

**To: Trustess of the Exxon Valdez Oil Spill**

2 October 2022

From: Stanley D Rice, retired NOAA scientist

This letter is in support of the funding the killer whale project

**As a senior NOAA EVOS scientist** (now retired) involved with damage assessment and restoration, from the beginning in 1989, I strongly support the funding of the killer whale project for the following reasons:

1. The two pods (AT1, and AB) are both damaged, and have not recovered.
2. This study documents the population decline and lack of recovery because it is based on individual identifications of killer whales (dating four years prior to the spill) and has absolute numbers based on individual identifications. This was the most powerful scientific study documenting damage funded by the Trustees, and the most powerful study documenting lack of recovery.
3. Killer whales are a protected species, are apex predators, and the documentation of the lack of recovery should be continued.
4. Tracking the population of these two pods is of interest to both the ecosystem (apex predators), as well as to the tourism industry
5. In recent years, this powerful study has documented the dramatic loss in population of AB pod in response to the "heat wave" years, ad important ecosystem finding, made possible by long term population monitoring coupled with other studies

**As an internal science reviewer for both Gulf Watch and Herring program since the beginning of these two programs**, I note that the sudden population decline of fish eating AB pod during the heat wave years was as dramatic as the population decline immediately following the oil spill. This population effect was captured because of the long term data monitoring of both oceanographic conditions and with killer whale population. I also note the reduced budget request for the future (half) which will permit the orderly conclusion to the project.

**As an expert witness for the U.S. Dept of Justice** in the prosecution of British Petroleum in the 2010 Gulf of Mexico spill (one of two biologists that testified for Dept of Justice at the trial), I became aware of the importance of long term data sets from the Exxon Valdez damage assessment studies: the precedence they set as a guide for damage assessment studies for that spill, and the importance of those studies in support of the Gulf of Mexico observations in the court proceedings. I had been deeply involved in many Exxon Valdez studies as a researcher, and co-authored about 100 peer reviewed scientific publications on Exxon Valdez damages, and used these to corroborate the gulf spill findings, and presented these in court. Bottom line: Killer whale studies, embryo toxicity studies, and sea otter/oil persistence studies, all with long term data sets, were extremely important and convincing that similar observations of the Gulf of Mexico spill were also real; collectively, the Exxon Valdez studies continue to be of national interest, not just a regional interest to Alaska.

**As a citizen of Alaska**, I have always been proud of the work that scientists and agencies collectively did in response to the spill. The process did not have a very good road map to follow in the beginning from the studies of previous spill. The process quickly developed was an open peer reviewed process, with input from agencies, and from the public sector, such as the PAC, and a peer review of proposals and

progress from the EVOS Science Panel; Trustees were responsive and adjusted their directions and approvals as information was learned and as we as a whole evolved in our understanding.... I strongly believe there has been a change, the decision process appears to be less transparent, and the recommendations of PAC and the EVOS Science Panel have not been followed, breaking from more than 25 years of tradition. I strongly urge the Trustees to return to a more transparent process, heed the advice and recommendations of PAC and the Science Panel as well as possible, and de-politicize the decision process. Our biggest and most important legacy is the documentation of the spills damage and the length of recovery of damaged species and habitats, providing the best information for management agencies and the people that use these damaged habitats and resources.

## John Moran

I am writing in support of the continued long-term funding for the Killer Whale Monitoring Project. The Killer Whale Project has almost 40 years of data on this iconic species. At a time when the AT1 transient population seems to be heading toward extinction, and other resident pods such as ABs are in decline, it seems counter intuitive cut funding for this project. I have worked with this team for 15 years. Their dedication and commitment to excellence is unsurpassed, they are the world's leading killer whale experts.

Please consider the current situation with southern resident killer whales and the recent U.S. District Court decision which may have impacts on Alaskan fisheries. The need to continue this high quality research is essential to protect the species and inform policy makers on decision that could have both economic and social impacts for Alaskans.

## Doug DeMaster

This is a letter of support for the Killer Whale Monitoring Project (Progress report and reduced budget, 2022- Matkin and Durban). The Principle Investigators (PIs) are seeking additional support for the Killer Whale Monitoring Project in years 2023, 2024 and 2025. I believe I am in a strong position to provide a fair and unbiased recommendation for this proposal. I have no conflict of interest related to the PIs and have no involvement with the proposed operations. My background concerning marine mammal science is significant, which includes: 1) Director of the NMFS Alaska Fisheries Science Center for 17 years, 2) Director of the Marine Mammal Laboratory, AFSC/NMFS for 3 years, 3) Director of the Cetacean Program for 5 years at the Marine Mammal Laboratory, AFSC/NMFS, and 4) serving as Chair of the International Whaling Commission's Scientific Committee for 3 years. I have over 80 peer-reviewed publications regarding marine mammal ecology and assessment, and have served on the Alaska and Pacific Scientific Review Groups for marine mammal stock assessment (NMFS), as well as serving as acting NMFS representative on the North Pacific Research Board (NPRB) and as a member of the NPRB's Science Panel.

The Killer Whale Monitoring Project was initiated in 1984 and is one of the few time series with pre-and post-spill data. Pre-spill data on killer whale populations in this region is particularly important information, as it provides baseline data on the status and health of these animals. In addition, the project provides both pre- and post- marine heat wave information on killer whale survival, fecundity, diet and movements. This sort of information for long-lived, top of the food chain predators is critical to a complete understanding of the influence of multiple factors on the dynamics of populations that were impacted by the EVOS. Another strong factor favoring support of this proposal is that the project has integrated an unusually broad set of data sources, including genetics, acoustics, photo-identification, dietary studies, and photogrammetry. Further, the statistical and quantitative ecology skills among the PIs is exceptional. For example, the PIs published two articles on the impacts of the heatwave on killer whale populations in the Prince William Sound and Kenai Fjords region by fitting a Bayesian latent state mark-recapture model to long-term photo-identification records to estimate annual departures from the survival expected based on age and sex composition for 2009-2021, spanning five years on each side of the heatwave (see Ward et al. 2016 and also Stewart et al. 2021). In my experience, there are very few marine mammal research teams that combine field expertise, animal knowledge and quantitative skills, as this team has. Finally, it should be recognized that the PIs work very closely with the Alaska marine tourism industry, and provide significant information and educational materials. This connectivity between research and the general public provides a significant opportunity to educate the public regarding marine ecosystems and the trajectory of marine mammal populations following the EVOS.

The following information is from the proposal prepared by the PIs. They have documented that the oil spill has had long-term and continuing effects on killer whales that were exposed to oil from the EVOS. They have documented that the AB pod of southern Alaska Resident killer whales has not recovered, the AT1 Transient population is headed for extinction, and the AB pod was on 30 year recovery trajectory since the spill, but, along with other Resident pods, has declined following the recent marine heatwave in the Gulf of Alaska. In 2021, the PIs initiated a photogrammetric study on killer whales in their study area for the purpose of linking nutritionally driven changes in body condition to their reproductive success and survival. This research has continued in 2022 with support from the EVOS Trustee Council. It is clear from existing and future publications that

understanding trophic linkages are critical to understanding the population dynamics of killer whales in this region. Additional research by the PIs that was supported by the EVOS Trustee Council includes passive acoustic studies to better describe year-round distributional and residency patterns of killer whales in the Gulf of Alaska and the use of genetic prey barcodes to better understand the diets of resident killer whales. The information provided by these latter two studies should provide the information needed to describe how prey distribution and abundance drives the population dynamics and spatial behavior of killer whales in this area.

As noted above, there are clearly multiple factors affecting the dynamics of killer whale populations in this region over the past few decades. Without some understanding of all of the significant factors, it is not possible to attribute the impacts of the oil spill on these animals. This demonstrates the need to continue monitoring to assess recovery potential, and to understand the influence of environmental drivers and anthropogenic drivers over the past 35 years.

The PIs are requesting \$385,400 in fiscal years 2023, 2024, and 2025. During this period, the PIs propose to find support for their research outside of support from the EVOS Trustee Council. At an average annual expenditure of \$128,467, this appears to be an outstanding way to transition this research program from EVOS Trustee Council support to other sources, while continuing the data collection and time series, and while also continuing the analysis of existing data. That figure is approximately the cost of one federal analyst per year. Frankly, it is remarkable that the PIs will be able to continue their field work, data analysis and cover operating and labor expenses with that amount of support. Nonetheless, I strongly believe that the PIs will perform, as they have in the past, with a strong list of accomplishments.

I have no reservations regarding this recommendation to the Trustee Council. The skill set of the PIs is outstanding. Further, the synthesis publication proposed for fiscal year 2025 will be a very important overview of findings from this long-term study. The information provided by this research is clearly of importance to the mandates of the EVOS Trustee Council. And, the PIs are being responsive to the requests of the Trustee Council to find outside support for their research. The level of funding requested over the next three years is certainly reasonable. Finally, the publication record of this team in the peer-reviewed literature is not only outstanding (i.e. seven publications in the last 4 years), but has strongly influenced the literature on the impacts of both environmental and anthropogenic factors on top level predators, such as killer whale populations in the Prince William Sound/Kenai Fjords region, and other regions.

Dear EVOS Trustees,

I am the Science Lead for Gulf Watch Alaska (GWA) and have been in this role since 2017. During the program's first 10 years, GWA was designed and has matured as a highly integrated long-term ecosystem research and monitoring program. Through the efforts of the Management Team, including science leadership, GWA published four synthesis papers describing how the Gulf of Alaska responded to recent heatwaves and impacts on the physical environment, ecosystem components, fisheries, and recovery of resources injured by the *Exxon Valdez* oil spill (EVOS) <sup>1</sup>.

Synthetic products that allow us to estimate recovery timelines are not possible without efficient program administration and science coordination that the GWA Management Team provides. Otherwise, you are left with an assortment of individual projects, without cohesion, and would not be possible for the EVOS Trustee Council staff to administer with current staffing levels.

Building on the first 10 years, we developed our proposal for the next 10 years as an efficiently administered, integrated program. The greatest value of GWA is this integration and the sustained data collection. The selective removal of individual projects and intentions to reduce the length of data collection severely compromise that value. A prime example is the killer whale project that has demonstrated how the recent marine heatwave erased a 30 year, positive recovery trajectory of a key Prince William Sound resident group. Under a reduced funding scenario, portions of this and several other projects are among the last that I would have recommended eliminating. GWA would have been strategic in reducing costs to a new spending cap, while maintaining integration and science integrity.

I understand the need to reduce expenditures and fund other priorities, but I urge you to maintain the integrity that we designed into the GWA long-term monitoring program by funding Program Management and the reduced killer whale project. This design allows GWA to continue its legacy products, while being nimble enough to provide new products valuable to the EVOS Trustee Council's Mariculture and Education & Outreach foci.

Thank you for your time and investment in overseeing the EVOS legacy efforts. Sincerely,

Robert M. Suryan, PhD

Supervisory Research Fish Biologist, NOAA Auke Bay Laboratories

Science Lead, Gulf Watch Alaska Long-Term Ecosystem Research and Monitoring Program

<sup>1</sup> Suryan et al. 2021. Ecosystem response persists after a prolonged marine heatwave. *Scientific Reports* 11:6235.

Danielson et al. 2022. Temperature variations in the northern Gulf of Alaska across synoptic to century-long time scales. *Deep Sea Research Part II: Topical Studies in Oceanography*:105155.

Weitzman et al. 2021. Changes in rocky intertidal community structure during a marine heatwave in the northern Gulf of Alaska. *Frontiers in Marine Science* 8.

Arimitsu et al. 2021. Heatwave-induced synchrony within forage fish portfolio disrupts energy flow to top pelagic predators. *Global Change Biology* 27:1859-1878.