



# Diel Patterns of Bocaccio Rockfish Communication

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## Introduction

- Fish communication patterns are crucial to understanding how fish interact in different habitats and during critical periods like mating season
- Acoustic monitoring helpful for observing fish behavior, locating populations
- Consistency in calling patterns allow for more predictable localization – critical for conservation efforts
- Bocaccio rockfish (*Sebastes paucispinis*) receive much attention because they are a critically endangered commercial fish
- Bocaccio habitats span the Pacific coast of the US from the Alaskan Peninsula to Baja, California, and produce low-frequency pulsed mating calls<sup>1</sup>

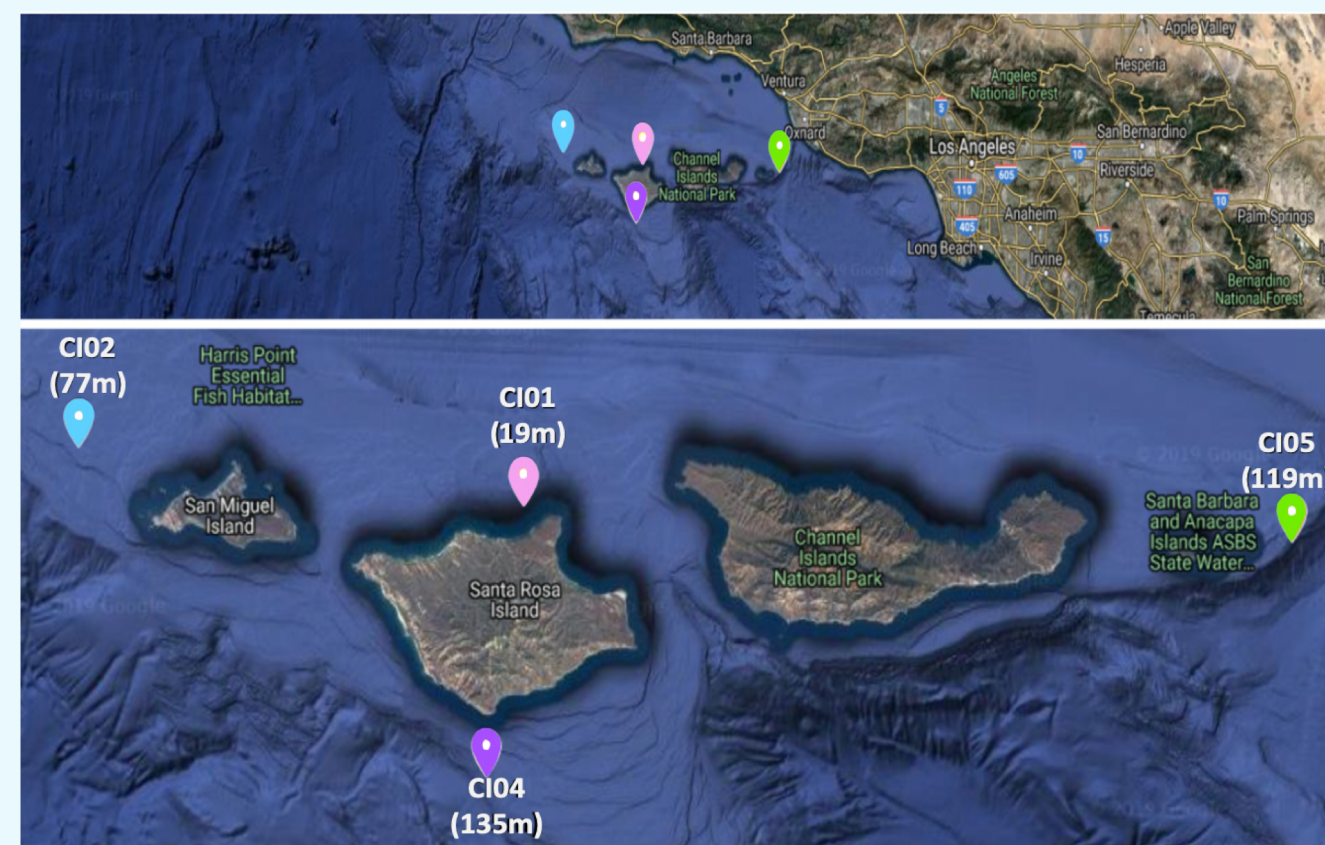
### Research Questions:

- What are the diel patterns of bocaccio rockfish mating calls in the Channel Islands National Marine Sanctuary (CINMS)?
- Do call patterns align with bocaccio mating season (Sept-Mar)<sup>2,3</sup>?
- How do bocaccio call patterns vary between hydrophone sites in the CINMS?

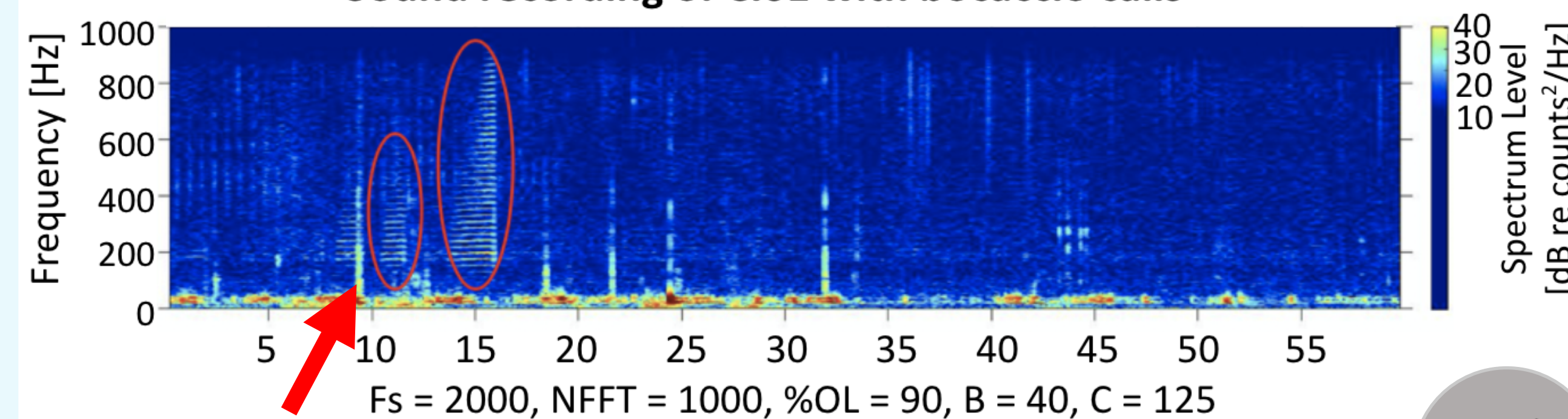
## Methods

- Bocaccio calls recorded using four autonomous hydrophones located at depths between 20 and 150 m
- Calls extracted using automated matched filter detector
- Manually screened automatically detected calls, false detections rejected

Hydrophone locations

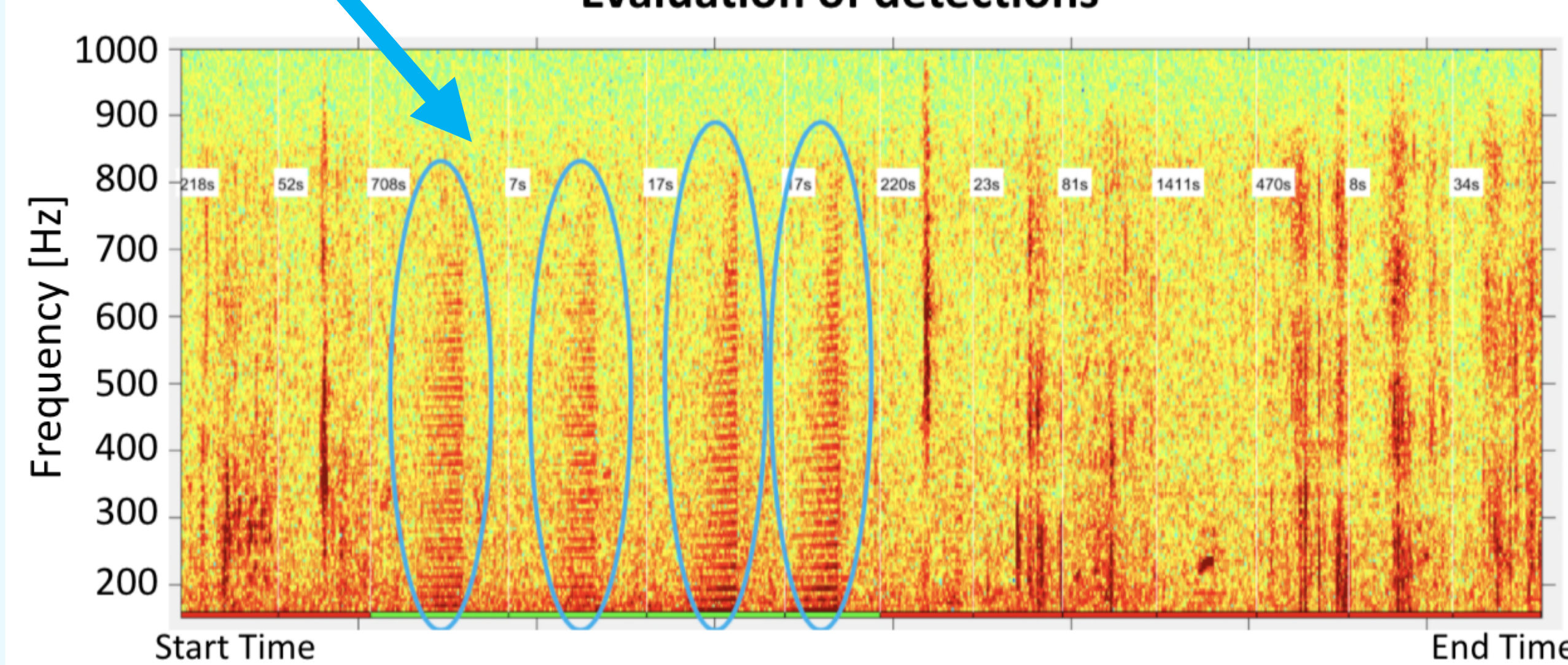


Sound recording of CI01 with bocaccio calls

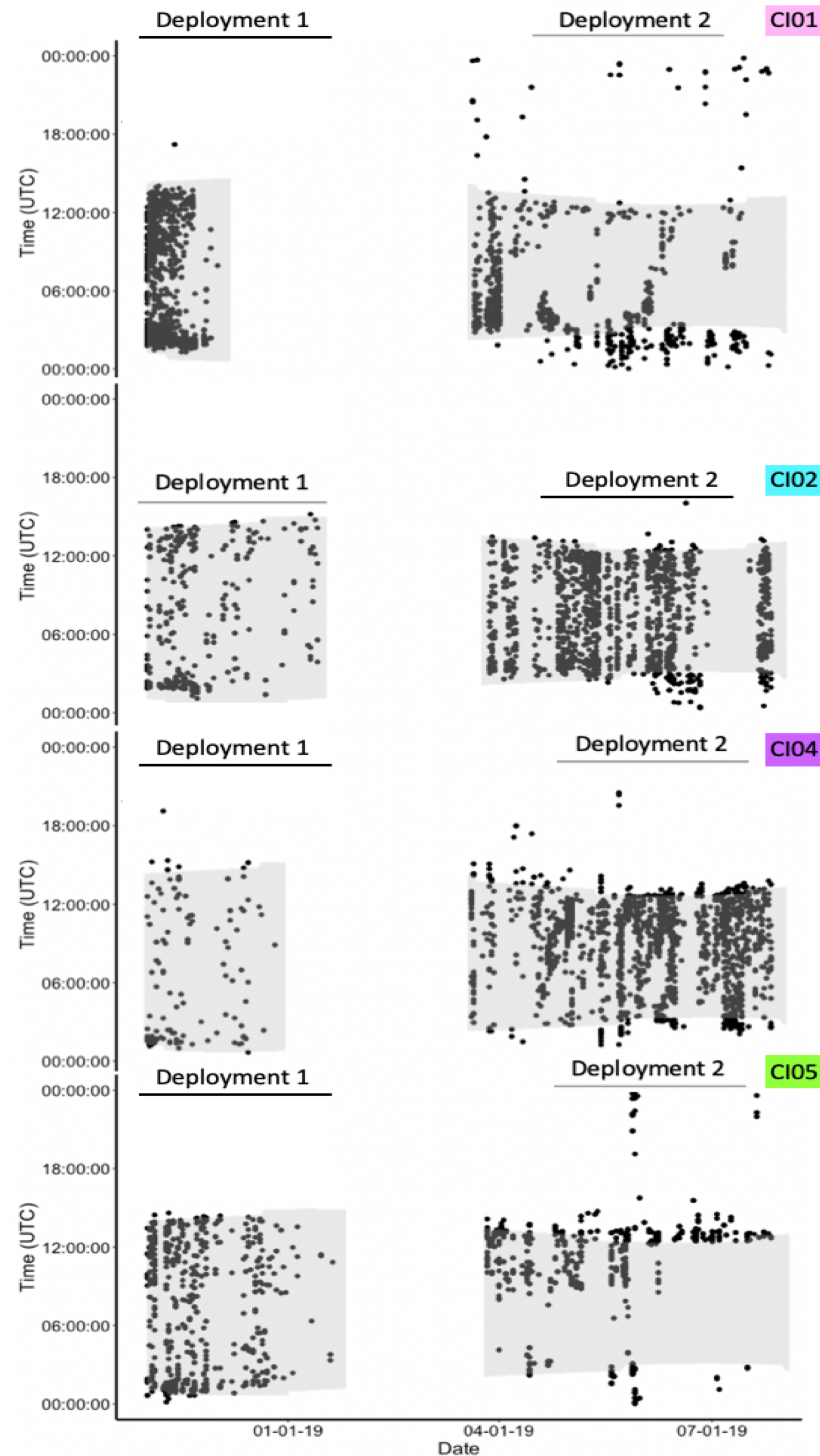


True detections

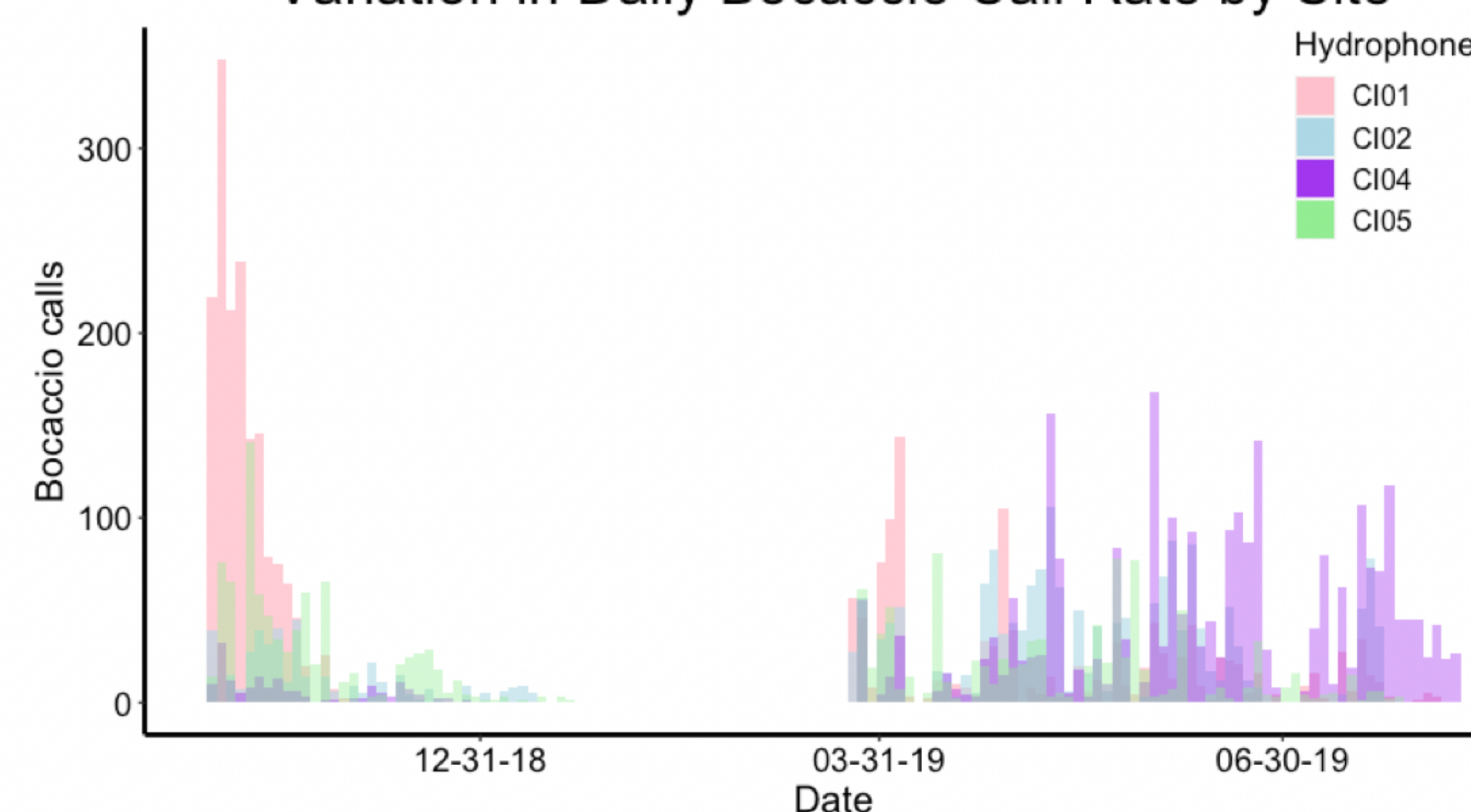
Evaluation of detections



## Diel Variation in Calling Activity



Variation in Daily Bocaccio Call Rate by Site



## Results

- Calls generally occur between 5pm and 5am and are most frequent during the crepuscular periods (dawn/dusk) of each day
- Many more calls in Spring than Fall for CI02 and CI04, but more calls in Fall than Spring for CI01 and CI05
- First deployment of CI01 has significantly more calls than first deployments of CI02, CI04, CI05, despite being constrained to just one month of available data
- Call rates of the first deployment of all four hydrophones show the same decreasing pattern as Fall progresses
- Second deployment call rates are much more similar, though calls in CI02 and CI04 occur throughout the night whereas calls in CI01 and CI05 seem to be more closely associated with dawn/dusk

## Conclusion

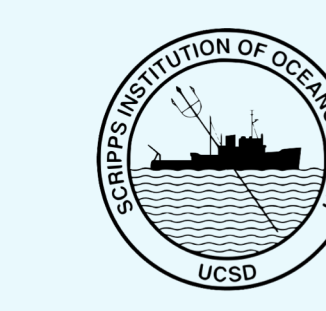
- Bocaccios communicate almost exclusively at night
- Calls do not line up as expected with bocaccio mating season
- Some site variability - possibly a result of hydrophone depth and/or the effect of anthropogenic sound from ships passing through the channel

## Outlook

- Future research could focus on a more detailed timeline of bocaccio communication, including the winter and summer months.
- Consider the effects of varying nighttime lengths on bocaccio communication
- Expand beyond bocaccios to other rockfishes and/or fish in general

## Acknowledgements

I would like to thank to the National Science Foundation and Scripps Institution of Oceanography for funding the 2020 SURF program (NSF GEO/OCE REU Award #1659793) and Jane for managing the program logistics. Additional thanks to Annebelle Kok for being an incredibly helpful mentor and working patiently with me as I learned my way around marine acoustics. Finally, thank you to the Scripps Acoustic Ecology Lab group for welcoming me with open arms and making me feel at home in this brand new environment.



## References

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