

Fact Sheet Contaminants in Fish

Contaminants in Sport Fish

Two-Year Statewide Survey Begins with Focus on Urban Coastal Areas

Overview

The State Water Resources Control Board's Surface Water Ambient Monitoring Program (SWAMP) has released a report on results from the first year of a two-year statewide screening survey of contaminants in sport fish from California coastal waters. The report, *Contaminants in Sport Fish from the California Coast, 2009*, represents a major step forward in understanding the extent of chemical contamination in sport fish on the California coast. Monitoring in 2009 focused on areas near Los Angeles and San Francisco, including San Francisco Bay. The study has provided information that will be valuable in prioritizing areas in need of further study, support development of consumption guidelines and cleanup plans, and provide information the public can use to be better informed about the degree of contamination of their favorite fishing spots.

Information for locations included in the 2009-2010 Coast Survey and the 2007-2008 Lakes Survey can be obtained by clicking the link *Is It Safe to Eat Fish and Shellfish from Our Waters?* at the California Water Quality Monitoring Council's "My Water Quality" web portal at: www.swrcb.ca.gov/mywaterquality/



www.waterboards.ca.gov/swamp

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About the Survey

This initial screening survey did not provide enough information for consumption guidelines – this would require a larger and more focused monitoring effort that would include a broader array of species and larger numbers of fish. Sampling in year one focused on the most urbanized regions on the coast near Los Angeles and San Francisco. Sources of contamination are generally more prevalent in urban regions, so the preliminary results from year one reflect a bias toward higher contaminant concentrations. Sport fish were evaluated because they provide information on human exposure and also the condition of the

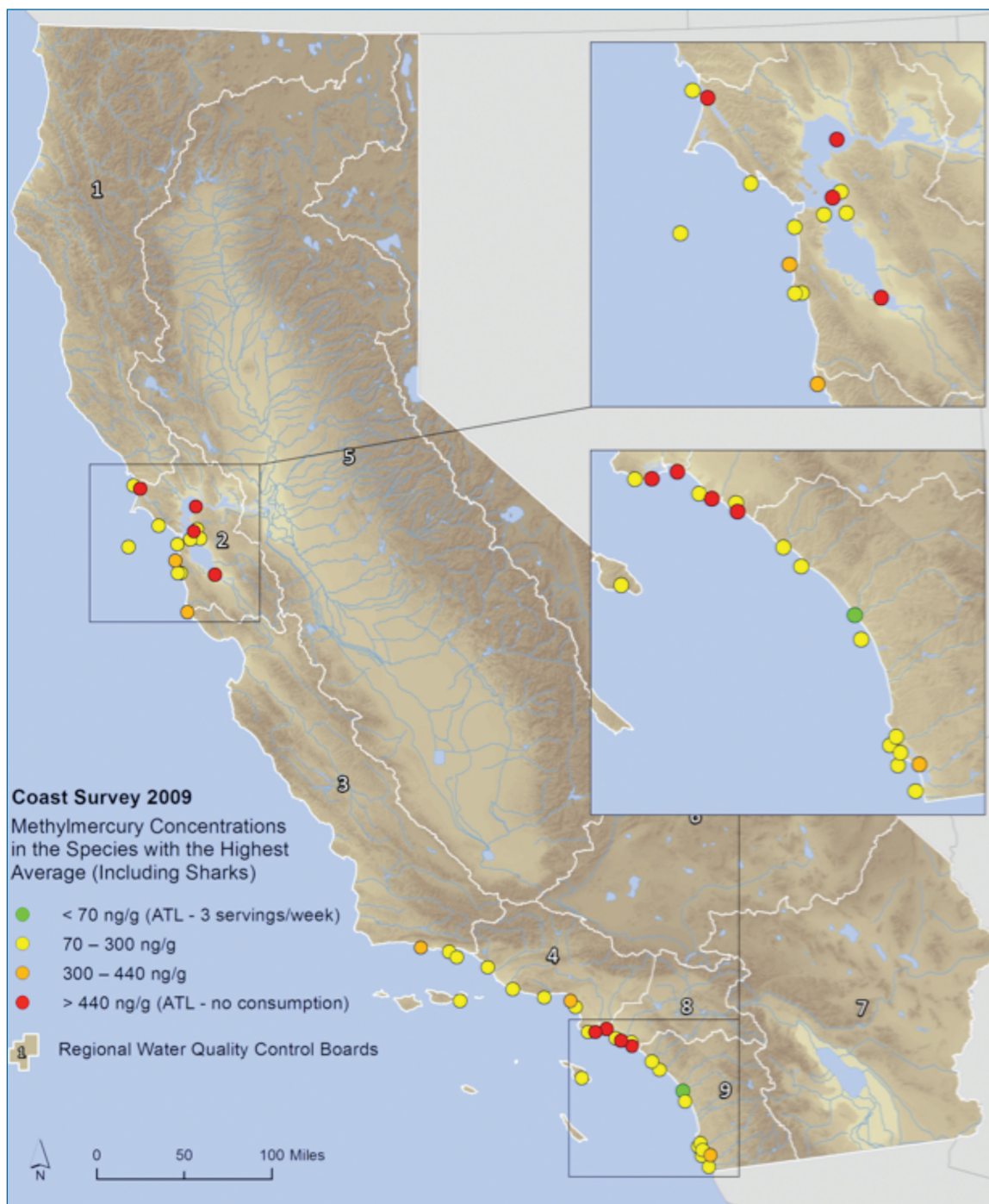
aquatic food web. The array of species selected for sampling included those known to accumulate high concentrations of contaminants and therefore serve as informative indicators of potential contamination problems.

Contaminant concentrations in fish tissue were evaluated using thresholds developed by the California Office of Environmental Health Hazard Assessment (OEHHA) for methylmercury, PCBs, dieldrin, DDTs, chlordanes, and selenium, and a State Water Resources Control Board threshold for methylmercury in tissue that is being used for identification of impaired water bodies.

The survey identified high concentrations of contaminants in a few areas, and widespread moderate contamination throughout the urban coastal regions sampled

Findings

In the first year of this statewide screening study, 2291 fish from 36 species were collected from 42 locations on the California coast. The survey identified high concentrations of contaminants in a few areas, and widespread moderate contamination throughout the urban coastal regions sampled. Methylmercury and PCBs are the pollutants that pose the most widespread potential health concern to consumers of fish caught on the California coast. None of the locations had all sampled fish species below all the OEHHA thresholds. However, the high degree of variation observed among species indicates that exposure can be significantly reduced by selectively targeting cleaner species.



At several locations, **methylmercury** reached concentrations high enough that OEHHA would consider recommending no consumption of the contaminated species. At all but one of these locations the highest concentrations were observed in sharks, which have a tendency to accumulate high levels of methylmercury worldwide. Most of the locations sampled (33 of 42) were in the moderate contamination categories (above the lowest threshold of 0.07 ppm and below 0.44 ppm).

Most of the high methylmercury concentrations observed were for sharks, which have an anomalous tendency to accumulate high levels

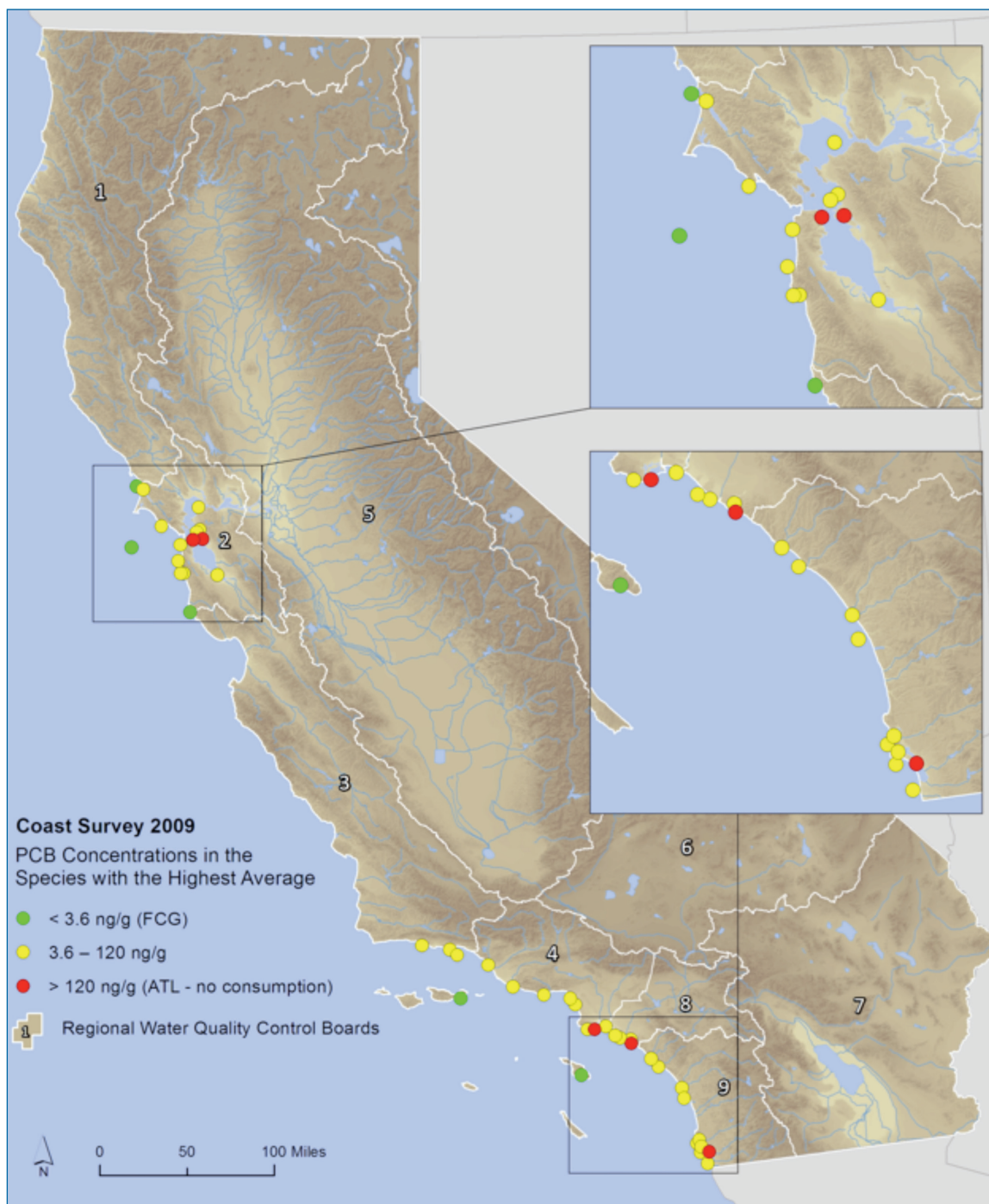
At several locations, methylmercury reached concentrations high enough that OEHHA would consider recommending no consumption of the contaminated species (0.44 ppm wet weight). Overall, eight of the 42 locations surveyed had a species with an average concentration exceeding 0.44 ppm. At all but one of the locations the highest concentrations were observed in sharks, which have a tendency to accumulate high levels of methylmercury worldwide. Striped bass, a very popular species sampled in San Francisco Bay, was the one other species that had an average methylmercury concentration (0.45 ppm) above 0.44 ppm. Most of the locations sampled (33 of 42) were in the moderate contamination categories (above the lowest threshold of 0.07 ppm and below 0.44 ppm). Several species had average methylmercury concentrations below all thresholds, most notably chub mackerel, which is one of the most popular sport fish species on the southern California coast.

PCB contamination was also moderate but widespread. Six of the 42 locations surveyed had a species with an average concentration exceeding the threshold of 120 ppb above which OEHHA would consider recommending no consumption of the contaminated species. San Francisco Bay and San Diego Bay stood out as having elevated concentrations. Most of the locations sampled (74%) fell in the moderate contamination categories between the lowest threshold of 3.6 ppb and the 120 ppb no consumption threshold. Only five locations from more remote areas

had concentrations lower than the lowest threshold. Eleven species, including all of the rockfish species sampled, had average PCB concentrations below all thresholds. Safe eating guidelines have been in place for many years in San Francisco Bay, but guidelines for San Diego Bay have not been developed.

Concentrations of the other contaminants measured in fish tissue sampled rarely exceeded any of the OEHHA Advisory Tissue Levels. The legacy pesticides, however, did frequently exceed Fish Contaminant Goals established by OEHHA.

San Francisco Bay samples were also analyzed for dioxins, polybrominated diphenyl ethers (PBDEs), and perfluorinated chemicals (PFCs). Dioxin TEQ concentrations in the Bay are several times higher than a San Francisco Bay Water Board screening value and do not show obvious signs of decline. A lack of accepted thresholds constrains assessment of the concern posed by PBDEs and PFCs for consumers of Bay sport fish. Continued monitoring of sport fish and other matrices in the Bay will be needed to determine whether the California bans of the “penta” and “octa” PBDE mixtures imposed in 2006 are indeed reducing PBDE concentrations in the Bay food web. Only four samples had detectable perfluorooctanesulfonate (PFOS) concentrations. A study performed with white croaker from San Francisco Bay found that removal of skin reduced concentrations of organic contaminants such as PCBs by 65%.



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What's Next?

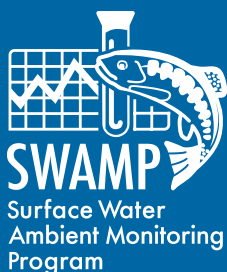
The SWAMP team sampled another 27 coastal locations in 2010. Results from this second round of sampling will be available in May 2012. In 2011, the program is sampling rivers and streams, completing a full cycle of assessment of contaminants in sport fish across all California water bodies. Results from the Rivers and Streams Survey will be available in May 2013.



Acknowledgments

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