

Little creatures, big blooms

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The San Francisco area is well-known for its beautiful waters. In fact, it is one of the most biologically productive areas in the United States' waters.

But with global warming, says Natural Sciences and Engineering Research Council (NSERC) grantee Vera Pospelova, those waters are going to change. Pospelova studies sedimentary records of dinoflagellates – small plankton creatures, eaten by fish, that depend on the sun for their survival. There are dozens of species of these creatures, but the ones that produce toxic blooms concern her the most.

“From my work in the area, I know there are at least two particular dinoflagellate species – an Alexandrium-type and Lingulodinium polyedrum – that are already in the coastal waters near San Francisco,” says Pospelova, an oceanographer at the University of Victoria. “No one can say for sure, but we think that as the waters get warmer, more of these blooms are going to occur. When they do, they will begin killing some of the fish species and poison the shellfish.”

Dinoflagellates form the basis of the food chain, and their fossil record has been found in sediments as far back as the Triassic period, 250 million years ago. Because they are so sensitive to environmental change, looking at fossil dinoflagellates in the San Francisco area and other coastal areas provides a valuable baseline for predicting how climate change will affect marine life.

Pospelova is looking at dinoflagellates all the way along the western

coast of North America, from the south of British Columbia to Baja California, Mexico. Her goal is to publish precise predictions about how dinoflagellate population will change during the next few years, to let fisheries and other coastal industries know what to expect as the waters warm up.

“Humans definitely are impacting our environment, and dinoflagellates are perfect for tracking the effects because they are sensitive to water temperature, the amount of salt in the water, and the amount of nutrients,” she says. “The fossils I study are a good way of tracking the past, so that we can predict the future and be better able to cope with it.”

Source: Natural Sciences and Engineering Research Council

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