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Thank you Mr. Chairman. For the record, my name is John Gauvin. I am a resource economist and have been involved in both applied research and the use of science in fisheries management in Alaska since 1993.

I would first like to express my gratitude to you Mr. Chairman and to the members of the Subcommittee for the opportunity to provide my perspective on NOAA's science activities in support of the management in federal waters groundfish fisheries in Alaska.

My area of specialization has been applied research on bycatch reduction, effects of fishing on habitat, management systems to increase economic efficiency, and approaches to implementation of ecosystem management in Alaska fisheries. I am currently the fishery science director for the Alaska Seafood Cooperative and also simultaneously direct several cooperative research projects in Alaska and the Pacific Northwest for clients including the North Pacific Fisheries Research Foundation, Environmental Defense Fund, and other governmental and non-governmental organizations. Finally, I have served on the board of the North Pacific Research Board since 2001 and I was a recipient of NOAA's Environmental Hero Award in 2000 for conservation engineering extension work with the flatfish trawl industry in the Bering Sea.

I would like to title my testimony today as: "NOAA's science to support fishery management in federal fisheries off Alaska: The Good, the Bad, and the potentially Ugly". To summarize my perspective today, I would say that there is a lot of good that can be said about NOAA's role in providing the fundamental science products needed to support the economically important commercial fisheries in federal waters off Alaska. This is not to say that NOAA's science in the North Pacific is beyond reproach and I will talk about one important shortcoming where I feel there is a great deal of room for improvement. But I will start with where things are going well and outline the importance of continuing that important work to support sustainable fisheries.

The Good:

The Alaska Fisheries Science Center (AFSC) plays a crucial role in providing supporting science across an ever-increasing set of issues, scientific domains, and regulatory mandates. AFSC's role in Alaska to furnish baseline science has expanded in step with the complexity of fishery management. This tracks the ever increasing set of demands by public, industry, environmental, and governmental stakeholders who insist that fisheries be managed sustainably based on the best peer-reviewed science while providing food, employment, and recreation to the nation.

If one peruses the Alaska Fishery Science Center's (AFSC) website, the breadth of the Center's fishery science mission becomes evident. The AFSC provides science products and services for everything from: Fisheries Assessment Surveys; North Pacific Groundfish Observer Program; Ecosystem Monitoring and Assessment; Habitat Assessment and Marine Chemistry; Genetics-Stock Identification; Fishery Ecology Diet and Zooplankton; Age and Growth; Stock Assessment and Multispecies Assessments; Economic and Social Sciences Research; Bering Sea Integrated Ecosystem Research Program; Resource Ecology and Ecosystem Modeling; Conservation Engineering; Marine Mammal Research; and Studies of loss of Sea Ice. All of these are important at some level to managing sustainable fisheries in Alaska given the expectations at the scientific and fishery management arena for everything bundled into the concept of "sustainability" and management of the effects of fishing on the ecosystem.

Of the above disciplines within fishery science at the AFSC, I work closest with the Conservation engineering, Stock Assessment, and Resource Ecology and Ecosystem modeling branches and I am pleased to say that I think the AFSC does a remarkable job providing the science needed to meet the ever-increasing mandates for sustainable management of our fisheries in Alaska in those areas.

I can also tell you from experience that when we proposed 12 fisheries for flatfish and cod for certification by the Marine Stewardship Council (MSC), the gold standard of independent sustainability certification, I came to appreciate even more the solid science that goes into our fishery management system. The standards for certification for harvest strategy, fishery management, and management of ecosystem effects of fishing embedded in the MSC certification process could not have been met if we had mediocre baseline science coming out of the AFSC. Meeting those standards, and obtaining MSC certification, has allowed us to access a growing set of markets in Europe and elsewhere that would otherwise not be available to our industry.

From my numerous cooperative research endeavors with NOAA scientists in its Resource Assessment & Conservation Engineering, Groundfish Observer Program, and Resource Ecology and Fishery Management divisions, it is my experience that these divisions have eagerly made their scientists available to assist the fishing industry in conducting research to modify fishing practices to address sustainability concerns and environmental effects. This research has been carried out through partnerships designed to take advantage of relative skills of each party within a setting of mutual trust and respect. This work has been successful in bringing fishermen's knowledge of fish behavior, the environment, and fishing gear into scientific exchanges with AFSC researchers. Impressive reductions in bycatch, reduced impacts of fishing gear on habitat, other creative solutions and even gains in catch efficiency/reduction in fuel use have been accomplished through these partnerships.

As part of the work I do the Alaska Seafood Cooperative, I review a wide set of NOAA's science products on a regular basis to ensure they are sound and that the content is being correctly interpreted. From my experience doing this work every year I can say that NOAA's fishery stock assessment and ecosystem modeling studies in Alaska are generally of the highest quality available. Several scientists at the AFSC are world-renowned and in high demand

internationally for workshops and symposia. NOAA staff and scientists in these divisions work hard, and we appreciate it.

In my view, this high quality science standard has been achieved both through the funding commitment that NOAA has made through the AFSC, and because the Center in most areas has not been afraid to open its process to outside, independent peer review. Independent review in the development stages of modeling and stock assessments is, in my opinion, critical to achievement of a high quality science process. I would like to touch on each of these.

First off, in order to successfully manage sustainable fisheries, you have to have good basic data. In Alaska, the AFSC has conducted annual trawl surveys in the Bering Sea and bi-annual surveys in the Gulf of Alaska and Aleutian Islands for an impressive time series. The annual trawl surveys in the Bering Sea are the basic underpinning of stock assessments and ecosystem models for some of the nation's largest fisheries. We are very fortunate to have had NOAA's commitment to prioritize that work because it is this top-notch science that has allowed the large scale fisheries of the Bering Sea to be managed sustainably. Overall, Alaska produces over half the nation's seafood landings, worth billions of dollars and tens of thousands of jobs on a long term sustainable basis. Simply put good science means sustained jobs and revenues for the nation.

One of the other important factors in good science is having a trusted process that builds confidence in management. An open peer review process is key to building this trust and critical to maintaining the quality of the science. One of the best peer review processes takes place through the North Pacific Fisheries Management Council. Periodic outside review and annual review by both Plan Teams and the North Pacific Council's Science and Statistical Committee are key ingredients in what makes the Alaska management process work. The success of this scientific peer review is that it is transparent, and science driven. This review includes opportunities for non-governmental scientists from academia, the industry, environmental organizations, and other interests to participate in an open and public manner. Transparency builds confidence in the science, and thus the management decisions that are made based on the results of that science.

Unfortunately, both of these key factors are at risk. Every year there are new threats to the funding for trawl surveys and other scientific work that is fundamental to fisheries management in Alaska. I cannot overemphasize the potential downside in terms of loss of management precision for fishery resources in Alaska that would occur if NOAA's funding for resource surveys is reduced, or redirected elsewhere. As I read about NOAA's national priorities for a National Ocean Council, Marine Spatial Planning, and Regional Ecosystem Protection and Restoration Initiatives envisioned at the national level, I grow increasingly concerned that the funding at the regional level to support the AFSC, Alaska Regional Office, and the North Pacific Fishery Management Council will be redirected to help fund different priorities set by NOAA headquarters. In these times of limited fiscal resources one has to question whether redirecting baseline funding to the latest idea at the Headquarters level is an appropriate use of tight federal funds.

I personally do not believe that moving funds needed for fishery science to cover such initiatives at the national level will improve our ability to conserve and manage resources sustainably in Alaska. The simple fact is that with any reduction in the scope of these surveys or their interval will result in more uncertainty. This could lead to a reduction in yields even where groundfish populations are increasing. With less frequent surveys, uncertainty increases and harvest strategies must be reduced to avoid potential for overfishing. I have little doubt that if the AFSC conducted the groundfish trawl surveys in the Bering Sea every other year instead of every year, the allowable catches in the Bering Sea pollock fishery and other important fisheries for cod and flatfish would be reduced on average by at least 30 to 40% in the absence of any change in the actual abundance of these stocks. The downstream effect on fishery yields would have dramatic effects on the economies of Alaska, Washington, and Oregon in terms of employment losses, effects on coastal infrastructure that supports fishing, and loss of domestic and export earnings for the nation.

The Bad:

With all the glowing examples above it is clear that for the most part I believe NOAA is doing a great job providing the a high quality science product to support fishery management in Alaska. But I am also concerned with recent indications that NOAA is moving to closed door peer reviews when it comes to review of the science it does pursuant to the Endangered Species Act, protected resources, and marine mammals. As I have mentioned above, I believe the open and transparent standards for peer review process are critical and this is being undermined in this area in particular.

For review of its recent sea lion biological opinion in Alaska, NOAA has turned to a closed peer review with no public involvement instead of the more open and transparent peer review normal to the Council process. This closed process will take place through the Center for Independent Experts (CIE), a NOAA funded process. The problem with the CIE is that it is conducted without public involvement or any opportunity for presentations of scientific information except that provided by NOAA and the CIE is barred from commenting on the conclusions reached by the agency in the BiOp.

Despite several overtures from the North Pacific Fishery Management Council, as well as the States of Alaska and Washington, NOAA remains steadfast in its determination to only use the CIE to review the science in its recent sea lion Bi-op. The States of Alaska and Washington are currently conducting an independent scientific review. To their credit, they have held public sessions where experts from all interests, including NOAA, were invited to present scientific information on the topic. Instead of sending someone knowledgeable about the BiOp to the first of two planned sessions, NOAA sent one individual who played a relatively minor role in its development – in essence they boycotted the session. The States just released a first draft of their review of the sea lion Bi-op for public comment. Whether or not NOAA will elect to participate in a cooperative or meaningful manner in the final session and the remainder of the review is not known at this time.

It is important to recognize that the States have set a new standard for open peer review of controversial matters related to science done for protected resources and ESA listed species. It is unfortunate that NOAA is continuing to rely on an outdated process with its lack of transparency, especially in matters that are controversial. In my view, this lack of transparency will only serve to undermine confidence in NOAA's science programs. NOAA should follow the example of open process and transparency set by the States of Alaska and Washington.

This leads me to the broader issue I have with NOAA's approach to scientific work done to manage effects of fishing on marine mammals and protected or ESA listed species. For whatever reason, NOAA tends to move away from a scientific approach when it undertakes assessments of effects of fishing on marine mammals. This shows up in its development of biological opinions and other analyses in ESA Sec. 7 consultations, recovery plans and other aspects of NOAA's Endangered Species Act duties. I will provide a set of examples below.

As I mentioned above, the Alaska Regional Office of NMFS recently developed a biological opinion on the Western Distinct Population Segment (WDPS) of Steller sea lions. The area in question is the Aleutian Islands, an island chain spanning roughly 1,200 miles from east to west divided into three management areas: western Aleutians, central Aleutians, and the eastern Aleutians. The resulting regulations closed all fishing for Pacific cod and Atka mackerel in western Aleutian Islands including vast areas outside of Steller sea lion critical habitat. They also severely curtailed fishing for those species in central Aleutians, and reduced areas open to fishing in the eastern Aleutians. While sea lion numbers have decreased markedly in the western Aleutians and to a lesser extent in the central Aleutians, the science used in the development of this latest sea lion biological opinion was highly controversial, and did not, in my opinion and the opinion of many outside experts, consistently use the best available data. Overall, the biological opinion at best suffered from a very narrow perspective that appeared to be designed to justify a predetermined conclusion that fishing had to be closed in these areas.

The comments of the Alaska Seafood Cooperative, University of British Columbia, Adak Community Development Corporation, and several other stakeholders/affected communities as well as the Science and Statistical Committee of the North Pacific Fishery Management Council pointed out some glaring shortcomings to NOAA's draft Biological Opinion. Here are a few examples:

1. The use of scientifically inappropriate techniques in the analyses of the effects of prey removals by commercial fisheries as a percentage of local groundfish abundance. When the standard techniques, those used by NOAA's own scientists in the stock assessment process, were later applied in the final draft Bi-op, these correctly done calculations essentially removed the Bi-op's basis for asserting that cod and Atka mackerel fishing was taking a higher percentage of local fish populations in the Aleutian Islands. In acknowledgment of this fundamental error, NMFS's final Bi-op listed the new calculations in obscure tables in the document but ignored the new findings and left the old estimates in its conclusions and rationale for the closures NMFS finally adopted.
2. Analyses of how much sea lion food per individual sea lion were done using inappropriate spatial comparisons. Again, when the analysis was done correctly in the final Bi-op, it showed that the "forage ratios" (amount of forage fish in the Aleutian Island per individual sea lion) are actually higher in the Aleutians than other areas where

sea lions numbers are increasing. As in the above example, this corrected analysis was ignored in the final Bi-op's conclusions.

3. Use of data from just three individual tagged sea lions (out of a population of approximately 50,000) to conclude that offshore banks in the western Aleutians, well outside of SSL critical habitat, were important to sea lions and therefore should be closed to fishing. This assumption was roundly called into question as not scientifically justified. Nothing was done to correct this in the final Bi-op.
4. Single-species models runs in the draft and final Bi-op used to show that fishing restrictions would increase the amount of fish available to sea lions. These overly simplistic estimates were used in favor of NOAA's own available multi-species models and per-reviewed ecosystem modeling. In this part of the Bi-op, NOAA also failed to take into account the most recent information that Atka mackerel abundance which is currently at high levels in the western Aleutian Islands. The final Bi-op still asserts that mackerel abundance is at low levels in the western Aleutians but the new survey results were available well in advance of the drafting of the final Bi-op.
5. Premise that fishing is competing with foraging and affecting SSL natal rates based on studies done outside the Aleutian Islands. This was a glaring example of NMFS' selectively choosing which scientific opinion would bolster its preconceived determinations. NMFS chose to base its case on an overridingly narrow selection scientific papers and results, and specifically ignored, mischaracterized, or dismissed a long list of other peer-reviewed science where conclusions differed from those of NMFS Protected Resources division.

Biological opinions are required to use the best available science and make a reasoned and balanced assessment of the available scientific information to inform the opinion. The ESA does not give license to subjectively choose which science to consider, to use non-standard analytical methods, nor to dismiss out of hand the work of internationally recognized experts. A big part of the problem is the lack of concrete management standards, and a consistent and uniform manner for implementation. An effective peer review in the development of biological opinions is sorely needed to ensure balanced science is applied. I am clearly not the only one who sees this shortcoming with NMFS' role in assessing effects of fisheries on ESA listed species, this has also been observed by NMFS' own former chief scientist as I will point out below.

A big step in reshaping the process of development of biological opinions for ESA listed species would be to make that process more open and more subject to technical and scientific review from the outset. <u>In our experience, those involved in the development of biological opinions are not required to engage in meaningful internal or external peer review of the science used for development of their biological opinions.</u> It should be mandated that they work within the same review standards that stock assessments, habitat effects analyses, and ecosystem models operate under. An open process, with adequate time for all parties to review the data and the analyses is totally lacking in the current biological opinion process.

Additionally, implementing procedures for thorough and timely review would avoid the problem that occurred in the recent sea lion Bi-op where self-imposed agency deadlines and the fear of litigation (if one reads the administrative record) trumped the need to correct fundamental

problems with the basic constructs of the biological opinion. Some stakeholders believe the time schedule was developed intentionally by the authors of the Bi-op to circumvent concrete review. Whether that was the case or not, if the system was set up to allow adequate transparent scientific review early on during the development of the Bi-op, the ability to drive a pre-determined outcome would be greatly reduced, and there would be more confidence in the final result.

In making the above criticisms and suggestions, I should point out that others have seen the same problems with NMFS' science in support of protected species and ESA-listed species and marine mammals in particular. Similar views were expressed in a January 2011 programmatic review of the NOAA's science programs by Drs. Sissenwine and Rothschild (NMFS' former chief scientist for many years and Dr. Rothschild is professor emeritus at the University of Massachusetts at Dartmouth's School of Marine Technology and Science). Their review, entitled: **BUILDING CAPACITY OF THE NMFS SCIENCE ENTERPRISE,** states: (Page 68 with emphasis added)

> One important category of scientific product of the Alaska Fisheries Science Center that is not subjected to a formal process of quality assurance is scientific input to Agency decisions under the Endangered Species Act (e.g., listing decisions, recovery plans, jeopardy decisions). **The science underlying these decisions is often subjected to intense scrutiny after the fact (for example, an NRC review of factors that potentially threaten Alaskan Stellar Sea Lions), but this is not an appropriate alternative to a credible (with some independent experts, transparency, stakeholder buy-in) pre-decisional quality assurance processes similar to the ones used for fishery management decisions.**

I believe that the recent SSL Bi-op in Alaska is the very unfortunate outcome of a flawed process and is responsible for annual revenue loss that NMFS' itself concluded was approximately $60 million. Fishermen that depended on those fisheries unfortunately are now tied up at times of the year when mackerel and cod fishing in the Aleutians would be going on. There are fewer crew members employed and communities such as Adak that are attempting to develop their economy based on shoreside fish processing activities and vessel support services in the Aleutian Islands are clearly in danger of permanent failure and abandonment.

Most unfortunate in the process was that one of NMFS' own scientific studies, which had undergone full peer review, could have provided the basis for allowing some fishing in areas where the fishing was known to harvest as little as 5% of the local abundance of Atka mackerel. But that study was essentially ignored. Instead the Bi-op's authors relied on their own non-standard methods to evaluate amount harvested of local mackerel abundance. The methods used in the Bi-op even departed from the prescribed stock assessments methods and with this NMFS concluded that fishing was creating negative effects on SSL feeding opportunities.

In its efforts to find a viable landing place short of closing fisheries, during a special meeting held during the brief public comment period for the draft SSL Bi-op, the North Pacific Fishery Management Council developed an alternative for fisheries mitigation in the western Aleutians. That alternative was based in part on the results of several published scientific studies done by NMFS' own Fisheries Interaction Team (part of the Alaska Fisheries Science Center. The

studies are available at the following url: http://afsjournals.org/page/fidm/specialsections). The mackerel tagging studies the Council used in its alternative were based on data from recoveries of tagged Atka mackerel. These returns were evaluated to characterize movement of mackerel and elucidate whether fishing in areas open to the fishery affected mackerel abundance inside rookeries. The tagging studies also developed estimates of local mackerel biomass so that amounts removed in the fishery could be evaluated and controlled to be under five percent (a benchmark in the Bi-op itself that would prevent localized depletion). But the NPFMC's alternative was thoroughly dismissed by NMFS along with all other ideas for mitigating fishery effects save closing down fishing for mackerel and cod in its entirety.

The Potentially Ugly:

I have already said that good management is founded on good basic data. In order to get good data, there also needs to be a commitment to do the field work to get it.

NOAA has said that it will conduct mark/recapture (branding) and telemetry work on sea lions in the western Aleutians in 2011. This will surely be a big improvement over the data used in the recent Bi-Op where location information from three non-resident juvenile SSL was used to as a rationale for extending the scope of the fishery closures to include areas outside of critical habitat. NMFS' stated commitment to do some branding and telemetry research on SSL in the western AI is a good step forward in support of addressing the huge holes in the science NMFS used to put the current closures in place. But that information will only address one piece of the puzzle and information on fish movement and local biomass is also needed.

Another critical piece of information was slated to be addressed in research in 2011 and 2012 but NMFS has apparently decided to cancel or postpone the research. That project was funded in part by the North Pacific Research Board. The project was an extension of the mackerel tagging work to the western Aleutians and it was slated to take place in the summer and fall of 2011 and early 2012. At this point we are unsure of the agency's rationale for this decision.

The Fisheries Interaction Team of the AFSC had been successful in applying for North Pacific Research Board for funding to conduct an Atka mackerel tagging and tag recapture experiment in the western Aleutian Islands. Part of the reason this project was successful in obtaining NPRB funding was that it is vital new information and it was supposed to occur in the area where the management questions surrounding effects of fishing on sea lions are the most critical. The mackerel research was also partially supported by the North Pacific Fisheries Foundation, which had committed to supply vessels for the tagging and tag recovery as well as other logistics. The Foundation's funding was specifically designed to help NMFS conduct research in this critical area with minimal use of NMFS' limited resources.

The previous mackerel tagging research had progressed to cover nearly all fishing areas in eastern and central Aleutians and a series of peer reviewed publications had been generated which highlighted the low exploitation rates in most the areas that used to be fished. Although NMFS had largely ignored this information in the rush to do the recent Bi-op, there was still

some potential for consideration of this type of information in the development of more surgical mitigation measures in a trailing process through the NPFMC.

Now, with the biggest information needs clearly in the western Aleutians, NMFS has apparently opted not to conduct the mackerel tagging research that NPRB and an independent foundation had provided funding for. The reason NMFS made this decision is not clear. Informal dialogue with AFSC officials has generated one possible reason being the agency's concern over litigation if any catch of mackerel is allowed in the western Aleutians. This is a spurious issue, in our view, as amounts of fish taken in the tagging studies are a very small fraction of the harvest levels prior to the closures and would surely have no negative effect. NMFS may also be concerned that the field research would require a separate Section Seven formal consultation under the ESA or this could just be a policy decision. We just don't know.

However, from the perspective of the industry and affected communities we know that a broader scientific baseline is needed to evaluate the assumed effects of fishing on SSL in the western Aleutians. NMFS' cancelation of the mackerel tagging study is very hard to accept.

Until we have a concrete understanding of NMFS' reason for derailing this important research, this incident falls into the "potentially ugly" category. At this point, even if we are successful in getting them to reconsider allowing the research to occur, getting the project resubmitted into the NPRB or other funding sources will take time. So at a minimum, the cost will potentially be several more years before information critical to reopening SSL critical habitat to mackerel fishing in the western AI is likely to be available. This means addition revenue forfeitures and fewer jobs in some of the nation's healthiest fisheries.

In conclusion Mr. Chairman, I want to again thank you and the subcommittee for this opportunity to testify today, and I stand ready to answer any questions you may have.