

Microplastics in Corals

Scotty Jernigan, Taylor Savitski, and Jillian Kelley

What are they?

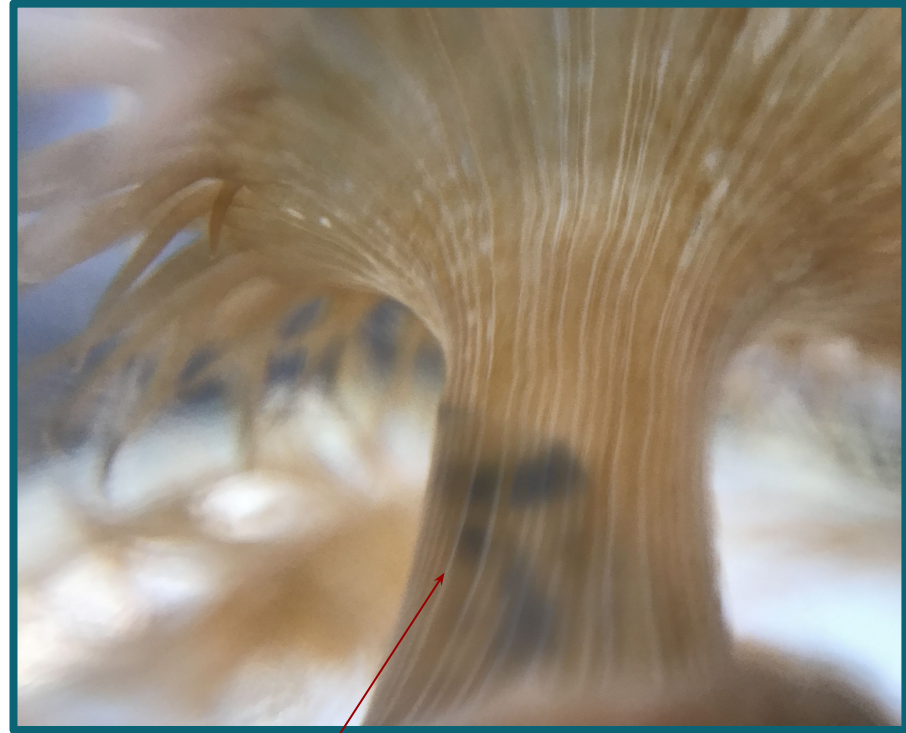
Microplastics are extremely **small pieces** of **plastic debris** in the environment resulting from the **disposal** and **breakdown** of **consumer products** and **industrial waste**.

- ★ Must be smaller than **5mm** to be considered “microplastic”



Purpose

- Research is being done to discover:
 - effects of plastics on corals
 - what kinds of plastics corals prefer
 - why corals are choosing plastic over their actual food



Marine debris in the
stalk of the anemone



Hypothesis

- If corals eat too much plastic then they will not have room in their stomach for foods they need, thus causing them to be malnourished because plastics do not digest in the stomach.
- *Aiptasia pallida* will prefer marine debris over the other plastics.

Impacts on Corals

- Increases risk of disease
- Causes intestinal blockage -- makes corals think they're full
- Stresses them out, causing them to release zooxanthellae
- Results in coral bleaching and loss of biodiversity



Existing Research

DUKE UNIVERSITY



- Showed corals prefer taste of plastic -- not appearance (corals don't have eyes).
- Corals were exposed to different types of plastic, as well as clean sand, to determine what they prefer to eat.
- Preferred "unfouled microplastics" -- those not covered in bacteria.
- Chemical additives could be the culprit -- unintentionally making plastic taste good.



More Research

“This study demonstrates that reductions in the amount of plastic waste entering the ocean will have direct benefits to coral reefs by reducing disease-associated mortality.”

-Joleah Lamb, study leader

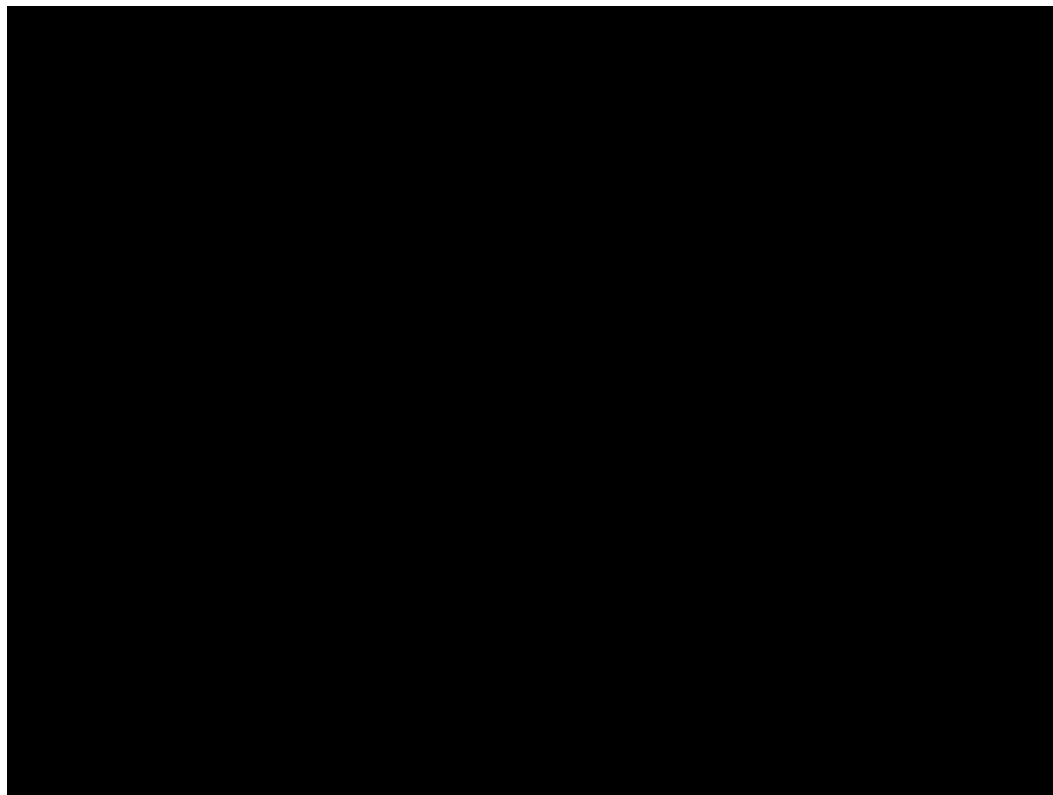
CORNELL UNIVERSITY

- 159 coral reefs in the southern hemisphere surveyed for tissue loss/disease lesions
- .4-25.6 items per 100 square meters
- **2025 PREDICTION:**
 - Amount of plastic in the ocean will increase to 15.7 billion items on coral reefs

[Cornell Research Video](#)



Procedure



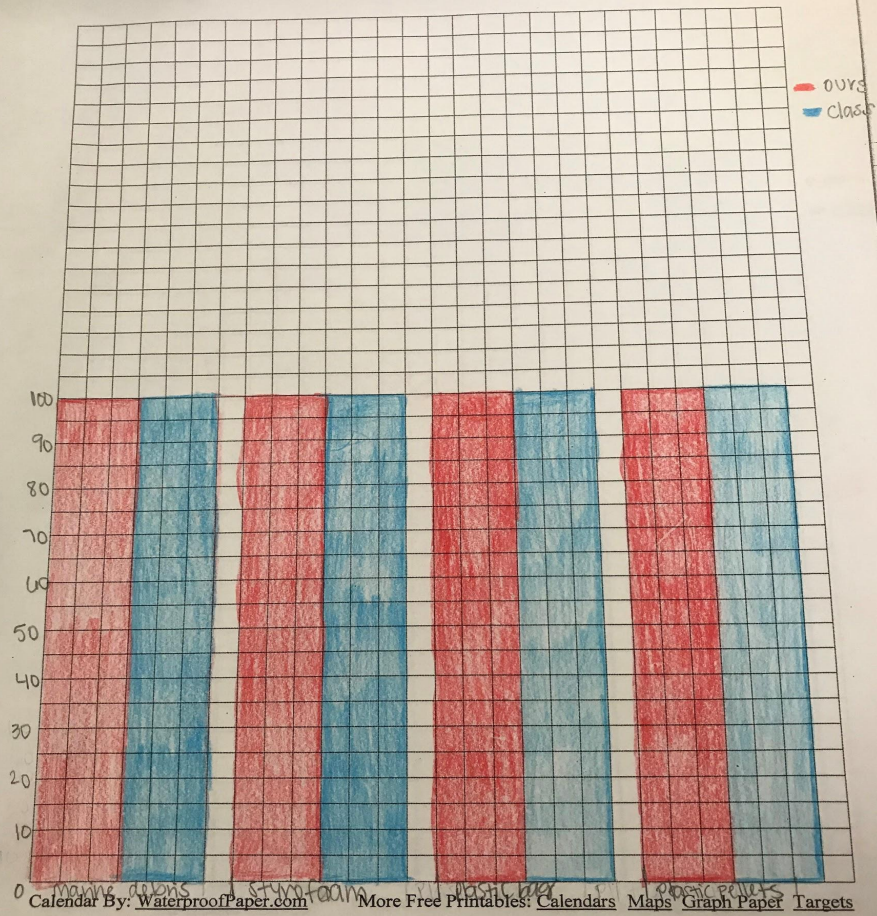


Procedure

- We gave each of the different types of plastic to two different anemones (for example, we gave marine plastic to two different anemones, plastic bags to two different anemones, and so on).
- Each plastic was offered to anemones multiple times and we measured how often it grabbed on to each plastic and how long it held the plastic in its mouth.

% attached

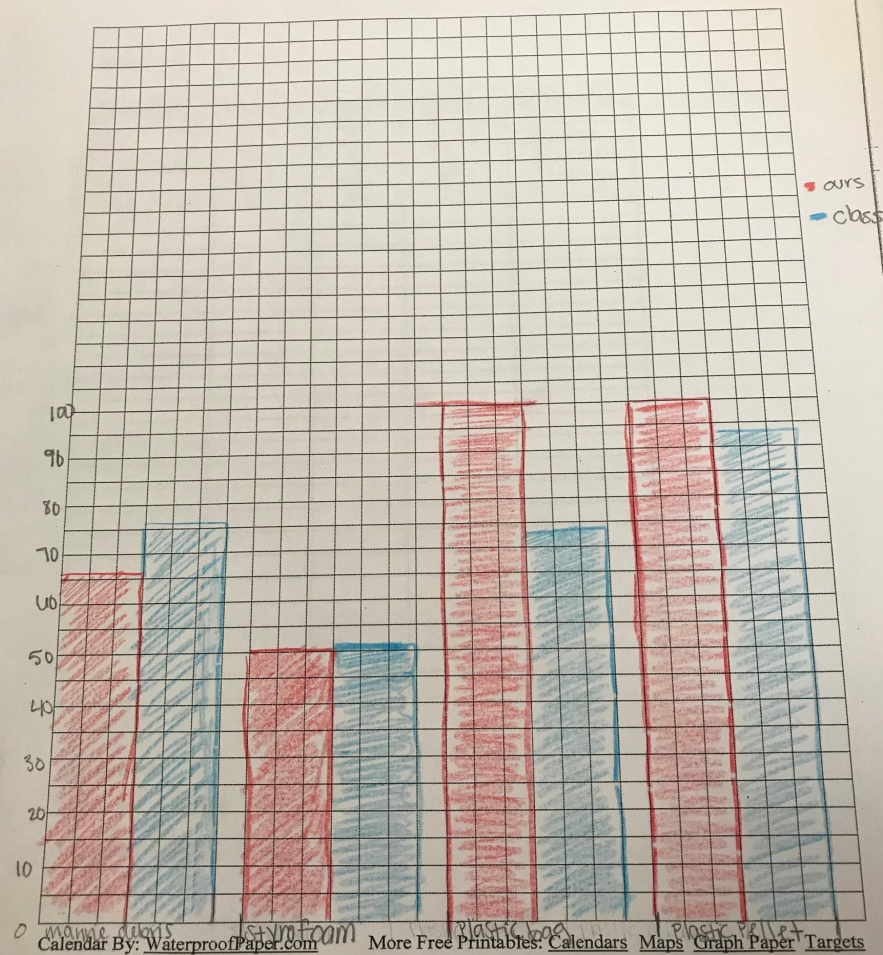
Percent



Type of Plastic

% Injected

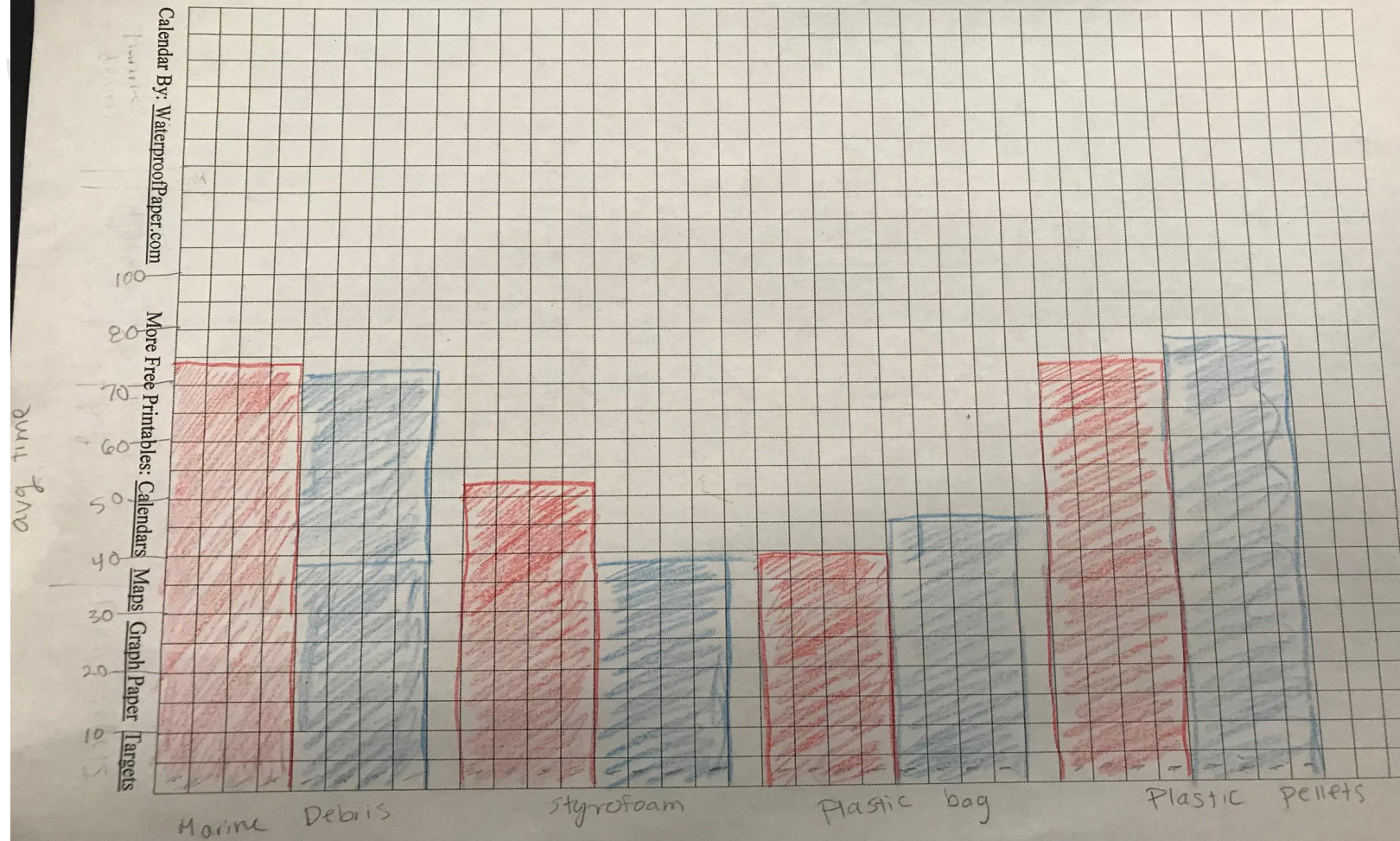
Percent (%)



Type of Plastic

avg Time ingested

ours
class



Conclusion

- *Aiptasia pallida* preferred plastic pellets.
- We know this because the *Aiptasia pallida* held the plastic pellets in their mouth the longest and had the highest ingested percentage.



Were we correct?



Citations

<https://www.cnn.com/2018/04/22/health/microplastics-land-and-air-pollution-intl/index.html>

<https://www.sciencedirect.com/science/article/pii/S0043135415000858>

http://www.dw.com/image/35913253_304.jpg

<https://www.independent.co.uk/environment/plastic-pollution-coral-reefs-disease-damage-seas-oceans-cornell-university-a8178156.html>

https://2.bp.blogspot.com/-qBNtHNpGHo8/WfCoY9-JP2I/AAAAAAAAANwc/S5Ccs7Oe4wsW0BEmuks9wKdQts4E_nylwCLcBGAs/s1600/Corals%2BEat%2BPlastic%2BBecause%2BThey%2BLike%2Bthe%2BTaste%2B%25281%2529.jpg

<https://phys.org/news/2017-10-corals-plastics.html>