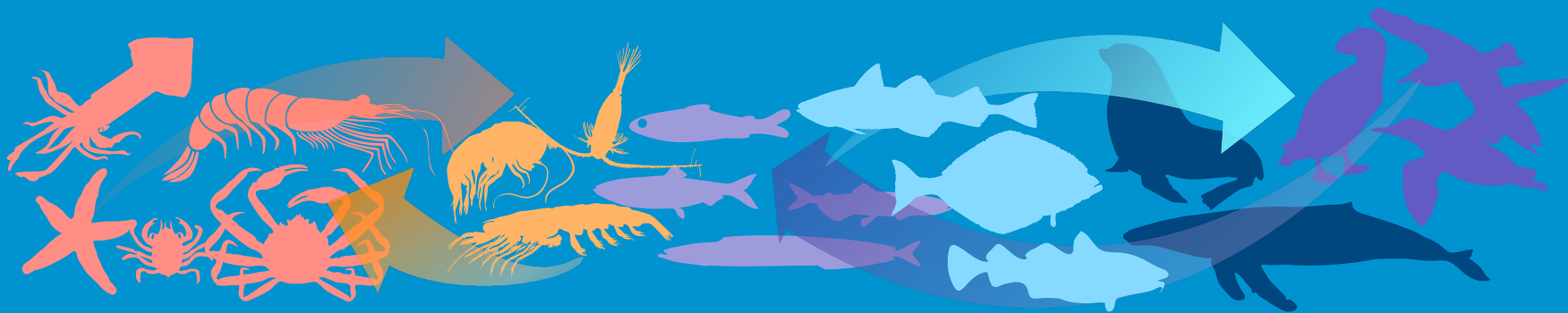




NOAA
FISHERIES

Ecosystem-Based Fisheries Management in Alaska



OUTLINE

- Ecosystem-Based Fisheries Management in Alaska
- EBFM products and on-ramps
 - Ecosystem Status Reports
 - Ecosystem & Socioeconomic Profiles
 - Risk Tables
- 2017 Gulf of Alaska Pacific cod
- What is working well in Alaska (our *ingredients*)?
- What might be adaptable to other regions (your *recipe*)?

Elizabeth Siddon



Bridget Ferriss



Ivonne Ortiz



Stephani Zador



Kalei Shotwell



Erin Fedewa



NOAA provides science to inform how the Council *balances competing interests*



The EBFM toolbox in Alaska

Ecosystem Status Reports

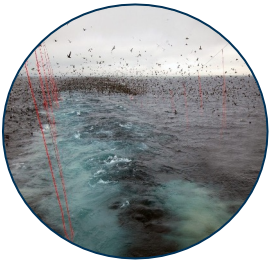


Ecosystem & Socioeconomic Profiles

Protected Species Catch Limits



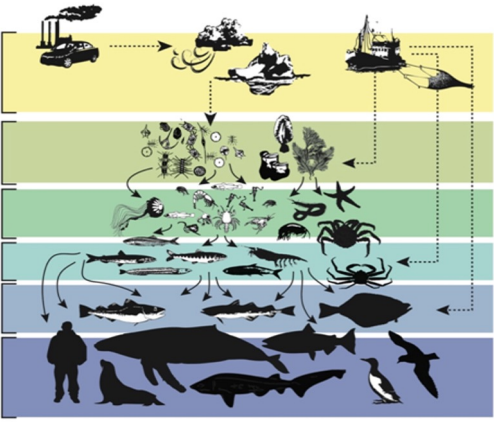
Gear Modifications



Fishery Closures



Climate-informed Ecosystem Models and MSEs



Optimum Yield Caps



COUNCIL

Ecosystem-Based Fisheries Management (EBFM)

Annual harvest specification process

LME-based

Ecosystem Status Report (ESR)

Stock-based

Stock Assessment

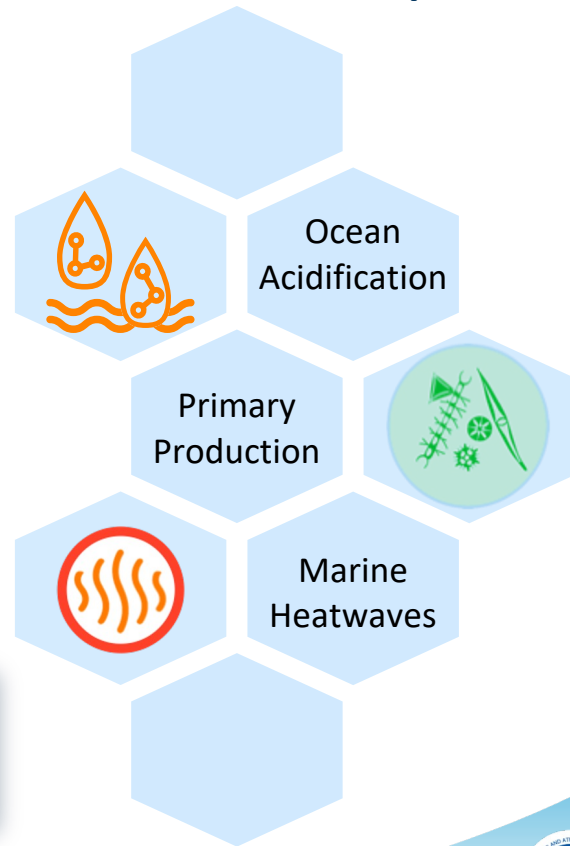
Risk Table

Ecosystem and Socio-economic Profile (ESP)

Profile (ESP)

Profile (ESP)

Process Research & Indicator Development



NOAA FISHERIES

COUNCIL

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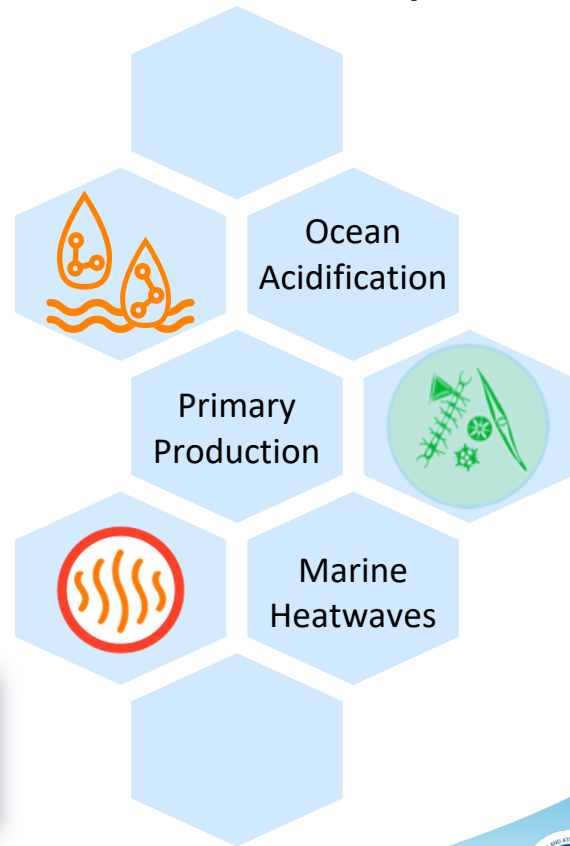
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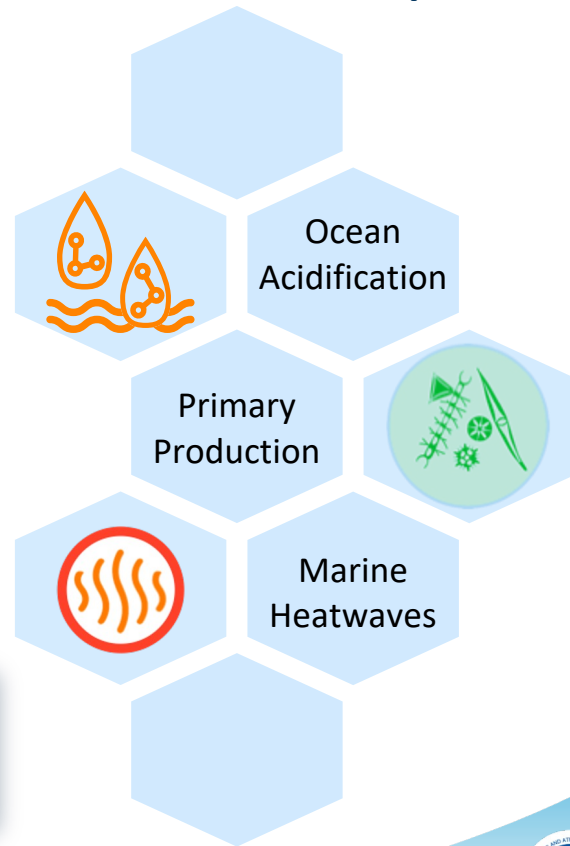
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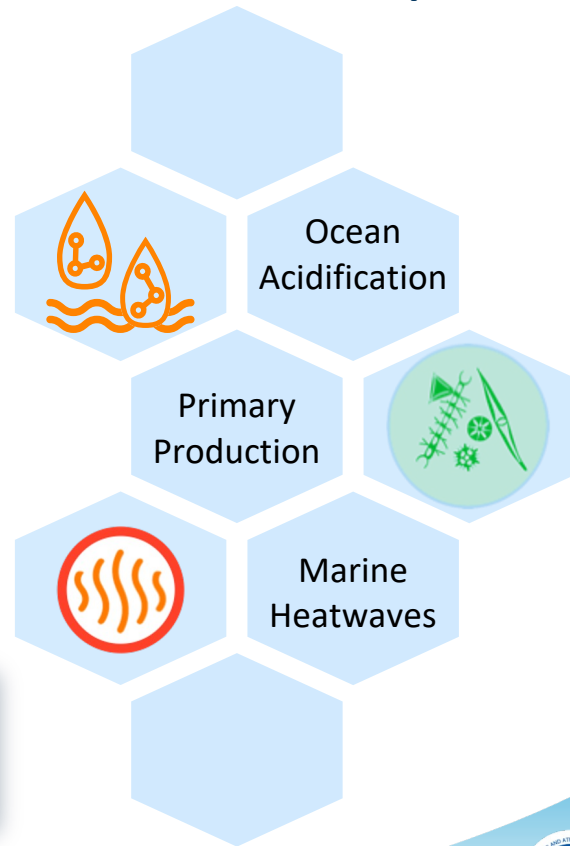
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- **Paired** with annual stock assessment cycle
- Presented **before** assessments
- Constantly **evolving & tailored** to the Council
- 'In Brief' (4-page summaries)



- Willingness to receive contextual information
- Use qualitative information to make quantitative decisions for quotas
- *"A safe place to have conversations"*
 - Stephanie Madsen, Executive Director, At-Sea Processors Association



EASTERN BERING SEA



ALEUTIAN ISLANDS



GULF OF ALASKA



LME-based



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2022 EBS Contributing Partners



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Hot Topic Updates




Ice Seal Unusual Mortality Event

On September 12, 2019, NOAA Fisheries declared an Unusual Mortality Event (UME) for three species of ice seals in Alaska. The UME investigation continued through 2021. The increased mortality of seals during 2018-2019 coincided with the dramatic reduction in sea ice habitat for pupping and nursing in the northern Bering Sea. Stranding reports from 2018-2019 indicated several seals were emaciated. Reports from 2020-2021, however, did not identify emaciation as a factor. The ice seal UME may reflect an ecological shock from those two extreme years superimposed on a longer-term trend.




Gray Whale Unusual Mortality Event

In May of 2019, elevated numbers gray whale mortalities resulted in the declaration of a UME. Gray whale life history includes an annual round-trip migration from the southern Baja California Peninsula, where they overwinter to mate and calve, to Alaskan waters where foraging occurs. The cause of the UME has not yet been determined and the investigation is continuing. Preliminary findings have shown evidence of emaciation; however, these findings are not consistent across all whales examined. Gray whales strandings dropped ~50% in 2021. Closure of the UME has been discussed and will be reassessed in early summer 2022.



Incidental Catch of Herring

The incidental catch of herring in the 2020 directed pollock fishery was unusual because it occurred during a period of relatively high nominal CPUE values for pollock fishing. It also was highest in the winter A season rather than the B season. The pollock fleet may have encountered high numbers of Togiak age-4 fish, as the 2016 year class is estimated to be the largest in recent history. This provides a partial explanation of the abrupt increase of incidental catch in 2020. Industry professionals and assessment scientists collaborated, sharing expertise to develop hypotheses to help move fishery management forward.




Future Projections

Temperatures are predicted to cool in early 2022 due to high sea level pressure centered over the western Bering Sea, consistent with a moderate La Nina winter. Projections from the National Multi-Model Ensemble (NMME) show near-normal temperatures for the Bering Sea through spring of 2022. There is variability in the sea ice forecast, though most models suggest ice could extend south of 60°N and as far south as Bristol Bay.

Management Uses


Ecosystem and stock assessment scientists worked together to account for the influence of environmental conditions in the Bering Sea on commercially-important fish stocks. They considered ecosystem information in seven full assessments for the Bering Sea and Aleutian Islands stocks plus the Alaska-wide sablefish stock in 2021. Four of these assessments classified ecosystem dynamics at risk level 2 (out of 4), noting substantially increased concerns: EBS pollock, EBS and AI Pacific cod, and yellowfin sole. The acceptable biological catch (ABC) for EBS pollock was reduced 11% from the Tier 1 to Tier 2 maximum permissible noting assessment, ecosystem, and fishery performance concerns. For yellowfin sole (YFS), the Scientific and Statistical Committee (SSC) recommended the maximum permissible ABC rather than the proposed reduction by the stock assessment author and BSAI Groundfish Plan Team. During deliberation, the SSC agreed that some concerns existed for YFS but they did not appear elevated from the previous assessment and did not warrant a reduction at this time. For the remaining six stocks, including EBS and AI Pacific cod, precautionary measures already incorporated into setting catch levels were considered sufficient to address uncertainty about current ecosystem dynamics.




Reference: Siddon, E. 2021. Ecosystem Status Report for the Eastern Bering Sea, Stock Assessment and Fishery Evaluation Report. North Pacific Fishery Management Council, 1007 West Third, Suite 400, Anchorage, AK 99501.

Contact: elizabeth.siddon@noaa.gov


More information on these and other topics can be found on the Ecosystem Status Report website.



Gina M. Raimondo
U.S. Secretary of Commerce



Richard W. Spinrad
Under Secretary of Commerce
for Oceans and Atmosphere




Janel Colt
Assistant Administrator
for Fisheries

National Marine Fisheries Service
Alaska Fisheries Science Center
7600 Sand Point Way N.E., Seattle, WA 98115-6349
www.fisheries.noaa.gov

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LME-based

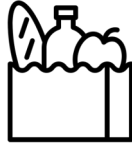


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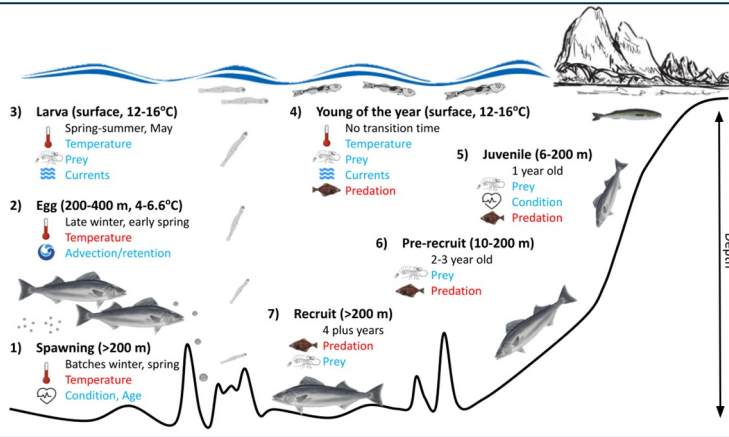
Ecosystem & Socioeconomic Profiles (ESPs)



- **Stock-specific** indicators
- Appended to and presented **with stock assessments**
- Annual **process for development**, prioritized through stock assessment review
- **Full ESPs** in June; current-year **Report Cards** in December



- Qualitative and quantitative context for EBFM
- National ESP Program developing



Stock-based

Risk Tables for stock assessments



- Introduced in 2018
- Produced for **all full assessments** beginning in 2019
- Document concerns **external** to assessment models
- May be used to **justify reductions** from max ABC

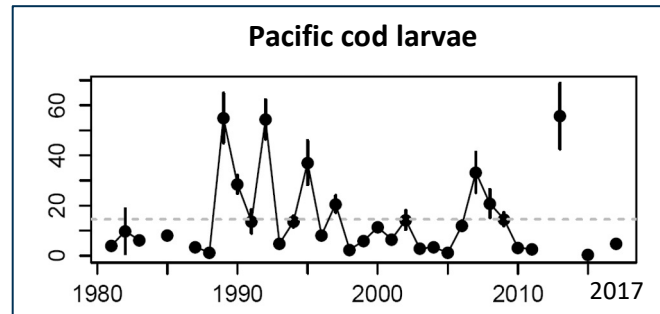
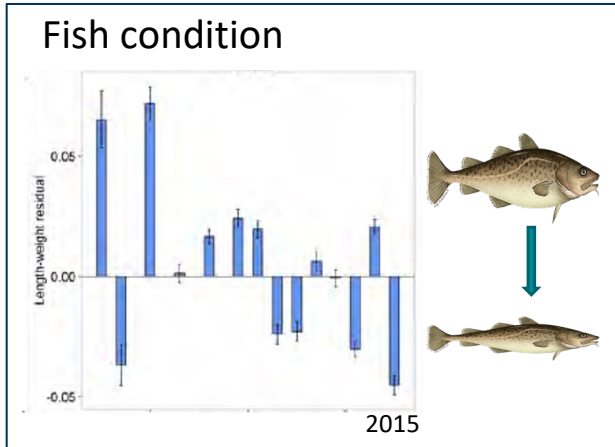
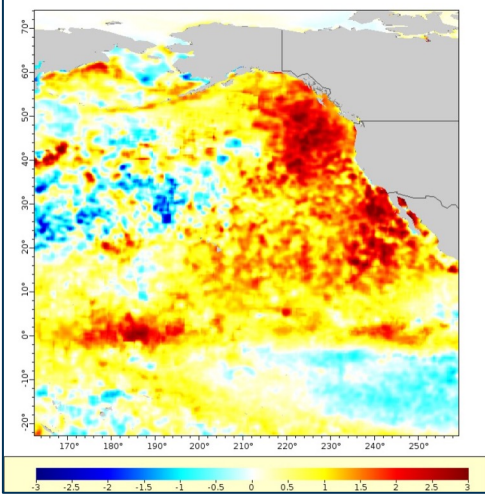


- Conversations for each stock
- Increased transparency
- Consistency in decision-making
- No change to how decisions are made

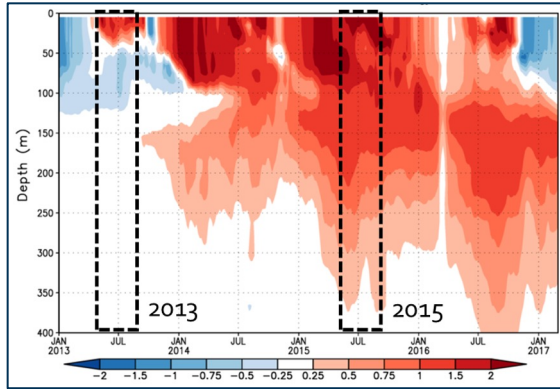
	Assessment-related Considerations	Population Dynamics Considerations	Ecosystem Considerations	Fishery Performance Considerations
Level 1: Normal				
Level 2: Substantially increased concerns				
Level 3: Major Concern				
Level 4: Extreme concern				

2017 Gulf of Alaska Pacific cod

- 2014-2016 marine heatwave (“The Blob”)
- Warm water persisted through winter (“endless summer”)
- Fish had increased metabolic demands
- Ecosystem indicators suggested food limitations and high mortality
- Biomass dropped 83% in 2017



2017 Gulf of Alaska Pacific cod



Stock assessment

Increased natural mortality parameter during warm years to reflect reduced prey availability and increased mortality

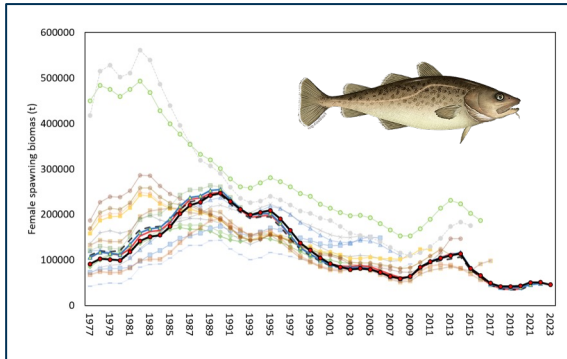
Scientific & Statistical Committee

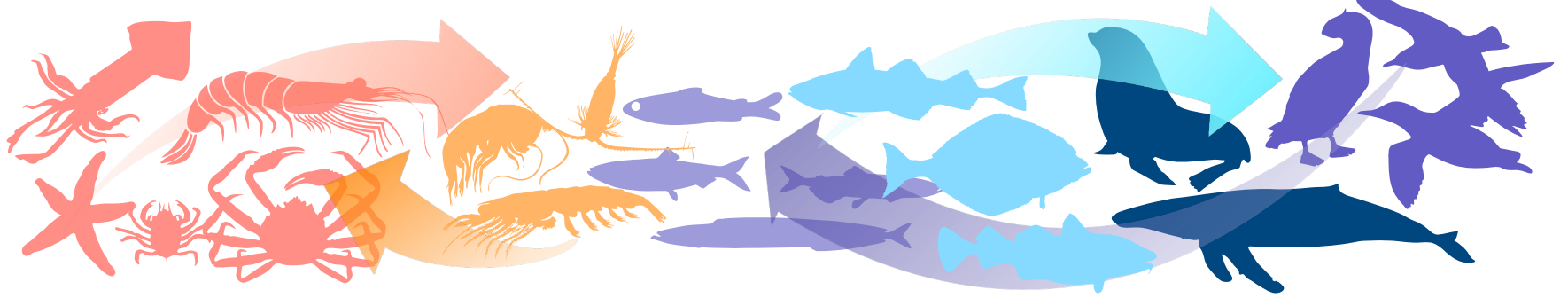
“The SSC accepts this adjustment to natural mortality to achieve a better model fit because of the **strong rationale presented by the author and the ecosystem group** in support of higher mortalities for the period 2015/2016.”

Council

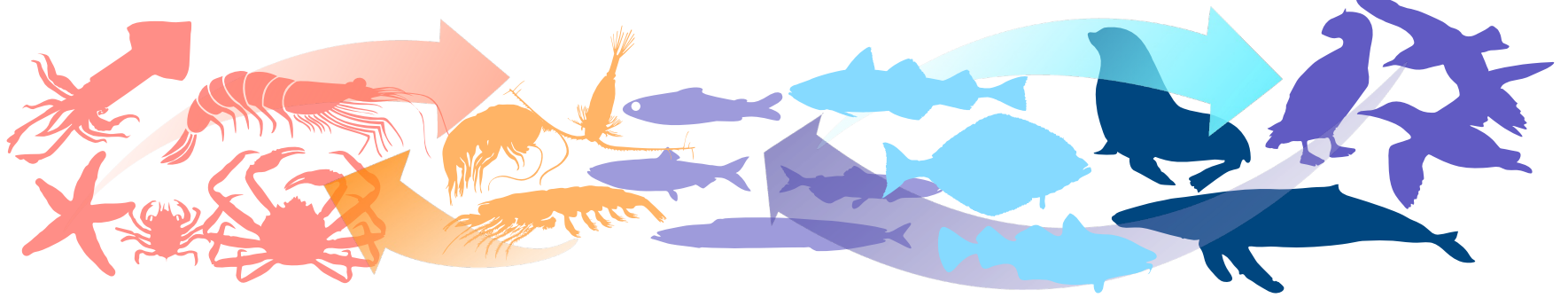
Quota was reduced by 80% for 2018

“There was a reason. People understood.” - Council member

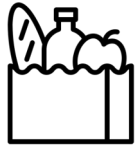




- In Alaska, we are seeing the effects of climate change
 - *Management system that can handle the speed of change*
- Multi-pronged approach for EBFM is necessary (“toolbox”)
 - *Use the “best scientific information available” (National Standard #2)*
- Communication, collaboration, and transparency build trust
 - *Trust is essential for effective EBFM*



What **ingredients** do we have in Alaska?



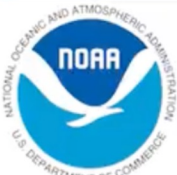
- Diverse information sources contributed
- Provided in real-time (updated through 2022)
- Variety of complementary tools (i.e., ESRs, ESPs, Risk Tables)

What **recipe** might work best in other regions?



- Partnerships and relationships
- Shared understanding and trust among stakeholders
- Timely use of “best scientific information available”





ALASKA'S ECOSYSTEM STATUS REPORTS

A COLLABORATIVE APPROACH
TO INFORM FISHERIES MANAGEMENT

[VIDEO LINK](#)

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