

**Project Title: Developing Ecosystem and Socio-economic Profiles for the AFSC**

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**Summary** (Please describe the focus of this project.)

*We are at the dawn of next generation stock assessment. Ecosystem-based science is becoming the forefront component of effective marine conservation and resource management; however, the gap remains between conducting ecosystem research and integrating with the stock assessments. Primary obstacles are a lack of a consistent approach to deciding when and how to incorporate ecosystem and socio-economic information into a stock assessment and how to test the reliability of this information for identifying future change. Over the past several years we have developed a new standardized framework for operationalizing the integration of ecosystem and socio-economic factors within the NOAA Fisheries' stock assessment system (Shotwell et al., 2016, Shotwell, 2018). This baseline Ecosystem and Socio-economic Profile (ESP) uses data collected from a large variety of national initiatives in a four-step process to generate a set of standardized products that culminate in a focused, succinct, and meaningful communication of potential drivers on a given stock. A preliminary ESP was first introduced for the Alaska sablefish stock in 2017 (Hanselman et al., 2017). ESPs are an efficient testing ground for new approaches and provide a set of communication tools that can be tailored to a large variety of audiences in order to effectively merge the ecosystem, socio-economic, and stock assessment disciplines.*

*Following the introduction of the sablefish ESP in 2017, the North Pacific Fishery Management Council (NPFMC, Council) recommended ESPs be developed for priority stocks in the Alaska groundfish and crab fishery management plans. The ESP concept is supported in the Gulf of Alaska Regional Action Plan (Dorn et al., 2018), the Alaska Essential Fish Habitat Research Plan (Sigler et al., 2017), and the new Stock Assessment Improvement Plan (Lynch et al., 2018). These plans describe the ESP as a unique process/product framework that identifies and analyses representative ecosystem, habitat, climate, and socio-economic linkages in accordance with the complexity of the stock assessment. The results are distilled into decision tables for fishery management and several different dynamic reporting formats to effectively communicate with the scientific community, stakeholders, and the public. As such, the ESP is a clear example of the fifth guiding principle in the ecosystem-based fishery management (EBFM) Road Map and should be considered a stock-specific example of the Integrated Ecosystem Assessment (IEA) framework loop. Finally, the 2017 Alaska Fisheries Science Center's (AFSC) Strategic Science Plan prioritizes the creation of next generation stock assessments that explicitly include ecosystem linkages, and the ESP creates the building blocks to accomplish this task. However, in order to implement the ESPs, a large amount of coordination is required between a diverse set of programs within the science centers that run the stock assessments. This project seeks to conduct a series of workshops to inform and coordinate the ecosystem, economic, and stock assessment communities at the AFSC so that the recommended ESPs can be created and maintained.*

**Approach** (Concisely state the approach that will be used to address the problem or question.)

*We propose to conduct three workshops (one per year) at the AFSC in Seattle to create the necessary infrastructure to implement the ESP process for priority stock assessments. Stock assessment authors along with representatives from programs within the AFSC will be invited to attend and contribute to the*

*workshops. Additionally, Council representatives will be invited to participate and provide feedback. The workshops are organized along three general themes associated with the development of an ESP but the process will be continually evaluated over the time period to determine avenues for improvement.*

*Specific tasks are detailed below for each workshop:*

- *2019 Data Workshop: 1) review ESP framework and step through current ESP examples, 2) review current AFSC ecosystem and socio-economic research and discuss how it may contribute to the ESPs metrics and indicators, 3) present/discuss guidelines for streamlining data contributions to the ESPs, 4) create general timeline and personnel matrix for determining when and how to conduct ESPs*
- *2020 Model Workshop: 1) review current ESPs (anticipating 4) and any accompanying Council recommendations, 2) present/discuss modeling applications in the ESPs (data-limited and data-rich examples), 3) present/discuss guidelines for indicator selection and ecosystem research model performance, 4) review data contributions, timeline, personnel involvement and discuss what is working and what needs improvement in the process*
- *2021 Advice Workshop: 1) update on current ESPs and Council recommendations, 2) present/discuss forecasting applications in the ESPs and resulting management decisions, 3) present/discuss guidelines for ecosystem model projections and decision tables for quota recommendations, 4) develop templates for ESP reporting (e.g. rapid two-page communication for stakeholders and the Council, summaries for the stock assessment reports)*

*This project will help bridge the gap between the ecosystem, economic, and stock assessment communities at the AFSC by encouraging cooperation and communication amongst a wide variety of programs toward the common goal of implementing EBFM. The results of the workshops will create guidelines that detail the ESP process tailor fit to the ecosystem and socio-economic research conducted at the AFSC.*

### **Deliverables** (Describe the outputs of this project.)

- *Three proceedings technical memorandums following each workshop with detailed minutes*
- *A manuscript summarizing the resulting guidelines by workshop theme and overall recommendations of the three workshops*
- *A ESP web page on the new NMFS website that reviews the ESP process and provides links to ESP templates, code, and examples at the AFSC for potential application at other science centers*

### **Partners** (List all resources/funding from within the AFSC as well as external partners)

*This project involves data available from a wide variety of sources covering the spectrum from stock assessment results to ecosystem and socio-economic status reports. All divisions at the AFSC contribute to producing this information which includes ABL, Kodiak, REFM, RACE, FMA, HEPR, and MML. Additionally, scientists from universities such as UAF and UW have contributed to the available indicators as well as personnel from other centers (e.g. SWFSC and NWFSC). Staff at the Office of Science and Technology's National Stock Assessment Program have worked on developing the ESPs and support the continued work on the ESPs at the AFSC. Finally, the Council's Groundfish Plan Teams and Scientific and Statistical Committee have endorsed the ESP and continue to request updates on the ESP progress.*

APPENDIX (does not count against the 2 page max limit)

**Intent** (Please place an X next to the associated implementation program. If you select “Other”, then please provide an explanation of how this project satisfies the intent of the other implementation programs. “Other” could also be a place to describe links to past OST RFP processes.)

Implementation Program	Applicable
Regional Action Plans ( <a href="#">RAP</a> )	X
Ecosystem-based Fisheries Management Roadmap ( <a href="#">EBFM</a> )	X
Integrated Ecosystem Assessment ( <a href="#">IEA</a> )	X
Stock Assessment Improvement Plan ( <a href="#">SAIP</a> )	X
Other (please explain):	

**Budget** (object class level view of the project’s proposed budget in \$K.)

Object Class	FY19	FY20	FY21	Notes
Contracts	0	0	0	
Grants	0	0	0	
Equipment	0	0	0	
Travel	30	30	30	<i>Trip to Seattle for 15 workshop participants from Alaska</i>
Supplies	2	2	2	<i>Workshop supplies (e.g. data storage, printing)</i>
Term/Temp Labor	0	0	0	
<b>TOTAL by year</b>	<b>32</b>	<b>32</b>	<b>32</b>	

**Literature Citations** (feel free to list relevant publications)

Dorn, M. W., C. J. Cunningham, M. T. Dalton, B. S. Fadely, B. L. Gerke, A. B. Hollowed, K. K. Holsman, J. H. Moss, O. A. Ormseth, W. A. Palsson, P. A. Ressler, L. A. Rogers, M. A. Sigler, P. J. Stabeno, and M. Szymkowiak. 2018. A climate science regional action plan for the Gulf of Alaska. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-376, 58 p.

Hanselman, D.H., C.J., Rodgveller, C.R., Lunsford, and K.H. Fenske. 2017. Assessment of the sablefish stock in Alaska. *In* Stock assessment and fishery evaluation report for the groundfish resources of the GOA and BS/AI. North Pacific Fishery Management Council, 605 W 4th Ave, Suite 306 Anchorage, AK 99501.

Lynch, P. D., R. D. Methot, and J. S. Link (eds.). 2018. Implementing a Next Generation Stock Assessment Enterprise. An Update to the NOAA Fisheries Stock Assessment Improvement Plan. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-F/SPO-183, 127 p. doi: 10.7755/TMSPO.183

Shotwell, S.K., D.H. Hanselman, S. Zador, and K. Aydin. 2016. Stock-specific Profiles and Ecosystem Considerations (SPEC) for Alaska groundfish fishery management plans. Report to Joint Groundfish Plan Team, September 2016. 15 p. Available Alaska Fisheries Science Center, Auke Bay Laboratories, 17109 Point Lena Loop Road, Juneau, Alaska 99801.

Shotwell, S.K. 2018. Update on the Ecosystem and Socioeconomic Profile (ESP). Report to Joint Groundfish Plan Team, September 2018. 11 p. Available online at: [https://meetings.npfmc.org/CommentReview/DownloadFile?p=d467ccc4-a136-4d63-b445-fdc6d0fe4629.pdf&fileName=ESP\\_Update\\_PT-0918\\_Shotwell.pdf](https://meetings.npfmc.org/CommentReview/DownloadFile?p=d467ccc4-a136-4d63-b445-fdc6d0fe4629.pdf&fileName=ESP_Update_PT-0918_Shotwell.pdf)

Sigler, M. F., M. P. Eagleton, T. E. Helser, J. V. Olson, J. L. Pirtle, C. N. Rooper, S. C. Simpson, and R. P. Stone. 2017. Alaska Essential Fish Habitat Research Plan: A Research Plan for the National Marine Fisheries Service's Alaska Fisheries Science Center and Alaska Regional Office. AFSC Processed Rep. 2015-05, 22 p. Alaska Fish. Sci. Cent., NOAA, Natl. Mar. Fish. Serv., 7600 Sand Point Way NE, Seattle WA 98115.