

Effects of Microplastics on *Aiptasia* *pallida*

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Marine Debris

- Materials from humans that are released into rivers, streams, or the ocean
- Examples include plastics, glass, metals, paper, cloth, rubber, and wood.
- Microplastics are pieces less than 5mm in diameter
- Easily eaten by many aquatic organisms
- Cause injury, illness, and even death among marine organisms



Problems

- If corals eat marine debris they trick themselves into being full
- Low levels of photosynthesis are unsustainable
- Corals and anemones are crucial members of ocean ecosystems
- Death throws off food web balance by taking out major food sources, habitats, and shore protection.



Purpose of Research

- Find out the impact of human caused marine debris on organisms in our environment
- Determine which types of plastic could be more harmful to these organisms and the food chain as a whole



James Cook University Research

- Determine the impact of microplastics on living coral reef systems
- Took samples of corals from the Great Barrier Reef and placed them into debris contaminated water
- Waited two days to observe the corals again



James Cook University Research

- Results showed they had ingested plastics
- Rate slightly lower than natural feeding habits
- Found buried in digestive tissue of gastrovascular cavity
- Unable to pass plastic remains
- Further research needed to determine impact on health and other marine organisms



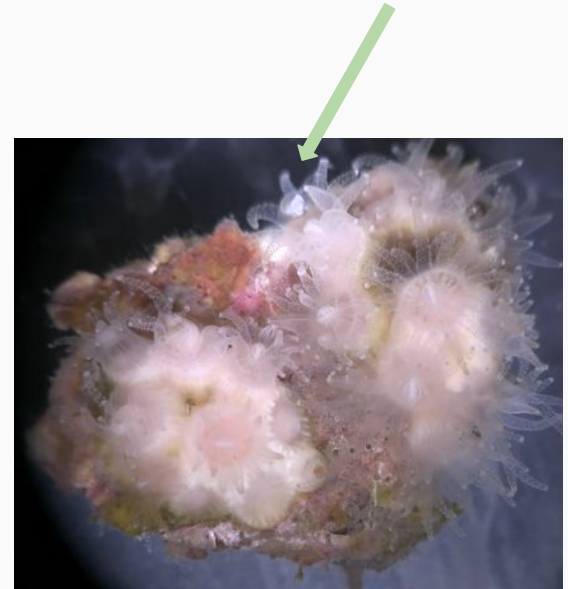
DUML Research

- Two separate tactics used in the study, hand feeding corals and growing them in large plastic contaminated tanks
- The corals hand fed were given clean sand as well as plastic pieces
- Applied algal films to some plastic to simulate the taste of natural food



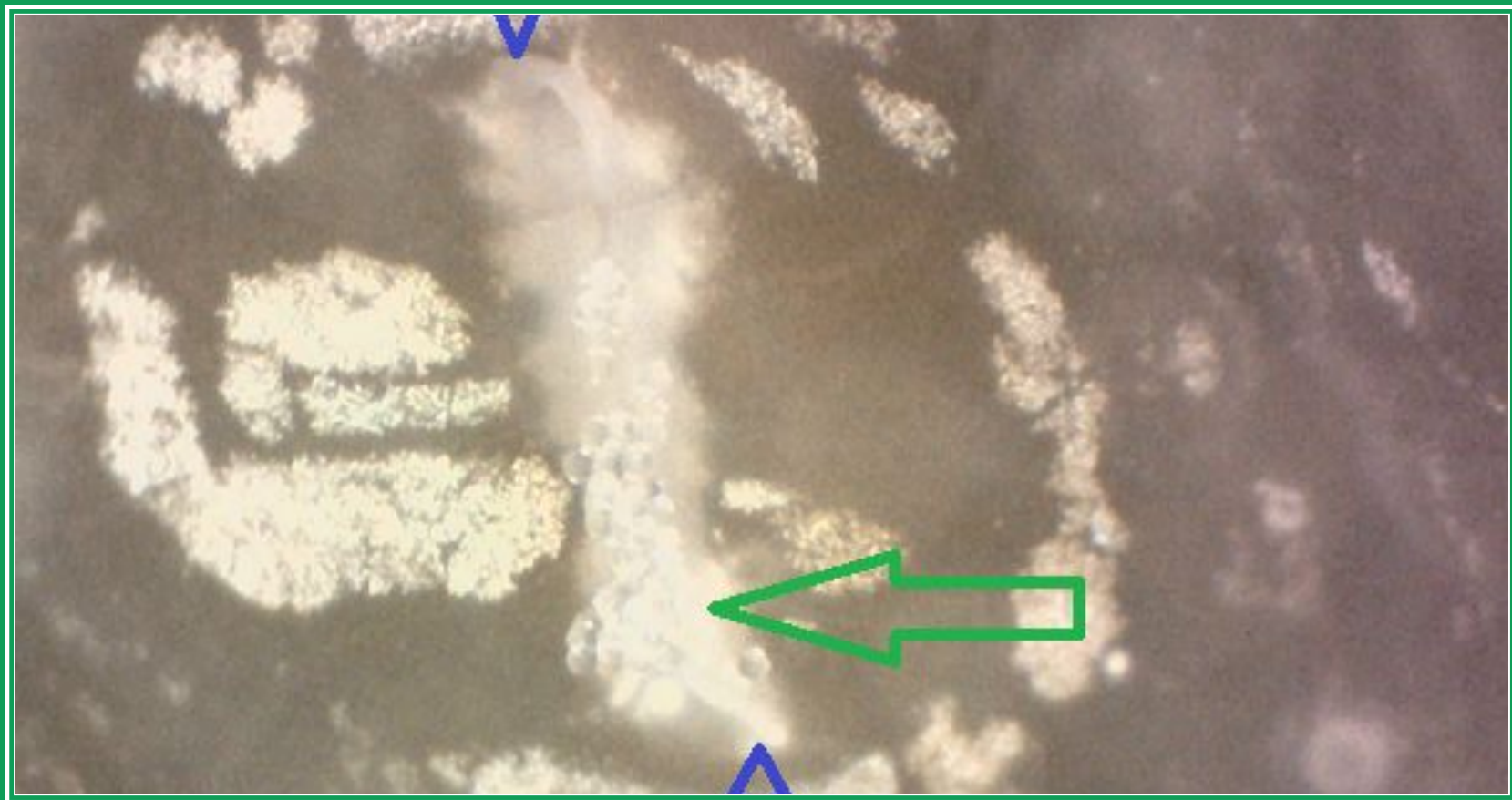
DUML Research Results

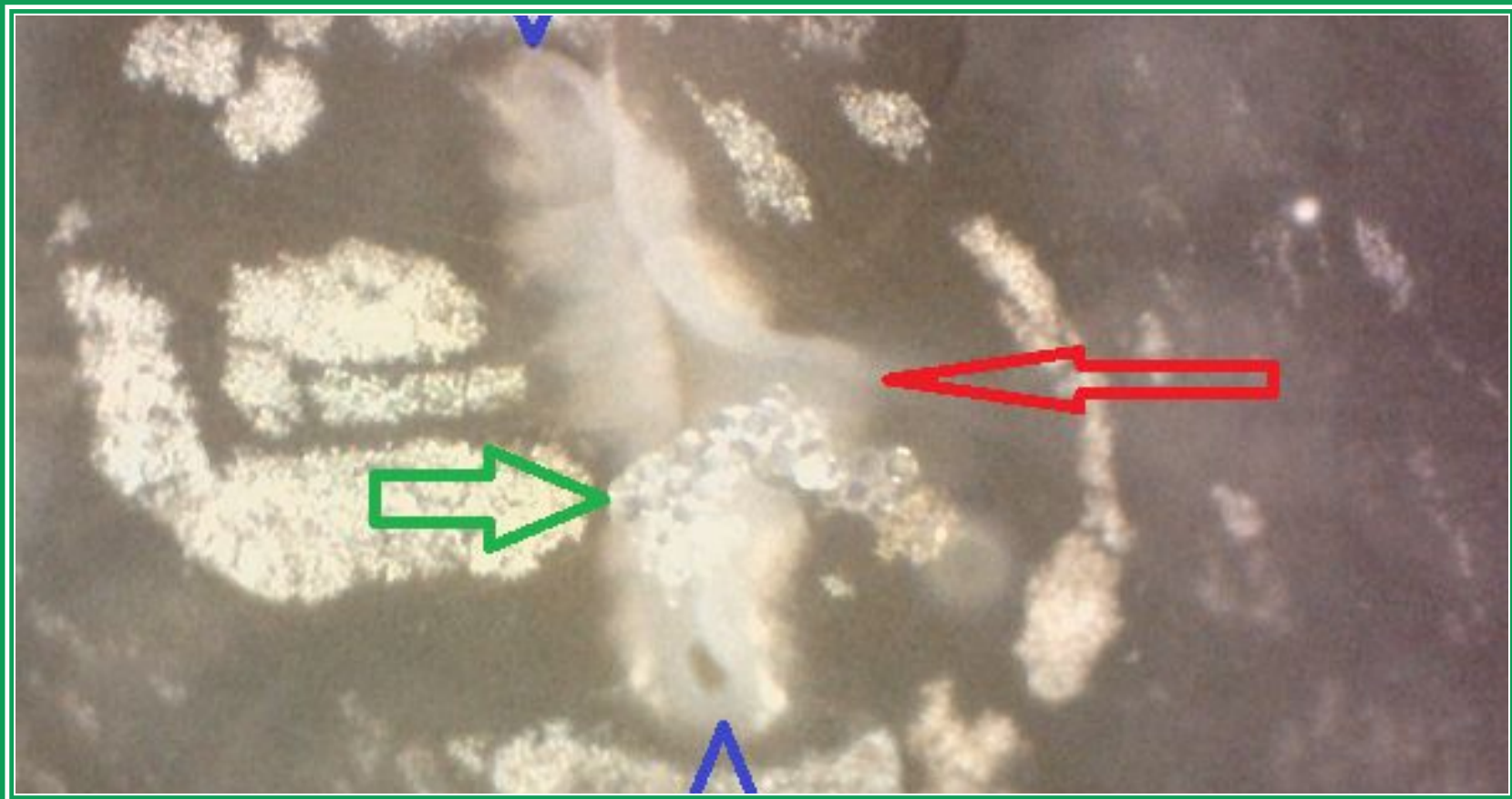
- Corals brushed the sand off of their bodies to clean themselves
- Plastic was held onto and ingested
- Corals also preferred “clean” plastics
- Suggests plastics have an appealing taste
- Believed chemical additives could act as a stimulant



University of Queensland Research

- Placed *Aiptasia* anemones in filtered seawater
- Delivered plastic debris directly to some anemones, others were in plastic contaminated water
- Anemones in contaminated water did not ingest as much as ones that had direct contact with the plastic
- Few plastic pellets were egested after they came into contact with the anemones





Our Research and Hypothesis

- Our research was to determine which plastics were more preferable to the *Aiptasia pallida*
- Our Hypothesis was that the anemones would prefer the plastic bags because they are softer and may mimic their food sources



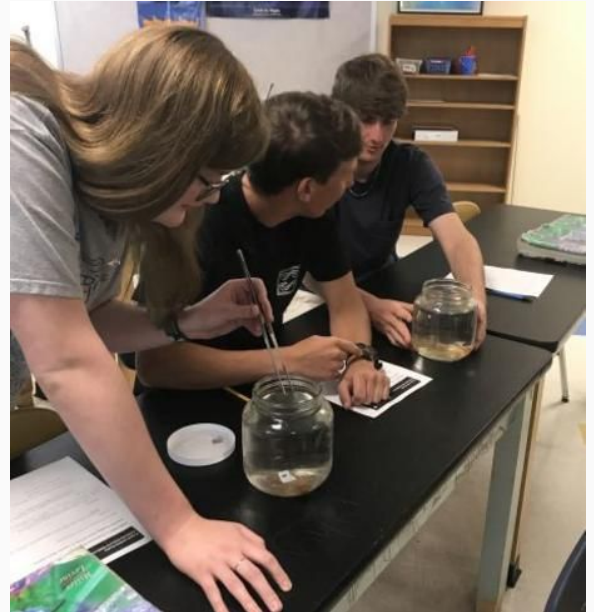
Aiptasia Pallida

- Marine invertebrates
- Tentacles can reach up to 8 cm in length
- Grows across the entire coast of the US
- Very common, considered a nuisance to aquarium keepers
- Fed on by nudibranchs and other small organisms
- Lab Grown

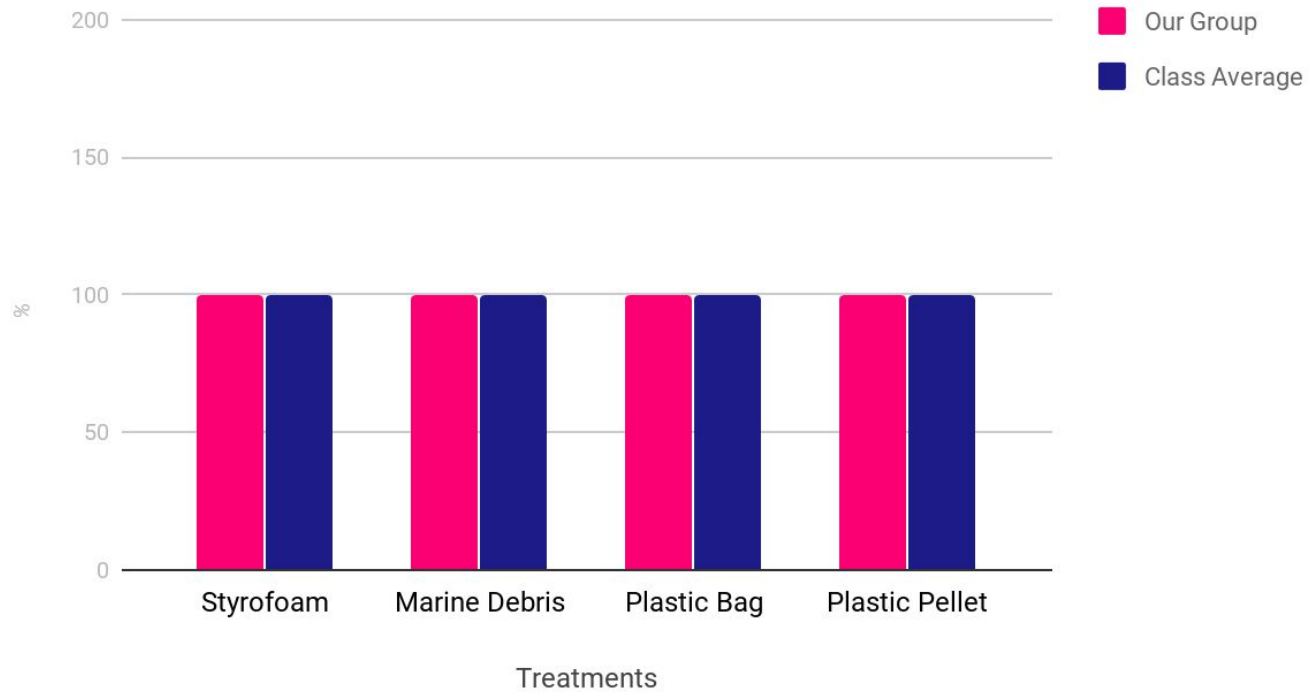


Procedure

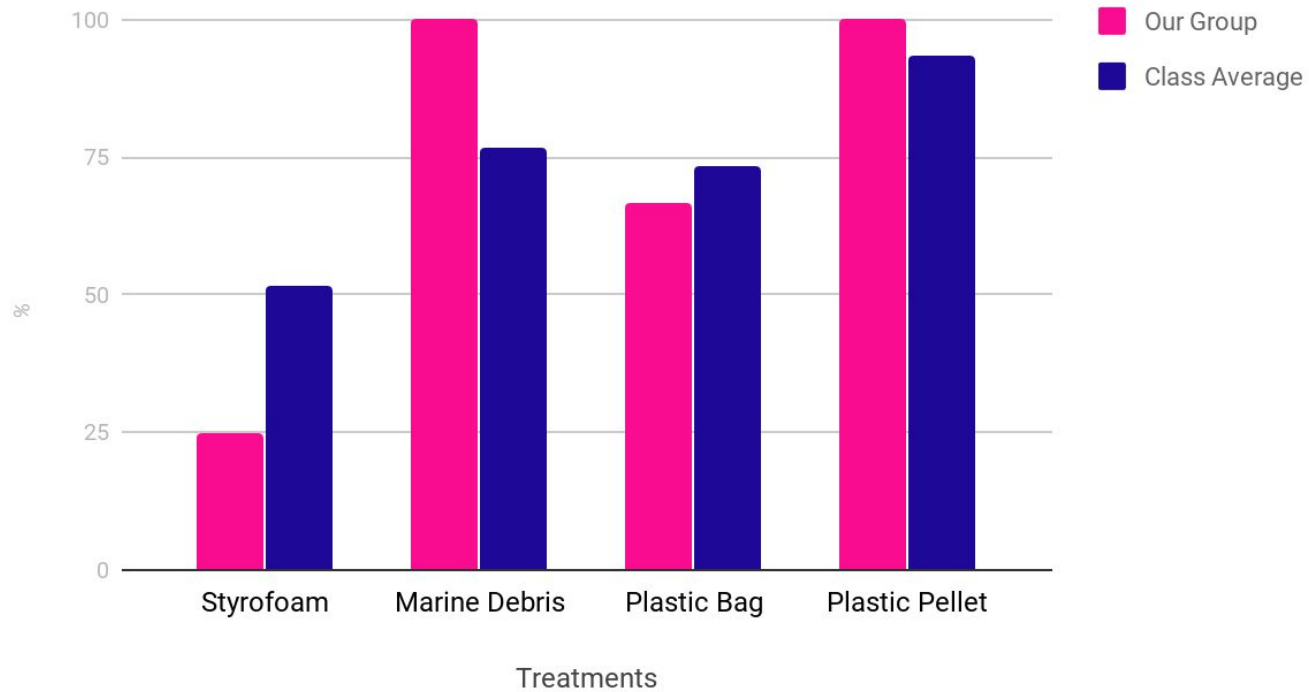
- We tested *Aiptasia pallida* to see what plastics they favor
- Offered plastic bags, styrofoam, marine debris, and plastic pellets
- We collected data on percentage of attachment, ingestion, and retention times
- The longer an anemone kept the plastic, the 'tastier' it was to them



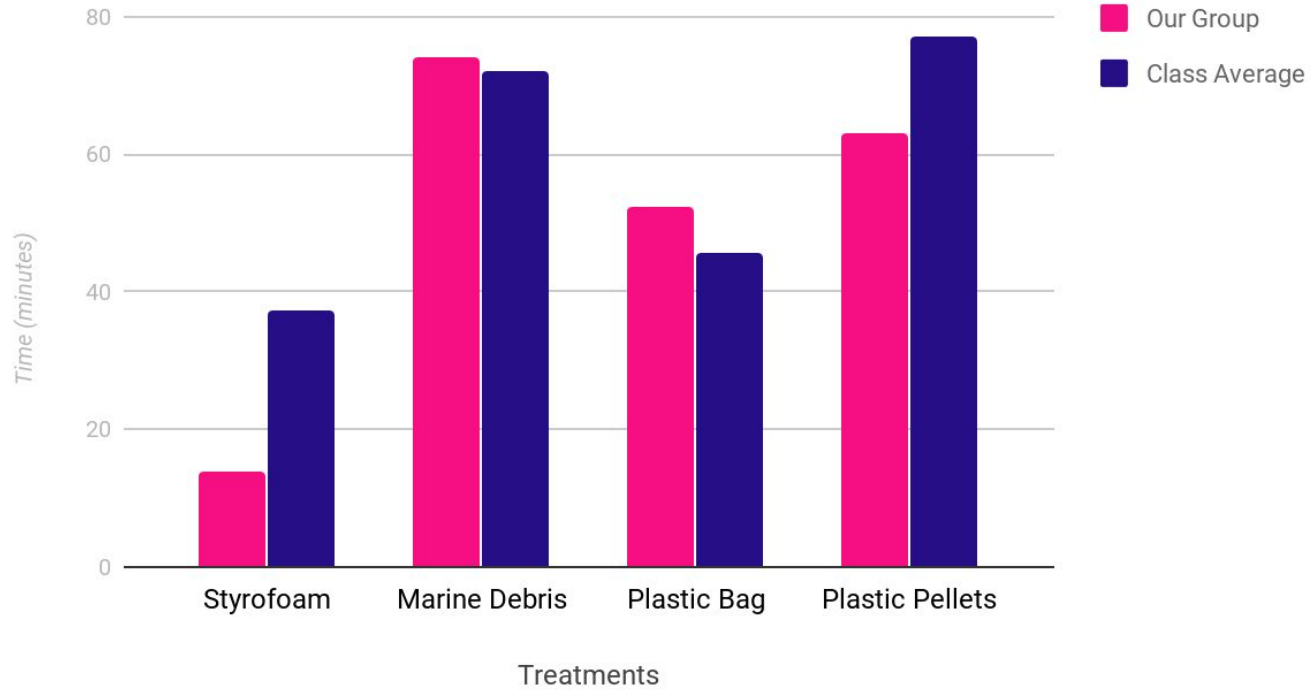
Percent Attached



Percent Ingested



Retention Time



Conclusion

- The anemones prefer plastic pellets
 - Longer ingestion times and largest % attached
- Marine Debris was a close second
- Could be due to
 - Chemicals
 - Size
 - Texture



Citations

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