Evaluating the Key Factors that Influence the Efficacy of Transplanting to Supplement Recruitment

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May 4, 2022

1.0 EXECUTIVE SUMMARY

Project Title: Evaluating the Key Factors that Influence the Efficacy of Transplanting to Supplement Recruitment

Year Awarded: 2022

RSA Priorities Addressed By This Research: *RSA High Priority #2: Research on scallop biology and RSA General Research Needs #4: Scallop recruitment supplementation*.

Industry Partners: Nordic Inc., Empire Fisheries, Quinn Fisheries, Fulcher Seafoods, Viking Village, Eastern Fisheries, O'Hara Fisheries, and Mass Fabrication, Inc.

The proposed project will evaluate the impacts of transplanting on scallop growth, dispersal and mortality addressing scallop ***RSA General Research Needs #4: Scallop recruitment supplementation***. The project will take place over a one-year period, starting June 1st, 2022, through May 31st, 2023. During this period, we will perform five surveys to evaluate growth, mortality, and dispersal of transplanted scallops. We propose to move 2,000 baskets of scallops from a harvest site within ten miles of the transplanting site and tag up to50,000 scallops with ¾" Floy flexible shellfish tags. A survey will be conducted one-month prior to, one-month, three-months, six-months, and one-year following transplant. By tracking tagged scallops within the transplant site, we will be able to evaluate growth and changes in biomass relative to scallops in a nearby control site. Oceanographic data (i.e. temperature, depth, conductivity) will be collected during all surveys using the vehicle's onboard sensor array. With the environmental data, we will evaluate relationships between these factors and growth. The successful completion of the proposed research will provide necessary insight on the factors that influence the formation and persistence of scallop beds addressing ***RSA High Priority #2: Research on scallop biology***.

2.0 PRELIMINARY RESULTS AND DISCUSSION

Unpredictable recruitment events have resulted in boom-and-bust years for the US Atlantic sea scallop resource. As an industry, these issues make long-term business planning difficult. Thus, it is imperative that the industry develop proactive approaches to stabilize the scallop resource. Scallop transplanting is a viable option to stabilize this resource and is the active management strategy the industry needs. Developing this active management strategy will not only benefit fishermen, but also managers and local communities. We plan to work with industry partners to conduct this research and develop best practices for transplanting scallops. Industry partners will also collaborate on site selection. The results of this project will be presented to the management council as a potential strategy to help stabilize this resource and could be used alongside current rotational management. By evaluating the drivers of dispersal and mortality of recently transplanted sea scallops, we can improve the resilience of the sea scallop fishery and use this information to develop strategies that improve the resilience of the fishery.

3.0 SPECIAL COMMENTS

The strategy being investigated by this project is one of many strategies that the sea scallop industry and managers should investigate. The current rotational management program relies on natural recruitment processes increasing the risk of a fishery collapse due to ocean warming. The imminent development of offshore wind in the Northeast will likely displace sea scallop fishing effort and prevent the fishery from accessing sea scallops that may recruit to these areas. These issues make necessary the development of proactive approaches for improving the resilience of the sea scallop fishery. While the information provided by this research will be useful to those seeking to transplant scallops, a large-scale proactive strategy is required to truly realize the potential benefits gained through enhancement. Both the past and on-going enhancement research are reactions to declining landings and strong indications of the sea scallop resource collapsing (**Figure 1**). Rather than continuing to react to boom and busts in the sea scallop fishery, managers need to implement proactive measures to improve the resilience of the fishery in the face of existential threats like climate change and offshore energy development.

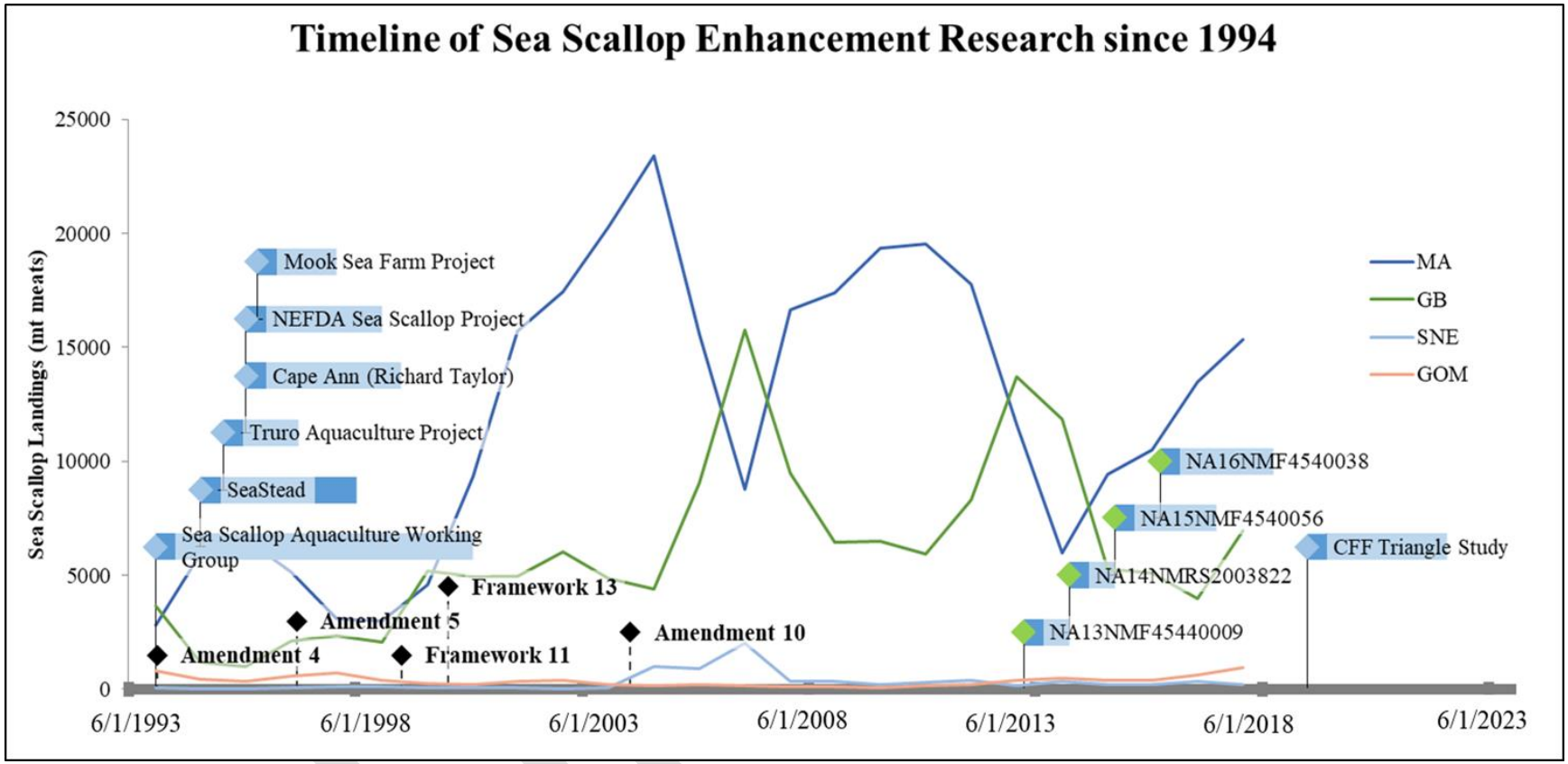

Figure 1: Timeline of enhancement research relative to sea scallop landings and critical sea scallop legislation.