

## **Rice comments to the EVOS Trustee Council meeting of 18 January 2022**

As a long time EVOS researcher from the beginning, I have witnessed and participated in the evolution of spill science, from single species driven research, to support litigation, to ecosystem research to support the management of important species. I retired in 2014; I have no specific interest to my former agency (NOAA Auke Bay Lab), or to any specific project, but I have continued as an unpaid internal science reviewer for both the Gulf Watch and Herring programs. My present motives for commenting today are for continued advancement of science that benefits Alaska in an ever-changing world. I have 3 main points to make:

**Point 1.** EVOS science is among the best programs in the world. It has a track record of well published peer reviewed science over a long period of time that have withstood the test of time in the scientific literature as well as standing tall in court. Several of the data sets reach back 3 or more decades, and range across the scientific spectrum, from oceanography to important managed species. In the last 10 years, EVOS science has evolved into a mature program, with better integration of logistics, science, and management. A few specific studies were added to compliment the long-term legacy studies. The management part of the program has ensured the continuation of the long-term data sets, and has also established further integration to support syntheses across studies, thus enhancing the overall value of the science produced. Management agencies, both state and federal, usually do a good job of tracking populations trends of important species, but often fail to predict and understand why there are specific major deflections from the predictions. Ecosystem level research across multiple disciplines is required to understand the complexities operating in the ecosystem, with but are usually well beyond the individual agencies with management responsibilities. NPRB took one approach- like BSRP (Bering Sea Research Program), where about 50 studies were funded for 3-4 field years; EVOS took a different approach; fewer studies, but for a longer period of time, with a goal of protecting, following, and understanding the changes to injured species and important managed species. We are now half way through the 20 year vision of that program and have captured important data in cold/warm years as well as good/bad years. The net result has been the continuation of world class studies that involve long term data sets with integration and interpretation.

**Point 2.** “Program management ” is key to the “enhanced success” of the program. Program management is needed to coordinate logistics, integrate the science across projects, and most importantly, to form teams to provide a synthesis of the science across multiple projects. The ecosystem is complex, it is always constantly changing; we can’t study all the moving parts, but ten years ago we have made our best stab at selecting parts from the bottom-up forces (e.g. prey production, energy input, recruitment, etc.) as well as top-down forces (e.g. predation, disease, etc.). It takes a management team to ensure there are oceanography studies in the same areas and timing as the species studies. A giant glob of data is subsequently produced from various different study inputs, and must be managed, scrutinized, and made available to all; followed by individual study reports and interpretations; and most importantly, followed by a synthesis across a group of studies by multiple teams. This is the big payoff for Alaska science, where EVOS science enhances not only those studies within the program but also serves the need of agency managers who need to have a better understanding why their species are drifting up, or falling off a cliff. After a period of time, the biological response of several different ecosystem levels can be compared between cold/warm years, or good/bad years for specific target species. Without program management support, the individual funded studies will devolve into a collection of studies, losing integration of logistics, inter-connection

of science, and synthesis. Individual studies will produce, but the collective benefit will suffer, and Alaska science will not be served as well as it was, or could be.

**Point 3.** Program management should be making the difficult decisions of how to finish the programs, with the maximum number of peer reviewed publications, particularly syntheses, within the funding guidance determined by the Trustees. Cutting off specific studies without a closeout year will cause a loss of data that has been collected, analyses of data or samples will be stopped, papers not published, and syntheses will not be completed. New studies should not be started if that action leads to an abrupt termination of long-term study without a closeout year and the completion of publications. One example is the genetics/herring study that has produced a large quantity of analyses, with maybe some to go, but statistical analysis of the data and formal publications have not been completed. Not approving new exposure studies is one thing, but to abruptly stop the project before completing data analyses and publication (close out year) would waste a lot of the money already invested in the project. We will lose several important high quality publications and undermine a valuable contribution to the herring program. Options such as diminishing some studies to 9 or 8 years, but with a close out for all should be on the table, with a general strategy of producing the most publications, and syntheses as the funded studies allow. Abrupt stopping of long-term studies without a close out year is not right.

The program will come to an end, but the final document should be a status of the injured species, as stipulated in the Restoration Plan. That should be a final close out requirement, and may be a legal requirement. Stopping the funding abruptly to a study such as the killer whale monitoring study, an injured species that has not recovered from the spill with a 40 year population time line is not the right thing to do. From a legal perspective, this is the best study that documents population effects from the spill. From a scientific perspective, with the population enumerated before and after the spill down to the individual level, it is arguably the most powerful damage assessment study ever, and neither of the two affected pods have reached recovered status. Abruptly ending these studies without close out It will be a strategic failure by the Trustees to meet the goal of providing the best science possible. The lack of a conclusionary report on the status of injured species at the end of the program will also be a fundamental failure. In light of these 3 points, I urge the Trustees to reconsider some of their earlier decisions.

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