The Na Kahumoku Program

- **Our program consists of three key factors: environment, culture and leadership. First is environment, we participate in events to support our environment (like the HI-MOES program and Reef Teach). We also try and help our community by reducing plastic usage and litter. We use reusable bottles and do clean ups. Second is culture, culture is a big part of our program. We talk about culture so we can have a greater respect and understanding for the environment. Last and the most important factor is leadership. Without leadership we couldn't make this program work. We used our own time and knowledge to make our program help the environment.**
- **In our investigation we studied water quality and fish counting to conclude if the water quality affects our marine environment. We also went to different sites to compare if the water quality did get affected after the tsunami.**
- **We participated in this activity to learn about our marine life. Ocean life is one of the main components of the earth and is a very important part of everyday life in Hawai'i.**

Background / Hypothesis

- Non-point source pollution can come from runoffs, industrial and sewage treatment plants. These can include: fertilizer, grease and other chemicals.
- Non-point source pollution is bad because it affects the water / marine environment. Specifically, it damages the coral, lowers water quality, and affects the fish from runoff.
- Our hypothesis is to determine if the water quality affects the marine life. Specifically, will non-point source pollution affect fish population counts?

Procedure

- Water quality: Grabbed several samples of water from 4 locations at 2 different sites (Kahalu'u and Kukio). Tested samples for ammonia, pH, salinity, temperature, phosphate, nitrate, oxygen.
- Fish count: Looked at the amount of fish in an area and recorded how much fish there were. Also recorded what kind of fish was at the site.
- Journalists: Took GPS coordinates of where the water samples were. We also wrote down observations of what we saw, including the conditions at the beach.

Results

Water Quality							
Site	Sample	Phosphate	Nitrate	Ammonia	Salinity	pH	Temp C
Kahaluu	Day 1 Avg (Pre-tsunami)	0.11	0.38	0.00	29.75	8.64	25.82
Kahaluu	Day 2 Avg (Post-tsunami)	0.07	0.13	0.00	21.13	8.49	26.26
Kahaluu	Overall Avg	0.09	0.25	0.00	25.44	8.57	26.04
Kukio	Overall Avg (Pre-tsunami)	0.04	0.31	0.25	33.25	8.33	26.59
Fish Count							
		Kahaluu 1	Kahaluu 2	Kahaluu Avg	Kukio Avg		
Total fish seen at each location		45	172	109	83		
Average # of fish seen on by each group		11	43	27	21		

- Kahalu'u non-point source pollution levels went down after the tsunami hit. Fish count levels were higher after the tsunami.
- Kahalu'u had more phosphate pollution, but lower average levels of nitrate and ammonia.
- On average, there were more fish seen at Kahalu'u than Kukio.

Conclusion

- From the data we collected we found that Kahalu'u had more phosphate pollution, but lower average levels of nitrate and ammonia. On average, there were more fish seen at Kahalu'u than Kukio. So this could mean that fish populations increase as phosphate levels decrease.
- However, the tsunami did seem to have an affect on the water quality and the fish count, so this may have affected our results. Maybe when the tsunami hits the reef, the pollutants are washed away.
- To improve our study we could do our tests when / where there is no people so we could get an idea of what it is like when there is no human interaction at the beach. We could also choose a time to study when there is no tsunami.