

# Effects of Sea Star Wasting Disease on Mussel Recruitment



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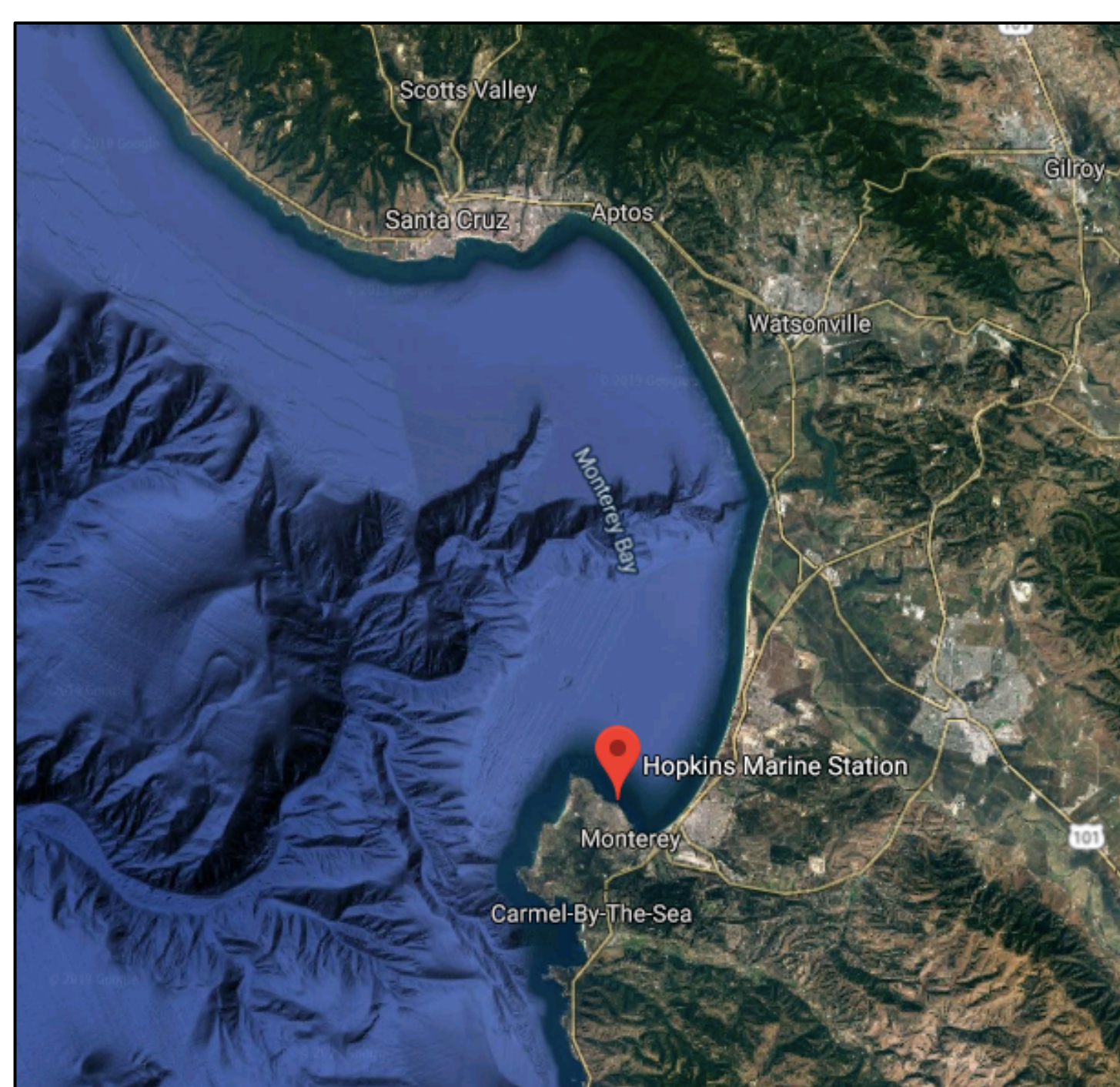
## Introduction

- Mussels (*Mytilus spp.*) are an ecologically important foundation species
- Mussel populations are kept in check by sea stars, a keystone species
- Understanding mussel dispersal and recruitment is important to make predictions about how intertidal ecosystems will respond to loss of keystone predators through sea star wasting disease (SSWD)
- Recent SSWD event first noted in central California in fall 2013



## Methods

- Tuffy collectors were bolted onto rocks at Hopkins Marine Station Marine Life Refuge
- These recruitment collectors were swapped in the field and brought back to the lab
- After filtration, contents of tuffy collectors preserved in 70% ethanol were sorted under a dissecting microscope
- Counts were recorded on a spreadsheet
- Data collection began in 2014, after SSWD event started



Mussel recruitment was high during the peak of the sea star wasting disease.

## Results

- Mussel recruit populations were highest in 2014, during the peak of sea star wasting disease
- There is a significant difference in the average number of mussel recruits between 2014 and 2019 ( $p < 0.001$ )

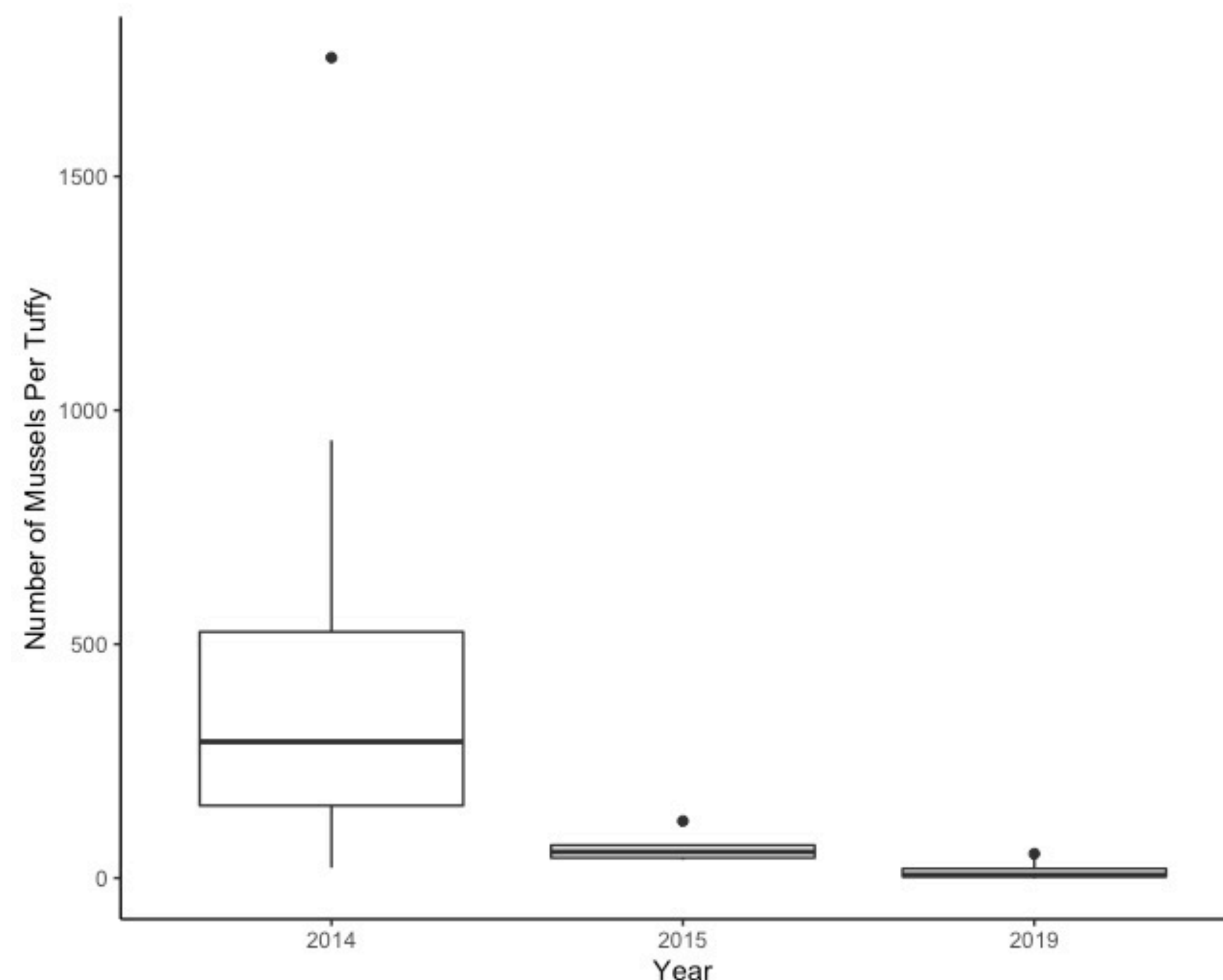


Figure 1. Boxplot comparing the average number of mussel recruits in 2014, 2015, and 2019. There is a significant difference in the average number of mussel recruits between 2014 and 2019 ( $p < 0.001$ ).

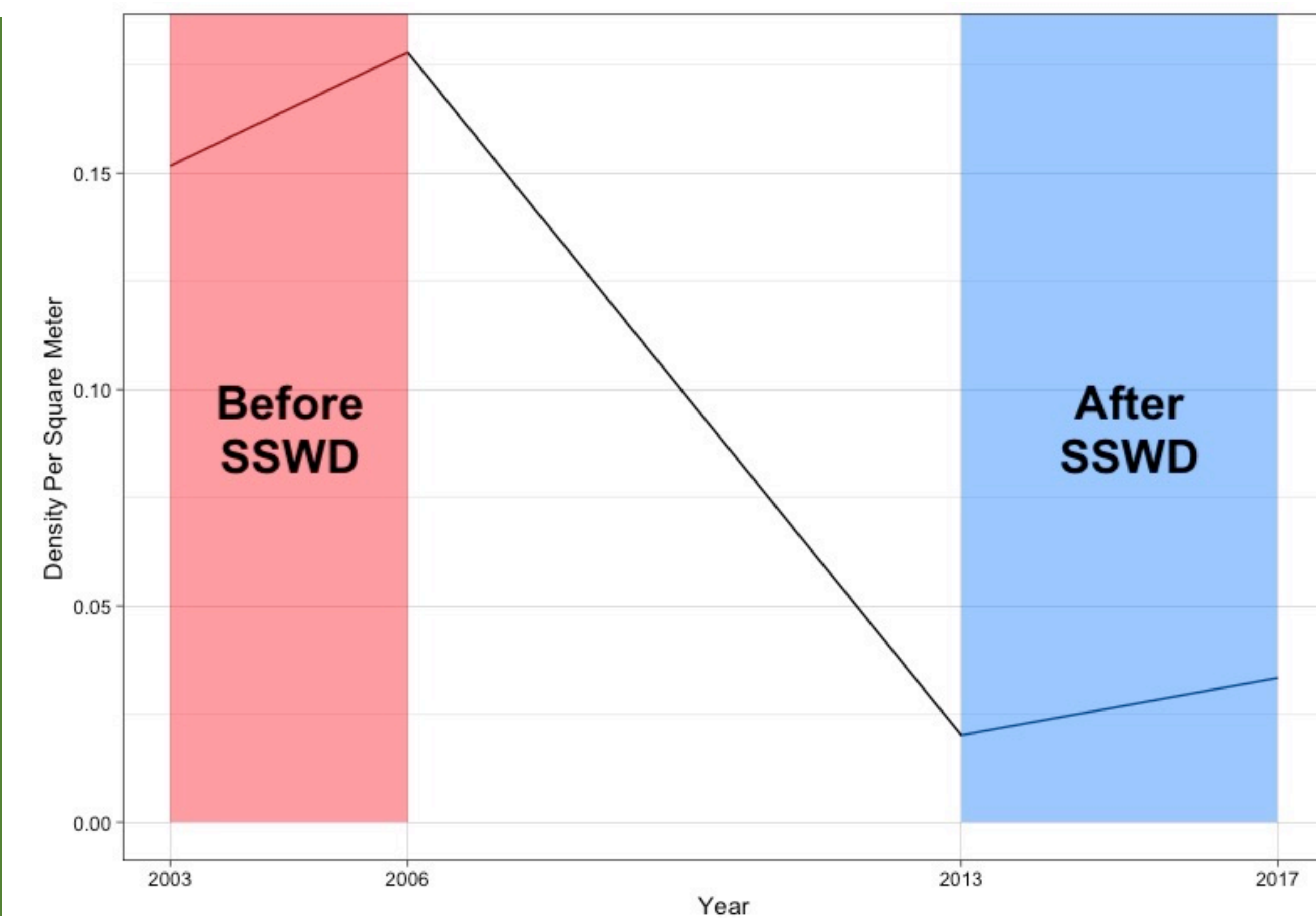


Figure 2. Line graph showing *Pisaster ochraceus* population density at Hopkins Marine Station from 2003 to 2017. Data taken from Miner et al. 2018.

## Discussion

- Mussel recruitment was high at the peak of sea star wasting disease, possibly due to a lack of predation by sea stars
- As sea star populations recover, mussel recruitment will decrease
- Mussel recruitment declined in 2019 after the peak of SSWD but we do not yet have data on sea star density for comparison
- Increase in the mussel population due to SSWD can impact the biodiversity of the intertidal community

## References

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