

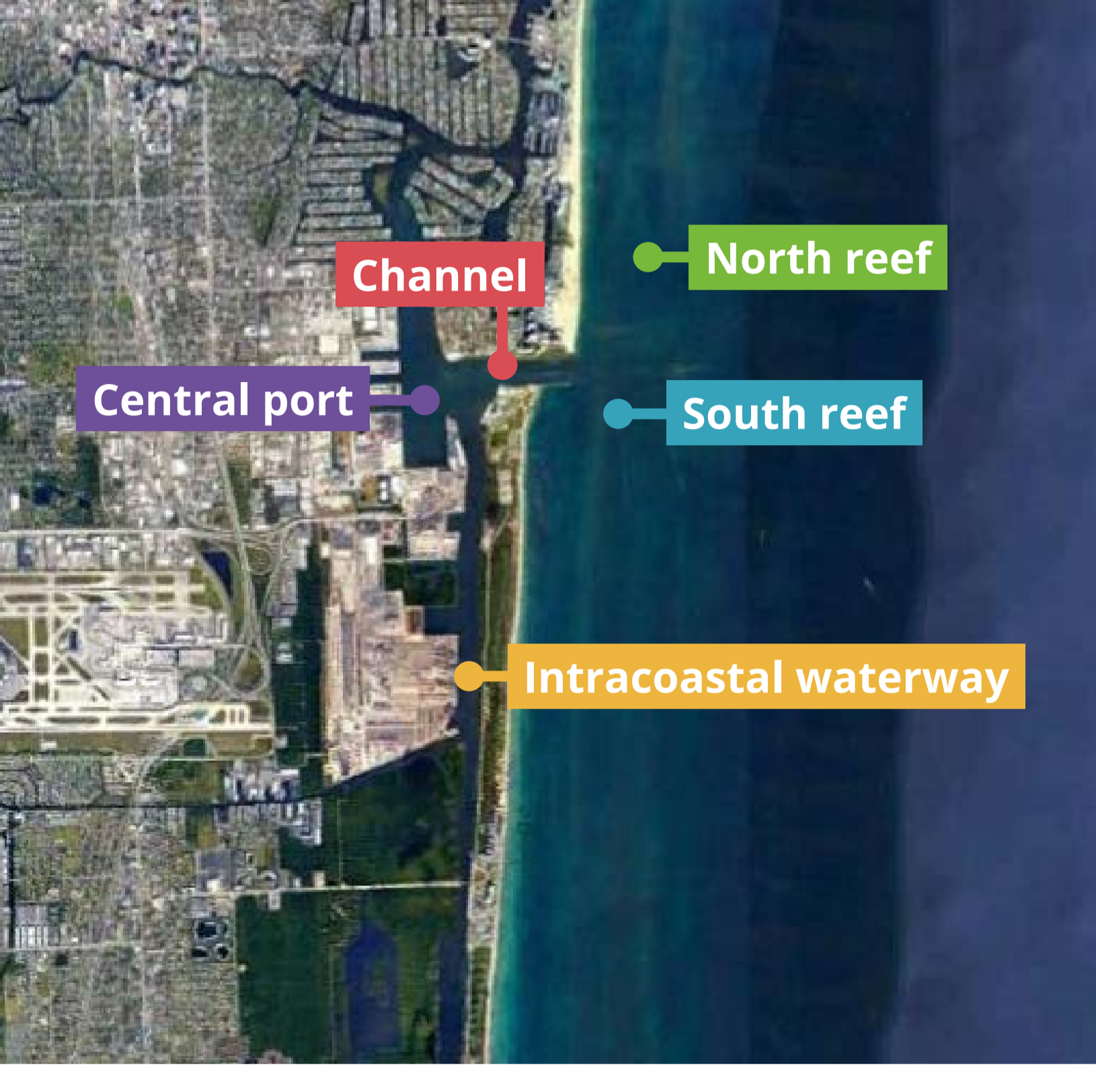
How small creatures can show big changes: microbial communities in Port Everglades Inlet and nearby coral reef sediments



INTRODUCTION

Port Everglades Inlet is a large South Florida cargo port serving municipalities with more than 2 million people and lies adjacent to coral reefs, dwindling mangroves, and recreational beaches. Disturbances, like dredging, can have negative effects on these natural areas.

In this study, **we characterized the hypervariable 16S rRNA gene regions of microbial communities across the area in order to assess the influence of a major disturbance: dredging of the port and channel.**



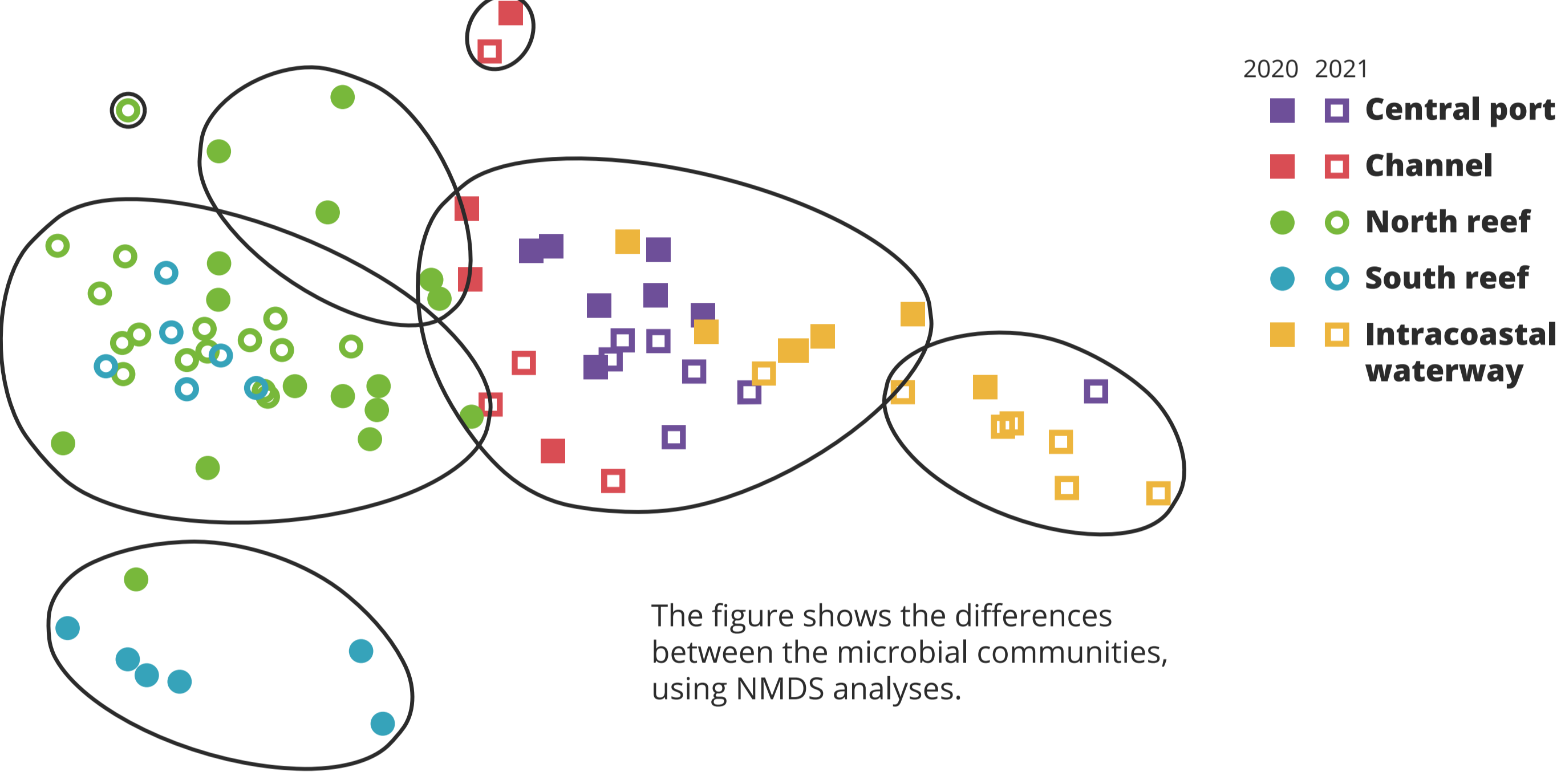
METHODS

We took **sediment samples from 40 sites** located in the port, channel, intracoastal waterway, and reefs. We sampled **before and after the major dredging** took place (in 2020 and 2021).

Then, we **compared the diversity of microbes** in each of the samples and locations.

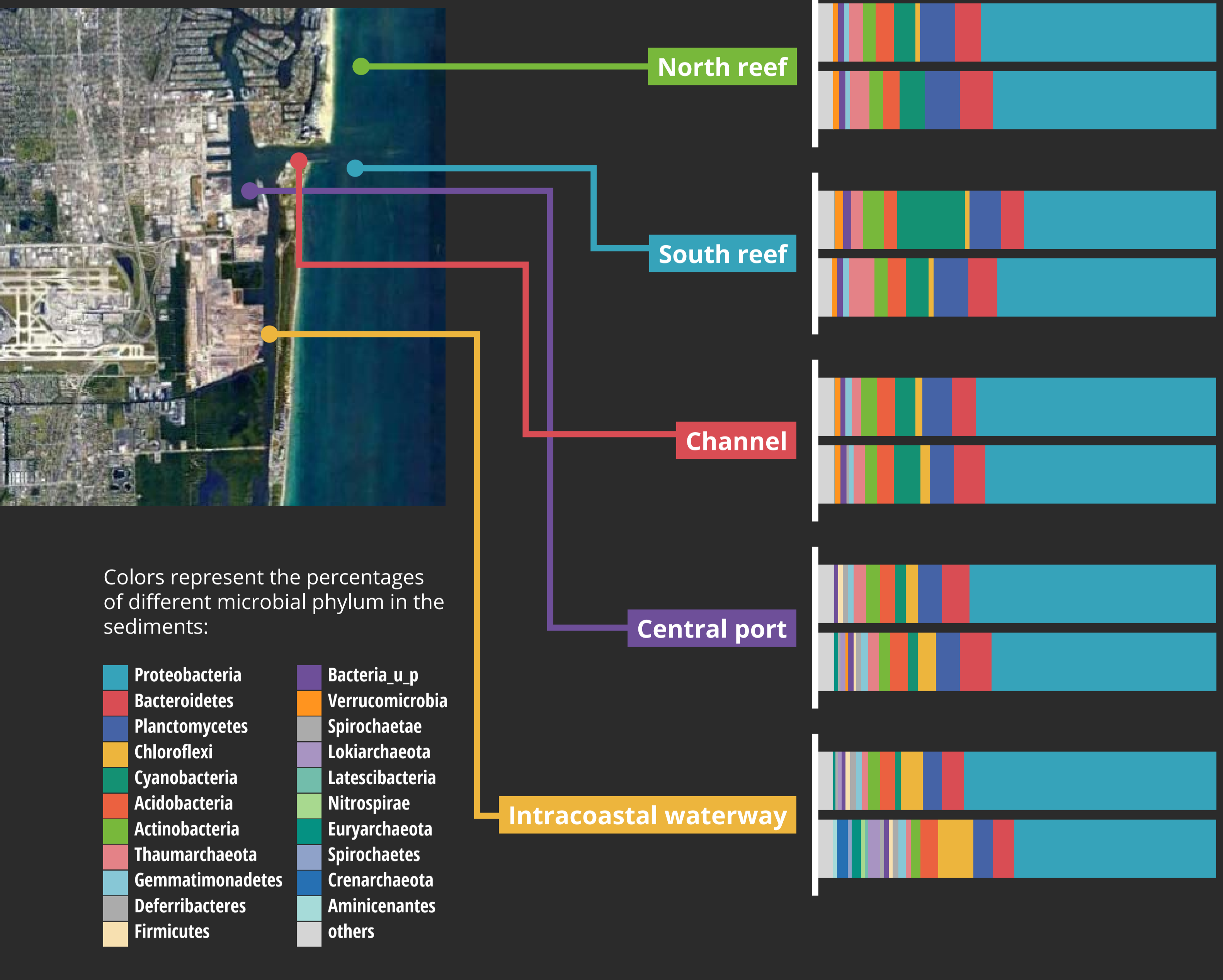
RESULTS

We found that the microbial communities were distinctly different in each location (both before and after dredging).



After dredging took place, microbial diversity within the intracoastal waterway changed the most.

But the microbial diversity in the coral reef samples also changed, indicating **potential influence of either dredging or greater wave activity offshore affecting the reef habitat.**



Sediment samples from the port contained **possible coral reef pathogens**, although dredging did not affect the relative abundances of these microorganisms.



Sediment samples from the port contained higher **trace metals, indicating possible contamination from port activities.**

CONCLUSION

This study demonstrates that human activity can drastically alter an environment and impact surrounding natural environments. **Coral reefs and mangroves are sensitive to change, and it is important to consider the impacts of disturbances such as dredging.**

Furthermore, this study shows that it is relatively easy to apply current molecular ecology methods to address macroscale environmental questions.

