2018 Southeast Alaska Pink Salmon Harvest Forecast

Jim Murphy, Emily Fergusson, Jordan Watson, Andrew Gray

NOAA FISHERIES
Alaska Fisheries Science Center
Auke Bay Laboratories

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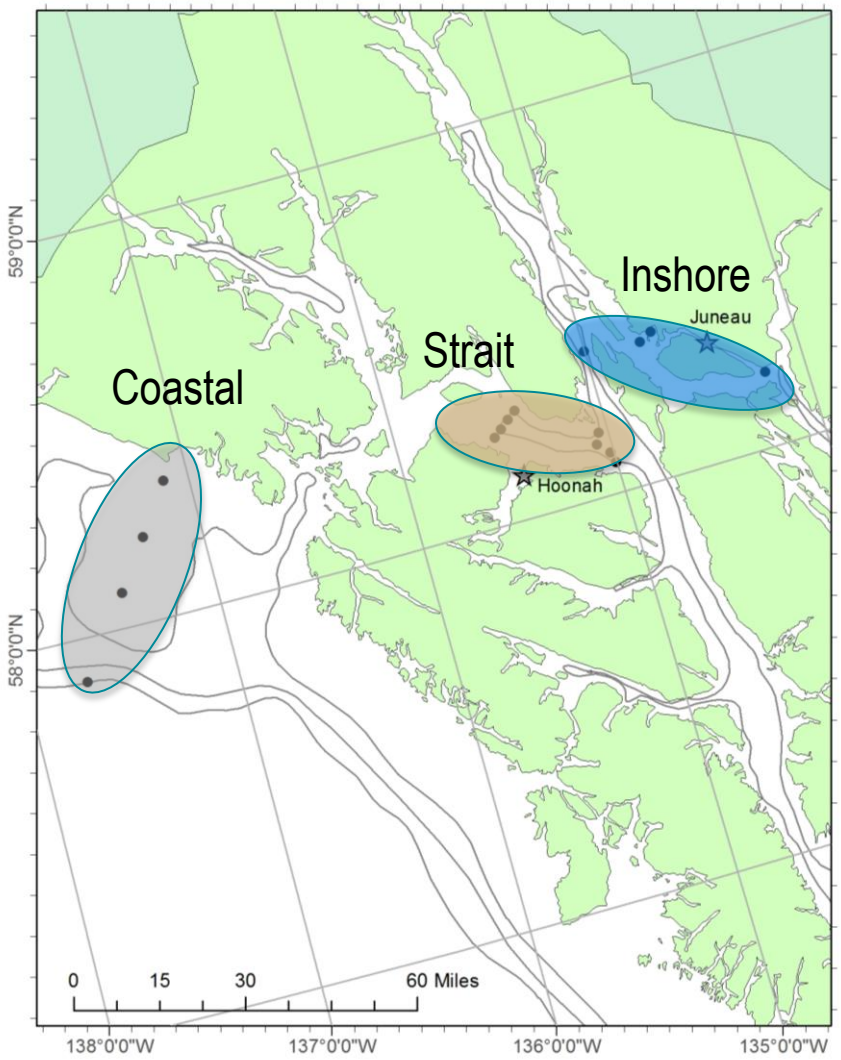
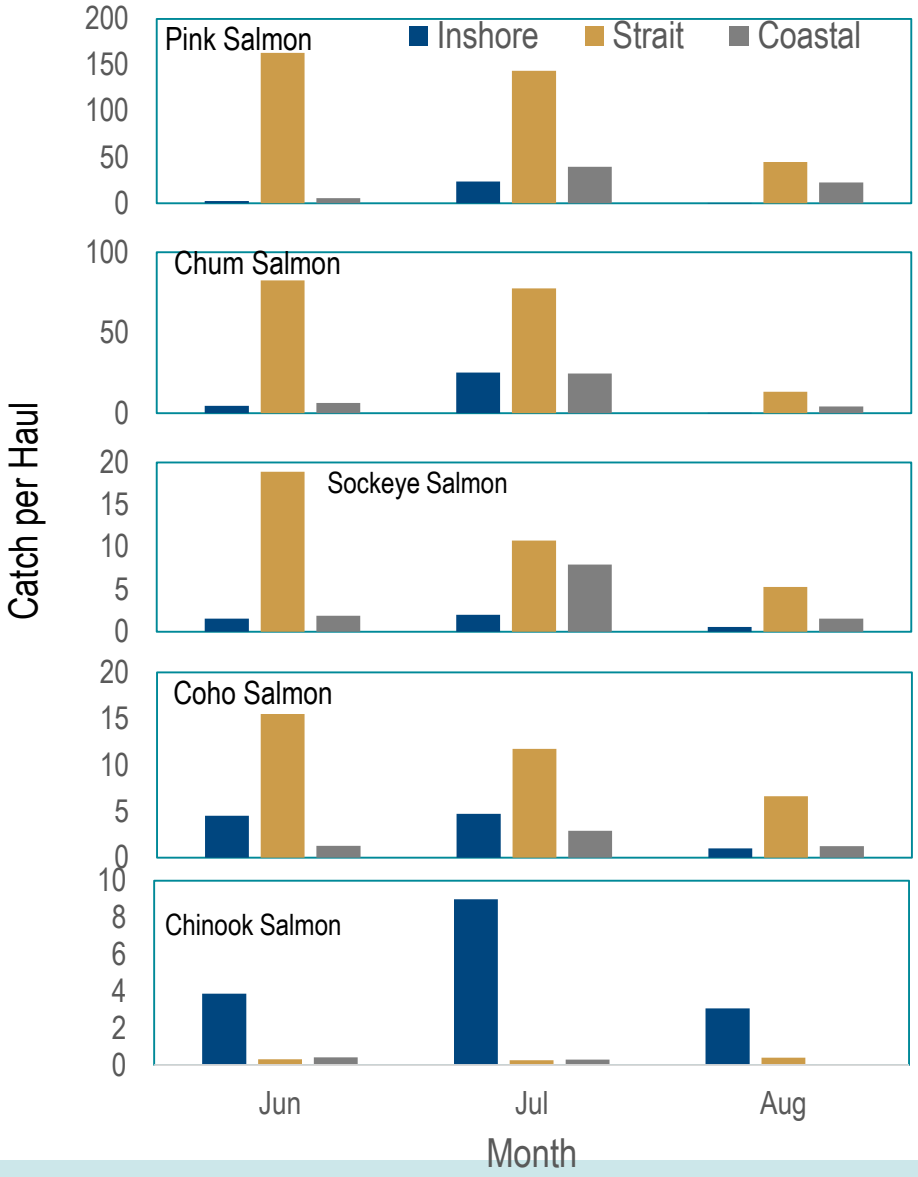
Southeast Alaska Coastal Monitoring Research

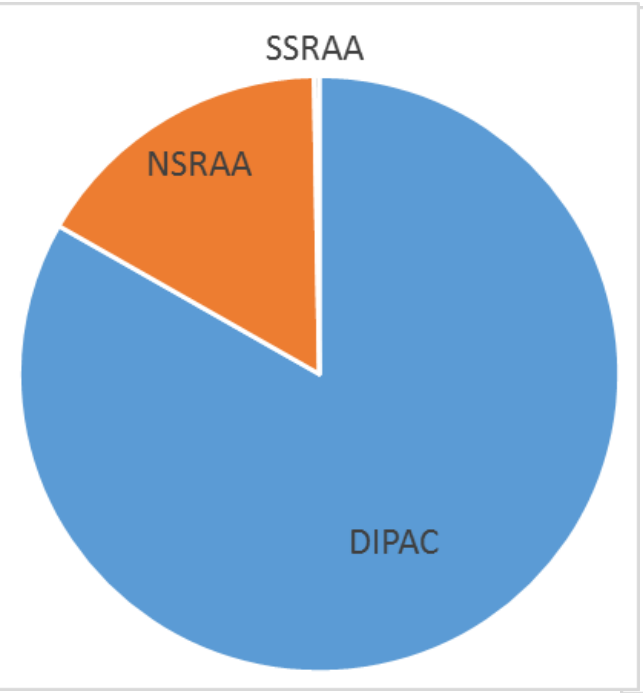


Surface Trawl Catch per Haul for Juvenile Salmon by Month

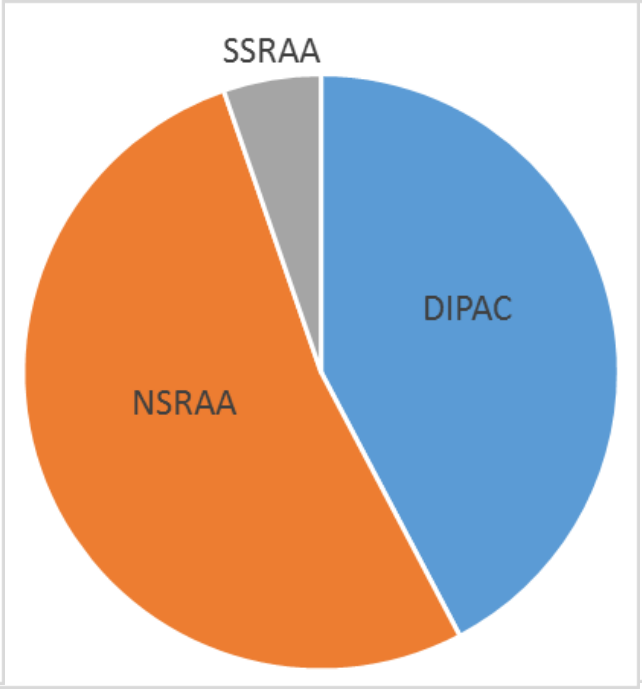


Icy Strait Hatchery Chum Salmon Origin
(thermal mark recoveries 1997-2016)

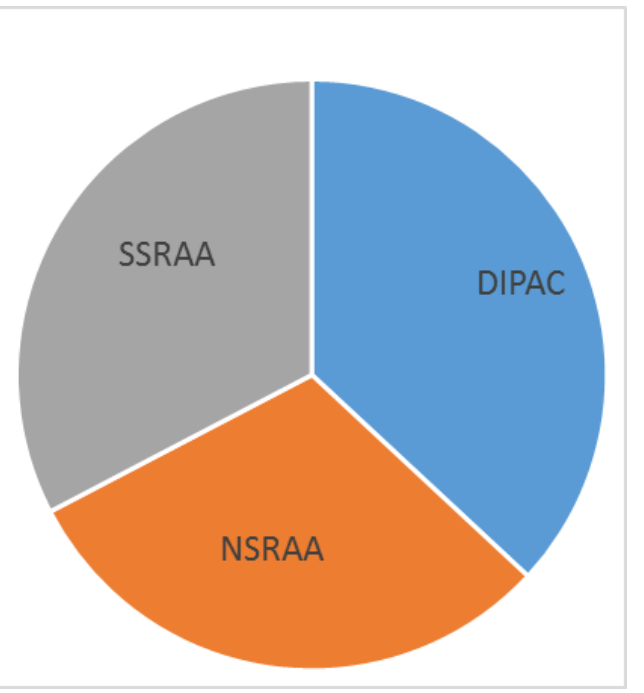
June



July



August



Pink Salmon Harvest Forecast Model Structure

- Juvenile abundance index: Peak surface trawl catch rates (CPUE) in June or July.

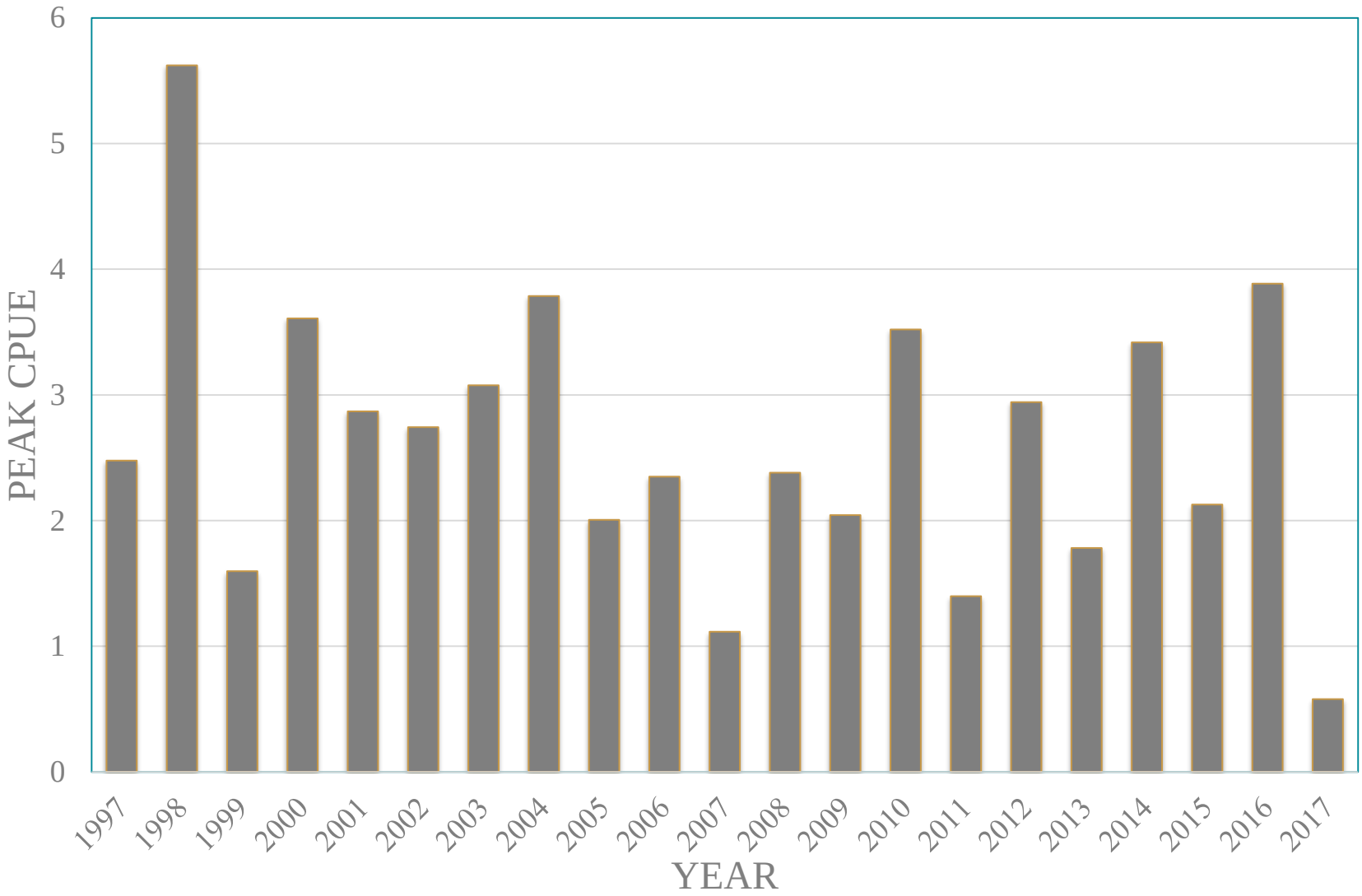
- Ecosystem considerations: Ecosystem variables are included if they significantly reduce the prediction error (MAPE) of the forecast model.

Forecast Model Variables Considered

- Juvenile abundance index (catch per unit effort, CPUE):
  - Peak CPUE (calibrated)
  - Peak CPUE (trawl track distance)

- Ecosystem variables:
  - Juvenile pink salmon condition, size, and seasonality
  - Icy Strait Temperature Index (**ISTI**) and mixed layer depth
  - Pacific Decadal Oscillation (PDO) winter and summer
  - Multivariate ENSO Index (MEI) winter

Peak CPUE (calibrated) of juvenile Pink Salmon

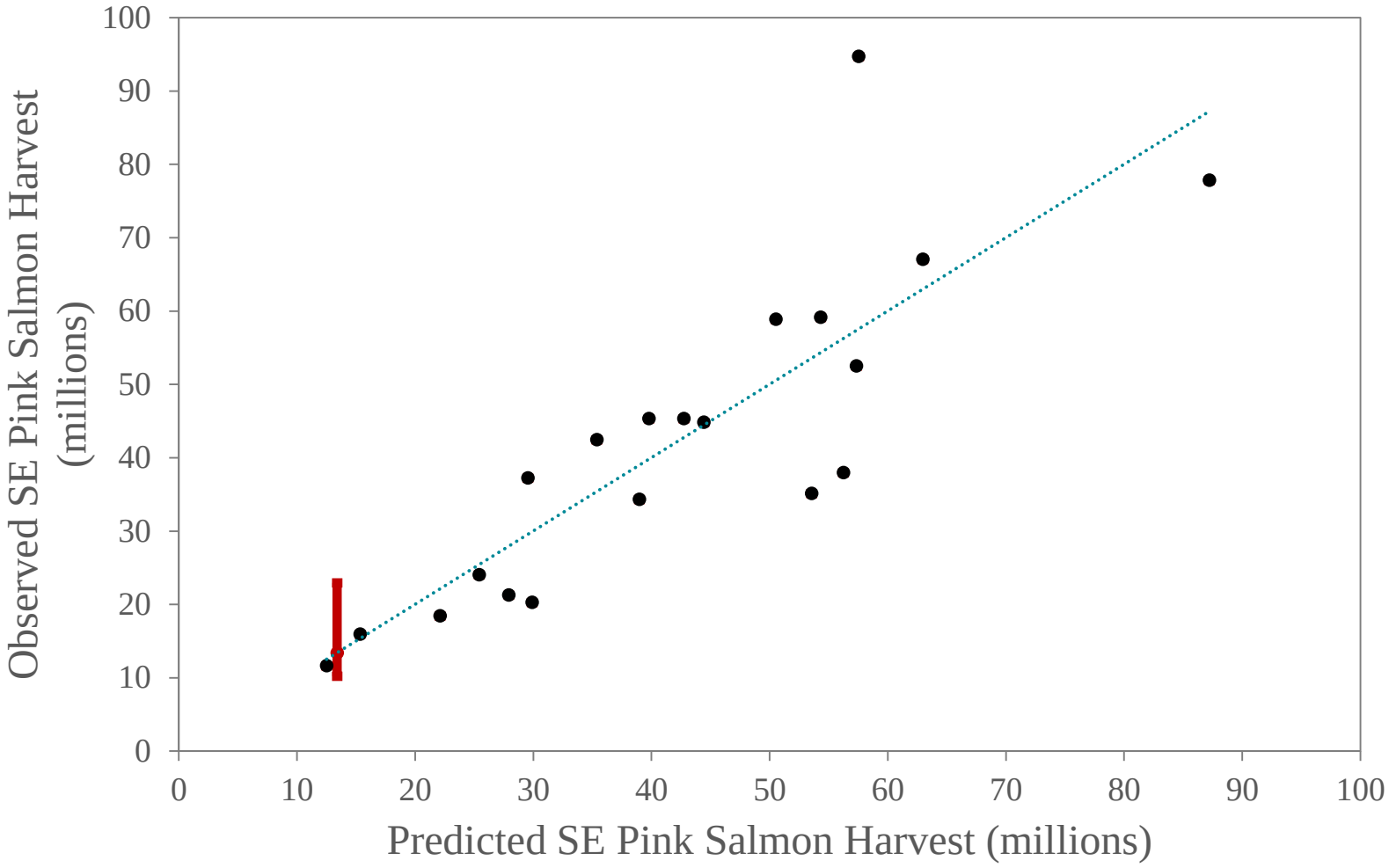


Icy Strait Temperature Index (ISTI)

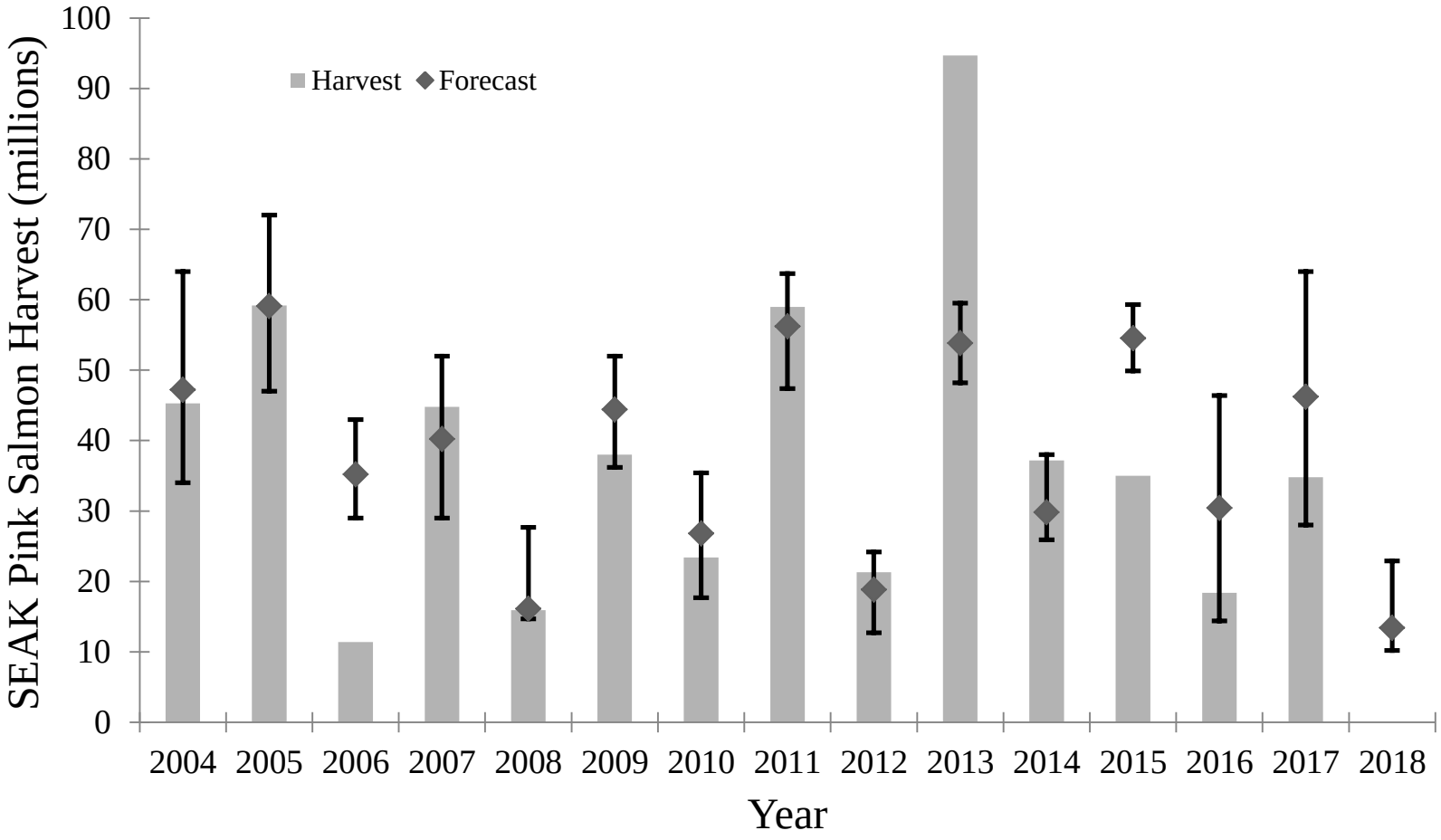
Pink Salmon Harvest Forecast Models

Juvenile Index	Model	Prediction (millions)	LCI (80%)	UCI (80%)	MAPE
Calibrated	CPUE	11			35%
	CPUE + ISTI	13	10	23	22%
Trawl Track Distance	CPUE	20			48%
	CPUE + ISTI	23			37%

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



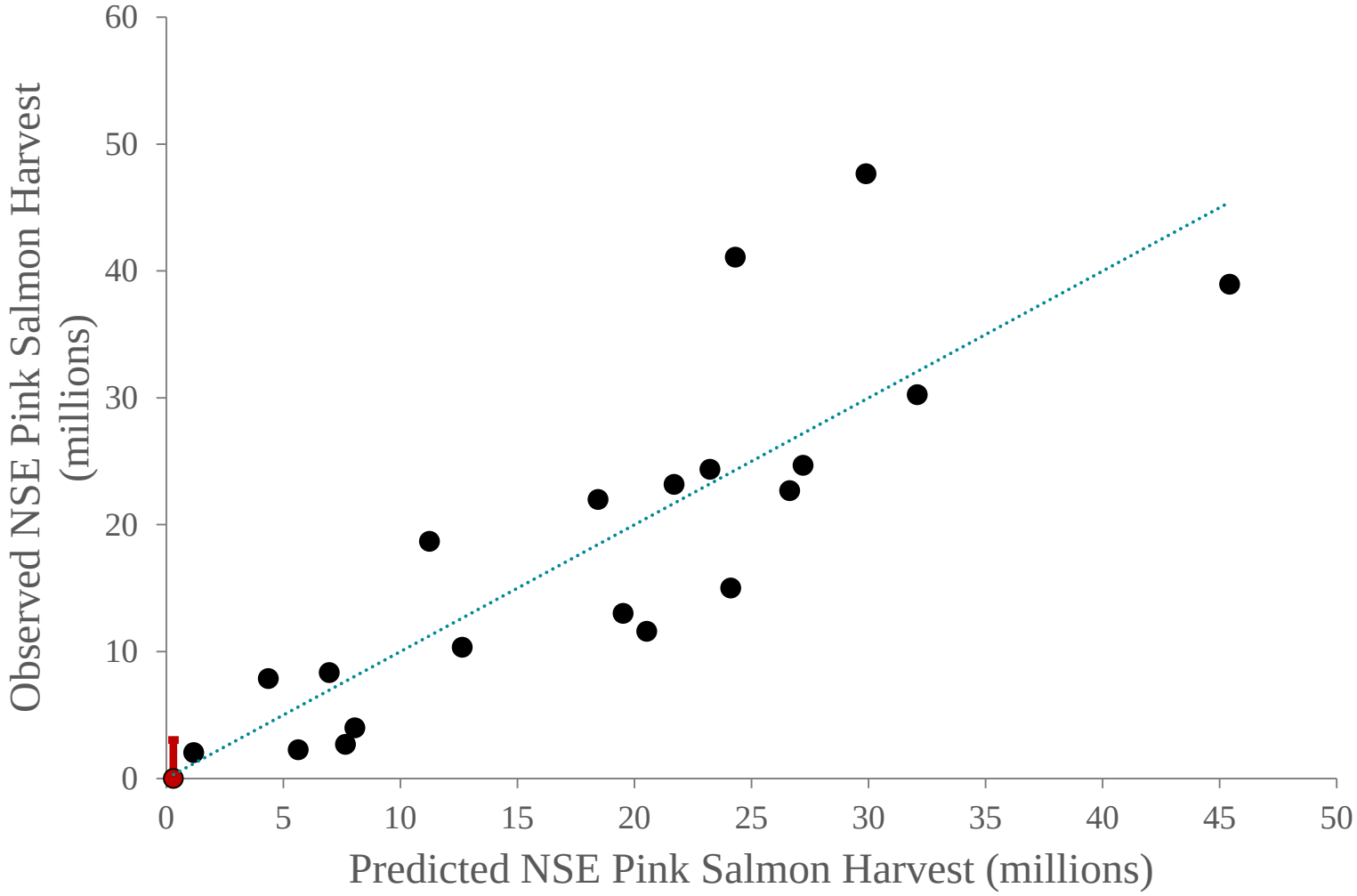
Southeast Alaska Pink Salmon Harvest Forecast Model Performance



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).

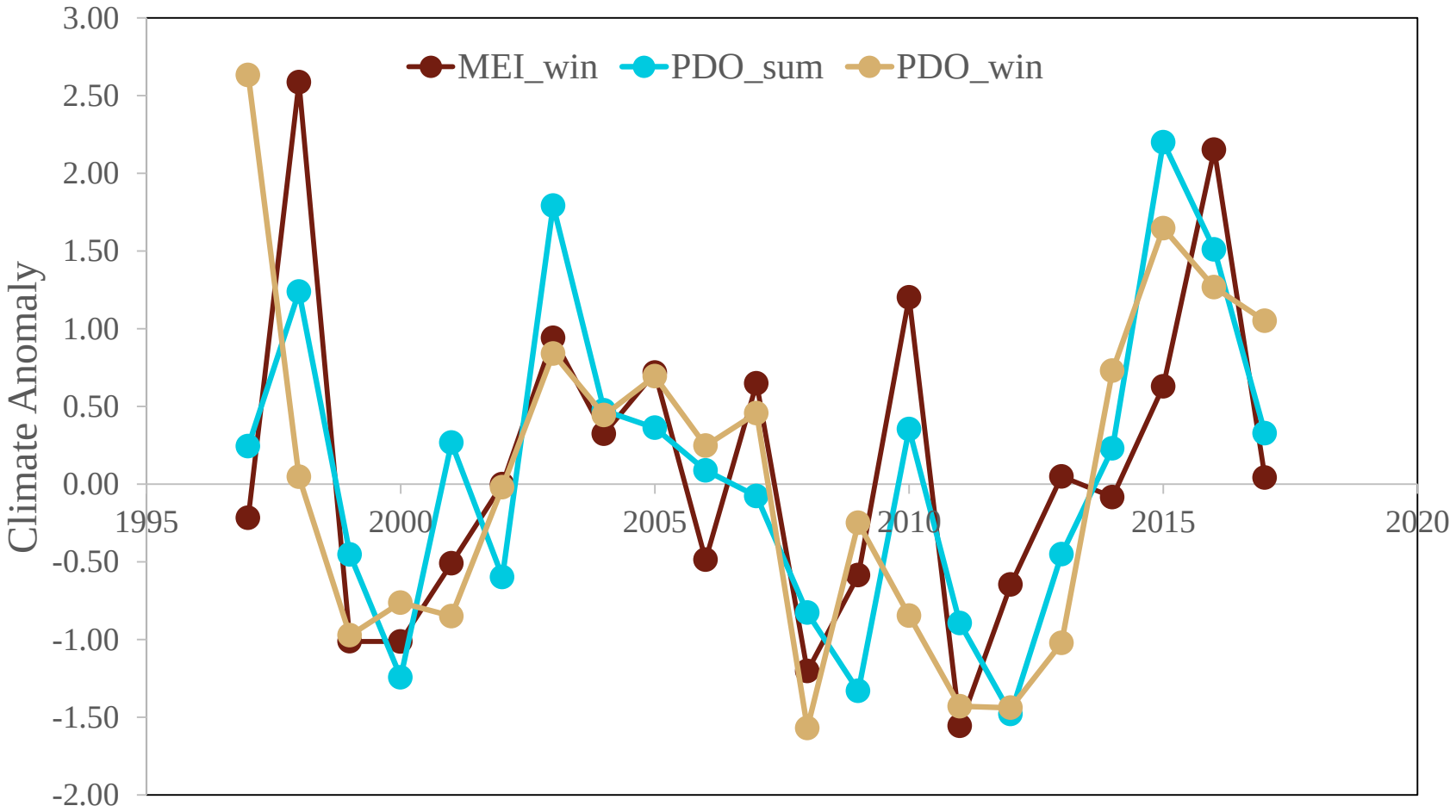
Northern SE Pink Salmon Harvest Model (< 3 million) (Calibrated CPUE)



Forecast Model Considerations

- Although climate indices have returned to a near normal state in 2017, the duration of ecosystem impacts from warm conditions in 2015 and 2016 (warm blob) is unknown

North Pacific Climate Anomalies



2018 SECM Pink Salmon Forecast Summary

- The 2018 Southeast Alaska pink salmon harvest forecast is:
  - **10 – 23 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 have 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.