

2019 Southeast Alaska Pink Salmon Harvest Forecast



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Alaska Fisheries
Science Center
Auke Bay
Laboratories



**Alaska
Department of
Fish and Game**

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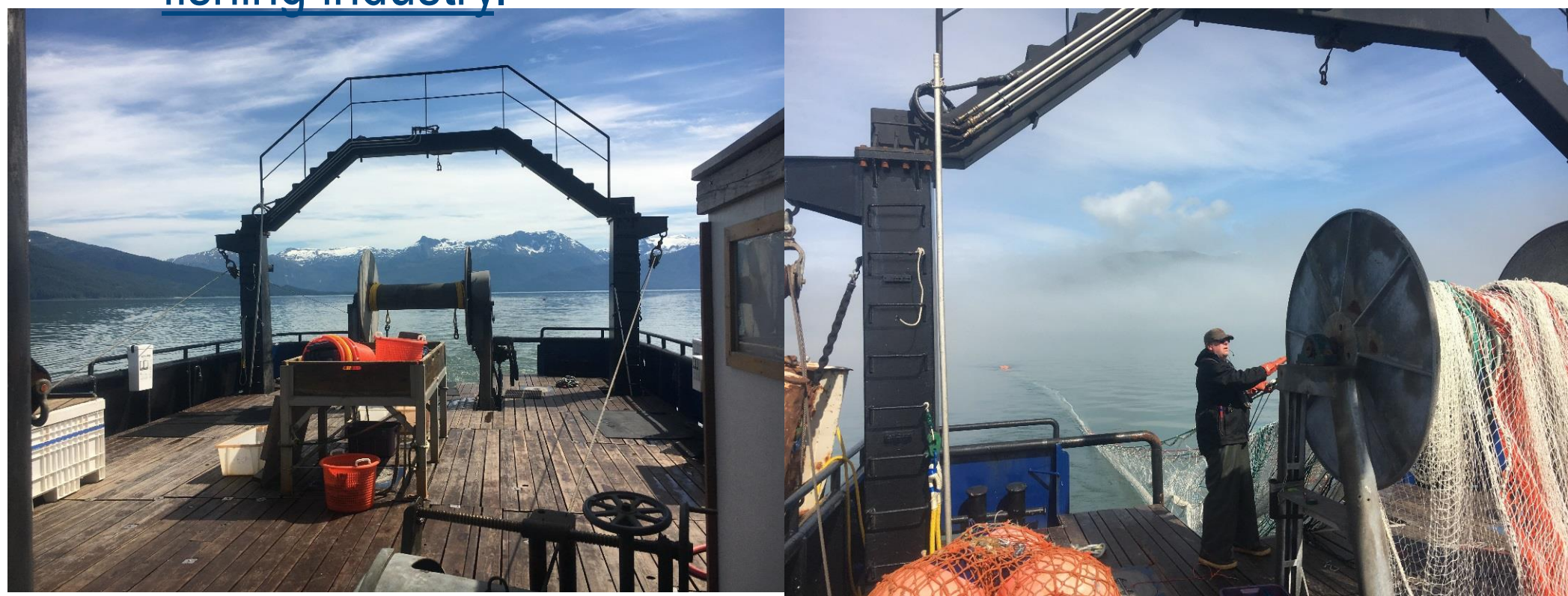
ADF&G: Andy Piston, Steve Heinl, Sara
Miller, and Rich Brenner

2018 Purse Seine Task Force Meeting
Petersburg, AK

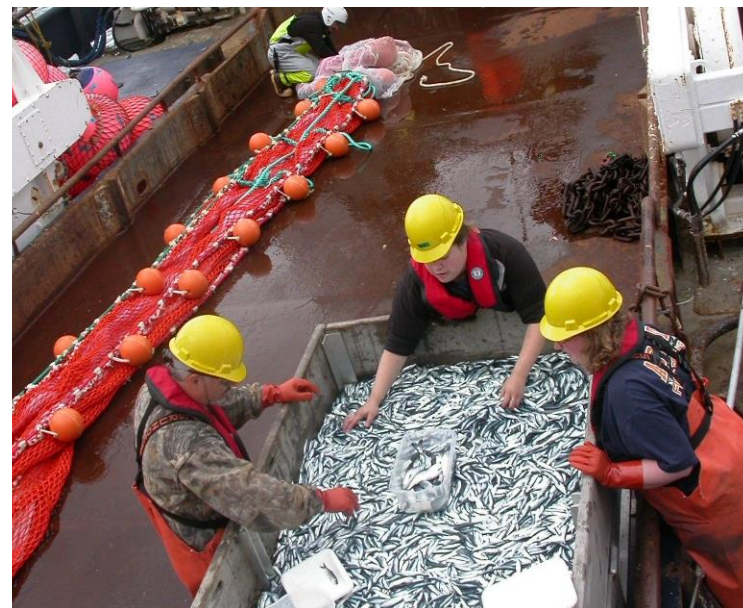
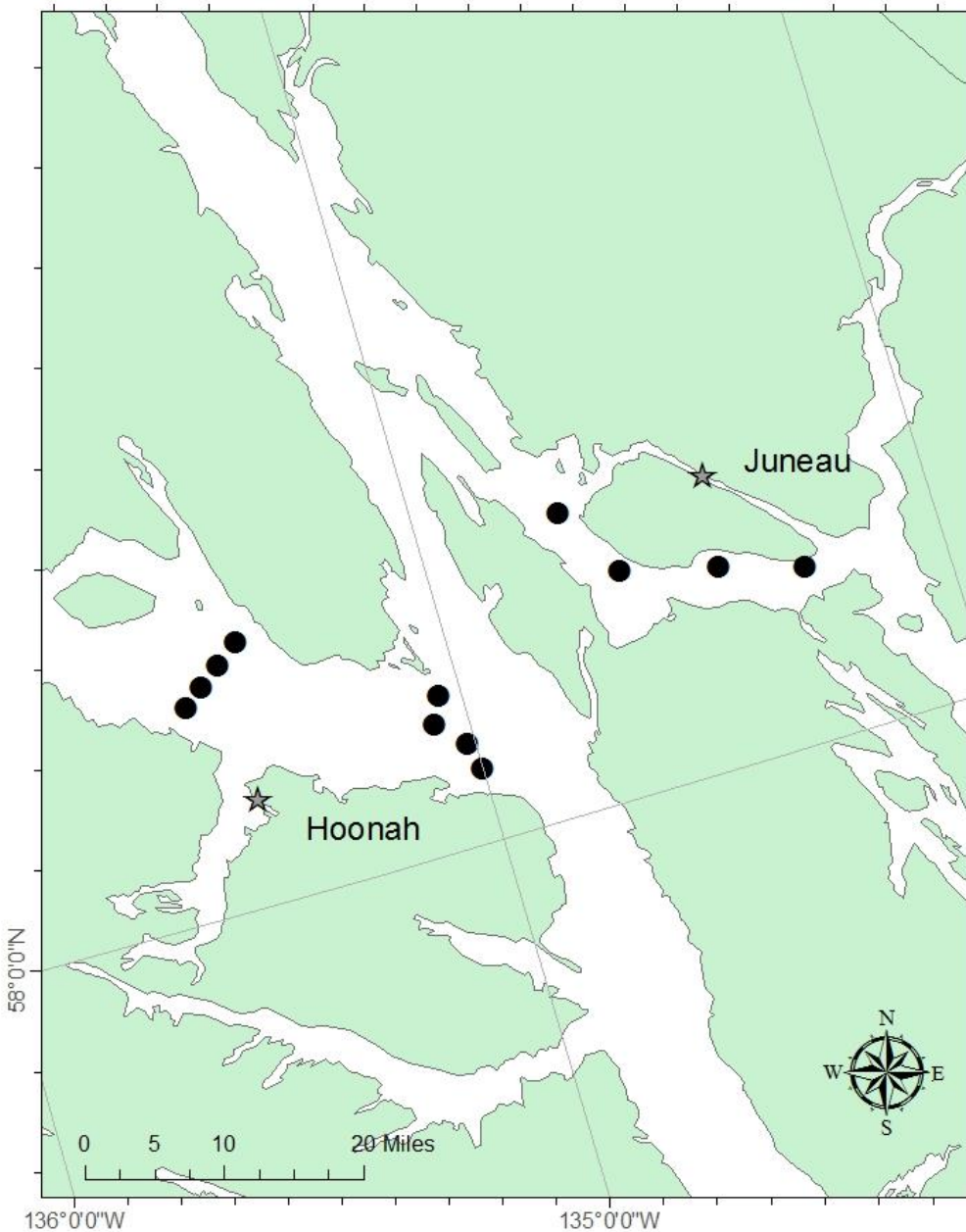
Nov 28, 2018

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.



Southeast Alaska Coastal Monitoring Research



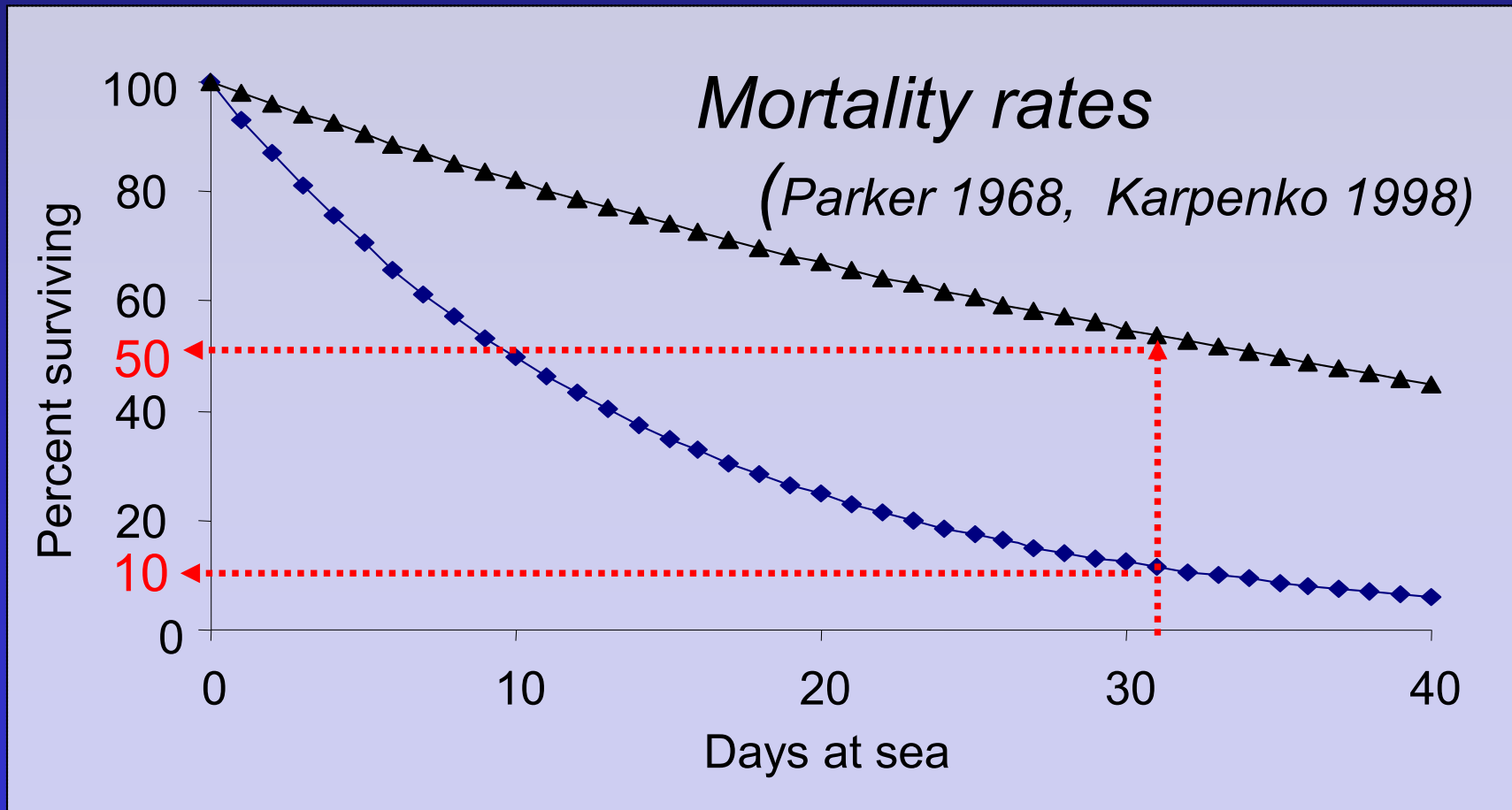
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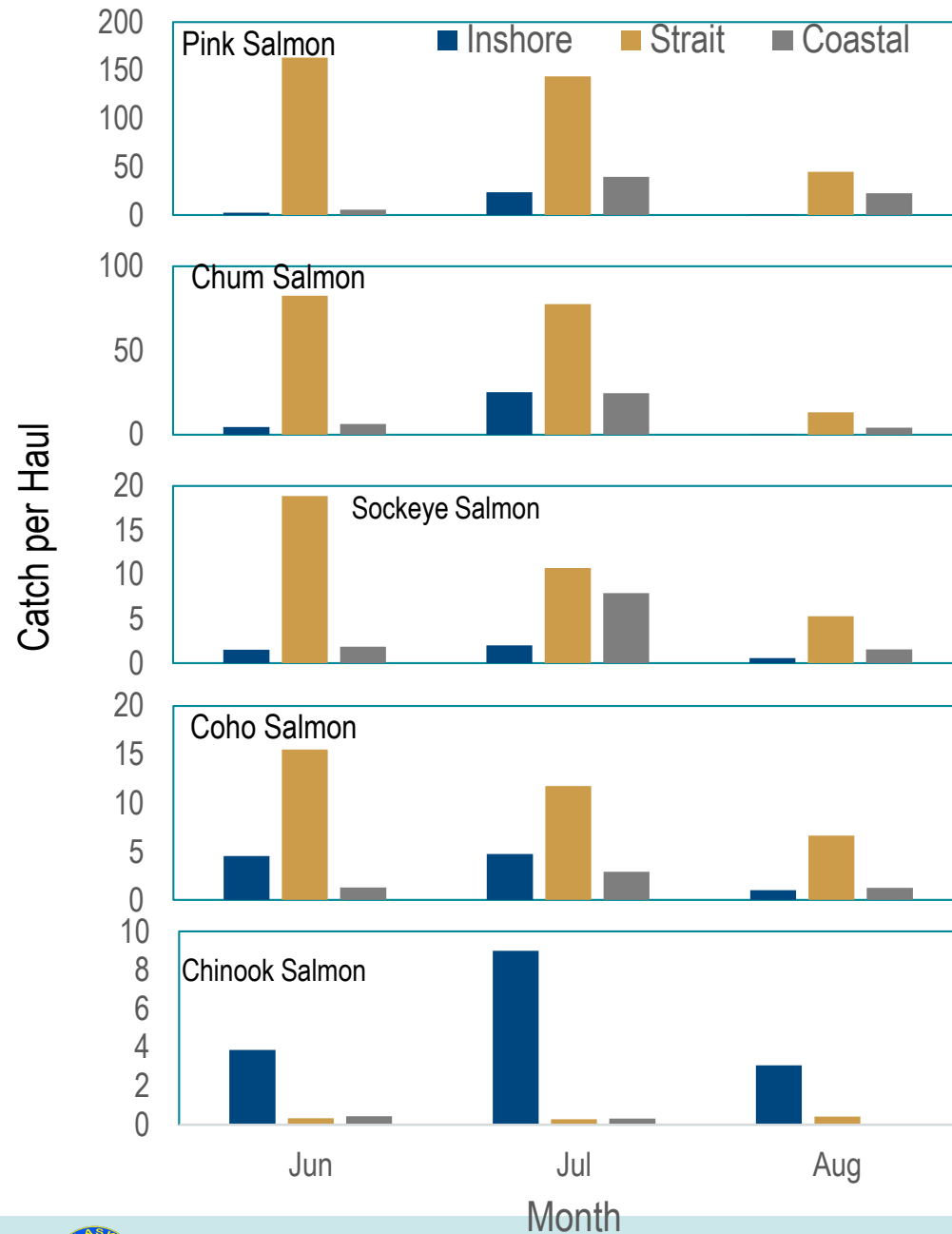
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Paradigm of pink salmon biology:

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

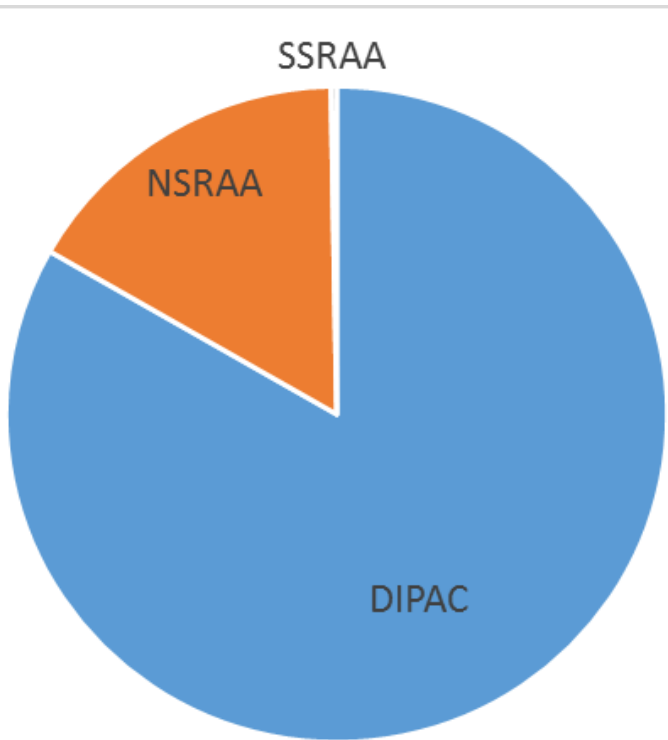


Surface Trawl Catch per Haul for Juvenile Salmon by Month

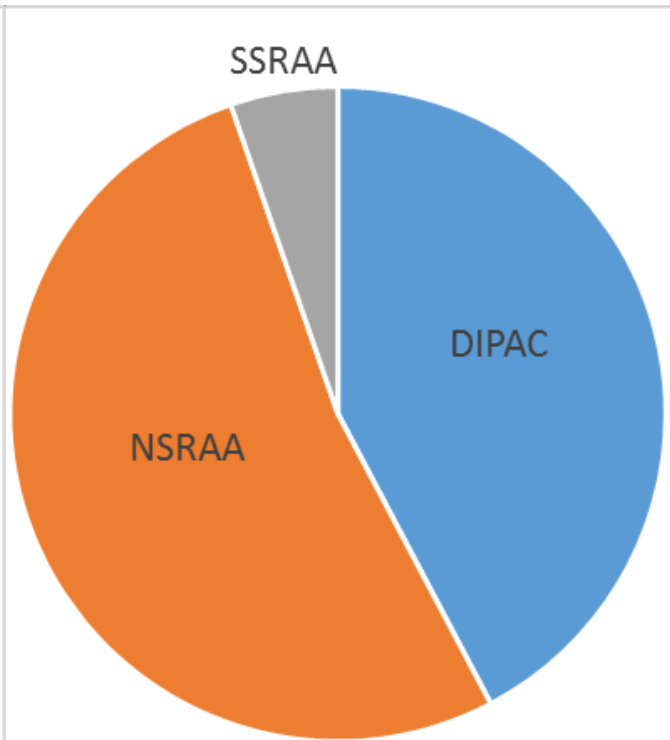


Icy Strait Hatchery Chum Salmon Origin (thermal mark recoveries 1997-2016)

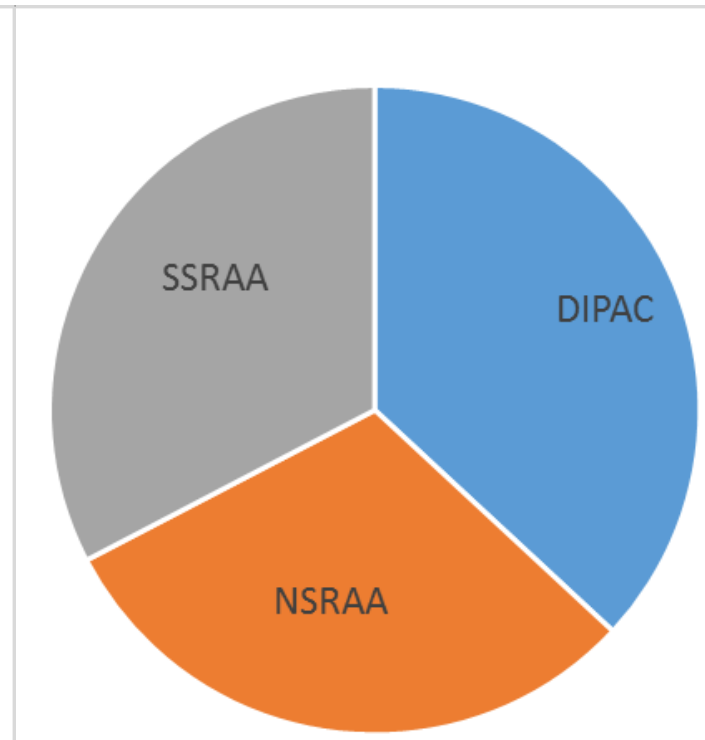
June



July



August



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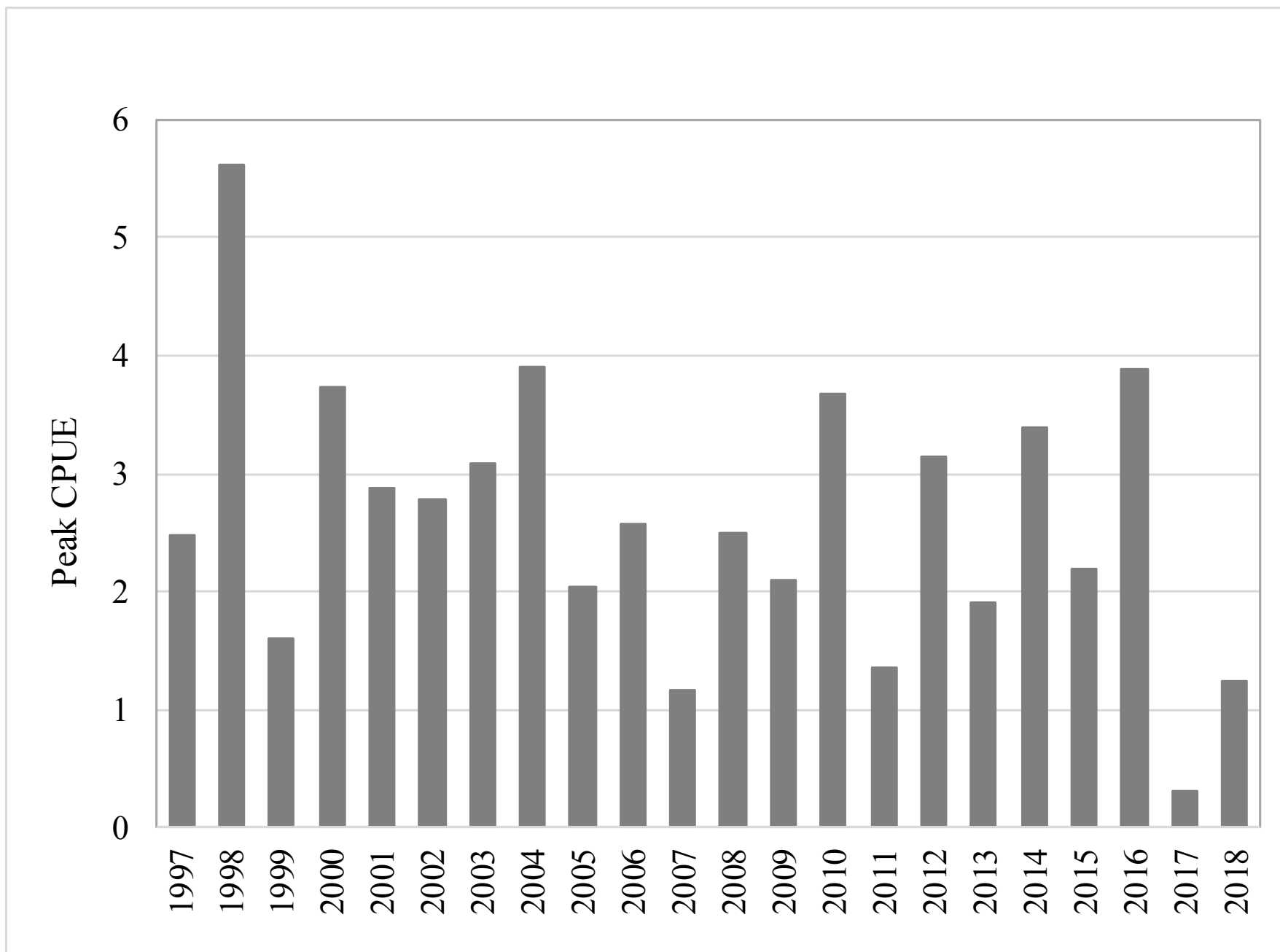
Pink Salmon Harvest Forecast Model Structure

- Juvenile abundance index: Peak surface trawl catch rates (CPUE) in June or July.
- Ecosystem considerations: Ecosystem variables are included if they significantly reduce the prediction error (MAPE) of the forecast model.

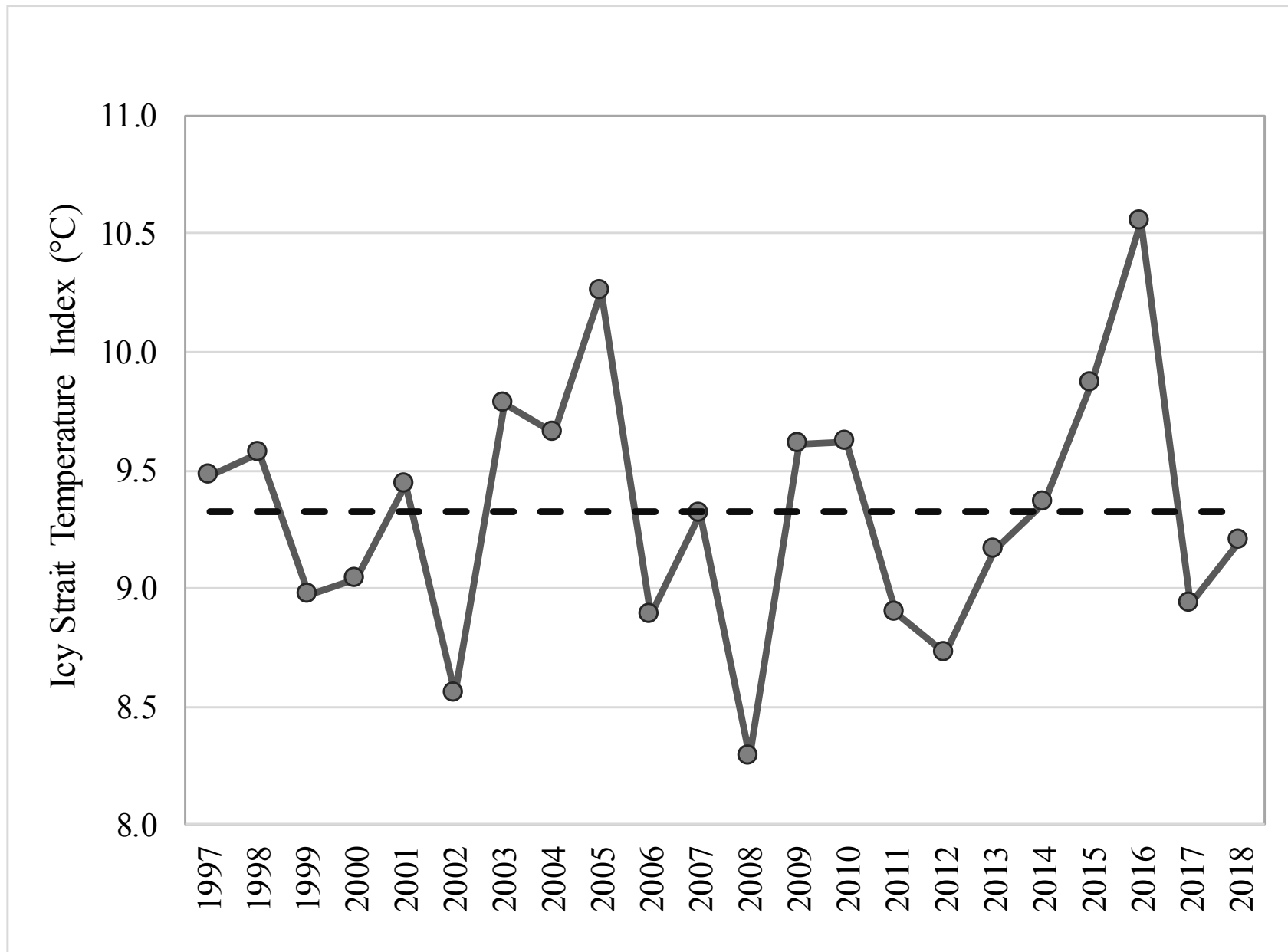
Forecast Model Variables Considered

- Juvenile abundance index (catch per unit effort, CPUE):
 - Peak CPUE (calibrated)
- Ecosystem variables:
 - Juvenile pink salmon condition and size
 - Icy Strait Temperature Index (**ISTI**)
 - Pacific Decadal Oscillation (PDO) winter and summer
 - Multivariate ENSO Index (MEI) winter

Peak CPUE (calibrated) of juvenile Pink Salmon



Icy Strait Temperature Index (ISTI)

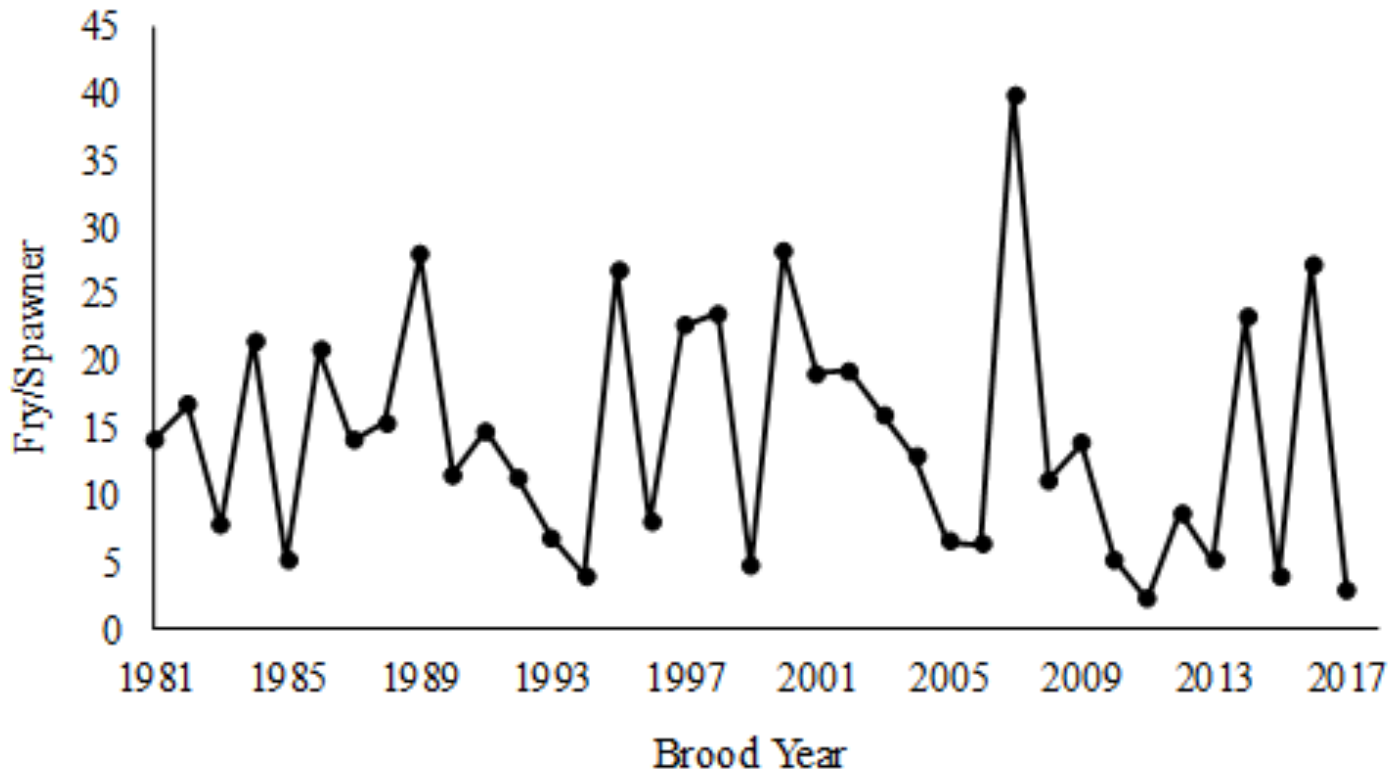


Forecast Model Considerations

- There are several ways that temperature (ISTI) could be important to the forecast model.
 - Survival (e.g. reduced survival during warm years)
 - Distribution/migration (e.g. increased migration of southern stocks through Icy Strait during warm years).

Fry production per spawner at Auke Creek

Auke Creek Pink Salmon

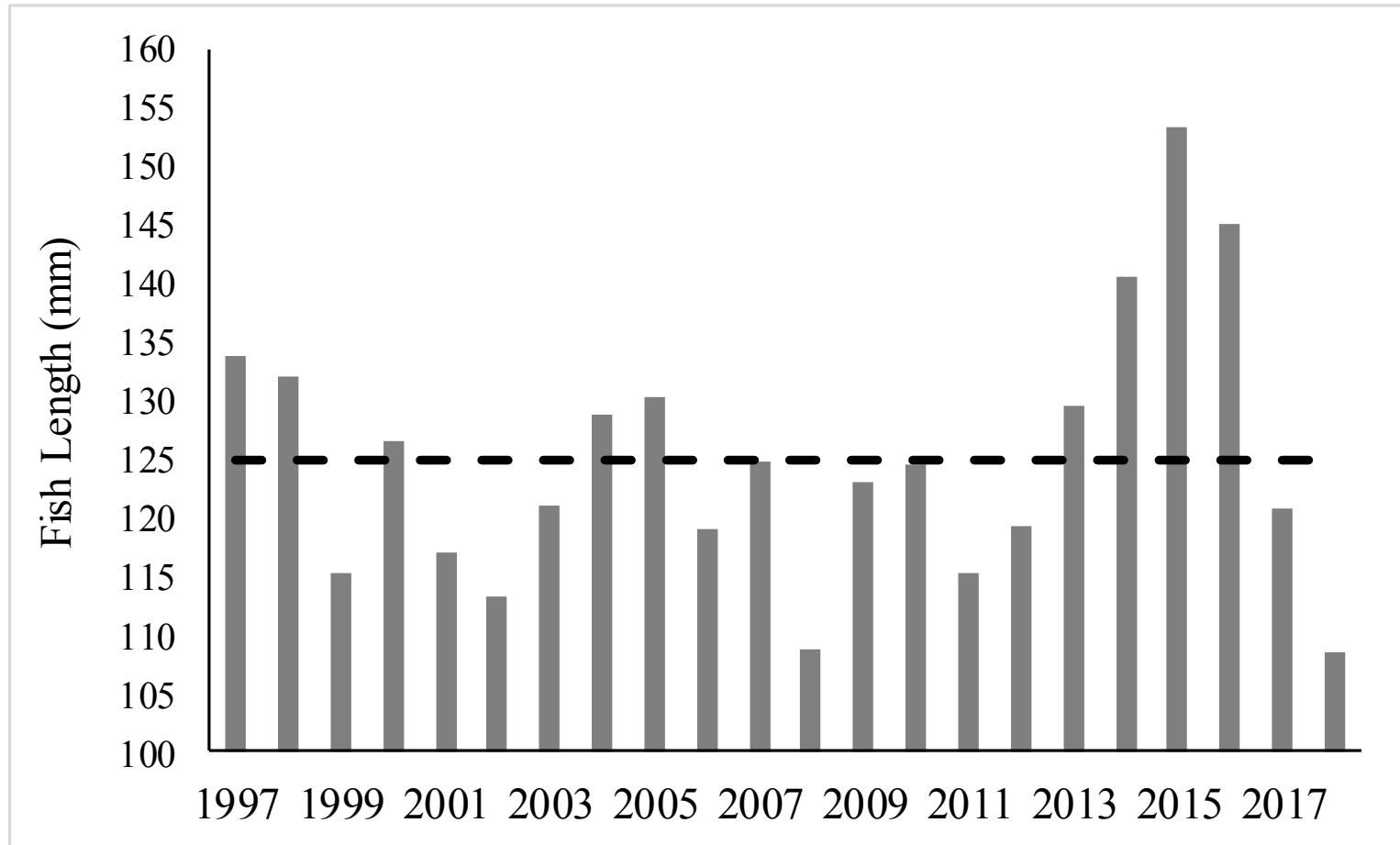


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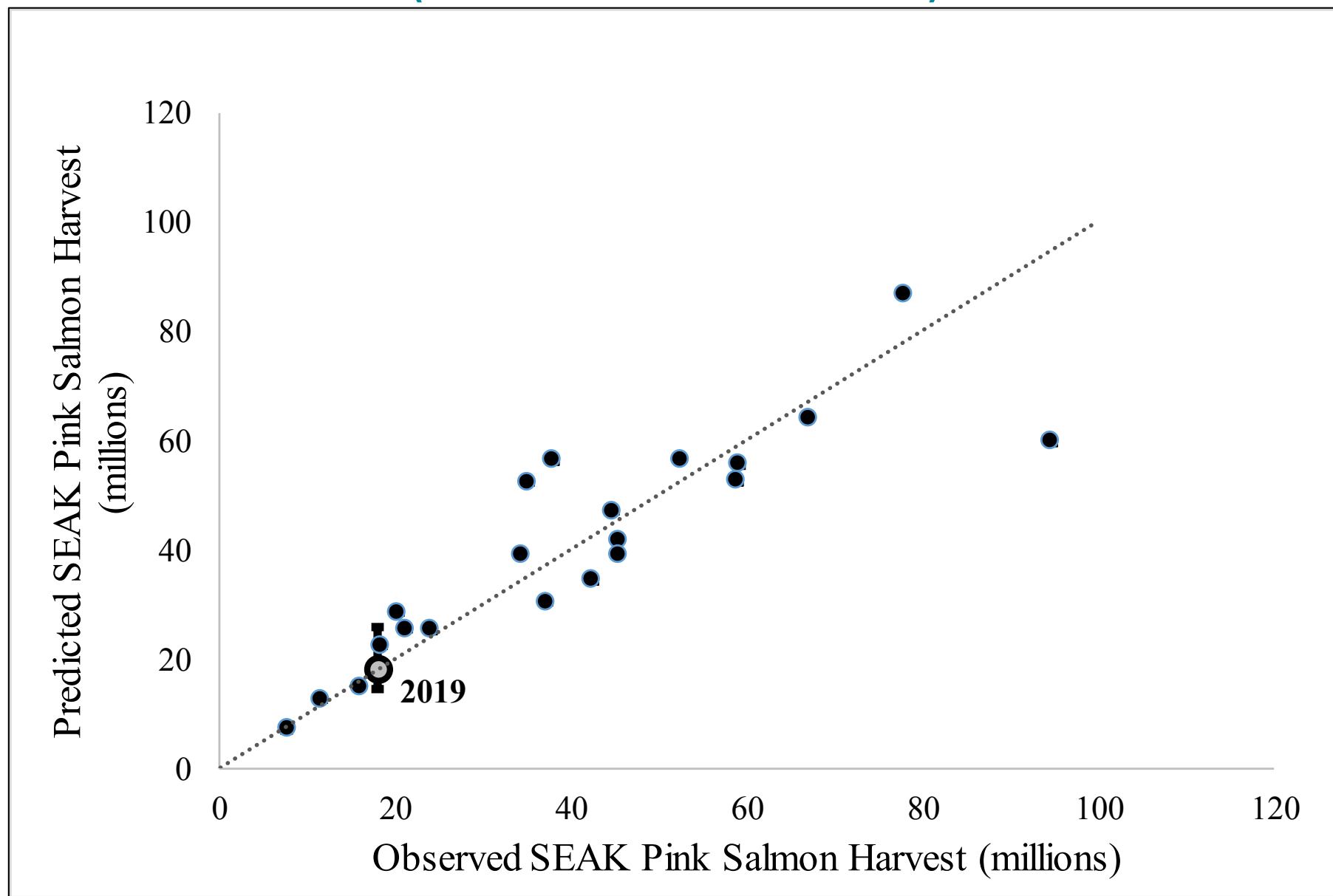


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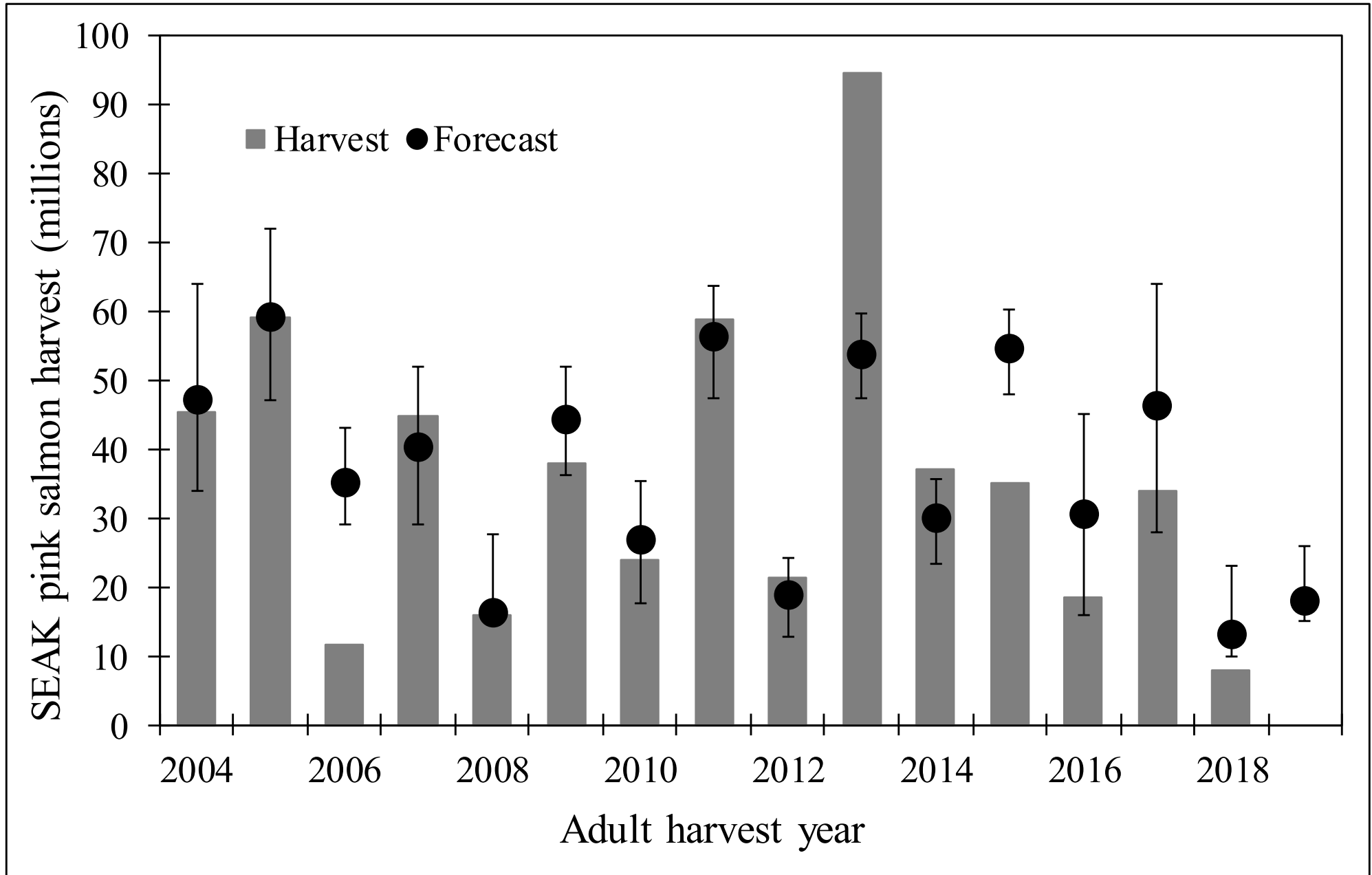
Length of Juvenile Pink Salmon



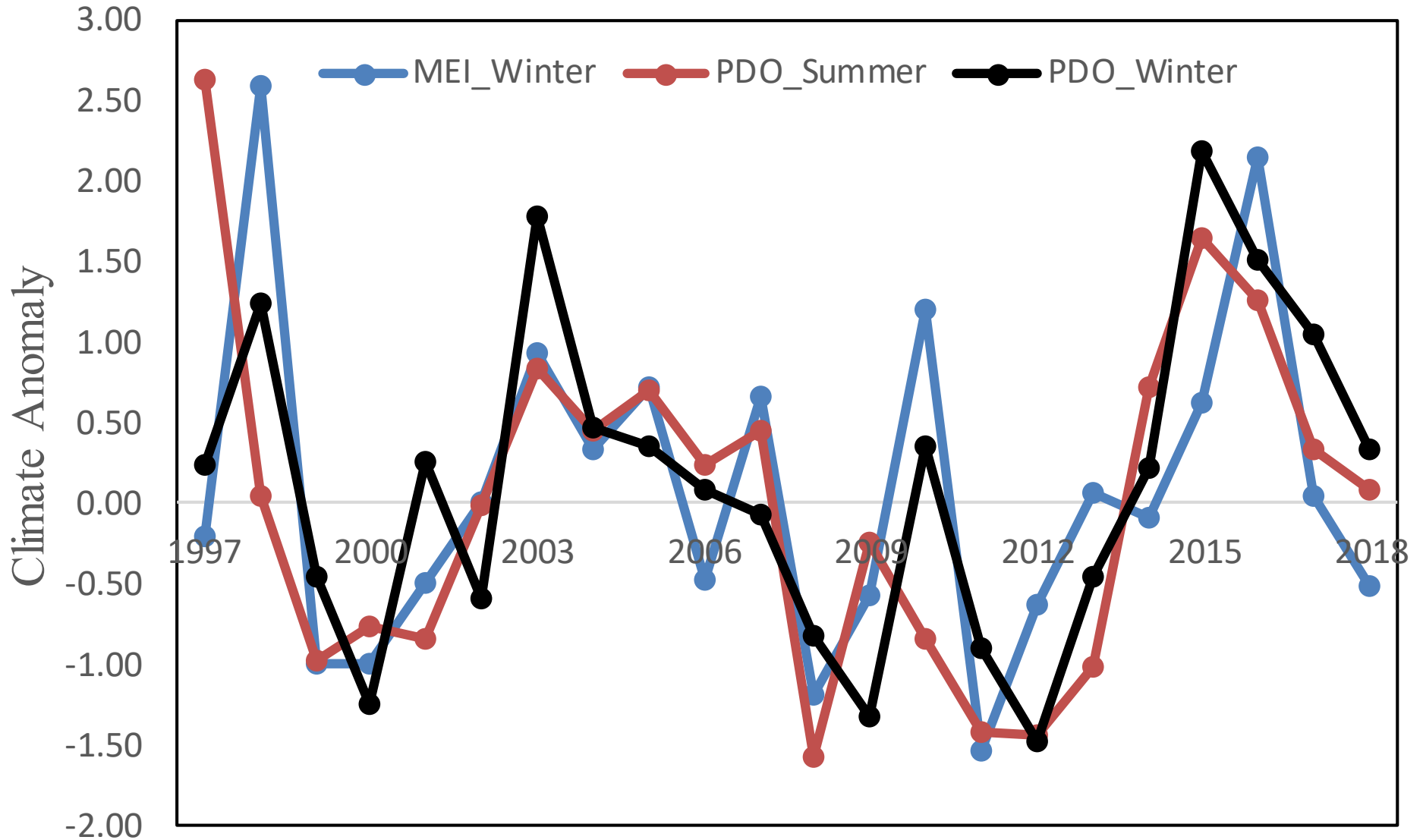
Southeast Alaska Pink Salmon Harvest Forecast Model (Calibrated CPUE + ISTI)



Southeast Alaska Pink Salmon Harvest Forecast Model Performance



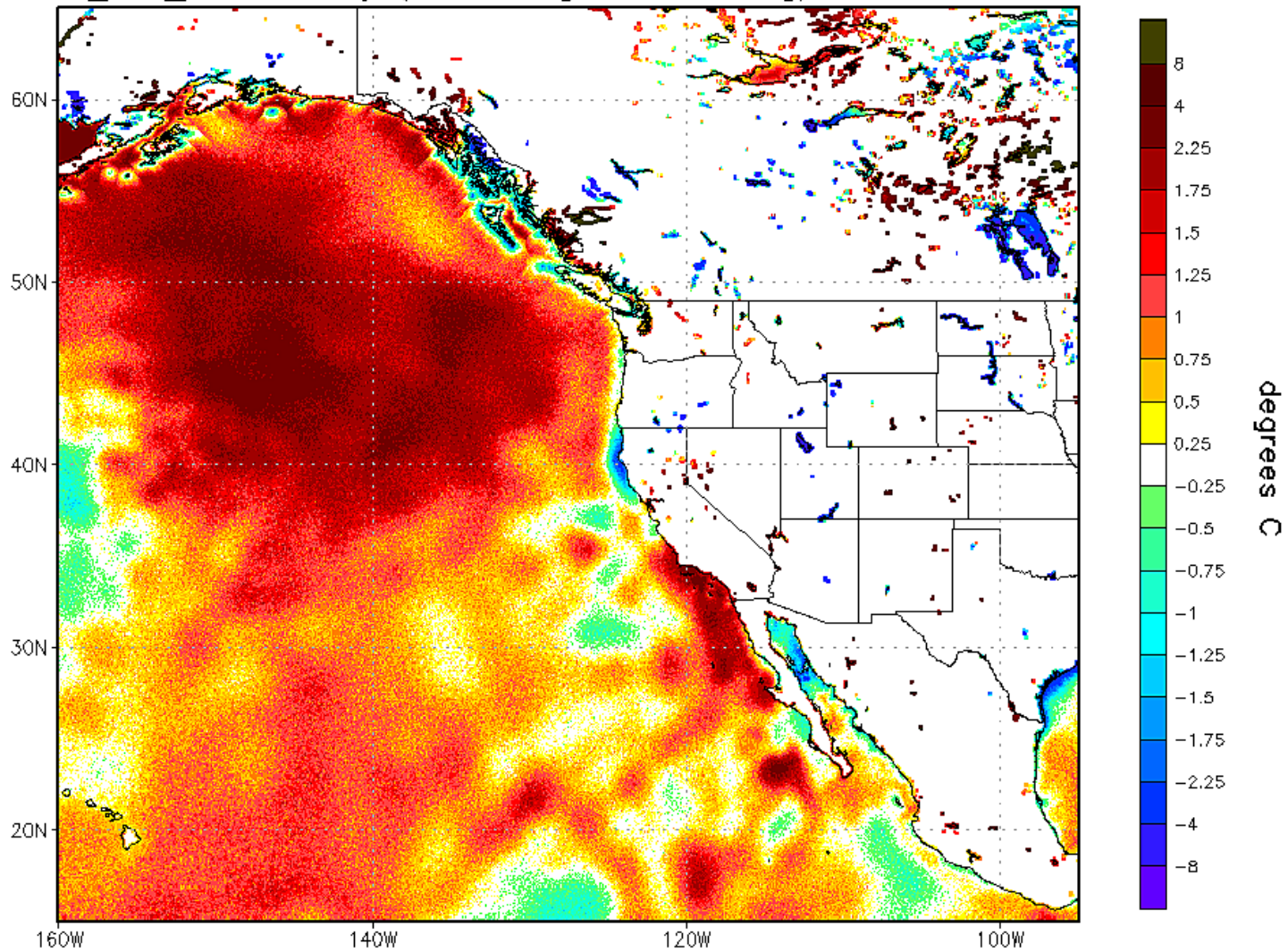
North Pacific Climate Anomalies



North Pacific Climate Anomalies

NOAA/NWS/NCEP/EMC Marine Modeling and Analysis Branch Oper H.R.

RTG_SST_HR Anomaly (0.083 deg X 0.083 deg) for 13 Nov 2018



22:38:17 TUE NOV 13 2018

2019 SECM Pink Salmon Forecast Summary

- The 2018 Southeast Alaska pink salmon harvest forecast is:
 - **18 million (80% CI = 15 – 26 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.
- Although climate indices returned to near normal in 2017, ecosystem impacts of the ‘warm blob’ years (2015 and 2016) could still have a negative impact on juvenile survival. Blob reformed in summer of 2018.