

Comments on “The Future of the EVOSTC Program” by Thomas C. Royer, March 29, 2010

Alaska’s marine ecosystems have seasonal, inter-annual, inter-decadal and longer changes in response to natural and anthropogenic influences. For example, Prince William Sound’s marine ecosystem today is different from what it was in March 1989. In order to manage and sustain these marine systems, we must continue to measure the changes in them. If we attempt to manage the marine resources without these measurements, we will be unable to evaluate the effectiveness of the management strategies. Therefore, long term measurements or monitoring is an essential part of any ecosystem based management of marine resources.

Scientists who study ecosystems have a long term perspective of the world. It is not one that focuses on minutes, hours or days but rather on years, decades and millennia. Changes of ecosystems do not necessarily reveal themselves immediately. Instead they are usually masked by daily and seasonal changes. Examples are the interannual changes in air temperatures and precipitation. This is especially true at high latitudes where seasonal temperature changes are often an order of magnitude greater than at low latitudes. For example, the seasonal change in air temperature in Fairbanks is 70 degrees F whereas it is 7 degrees F in Hawaii but the inter-annual air temperature change might be similar at both locations.

How can we detect long term changes in Alaska’s marine ecosystem? We must make observations that will measure the long term changes while resolving the short term “noise” such as seasonal signals. We must sample frequently over long durations in order to detect subtle, yet significant changes. The EVOSTC-supported mooring at GAK1 is an excellent example of the type of measurements required to detect, analyze and predict long term changes in Alaska’s marine environment. It builds on measurements of water column changes since 1970. Unfortunately, the financial resources are not available to place similar moorings throughout Alaska’s coastal waters.

The oceanographic measurements at the mouth of Resurrection Bay (GAK1) that EVOSTC has supported are providing valuable information on the status of the marine ecosystem in the northern Gulf of Alaska. Similar measurements should continue in the future but additional biological and chemical observations across the shelf are necessary to provide a spatial context for the GAK1 mooring data that are primarily physical measurements (water temperature, salinity, and currents). Since the ecosystem changes continue in time, these measurements must be sustained.

I recommend that some of the EVOSTC funds be used to establish an endowment for the long term marine ecosystem measurements that would assure their continuation. At the present time, these observations are at the mercy of year to year funding fluctuations. No federal or state agency has stepped up to assure that this vital work continues though many have provided interim support. These agencies agree that this ecosystem monitoring is vital to their missions but do not have the resources to support it.

A commission should be established to guide this monitoring effort. It should have representation from the fishing, science, marine technology and resource management communities. Each of these fields has a different perspective and expertise on the marine environment. Operational procedures to continue and possibly expand on the present sampling should be discussed. New sampling methods should be considered

such as the use of autonomous underwater vehicles and remote sensing. Periodic oversight should be provided to evaluate the effectiveness of this sampling. The management and dissemination of the data to users such as resource managers is a vital aspect of this effort. Transparency of the data to the general is important so that they can become aware of changes in Alaska's marine ecosystems.

Why should we care if changes take place in Alaska's marine ecosystem? Alaska's fisheries are some of the largest in the world and there is evidence that fish populations respond to changes in the ecosystem such as changes in temperatures, salinities and ocean acidity. Over the last several decades we have seen changes in Alaska's fisheries with the demise of shrimp, king crab and herring and the increase in Pollock and now its decline. We need information on the Alaska's marine ecosystems to help manage these resources and assure that they will be sustained. We need to gather data that will be useful today, tomorrow and far into the future.

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