

Alaska Fisheries Science Center FY20 and FY21 Surveys

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AFSC Research and Science Director

Presentation to North Pacific Fisheries Management Council
SSC

September 29, 2020



NPFMC letter to AFSC

- *Concern and consequences with 2020 survey cancellations*
- *Plan for 2021 surveys...including the northern Bering Sea*
- *Support for technical assistance from SSC to prioritize*
- *Funding scenario for 2021 surveys*
- *Cautious support for UxS (uncrewed systems) and modeling*
- *Support for cooperative research opportunities with industry*
- *Update in October and December*



AFSC surveys

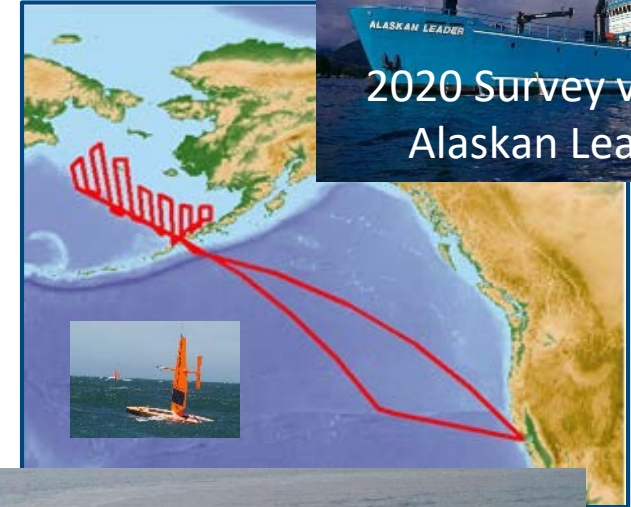
- Evaluating impacts of missing 2020 survey
 - CPT and GPT: Retrospective analyses, model predictions, sensitivity analyses
 - Mitigation and comms plan
- Survey prioritization (2021 and beyond)
- Plan for 2021 survey and contingencies
- Funding scenario for 2021 surveys



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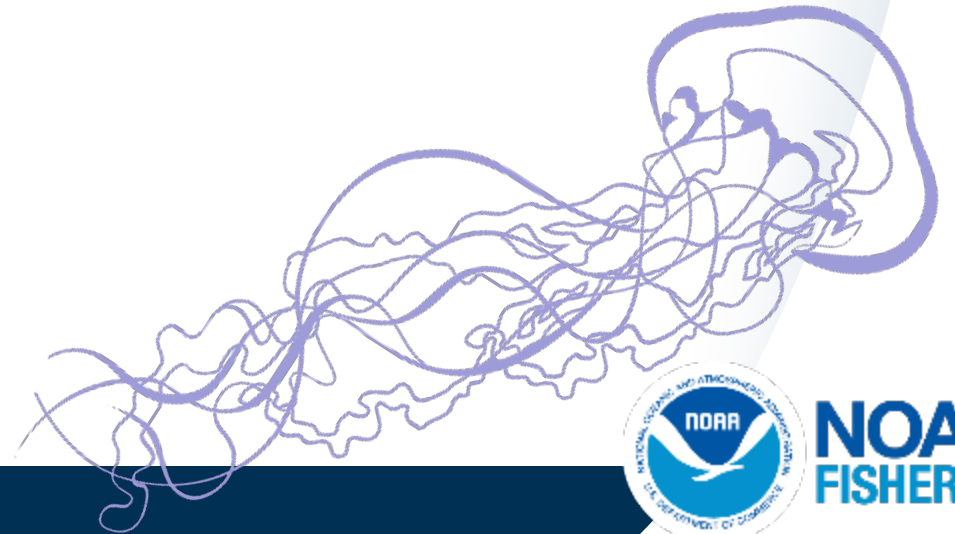
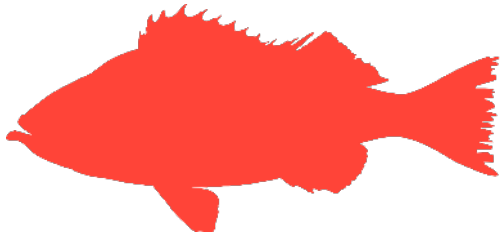
Mitigation for data loss in 2020

- Longline survey and nearshore research
- Fishery dependent, age composition data
- Acoustic data collection via saildrone to augment pollock assessment.
- Oscar Dyson support acoustic and ecosystem moorings retrieval.
- Ecosystem data collections from communities or vessels of opportunity (e.g. fishing industry, local communities)



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- Despite delays and cancellations in data collection and sample analysis due to COVID, we are able to mitigate some data loss thanks to AFSC and external partnerships.
(THANK YOU!)
- Most indicators received to date are within expected bounds in all regions.



Ecosystem data

Data Loss and Mitigation

Data Collection

- Off-year for biennial NOAA surveys in GOA; regional surveys completed
- On-year for biennial NOAA surveys in the AI and EBS
- Internal and external collaborations provided continued and new information in all regions

Data Loss

- Delayed analysis of 2019 data (due to restricted lab access)
- Cancelled non-NOAA surveys (e.g., seabird reproductive success) in all regions
- Upper trophic levels (e.g., groundfish, marine mammals) in all regions

Data Mitigation

- ROMS model output (EBS)
- Satellite-derived data (SST, chl-a) in all regions
- Seabird information (COASST, USFWS, USGS)

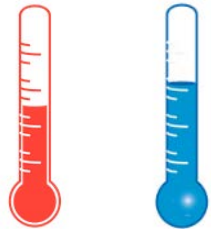


Ecosystem data

GOA: Key Messages



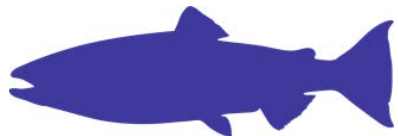
Limited ecosystem data gaps (AFSC & partnerships!)



Ocean temperature: This was not a heat wave year. We did have warm summer sea surface temperatures and continue to have residual warmth at depth. *Will residual warmth at depth delay recovery from previous warm years?*

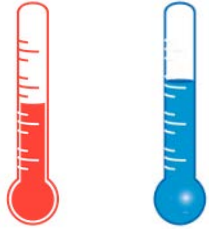


Relative increases in age-0 walleye pollock and age-0 Pacific cod. *Hopeful news for future recruits in context of low pollock biomass this year*

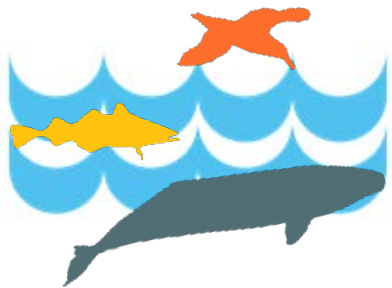


Record low salmon catches across GOA, especially in SE AK. *What does this trend indicate about ocean conditions? Is early marine survival a potential key driver?* This is also a key issue this year for commercial, recreational, & subsistence communities





Ocean temperatures: cooler summer SST, GODAS subsurface GOA/ AK Pen. not extended to AI; 100-200m considerably warmer ($>1sd$) than the mean since 2014-2016 in WAI, CAI, EAI - tentative. EKE low for 8th year in a row. *Unknown what the effects of the sustained low flow through passes is on fish productivity.*



High ecosystem data loss for 2020 particularly for all upper trophic levels: fish, seabirds and marine mammals. *Four year gap in time series dependent on NOAA survey.*



Community and fishing impacts due to HABs (particularly subsistence harvest) unknown so far for upper trophic levels, very high toxicity limited to Unalaska. *Will not know impacts on trophic levels until samples are analyzed when labs re-open.*



Ecosystem data

EBS: Key Messages



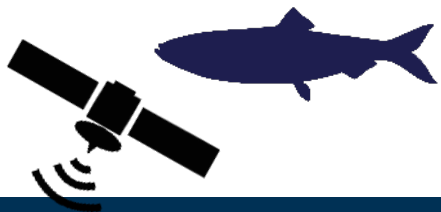
Sea ice extent was near-normal over winter 2019/2020, but quality was thin/weak. The ice retreated rapidly in spring 2020. *Will sea ice formation be delayed this winter due to residual warmth?*



Spring bloom biomass was below average for the 5th consecutive year. Peak bloom occurred early (similar to 2019). *Due to missing data collection, we cannot address whether low biomass is due to grazing by the zooplankton community.*



Gray whale UME continued. *May indicate cumulative impacts of changes in food web structure and carrying capacity of the NBS.*



Internal and external collaborations have provided continued and new information to mitigate data loss and inform emerging hot topics.
Thank you!



2020 Ecosystem Status Report

AFSC Contributing Partners



PRINCE WILLIAM SOUND
SCIENCE CENTER



COAST



Institute for Seabird
Conservation and
Research



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2020 Ecosystem Status Report

Communication Products

D1 AFSC Summary
October 2020

Full Reports for EBS, GOA, and AI

In Briefs for EBS, GOA, and AI

Story Maps for EBS, GOA, and AI

Educational outreach videos

**Ecosystem Status Report 2019
Eastern Bering Sea**



Edited by:
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With contributions from:

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Reviewed by:
The Bering Sea and Aleutian Islands Groundfish Plan Team
November 15, 2019
North Pacific Fishery Management Council
605 W. 4th Avenue, Suite 306
Anchorage, AK 99501

**2019 Eastern Bering Sea
Ecosystem Status Report:
IN BRIEF**

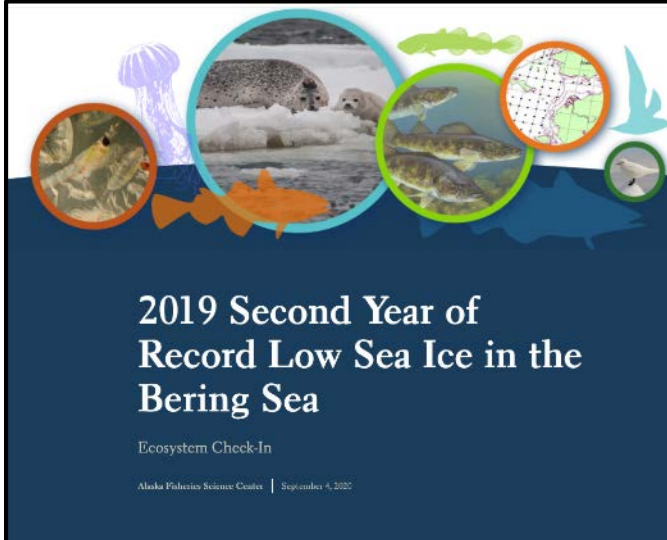
Current Conditions

The eastern Bering Sea experienced the second year of low sea ice conditions during winter 2018/2019 due to (1) residual heat in the Chukchi Sea in fall of 2018 and (2) anomalous winds from the south in February 2019 causing ice retreat. The 2018-2019 mean sea ice extent was the second lowest of record (only 2017-2018 was lower).

Over the southern shelf, summer surface and bottom water temperatures increased from 2018 and were significantly warmer than their long-term means. No cold pool (footprint of winter sea ice the following summer) was present over the southern shelf and unprecedentedly warm bottom temperatures occurred in coastal waters. A small cold pool was located over a portion of the northern shelf in summer 2019.



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U.S. Department of Commerce | National Oceanic and Atmospheric Administration | National Marine Fisheries Service



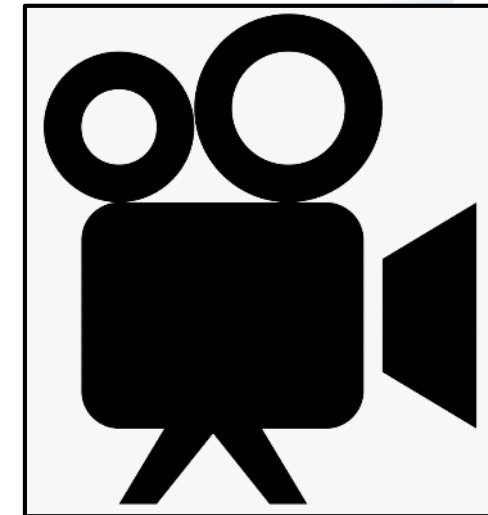
**2019 Second Year of
Record Low Sea Ice in the
Bering Sea**

Ecosystem Check-In

Alaska Fisheries Science Center | September 4, 2020

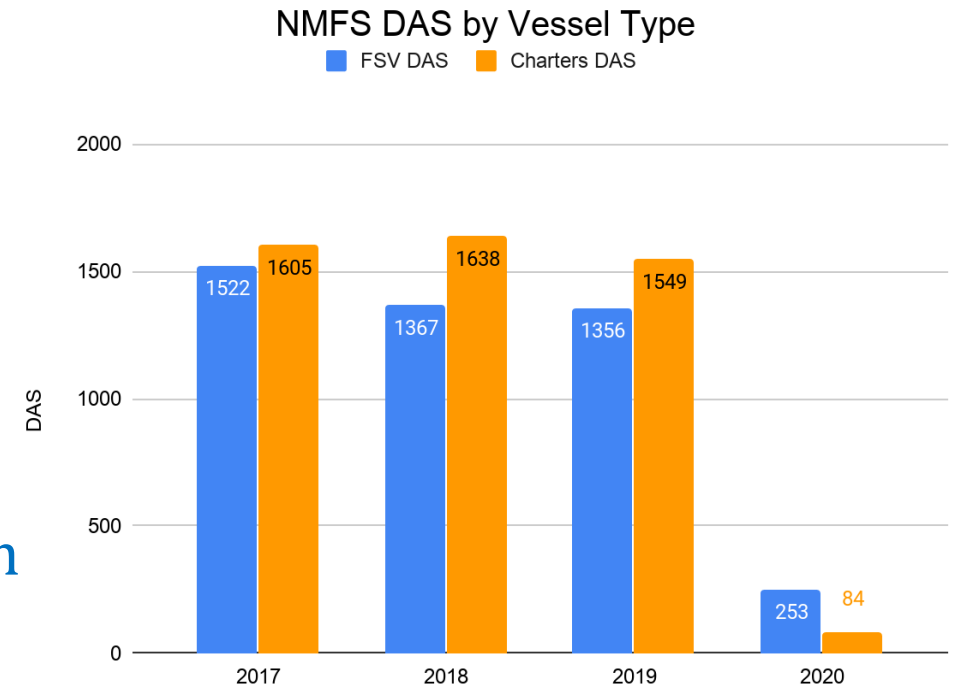
[Gulf of Alaska 2019: It's All About the Food](#)

[2019 Second Year of Record Low Sea Ice in the Bering Sea](#)



AFSC communication plan for 2020 surveys

- **March 16:** AFSC/NMFS initial survey impact assessment & initial cancellations
- **March 24:** AFSC Stock Assessment Scenario Working Group Formed
- **April:**
 - Council meeting cancelled due to Covid-19
 - AFSC – Council staff and chair initial discussion on survey comms
- **May 13:** Council memo on 2020 survey delays
- **June 8:** AFSC presentation on 2020 survey status
- **July 14:** Council memo on 2020-21 surveys



AFSC communication plan for 2021-22 surveys

- **October 2020:** update on scenario planning
- **December 2020:** update on update...semi-final plan with criteria for 2021 surveys
- **February or April 2021:** AFSC State of the Center



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AFSC survey priorities informed by:

- SSC-subgroup (2018)
 - 1) eastern Bering Sea shelf; 2) Gulf of Alaska; 3) Aleutian Islands; 4) northern Bering Sea; and 5) Bering Sea slope
- International Council for Exploration of the Sea (ICES) WK on Unavoidable Survey Effort Reduction (e.g. Barnett et al. → two vs three vessels in GOA)
- Bias and uncertainty analyses (e.g. Meaghan Bryan et al. → loss of survey impact)
- Survey optimization
- SSC-subgroup (2020)
 - northern Bering Sea survey is combined with the eastern Bering Sea Shelf survey
 - Include Norton Sound
 - BS slope and GOA deep **important!** But prioritize NBS



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AFSC planning for 2021 surveys

- Surveys during COVID-19 pandemic: unprecedented consideration to ensure the health and safety of NOAA Fisheries employees, vessel employees, and communities while minimizing impacts to industry.
- Collaborating with NOAA Office of Marine and Aviation Operations (OMAO)
- Planning scenarios **IF** needed
 - Full complement based on current staffing capacity (prioritized core areas)
 - Partial survey coverage
 - Advanced tech and analysis tools/ cooperative research



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Gulf of Alaska

Survey	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
GOA BT vessel 1		Green		Green		Green		Green		Green		Green
vessel 2		Green		Green		Green		Green		Green		Green
vessel 3		Red		Red		Diagonal		Red		Red		Red
Deep shelf and slope groundfish longline	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Winter Acoustic-Trawl Shumagin/Sanak	Green	Red	Green	Green	Green	Green	Green	Green	Green	Red	Green	Green
Winter Acoustic-Trawl Bogoslof		Red	Green		Green		Green		Green		Green	
Winter Acoustic-Trawl PWS/Kenai	Green					Green		Green		Red		Green
Winter Acoustic-Trawl Shelikof	Green	Red	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Summer Acoustic-Trawl GOA		Green		Green		Green		Green		Green		Green
GOA larval	Diagonal	Diagonal	Diagonal	Diagonal	Green	Green	Green	Green	Red	Red	Red	Red
Spring GOA Ichthyoplankton		Green		Green		Green		Green		Green		Green
Summer GOA Age-0 Kodiak Pacific cod nursery habitat	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Large-Scale GOA Pacific cod nursery									Green	Green	Green	Green
GulfWatch oceanography&forage	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green

- Limited coverage of GOA deep (>700 m) stations in favor of NBS
- Biennial GOA



Aleutian Islands

<u>Survey</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
Aleutian Island vessel 1	Green	White	Green	White	Green	White	Green	White	Green	White	Red	White	Green
Aleutian Island vessel 2	Green	White	Green	White	Green	White	Green	White	Green	White	Red	White	Green
Deep shelf and slope groundfish longline	Green	White	Green	White	Green	White	Green	White	Green	White	Green	White	Green

- Biennial AI



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Bering Sea

Survey	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Eastern Bering Sea vessel 1	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Red	Green	Green
vessel 2	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Red	Green	Green
Summer Acoustic-Trawl EBS	Green	White	Green	White	Green	White	Diagonal	White	Diagonal	White	Orange	White	Green
Bering Sea Slope	Green	White	Green	White	Red	White	Green	White	Red	White	Red	White	Red
Northern Bering Sea vessel 1	Green	White	White	White	White	White	White	Green	Orange	Green	Red	Green	?
vessel 2	Green	White	White	White	White	White	White	Green	Orange	Green	Red	Green	?
Deep shelf and slope groundfish longline survey	White	Green	White	Green	White	Green	White	Green	White	Green	White	Green	White
Spring EBS Ichthyoplankton	Green	White	Green	White	Green	White	Green	White	Green	White	Red	White	Green
Summer EBS Age-0 (Inc. BASIS)	White	Green	Green	White	Green	White	Green	White	Green	White	Red	White	Green
Spring EBS Ecosystem/Moorings	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Red	Green	Green
Fall EBS Ecosystem/Moorings	White	Green	White	White	White	Green	Green	Green	Green	Green	Diagonal	Green	Green
Northern Bering Sea juvenile salmon and age-0	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Red	?	?
Distributed Biological Observatory (Ecosystem)	AE	AE	AE/RUSALCA A IES	AE EIS	AE RUSALCA	AE	AE	AIERP DBO	DBO AIERP	AIERP DBO	DBO	?	?

- No Slope 2022
- NBS in 2021



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AFSC funding for FY21 surveys

- FY20 costs
- FY21 charter costs increasing and Oscar Dyson days at sea decreasing
 - OMAO protocols: 45DAS/16 days shore
- Dependent on FY21 fiscal process (pre-funded contracts, carry-over funds, base budget)
- New FY20 congressionally directed funds (\$1.1M) to support 2021 surveys as originally planned.



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Alaska Fisheries Science Center FY20 and FY21 Surveys

Take home messages to NPFMC

- AFSC looking forward to getting back to data collection in 2021!
- AFSC will continue to communicate with stakeholders and communities as decisions are made
- AFSC will continue to identify methods to mitigate data losses

Thank You!



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