

Title: New Product Development for Alaska Seaweed

Organization: Alaska Fisheries Development Foundation (AFDF)

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Principal Investigator: Julie Decker, jdecker@afdf.org

Priority Addressed: Priority #2 - Science or Technology that Promotes Sustainable U.S. Seafood Production and Harvesting

Background: In 2017, global aquaculture production of seaweed was 23.8 million tons per year, worth \$6.4 billion. The majority of edible seaweeds consumed in the United States are imported from Asia. Alaska has more than 30,000 miles of clean, pristine, nutrient-rich coastline, which produce more than 50 percent of seafood in the United States. Alaska has all the qualities of an ideal environment for mariculture development: clean and abundant waters, hardy coastal communities with maritime experience, and an existing seafood industry and infrastructure. In 2014, the Alaska Fisheries Development Foundation (AFDF) began spearheading the **Alaska Mariculture Initiative** – a strategy to accelerate the development of mariculture in Alaska [enhancement, restoration, and farming of shellfish (marine invertebrates) and seaweeds (macroalgae)]. The Initiative led to the establishment of the Alaska Mariculture Task Force by Administrative Orders #280 and #297 under Governor Walker and the adoption of a statewide comprehensive plan, called the Alaska Mariculture Development Plan (Plan) with the goal to grow a \$100 million industry in 20 years. In 2017, three farms harvested farmed seaweed for the first time in Alaska. In 2020, these three farms have already exceeded the production capabilities of the two small companies purchasing seaweed in Alaska. During this same period of time, 61 additional seaweed farm applications were submitted to the state, several of which were over 100 acres in size, for a total of 1,200 acres. Although the seaweed industry in Alaska is in its infancy, it is poised to experience considerable growth in the near future. Alaska’s seaweed farmers are currently focusing on sugar kelp, ribbon kelp, and bull kelp.

Rationale: The May 07, 2020 Presidential Executive Order advocates that the U.S. renews “. . . our focus on long-term strategic planning to facilitate aquaculture projects [in order to] protect our aquatic environments; revitalize our Nation’s seafood industry; get more Americans back to work; and put healthy, safe food on our families’ tables”. As mariculture of shellfish and aquatic plants grows in Alaska, product development, including marketing research and development, will help assure that increased production results in increased opportunity and stable revenue for the industry and the State (priority recommendation of the Plan).

In order to increase market demand for and sales of Alaska seaweed, first the number of companies processing seaweed and the amount of seaweed processed must increase. Much of these business decisions hinge on the development of new products, targeting of and access to markets, and understanding prices, production costs and profitability. However, companies currently buying Alaska seaweed (Barnacle Foods and Blue Evolution) and companies considering entering this business have both expressed the need for information on new

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product development, including optimal product forms, processing procedures and markets suggesting the highest value potential. This has hindered the growth of industry.

As part of the Plan, AFDF commissioned an economic analysis which provided framework for how the Alaska mariculture industry may develop over the next 20 years. Encompassed in this economic analysis, the McDowell Group included a five-year projection for the development of seaweed farming: **“By year five, 150 acres will be under cultivation, producing 8,000 lbs per acre”** or a total of 1.2 million pounds annually. However, in three short years of growing and harvesting seaweed, **Alaska farmers have already exceeded existing processing capacity. If we can remove this processing bottleneck, Alaska will exceed the 5-year projection.**

Extrusion is a food processing technology utilized to produce direct expanded snack foods, breakfast cereals, flat breads, pet foods, pellet products, textured vegetable proteins and many others. Extruded products are typically made by utilizing a raw material (i.e. Alaska seaweed) and subjecting it to high temperatures while also creating a high shear and high-pressure environment, transforming ingredients into products with different eating characteristics. Extensive extrusion food processing has not been analyzed for Alaska seaweed, including nutrient profiling, product testing and production cost analysis. Derived from a separate grant, a seaweed market assessment will inform this project and recommend future research given the identified gaps. This project will increase market demand for and sales of Alaska seaweed products while diversifying economies and increasing the resiliency of coastal communities participating in the seaweed industry, including full utilization of existing processing facilities and other fishery infrastructure. This project addresses both SK Priorities #1 and #2. AFDF will partner with seaweed farmers, Rising Tide Communications, McDowell Group, Alaska Manufacturing Extension Partnership (MEP), TBD extrusion lab, Seagrove Kelp and other stakeholders to direct this new industry towards sustained market growth.

Goal: The overall goal of this project is to enable increased sales of Alaska seaweed through product development in order to meet or exceed production goals set in the Plan of 1.2 million pounds within five years (2023). This goal will be accomplished via the following objectives:

- Objective #1 – Secure Alaska seaweed supply for product dev. (AFDF, Seagrove Kelp)
- Objective #2 – Create Industry Steering Committee - utilize domestic and European seaweed market assessment and industry input to guide seaweed product dev.
- Objective #3 - Develop at least 15 new seaweed product prototypes for potential sales in domestic and European markets (AFDF, ASG, Seagrove Kelp, TBD extrusion lab, MEP)
- Objective #4 - Conduct nutrient profiling of new seaweed products, develop best practices guide, recipes and handbook for Alaska seaweed product dev. (AFDF, Seagrove, McDowell Group, RTC, Steering Committee, MEP).
- Objective #5 – Provide outreach/education, disseminate results of objectives 3-4 (AFDF).

Identification of Required Permits: None required.

Estimated Budget: \$280,00