Our project with COBI serves as the thesis for our master’s degree. We have a several academic deliverables to complete our thesis. This quarter, we have focused on completing our work plan. For the work plan, we performed a literature review, created a data management plan, outlined our technical approach for the project, created a timeline to organize our work schedule (Gantt chart), and created a group management plan to set expectations and to ensure good communication. Next spring, we will have a final report, project brief, and project poster due. We will be having an academic defense in March and a public presentation in April and we invite our external advisors to attend both of these events.

Our objective is to select biophysical, socioeconomic and governance indicators and create a framework for COBI’s staff to be able to evaluate the effectiveness of community-managed and government-managed marine reserves along the Pacific side of the Baja Peninsula, the Gulf of California, and the Caribbean. Our focus will be on marine reserves can be no-take (fishing is off-limits), partially protected (extraction of specific species is not allowed), temporarily protected (only for a period of time) or a combination of temporary and partial protections. We will create a physical guidebook that will have sample analyses for reserves from each of the three regions so that COBI’s staff will have an example of how to perform the analyses.

This quarter we have created an outline of the guidebook. It will include sections on selecting indicators based on the objectives of each reserve, data collection, data formatting, analysis, interpretation of results and recommendations for improvement. This quarter we have created a draft list of indicators. The list of indicators has almost been finalized. We revised the list with COBI’s comments and are currently revising the list further with the suggestions from our external advisors.

The focus of the review meeting on the June 1st with our external advisors was how to improve our analysis of indicators and the selection of controls, as well as, how to provide meaningful interpretation of results and recommendations for improvement for COBI.

At the review meeting on June 1st. We discussed that we should focus on explanatory variables that are drivers of change, such as illegal fishing, environmental stressors, and hypoxia events. We should also determine a threshold value for binary variables (i.e. indicators where it is good or bad, yes or no). For covariates, it was brought to our attention that we must think about how to deal with different time scales for analysis. Also, we should try to incorporate spatial information as covariates into our models.

The advisors also gave us advice of how to choose proper counterfactuals for analysis. Fiorenza mentioned that in the Pacific, it is not possible to find a control zone out of a TURF. Therefore, she suggests that we look at non-target species in the TURF for our analyses as not all species are under concession. She also suggests that one indication of success of the reserve would be if the difference between the reserve and the control in the TURF decrease over time. It was also suggested that we come up with appropriate controls or sets of controls for each type of indicator and each type of reserve. It was also emphasized that we should reduce the number of our indicators, because we are more likely to get a significant result the more indicators we include in our analysis.

In order to get a measure of compliance, it was suggested that we focus on interviews and how to measure the isolation of the reserves. Mar says that fishermen do not always know much about the reserves what the reserve is trying to achieve. For the interviews, the advisors suggested that it may be interesting to determine what the perception of fishermen are of the reserves and if they have been effective in increasing fish size, for example. We should conduct a survey to fill in data gaps for co-variates. For the recommendations for improvement, we should focus on what are the things that COBI could change. There should be a decision tree for what actions should be taken to improve the reserves based on which indicator and changing and how it is changing. We should look at what governance indicators are having effect on improvements and make recommendations that are feasible by COBI. For example, if there is illegal fishing then we should suggest increased enforcement.

At the review meeting on June 7th, we discussed the Shiny app with Alvin. We emphasized that the guidebook is our priority and that we will create the Shiny app only if we have time. He likes the idea of the Shiny app. The Shiny app is an interactive webpage application that has a user-friendly interface. The Shiny app is free and does not require any programing or installing. The Shiny app would automate the analysis section of the guidebook. All COBI staff would have to do is upload a standardized data set, click a few buttons, and it would run the analysis for them. Alvin said he would like to see qualitative interpretation of results (red for bad, yellow for no change, and green for good) in addition to the detailed report of results that could be used in scientific papers.

Alvin said that Mar is the first person to work with COBI on governance data. COBI is open to collecting information that is needed. COBI is also interested in determining what is the best reserve they have and why. For example, if they have this socioeconomic status, this ecology, and this governance indicators, then the reserve is likely to be successful. We stated that our analysis is focused on objectives specific to each reserve, but if there was a stated overall objective, then we could determine whether or not the reserve is successful. Alvin stated he liked our timeline. We emphasized we welcome COBI to share any concerns or suggestions for improvement at any time.

During the summer, each of us will be working full time at different internships. However, we will continue to perform out literature review, format the data COBI gave us, and conduct a survey of communities to fill in data gaps. The first week of fall we will run all the sample analyses together.