Motivation
- Modeling anchovy abundance distributions will aid in anticipation of climate change effects on populations
- Models must adequately capture mechanistic drivers that underpin response to environment
- Larval anchovy abundance distributions are difficult to predict under novel environmental conditions
- Fine-scale abundance data may allow more accurate characterization of mechanistic drivers of abundance

Results
- CV RF $r = 0.35$, OOB RF $r = 0.36$
- Depth allowed greatest reduction in node impurities (Fig. 5)
- RF was more likely to predict high anchovy abundance at:
  - Shallow depths
  - High dissolved oxygen
  - High chlorophyll a
  - Extreme salinities
  - High temperatures
  - Offshore and extreme inshore locations

Conclusions and Future Directions
- Similar performance of CV and OOB RFs suggest negligible influence of autocorrelation on model performance
- Partial effect plots (Fig. 6) support hypothesized effects of most important predictors (e.g., depth, oxygen, chlorophyll)
- Unexpected effect of salinity
- Low predictive performance may indicate that other ecological factors (e.g., currents, predators) are also important
- Time lags may obscure relationships between larval anchovy abundance and environmental conditions
- Zero inflation may be addressed using a two-step model
- Other modeling frameworks (e.g., SDMTMV) may be useful

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Reference