

Fact Sheet **Contaminants in Fish**

CONTAMINANTS IN SPORT FISH

Statewide Survey Finds Low Concentrations at Majority of Popular River and Stream Fishing Locations

The State Water Resources Control Board's Surface Water Ambient Monitoring Program (SWAMP) has released findings from the first statewide survey of contaminants in sport fish from California rivers and streams. The report, *Contaminants in Sport Fish from California Rivers and Streams, 2011*, represents a major advance in understanding the extent of chemical contamination in these aquatic ecosystems. The study has provided information that will be valuable in prioritizing areas in need of further study, supporting development of cleanup plans and consumption guidelines, and providing information the public can use to be better informed about the degree of contamination at popular fishing spots.



Information on contaminants in fish at locations included in the 2011 River and Stream Survey, 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" website at: www.CaWaterQuality.net



About the Survey

In this screening survey, sport fish were sampled from popular fishing areas in rivers and streams throughout the state and tested for contaminants with the potential for exceeding established levels of concern, including methylmercury, PCBs, selenium, and the legacy pesticides dieldrin, DDTs, and chlordanes. Sport fish were evaluated because they provide information on human exposure and also the condition of the aquatic food web. The sampling plan called

for collecting multiple species, if possible, at each location (many high elevation locations were dominated by a single species). The 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 were evaluated using thresholds developed by the California Office of Environmental Health Hazard Assessment (OEHHA).

Contaminant concentrations were low at the majority of locations sampled



Overview

In this Survey, 568 fish representing 16 species were collected from 63 river and stream locations throughout California. Contaminant concentrations were found to be low at the majority of locations sampled. However, the results indicate that methylmercury accumulation is of high concern in the Sacramento-San Joaquin Delta region. Methylmercury is generally a low concern in high elevation locations where trout species predominate. Concentrations of the other contaminants measured rarely exceeded OEHHA thresholds that would indicate a potential need for reduced consumption.

Methylmercury poses the greatest concern for consumers of fish caught in California rivers and streams. Most locations sampled (32 of 63, or 51%) had low concentrations of methylmercury (<0.07 ppm). A few locations, 8 of 63 (13%), were in the high contamination category, with an average for the most contaminated species exceeding 0.44 ppm. Most of the locations in the high contamination category were in the Delta region. Locations outside of the Delta region all had low or moderate methylmercury contamination, with the one exception of Laguna de Santa Rosa.

Rivers Survey 2011

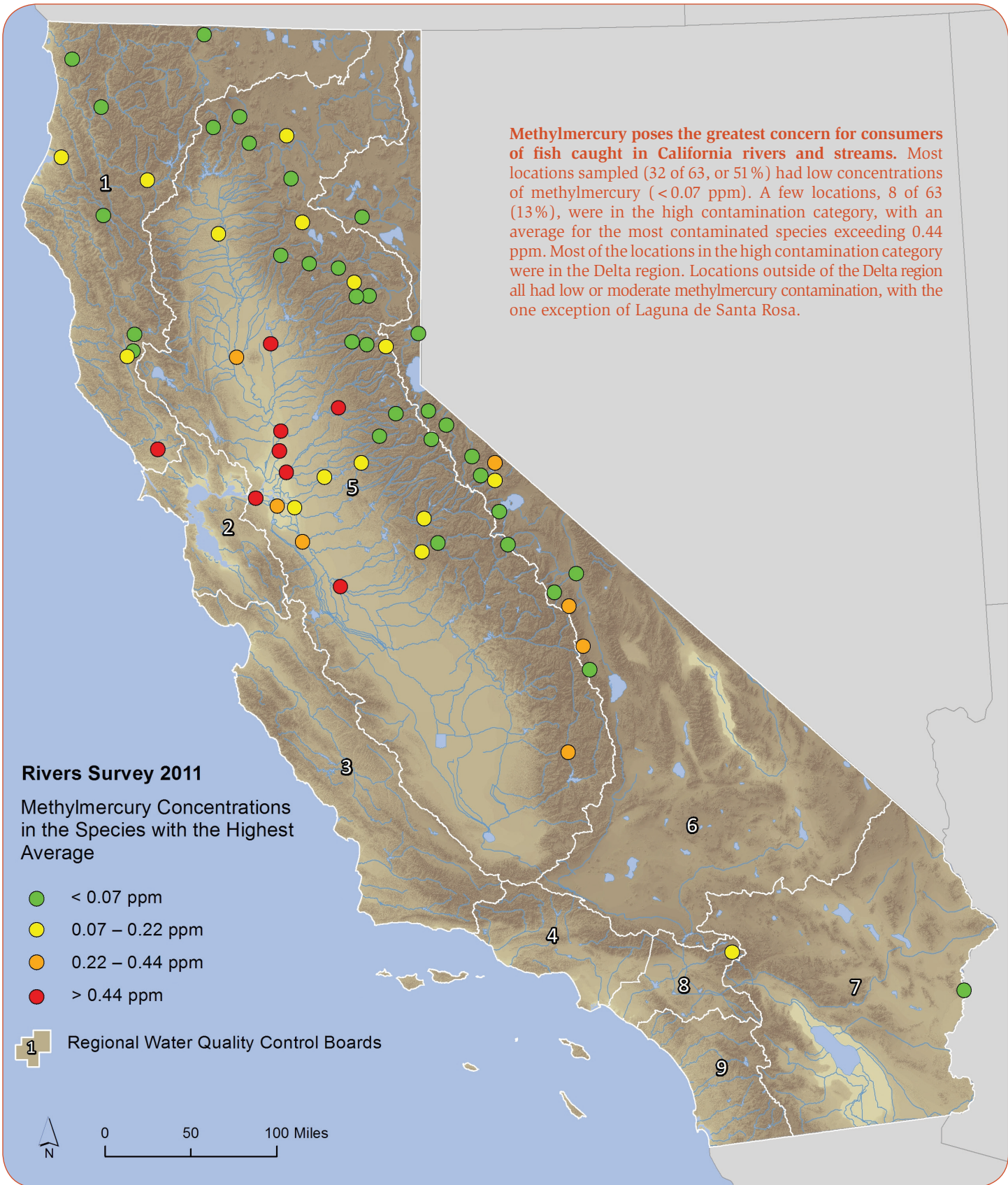
Methylmercury Concentrations in the Species with the Highest Average

- < 0.07 ppm
- 0.07 – 0.22 ppm
- 0.22 – 0.44 ppm
- > 0.44 ppm

1 Regional Water Quality Control Boards



0 50 100 Miles



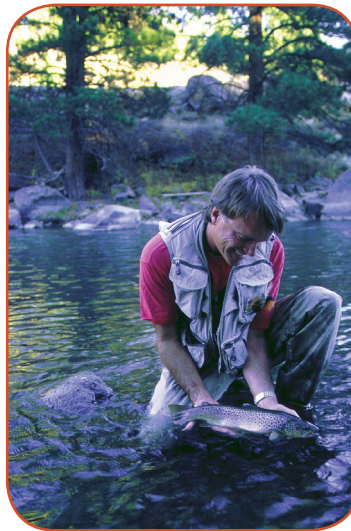
Methylmercury the Greatest Concern

Methylmercury is the contaminant that poses the greatest concern for consumers of fish caught in California rivers and streams. Most of the 63 locations sampled (51%) had low concentrations of methylmercury (<0.07 ppm). This represents an estimate of the percentage of locations where frequent consumption of fish is likely to be safe with regard to methylmercury. Eight of the locations (13%) were in the high contamination category, with average methylmercury concentrations in the most contaminated species exceeding 0.44 ppm. Fifteen locations (24%) had a species above 0.22 ppm. Overall, 87% of the locations had average methylmercury concentrations below 0.44 ppm in the most contaminated species. Specific recommended consumption frequencies will be determined by OEHHA when sufficient data are available for this type of evaluation.

Cleaner species were frequently present alongside the species with high concentrations

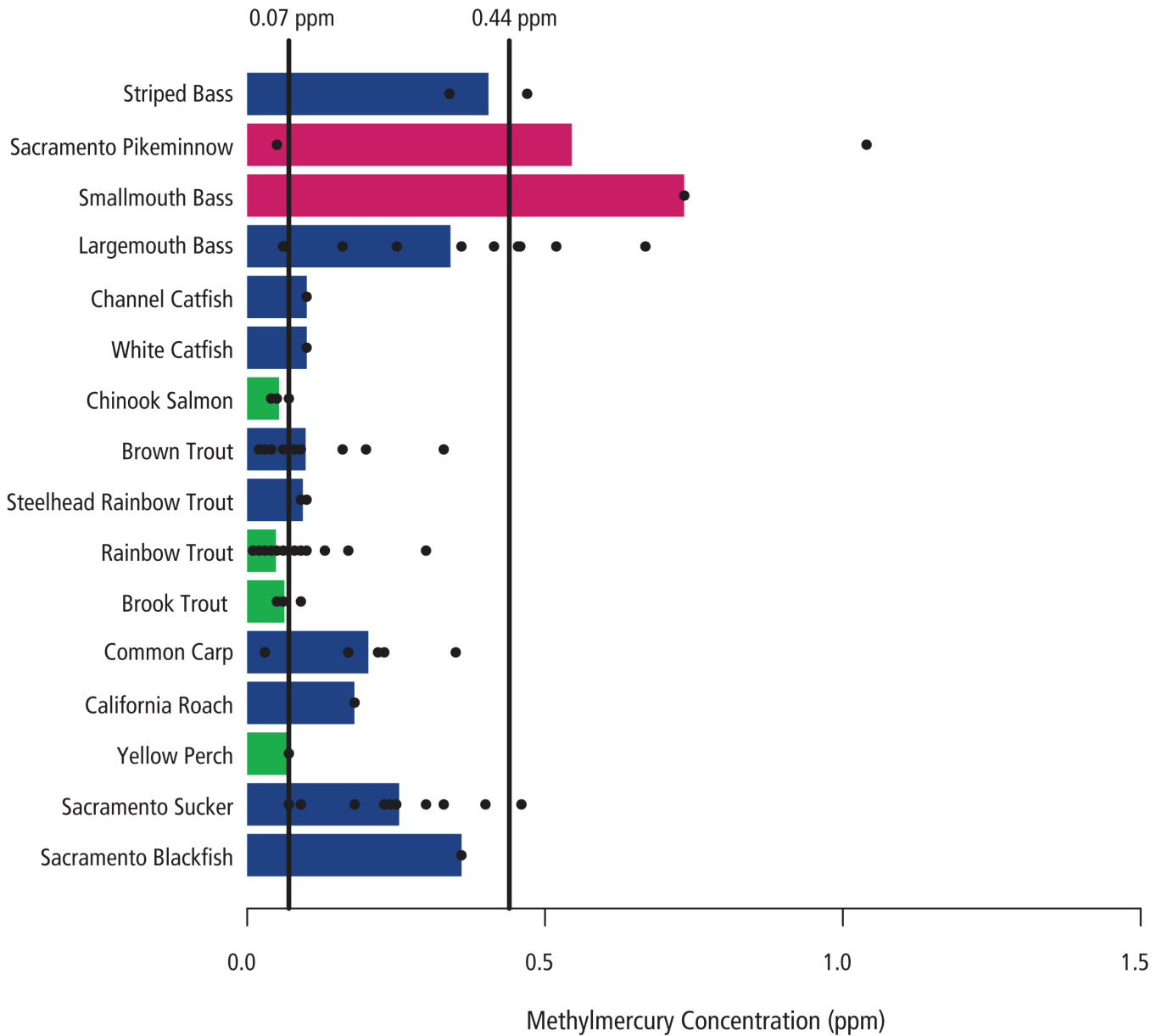
Most of the locations in the high contamination category were in the Delta and in nearby Delta tributaries. The patterns observed in the Delta region are in close agreement with the patterns observed in past sampling, with high concentrations around the periphery of the Delta and lower concentrations in the central Delta. The only other location with a concentration in the high category was the Laguna de Santa Rosa in Sonoma County.

River and stream locations outside of the Delta region all had low or moderate methylmercury contamination, with the sole exception of Laguna de Santa Rosa. At many of these locations, rainbow trout was the only target species that could be collected. Rainbow trout were collected at 40 locations and had low concentrations (less than 0.07 ppm) at 34 (85%) of those locations. Limited sampling of other trout species and Chinook salmon also found low average concentrations.



Concentrations of the other contaminants measured (PCBs, selenium, and the legacy pesticides dieldrin, DDTs, and chlordanes) rarely exceeded OEHHA thresholds that would indicate a potential need for reduced consumption. The organic contaminants, however, did frequently exceed other thresholds that have been used by Regional Water Boards to list water bodies as impaired pursuant to Section 303(d) of the Clean Water Act.

Other less-contaminated species were frequently present alongside the species with high concentrations at the contaminated locations, suggesting that safe fish consumption at a frequency of more than one serving per week is possible at the vast majority of locations if the cleaner species are selected. Comparing the data to a high standard of safety, 28 of the 63 locations (44%) had at least one species with concentrations of all contaminants suggesting that they can be safely consumed at a higher consumption rate of 3 servings per week.



A large amount of the variation observed in the Survey was due to differences among species in the degree to which they accumulate methylmercury. Relatively high methylmercury concentrations (near or above 0.44 ppm) were observed in species that are predators high in the food chain, including largemouth, smallmouth, and striped bass, and Sacramento pikeminnow. Other lower trophic level species such as common carp, Sacramento blackfish, and Sacramento sucker had moderate methylmercury contamination. Rainbow trout were sampled more extensively than any other species (40 locations), and generally had low concentrations of methylmercury (below 0.07 ppm), due to their lower position in the food chain and to the common presence of stocked fish. Limited sampling of other trout species and Chinook salmon also yielded low average concentrations. Dots show averages for each location; bars show overall average.

What's Next?

A report summarizing the complete five-year sport fish survey dataset for lakes, the coast, and rivers and streams will be released in late 2013.

Results from the Survey will be used by the State and Regional Water Boards to prioritize rivers and streams in need of cleanup plans or further monitoring. 303(d) listings and consumption advisories are already in place for many of the areas sampled in this Survey. Consumption advisories may be viewed on the web at www.oehha.ca.gov/fish.html, and consumption advisories and impaired waters listings may be viewed at www.CaWaterQuality.net.

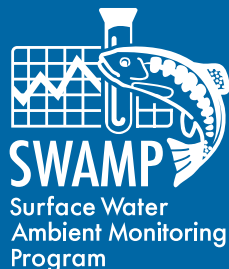
In 2012 and 2013, SWAMP is assessing methylmercury exposure and risk in wildlife in California lakes and reservoirs. Specifically, this study is examining methylmercury concentrations in birds (Western Grebes and Clark's Grebes), the small fish they eat, and sport fish consumed by humans. Results from the first year of this study will be reported in early 2014.

Acknowledgments

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