

Effect of Size on Foraging Behavior of the Green Sea Urchin *Strongylocentrotus droebachiensis*

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Strongylocentrotus droebachiensis, the Green Sea Urchin, is a cold water species, found in both the Northern Atlantic and Pacific oceans. Green Sea Urchins are commercially important in the United States (primarily in Maine), Canada, Japan, and parts of Northern Europe, commonly harvested from the wild. Unfortunately, the green sea urchin fishery in Maine has been overexploited causing increased regulation such as an upper size limit (test diameter (TD) $2 \frac{1}{16}''$ to $3'' = 52-76$ mm) which may be impeding population growth due to conspecific competition. More specifically, size restrictions could be creating competition between larger individuals, preventing smaller individuals from accessing high value food sources, such as kelp, therefore preventing their ability to grow into larger, harvestable sized animals for the market. This pilot study was conducted to determine the veracity of a possible link between abundance of urchins in particular size classes and competition while foraging. Green sea urchins were separated into size classes [Large and Small], placed alone into separate tanks with one piece of kelp (*Saccharina latissimi*) on the opposite end of the tank. Their behavior was filmed for 1.5 hours, and the time taken to reach the kelp, the amount of time associated with kelp, and the amount of kelp consumed. Small urchins were found to be much more efficient foragers in all respects. Further study is needed to determine if this is representative of trends at a larger scale, and how foraging behavior is affected by the presence of other urchins.