

# Using Coupled Trophic Networks and Field Experiments to Explain and Predict Kelp Forest Community Dynamics

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Trophic networks and experiments are best applied with one another when it comes to building the best possible model. Trophic networks are made up of predator and prey interactions that determine the structure and function of a community, and allow us to predict how communities will change. These predictions generate hypotheses that are then tested by experiments, which then adds to the data used to inform the model. Thus, trophic interactions and experiments function in a positive feedback loop where one improves the other. We decided to use this coupled approach in kelp forests as they are widely considered one of the most productive and species rich ecosystems on the planet. To do this we constructed a database of central California kelp forest trophic interactions and functional groups, and populated it with information gathered from extensive literature review. Using this compiled data we created four trophic networks, each predicting the community response to the presence and/or absence of sea urchins and drift kelp. These networks will be compared with field experiments conducted by the RC lab at UCSC once field conditions improve and pandemic regulations are relaxed.



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