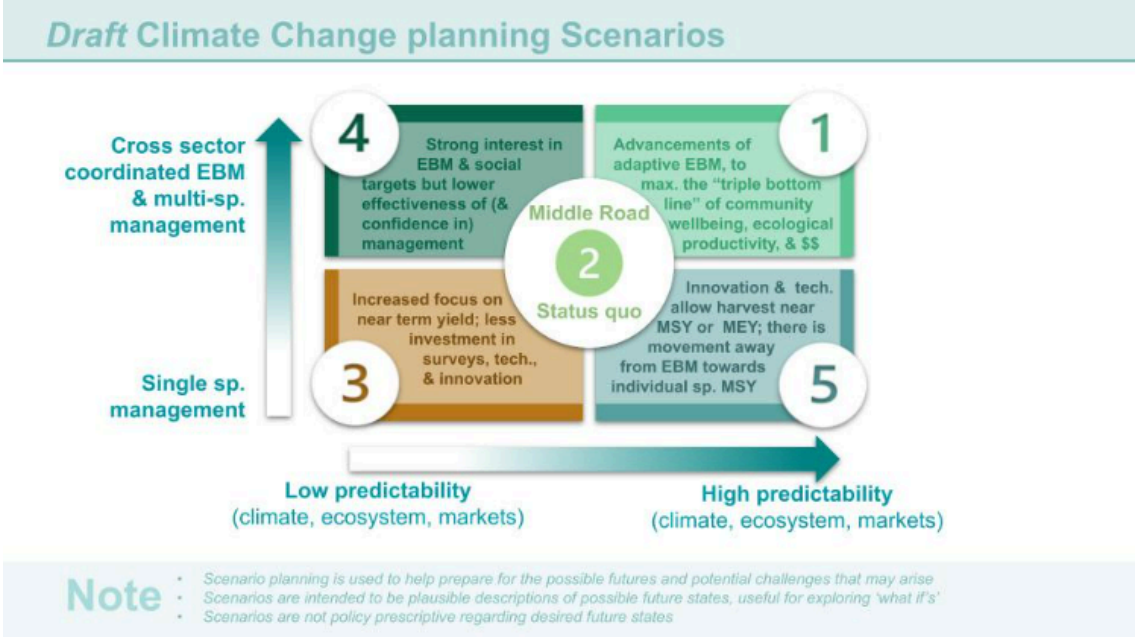
CCTF LUNCH Assignment - read and comment- all text is placeholder, edit freely including titles

Next step → Share with public at 3 pm PDT



Scen1: "Productivity, stability, and equity" “Harmony”

Highly effective Ecosystem Based Management & high system predictability

Global / extrinsic trends: (SSP1) Following global trends, the emphasis on economic growth shifts toward a broader emphasis on human well-being. There is proportional increase in global demand for seafood due to the efficient and sustainable delivery of seafood and the shift away from terrestrial meat consumption. Development and consumption is oriented toward low material growth and lower resource and energy intensity. Intensive hatchery mitigation ceases fostering better conditions for the rebuilding and production of wild stocks. Global seafood markets are stabilized through increased intergovernmental coordination, lower geopolitical tensions.

Climate: Global temperatures have increased from 2024 but through aggressive carbon mitigation efforts and carbon recapture warming levels remain near or below global mean warming levels of +1.5 to +2.0 deg C above pre industrial temperatures (analogous to SSP126). Temperatures across Alaska are approx Xdeg C warmer [add: X deg warmer SST, and BT. Approx. There is a large MHW every 8 yrs (a 2X fold increase over the 1980-2020 average)

Management: There are advancements of adaptive EBM, to max. the “triple bottom line” of community wellbeing, ecological productivity, & economic vitality. Alaska shifts gradually, but pervasively, toward sustainable social and ecosystem (SES) targets, emphasizing more inclusive marine spatial planning that protects sensitive habitats, nursery areas, and culturally important regions as well as targets that account for equity, ecosystem and environmental boundaries. Management is effective and equitable across large scale offshore fisheries with small scale shore-based fisheries and subsistence harvest effectively, enabling delivery and sustainability of food and resources to support global, national, and regional food and nutrition security as well as subsistence food security and sovereignty.

Technology and information: High investment in technology and AI enables high forecast and prediction skill. Investment in climate-informed decision support tools and ecological monitoring enable dynamic management, near-term forecasts, and nowcasts. There are well established processes to rapidly communicate and meaningful consider multiple diverse knowledge sources in decision making.
Fisheries: There is a focus on long-term returns and sustained productivity and fishery stability over short term returns and gains. There is a high ability to avoid bycatch and high efficiency to achieve high quality yields and reduce discards. Fisheries are resilient to short-term shocks and able to adapt through following spatial shifts in stocks, accounting for shifts in the timing of spawning, reduced dependence on singular stocks (e.g., mix of species with divergent climate responses). Community dependencies (cultural and economic) on marine resources are incorporated into management responses to a changing climate.

1) Under this scenario fisheries would continue to experience periodic climate shocks and extreme events with slightly more frequency than present day, but because of better capacity for prediction, higher planning for emergency response, and more options for med-term diversification, fishery impacts are lessened. What elements do you think would be necessary for this to take place for high resilience/sustainability? Draw on your own expertise or understanding and discuss as a group:

Management & governance elements needed to support this [e.g., catch shares that are more equitable]	**Prediction & scientific tools needed to support this**	**Information and knowledge sources that could be useful for this**	**Fishery & community responses, technology or other related activities that could be useful for this**

2) What uncertainties might arise under this scenario?
3) What indicators would need to be tracked under this scenario?
ADD other questions:

Scen 2: Status Quo; Ecosystem Based Fisheries Management and moderate predictability “Business as usual”

Med predictability; Med cross sectoral coordination/focus (Ecosystem Based Fisheries Management)

Global / extrinsic trends: (SSP2) Global population growth is moderate-high, proportional demand for seafood remains similar to 2024. Income diversity and inequality remain similar to present day and challenges to reducing vulnerability to societal and environmental changes remain. Global demand for seafood remains proportionally approximate to present day. Global seafood markets are increasingly disrupted by climate shocks. Large-scale use of fish hatcheries and aquaculture systems.

Climate: Climate change and extreme events continue to disrupt ecosystems, livelihoods, and human well-being. Approx SSP245 (add GOA and EBS specific info from CLIMs). Species distributions and catchability are highly variable from year to year due to changes in ocean circulation and atmospheric patterns (similar to 2010 through 2024). Periodic recruitment failures associated with extreme climate events.

Management: Management and policies in Alaska do not shift markedly from historical patterns. Environmental systems experience climate driven and non-climate degradation. Spatial and seasonal closures remain the same as in 2024. Layering effect of multiple competing regulations. Disparate prioritization of different relationships with and values related to the ecosystem.

Technology and information: Some forecasting skill for physical conditions, considerable uncertainty about climate futures. Moderate investment in tools to improve planning.

Fisheries: Disparities in adaptation potential between fisheries, fleets, and small and large vessels or shore-based versus off-shore based processors continue, with some fisheries achieving bycatch and sustainable goals but a few encountering challenges regarding bycatch and marketability. Uncertainty creates unpredictable impacts on processors, harvesters and communities. Disparities in prioritization of different fishery resources and behaviors.

1) Under this scenario fisheries would [add]. What elements do you think would be necessary for this to take place for high resilience/sustainability? Draw on your own expertise or understanding and discuss as a group:

Management & governance elements needed to support this	**Prediction & scientific tools needed to support this**	**Information and knowledge sources that could be useful for this**	**Fishery & community responses, technology or other related activities that could be useful for this** *E.g. fisheries expand spatially to follow new distributions*

2) What uncertainties might arise under this scenario?
3) What indicators would need to be tracked under this scenario?
ADD other questions:

Scen 3: “Fragmentation”

Low predictability; Low cross sectoral coordination/focus (Ecosystem Approach to Fisheries Management)

Global / extrinsic trends: (SSP3)Global population growth is high.

A resurgent nationalism, concerns about competitiveness and security, and regional conflicts push countries to increasingly focus on domestic or, at most, regional issues. Policies shift over time to become increasingly oriented toward national and regional security issues. There is less federal funding and resources for surveys, technology, collaboration and communication. Countries focus on achieving energy and food security goals within their own regions at the expense of broader-based development.Investments in education and technological development decline. Economic development is slow, consumption is material-intensive, and inequalities persist or worsen over time. Population growth is low in industrialized and high in developing countries. A low international priority for addressing environmental concerns leads to strong environmental degradation in some regions. There is an expansion of mineral extraction, shipping and oil and gas development in Alaska. Social cohesion degrades and conflict and unrest become increasingly common.

Climate: Approx SSP585. Warm conditions prevail with approximate increases in temperature globally of [add] deg and in Alaska Ydeg. Winter sea ice no longer forms in the EBS, there is rarely a measurable cold pool. Sea ice still forms in the central arctic in winter but the Arctic is ice free nearshore. Shipping is common through the NW passage.

Management: Management is siloed within sectors and fleets. There is a movement away from cooperative EBM towards an Ecosystem Approach to individual stock management (accounting for Ecological impacts on a stock but not the inverse). Due to significant uncertainty about future productivity and climate impacts, goals and targets aim at maximizing near term yield. Management pertaining to ensuring sustainability of ‘indirectly’ impacted resources and communities is not prioritized.

Technology and information: Most funding and government resources are focused on responding to and recovery from the increased number of extreme events and climate shocks. Investments in predictive tools has stalled out due to limited ability to support technological investments. Increased development in communication tools allows for rapid sharing of information between discrete groups.

Fisheries: Fisheries experience increased challenges of climate and market shocks with little predictability or warning. Fishery stocks shift rapidly when more frequent extreme events materialize, and the rapid succession of extreme events prevents recovery for multiple species. Novel species arrive in the system. . Fishery dependent communities (both shoreside and at-sea sectors) experience fluctuation in marketable product supply and processing capacity, increasing uncertainty in employment, revenues, and operating costs. Fishery resources that aren't directly harvested or are less financially profitable at risk of higher degree of negative impacts.

1) Under this scenario fisheries would [add]. What elements do you think would be necessary for this to take place for high resilience/sustainability? Draw on your own expertise or understanding and discuss as a group:

Management & governance elements needed to support this	**Prediction & scientific tools needed to support this**	**Information and knowledge sources that could be useful for this**	**Fishery & community responses, technology or other related activities that could be useful for this** *E.g. fisheries expand spatially to follow new distributions*

2) What uncertainties might arise under this scenario?
3) What indicators would need to be tracked under this scenario?
ADD other questions:

Alternatives of the two axes not being used - but can edit if there is time

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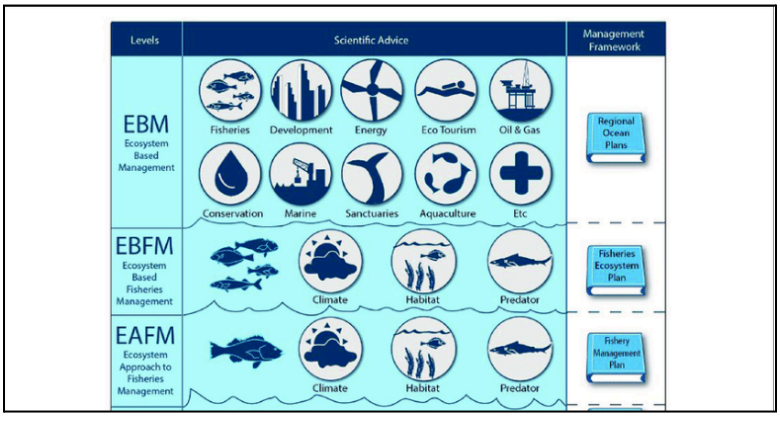
Scen 4: Short-term choices

Low predictability; High cross sectoral coordination/focus (Ecosystem Based Management)
Global / extrinsic trends: Social cohesion degrades and conflict and unrest become increasingly common.
Management: There strong interest in ecosystem based management (EBM) and social targets but lower ability to implement them (low investment in surveys, low investment in reporting). Low predictability challenges traditional management and stock assessment methods. Innovation through EBM, knowledge sharing, and communication is needed to rapidly assess current conditions. Technology and information:
Fisheries:

Scen: 5 Smart fisheries through tech

High predictability; Low cross sectoral coordination/focus (Ecosystem Approach to Fisheries Management)

Global / extrinsic trends:
Management: (stock specific focus through EAFM; high predictability of markets and climate conditions). Management is siloed within sectors and fleets. There is a movement away from cooperative EBM towards an Ecosystem Approach to individual stock management (accounting for Ecological impacts on a stock but not the inverse). Due to a global trend in predictability, goals and targets aim at maximizing near term yield. Innovation and technological advancements allow fisheries to harvest at near MSY and MEY. There is strong support for surveys and models but a general movement away from EBM targets to those that maximize individual MSY for each species.
Technology and information: There is high ability to predict upcoming extreme events and the emergence of novel fish stocks. AI technology aids in market predictability and advancements of predictive tools allow for planning and preparation for extreme events
Fisheries:



Dolan et al. 2015 https://academic.oup.com/icesjms/article/73/4/1042/2458509