

## The Bering Sea: Current status and recent events

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This issue's report will be much briefer than the past issue. Most investigators have not been in the field since last summer or fall, and those initial late summer results were published in the previous issue. Scientists wishing to contribute observations, analyses or pure speculation are encouraged to contact the author at the above address.

### ***Recent climate and upper ocean observations***

The winter of 2003-04 brought weather typical of the recent past to the eastern Bering Sea. After a warm, early fall, the region experienced a series of moderate arctic air outbreaks interspersed with periods of mild, maritime conditions. The sea surface temperature (SST) over the shelf was on the order of 1.5°C warmer than normal going into the winter. This served to keep the air temperature over the shelf relatively warm for the entire winter, and to delay the seasonal advance of the sea ice. On the other hand, western Alaska, which was not as subject to the moderating influence of the shelf water, recorded near-normal air temperatures overall. There was an unusually pronounced cold snap at the end of March into April 2004; some of the coldest temperatures and the maximum ice extent (to about 57°N) occurred at this time (<http://www.natice.noaa.gov>). This was the third ice advance/retreat sequence of the winter. The cold snap was followed by a quick warm-up, and the ice sheet began retreating rapidly to the north, as has been typical of the last decade or two. At the time of this writing (late April), the ice edge was located at about 60°N, around Nunivak Island. From the ice distribution, I would predict an early spring phytoplankton bloom between 57° and 60°N, and a later spring phytoplankton bloom south of 57°N initiated by thermal stratification of the water column.

The overall atmospheric circulation anomalies for the winter (Nov.-Mar.) of 2003-04 included anomalously low sea-level pressure (SLP) over the Kamchatka Peninsula extending into northwest Alaska, and an anomalously high SLP center in the North Pacific near 45°N, 160°W. One of the consequences of this pattern was a tendency for cyclonic storms to track into the western portion of the Bering Sea more often than usual. El Niño-Southern Oscillation (ENSO) and the Arctic Oscillation (AO) represent important drivers of inter-annual climate variability on the hemispheric scale. The winter of 2003-04 was near-neutral with respect to ENSO, and moderately negative with respect to AO. For the North Pacific basin as a whole, it appears that the second leading mode of SST (Bond *et al. Geophys. Res. Lett.*, 2003, 30(23): 2183-2186) re-emerged in a moderately positive sense after a 1-year hiatus in 2002-03. That winter included an El Niño and a strongly positive state for the Pacific Decadal Oscillation (PDO); PDO has since been in a weak-moderate positive state.

### ***New research projects***

Late this summer there will be two new projects sampling the eastern Bering Sea. The first is a joint Russian-U.S. program to conduct a census of marine life in the northern Bering and Chukchi Seas aboard the R/V *Professor Khromov* (Fig. 1). The Russian-American Long-term Census of the Arctic (RUSALCA) project is sponsored by the Russian Academy of Sciences and NOAA ([http://www.cifar.uaf.edu/rusalca\\_awards.html](http://www.cifar.uaf.edu/rusalca_awards.html)). Long-term trends in arctic sea ice cover and forecasts of loss of seasonal ice cover were the impetus for sponsoring the ecosystem exploration. Investigators from both sides of the Pacific represent a number of institutions and disciplines

from physics, chemistry to adult fish. Dr. Terry Whitlege (University of Alaska, Fairbanks) will be the Chief Scientist.

productivity during a cruise in late July/early April aboard the R/V *Alpha Helix*. Dr. George Hunt (University of California, Irvine) will be the Chief Scientist.

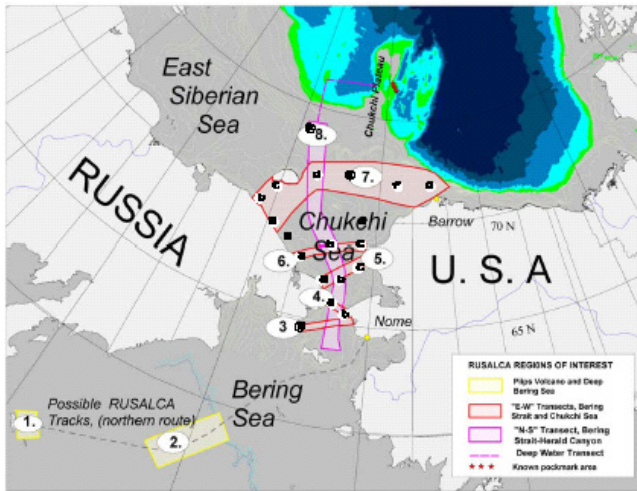


Fig. 1 Proposed transects 3-8 for the Nome-to-Nome leg of the RUSALCA cruise. Letter designations on each transect are locations for proposed sampling of larval and juvenile fishes.

The second project, sponsored by the U.S. National Science Foundation, is a test to determine if the transport of slope water onto the shelf and subsequent eutrophication of shelf waters around the Pribilof Islands can be tracked: physically, chemically, and through the food web. Seven physical oceanographic moorings were deployed in April 2004 around the Pribilof Islands (Fig. 2). Scientists will study hydrography, water chemistry, and biological

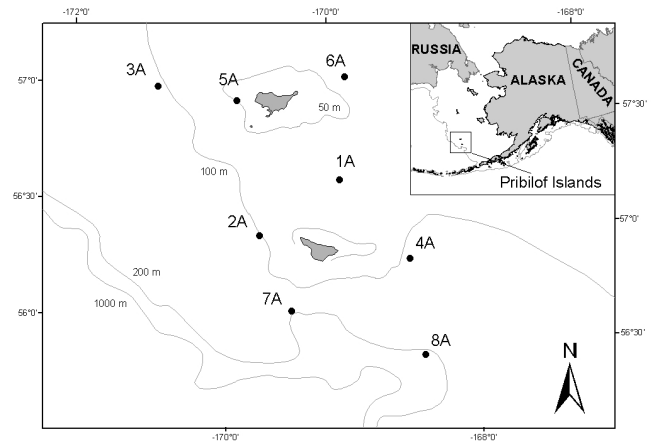


Fig. 2 Mooring locations for the Pribilof Island study

The Bering Sea Ecosystem Study (BEST) draft science plan ([http://www.arcus.org/bering/science\\_plan.html](http://www.arcus.org/bering/science_plan.html)) was presented to the science community at two recent meetings: SEARCH (Seattle, October 2003) and ASLO/TOS (Hawaii, February 2004). The deadline for comments was March 1. Those comments submitted are now being considered for incorporation into the plan. The next step will be to present the amended plan to the U.S. National Science Foundation. Once accepted it will be necessary to write an implementation plan.

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