**Introduction to research – Witman Lab at Brown University**

**Our research aims to figure out how natural systems function in the ocean.**

Ecosystem functioning is being altered in complex systems across a range of spatial scales by the "big three": climate change, habitat destruction and the removal of top consumers. This underscores the need to embrace the full complexity of natural systems in our studies, and to increase the scale of ecological research.

It is easy to challenge ecologists to make experimental manipulations more realistic by including more factors and interactions in them, and to expand the spatial and temporal scales of research, but this is difficult to achieve in practice. The approach I have developed to meet this challenge involves performing realistic (as possible) experimental manipulations in the field, with a background of long term monitoring at local-regional spatial scales. This provides valuable insight into mechanism, complexity and scale. Through monitoring, I aim to catch the impacts of climate oscillations, episodic events (i.e. bottom up effects of massive prey recruitment, severe disturbances) that can re-set local community dynamics, as well as long term change from overfishing or rising temperatures.

My research has been focused on patterns and processes in hard bottom communities such as subtidal rocky shores and coral reefs but also considers how the benthic communities are coupled to events in the water column. Attaining this knowledge is an end in itself, but it is perhaps most rewarding to use it as a baseline to interpret anthropogenic impacts and to inform conservation.

I am passionate about training more students to test ecological theory in the ocean.