



March 28, 2010

Dear Council

I am a biological oceanographer with a decade of experience working in Alaskan waters studying the status of its planktonic communities and the processes that shape them. I would like to express my thoughts on the use of *Exxon Valdez* Oil Spill Trustee Council's remaining restoration funds. I strongly advocate that a significant proportion of the funds be committed to long-term multi-disciplinary monitoring efforts of the marine ecosystems of the Gulf of Alaska. The EVOS trust is in a unique position to support continuance of several key observation time-series in this region, and expand our understanding of their trends and variability.

Perhaps the greatest environmental challenge of our time is the need to understand, and ultimately predict, the biological response to both short-term and longer-term natural climate cycles. This challenge is made ever more difficult by ongoing, and likely unprecedented, climate change trends (IPCC 2007) on which these natural cycles are superimposed and modified. Although we can measure the superficial thermal response of the oceans to these trends at global scales by satellites – and even deeper with the aid of mooring and Argos drifters – our ability to measure biological response is comparatively limited. Although broad-scale patterns of surface chlorophyll can be deduced from ocean color viewed by satellites, at present, patterns and biomass concentration of marine animals can only be measured by direct collection. We can measure and learn much by traditional oceanographic programs at the regional scale. The logistical challenge is to collect enough information at sufficiently regular temporal scales and sufficient spatial scales to match the physical climatic backdrop to the consequent biological response. Such observations also provide the reference against which to assess locally specific human impacts (such as oil spills) or global-scale changes in ocean pH.

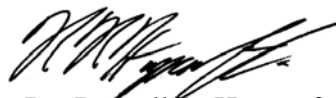
Long-term monitoring of marine conditions is specifically identified as one possible use for the remaining trustee council funds. In fact, when I interviewed for my position at UAF in 1999 I was awed by the foresight EVOS appeared to have in this respect with the development of its proposed Gulf Ecosystem Monitoring (GEM) program. This program understood that one of the biggest problems in assessing the impact of the oil spill was the lack of information on the state of the ecosystem prior to the spill and knowledge of how the components of the ecosystem functioned. This can only be accomplished by having a monitoring program in place **before** and during an unforeseen event, not by trying to mobilize a coordinated effort **after** it has happened. Simultaneously, the GEM program also acknowledged that the ecosystem was sensitive to other types of broader environmental forcing, such a climate change (but preceded the more recent recognition of the ocean acidification problem), which could have comparably large impacts on the marine resources of the region. GEM proposed to study the region in its full complexity, from physics through plankton and benthos to fish, marine mammals and seabirds.

EVOS proudly displayed their plans as numerous venues throughout Alaska and in the lower 48. The need for these important observations did not change, but the financial and political agenda did. The program was never implemented by EVOS as conceived, except for numerous studies on some of the more visibly prominent vertebrates. Studies on the environment and lower trophic levels on which these charismatic vertebrates depend were few, such as the long-term observations at the GAK-1 mooring and the Pacific CPR program.

As example, since 1998, GLOBEC (jointly funded by NSF and NOAA) and continuing efforts along the Seward line (supported by NPRB) have maintained broad observations of the ecosystem (see <http://www.sfos.uaf.edu/sewardline/>), and have vastly increased our knowledge of the linkages between ecosystem components within Prince William Sound and the coastal Gulf of Alaska. With a dozen years of observations we can now see a pattern emerging above the noise of year-to-year variability. Strong statistical relationships can now be demonstrated between spring zooplankton productivity on the Gulf of Alaska shelf and the survival of juvenile pink salmon released by Prince William Sound hatcheries that will return the following year. Basically, the value of such observations increases with the length of time they are maintained. Other longer-term observations in the region are also at the point that they are finally beginning to demonstrate the emergence of important patterns.

Despite the now demonstrated value of such long-term observations, their funding is always in doubt. Everyone wants to make use of such time-series observations, but no one wants to make the long-term commitments to maintain them. NSF for example argues they are not process-oriented hypothesis-testing science, so do not fall under their mandate. NOAA should perhaps be making such detailed ecosystem assessments throughout the Gulf of Alaska, but lacks the budget to maintain even the ongoing observations it is charged with. Alaskan organizations must therefore meet the challenges of monitoring the state's vast marine ecosystems. Although NPRB has seen the value of long-term observations along the Seward Line, and elsewhere, they require partners to share these costs in the longer-term. The EVOS trustee council is in a unique position to endow several such long-term observations projects in the Gulf of Alaska, a region critical to the marine resources upon which Alaska depends culturally and economically. I urge them to do so.

Sincerely,



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