Environmental Sensors

C Monkeys

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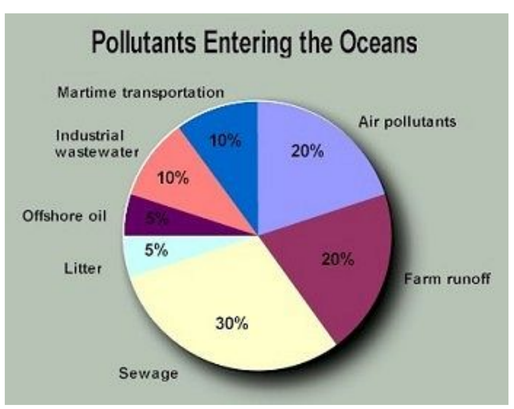
Abstract

- We selected the Environmental Sensing Project from the Seaperch In the Wild Section because we were inspired by the data collection field, especially in the environmental side of things. We knew that getting information would be completely crucial in taking any sort of measure against environmental effects. Our hypothesis was: Through our SeaPerch, we will be able to collect data about nearby water sources to make educated decisions on how to proceed with the cleanup.

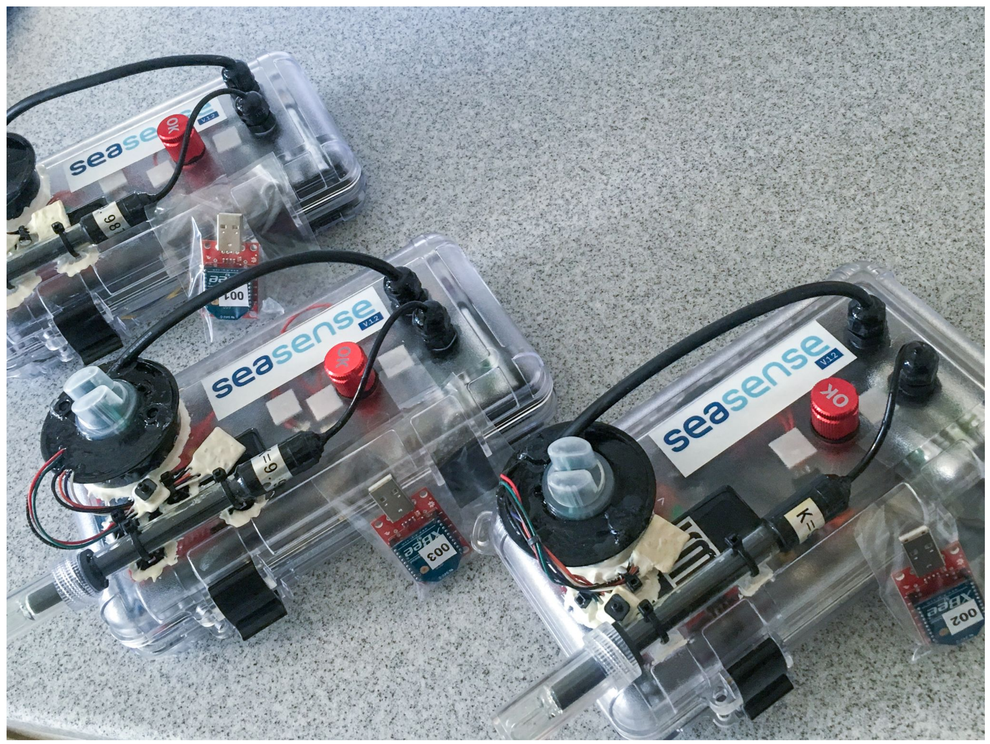
Background & Motivation

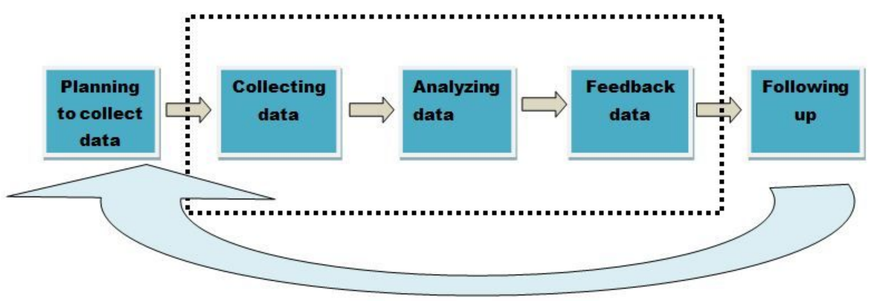
- We as a team picked this project because we knew that it was the way to get the most done for the community. Without this project, the area inaccessible to divers would have had no information whatsoever, and would not receive the attention it requires in order to keep the region safe. Every area needs to be surveyed and kept in check, like a nationwide census every decade. In a body of water where change was prominent, early detection would mean the difference between life and death for the wildlife involved



Methodology

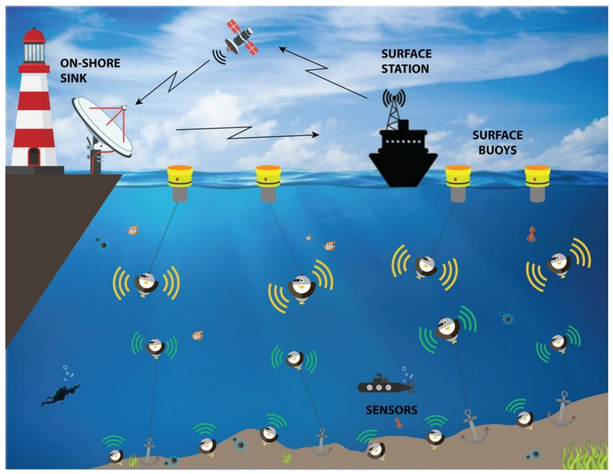
We took this approach like data scientists. We figured out that in order to get access to a cave inaccessible by divers, we needed to get a way of taking data from ROVs. We would use specific Underwater Wireless Sensor Networks (UWSNs) to detect the 3 important issues in a body of water: Water Quality, Oxygen levels, and Pollution levels. Our job was to theoretically develop these and implement them onto the ROV. Since a sensor requires power to hold data, we would be soldering it onto our main board to provide it with power and allow for it to transfer over data.





Results & Discussion

- We were looking for some data on the lakes in relation to its future usability as a fishing or drinking source. We needed data that would point at the general trend that the body of water was heading towards, so that we could take steps required. Our hypothetical data revealed that water quality was stable, oxygen levels were dropping, and that the pollution levels were slightly increasing. Through our discussions, we found out that it was being caused by the creation of a fishing pier nearby. The quality of the water remained stable, but the littering and the disruptive wildlife introduced by the fishermen needed to be halted.



Conclusion

The results of our project led us to find out the cause of the growing water pollution, and the steps we can take to slow it down. We would be enforcing heavier fines on littering in the pier to discourage it, and having waterway pickup projects in order to reduce the pollution levels detected by the sensors. With this ROV, we would be able to do monthly scans to fully chart out the trend of the body of water. Something we understood is that we were able to catch the change quickly, and slow it down before the problems got severe thanks to these sensors

Acknowledgements

- We'd like to expand this project to other important bodies of water that require more data. Any sort of conditions too dangerous or anywhere without enough volunteers no longer should be abandoned or put on the back burner. As more and more data is collected, the overall trend of the graph will become more evident, and the steps needed likewise. We'd like to explore the question of a way to correlate data with different parts of the ecosystem, such as rain percentage or humidity.