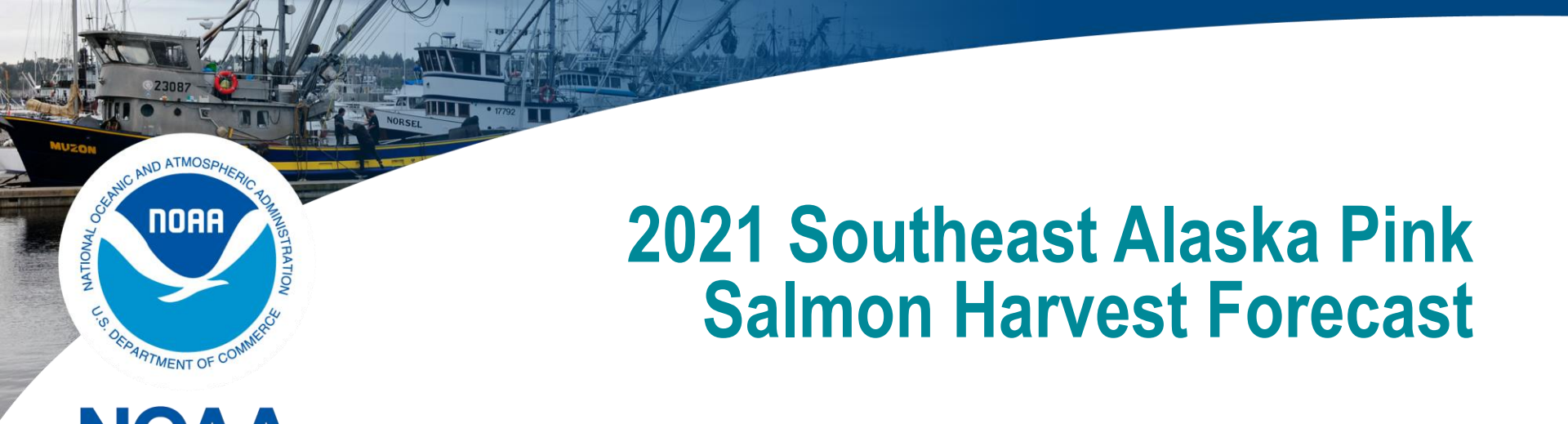


2021 Southeast Alaska Pink Salmon Harvest Forecast

NOAA: Jim Murphy, Emily Fergusson, Jamal Moss, Wes Strasburger, Andrew Gray

ADF&G: Andy Piston, Steve Heinl, Sara Miller, and Rich Brenner

NOAA FISHERIES
Alaska Fisheries Science Center
Auke Bay Laboratories

Alaska Department of Fish and Game

2020 Purse Seine Task Force Meeting

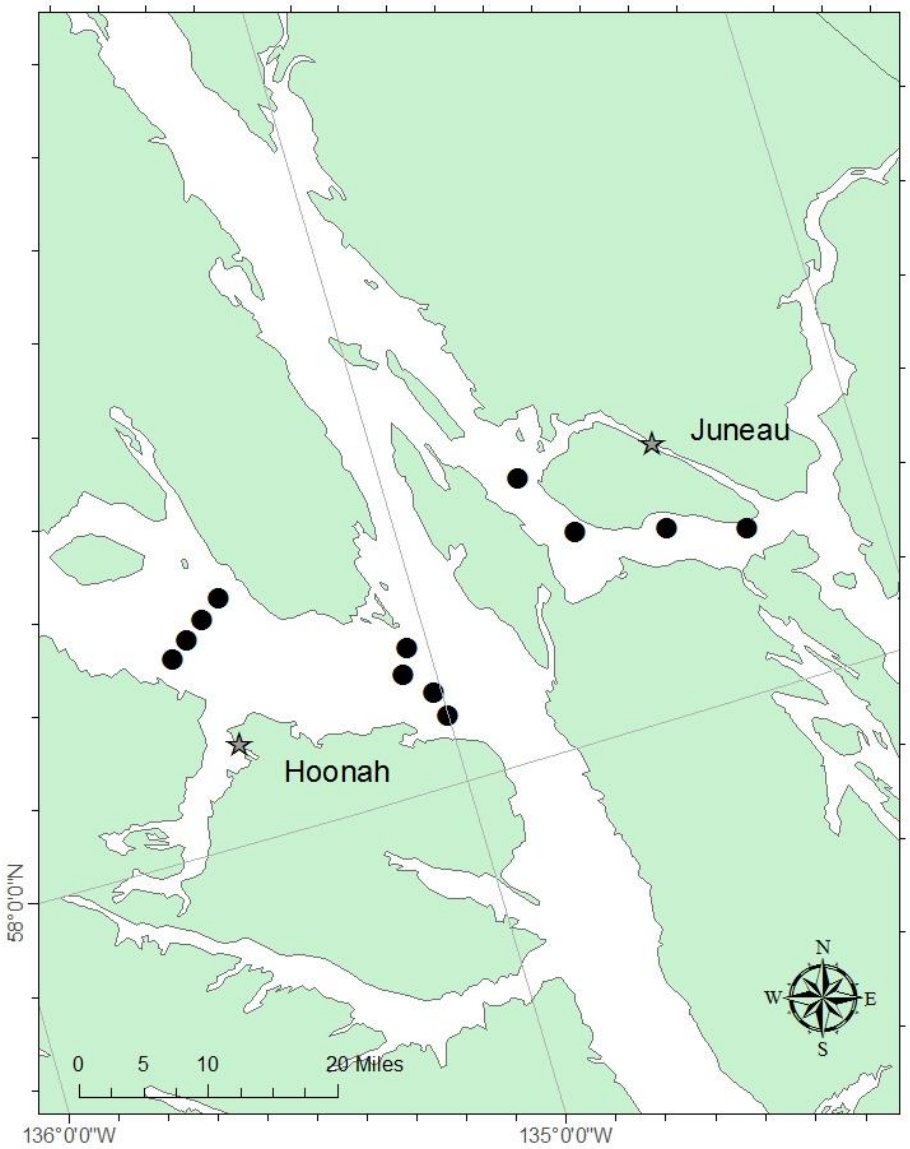
Deccember 8, 2020

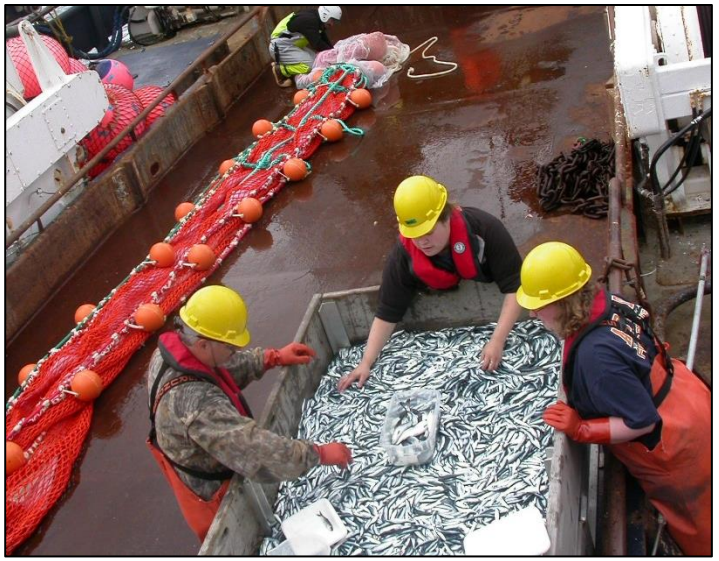
Southeast Alaska Coastal Monitoring Research

- Surveys are now being conducted on ADF&G Research Vessel Medeia.
- Increased cooperation between NOAA and ADF&G; continued efforts to increase the value of information for the fishing industry.

Photo by master photographer Jim Murphy

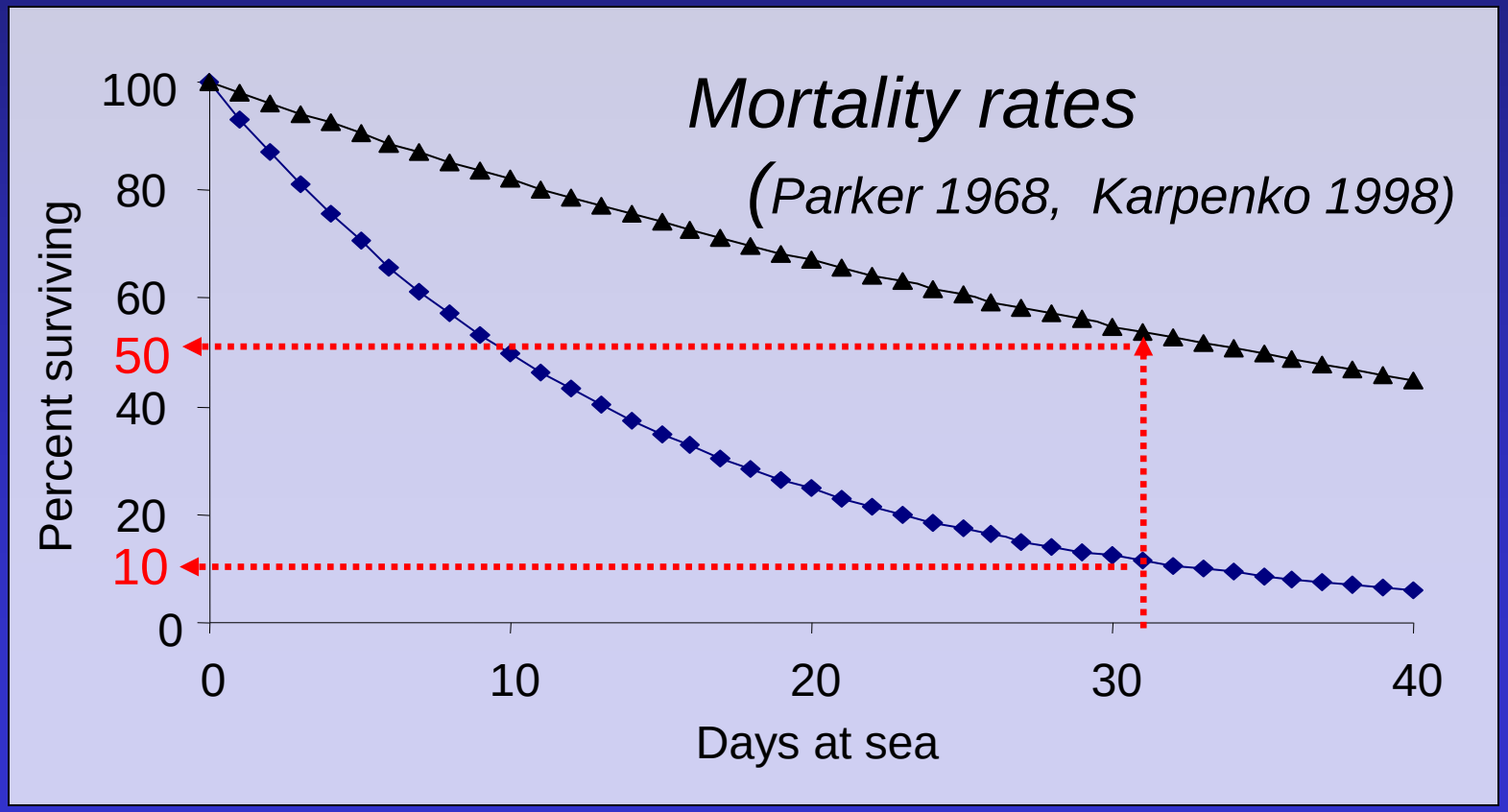
Southeast Alaska Coastal Monitoring Research



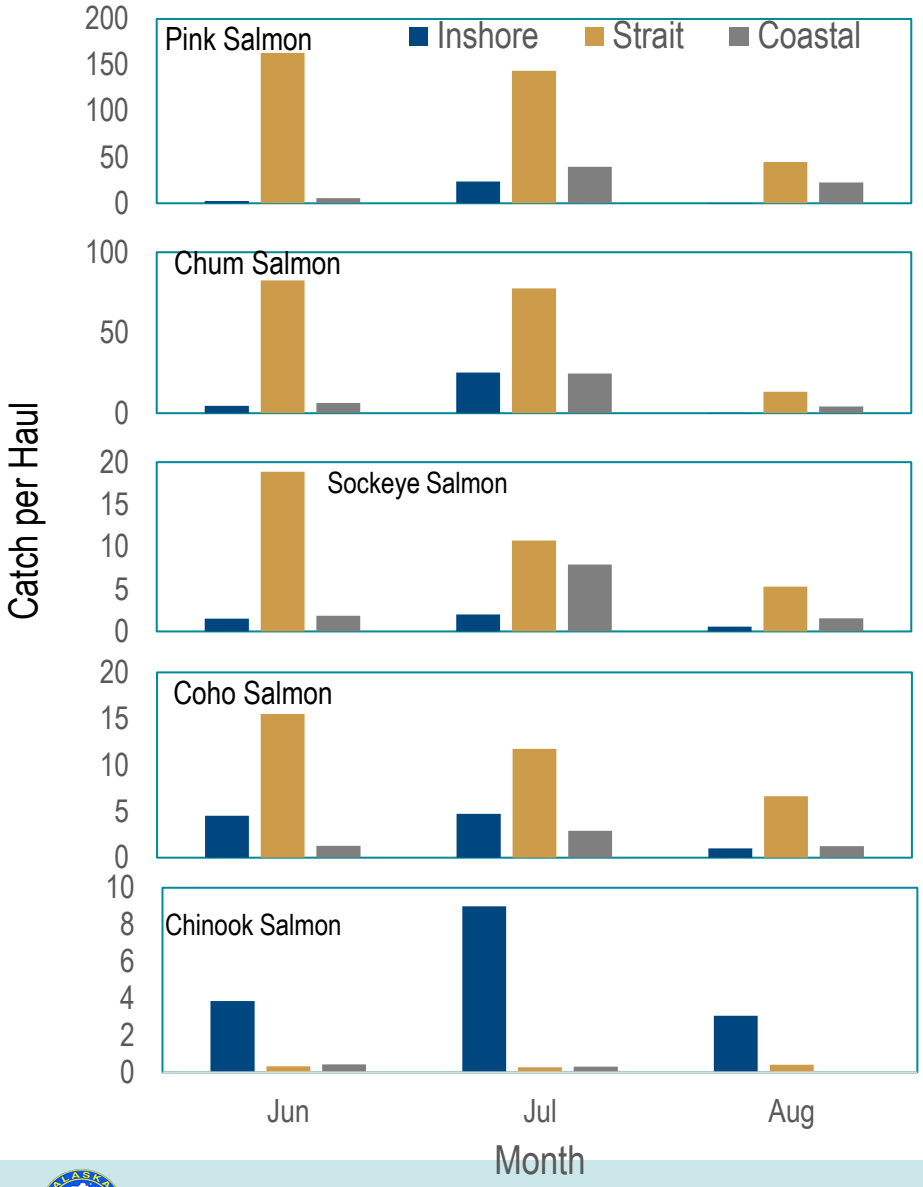


Paradigm of pink salmon biology:

Mortality during early marine life is high, variable, and a major determinant of year class strength

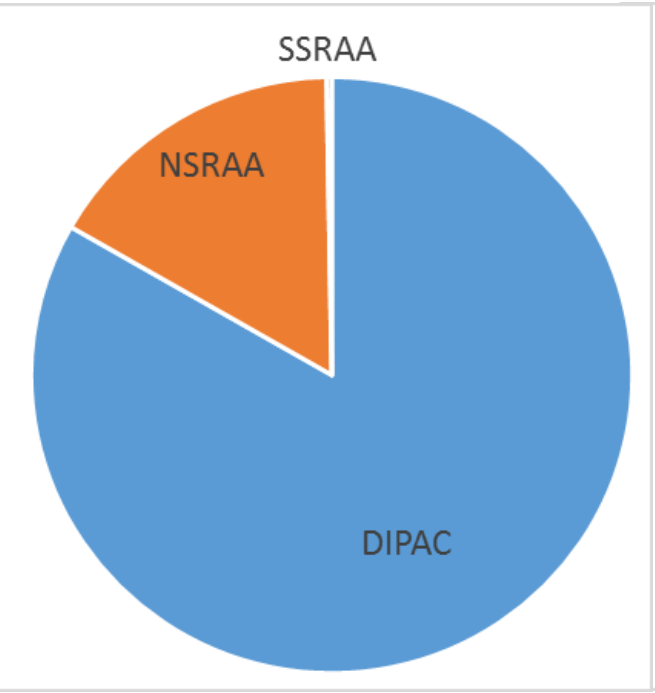


Surface Trawl Catch per Haul for Juvenile Salmon by Month

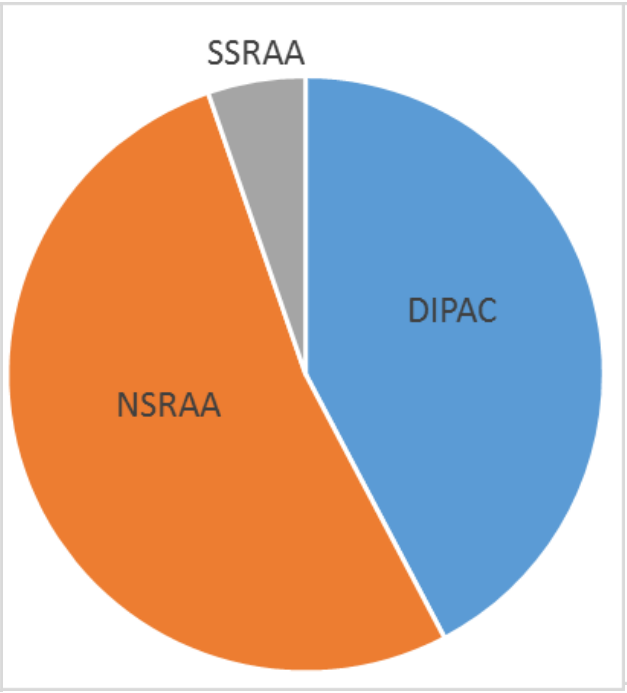


Icy Strait Hatchery Chum Salmon Origin
(thermal mark recoveries 1997-2016)

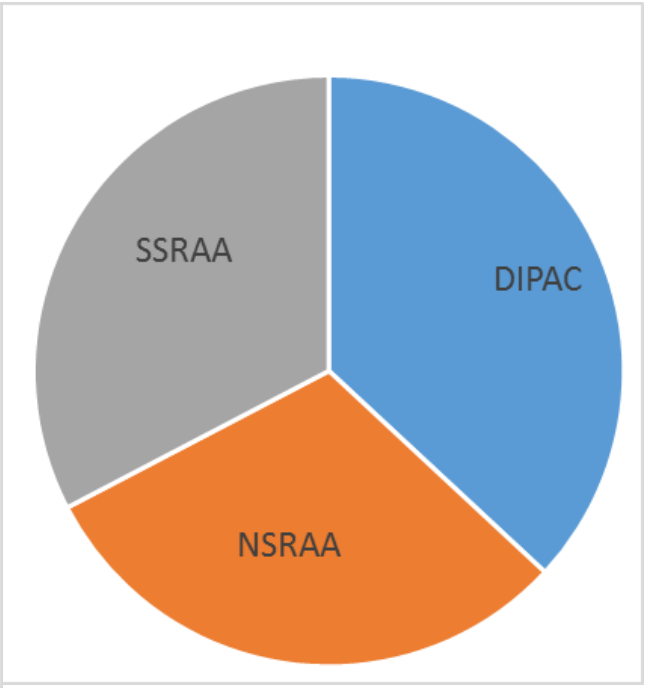
June



July



August



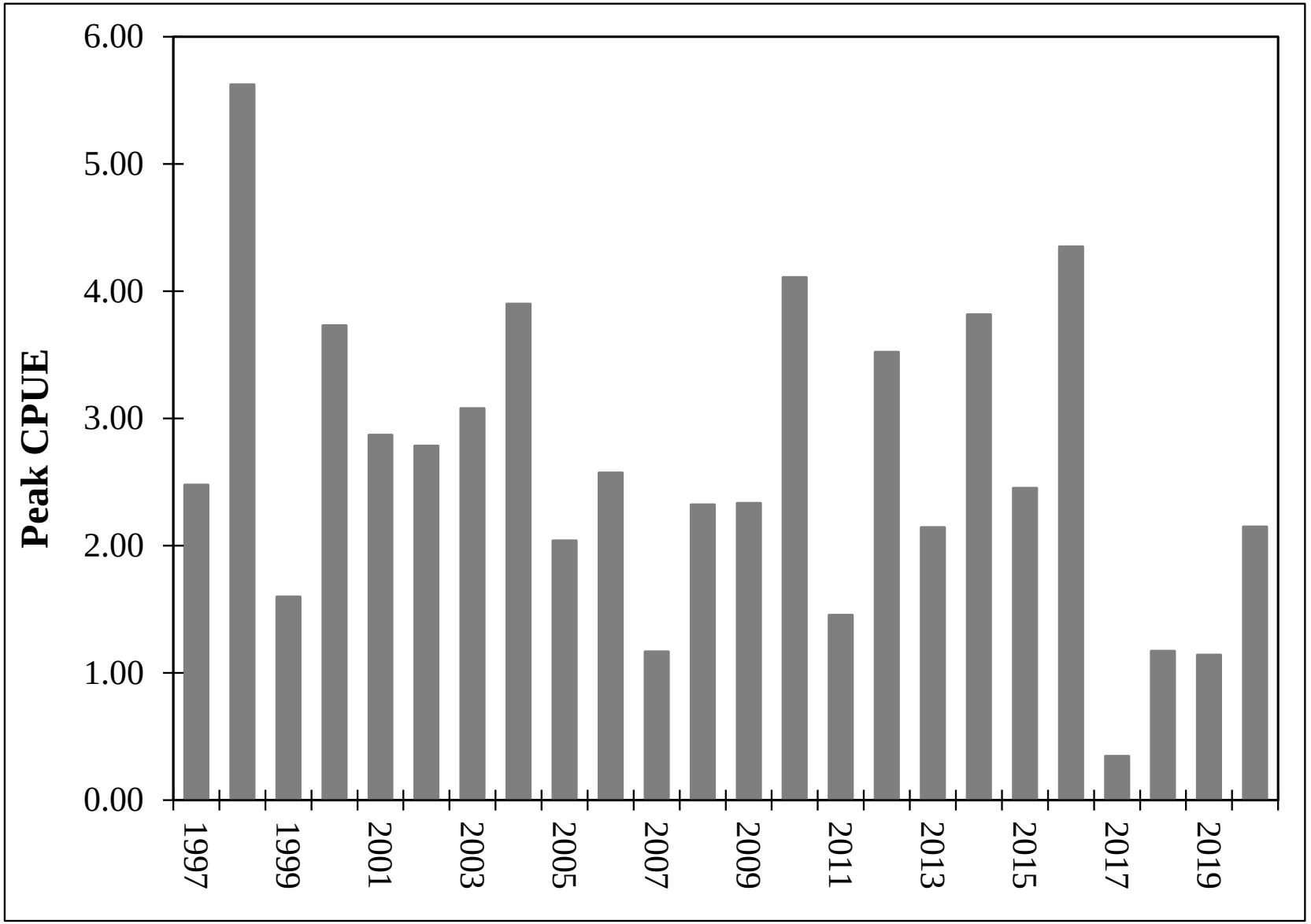
Pink Salmon Harvest Forecast Model Structure

- Peak surface trawl catch rates (CPUE) in June or July.
- Icy Strait Temperature Index (ISTI)

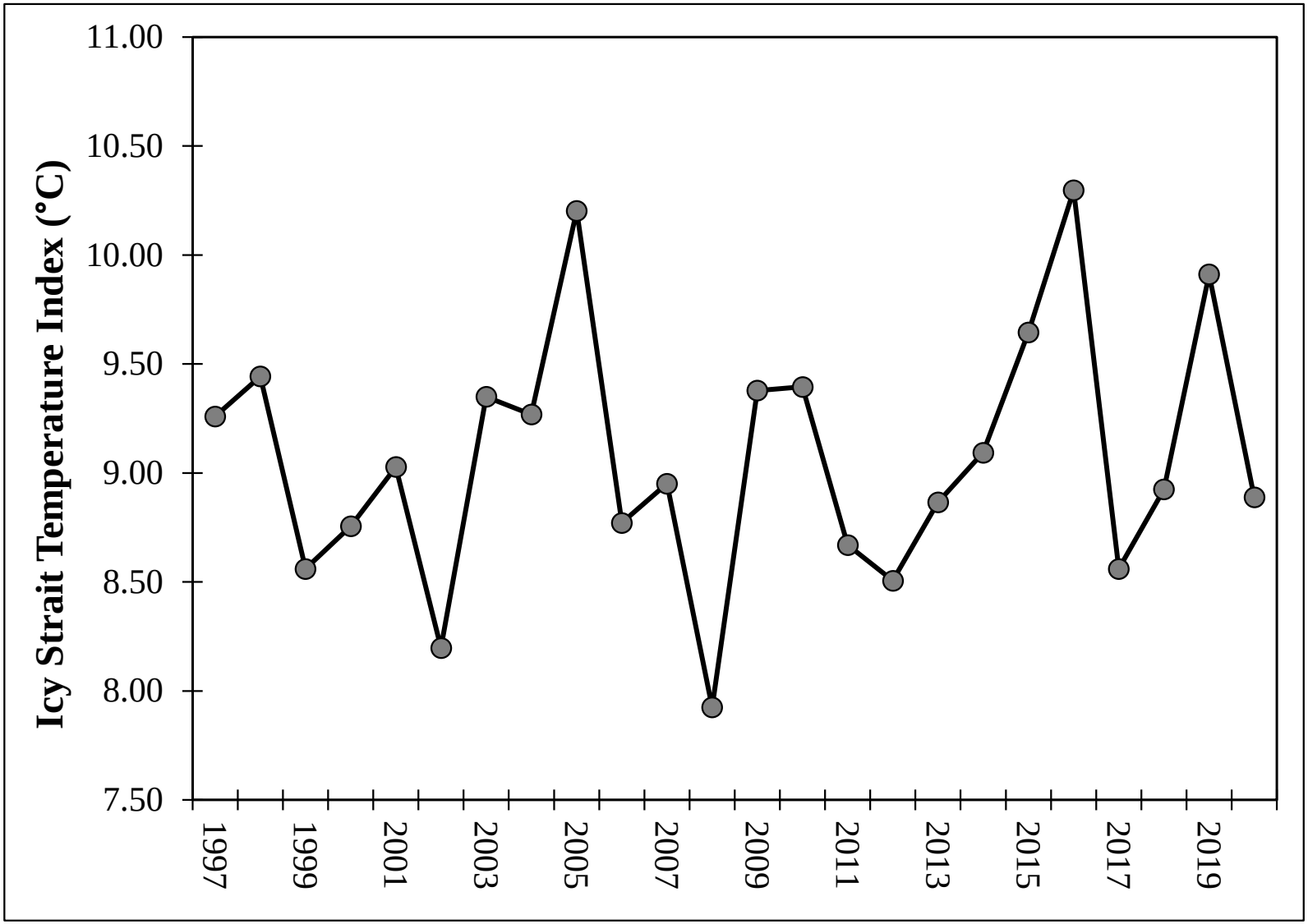
Forecast Model Considerations

- There are several ways that temperature (ISTI) could be important to the forecast model.
  - Survival: reduced survival during warm years. Since growth is higher in warm years, this would imply that small fish have better survival.
  - Migration: Increased movement of SEAK stocks through Icy Strait during warm years.

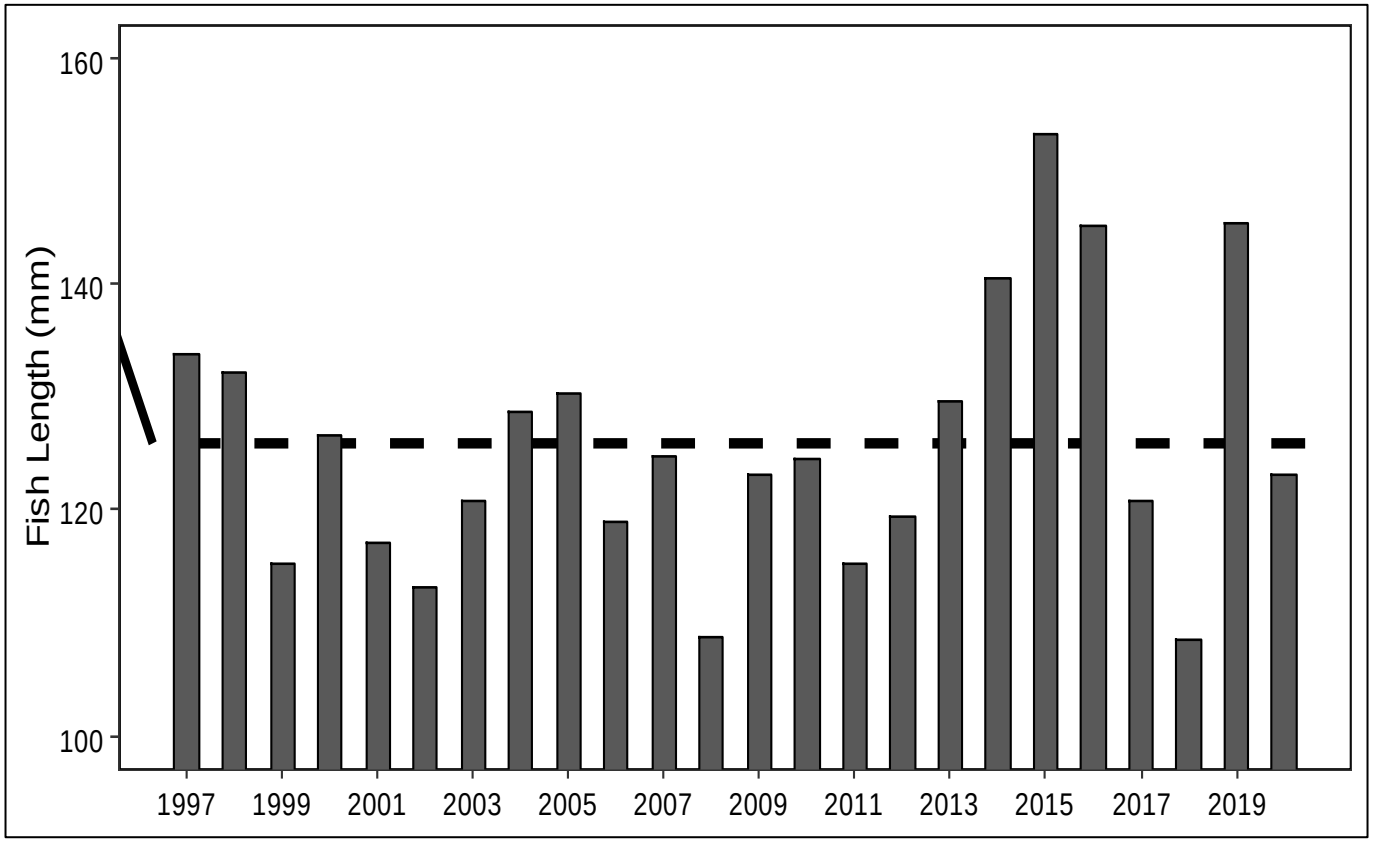
Peak CPUE (calibrated) of juvenile Pink Salmon



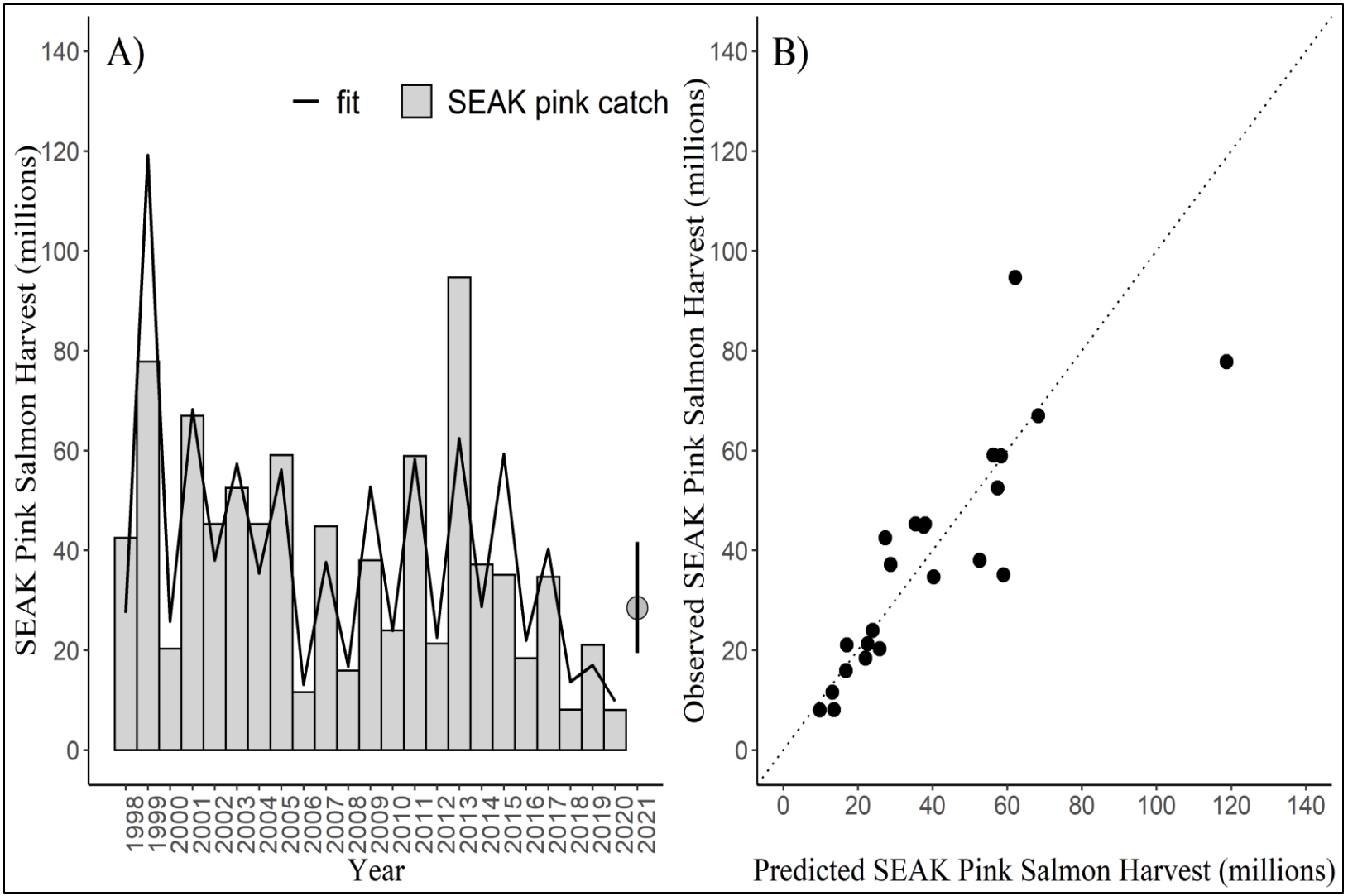
Icy Strait Temperature Index (ISTI)



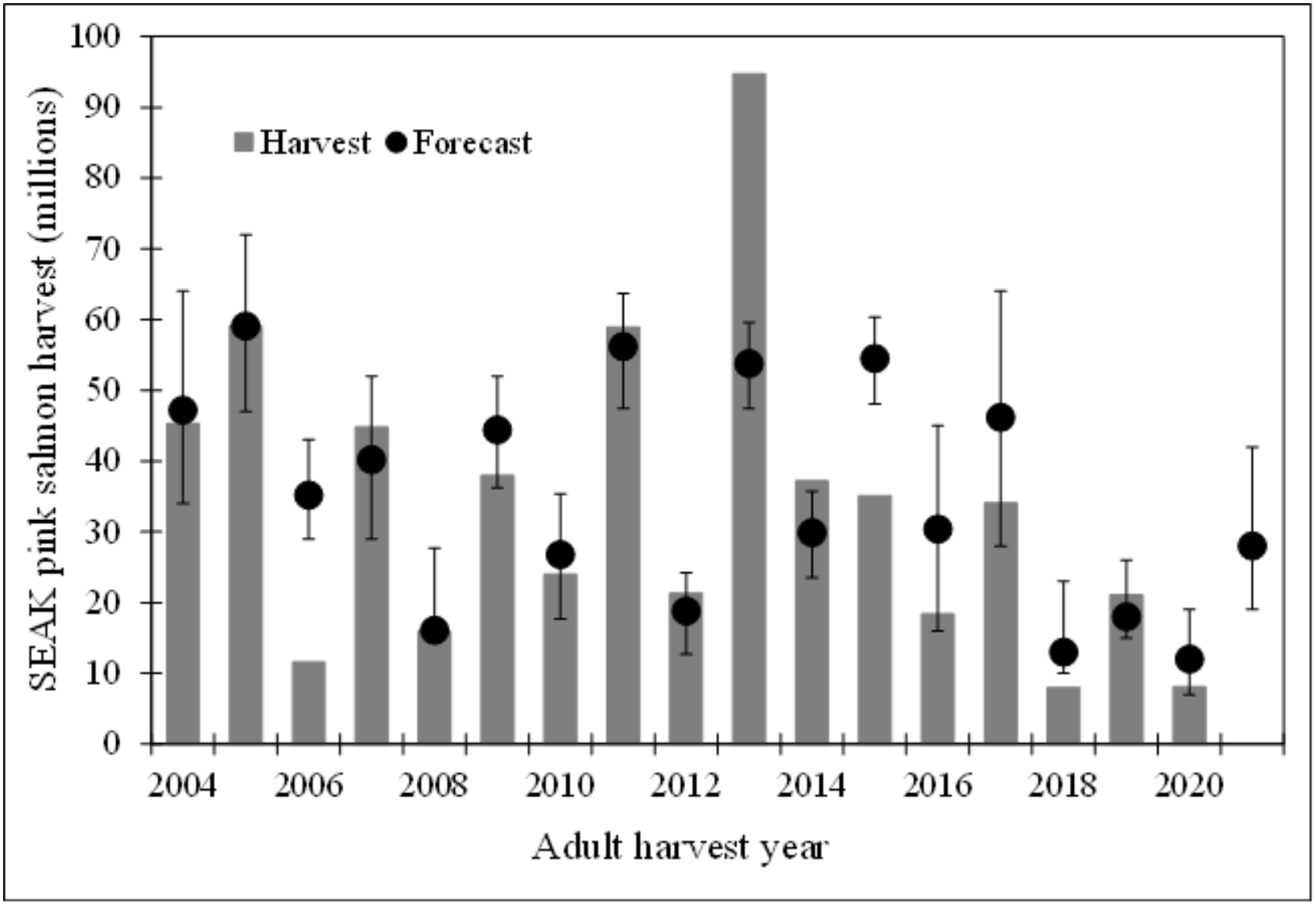
Length of Juvenile Pink Salmon



Southeast Alaska Pink Salmon Harvest Forecast Model (Calibrated CPUE + ISTI)



Southeast Alaska Pink Salmon Harvest Forecast Model Performance

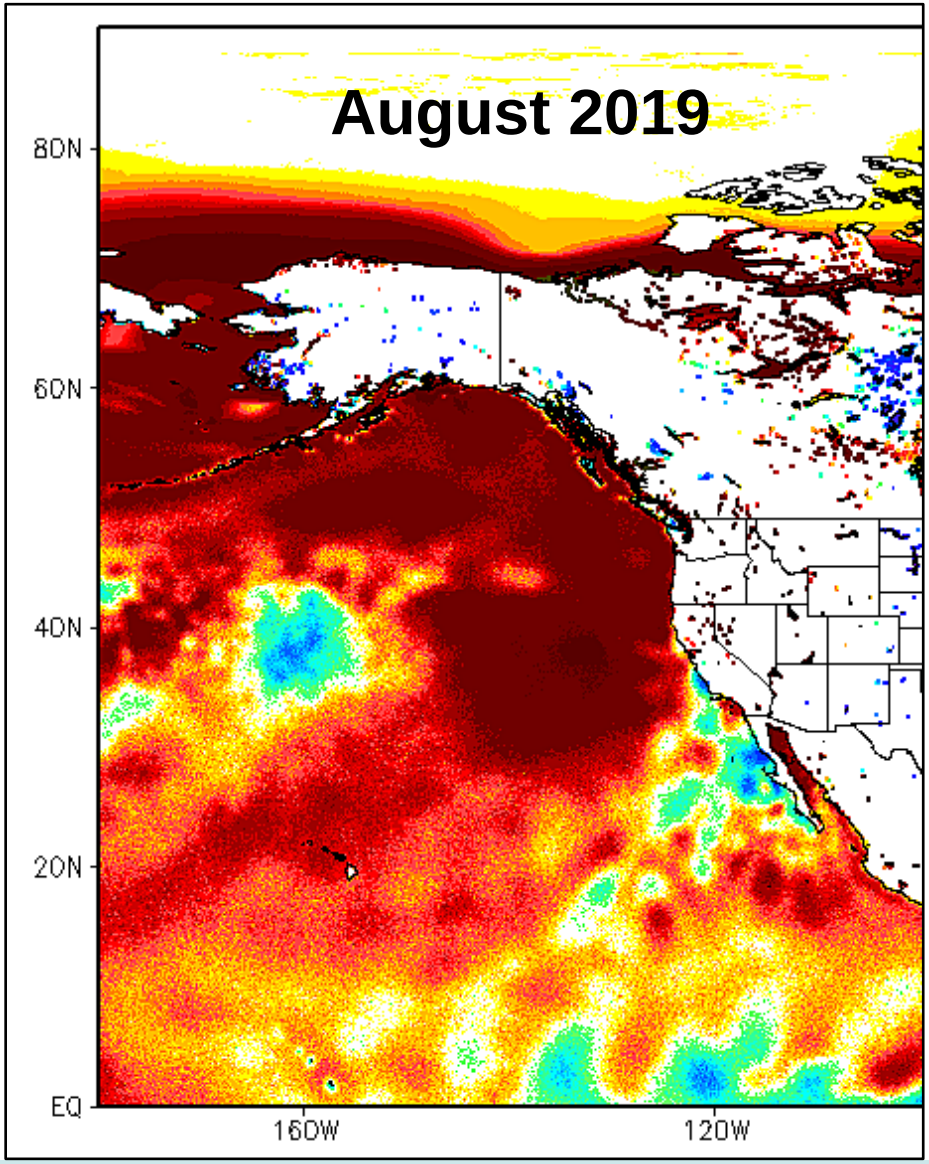


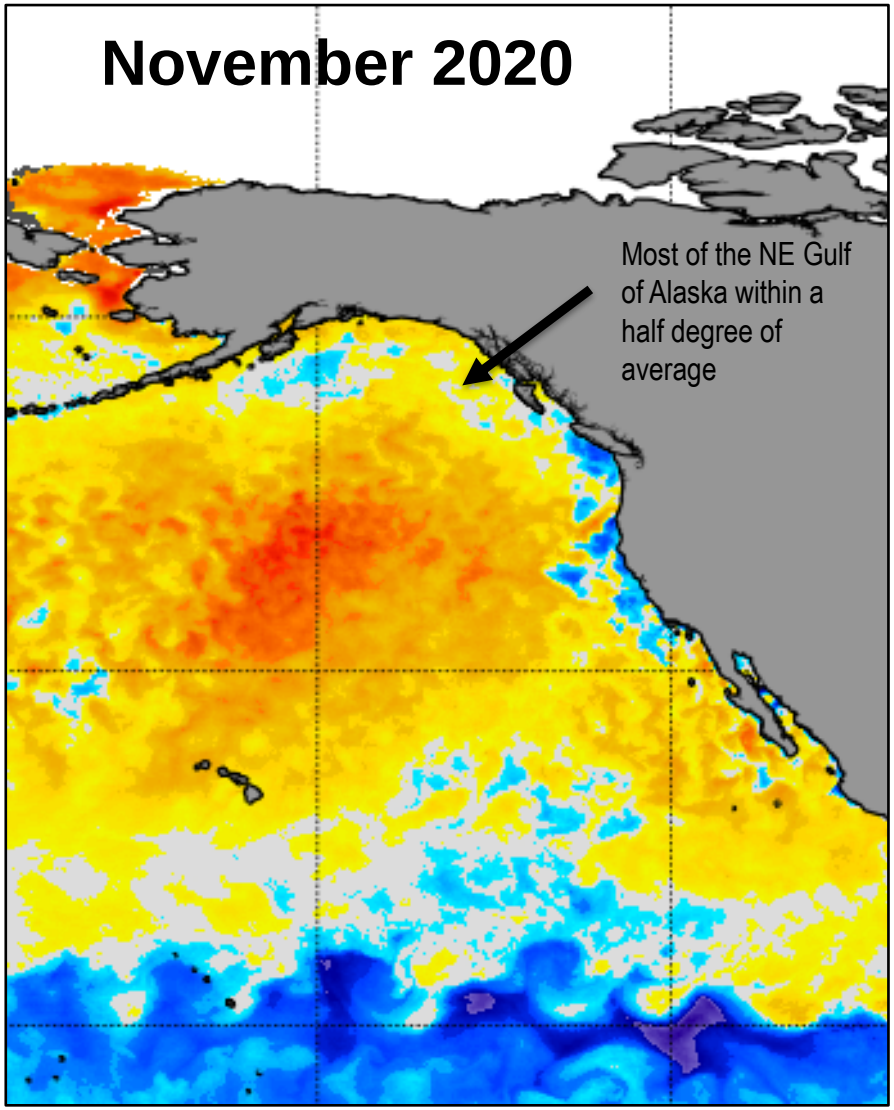
Concerns Related to 2021 Forecast

Tendency for forecast to be on high side in recent years

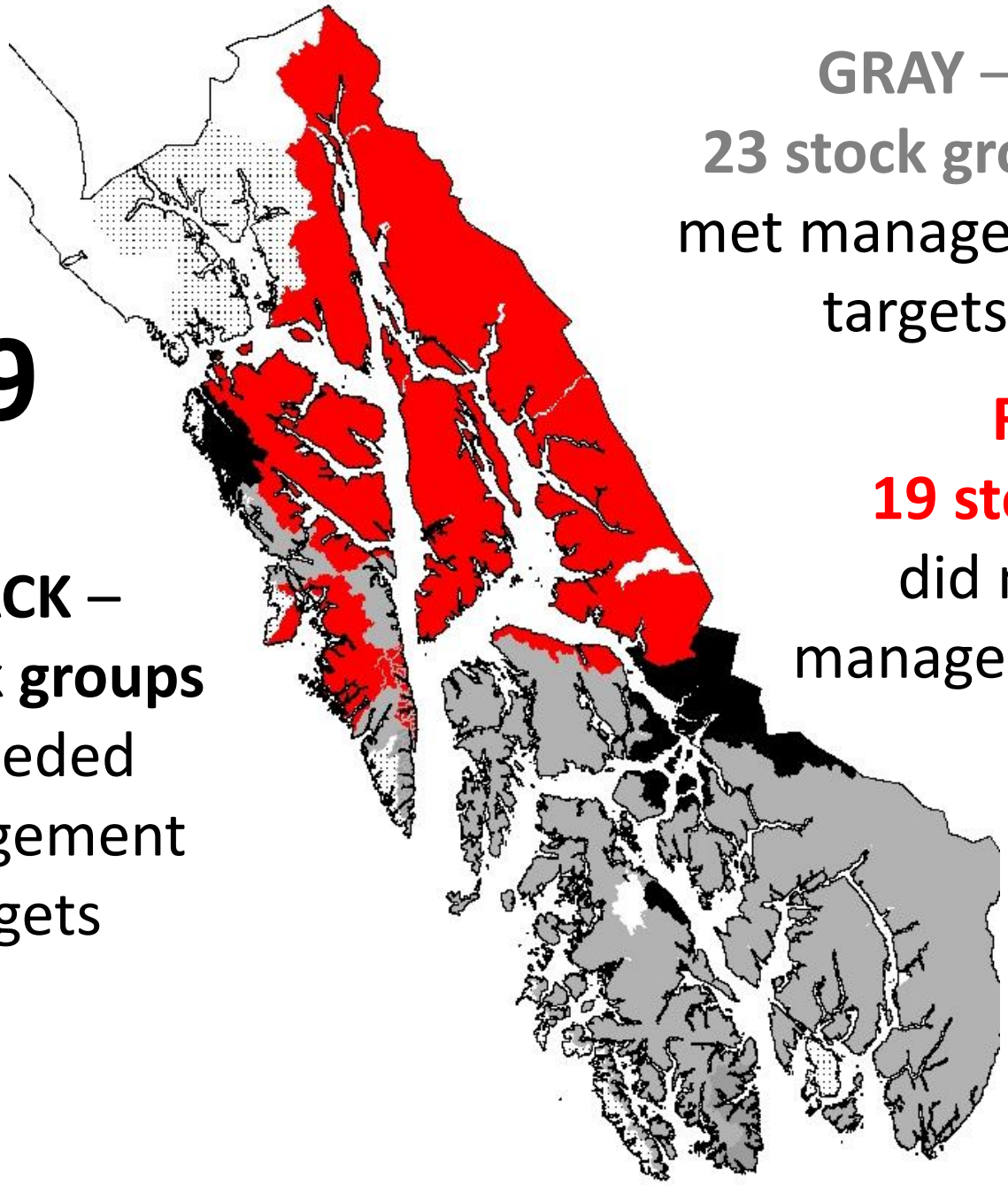
- Increased offshore mortality in recent years?
- Poor escapement to NSEI Subregion in 2019.
- Distribution of juvenile catch in trawls resulting in inflated CPUE estimate?
- Error in how temperature is incorporated into the model?

North Pacific Sea Surface Temperature Anomalies





2019



GRAY –
23 stock groups
met management targets

RED –
19 stock group
did not meet management targets

BLACK –
4 stock groups
exceeded management targets

Pink Salmon Disaster Relief Funding

- Covers SECM Survey through 2022 season.
- Covers costs associated with ADF&G Research vessel Medeia.
- Genetic Pink Salmon Baseline Study
- Analyzing Chinook genetic samples from SECM
- Funding thermal mark reading of chum captured by SECM otoliths by DIPAC
  - Additional funding from Northern Fund to cover NOAA lab work.

Additional SECM Activities

- Potential for additional survey transects from more southern locations.
- Preliminary looks at chum salmon forecasting.
- Increased data on Chinook salmon.

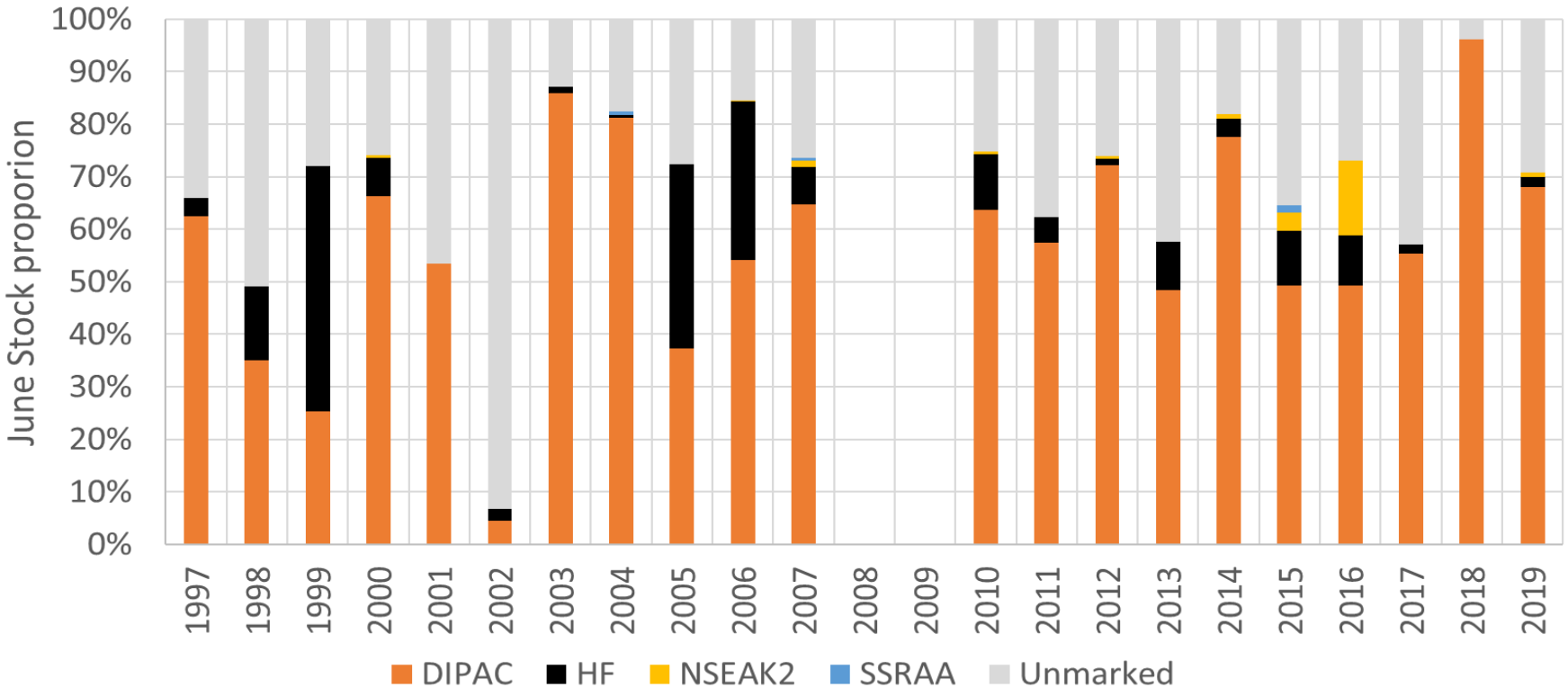
2021 SECM Pink Salmon Forecast Summary

- The 2021 Southeast Alaska pink salmon harvest forecast is:
  - **28 million (80% CI = 19 – 42 million).**

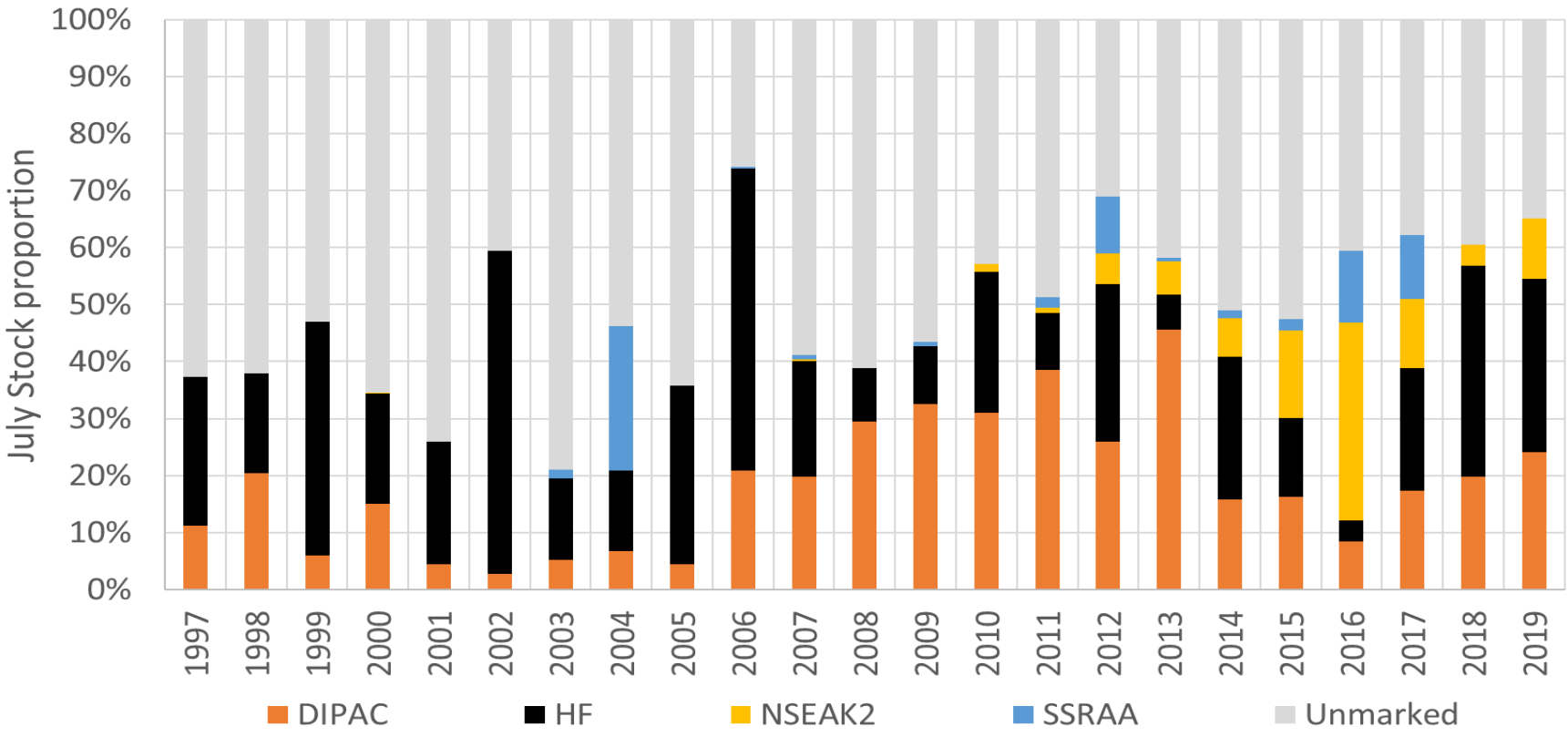
- The forecast is based on a juvenile abundance index and temperature (ISTI). The significance of temperature is unclear, it could be due to variation in survival and/or migration of juveniles.

- Drought throughout Southeast Alaska continued through summer of 2019. Sea surface temperatures have moderated, and Icy Strait temperatures were slightly below average.

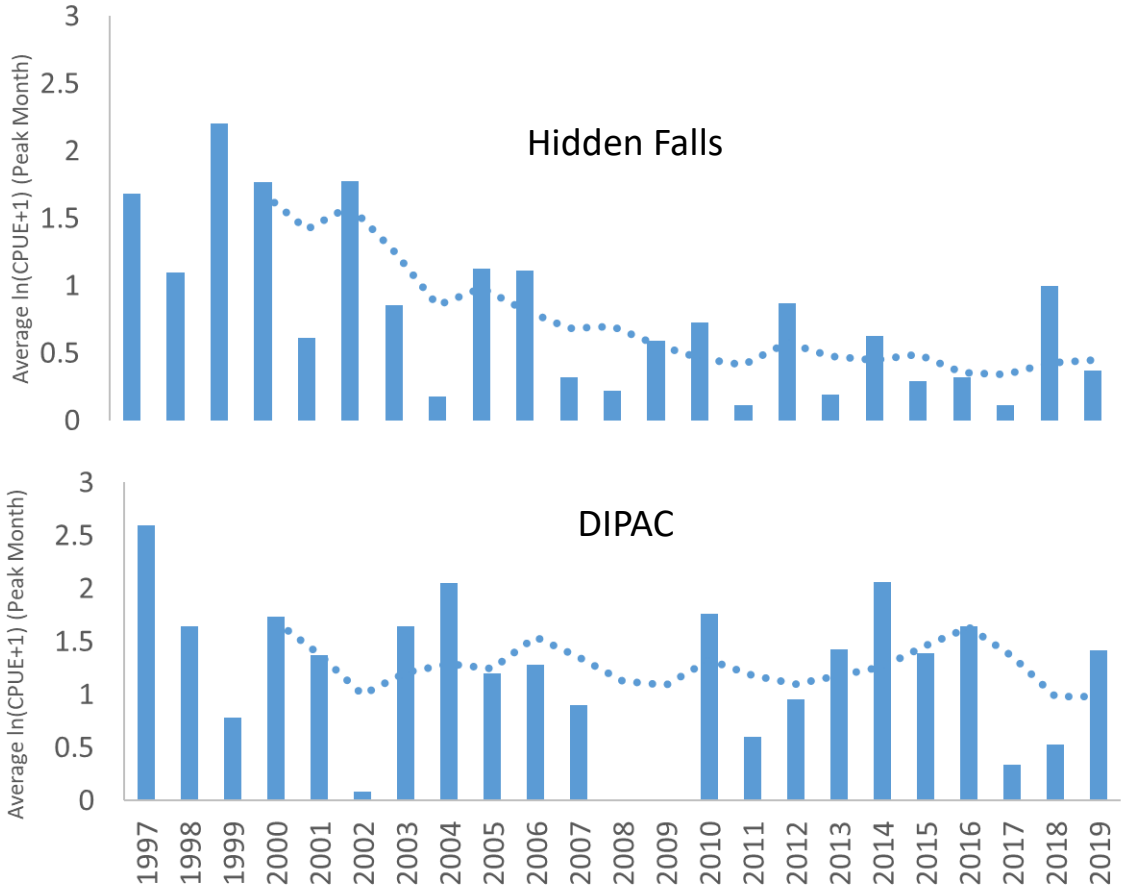
Juvenile Chum salmon otolith thermal marks (Icy Strait) (June).

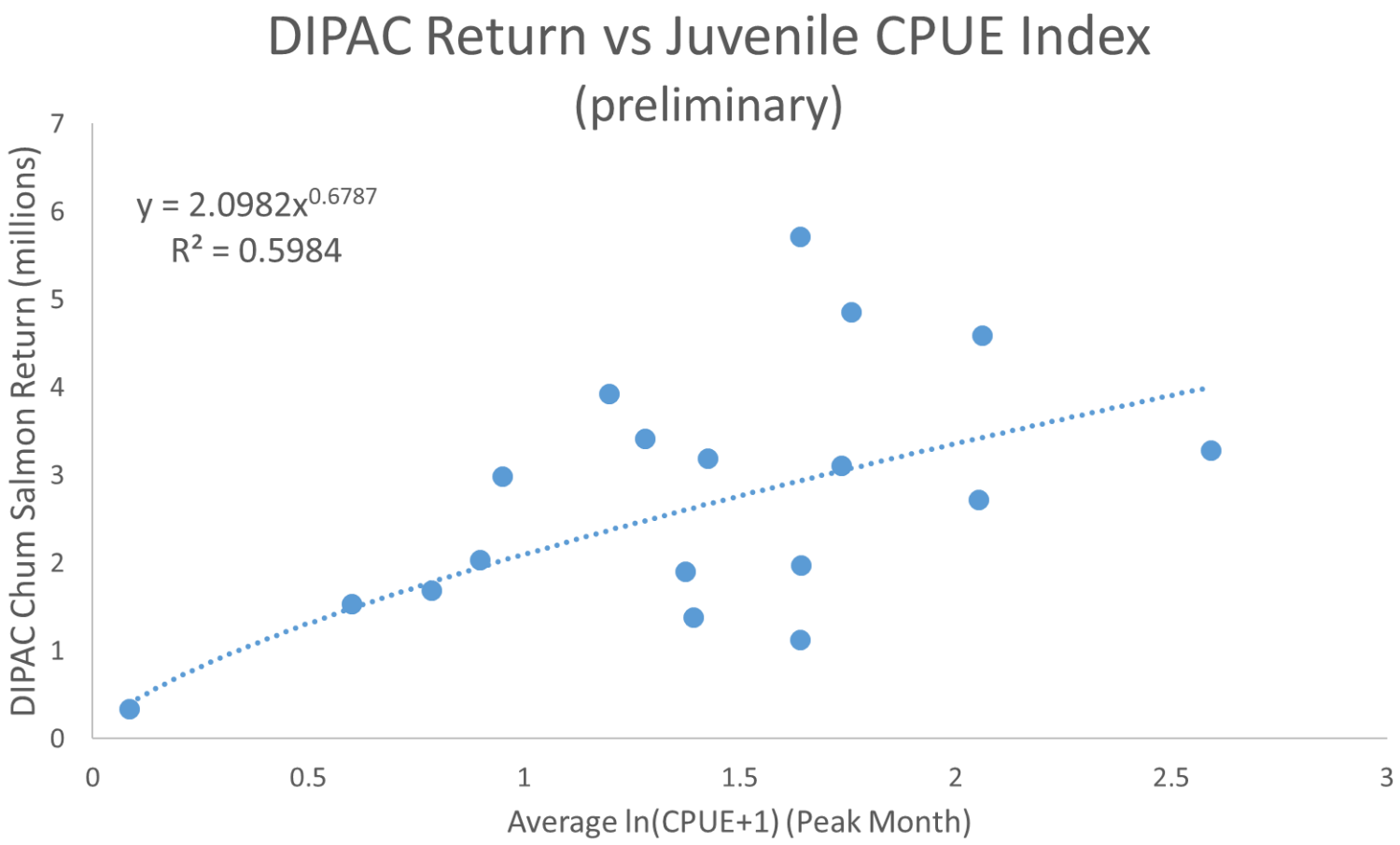


Juvenile Chum salmon otolith thermal marks (Icy Strait) (July)



Stock-Specific Juvenile Chum Salmon CPUE Indices (Icy Strait)
(preliminary)




DIPAC Return vs Juvenile CPUE Index
(preliminary)
y = 2.0982x^0.6787
R² = 0.5984
DIPAC Chum Salmon Return (millions)
Average ln(CPUE+1) (Peak Month)
0
1
2
3
4
5
6
7
0
0.5
1
1.5
2
2.5
3