ENVIRONMENTAL INDICATOR: FISHABLE

WATERBODY TYPE: COAST	**MEASURE:** CONTAMINATION IN SPORT FISH

MESSAGE:

100% of California's urban coast have fish that are contaminated

KEY STATISTICS	
Number of sites sampled:	*43*
California Coastal Zones Sampled (42 zones out of 69 zones sampled):	*61%*

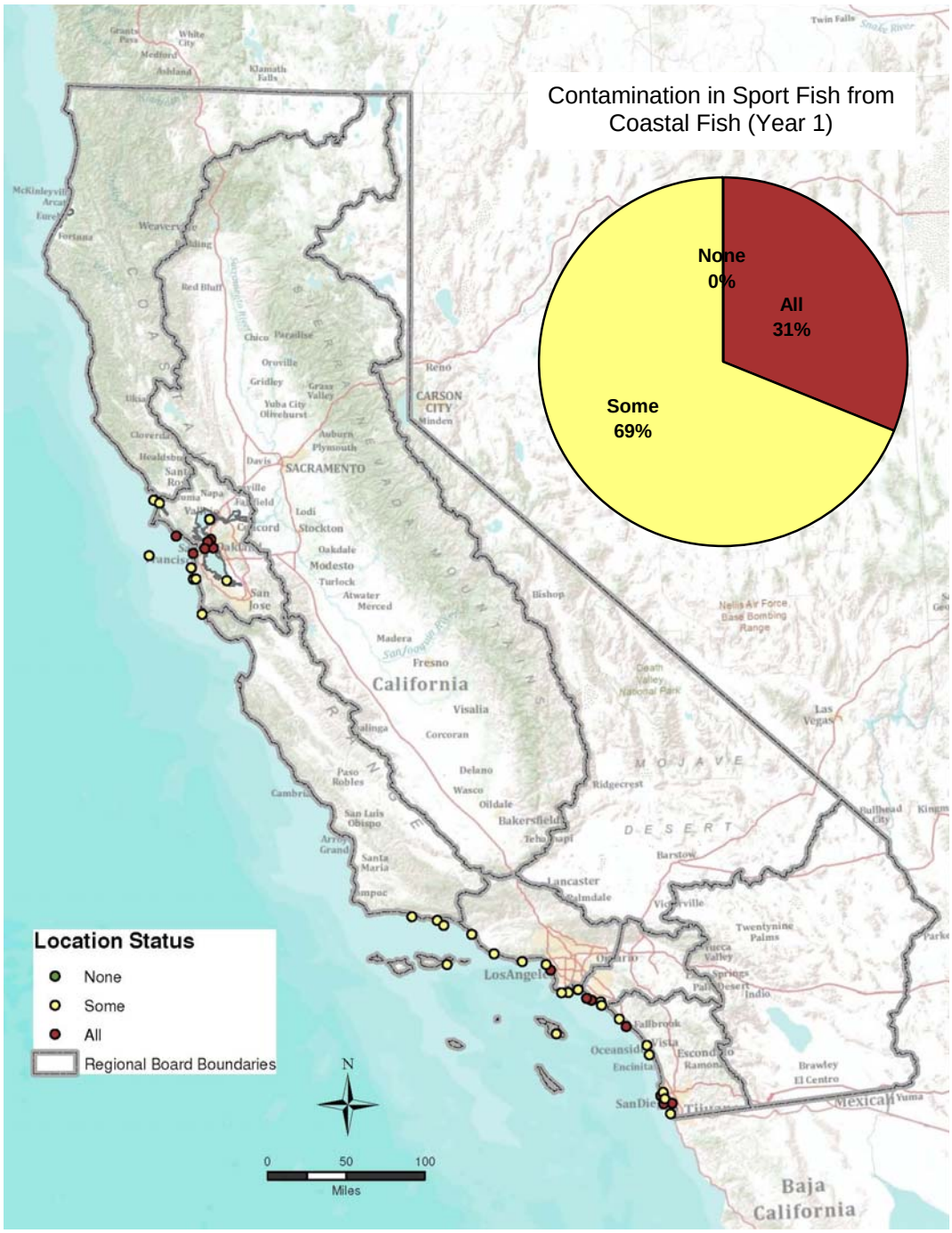

Figure 1. The Status of Contamination Above Any of the Known Human Health Thresholds Caught at Each Location in Urban Areas of California (San Francisco Bay, Los Angeles And San Diego Areas).

This is the First Year of a Two-Year Study and Only Represents a Portion of the Statewide Coast. Pie chart only represent first year data and does not represent the statewide condition status: **green** = none of the fish caught had contamination above any of the known human health thresholds, **yellow** = some of the fish caught had contamination above any of the known human health thresholds, and **red** = all of the fish caught had contamination above any of the known human health thresholds.

WHAT IS THE MEASURE SHOWING?

California Urban Coastal Waters – This measure shows the percent of California urban coastal waters in which sport fish are contaminated with mercury or other chemicals. In 69% percent of California urban coastal waters one or more fish caught exceeded a known human health threshold (Some category), while in 31% percent of the urban coastal waters all the fish caught exceeded known health thresholds (All category). All of the zones sampled thus far had some contaminated fish therefore none of the zones were in the "None" category.

The objective of this screening survey was to identify popular coastal fishing areas where sport-fish are contaminated. As a consequence, the information used for this measure was based on the preliminary results from the first year of a two-year survey of sport fish on the California coast. The results reflect a bias toward higher contaminant concentrations because the survey focused on the most urbanized regions on the coast of California. This measure shows widespread moderate contamination throughout the urban coastal regions sampled with high concentrations of contaminants in a few areas.

WHY IS THIS MEASURE IMPORTANT?

Knowing the contamination levels of sport-fish is important because humans eat sport-fish. Contaminants like mercury and PCBs can reach levels that directly affect human health. Mercury poisoning can cause brain damage and other neurological problems, particularly in fetuses and small children. PCBs may cause cancer, damage the liver, digestive tract, and nerves; and affect development, reproduction, and the immune system. Once this study is complete, the information from this study can be used to prioritize which urban coastal waters need follow-up studies and to inform the public of potential high contaminant levels in certain sport fish.

WHAT FACTORS INFLUENCE THE MEASURE?

Mercury is the number one contaminant found in sport-fish, reaching concentrations that pose potential health risks to consumers of fish caught from California's urban coastal areas. Mercury tends to accumulate in popular sport fish like sharks that tend to be at the top of the food chain. California's historic mining legacy is considered the main reason for the concentration of mercury found in certain fish. Other potential sources of mercury include incinerators and atmospheric deposition, landfills, wastewater discharges, gas pipelines and electrical equipment. PCBs were second to mercury in reaching concentrations that pose potential health risks from ingestion of fish caught in California's urban coastal areas. PCBs are organic chemicals once used in electrical equipment and other industrial products which bioaccumulate in the fatty tissue of sport-fish. . Fish with high percentages of fat tissue tend to accumulate the most PCBs. In California's Urban Coast, PCBs are more likely to be found in northern anchovy, shiner surfperch, white croaker, and shark species. are the species to have high level's of PCBs in California Urban Coastal areas. PCBs tend to occur in areas of historic use or maintenance of electrical equipment such as largely populated areas with high amounts of industrial activity, areas where electrical equipment or other PCB-containing equipment was used, and hydroelectric facilities.

TECHNICAL CONSIDERATIONS:

- Data source: Statewide SWAMP study of contaminants in fish from the California Coast; Period 2009. http://www.waterboards.ca.gov/water_issues/programs/swamp/coast_study.shtml
    - Also available in interactive map on the "My Water Quality" portal: http://www.waterboards.ca.gov/mywaterquality/safe_to_eat/
- Unit of Measure: Concentrations of mercury and PCBs in fish tissue.
- Not all fish species found in the urban coastal areas were sampled. Scientists targeted top predator species to evaluate food web bioaccumulation of mercury up the food chain and high fatty tissue fish because they bioaccumulate organic compounds like PCBs.
- For fish consumption advise (Safe Eating Guidelines) please visit the Office of Environmental Health Hazard Assessment (OEHHA): http://www.oehha.ca.gov/fish/so_cal/index.html
- USGS – Toxic Effects of Mercury: http://www.usgs.gov/themes/factsheet/146-00/
- CDC – Toxic FAQs for PCBs: http://www.atsdr.cdc.gov/tfacts17.html#bookmark05

GLOSSARY

Polychlorinated biphenyls (PCBs)
A class of organic compounds manufactured for use as cooling and insulating fluids in electrical wiring and components. Use of these chemicals was banned in the 1970s but, due to their persistence, they can still be found in the environment.

Atmospheric deposition
Air pollution deposited directly into water or onto land and then washed into water.

Bioaccumulate
The accumulation of substances, such as pesticides, or other organic chemicals in an organism through absorption from surrounding water or through ingestion of other contaminated organisms.

Sport-fish
Fish typically targeted by recreational anglers.

(Updated 9/14/2011)