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NEW RESEARCH IDENTIFIES EFFECT OF INVASIVE SEAWEED ON LOCAL FISH

Identification of abundance and diversity of economically and ecologically important fish and role of invasive seaweed that increases survivorship

Fish in the Charleston Harbor now share their home with a recently introduced invasive Asian seaweed, *Gracilaria vermiculophylla*. This home, full of economically and ecologically important fish, is likely to experience change as *Gracilaria* provides new food and shelter to the local marine community.

Melanie Herrera, an intern with the NSF REU program at the College of Charleston, is conducting research to explore a relatively new angle in understanding the importance of fish habitat: how a non-native seaweed changes fish habitat and how that may translate to the sustainability of fisheries. Unlike typical invasive species, Herrera hypothesizes *Gracilaria* actually plays a positive role in the recruitment of fish. She is looking at the presence of *Gracilaria* on fish. *Gracilaria* is characterized by 3D branches that create optimal hideouts for fish. In order to identify habitat preference, Herrera compares fish occurrences in two sites: a dense site, characterized as >80% of *Gracilaria*, and a sparse site, of <20% of *Gracilaria*.

In the lab, Herrera's collection of fish is preserved, separated and categorized by family, genus, and species. This categorization enables them to identify and analyze what types of fish and how many of each are using the different habitats. The analysis will give Herrera insight on what type of habitat, either patches dominated by *Gracilaria* or areas with more open water, benefits fish. Specifically, they will be able to identify if *Gracilaria* is advantageous to young fish or if their survivorship is independent from their habitat.

As a home to many economically important fish, Herrera's project can help commercial fisheries and the seafood industry better understand how *Gracilaria* supports their industries. Dr. Antony Harold, the project lead and expert in fish ecology, says "Some of the species of fishes found to colonize *Gracilaria* are those of some direct economic importance, including spotted sea trout and Florida pompano. Although these habitats are largely based upon invasive algae they make an important contribution to enhancement of populations of these species." Most importantly, this experiment provides a basic index of animals that are important for future studies, stock assessments, and economic contributions.



Figure 1: Examples of identifying and counting fish to the lowest taxa possible. (Left: Striped Killifish, Right: Atlantic Silversides)

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