DISTANCE FROM PORT AS A PROXY FOR HISTORICAL FISHING PRESSURE ON NEARSHORE ROCKY REEFS IN NORTHERN CALIFORNIA

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Introduction
California North Coast Marine Protected Areas (MPA)
- 19 new MPAs enacted December, 2012
- California/Oregon border to Pt. Arena
- 137 square miles, 13% of North Coast

Nearshore Rocky Reefs
- Not well studied in Northern California
- Support important commercial and recreational fisheries
- High fish diversity, especially Rockfishes (Sebastes spp), many of which are long lived, slow growing, and mature late in life making them susceptible to population declines from overfishing

Study Questions
- Is relative fish abundance, diversity, and size structure different between MPA and associated reference sites?
- Does distance to closest fishing port explain differences in relative fish abundance, diversity, and size structure?

Methods
Study Design
- 4 Ports: Crescent City, Eureka, Shelter Cove, and Fort Bragg
- 4 paired MPA and Reference Sites
- 4 random sampling stations at each site
- Summer 2014 (3 trips/site) and 2015 (2 trips/site)

Data Collection
- Chartered Commercial Passenger Fishing Vessel (CPFV)
- Standardized hook-and-line sampling
- 4 anglers, 1 fish processor, 1 data recorder
- Each fish was identified, measured, and tagged (if fork length > 240mm)
- Minimum of 3 drifts through each of the 4 stations. Each station fished for 45 minutes

Data Analysis
- Shannon diversity index is calculated using the “vegan” package in program R
- Generalized linear models built to evaluate distance from port as a predictor of relative fish abundance, diversity and size structure
- Site maps built in ArcGIS 10.2 (Esri, Inc)

Commonly Caught Fishes

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Broader Implications
- Direct effects of MPAs may not be seen for several years
- These data should be used as a baseline for future MPA studies
- Distance from port can be used as a proxy for historical fishing pressure in Northern California nearshore rocky reefs

Acknowledgments
- Tim Mulligan, Tim Bean, Joe Tyburczy
- Drew Barrett, Chad Martel, Leon Davis, Katie May
- Manishin, and all volunteer anglers
- CPFV Captains
- Mulligan Lab