

## RESEARCH

### BULL KELP FARM IMPROVEMENTS TO ENABLE SCALING OF INNOVATIVE FOOD PRODUCTS

**GOAL:** To explore potential methods to improve bull kelp (*Nereocystis leutkeana*) farming operations.



Currently, the farmed biomass of bullwhip kelp does not meet the optimal demand for the largest buyer of bull kelp biomass in the US- Barnacle Foods. The data collected in this study will contribute to improved farming practices.

In a partnership between farmers and researchers, experiments were conducted to examine how depth, water flow, and seeding density affect stipe development of bull kelp.

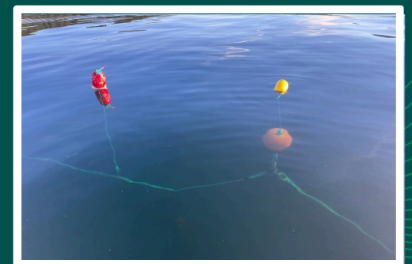


### Project Objectives

1. Determine if there are morphological (size and shape) differences between bull kelp farmed at relative low water flow vs. high water flow.
2. Determine if seeding at a lower density contributes to producing larger bull kelp individuals.
3. Determine if the depth of seed deployment contributes to producing larger bull kelp individuals.

### Methodology

- Farms deployed at sites with a maximum water velocity of  $\sim 0.4$  m/s, with bidirectional flow (water flowing from two directions) versus 0.11 m/s, with unidirectional flow (water flowing from one direction).
- Seedstring (line baby kelp spores grow on) was covered with 2500 spores/ml
- To test effects of low seeding density, 10cm per meter of seedstring was seeded.
- To test high high seeding density seedstring was continuously wrapped in seeding (baby kelp spores).
- To evaluate effects of depth the seedstrings were placed at 3 & 6 meters below surface.



## Research Team



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### Contact Us

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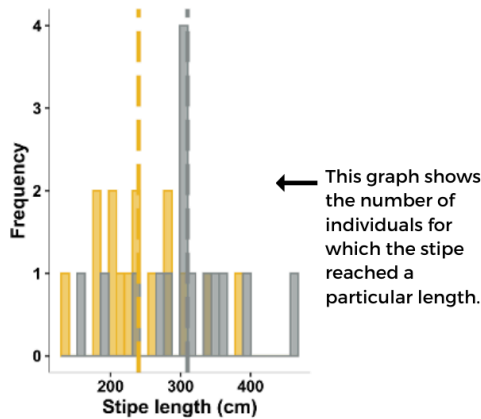
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## Results

- Farming deeper, at lower density, and at sites with adequate flow yielded longer and thicker sporophytes.
- Slow flow can be compensated for with low seeding density on seedstrings.
- Flow has a positive impact on stipe size.

### Relative stipe diameter

- 3 meters below surface
- 6 meters below surface
- 0.11 m/s, with unidirectional flow
- 0.4 m/s, with bidirectional flow



## Next Steps

- Present findings at the 2024 Mariculture Conference.
- Improve farm deployments and data collection.
- Barnacle Foods will use the kelp grown in their products.

