



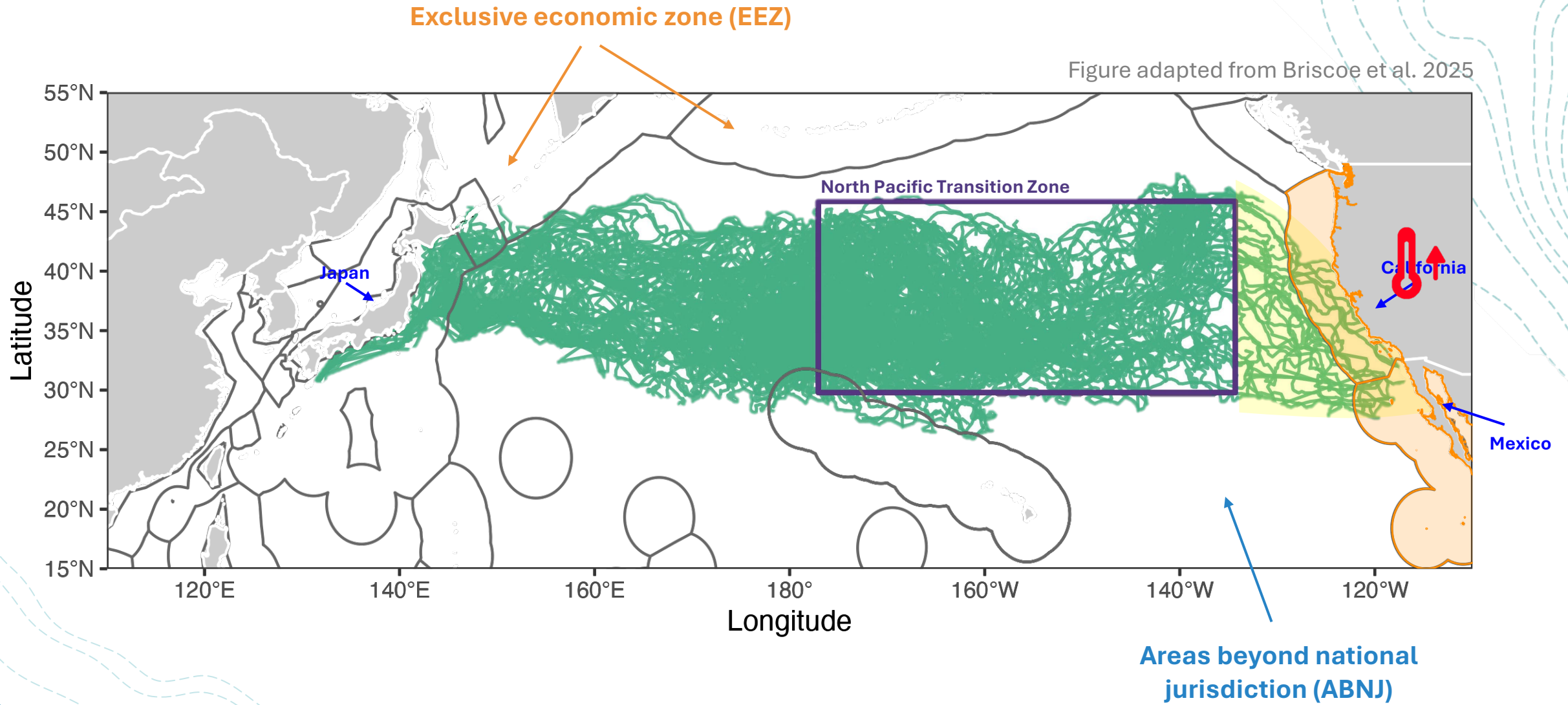
# Habitat suitability and transboundary considerations of loggerhead sea turtles in the Eastern North Pacific

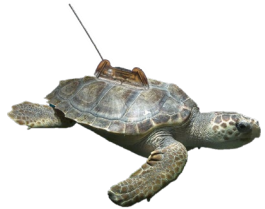
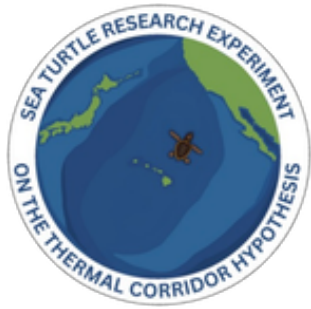
Bianca S. Santos

Stanford University, USA



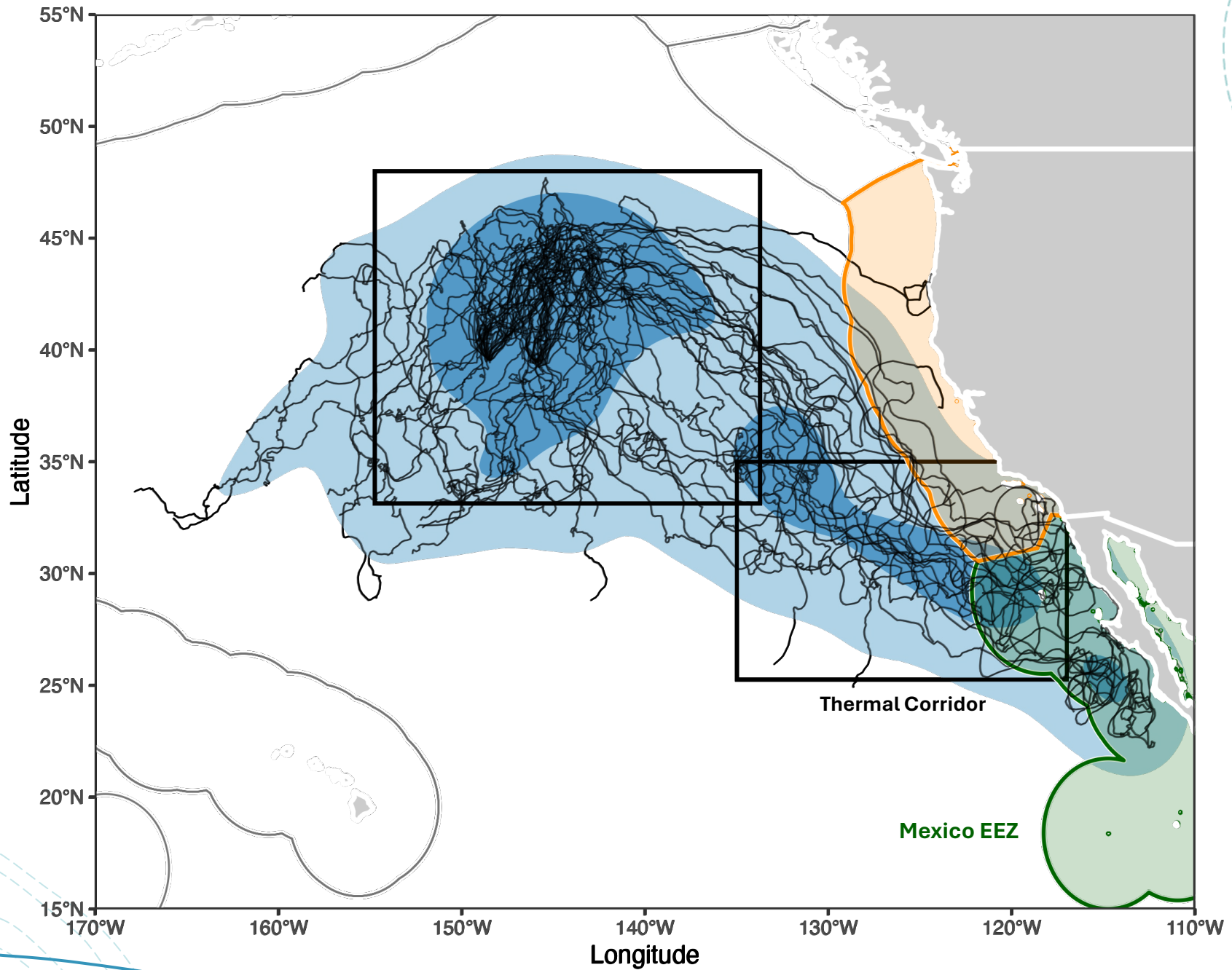
Figure adapted from Briscoe et al. 2025



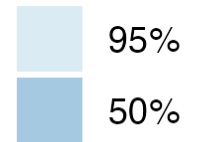


Cohort 1 (2023-24)  
N=25

Cohort 2 (2024-25)  
N=28

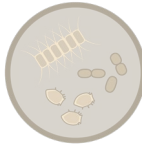


% Utilization

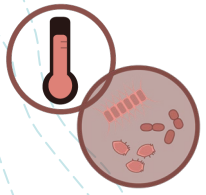




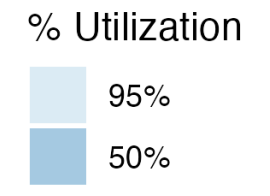
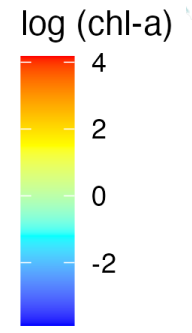
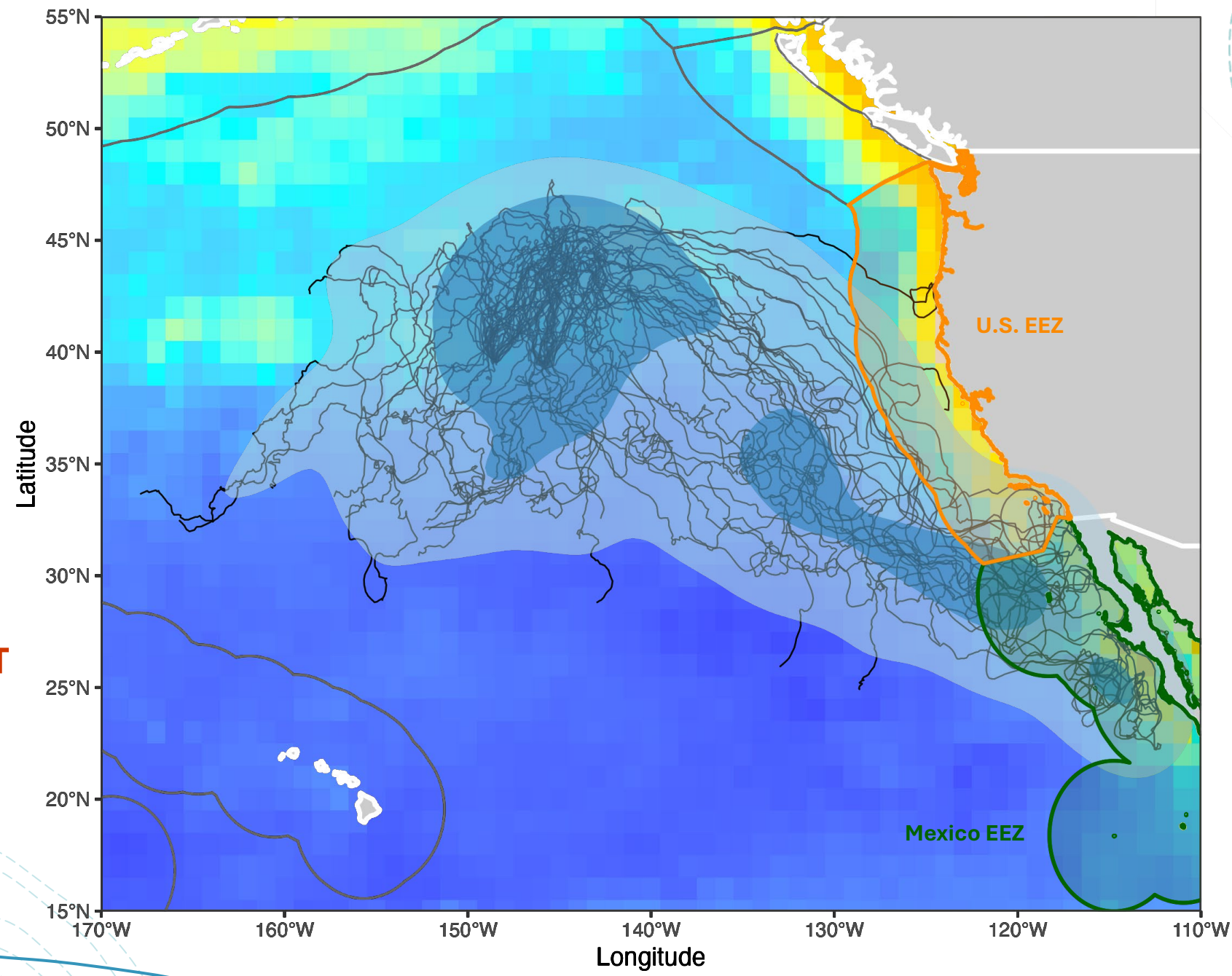
Sea surface temperature (SST)



Chlorophyll-a (chl-a)



Both SST & chl-a



# OBJECTIVES

Assess juvenile loggerhead suitable habitat across jurisdictional boundaries in the Eastern North Pacific and highlight governance considerations

1. Characterize juvenile loggerhead habitat preferences in the ENP



Cohort 1 (2023-24) & Cohort 2 (2024-25)  
LoggerheadSTRETCH data

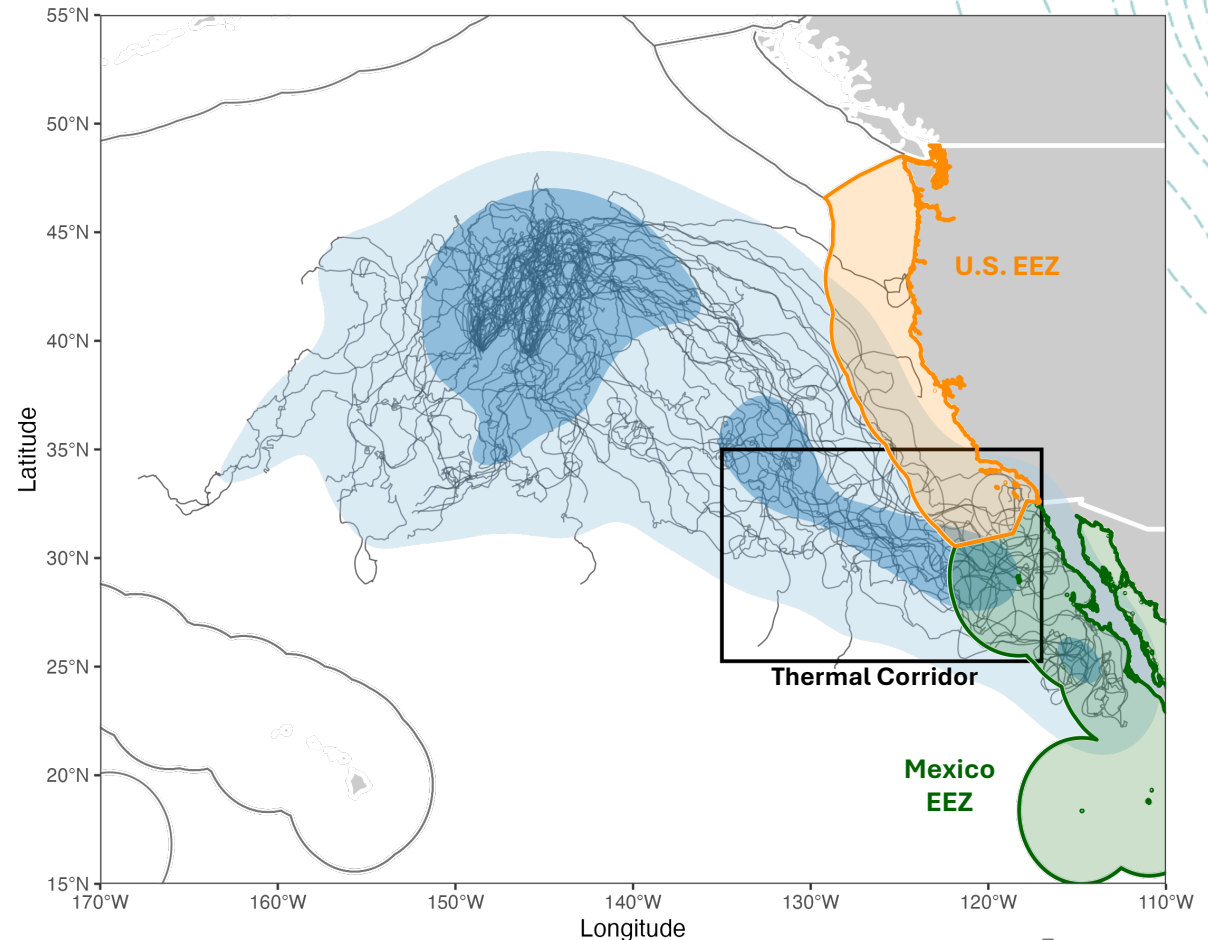


Environmental variables: SST & chl-a

2. Quantify potential habitat within U.S. and Mexico EEZs



3. Assess habitat shifts under changing climate & highlight governance implications



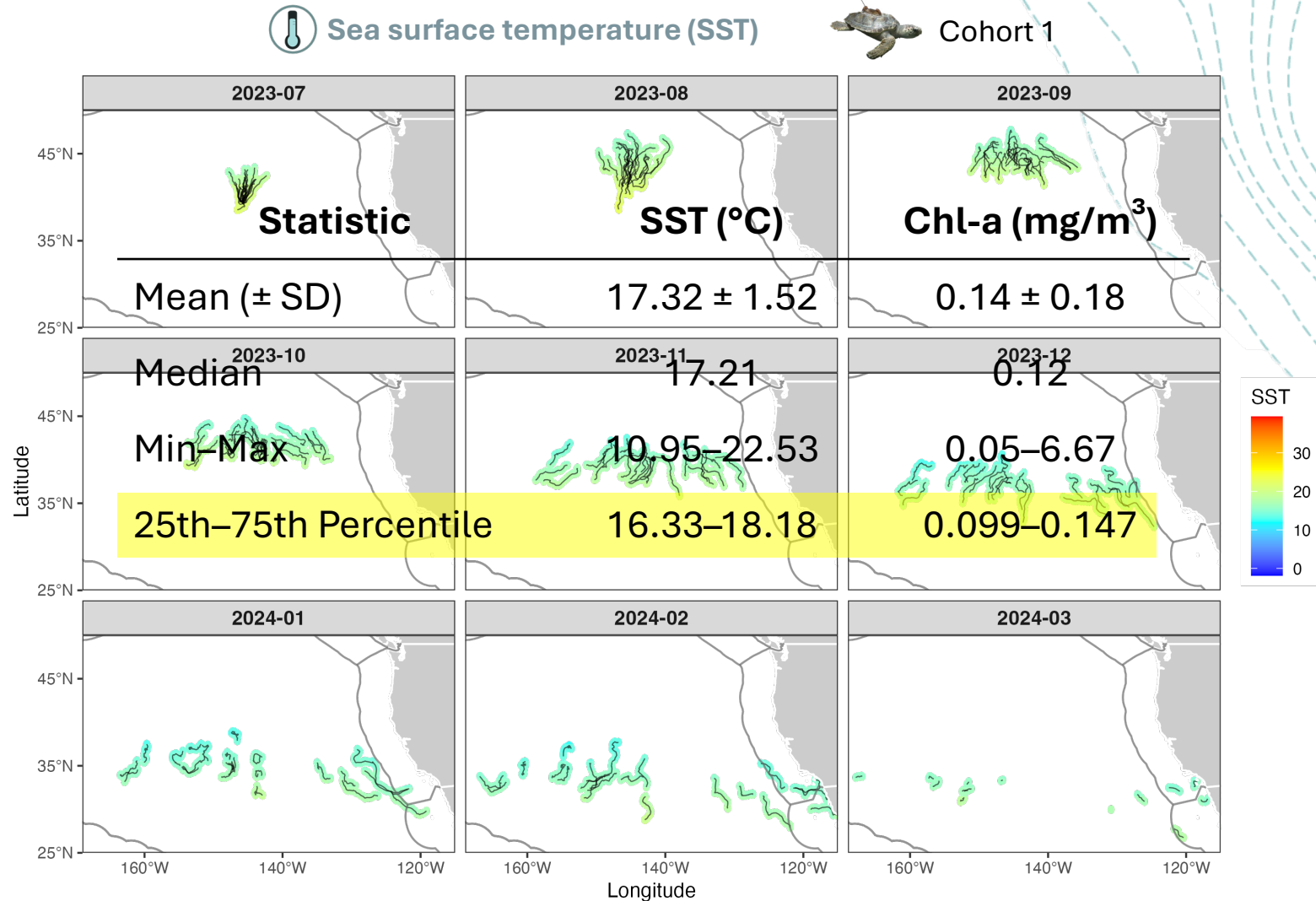
# 1. Characterizing juvenile loggerhead habitat from environmental preferences

## Methods

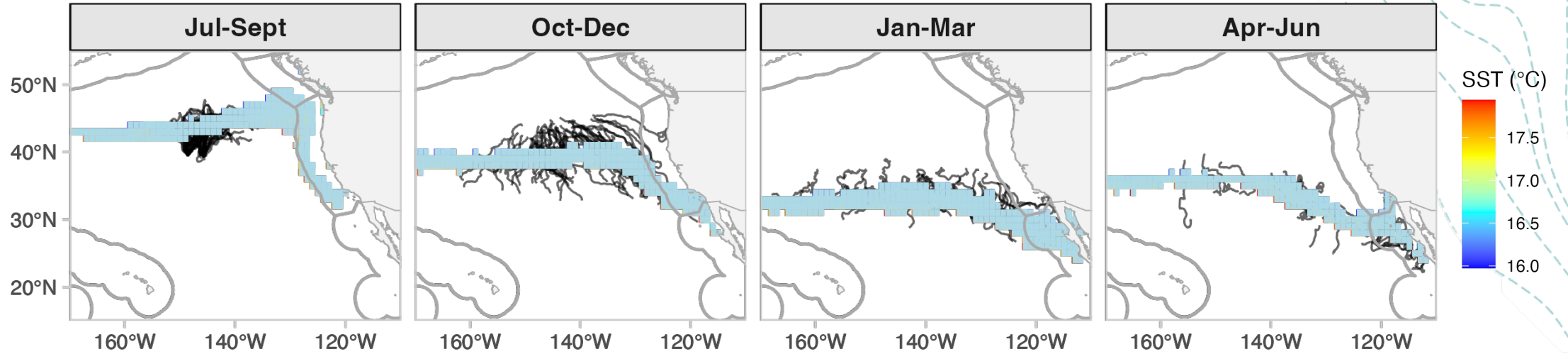
- Spatially match monthly SST & chl-a data (1° resolution) to turtle tracks



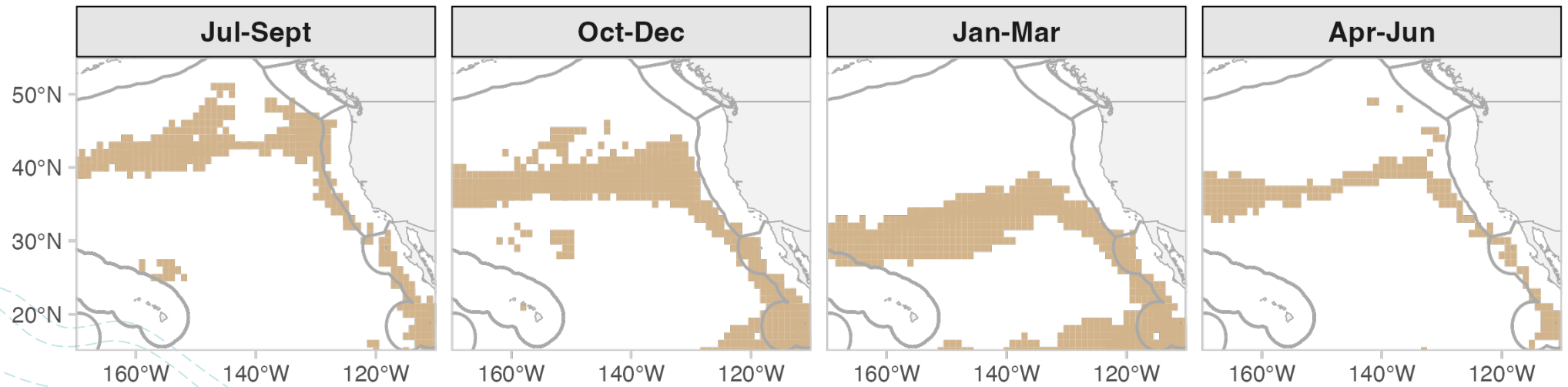
- Calculate summary statistics
  - Interquartile range (25-75<sup>th</sup> percentile) = “**core environmental envelope of potential suitable habitat**”



 **Sea surface temperature (SST): 16.33–18.1°C**



 **Chlorophyll-a (chl-a): 0.099–0.147 mg/m<sup>3</sup>**



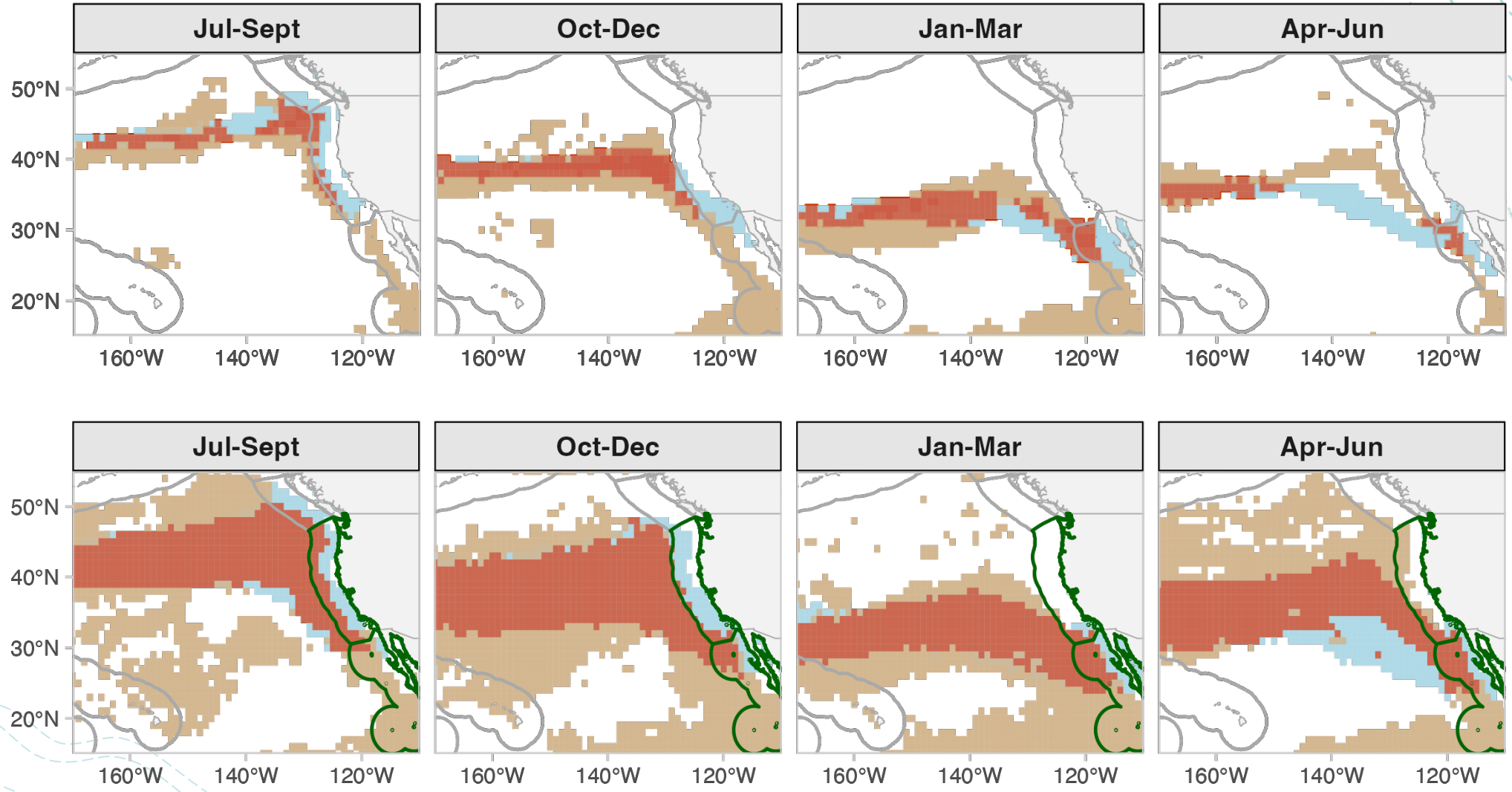
2023-  
2025

2014-  
2025

SST

Chl-a

Both SST & chl-a

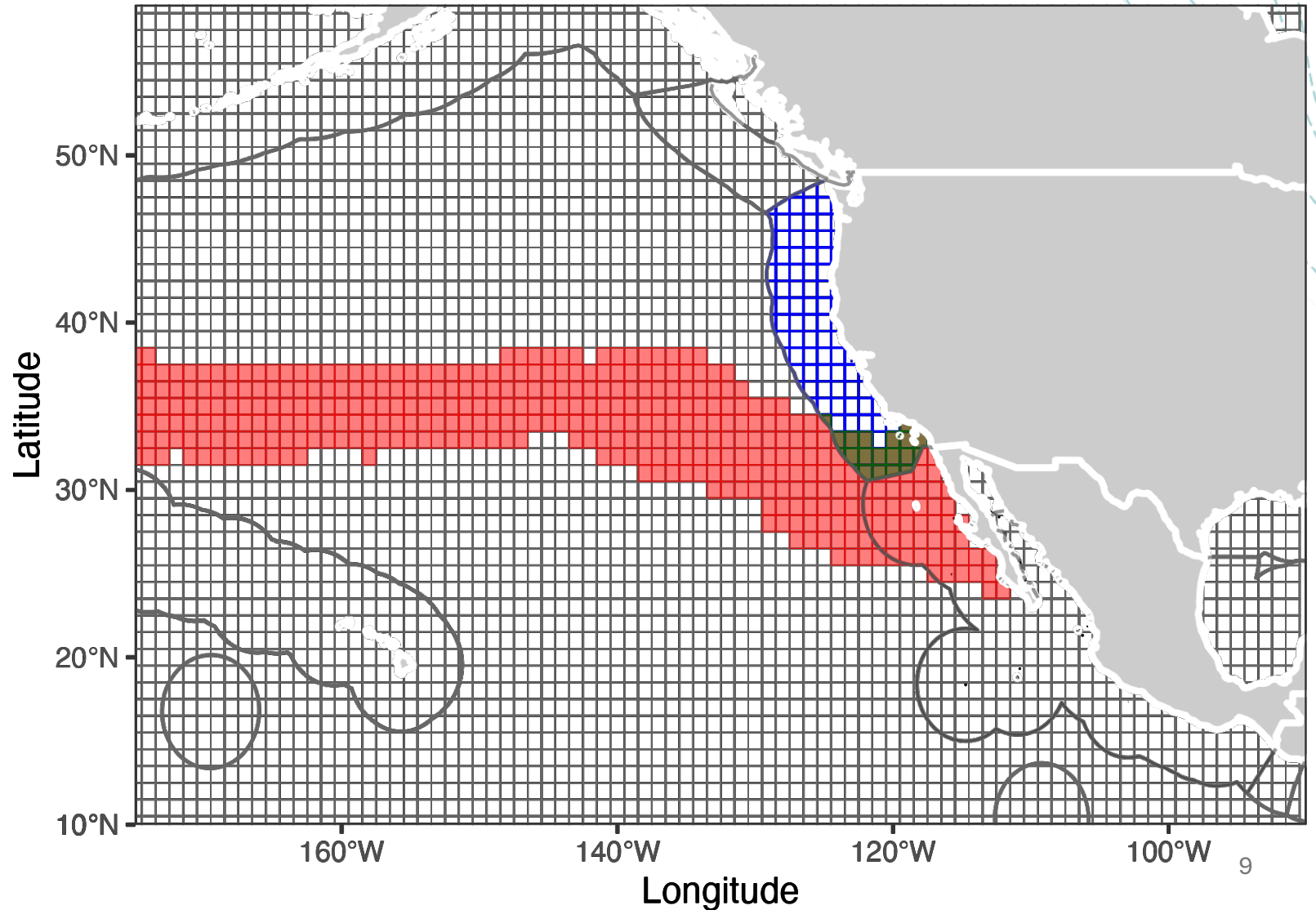


## 2. Calculate proportion of U.S. and Mexico EEZ with potential suitable habitat

“Size” of EEZ (U.S.)

Grid cells within preferred habitat range

Habitat range within EEZ

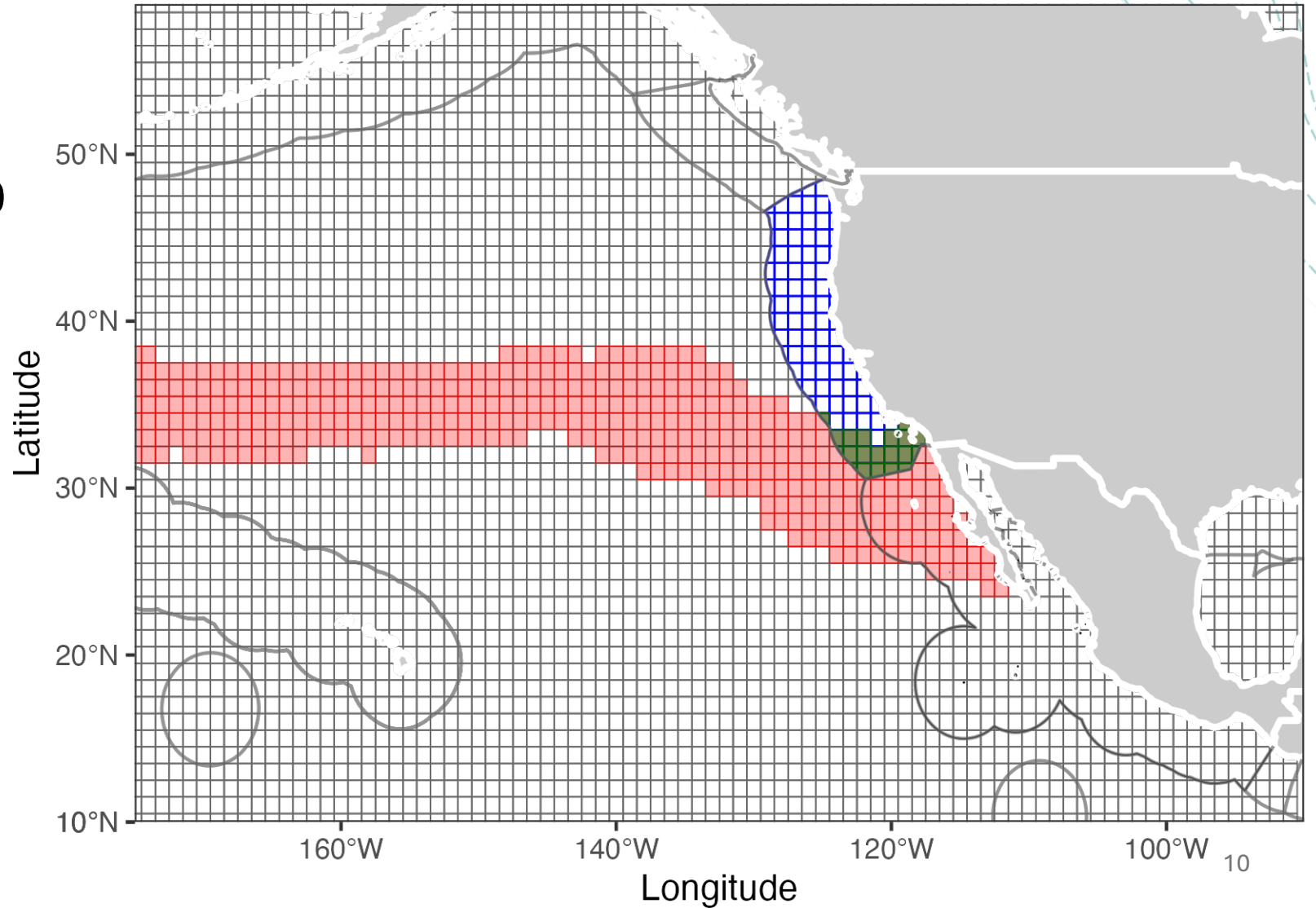


## 2. Calculate proportion of U.S. and Mexico EEZ with potential suitable habitat

Habitat range  
within EEZ

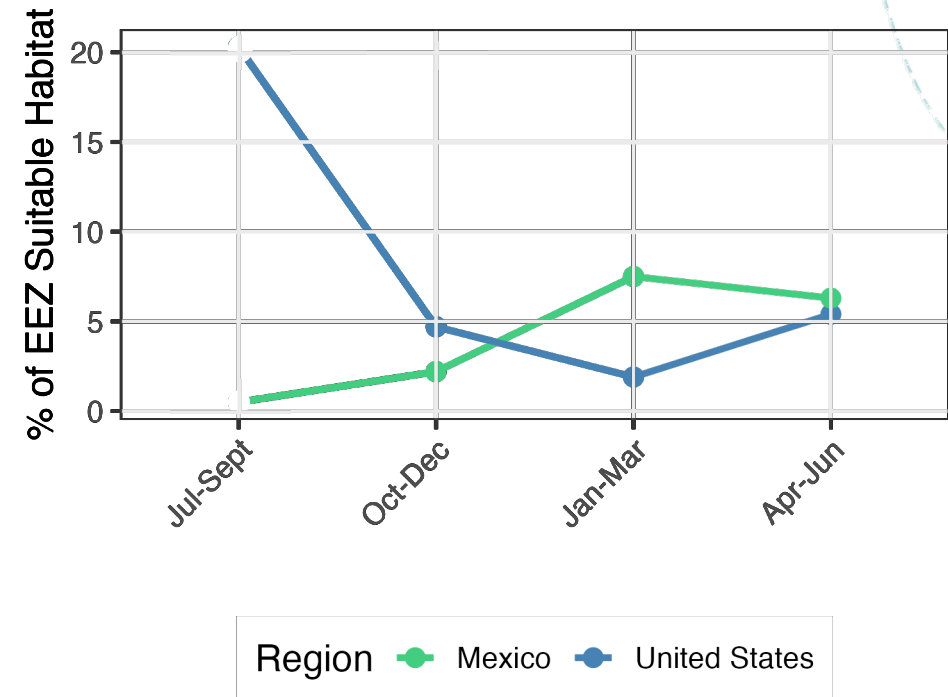
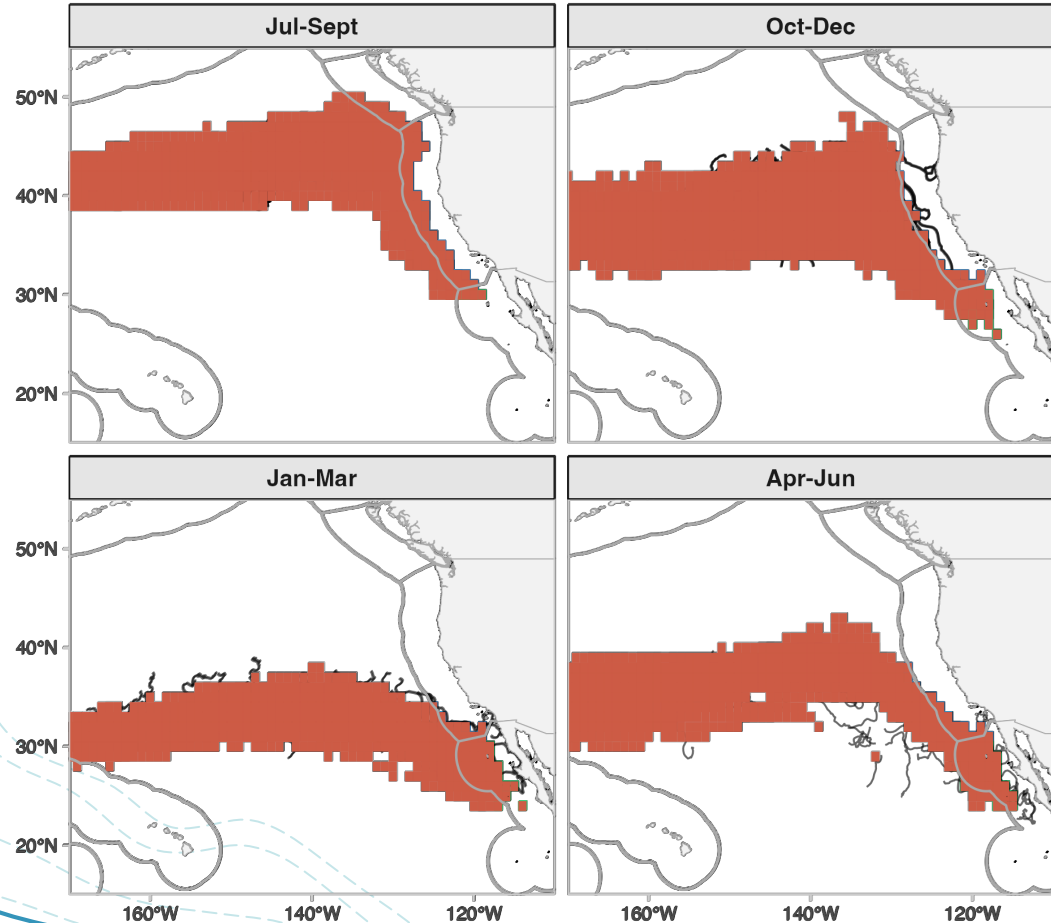
$$\frac{\text{Habitat range within EEZ}}{\text{"Size" of EEZ (U.S.)}} \times 100\%$$

= % of (U.S.) EEZ with suitable habitat



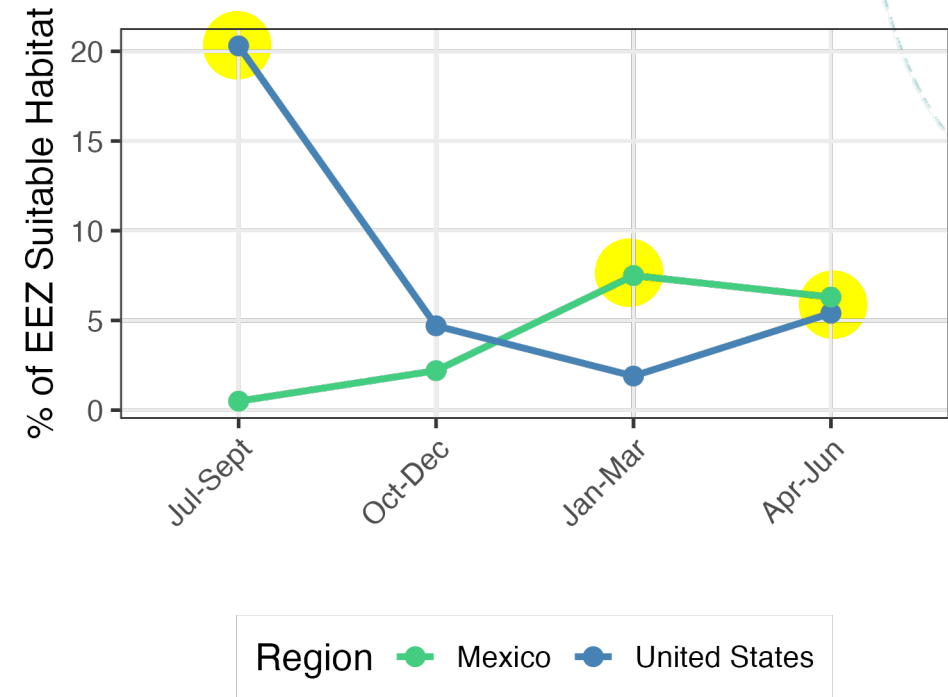
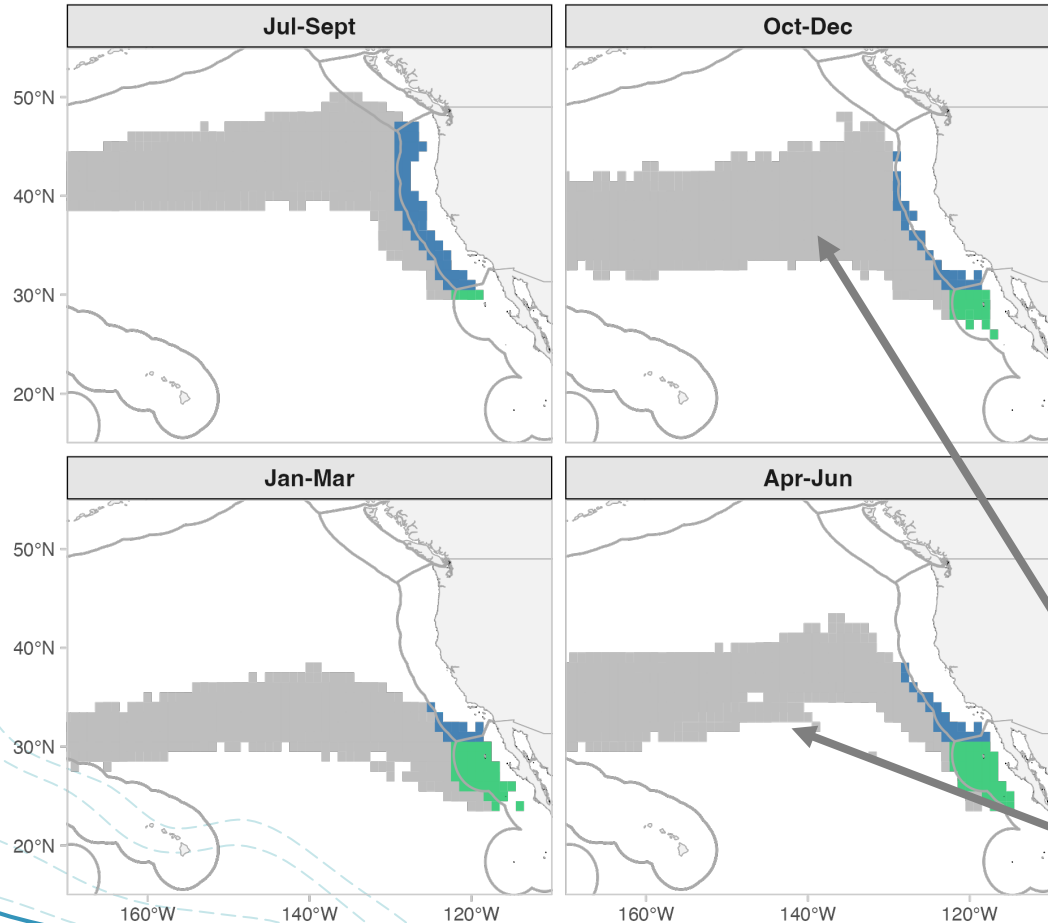
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 Both SST & chl-a



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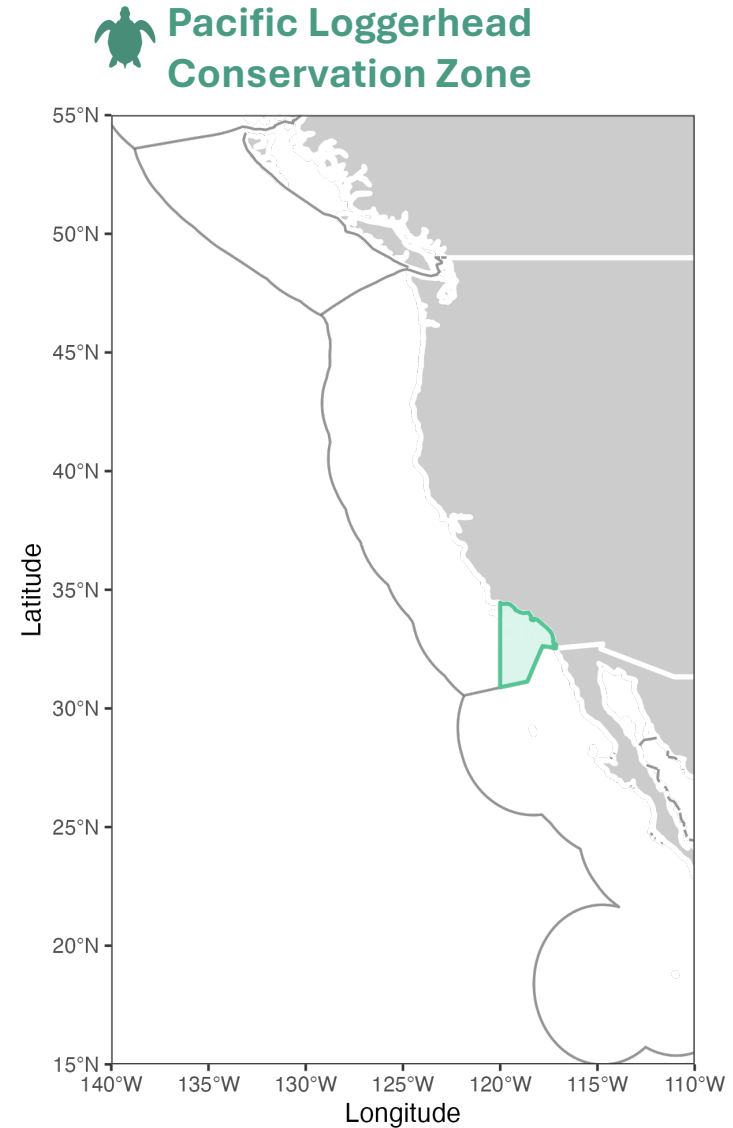
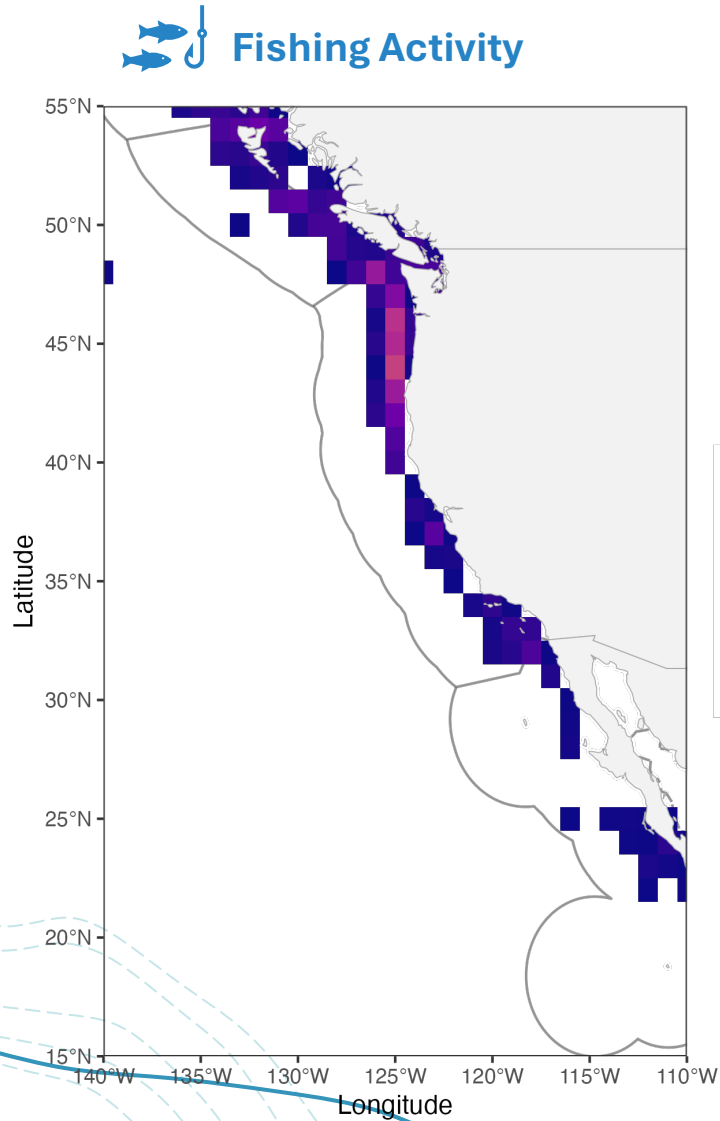
 Both SST & chl-a



Areas beyond national jurisdictions (ABNJ)

How does this compare to habitat suitability in future climate scenarios?

### 3. Management considerations with loggerhead suitable habitat across jurisdictions



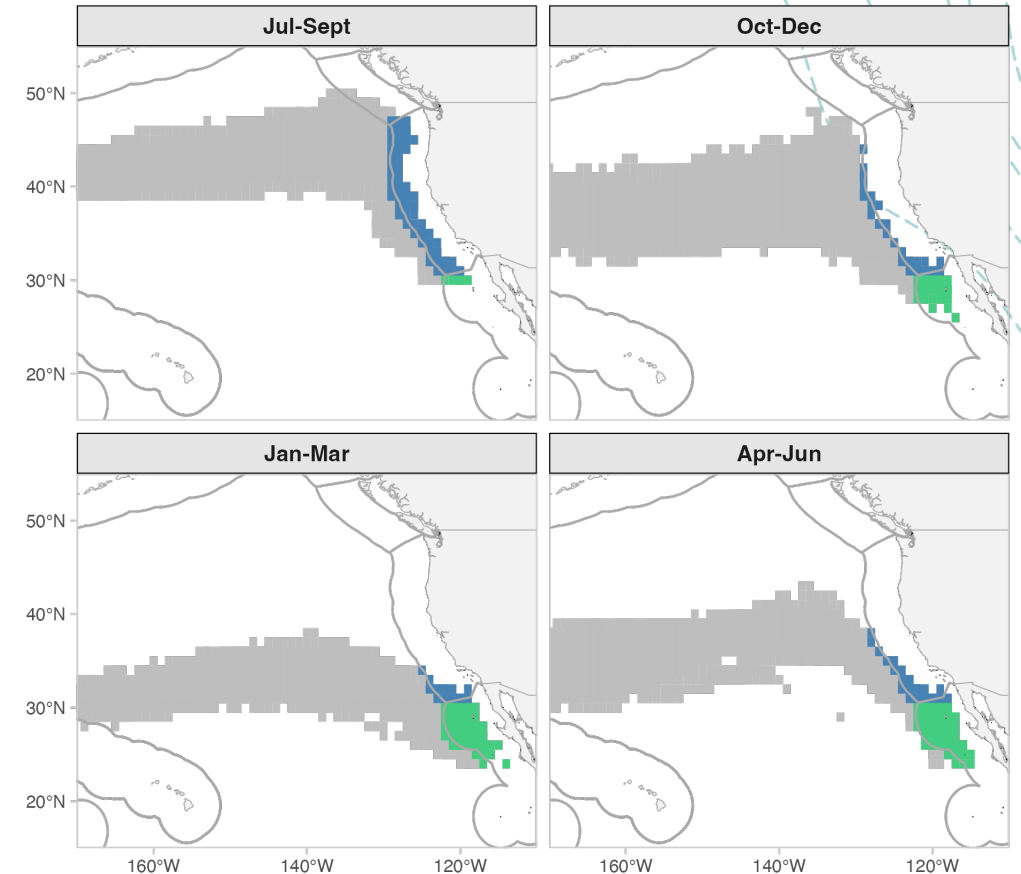
# Summary & Next Steps

## Summary

- Environmental envelope for loggerheads in ENP
- Quantified % of suitable habitat within EEZs
  - Highest in the U.S. from July–Sept, and in Mexico from Jan–June
  - Notable proportion of suitable habitat in ABNJ

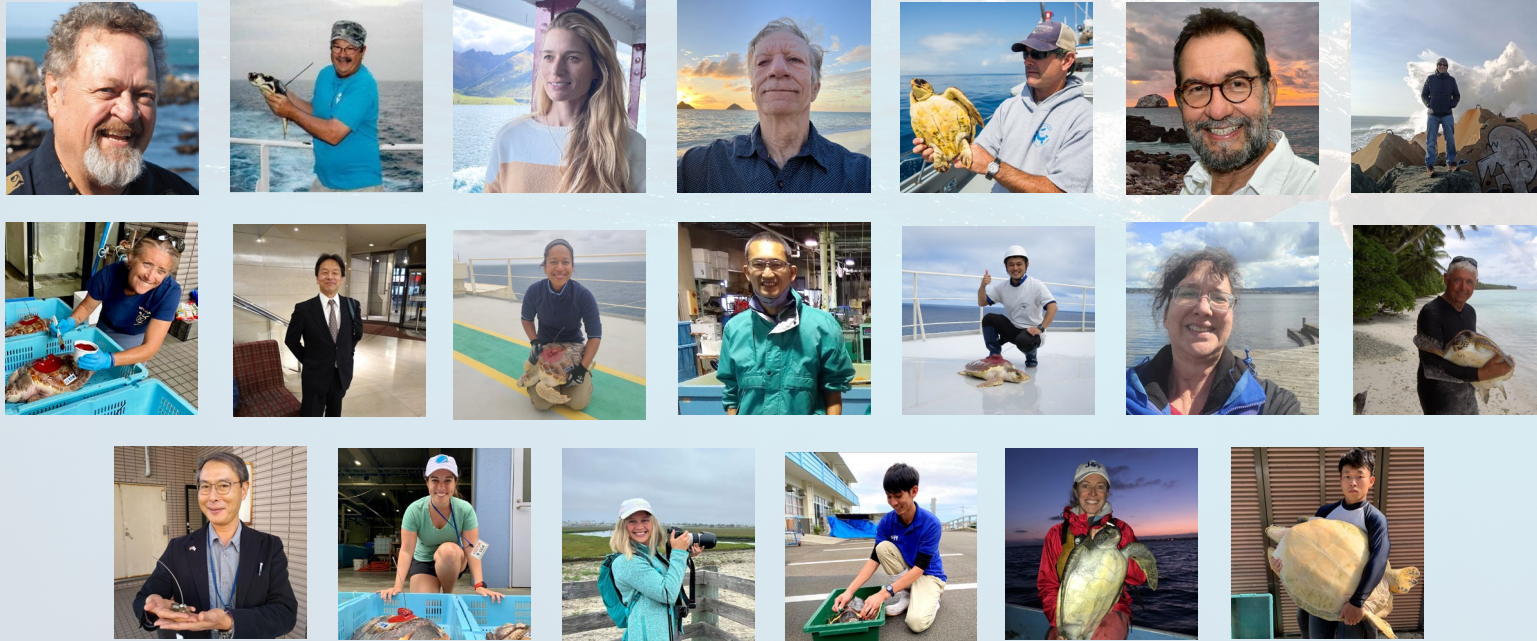
## Next steps/future work:

- Climate-driven habitat shifts
- Finer-scale analyses within EEZs & ecoregions
- Integrate human-use and governance data



# Thank you!

## STRETCH Team



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