAA) is soliciting comments to make further the goal of making our resources more resilient. The New Jersey Department of Environmental Protection appreciates the opportunity to provide input on Section 216(c) of Executive Order 14008 on Tackling the Climate Crisis at Home and Abroad.

We respectfully submit the following comments for your consideration. While the recommendations we provide below are specifically in reference to climate change, they also apply to potential impacts from ocean acidification.

- **Recognize the Importance of Working Waterfronts**—In order to make fisheries more resilient to climate change, working waterfronts and the industries they support need to be preserved and restored when destroyed by meteorological and hydrographical events related to climate change. Climate change and sea-level rise is projected to result in more intense storms, larger storm surges and an increase in extreme flooding. Competition for waterfront is well documented, water dependent businesses are continually losing ground to more high value uses like real estate. If federal funding is made available to make coastlines more resilient or if funding is provided after areas are damaged by impacts related to climate change, that funding should include initiatives that incorporate preservation of working waterfronts and water-dependent businesses. This could also include federal assistance to help states and municipalities develop regional strategies for community infrastructure needs.

- **Prepare for Sustainable Management of Emerging Fisheries**—Long term shifts in species distributions are expected to both eliminate existing fisheries and create new opportunities that may be critical for replacing those lost fisheries. Funding and other support should be made available to support training and marketing activities that explore/expand new
sustainable fisheries and markets, develop and test novel gear that maintain harvest while reducing discard mortality, and promote new fishery products. This could also include new jobs training for individuals who are displaced from a fishery. Additionally, research suggests that delaying the emergence of new fisheries will enable larger, more productive fisheries in the future (Pinsky and Mantua 2014).

- **Inclusive Management**- Management must continue to strive for inclusivity of all sectors, particularly marginalized communities, in the decision-making process, with the goal of a zero-sum loss of accessibility to healthy fish stocks.

- **Regional Considerations**- Management strategies will need to be evaluated against a range of regional scenarios for anthropogenic climate change impacts on ocean habitats and ecosystems – the impacts of climate change in any particular place will depend on the species that are present, the impacts of other stressors, and the geography and oceanography of the region (Pinsky and Mantua 2014).

- **Evaluation of Management Strategies**- The management strategies that optimize fisheries resiliency are likely to vary from region to region as a function of specific fisheries, cultural customs, and climate outcomes. Various and adaptive strategies, such as, open access fisheries, limited entry fisheries, individual transferrable quotas, and territorial use rights should be compared to better understand how managers may facilitate or hinder resilience under climate change (Ojea et al. 2017).

- **Refuge Area Implementation**- While the preservation of large areas of the ocean to provide refuge for marine populations and create habitat reserves is appropriate, the proposed 30x30 endeavor must be implemented in such a way as to not negatively impact fisheries and the management process. Designation of closed areas should carefully consider current and future distributions of the species/habitats to be protected (i.e. as distribution shift but closed areas are static) and must fully account for historic and future social and economic benefits of the areas.

**Ecosystem Monitoring**

- **Cumulative Impacts**- Management should address cumulative impacts on marine ecosystems. For example, management should reduce other stressors, including overfishing, stock depletion, damage to habitat, reduced ecosystem productivity, loss of prey, and bycatch. Distributing fishing effort across sub-stocks and age classes to maintain genetic, age, and spatial diversity within populations is also important for providing resilience to climate impacts. Those populations facing the fewest non-climate stressors are likely to be the best positioned to support robust fisheries despite climate change (Pinsky and Mantua 2014).

- **Monitoring and Evaluation**- It is necessary to integrate monitoring and evaluation of the state of the climate and ecosystem into the management cycle. Comprehensive ecosystem monitoring programs are critically important for detecting ecosystem change. Efforts to
greatly expand monitoring programs and to compile disparate programs into a centralized, easily accessible databases will be helpful (Pinsky and Mantua 2014). This should include fish, bird, and mammal diet studies required for some ecosystem models.

- **Ecosystem Approach**— Establish an ecosystem approach to ocean monitoring and assessment at fixed locations along the coast to document changes in complex species (dependent and independent) assemblages and evaluate commercially important species community changes over a fixed course and time period along the coastal region.

### Bivalve Aquaculture

Shellfish aquaculture would benefit from the development of shellfish stock with a higher resilience to changes in temperature and an increased resistance to the shellfish disease and human pathogens that climate change may bring. This would include management changes to hatchery siting and husbandry methods to develop a more resistant brood stock.

### Marine Mammals

Addressing resilience of marine mammals means not only being proactive about the individuals themselves, but also the food sources that they rely on. While marine mammals have been shown to be quite resilient to changing ocean conditions, the food that seals, sea lions, whales and dolphins depend on has been shown to change locations due to warming water (Marine Mammal Center n.d.). Understanding changing migration patterns of marine mammal food sources will help managers understand and determine the resilience in marine mammal populations. Solutions might entail not only changes to fishing practices, but to other commercial or recreational activities such as vessel traffic restrictions.

### Offshore Wind

- **Regional collaboration**— Collaboration with entities involved with the recent research and monitoring initiatives for offshore wind (OSW) and future ocean renewable energy is important. These groups include the Responsible Offshore Science Alliance (ROSA), the mid-Atlantic regional wildlife science entity (RWSE), and state government groups and/or academics and non-profits.

- **Baseline (reference conditions) and Continuous/long-term Monitoring**— State and federal fisheries and wildlife scientists, physical oceanographers, and climatologists have collected a voluminous trove of data that indicates increased temperature and northward movement of species. This research and monitoring should examine associated effects on fauna, including increased acidification in offshore waters. Monitoring and research efforts need to be increased significantly on a regional scale to learn the true scale of effects that climate change is having on habitat and species diversity, type, and abundance, populations, and life history.

- **Use of Offshore Wind Platforms**— The use of OSW platforms for increased capabilities and enhancement of technologies for monitoring ocean chemistry changes (temperature, pH, turbidity, salinity, etc.), wind resources, changes in biota, changes in fishing practices and fisheries, and alterations to habitat should be explored. This could include several devices (e.g. radar, passive
acoustic devices, remote sensing, other) that can observe in situ conditions and relay information to the fishing industry and other interested parties for assessment of and/or changes in stock. The ability to forecast ocean chemistry can assist coastal aquaculture operators when conditions become unfavorable for these resources (e.g. abrupt changes in pH), and may provide time for the industry to mitigate for these effects in a manner that minimizes loss (as is done on the West coast).

Use of OSW platforms for deployment of early detection/warning systems for navigational hazards or other weather emergencies should also be considered.

Tidal Wetlands

Tidal wetlands are the base of the estuarine food chain and provide critical habitat for many juvenile fish species. Unfortunately, climate change is expected to heavily impact tidal wetland ecosystems. Many tidal wetlands are not gaining elevation at a rate that will allow them to keep pace with sea level rise. When inundated for too long, tidal wetlands habitats can be lost. Increases in temperature will likely lead to shifts in the ranges of plant and animal species. Increased severity of storms will lead to erosion and decreased rain during summer months may lead to drought and extreme soil chemistry.

The following management activities may help tidal wetlands be more resilient to climate change:
1. Implement marsh enhancement projects such as runnels and thin-layer placement of dredged material;
2. Protect the land in marsh migration areas;
3. Remove barriers to marsh migration such as undersized bridges and culverts;
4. Maintain/increase sediment load in estuarine waters by removing dams and keeping sediment in the system during dredging (i.e., stop putting dredged material into upland confined disposal facilities unless the material is contaminated).

The following science/monitoring would help to manage tidal wetlands:
1. Updated tidal datums;
2. Increase the number of tidal gauges;
3. Increase the number of long-term salinity gauges;
4. Study changes in soil and pool water chemistry and temperature overtime and the effect on protected species;
5. Help to fund current long-term tidal wetland monitoring stations and fill gaps in monitoring networks;
6. Study how climate change will impact submerged aquatic vegetation;
7. Improve Sea Level Affecting Marsh Model (SLAMM) so that it can use data collected by long term monitoring sites;
8. Study ways to promote native species in marsh migration areas;
9. Update National Wetlands Inventory maps;
10. Develop a rapid functional assessment protocol for tidal wetlands;
11. Support tidal wetland soil mapping updates being done by National Resource Conservation Service;
12. Long-term monitoring (10+ years) for marsh resiliency projects (e.g., living shorelines, runnels, thin-layer placement).
Other

- Changes in calcium carbonate concentrations in marine waters can have cascading impacts for many shellfish and coral species. Impacts to fin fish can be complicated and deserve research attention (Kaplan et al. 2013, Bignami et al. 2013).
- Alterations to economically important marine fish due to ocean acidification will directly impact recreational and commercial fisheries, the jobs, and revenue associated with these fisheries, as well as tourism. Mitigation possibilities should be explored to help lessen these impacts biologically and economically.
- Projections of thermal habitat shifts (Morley et al. 2018) and climate vulnerability assessments (Hare et al. 2016) are critical to predicting the impacts of climate change on marine stocks so we suggest this work continue. This is essential information for informed management decisions, not only of species impacted today, but for those impacted in the future. Resources such as Hare et al. 2016 will be invaluable to managers in understanding species and fisheries at most risk; this research should continue.
- Prepare international agreements for shifts in species distributions (Pinsky and Mantua 2014): Many species will likely shift across socio-political boundaries, creating the potential for tension over newly shared resources (Pinsky et al. 2018). Past conflicts, the projected movement of stocks, and the gaps in current governance frameworks all suggest that cooperative fisheries management will need substantial changes to prevent future conflict (Pinsky et al. 2018). Cooperative management plans will depend on reliable projections of species shifts and associated uncertainties. Fisheries managers will likely need to focus on sustaining ecological functions, rather than historical abundances. As conditions change, current conservation goals and management objectives for stocks may no longer be applicable or achievable.

We appreciate that NOAA’s solicitation and consideration of comments. Successful climate adaptation will depend not only on adjusting management strategies, but in reevaluating and revising those goals and objectives of fishery management plans. Preventing overfishing and developing management strategies that are resilient to climate-driven changes in productivity are essential to maintain and rebuild fisheries capacity and support livelihoods in a warming ocean.

Sincerely,

Ray Bukowski,
Assistant Commissioner for
Natural and Historic Resources
Literature Referenced


Subject: Input on Section 216(c) of the Executive Order on Tackling the Climate Crisis at Home and Abroad (EO 14008)

Corinne Doctor

to OceanResources.Climate, Garrison Doctor

To Whom It May Concern:

This letter is in regards to Section 216(c) of the Executive Order on Tackling the Climate Crisis at Home and Abroad (EO 14008) issued by President Biden on January 27, 2021. As a business in the fly fishing industry, we have first hand seen the effect of climate change on fish, fisheries and their habitat. The fly fishing industry which not only makes up at least a billion dollars of the economy, but also very positively contributes to the mental health of its participants, relies on healthy fisheries. The negative effects of climate change on fisheries must be addressed in a holistic manner and not just by picking and choosing certain symptoms of the problem.

Not only does the management of fisheries themselves need to be taken into account, but the cause of the climate change problem must be addressed. Greenhouse gas emissions need to be reduced in a considerable way and this must be considered. As a business we have joined the Fly Fishing Climate Alliance through which we have been able to calculate our GHG emissions and purchase reputable offsets to go carbon neutral. While we are just a small business, if this and reduction of GHG could occur on a much larger scale, we can all make a difference in the negative effects of climate change.

Strictly looking at closures of fisheries will not make the long lasting change that our world and aquatic species need and deserve. Without a doubt large scale commercial fishing must be better managed, but this should be looked at very carefully. Small operation catch and release fly fishing guides, while under the label “commercial” do not fit the same qualifications as large scale commercial fisheries for consumption.

Please take the time to consider all of the aspects that affect our fisheries including the very different types of users when considering management and also the root causes of the problems, greenhouse gas emissions from large corporations and individual consumers.

Thank you,

Corinne and Garrison Doctor
Owners
RepYourWater - Erie, Colorado

corinne doctor | co-owner
repyourwater

[Icon: 3% for conservation]
In response to NOAA's request for information, Padre Island National Seashore provides the following:

Kemp's ridley sea turtle is a critically endangered species with a nesting range in the Gulf of Mexico. This species is considered one genetic stock and nest management along the Texas coast is therefore most like nest management for this species in Mexico at their primary nesting beaches. Nest management and nesting beach management has been in accordance with permitting authorities from Texas Parks and Wildlife Department and US Fish and Wildlife Service. Padre Island National Seashore's Sea Turtle Science and Recovery Program has provided publications about the impacts of climate change to sea turtle nesting habitat and incubating sea turtle eggs. Padre Island National Seashore has worked with the University of Alabama at Birmingham and Texas A&M University in Corpus Christi, collecting data about beach temperatures, and meteorological and geophysical processes that are impacting the Texas Coastal Bend. Ocean resource changes due to climate change appears to be increasing coastal flooding along the Texas coast. This is raising questions about sea turtle nest management as beaches increasingly erode Kemp's ridley nesting habitat.

Thank you,
Eric

From: Lauren Wenzel - NOAA Federal
Sent: Friday, March 19, 2021 9:04 AM
Subject: [EXTERNAL] National Stakeholder, State and Tribal Government Calls - Climate resilient fisheries and protected species

Dear MPA Partners
I wanted to make sure you are aware of upcoming calls hosted by NOAA Fisheries on the Climate Executive Order Section 216(c) seeking input from stakeholders and state and tribal governments on ways to make fisheries and protected resources more resilient to climate change.

The calls will be held March 23-April 1.

More information is here.

Best wishes,
Lauren
Subject: Input On Making US Fisheries more Climate Resilient

To Whom It May Concern,

My name is Angela Wilson. My colleague, Danielle Simming, and I are writing you to submit our recommendations on how to make American fisheries more resilient to climate change.

1. Increased communication between government agencies, industry, recreational fishing, and academics.
2. Better introduction of juvenile fish from hatcheries to wild water environments to increase the survival rate.
3. Targeted education and outreach for the local fishermen in coastal communities.
4. Focus marine protected areas on critical fish breeding habitat.

These recommendations will help all fisheries be more resilient, especially during uncertain climate change. My colleague and I are available if you would like further information. We appreciate this opportunity to write in our opinion.

Sincerely,
Angela Wilson and Danielle Simming

Please consider the environment before printing this e-mail
April 1, 2021

Benjamin Friedman
Deputy Under Secretary for Operations and
Acting Administrator
National Oceanic and Atmospheric Administration
Via Email: [email] and OceanResources.Climate@noaa.gov

Re: Climate: Recommendations for Fisheries and Protected Resources

Dear Acting Administrator Friedman:

Alaska Whitefish Trawlers Association (AWTA) appreciates this opportunity to provide input to NOAA Fisheries regarding how to make fisheries and protected resources more resilient to climate change, including changes in management and conservation measures, and improvements in science, monitoring, and cooperative research, as outlined under Section 216(c) of Executive Order 14008 Tackling the Climate Crisis at Home and Abroad. Section 216, titled Conserving Our Nation’s Lands and Waters, also includes the 30x30 initiative (goal of conserving 30% of our lands and waters by 2030). The 30x30 initiative, and resiliency discussion, are both very significant and complicated issues that currently leave us with a lot of questions. As a group of commercial fishermen based on Kodiak Island we depend on commercial fishing, marine shipping and marine transportation. We stand to be greatly impacted and ask that special effort be made to engage with us throughout this process.

AWTA is a trade association of groundfish trawl harvesters based in Kodiak, Alaska. Our vessels average 77 feet in length, with a crew complement of four people, and operate primarily around Kodiak and Shelikof Strait, as well as in the Bering Sea and West Coast groundfish fisheries. Trawl operates 11 months of the year and delivers 60-70% of fish across the docks in Kodiak, contributing to Kodiak’s consistent ranking within the top four fishing ports by volume in the United States. Our federal fisheries are managed by the North Pacific Fishery Management Council (NPFMC), which is widely considered the gold standard for sustainably managed fisheries, and each of our primary trawl fisheries is certified by the Marine Stewardship Council.

We recommend that NOAA enlist the NPFMC as a partner, and support the NPFMC’s ongoing proactive efforts to incorporate climate resiliency into our conservation and management process. The goal of effectively conserving 30% of our lands and waters by 2030 will require a lot of coordination and input across many stakeholder groups. The NPFMC has an effective and transparent public input process which is familiar to fishery stakeholders, and leveraging this existing structure will facilitate continued engagement of fishery stakeholders throughout planning and implementation. We greatly appreciate the inclusive approach President Biden outlined, including gathering input from stakeholders, and partnering with the NPFMC will ensure that fishery stakeholders continue to be heard throughout this entire process.
NOAA should also ensure consistent funding and support for fisheries and ecosystem surveys that are the fundamental basis of fisheries management in the North Pacific. Scientific information and data underpin all NPFMC management decisions, and up-to-date fisheries surveys and environmental data collection are critical to recognizing and reacting quickly to changing conditions. This is key to making fisheries and coastal communities more resilient.

We also ask that the following information be provided, along with additional opportunities to provide input and engage with the Administration on these issues.

Clarify what is meant by “conserve.” The Executive Order does not define “conserve” or address what activities would be allowed in “conserved” areas. Given our dependence on commercial fishing, marine shipping and marine transportation we are very concerned about negative impacts to our businesses and community if some activities are limited or shut down completely.

Identify and account for current conservation and protected areas within Alaska’s EEZ. Over 65% of the Alaska EEZ is already closed to some or all fisheries to conserve habitat, and this should be acknowledged and included within the 30% goal. We note that these closures were developed through NPFMC’s public process with input from all stakeholders, and encourage utilization of the existing NPFMC public process as much as possible. Conservation measures already developed by the NPFMC over 65% of the Alaska EEZ should not go overlooked.

Clearly state the end goal with rationale, and then solicit additional input. The Executive Order covers a lot of ground, and Section 216 alone is quite broad, given the lack definition and clarity. This makes it very challenging to propose recommendations that are on point and narrowly tailored to effectively address the end goal without causing harm to communities and businesses.

In addition to the requests for clarification listed above we emphasize the following: (1) current data is critical to responsive fishery management, and NOAA Fisheries must maintain and expand core surveys in Alaska, including surveying the Gulf of Alaska annually rather than every two years (2) effective fishery management also needs to be flexible, and conservation measures that create more “boxes” and limitations are more likely to have unintended negative effects; (3) there are a lot of moving parts and trade-offs to this work, and maintaining a transparent and effective public process, with multiple opportunities for input throughout, is critical.

We appreciate this opportunity to provide input, and look forward to continued engagement throughout this process. If you have any questions please do not hesitate to contact me.

Thank you,

Rebecca Skinner, Executive Director
Alaska Whitefish Trawlers Association
April 2, 2021

Benjamin Friedman
Deputy Under Secretary for Operations
National Oceanic and Atmospheric Administration

Heather Sagar
Senior Policy Advisor, Office of Policy

Re: NOAA Request for Information Related to Section 216(c) of Executive Order on Tackling the Climate Crisis at Home and Abroad

Dear Deputy Under Secretary Friedman and Ms. Sagar:

Thank you for the opportunity to provide comments in response to the National Oceanic and Atmospheric Administration (NOAA) Request for Information on how fisheries and protected resources may be managed so that they are more resilient to climate change.

Our mission at the Monterey Bay Aquarium (Aquarium) is to inspire conservation of the ocean. Our conservation priorities tackle critical ocean health issues, including sustainable global and domestic fisheries and aquaculture, ocean wildlife and ecosystem protection, climate change,¹ and plastic pollution.² We conduct scientific research, inform policy from the local to global level, and engage industry in market-based change, working with a range of public and private sector partners. We join with our sister institution, the Monterey Bay Aquarium Research Institute (MBARI), to develop cutting-edge technology and information in support of our conservation goals. As a public-facing institution, we raise awareness of the ocean with millions of onsite and online audience members each year—including thousands of students and teachers-- and inspire them to take action to improve ocean health.

Aquarium research on regional climate change impacts.

¹ The Aquarium has committed to achieving net-zero carbon emissions and transitioning 100 percent of our vehicle fleet to renewable power by 2025. (Monterey Bay Aquarium (2021). https://www.montereybayaquarium.org/act-for-the-ocean/climate-change/what-we-do)

² In 2017, the Aquarium eliminated single-use plastic — bottles, straws, and bags — from our cafe. Less than seven percent of our retail items are packaged in single-use plastic and we aim to further reduce this number through 2021. (Monterey Bay Aquarium (2021). https://www.montereybayaquarium.org/act-for-the-ocean/climate-change/what-we-do)
For the last thirty years, the Aquarium has studied important marine life found in and near Monterey Bay, including southern sea otters, white sharks, Pacific bluefin tuna, kelp, and steelhead trout. Decades of data gathered by Aquarium researchers show how climate change is impacting these species and the Pacific ecosystems where they live.\(^3\) The Aquarium recently published a study that showed increasingly warmer waters in and around Monterey Bay are bringing juvenile white sharks to the bay, shifting their habitat north from Southern California.\(^4\) This is leading to increased interactions with Central Coast species, such as southern sea otters, and will likely result in transformations of regional ecosystems.

The Aquarium has long been at the forefront of efforts to recover southern sea otters, which are listed as threatened under the federal Endangered Species Act. Working alongside federal and state agencies and other academic and nonprofit partners, our research and conservation actions, including our pup surrogacy program, have resulted in an increase in the southern sea otter population along California’s Central Coast.\(^5\) These otters are now helping to increase climate resiliency along the coast by keeping invertebrate populations in check and enhancing the growth of kelp forest and seagrass ecosystems, which has helped improve water quality, nurture valuable fisheries, protect coastal communities from rising tides, and sequester carbon.

Climate change will continue to modify ocean ecosystems and directly impact living marine resources, as well as exacerbate the impacts and cumulative effects of other threats – including from plastic pollution, marine transportation, and coastal development. Regional studies like these that identify causal links between climate change, ecological processes, and food webs serve to document the current baseline and help identify new management tools and approaches necessary for the future.

**Incorporating climate change into management - guidance from the Aquarium’s Seafood Watch program.**

Since 1999, the Aquarium’s Seafood Watch program has become one of the most respected sources of seafood sustainability guidance for consumers and businesses around the world. We use science-based, peer-reviewed standards to assess the environmental sustainability of fisheries and aquaculture operations important to the U.S. market. Our standards, assessments and recommendations are available to the public at [seafoodwatch.org](http://seafoodwatch.org).


We regularly review and update Seafood Watch standards to incorporate the best available science and practices. Input into the standards review process is made through public consultations, Expert Working Groups, Technical Advisory Committees, and a Multi-Stakeholder Group. In 2020, we completed the most recent update to our standards for fisheries, salmon-specific fisheries, and aquaculture. The 2020 version of the Seafood Watch Standard for Fisheries (version F4) now evaluates flexible and resilient fisheries management in the face of climate change when assessing management effectiveness.\(^6\) Fisheries management that is proactive, flexible so that it can adapt to shifting conditions, and inclusive of measures to build both resilient target populations and ecosystems is considered current best practice.

Flexible and resilient fisheries management in this context includes precautionary, ecosystem-based, and responsive policies that address climate change uncertainty through consideration of species’ life history characteristics. Ideally, managers and management systems can anticipate changes and implement proactive strategies to buffer impacts and promote resilience of stocks and ecosystems. Often management responds to change once it has occurred. The Seafood Watch standard accepts reactive management as potentially effective, as long as it is implemented in an appropriate time frame (e.g., before a stock falls below a critical point so that recovery does not, or is likely not to, occur). All effective proactive and reactive management strategies in the face of climate change rely on high quality data and robust monitoring.

The 2020 update of the Seafood Watch Standard for Aquaculture also incorporates some climate considerations.\(^7\) The standard includes an evaluation of an aquaculture operation’s emissions, including the carbon footprint of the feed it uses. We also consider the operation’s impact on mangroves, eelgrass, and other habitats that capture and sequester carbon. Our aquaculture assessments are meant to provide a pathway for improving the sustainability of aquaculture operations, including minimizing contributions to climate change and improving climate resilience.

Recommendations on managing fisheries and protected resources to be more resilient to climate change.

Based on internal expertise and expert input, we believe the following actions will help NOAA improve the management to make fisheries and protected resources resilient in the face of climate change.

1. Deploy flexible, adaptive, ecosystem-based fisheries management strategies.

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When assessing management effectiveness, we look for three strategies to help ensure resilience. Each of these rely heavily on effective monitoring, comprehensive research, and enforcement - all key roles for NOAA.

- The first key strategy calls for flexible management systems that are actively monitoring for species and ecosystem shifts related to climate change and are able to adapt in a timely manner. Examples include adjustable reference points and catch allocation by fishery and/or gear type.
- A second strategy takes a more proactive approach, in that it manages for uncertainty in the target species. This embraces scenario-planning that anticipates the need to be precautionary and adaptive. Examples include strategies that protect target stock age structure, incorporating environmental parameters into stock assessments, and measures that decrease existing stressors on stocks.
- In keeping with NOAA’s commitment to ecosystem-based management, the protection of key habitats and non-target species, including the design of appropriate marine reserves, are essential components to helping to ensure our fisheries can continue to thrive in the face of a changing climate.

The changing ocean also creates a need for proactive, multi-threat, and flexible transboundary management agreements and necessitates stronger U.S. leadership and accountability measures at Regional Fisheries Management Organizations.

2. Achieve climate readiness with monitoring, research, and training.

We strongly support NOAA’s work to build regional assessments, data sets and tools to better enable the federal government and stakeholders to plan for and respond to climate change. We recognize the importance of NOAA’s Western Regional Action Plan that identifies important federal research priorities within the California Current Large Marine Ecosystem.\(^8\) We believe it is especially important to conduct climate vulnerability analyses for species managed by and protected under the Endangered Species Act, Marine Mammal Protection Act, and Magnuson–Stevens Act. We also support NOAA’s ecosystem monitoring activities, including its annual California Current Integrated Ecosystem Assessment that is foundational for conservation, research, and science-based management decisions. The Aquarium urges NOAA to increase research and monitoring to understand and predict ocean changes due to climate change and how these changes impact fisheries, aquaculture, and protected resources.

Preparing for and responding to climate change requires an entirely new level and increased pace of science-based information and management processes. It also involves major conflicts

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between fishing activity and endangered and protected species. Technology alone will not be enough – roadmaps and strategies must give way to implementation plans targeted to specific known or predicted challenge areas. Stakeholder transparency and trust will also be essential. Climate change is affecting fisheries and ecosystems so rapidly that existing management boundaries and cumbersome processes hamper decision making and delay adaptive and predictive management. Rapid response and adaptive regulatory approaches, coupled with data transparency tools, such as we saw used in the response to Deepwater Horizon, will be essential. Management strategy evaluation techniques are helpful and will need to be faster and easier for stakeholders to participate in and rely on.

To achieve this, NOAA needs to explore or expand science and technology partnerships and increase resources and technical training on these new approaches for resource managers. Such training would need to occur at all levels of government, including federal and state ocean and coastal managers, regional fishery council members, tribal governments, interstate fisheries commissions, and members of international management bodies. Given the breadth of relevant managers, NOAA should aim to create learning pathways that will be inclusive and facilitate data-driven decision making to identify, implement, and continue to evolve dynamic management approaches.

3. Use a science-based, precautionary approach in considering the impacts of new ocean uses.

The Aquarium supports the nation’s move toward a clean energy future. In the ocean, this means exploring wind and other potential sources of renewable energy to supplement similar renewable energy production from land. We must also work to ensure the health of ocean wildlife and ecosystems in the face of energy development so that they can continue to provide the suite of services they bring to the global population, including food, protection, tourism, and other vital benefits. With jurisdiction over the nation’s living marine resources, NOAA must actively engage with the Bureau of Ocean Energy Management and other federal and state agencies to develop science-based and stakeholder-driven decision-making processes. In particular, NOAA should prioritize research on the impacts of these uses on protected species, ecosystems, and regional fisheries.

4. Work with community-based organizations to advance regional solutions.

In addition to ocean wildlife and ecosystems, coastal communities and economies are also being affected by climate change. We recommend that NOAA ensure that climate strategies and solutions recognize and understand the needs of diverse ports and coastal communities nationwide. For example, the Monterey Bay Fishery Trust (MBFT) is a nonprofit organization that works to support local fishermen and sustain local fisheries. The MBFT recognizes the challenges of climate change, and we applaud their work to address current and emerging threats to ensure the future of small fishing ports in California and along the entire West Coast. By working with groups like MBFT and the Aquarium, NOAA can collaborate with regional interests to design
management measures that respond to climate change in a way that meets both local and national goals.

5. Consider that aquaculture is linked to the resilience of protected resources and fisheries.

While this Request for Information is focused on fisheries and protected species, we respectfully request that NOAA include aquaculture in the development of climate-focused management measures. Globally, the growth of aquaculture is eclipsing that of fisheries, and there is a need for U.S. aquaculture to serve as a model of sustainable management just as U.S. fisheries management has. This means developing predictive tools to support adopting the same data-driven, adaptive, and precautionary management approaches for aquaculture in the face of climate change as for fisheries management.

Climate change is the largest existential threat our world has ever faced. The ocean has a role to play in mitigating against the worst impacts of climate change, while at the same time, we must do everything we can to increase ocean resilience so that it continues to produce the services we need. We stand ready to work with NOAA to advance climate mitigation strategies for fisheries and protected resources and to sustain the nation’s ocean resources in the face of climate change. We must redouble our work together to protect our lives and livelihoods in this unprecedented time.

Thank you for your consideration of these comments.

Sincerely,

Margaret Spring
Chief Conservation & Science Officer
Monterey Bay Aquarium
Public Comment Regarding NOAA’s Request for Input on How to Make Aquaculture, Fisheries, and Protected Resources More Resilient to Climate Change

**Introduction**

The following comment is submitted on behalf of the Aquatic Animal Alliance (AAA) and the Coalition for Aquatic Conservation (CAC). We are a coalition of animal advocacy organizations that believe aquatic animals should have lives free of suffering. Our primary focus and areas of expertise is to identify key areas where welfare interventions are most needed for animals used in aquaculture and engage with key decision makers to implement these standards.

In the comment below, we offer recommendations to the National Oceanic and Atmospheric Administration on how to make aquaculture more resilient to climate change. Our main concern is aquatic animal welfare (for animals both within and outside aquaculture facilities), as we believe animal welfare is both an issue of importance in and of itself and that, in many cases such as this, improved animal welfare (e.g. appropriate stocking density, responsible feeding practices, good fish health) can have auxiliary benefits, including making aquaculture more resilient to the urgent threat of climate change.

We would like to thank the National Oceanic and Atmospheric Administration for the opportunity to comment. We hope our comment provides insightful feedback and we look forward to showing how data-driven and science-based animal welfare policy can facilitate aquaculture resilience in response to short- and long-term climate-driven threats.

In the next section, we will state our issues of concern and provide recommendations regarding:

1. Escapes
2. Health and Medical Treatment
3. Feed Composition/Feeding
4. Space Requirements and Stocking Density
5. Water Quality
6. Transport/Handling
7. Worker Protection
8. Environmental Enrichment
**Issues of Concern:**

1. **Escapes:**

Net pen escapes have been well documented globally.¹ Some of these escapes were the result of natural events such as storms or fires, and another due to poor infrastructure, resulting in the structural collapse of a net pen facility. According to a 2018 FAO report, one short-term impact of climate change is the loss of aquaculture infrastructure as a result of extreme weather events.² This means that in the coming years we should expect an increase in the likelihood of escapes, which are already all too common, and thus prepare accordingly. Therefore, it is imperative that the prevention of escape of farmed fish is strongly considered when forming adaptation measures.

Additionally, escapes can lead to deleterious consequences for wild fish populations and the local environment. For instance, feral farmed-fish have been shown to harm ecosystems (e.g. carps in the United States), displace wild populations as the result of ecological interaction (e.g. competition for space or food; predation), reduce the fitness and genetic diversity of wild populations as the result of interbreeding, and spread infectious disease.³ Moreover, escapes can increase the stress levels of captive fish and degrade water quality, which ultimately leads to poor welfare outcomes for wild and farmed populations.

For these reasons, we support measures that would put more accountability on producers to prevent escapes, including the requirement of contingency plans in the event an escape occurs.

**Recommendations**

Improved protections and requirements to reduce environmental impacts and increase resiliency of net pen operations could include: increasing underwater video monitoring; conducting regular inspections to assess structural integrity of the net pens and submitting inspection reports certified by an objective third party; requiring improved maintenance and cleaning of the net pens, water quality monitoring, and maintenance procedures; requiring transparent reporting if fish mortality rate exceeds 0.5 - 1%; refraining from self-reporting and instead relying on a third party to assess and disclose pertinent information; developing site-specific response plans for implementation in the event that fish escape; conducting and participating in emergency response exercises.

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² 2018 FAO Report on the impacts of climate change on fisheries and aquaculture [https://reliefweb.int/sites/reliefweb.int/files/resources/i9705en.pdf](https://reliefweb.int/sites/reliefweb.int/files/resources/i9705en.pdf), pg. 451

³ 2018 FAO Report, pg. 492-493
preparedness training; and maintaining contact information to promptly notify area tribes and state agencies in the event of an escape.

Also, we believe that adequate zoning and site selection through the use of risk analysis is essential for aquaculture to adapt to climate change. This includes the consideration of exposure to extreme weather events, changes in currents, in addition to long-term trends such as increasing ocean temperature, salinity, and decreasing DO levels when determining aquaculture zoning and site selection.

Lastly, contingency planning is essential for mitigating the detrimental outcomes of an escape. Many of these events result in high levels of suffering as well as acute mortality events for farmed fish. All aquaculture facilities must have a robust and actionable emergency response and contingency plan. The FAO categorizes disasters into three groups as follows:

1. Natural disasters: hydrometeorological hazards (e.g. floods, waves and surges, storms, droughts),
2. Geological hazards (e.g. earthquakes, volcanic eruptions) and Biological hazards (e.g. epidemics, insect infestations).
3. Technological disasters: directly related to human activity, a result of failure of a technology or of management (e.g. oil or chemical pollution from tankers, pipelines and drilling accidents, nuclear disasters).

All contingency plans must include animal welfare consideration, including but not limited to relocation planning and an emergency slaughter plan. Farms should also have an adequate contingency plan relating to emerging and exotic diseases of aquaculture animals.4

2. Health and Medical Treatment:

The long-term effects of climate change, which among other factors includes rising ocean temperatures, could lead to higher rates of pathogenic bacteria, as well as the emergence of new pathogens, an increase in the transmission and virulence of common parasites, an increase in the intensity and duration of algal blooms, and the prevalence and toxicity of various contaminants (e.g. mercury).5

Moreover, more extreme weather events, such as hurricanes or heavy rainfall, can lead to an increase in run-off of fertilizers and pollutants such as pesticides, herbicides, and trace metals into marine and inland aquaculture operations.6 If not adequately addressed, this could pose serious health and welfare risks to farmed fish and public health generally.

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4 Article 47 of Council Directive 2006/88/EC can give some guidance as to what the plan should entail at a minimum. See: https://www.fishhealth.ie/fhu/health-surveillance/aquaplan-fish-health-management-ireland/contingency-planning for more
5 2018 FAO Report, pg. 519-520
6 2018 FAO Report, pg.519
**Recommendations:**

In order to mitigate the impacts of climate change, effective biosecurity measures that emphasize disease prevention are essential.\(^7\) We support welfare management best practices such as low stocking density and responsible feed composition, as outlined in sections 3 and 4, throughout the time that fish are cultured in marine waters, which have shown to reduce stress and thus reduce the risk of infection, disease amplification, and transmission.

Additionally, we support medical interventions like traditional vaccinations that prepare the individual organisms’ immune systems to combat pathogens, and hence reduce the risks of infection, pathogen amplification and transmission, and disease. We believe the recommendations below enhance fish welfare and bolster aquaculture biosecurity through improving fish health, reducing suffering, and emphasizing responsible and science-based health management practices.

**Parasites and cleaner fish**

The welfare of all sentient animals in the supply chain, including those which do not end up in the ultimate food product, must be given consideration. This includes cleaner fish introduced as symbiotes to prevent infestation of sea lice in salmon farming.

The use of cleaner fish must be banned in every system in which the welfare of the cleaner fish is compromised. The use of cleaner fish is not an efficient method of removing sea lice,\(^8\) and cleaner fish face poor welfare, high disease rates, deformities, predation by salmon, and very high mortality rates.\(^9\) Several diseases that incubate in cleaner fish are communicable to salmon.\(^10\) Sea lice are rapidly developing resistance to treatment methods.\(^11\)

Methods used for removal of parasites, such as sea lice, must provide rigorous, scientific documentation and reduce any adverse effects on the welfare of the fish. Methods such as thermal delousing machines are not recommended: Ulcers, lesions, and crush injuries are routinely reported among fish who have been exposed to thermal delousing procedures,\(^12\) and delayed mortality is more common in thermal delousing systems than the alternatives.\(^13\) Recent findings show that thermal treatments are painful and cause panic reactions in Atlantic

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\(^7\) 2018 FAO Report, v.
\(^13\) Ibid., p. 85.
The Norwegian Food Safety Authority recently recommended a ban on thermal delousing, and activists are currently petitioning for a similar ban in Scotland. Evidence suggests mechanical delousers are also deleterious to welfare.

For these reasons, we advocate for further research into and implementation of preventative measures, such as with snorkel cages and lice skirts, that reduce parasitical load and the total number of animals involved in the production process, including the sea lice themselves.

**Routine mutilations**

We oppose the use of routine mutilations, including the practice of eyestalk ablation. Sufficient evidence exists to show that ablation causes animals to become “disorientated, flick their tail (an escape reflex) and rub the traumatised area”, all behaviors associated with pain. Given the advent of commercially viable ablation-free crustaceans, we see no reason for this practice to continue.

**Medical Treatment with Vaccinations**

When vaccination is necessary, proper handling and care should be observed, as referenced in section 6; it shall be done with minimal distress and with the animal anesthetized, performed only by certified veterinarians or adequately trained animal health professionals. Vaccination administration must be consistent with RSPCA guidelines. We oppose the routine or prophylactic use of antibiotics, however, we do not oppose the metaphylactic use of antibiotics when absolutely necessary to ameliorate the suffering of captive animals.

**Recommendations**

1. Currently aquatic animals are treated as a ‘batch’, with most treatments being applied to every animal in the batch. From a welfare point of view, aquatic animals should be given individualized health plans, and given appropriate treatment as an individual when they are at risk of getting sick.

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20 Ablation is a hatchery technique of masceratting or destroying the eye stalk gland in female broodstock shrimp/prawns to encourage spawning
23 Emerging technologies make this possible: radio tags for fish in RAS systems, or visual recognition of fish by systems such as iFarm.
2. In order to maximize welfare and reduce the risk of population-level infection or infestation, medical treatments should be prioritized in this order: measures which prevent disease > allopathic treatments > metaphylactic treatments.

3. Disease outbreaks must be properly managed through rapid diagnosis and treatment, and when necessary, humane slaughter. Only veterinary medicines, chemicals and biological products approved for aquaculture by relevant authorities and not banned for food fish can be used.

4. All mass mortality events must be reported. This should include the number, weight and age of deceased animals; their cause of death; and all remedial measures taken to prevent further mortalities.

5. Records of individual deaths shall be kept for at least 10 years and numbers be made available to the public.

6. A primary indicator of sickness in the aquaculture setting is mortality. From an animal welfare perspective, metaphylactic treatment will usually come too late to be effective. Standards should require routine testing for diseases to thereby establish appropriate metaphylactic treatment protocols. Every effort should be made to identify and treat isolated cases before they spread to the population.

7. The use of sacrificial symbiotic species, such as cleaner fish, should be banned. Co-housing of different species is only permitted where the welfare of neither species is compromised.

8. For new facilities, the farming location shall be chosen so as to minimize the presence and spread of parasites (such as sea lice) and provide for optimal water quality and temperature conditions for the animals.

9. Sea cages are to be designed with an internal skirt to encourage salmon to use deeper water, to prevent sea lice contraction.

10. Routine mutilations, such as eyestalk ablation or fin clipping, are not permitted.

11. Wherever possible, the production facility must be biosecure, and the impact on other species in the vicinity must be minimized.

12. Health management procedures must be described in a manual, reviewed and approved by a fish health professional, and must include BMPs, measures to prevent introduction of diseases protocols for water quality management and health monitoring.

3. **Feed Composition/Feeding:**

According to the 2018 FAO report, greenhouse gas emissions associated with aquaculture are greatest in intensive production of finfish and crustaceans, which is heavily reliant on feed and other inputs. The AAA and CAC support various interventions regarding feed and feed composition that are beneficial from a fish welfare perspective, and in this case, mitigating greenhouse gas emissions associated with aquaculture production. Indeed, these interventions are good for fish and for the future sustainability of aquaculture.

**Why is this intervention important?**

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24 2018 FAO Report, pg.599
To reduce the suffering of sentient beings, the number of animals used in the fish-feed supply chain should be minimized. From a welfare perspective, feeding fish to other fish produces a huge amount of suffering. One method in which fish are caught to feed farmed fish is through bottom trawl fishing, which not only contributes to overfishing, but has also shown to contribute to ocean acidification and reduce the ocean’s ability to pull carbon dioxide from the atmosphere, thereby accelerating climate change.\(^25\) We calculate that more than a trillion aquatic animals are used as feed in aquaculture systems each year.\(^26\) Each of these animals is a sentient individual with its own welfare concerns; many are caught at sea, and/or slaughtered in a poorly regulated environment. These fish are of low or no direct commercial value,\(^27\) and replacing their use in feed with alternative protein sources could reduce global fishing by \(\sim 12\%\).\(^28\)

Preliminary studies suggest that for a number of herbivorous and omnivorous species, such as with whiteleg shrimp, *litopenaeus vannamei*, can be efficiently produced using a feed replaced by alternative protein with no evidence of welfare consequences for the animals.\(^29\) We propose that animal-based fish feed should be replaced with alternative proteins to the extent that the evidence suggests this will not have a deleterious impact on the health and wellbeing of the fish, and the ecosystem.

In order to reduce the number of animals in the supply chain, producers must move toward the use of alternative feed products, higher feed efficiency ratios, and the substitution of carnivorous farmed species with herbivorous species, extractive species, and integrated agriculture-aquaculture systems where fish and their feed are co-produced. The use of Fish Meal/Fish Oil (FMFO) in the feed of herbivorous and omnivorous aquatic species/life stages must be prohibited, when alternatives do not affect both the animals and the ecosystem. Where obligate carnivores are farmed, the minimum amount of FMFO should be used while still ensuring good welfare, including good health.

Where animal products are required, the maximum proportion of animal products used should be sourced from byproducts and offcuts of human animal consumption. The use of alternative feed products, such as algal oils, bio processed soybean meal, and lima bean flour, should be maximised to the extent that they do not impair health and welfare.

Producers must keep accurate records of what kinds of feed are being used, and justify the ration *qua* the welfare of the fish.

Welfare consideration must be given to all animals, regardless of whether the animal is destined for the human plate. Equal consideration must be given to both the animals used as feed in aquaculture and the animals being fed, in order to reduce total animal suffering.

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\(^{26}\) ALI Report on “Blue Loss,” https://ali.fish/blue-loss


Recommendations
1. Where possible, the use of obligate carnivores in farming systems should be substituted for herbivores or omnivores who are fed a herbivorous diet.
2. Extractive species should be preferred over all other species.
3. The use of Fish Meal/Fish Oil (FMFO) in the feed of herbivorous aquatic species/life stages should be prohibited.
4. Where obligate carnivores are farmed, the minimum amount of FMFO should be used while still ensuring good health.
5. Where FMFO is used, the maximum proportion of animal products used should be sourced from offcuts and byproducts of human animal consumption.
6. Alternative feed products, such as algal oils, bio processed soybean meal, and lima bean flour, should be used in the place of fish products, to the extent they do not impair health and welfare. The most sustainable alternative feed product should be preferred.
7. FMFO should be identified and quantified by the number of individual animals consumed per individual farmed aquatic animal. The animals used in fishmeal should be recorded by species and geographical sourcing.
8. The same considerations must apply to all animals in the supply chain.
9. Seaweed farming as a FMFO alternative also serves as a form of carbon sequestration acting as a natural combatant to climate change, according to Dr. CRK Reddy from the Indian Centre for Climate and Societal Impact Research.30

A note on feeding generally
Appropriate feeding is critical for good fish welfare. Insufficient amounts of feed, or feed in an unavailable form (e.g. excessively large pellets or feeding in a location where smaller fishes are outcompeted) can result in poor health and welfare. Providing too much feed can cause poor water quality, which in turn will affect health and welfare. Producers should strive to provide appropriate feed formulations, in appropriate amounts, which is available to all fishes kept in the farm.

Starvation periods should only be used when absolutely necessary and when advised by a vet. Fasting should not exceed the minimum duration sufficient to ensure clearing of the guts, with 72 hours as the absolute maximum. Records need to be kept about why, when, and for how long feed was withheld from aquatic animals. Fasting may not be extended due to logistical concerns or off-flavor issues.

4. Space Requirements and Stocking Density:
Space and stocking density requirements are essential from a welfare, water quality, disease incidence perspective, and must be strongly considered when forming adaptation measures for aquaculture in response to climate change. As mentioned previously, long-term effects of climate change could result in higher rates of pathogenic bacteria, transmission and virulence of common parasites, and potentially new pathogens. The recommendations offered below are an example of

30 https://www.iccsir.org/climate_change.html#
how robust fish welfare policy leads to healthier fish, and in turn makes aquaculture more adaptive to the detrimental effects of climate change.

**Why is this intervention important?**

As with terrestrial animals, the amount of space available to each animal, and the density at which the animals are stocked is highly important.

In order to have a life worth living, fishes and other aquatic animals must have sufficient space to exercise their species-specific behaviors. Increasing the total swimmable water volume per individual, not just minimizing stocking density, therefore has the potential to be a very high-impact intervention from a welfare perspective. The available space and volume must reflect the species’ needs (e.g. for a schooling species, more space will likely be necessary).

Stocking density is of utmost importance to fish welfare, as it produces a dynamic interplay with several critical welfare factors: water quality, conspecific aggression, and incidence of disease. Excessive stocking densities are associated with decreased growth, diminished nutritional uptake, reduction in feed conversion efficiency, fin erosion, gill damage, immunosuppression, inter-fish aggression, and disturbed movement activity. It is also one of the most tractable areas of welfare, as no infrastructural investment is required to stock fewer animals. In most cases, the legal limits on stocking density are above the density recommended by the best available evidence.

Producers must keep records of both density and total space available to animals.

**Recommendations**

Individual aquatic animals must have access to sufficient space and total volume of water to exhibit their natural behaviors (e.g. schooling).

Aquatic animals should be stocked at a density no higher than the level which is shown to produce the lowest stress, lowest maladaptive behaviors, and lowest conspecific aggression. This is to be determined by the best available evidence.

For species-specific stocking density recommendations, see Appendix below.

For a case study on stocking density, see Appendix below.

5. **Water Quality:**

One of the most important measures for mitigating greenhouse gas emissions from aquaculture is improving fish health through the improvement of water quality management. The AAA has also identified water quality as a key welfare priority for fish used in aquaculture. We believe

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33 Supra note 17.
34 2018 FAO Report, pg.600
that this priority is especially important within the context of climate change given the fact that climate-driven changes in temperature, precipitation, ocean acidification, incidence and extent of hypoxia are expected to become increasingly common in the coming years. Alterations in water pH, dissolved oxygen, and temperature will inevitably affect fishes’ welfare and increase stress. It is thus imperative to improve the resilience of fish.

Why is this intervention important?

Water quality is a generally accepted high priority welfare issue. It is imperative to understand and adjust the quality of water according to specific needs of the aquatic animals in order to protect their welfare and ensure optimal health. Fish are sensitive to some twenty chemical factors in the water, which exist in a web of correlation such that an increase in one might be a limiting factor in the level of several others. Principal water quality parameters to consider include dissolved oxygen (DO) levels, temperature, concentration of carbon dioxide and ammonia, salinity, and acidity.

In salmon for example, a sufficient dissolved oxygen concentration is required to facilitate passive diffusion of oxygen into the salmons’ blood via the gills. Where oxygen isn’t sufficiently available, fish experience hypoxia, which manifests via gasping response, anorexia, distress, unconsciousness, and death.

Aquaculture sites should be carefully chosen or designed so as to ensure an adequate flow of clean water of suitable quality in the enclosures, according to the characteristics of the system and to the species’ particular requirements. Water quality parameters must at all times be within the adequate range that sustains normal activity and physiology for a given species.

Recommendations

1. Every effort shall be made to maintain the ideal homeostatic conditions for farmed aquatic animals to thrive in their environment.
2. Water quality (at least turbidity, total dissolved solids, oxygen, ammonia, carbon dioxide, temperature, pH, salinity and, in the freshwater context, nitrate) shall be assessed using an appropriate technical device for each parameter, with a frequency appropriate to the species and the system involved in order to avoid poor welfare. The resolution of these records should be as high as feasible, and the results must be periodically and centrally published.
3. For saltwater and freshwater animals, water quality parameters should include: temperature, pH, oxygen, carbon dioxide concentration, salinity, ammonia, nitrate, presence of nuisance biological agents.
4. Sites shall be carefully chosen or designed so as to ensure an adequate flow of clean water of suitable quality in the enclosures, according to the characteristics of the farm system and to the species’ requirements.
5. Water quality parameters shall be at all times within the adequate range that sustains normal activity and physiology for a given species. When they are not, corrective action measures must be taken as quickly as possible.
6. Aquatic animals show varying degrees of adaptability to changing water quality conditions. Some degree of acclimatization may be necessary, and this should be carried
out for a period appropriate for the species in question. Appropriate measures shall be taken to minimize sudden changes in the different parameters affecting water quality.

7. Studies of individual animals’ experience of water quality show that animals may not be able to effectively move to higher-quality areas of the enclosure, preferring to cluster in certain areas, even if they are deprived of essential qualities. Attempts must be made to create accurate profiles of the distribution of water quality in the cage, and effectively treat quality “cold” zones.

8. Ammonia and nitrites must be kept as close to 0ppm as possible.

9. Accumulation of carbon dioxide to harmful levels shall be avoided, for example by using aeration systems or by chemical means appropriate to the farming system used (e.g. pH depends on many water quality factors, such as the concentration of humic acids, CO2 and dissolved calcium salts).

10. Acidity (pH) shall be kept stable, as all changes in pH initiate complex water quality changes, which may cause harm to the fish.

11. Oxygen saturation, pH and temperature should be tested twice daily (at least six hours apart) if done manually, or at the highest resolution possible if an automated probe is installed. All other parameters should be tested regularly (weekly or biweekly as appropriate) to document trends.

12. Water should be sampled monthly at a gradient across the breadth and depth of the enclosure to identify quality cold spots. The water quality risk assessment must be coupled with an action plan once poor water quality is detected. Oxygen levels should be monitored and adjusted to species-specific optimal levels. A full accounting of water quality records is required.

For species-specific water quality recommendations, see Appendix below.

6. **Transport/Handling:**

The AAA and CAC also believe that fish welfare must be strongly considered throughout transportation and handling processes. Improper handling and transportation measures could lead to poor fish health or otherwise preventable death. The recommendations offered below are important adaptation measures due to their primary consideration of welfare, water quality, and stocking density requirements, which as we have mentioned previously are essential for maintaining and improving fish health.

**Why is this intervention important?**

Transportation of aquatic animals involves collection, loading, transport, unloading and stocking and can induce significant stress responses from which the animals will take a long time to recover. Poor conditions during transport, such as overcrowding and inadequate water quality, can cause irreparable damage or death to the animals. The circulation of low-volume water means transport is fundamentally a risky activity, as there is little room for error if (even very rigorous) standards lapse or equipment fails. As such, live transport should be minimized wherever possible in favor of on-site slaughter, and minimal time spent in transportation boats.

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Recommendations

1. All recommendations are in addition to respective OIE standards on fish transportation.
2. Handling of fish at all times must be minimized. Any handling taking longer than fifteen seconds requires sedation.  
3. All new facilities should be constructed with slaughter facilities on-site, or access to a mobile slaughter facility that minimizes live transport.
4. Water quality (e.g. oxygen, carbon dioxide and ammonia levels; pH; temperature; and salinity) should be appropriate for the species being transported and the method of transportation.
5. Monitoring, maintaining, and reporting these water quality parameters is required. Contingency plans (e.g. bottled oxygen) must be in place on site in case of a lapse in quality.
6. The documentation accompanying the consignment (the transport log) should include: a) description of the consignment (e.g. date, time, and place of loading; species; and biomass load); b) description of the transport plan (e.g. route; water exchanges; expected time, date and place of arrival and unloading; and receiver contact information).
7. Animals should not be loaded until the required log documentation is complete.
8. The transport log should be made available to the dispatcher and the receiver of the consignment. Transport logs should be centrally and regularly published.
9. As transport distance is minimized, there is less need to lower the metabolic rate of fishes in transport. As such, temperature change during transport should be minimized.
10. Appropriate stocking densities during transportation must be respected.

7. **Worker Protection:**

As NOAA is aware, aquaculture workers are exposed to a multitude of potential occupational hazards at the workplace. Causes of death have included drowning, electrocution, crushing-related injury, hydrogen sulfide poisoning, and fatal head injury. Reported nonfatal injuries have included slips, trips, and falls; machines; strains and sprains; chemicals; and fires. Risk factors included cranes (tip over and power line contact), tractors and sprayer-equipped all-terrain vehicles (overturn), heavy loads (lifting), high-pressure sprayers, slippery surfaces, rotting waste (hydrogen sulfide production), eroding levees (overturn hazard), storm-related rushing water, diving conditions (bends and drowning), nighttime conditions, working alone, lack of training, lack of or failure to use personal flotation devices, and all-terrain vehicle speeding. Other hazards include punctures or cuts from fish teeth or spines, needlesticks, exposure to low temperatures, and bacterial and parasitic infections. Some of these hazards are

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37 Lowering the temperature under which fish are transported increases the stocking density that the fish can tolerate, since lower temperature slows the metabolism (reducing oxygen requirements), but abrupt temperature changes are stressful to fish. The temperature changes to which fish are exposed during transport are highlighted as a major fish welfare problem during transport in a stakeholder forum organized by the Humane Slaughter Association, as were the transfer of smolt to seawater before they are capable of coping physiologically, and mechanical breakdowns, which result in “significant mortalities” during transport.
38 Review of Occupational Hazards Associated With Aquaculture
Melvin L. Myers MPA  Pages 412-426 | Published online: 15 Oct 2010,https://doi.org/10.1080/1059924X.2010.512854
39 Review of Occupational Hazards Associated With Aquaculture
Melvin L. Myers MPA  Pages 412-426 | Published online: 15 Oct 2010,https://doi.org/10.1080/1059924X.2010.512854
set to become increasingly dangerous as a result of climate-driven heat waves, storms, and extreme weather events that are becoming ever more prevalent each passing year.

Climate change must be considered as a relevant factor when forming safety measures for aquaculture workers. Occupational safety laws must be applied and well enforced in these facilities. Given the particular risks, specific workers protection regulation for this industry may be necessary. Adequate training must be provided for all employees.

Additionally, utilizing local resources, minimizing trade, and using sustainable ingredients for FMFO could also help avoid nutrient loss for populations in developing countries. Sardines and anchovies could provide developing nations a direct quality protein and nutrient source, instead of utilizing them for FMFO feed to the “expensive” fish we eat in developed nations. This intervention would provide an area of food security to the countries that will suffer the greatest impacts of climate change.

8. **Environmental Enrichment**

From a fish welfare perspective, the duration of time spent for fish in the rearing environment (as compared to in transport, for example) makes environmental enrichment (EE) a primary concern. Environmental improvements can be integrated into existing farm structures, requiring minimum disruption and capital investment. Most of these interventions carry both intrinsic and instrumental benefits: they increase the welfare of the fish, but also improve their performance as a farmed animal, by improving their growth, condition, and resilience to death. As such, environmental enrichment can help improve fishes’ welfare and thus their resilience to environmental stressors that will emerge from climate change.

This includes, but is not limited to, additional forms of restorative, non-industrial aquaculture such as shrimp farming with mangroves, as mangroves act as a natural coastal barrier to extreme weather events associated with climate change, as well as a form of enrichment for shrimp. We also recommend incorporating kelp rings as a form of environmental enrichment in aquaculture settings as a means to reduce environmental impacts.

**Conclusion**

The Aquatic Animal Alliance and Coalition for Aquatic Conservation would like to again thank the National Oceanic and Atmospheric Administration for the opportunity to comment. Although the recommendations above are not a comprehensive outline of all the ways in which aquaculture can be more resilient to the effects of climate change, it represents an overview of our main

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concerns in this context. At the AAA and CAC, we believe these recommendations offer a robust framework for implementing meaningful welfare interventions that allow for farmed aquatic animals to have a life worth living, and in the context of this public comment, prepare aquaculture and the many animals involved to face ever increasing climate-driven threats as sustainably and welfare-oriented as possible.

We should also note that the needs of aquaculture facilities vary within different contexts in response to climate-driven threats. Thus, it is important to remember that effective planning and adaptation measures will need to be flexible to regional differences. Moreover, measures will need to be implemented as a part of an ongoing and iterative process, and hence modified or updated accordingly.

We look forward to providing recommendations in future comment periods and would be happy to provide further resources as needed.

Signatories:

The Aquatic Life Institute
Animal Rights Center Japan
Equalia
OceanKin
NY4Whales
Sharklife Conservation Group
Animal Friends Jogja
OceanHero
Advocating Wild
Professor Kathy Hessler
Fish Welfare Initiative
Appendix: Species Specific Recommendations

This table contains a literature review of the best available welfare standards in our five key strategic areas, for the most commercially relevant farmed aquatic animals. A full bibliography is available [here](#).

The literature on fish welfare is extremely preliminary. For this reason, each recommendation comes with a rough certainty rating (5 is high confidence, 1 is low confidence) that reflects how likely in ALI's estimation the evidence is 1) reliable and complete 2) fully representative of the needs of the species.

<table>
<thead>
<tr>
<th>Species</th>
<th>Domain</th>
<th>Recommendation</th>
<th>Evidence</th>
<th>Certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlantic Salmon</td>
<td>Environmental Enrichment</td>
<td>Substrate provided at Alevin stage. Partial tank covers provided throughout pelagic stages. Structure to be provided in the tank. Interactive feeding mechanisms provided at saltwater stage. Tanks to be coloured dark blue.</td>
<td>[Cogliati 2019], [Marr, 1963], [Naslund, 2016]</td>
<td>3</td>
</tr>
<tr>
<td>Atlantic Salmon</td>
<td>Feed composition</td>
<td>Use of animal products in feed to be minimized where possible.</td>
<td>[ALI FMFO report]</td>
<td>2</td>
</tr>
<tr>
<td>Atlantic Salmon</td>
<td>Space requirements</td>
<td>10kg/m³</td>
<td>[North 2006]</td>
<td>5</td>
</tr>
<tr>
<td>Atlantic Salmon</td>
<td>Water quality</td>
<td>pH 6.5-8, calcium above 4 mg/L and Alx below 54 ug/L. DO of between 8.0-9.0 mg/L. This is dependent on temperature: Salmon usually kept at a range &gt;16°C for ideal growth. As such, oxygen level not to fall beneath 85% saturation in case water heats up further, or metabolic rate otherwise increases. Hyperoxia not permitted. CO2 levels should not exceed 10 mg/L.</td>
<td>[Sigholt 1995], [Brocksen, 1992], [Wedeme yer 1996]</td>
<td>4</td>
</tr>
<tr>
<td>Atlantic Salmon</td>
<td>Stunning and Slaughter</td>
<td>Electrocution where possible. If not, electrical stunning followed by immediate decapitation. Handling minimized.</td>
<td>[EFSA 2004], [Robb 2000], [Ruff 2002]</td>
<td>5</td>
</tr>
<tr>
<td>Fish</td>
<td>Category</td>
<td>Description</td>
<td>Reference</td>
<td></td>
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<td>--------------</td>
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<td>-----------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Nile Tilapia</td>
<td>Feed composition</td>
<td>No animal products are permitted.</td>
<td>[Neto 2020]</td>
<td></td>
</tr>
<tr>
<td>Nile Tilapia</td>
<td>Space requirements</td>
<td>20 kg/m³</td>
<td>[EC No 834/2007]</td>
<td></td>
</tr>
<tr>
<td>Nile Tilapia</td>
<td>Water quality</td>
<td>Oxygen level not to fall beneath 85% saturation. Hyperoxia not permitted. CO₂ levels should not exceed 10 mg/L. Total ammonia nitrogen not permitted to increase beyond 0.05mg/l (ppm).</td>
<td>[Josephson et al 2014], [Durboro w 1997]</td>
<td></td>
</tr>
<tr>
<td>Nile Tilapia</td>
<td>Stunning and Slaughter</td>
<td>Electrocution where possible. If not, electrical stunning followed by immediate decapitation. Handling minimized.</td>
<td>[EFSA 2004], [Robb 2000], [Ruff 2002]</td>
<td></td>
</tr>
<tr>
<td>Striped Catfish</td>
<td>Environmental Enrichment</td>
<td>Shelter structures, and floating pond covers to be provided. Dark tank coloration to be used. Feed to be given in dry crumbles at fingerling stage, with night-feed preferred at the adult stage.</td>
<td>[Phelps 1992], [Boerrigter et al., 2016], [Barcellos et al., 2009]</td>
<td></td>
</tr>
<tr>
<td>Striped Catfish</td>
<td>Feed composition</td>
<td>No fish products permitted. Medicated feeds not permitted.</td>
<td>[Naturland d, 2020]</td>
<td></td>
</tr>
<tr>
<td>Striped Catfish</td>
<td>Space requirements</td>
<td>10 kg/m³</td>
<td>[EC No 834/2007]</td>
<td></td>
</tr>
<tr>
<td>Striped Catfish</td>
<td>Water quality</td>
<td>Oxygen level not to fall beneath 85% saturation. Hyperoxia not permitted. CO₂ levels should not exceed 10 mg/L. Total ammonia nitrogen not permitted to increase beyond 0.05mg/l (ppm).</td>
<td>[Josephson et al 2014], [Durboro w 1997]</td>
<td></td>
</tr>
<tr>
<td>Striped Catfish</td>
<td>Stunning and Slaughter</td>
<td>Electrocution where possible. If not, electrical stunning followed by immediate decapitation. Handling minimized.</td>
<td>[EFSA 2004], [Robb 2000], [Ruff 2002]</td>
<td></td>
</tr>
<tr>
<td>Grass Carp</td>
<td>Environmental Enrichment</td>
<td>Multi-colored gravel substrate, cobbles and plants to be provided in the hatchery environment.</td>
<td>[Amina 2020]</td>
<td></td>
</tr>
<tr>
<td>Grass Carp</td>
<td>Feed composition</td>
<td>Animal products not permitted in feed. For grass carp, integrated &amp; extractive feeding systems only to be used.</td>
<td>[Shaha, 2015]</td>
<td>2</td>
</tr>
<tr>
<td>Grass Carp</td>
<td>Space requirements</td>
<td>8000 fingerlings per ha.</td>
<td>[Mohanty, 2017]</td>
<td>1</td>
</tr>
<tr>
<td>Grass Carp</td>
<td>Water quality</td>
<td>Oxygen level not to fall beneath 85% saturation. Hyperoxia not permitted. CO2 levels should not exceed 10 mg/L. Total ammonia nitrogen not permitted to increase beyond 0.05mg/l (ppm).</td>
<td>[Josephson et al 2014], [Durbo 1997]</td>
<td>4</td>
</tr>
<tr>
<td>Grass Carp</td>
<td>Stunning and Slaughter</td>
<td>Electrocution where possible. If not, electrical stunning followed by immediate decapitation. Handling minimized.</td>
<td>[EFSA 2004], [Robb 2000], [Ruff 2002]</td>
<td>5</td>
</tr>
<tr>
<td>Whiteleg Shrimp</td>
<td>Environmental Enrichment</td>
<td>50% of pond area to be covered by plants. Recommended plant species are e.g. leguminosae trees (e.g. Algarrobo), aloe, mangrove, semi-aquatic herbs and floating grasses for the lower parts of the slopes. Recommended to raise ducks in the pond, expelling intruding birds.</td>
<td>[Naturland, 2020]</td>
<td>3</td>
</tr>
<tr>
<td>Whiteleg Shrimp</td>
<td>Feed composition</td>
<td>No live catch permitted. All food to be processed (cooked) prior to feeding. Ideally, no animal material to be fed to shrimp.</td>
<td>(EC) No 889/2008 a. 25k (d)</td>
<td>4</td>
</tr>
<tr>
<td>Whiteleg Shrimp</td>
<td>Water quality</td>
<td>Naturland's guidance to be followed on water quality parameters, saline filtering, organic sediments,</td>
<td>[Naturland, 2020]</td>
<td>3</td>
</tr>
<tr>
<td>Whiteleg Shrimp</td>
<td>Stunning and Slaughter</td>
<td>Crustaceans lack a central nervous system so cannot be killed through destruction of the brain. Application of electrical stunning at 110 volts and 5 amps for 5 seconds.</td>
<td>[Neil 2012], [Yue 2008]</td>
<td>4</td>
</tr>
<tr>
<td>Decapods (Crabs &amp; Lobster)</td>
<td>Environmental Enrichment</td>
<td>Beneficial algae levels measured via secchi disc. Suitable blooms between 30 and 60 cm. introduction of aeration</td>
<td>[NACA, 2005]</td>
<td>2</td>
</tr>
<tr>
<td>Decapods (Crabs &amp; Lobster)</td>
<td>Feed composition</td>
<td>Use of marine animal products in feed to be minimized where possible</td>
<td>[ALI FMFO]</td>
<td>5</td>
</tr>
<tr>
<td>Decapods (Crabs &amp; Lobster)</td>
<td>Space requirements</td>
<td>Mud crab: 0.5-1.5 animals/m³. (No currently economically feasible lobster farms)</td>
<td>[QG, 2018]</td>
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<td>----------------------------</td>
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</tr>
<tr>
<td>Decapods (Crabs &amp; Lobster)</td>
<td>Water quality</td>
<td>Oxygen levels above 4-6 mg/l, pH levels between 7.5 and 8.5, salinity below 4-6 ppt, ammonia tolerance between 0.1 and 0.2 mg/l. &quot;Freshwater crayfish benefit from an alkalinity of between 50 and 300 mg/l, whilst prawns are best held in waters of between 80 and 120 mg/l.&quot;</td>
<td>[NACA, 2005]</td>
<td></td>
</tr>
<tr>
<td>Decapods (Crabs &amp; Lobster)</td>
<td>Stunning and Slaughter</td>
<td>Crustaceans for human consumption should only be humanely killed by trained and competent personnel before purchase by the customer. Live sale, consumer transport, home slaughter, and boiling alive of crustaceans is forbidden. Use of electrocution machines, such as crustastun, are the ideal solution for crustacean slaughter. The divergent nervous system makes the efficacy of spiking poorly evidenced.</td>
<td>[RSPCA 2019]</td>
<td></td>
</tr>
<tr>
<td>Bivalves</td>
<td>Environmental Enrichment</td>
<td>Management of natural beds will encourage the settlement of juveniles and sustain the fishery. Beds can be raked and tilled on a regular basis to remove silt and ensure that suitable substrates are available for the attachment of the juvenile stages. Adding settlement material, called 'cultch', is also beneficial. The most commonly used 'cultch' is old bivalve shells.</td>
<td>[FAO Hatchery]</td>
<td></td>
</tr>
<tr>
<td>Bivalves</td>
<td>Feed composition</td>
<td>Feed by filtering mainly phytoplankton, but also some organic detritus in sea water. Mixed algal diets are beneficial. A combination of two or three high nutritional value species including a suitably sized diatom and a flagellate invariably provide improved rates of larval growth and development than do single species diets. They also improve spat yields and influence the subsequent performance of spat in terms of both growth and survival.</td>
<td>[Cheng 2020]</td>
<td></td>
</tr>
<tr>
<td>Bivalves</td>
<td>Space requirements</td>
<td>Culture methods can include direct sowing onto the seabed, or containerized or attached to structures on or above the seabed, both intertidally and subtidally. Shallow and deep water systems of over 5 meters depth may suspend bivalves from longlines, rafts or other floating structures. Cultivation sites shall be of an appropriate scale and operated so they do not exceed the production carrying capacity of the water body. If the rate at which phytoplankton is removed exceeds the rate at which the ecosystem refreshes the supply the reduced availability of food can have a negative impact on growth and health. Note: there may be a predefined limit to an area available for cultivation based on what is known about the productivity and food availability for bivalve shellfish locally.</td>
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</tr>
<tr>
<td>Bivalves</td>
<td>Water quality</td>
<td>pH: 7-9. Temperature (°C): A discharge must not cause the temperature of the waters to exceed by more than 2 °C from the temperature of waters not so affected. Coloration (after filtration) (mg Pt/l): A discharge must not cause deviation of more than 10 mg Pt/l from the colour of waters not so affected. Suspended solids (mg/l): A discharge must not cause the ss content of the waters to exceed by more than 30% of the content of waters not so affected. Salinity (%): 12 to 38 ‰. Dissolved oxygen (Saturation %): ≥ 80%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bivalves</td>
<td>Stunning and Slaughter</td>
<td>Extremely limited evidence. Some producers’ associations recommend the use of live chilling and clove oil. Unclear what evidence this is founded upon, and how consistent this method will be. Recommendation is minimum level clove oil, and chilling in a refrigerator or freezer at a temperature below 4°C for a minimum of 20 minutes. Bivalves lack a central nervous system so cannot be killed by spiking.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sturgeon</td>
<td>Environmental Enrichment</td>
<td>Current enrichment provided for juveniles. Environmental complexity to be provided: Spatial cues, natural photoperiod, substrate, spatial complexity.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sturgeon</td>
<td>Feed composition</td>
<td>Use of animal products in feed to be minimized where possible.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td>Category</td>
<td>Requirement/Detail</td>
<td>Reference</td>
<td></td>
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<td>------------------------------------------------------------------------------------</td>
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<td></td>
</tr>
<tr>
<td>Sturgeon</td>
<td>Space requirements</td>
<td>30 kg/m³</td>
<td>(EC) 889/2008 Annex XIIIa</td>
<td></td>
</tr>
<tr>
<td>Sturgeon</td>
<td>Water quality</td>
<td>Compliant with EU organic standards</td>
<td>(EC) 889/2008 Annex XIIIa</td>
<td></td>
</tr>
<tr>
<td>Sturgeon</td>
<td>Stunning and Slaughter</td>
<td>Electrocution where possible. If not, electrical stunning followed by immediate decapitation. Handling minimized.</td>
<td>[EFSA 2004], [Robb 2000], [Ruff 2002]</td>
<td></td>
</tr>
<tr>
<td>Tuna</td>
<td>Environmental Enrichment</td>
<td>Early evidence suggests farming in low light can improve survivability. In the juvenile stage, placing nets farther from shore seems desirable.</td>
<td>[Hilder, 2013], [Kirchoff, 2011]</td>
<td></td>
</tr>
<tr>
<td>Tuna</td>
<td>Feed composition</td>
<td>No info</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tuna</td>
<td>Space requirements</td>
<td>Larvae: 5 larvae/L. Spawners: 5-8 ind/m³.</td>
<td>[Chen, 2016]</td>
<td></td>
</tr>
<tr>
<td>Tuna</td>
<td>Water quality</td>
<td>No info</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tuna</td>
<td>Stunning and Slaughter</td>
<td>Fish too big to be consistently stunned, spiking if delivered properly kills fish instantly. Surface shooting is not allowed. Crowding to be avoided. Use of gaff hooks on live animals prohibited.</td>
<td>[Peteri, 2004], [EFSA, 2009]</td>
<td></td>
</tr>
</tbody>
</table>
Dear Ocean Resources and Climate / NOAA,

Breaching the four lower Snake River dams will help ESA-listed wild salmon survive a warming, more unpredictable climate, which in turn will help critically endangered Southern Resident Orcas—a Species in the Spotlight—survive.

Breaching the 4 Lower Snake Dams will significantly reduce water temperatures in the Snake & Columbia rivers and allow salmon & steelhead to better survive the warming from climate change that is currently killing the fishery. This will help them survive their 1000 mile trip from central Idaho to the Pacific ocean, and back again.

This will help all states by recovering the fishery that is iconic to the Pacific Northwest, and it will make the difference between extinction or survival for Southern Resident Orcas.

A healthy Snake river is dependent on clean, clear water with temperatures cool enough to sustain salmon. All leading fishery scientists are telling us the 4 Lower Snake Dams must be breached or ESA-listed salmon in the Snake will go extinct, and that will drive ESA-listed Southern Resident Orcas to extinction as well.

Your action to breach the 4 Lower Snake Dams, and your response would be appreciated.

Sincerely,
Peggy Oki