

# **HEALTH ADVISORY:**

## **DRAFT SAFE EATING GUIDELINES FOR FISH AND SHELLFISH FROM THE SACRAMENTO RIVER AND NORTHERN DELTA**

**April 2008**

**NOTE: The advice for the Sacramento River and Northern Delta has been updated since this report was issued and can be found at:**

**[http://www.oehha.ca.gov/fish/so\\_cal/srnd041108.html](http://www.oehha.ca.gov/fish/so_cal/srnd041108.html)**

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**DRAFT SAFE EATING GUIDELINES  
FOR FISH AND SHELLFISH FROM THE  
SACRAMENTO RIVER  
AND NORTHERN DELTA**

**April 2008**

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## FOREWORD

This draft report provides guidelines for consumption of various fish and shellfish species taken from the Sacramento River and other water bodies in the Sacramento Valley watershed. These draft guidelines were developed as a result of studies of mercury concentrations in fish tested from these water bodies, and are provided to fish consumers to assist them in making choices about the types of fish and frequency of consumption considered safe to eat. Some fish tested from these water bodies showed high mercury levels, and draft guidelines are provided to protect against possible adverse health effects from methylmercury as consumed from mercury-contaminated fish. Additionally, the draft guidelines provide information to aid consumers in selecting fish that are lower in mercury or other contaminants. Historical and preliminary data for chlorinated hydrocarbons were also considered to determine whether consumption advice more restrictive than that for mercury was warranted. This draft report provides background information and a description of the data and criteria used to develop the draft guidelines, which will be revised as appropriate following public review, and published in a final report containing the final state advisory.

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## EXECUTIVE SUMMARY

The Office of Environmental Health Hazard Assessment (OEHHA) evaluated mercury levels in edible tissues of fish and shellfish caught from the Sacramento River and other water bodies (*e.g.*, creeks, sloughs) located in the Sacramento Valley. Data used in the evaluation included historical data obtained from the state Toxic Substances Monitoring Program and Surface Water Ambient Monitoring Program, the Sacramento River Watershed Program, the CALFED<sup>1</sup> Mercury Project, and researchers from the University of California at Davis. In addition, fish samples collected in 2005 and 2006 as part of the Fish Mercury Project, funded by the California Bay Delta Authority, were evaluated. This draft report and the safe eating guidelines contained herein pertain to fish caught from the Sacramento River just below Shasta Lake to the confluence with the San Joaquin River in Pittsburg; select creeks and sloughs associated with the Sacramento River; and other water bodies in the “Northern Delta” (defined as the Delta north of Highway 12 to Sacramento, and including the portion of the Sacramento River from Pittsburg to Rio Vista). These water bodies occur in parts of the following counties: Solano, Sacramento, Yolo, Sutter, Colusa, Yuba, Glenn, Butte, Tehama, and Shasta counties.

A previous draft advisory was issued in February 2007 for the “South Delta” that covered water bodies in the Delta south of the San Joaquin River. The boundary for the “South Delta” has been revised in this report to coordinate with the guidelines developed for the Northern Delta. Specifically, the northern boundary for the South Delta draft advisory was extended from the San Joaquin River to Highway 12 to meet the defined boundary for the Northern Delta draft advisory. This change will add fish and shellfish from the Delta region between the San Joaquin River and the Sacramento River and from water bodies north of the San Joaquin River but south of Highway 12, to the South Delta draft advisory. Samples evaluated from the area between the San Joaquin River and Highway 12 contained mercury levels consistent with other South Delta fish samples. Additionally, the name “South Delta” used in the previously issued advisory will hereafter be called the “Southern Delta.”

Mercury contamination of fish is a national problem that has resulted in the issuance of fish consumption advisories in most states, including California. Mercury is a trace metal that can be toxic to humans and other organisms in sufficiently high doses. Mercury occurs naturally in the environment, and is also redistributed in the environment as a result of human activities such as mining and the burning of fossil fuels. Once mercury is released into the environment, it cycles through land, air, and water. In aquatic systems, it undergoes chemical transformation to the more toxic organic form, methylmercury, which accumulates in fish and other organisms. Almost all fish contain detectible levels of mercury, more than 95 percent of which occurs as methylmercury. Consumption of fish is the major route of exposure to methylmercury in the United States. For more information on mercury, see Appendix I.

The critical target of methylmercury toxicity is the nervous system, particularly in developing organisms such as the fetus and children. Methylmercury toxicity can occur to the fetus during pregnancy even in the absence of symptoms in the mother. In 1985, the United States Environmental Protection Agency (U.S. EPA) set a reference dose or RfD (that is the daily

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<sup>1</sup> CALFED is a partnership among state and federal agencies that began in 1994 when California signed an agreement with federal agencies to coordinate activities related to water supply, water quality, fisheries, and agriculture in California. The mission of the CALFED Bay-Delta Program is to improve water supply in California and ecological health in the San Francisco Bay/Sacramento-San Joaquin Delta.

exposure likely to be without significant risks of deleterious effects during a lifetime) for methylmercury of  $3 \times 10^{-4}$  milligrams per kilogram of body weight per day (mg/kg-day), based on central nervous system effects (ataxia, or loss of muscular coordination; and paresthesia, a sensation of numbness and tingling) in adults. This RfD was lowered to  $1 \times 10^{-4}$  mg/kg-day in 1995, and confirmed in 2001, based on neurodevelopmental abnormalities in infants exposed *in utero*.

OEHHA finds convincing evidence that the fetus is more sensitive than adults to the neurotoxic effects of mercury, but also recognizes that fish can play an important role in a healthy diet, particularly when it replaces other, higher fat sources of protein. These potential beneficial effects are thought to stem largely from unique fatty acids found in fish (docosahexaenoic and eicosapentaenoic acids) and include reduced rates of cardiovascular disease and stroke, decreased inflammation, and improvements in cognitive and visual function. Fish consumption during pregnancy, in particular, has been associated with higher cognitive scores in young children. Nevertheless, because the fetus has increased vulnerability to methylmercury, OEHHA will use the current U.S. EPA RfD, based on effects in the fetus, for women of childbearing age (18-45 years) and children 1-17 years. At the same time, OEHHA will encourage women ages 18-45 to select and eat fish that are low in mercury or other contaminants and high in the fatty acids described above, which can benefit the developing fetus. The previous RfD, based on effects in adults, will be used for women over 45 years and men, who are generally less sensitive to methylmercury.

The dataset for fish and shellfish from the Sacramento River and Northern Delta encompassed an exceptionally large geographic area and sample size, which included many separate and connected water bodies. Sufficient numbers of legal or edible-sized fish or shellfish were available to evaluate mercury concentrations and issue safe eating guidelines for the following species from the Sacramento River or Northern Delta: American shad, Asiatic clam, bluegill, brown bullhead, carp, channel catfish, Chinook salmon, crappie, hardhead, largemouth bass, rainbow trout, redear sunfish, Sacramento pikeminnow, Sacramento sucker, white catfish, and crayfish (mixed species). Striped bass were also collected but not evaluated. Other fish and shellfish species collected in fewer numbers or locations were hitch, goldfish, smallmouth bass, spotted bass, steelhead trout, and tule perch. Images of the fish and shellfish species are presented in Appendix II. Samples were collected from 86 locations on the Sacramento River or in creeks, sloughs, or other water bodies in the Northern Delta or associated with the Sacramento River. Statistical analysis of the data was used to compare mercury concentrations between water bodies and subdivided areas. A regional approach was determined to be appropriate to characterize the results and to communicate them. Safe eating guidelines developed for the Sacramento River and Northern Delta are shown in the tables that follow.

In order to provide safe eating guidelines for various fish species, contaminant concentrations in fish from a water body are compared to OEHHA advisory tissue levels for those chemicals. Advisory tissue levels are used by OEHHA to determine the appropriate consumption rate (quantity of fish or shellfish consumed in a given time period) that would prevent exposure to more than the average daily reference dose for non-carcinogens or to a risk level greater than  $1 \times 10^{-4}$  (one in 10,000) for carcinogens. Best professional judgment is used to determine the most suitable data evaluation approach as well as the most suitable method to convert a complex data set into more simplified and unified consumption advice for risk communication purposes. Ultimately, safe eating guidelines identify those fish species with high contaminant levels whose consumption should be avoided as well as those low-contaminant fish that may be consumed frequently as part of a healthy diet.

For general information on how to limit your exposure to chemical contaminants in sport fish (*e.g.*, eating smaller fish of legal size), as well as a fact sheet on methylmercury in sport fish, see the California Sport Fish Consumption Advisories (<http://www.oehha.ca.gov/fish.html>) and Appendices I and III. Guidelines for other California water bodies can be found online at: [http://www.oehha.ca.gov/fish/so\\_cal/index.html](http://www.oehha.ca.gov/fish/so_cal/index.html). It should be noted that trimming the fat and cooking fish to remove the juices will not reduce the methylmercury content. Additionally, there are no known ways to prepare fish (such as soaking in milk) that will reduce the methylmercury content of the fish.

# DRAFT SAFE EATING GUIDELINES

Based on Mercury in Fish from the

## Sacramento River and Northern Delta

Including the Sacramento River from below Shasta Lake to Pittsburg and other water bodies in the Delta north of Highway 12

**A guide to eating fish caught in the northern Delta and Sacramento River**  
 For women ages 18 - 45, especially those who are pregnant or breastfeeding, and children ages 1 - 17

**Mercury Meter** (Low, Medium, High)

**Low Mercury:** American Shad, Asiatic Clam, Trout , Salmon   
 ♥ = High in Omega 3s

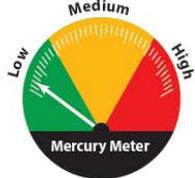
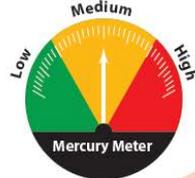
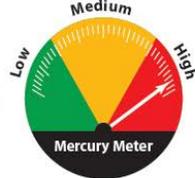
**Medium Mercury:** Carp and Goldfish, Sucker, Catfish, Crappie, Hitch, Sunfish, Hardhead, Crayfish

**High Mercury:** Striped Bass\*, Largemouth Bass, Sturgeon\*, Pikeminnow

**Safe to eat 3 servings per week** OR **Safe to eat 1 serving per week** **Do not eat**  
 \*Striped bass under 27 inches or sturgeon: safe to eat 1 serving per month.

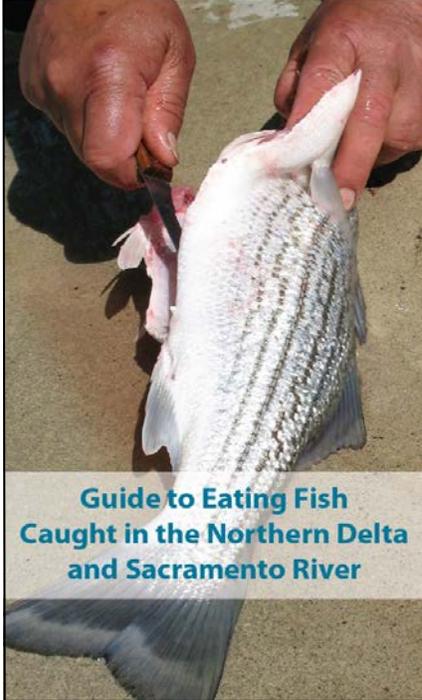
# A guide to eating fish caught in the northern Delta and Sacramento River

## Women over 45 and men over 17

 <p>American Shad</p> <p>Asiatic Clam</p> <p>Trout ♡</p> <p>Salmon ♡</p> <p>♡ = High in Omega 3s</p>	 <p>Carp and Goldfish</p> <p>Sucker</p> <p>Catfish</p> <p>Crappie</p> <p>Hitch</p> <p>Sunfish</p> <p>Hardhead</p> <p>Crayfish</p>	 <p>Striped Bass*</p> <p>Largemouth Bass</p> <p>Sturgeon*</p> <p>Pikeminnow</p>
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<p>Safe to eat 1 serving daily</p>	<p>OR</p> <p>Safe to eat 3 servings per week</p>	<p>OR</p> <p>Safe to eat 1 serving per week</p> <p>*Striped bass under 35 inches or sturgeon: safe to eat 2 servings per month.</p> <p>Do not eat striped bass over 35 inches.</p>
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# Eat fish. Be safe. Choose wisely.



**Guide to Eating Fish  
Caught in the Northern Delta  
and Sacramento River**

## Why eat fish?

Eating fish is good for your health. Fish have Omega 3s that can reduce your risk for heart disease and improve how the brain develops in unborn babies and children.

## What is the concern?

**Some fish have high levels of mercury** that can negatively affect how the brain develops in unborn babies and children.

## What should I do?

- Use this guide to choose fish lower in mercury and high in Omega 3s.
- Eat smaller fish of legal size. Fish build up mercury in their bodies as they grow.

## More fish eating advice for women ages 18 – 45 and children ages 1 – 17

- You can eat 2 servings per week of fish from stores or restaurants. But, do not eat fish caught by you, friends or family in the same week.
- Only one of your two servings of fish per week should be canned albacore (white) tuna.
- When shopping for fish, good choices are salmon, pollock, catfish, tilapia, and shrimp.
- Do not eat shark, swordfish, tilefish, or king mackerel. These fish are very high in mercury.

## What is a serving?



For Adults

For Children

The recommended serving of fish is about the size and thickness of your hand. Use your hand to measure a serving of fish. Give children smaller servings.

For more advice about what you can do to protect your family from mercury in fish, contact:



<http://www.oehha.ca.gov/fish.html>

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## INTRODUCTION

Mercury is a trace metal that occurs naturally in the environment, and exists in various forms including elemental or metallic mercury, inorganic, and organic mercury (ATSDR, 1999; IARC, 1993). Mercury enters the environment from the breakdown of minerals in rocks and leaching from old mine sites. Cinnabar ores, naturally rich in mercury, are common in northern California, and mercury was extensively mined in California in the 1800s and early 1900s. Mercury is also emitted into air from cement kilns, the burning of fossil fuels, and other industrial sources, as well as from volcanic eruptions. Mercury contamination thus occurs as a result of both natural and anthropogenic sources and processes.

Once mercury is released into the environment, it cycles through land, air, and water. The deposition of mercury in aquatic ecosystems is a concern for public and environmental health because microorganisms (bacteria and fungi) in the sediments can convert inorganic mercury into organic methylmercury, a more toxic form of mercury. Once formed, methylmercury is ingested by aquatic animals and subsequently by the fish that feed on them. In this way, methylmercury “biomagnifies,” reaching the highest levels in fish and other organisms at the top of the food web. Concentrations of methylmercury in fish tissues can therefore be orders of magnitude greater than concentrations found in the water in which they reside.

Methylmercury contamination of fish is a national problem that has resulted in the issuance of fish consumption advisories in most states, including California (U.S. EPA, 2003). Methylmercury can be toxic to humans and other organisms in sufficiently high doses and can pose a variety of human health risks (NRC/NAS, 2000). Fish consumption is the major route of human exposure to methylmercury in the United States (ATSDR, 1999). Almost all fish contain detectable levels of mercury, more than 95 percent of which occurs as methylmercury. For this reason, concentrations in fish are usually measured as total mercury, and the conservative assumption is made that the measured mercury is methylmercury. “Mercury” and “methylmercury” may thus be used interchangeably in this report. Whether consumption of fish is harmful depends on the concentrations of methylmercury in the fish and the amount of fish consumed.

Human toxicity of methylmercury has been well studied following several epidemics of human poisoning resulting from consumption of highly contaminated fish (Japan) or seed grain (Iraq, Guatemala, and Pakistan; Elhassani, 1982-83). The resulting illness was manifested largely by neurological signs and symptoms such as loss of sensation in the hands and feet and, in extreme cases, loss of gait coordination, slurred speech, sensory deficits including blindness, and mental disturbances (Bakir *et al.*, 1973; Marsh, 1987). Review of data collected during and subsequent to the Japan and Iraq outbreaks identified the critical target of methylmercury as the nervous system and the most sensitive subpopulation as the developing organism (U.S. EPA, 1997). During critical periods of prenatal and postnatal structural and functional development, the fetus and children are especially susceptible to the toxic effects of methylmercury (ATSDR, 1999; IRIS, 1995). For additional discussion of the toxicity of methylmercury, see Klasing and Brodberg (2008).

Risks from exposure to methylmercury in fish are evaluated by comparing measured concentrations to a reference dose (RfD), which is an estimate of daily human exposure to a chemical that is likely to be without significant risk of adverse effects during a lifetime (including to sensitive population subgroups), and is expressed in units of milligrams per

kilogram per day (mg/kg-day; IRIS, 1995). This estimate includes a safety factor to account for data uncertainty. The underlying assumption of a RfD is that, unlike carcinogenic effects, there is a threshold dose below which certain toxic effects will not occur. The RfD for a particular chemical is derived from review of relevant toxicological and epidemiological studies in animals or humans. Based on these values and the application of uncertainty factors to account for incomplete data and sensitive subgroups of the population, a RfD is then generated. Exposure to a level above the RfD does not mean that adverse effects will occur, only that the possibility of adverse effects occurring has increased (IRIS, 1993).

The first United States Environmental Protection Agency (U.S. EPA) RfD for methylmercury was developed in 1985 and set at  $3 \times 10^{-4}$  mg/kg-day (U.S. EPA, 1997). This RfD was based on the earliest symptom of methylmercury toxicity (paresthesias or numbness and tingling sensations) that occurred in a small percentage of exposed Iraqi adults. U.S. EPA applied a 10-fold uncertainty factor to the lowest adverse effect level to generate the RfD (U.S. EPA, 1997). In 1995, U.S. EPA had sufficient data from Marsh *et al.* (1987) and Seafood Safety (1991) to develop an oral RfD based on methylmercury exposures during the prenatal stage of development (IRIS, 1995). The oral RfD from these studies was set at  $1 \times 10^{-4}$  mg/kg-day, including a 10-fold uncertainty factor, to protect against developmental neurological abnormalities in infants (IRIS, 1995). This fetal RfD was deemed protective of infants and sensitive adults.

Recently, the National Academy of Sciences was directed to provide scientific guidance to U.S. EPA on the development of a new RfD for methylmercury (NRC/NAS, 2000). Three large prospective epidemiological studies were evaluated in an attempt to provide more precise dose-response estimates for methylmercury at chronic low-dose exposures, such as might be expected to occur in the United States. The three studies were conducted in islands (the Faroe Islands, Seychelles Islands, and New Zealand) where the residents' diets rely heavily on consumption of fish and marine mammals, which provide a continual source of methylmercury exposure (NRC/NAS, 2000). The National Academy of Sciences report supported the current U.S. EPA RfD of  $1 \times 10^{-4}$  mg/kg-day for fetuses, but suggested that it should be based on the Faroe Islands study rather than Iraqi data. U.S. EPA has since published an updated RfD document that arrives at the same numerical RfD as the previous fetal RfD, using data from all three recent epidemiological studies while placing emphasis on the Faroe Island data (IRIS, 2001). For additional discussion of the derivation of the reference dose for methylmercury, see Klasing and Brodberg (2008).

The Office of Environmental Health Hazard Assessment (OEHHA) is the agency responsible for evaluating public health impacts from chemical contamination of sport fish, and issuing advisories, when needed, for the state of California. OEHHA's authorities to conduct these activities are based on mandates in the California Health and Safety Code, Section 59009, to protect public health, and Section 59011, to advise local health authorities; and the California Water Code Section 13177.5, to issue health advisories. Fish advisories developed by OEHHA are published in the California Sport Fishing Regulations of the California Department of Fish and Game. OEHHA now emphasizes "safe eating guidelines" in these advisories in an effort to inform consumers of healthy choices in fish consumption as well as those that should be avoided or restricted. For advisories based on mercury levels in fish, OEHHA will use two separate RfDs to assess risk for different population groups. The current RfD of  $1 \times 10^{-4}$  mg/kg-day, based on effects in infants, will be used for women ages 18-45 years, including pregnant and breastfeeding

women, and children 1-17. The previous RfD of  $3 \times 10^{-4}$  mg/kg-day, based on effects in adults, will be used for women over 45 years and men.

Although evaluating contaminants that may be found in fish must be of primary concern, OEHHA has also determined that there is a significant body of evidence and general scientific consensus that eating fish at dietary levels that are easily achievable, but well above national average consumption rates, appears to promote significant health benefits, including decreased mortality. These potential beneficial effects are thought to stem largely from unique “omega-3” fatty acids found in fish (docosahexaenoic acid or DHA and eicosapentaenoic acid or EPA) and include reduced rates of cardiovascular disease and stroke, decreased inflammation, and improvements in cognitive and visual function. Fish consumption during pregnancy, in particular, has been associated with higher cognitive scores in young children. In order to take these benefits into account and best promote the overall health of the fish consumer, OEHHA has expanded the advisory process beyond a simple risk paradigm (see Klasing and Brodberg [2008] for more discussion). OEHHA encourages people of all ages, especially women 18-45 years and children, to select and eat fish that are low in mercury or other contaminants and high in “omega-3” fatty acids (DHA and EPA).

## BACKGROUND

The Sacramento Valley comprises the northern section of the Central Valley and is situated in the Sacramento River hydrologic region, which contains the entire drainage area of the Sacramento River and its tributaries (Umbach, 1997). The hydrologic region begins upstream of Shasta Lake near the Oregon border and extends south to the Sacramento/San Joaquin Delta. The northern boundary for this evaluation begins at the Sacramento River just below Shasta Lake to conform to project boundaries<sup>1</sup>, and extends to the confluence of the Sacramento and San Joaquin rivers in the Delta. The evaluation also included other water bodies such as sloughs and creeks in the northern portion of the Delta. The statutory boundary of the Delta, established in 1959 with the passage of the Delta Protection Act (Delta Protection Commission, 2006), was used here to define the western, northern, and eastern boundaries of the Northern Delta. Highway 12 was designated as the southern boundary for the Northern Delta, which divides it from the Southern Delta (Figure 1). Highway 12 was selected by OEHHA as the dividing line between the Northern and Southern Delta because it approximates the boundary between two hydrologic subareas of the Delta, as proposed by the Central Valley Regional Water Quality Control Board (CVRWQCB) and discussed further below, that corresponded to differences in mercury concentrations in fish.

Fish and shellfish from the San Joaquin Valley and Southern Delta were evaluated in the draft safe eating guidelines issued for the Southern Delta and San Joaquin River in February 2007 (Gassel *et al.*, 2007). At that time, the San Joaquin River was designated as the northern boundary of the Southern Delta. The boundaries for the Southern Delta draft advisory have been revised as presented in this report in order to coordinate with the draft fish consumption guidelines developed for the Northern Delta. The Southern Delta advisory is being revised to extend its northern boundary from the San Joaquin River to Highway 12, thereby making the Northern Delta and Southern Delta advisories contiguous (Figure 1).

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<sup>1</sup> The Fish Mercury Project, discussed below, was funded by a grant from the California Bay Delta Authority, which specified the project boundaries.

## The Sacramento River and Northern Delta

The Sacramento River is the largest river in California, over 300 miles long, with an average annual runoff of 27 billion cubic meters (Domagalski *et al.*, 2000). The Sacramento Valley is surrounded by a mountainous and forested region, and includes at least portions of Solano, San Joaquin, Sacramento, Yolo, Placer, Yuba, Sutter, Colusa, Glenn, Butte, Tehama, and Shasta counties. Population statistics vary by county. The Sacramento Valley is the most populated region and the area of greatest water use in the Sacramento River watershed (Domagalski *et al.*, 2000). Major crops are rice, fruits, nuts, tomatoes, grapes, sugar beets, corn, alfalfa, cotton, and wheat (Domagalski *et al.*, 2000; Umbach, 1997). The agricultural economy depends on the availability of irrigation water. Water is collected in reservoirs located within the mountains surrounding the Sacramento Valley and is released for agricultural, urban, and environmental<sup>1</sup> purposes, and for flood control (Domagalski *et al.*, 2000). The Sacramento River also supports numerous recreational activities including fishing, hunting, boating, swimming, birding, hiking, and camping (SacramentoRiver.org, 2007). Land use in the mountainous regions is mainly forestry. The cultural roots of the region date from Native American inhabitants, such as the Wintun Indians, to settlers who established and worked farms and ranches in the 1800s (CERES, 2007).

The Sacramento River flows into the Delta where it joins the San Joaquin River (near Antioch). The confluence of these two rivers forms the Sacramento-San Joaquin Delta, and the combined rivers flow into the San Francisco estuary. The Sacramento-San Joaquin Delta is an extensive network of rivers, tributaries, and channels. Much of the Delta is below sea level and more than 1,000 miles of levees have been built for protection against flooding. The Delta's land and waterways support communities, agriculture, and recreation including fishing and boating, and provide essential habitat for several hundred species of fish and wildlife (SacDelta, 2007; Sacramento River Advisory Council, 2000).

The California Coastal Range was one of the most productive mercury districts in the world; more than 220,000,000 pounds of elemental mercury were produced from the 1840s to the early 1960s (USGS, 2006). Cache Creek and Putah Creek deliver mercury used in previous mining within the Coast Range to the Sacramento Valley. Mercury can also enter the Sacramento River from the Sierra Nevada, where it was used in historical gold mining (Domagalski *et al.*, 2000). Millions of pounds of mercury were transported to the Sierra and used to extract gold, especially in hydraulic placer mining operations. Some of the mercury and gold mines in the vicinity of the Sacramento Valley and Delta are shown in Figure 2.

Elevated levels of mercury have been found in fish from numerous lakes, reservoirs, and rivers in northern California. As a result, fish consumption advisories based on mercury contamination have been issued by OEHHA for various water bodies in at least 29 counties in central and northern California. In an effort to assess mercury levels in fish from other northern California water bodies that may have been impacted by mining or other sources of mercury, OEHHA evaluated data from fish and shellfish samples collected from water bodies in California's Sacramento Valley and Delta (Figure 3). The focus of the evaluation described in this report was 1) the Sacramento River from Shasta Lake in Shasta County to the river's confluence with the San Joaquin River in Sacramento County, 2) select creeks and sloughs associated with the

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<sup>1</sup> Placement of dams, however, has blocked migration routes for anadromous salmonid fish species, including steelhead and Chinook salmon, and is thus thought to be an important factor in the decline of these species.

Sacramento River, including Big Chico Creek, Butte Creek, Colusa Drain, Sutter Bypass, Cross Canal, Reclamation Slough, and Sacramento Slough and 3) other small water bodies in the Northern Delta including Beach Lake, Green's Lake, Little Holland Tract, Little Hastings Tract, Delta Meadows, Delta Cross Canal, Toe Drain, the Deep Water Ship Channel, and the following sloughs: Bypass, Cache, Georgiana, Lindsey, Miner, Prospect, Snodgrass, and Steamboat sloughs. All sampling locations are shown in Table 1 and Figures 4 and 5.

## **Fish Species in the Sacramento River and Delta**

Popular fish species in the Sacramento River and Northern Delta include Chinook and kokanee salmon; rainbow, steelhead and brown trout; white catfish, channel catfish, and bullheads; largemouth, smallmouth, and spotted bass; bluegill and other sunfishes (*e.g.*, redear sunfish), and striped bass. Crappie, sturgeon, and shad are also sought by sport fishers (River Pirate, 2007; Sacramento River Advisory Council, 2000). Other fish species in water bodies in this area include Sacramento pikeminnow, Sacramento sucker, Sacramento perch, hitch, carp, and goldfish. Crayfish are also plentiful in some areas in the Delta. Images of the fish and shellfish species are presented in Appendix II.

## **Data Sources**

A large dataset on mercury concentrations in fish and shellfish from the Sacramento River and Northern Delta was recently collected under a grant from the California Bay-Delta Authority (CBDA). This study, the Fish Mercury Project (FMP), was initiated in 2005 to further examine mercury in fish in the Bay-Delta watershed. OEHHA worked collaboratively on this project with researchers from the University of California at Davis (UCD); the California Department of Fish and Game (CDFG), Moss Landing Marine Laboratory (MLML); the California Department of Public Health (CDPH, formerly the California Department of Health Services); and the San Francisco Estuary Institute (SFEI). In 2006, the second year of the FMP, sampling focused on the Sacramento Valley including the Sacramento River and other water bodies in the Sacramento Delta or "Northern Delta" in order to support evaluation of mercury concentrations in fish from this area. OEHHA identified target fish species for 35 locations on the Sacramento River or from other water bodies in the Northern Delta for sampling under the FMP in 2006. Several additional locations were also sampled by CDFG staff for the CVRWQCB. Fish samples that were collected from the same area in 2005 by other researchers associated with the FMP were also included in the evaluation.

An assessment of fish from Shasta Lake and other northern California reservoirs that were also sampled in the FMP will be conducted in future evaluations. OEHHA has also issued draft safe eating guidelines previously for the Lower American River and the Lower Feather River, two of the Sacramento River tributaries. Other rivers in the northern Central Valley include the Cosumnes, Bear, and Yuba Rivers, which were evaluated in prior advisories (see [www.oehha.ca.gov/fish.html](http://www.oehha.ca.gov/fish.html) for further information).

Fish tissue data from the FMP for the Sacramento River and Northern Delta were merged with historical data collected by the Sacramento River Watershed Program (SRWP<sup>1</sup>), the CALFED

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<sup>1</sup> The Sacramento River Watershed Program was founded in 1996 to sustain, restore, and enhance current and potential watershed resources. The SRWP operates through collaborative partnerships and conducts monitoring activities to assess water quality and other indicators of watershed health.

Mercury Project<sup>1</sup>, the Toxic Substances Monitoring Program (TSMP) and Surface Water Ambient Monitoring Program (SWAMP)<sup>2</sup>, and researchers from UCD<sup>3</sup>. In 2003, the CVRWQCB organized the historical mercury data into a single electronic database; some corrections were made to originally published data at that time. OEHHA received and reviewed the dataset, and data suitable for developing advisories were selected using OEHHA's criteria for minimum sizes and data reliability, as follows. Each sample was verified using the original dataset to address discrepancies and correct errors. Samples identified as potential duplicates were confirmed as duplicates and therefore eliminated. Latitudinal and longitudinal coordinates for mapping the sampling sites, and site names, were also reviewed and corrected as necessary. Subsequently, OEHHA compared and verified each sample with a statewide database built and maintained by SFEI for SWAMP. Samples from the SFEI database that did not occur in the file received from the CVRWQCB were added to the dataset used in this evaluation after verifying each sample with the original project data from which it was derived. Fish samples used by OEHHA to develop safe eating guidelines must meet minimum size requirements as stipulated by CDFG regulation or by OEHHA. For species that do not have a legal minimum size (or slot limit) determined by CDFG, OEHHA has established minimum "edible" sizes corresponding roughly to average length at maturity for the species (Gassel and Brodberg, 2005). Minimum legal or edible size criteria are shown in Table 2.

OEHHA merged site location spreadsheets from SFEI, TSMP, FMP, and the CVRWQCB to create a file to link tissue data with spatial locations for each sampling site. This spatially-enabled spreadsheet was brought into ArcMap, v 9.2 to create a site location shapefile of all sites, the result of which revealed some inaccurate spatial information. Spatial datasets varied with regard to documentation and accuracy. Some locations were created using Global Positioning System and others from site names. Sampling sites were discovered with similar names but in different locations, and in some cases, coordinates that were provided for some sampling site locations clearly placed them either in an incorrect location or in an inappropriately named location. OEHHA made every effort to ensure that the site location spreadsheets from the various sampling programs were accurate, and followed up by making verification inquiries with original researchers or sampling staff. Potential errors were explored and corrected as feasible. Several sampling sites were excluded when it was not possible to verify their locations (see Appendix IV). OEHHA reviewed and cross-checked the sampling locations provided by name and usually by latitude/longitude and coordinate system. Layers such as the NAD 27 California Hydrography layer (rivers and water bodies) originated by the Teale Geographic Information Systems (GIS) Solutions Group, were downloaded from the California Spatial Information Library (<http://gis.ca.gov/casil/gis.ca.gov/teale/hydro/>). Once the spatial information was reasonably dependable, maps were created and used to determine distance between sites and logical groupings of sampling sites for statistical analysis. The resulting database can be linked to hydrology, watershed, and Delta subregion characteristics in an ArcView GIS environment.

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<sup>1</sup> The CALFED Mercury Project was funded by the CALFED Bay-Delta Program to investigate mercury cycling in the Bay-Delta System.

<sup>2</sup> TSMP, a state water quality-monitoring program managed by the State Water Resources Control Board, was initiated in 1976 and continued until it was subsumed under the Surface Water Ambient Monitoring Program or SWAMP in 1997. CDFG collects and analyzes the samples.

<sup>3</sup> Data from studies by UCD were supplied by electronic mail by Darell Slotton and Shaun Ayers from UCD. CALFED data were obtained from Ben Greenfield at SFEI as electronic spreadsheets. TSMP and SWAMP data are maintained in OEHHA's data files after being downloaded from the SWRCB's web site.

## Collection and Preparation of Samples

Staff from CDFG MLML collected samples of the following fish species: American shad, bluegill, carp, channel catfish, Chinook salmon, goldfish, crappie, hardhead, hitch, largemouth bass, rainbow trout, redear sunfish, Sacramento pikeminnow, Sacramento sucker, smallmouth bass, spotted bass, steelhead, striped bass, sturgeon, tule perch, and white catfish, primarily using electroshocking boats and occasionally nets. Fish were measured (in total length) and weighed, and individual fish were analyzed for mercury as skinless fillets using a Perkin Elmer Flow Injection Mercury System (FIMS) or Milestone Direct Mercury Analyzer (DMA). Staff from MLML also collected and analyzed fish for the CALFED Mercury Project and the SRWP using the same methods used in the FMP. However, some fish species were prepared differently for analysis<sup>1</sup>, and some samples were analyzed as composites.

Fish sampled under TSMP and SWAMP were collected by staff from CDFG, Water Pollution Control Laboratory (WPCL), using electrofishing equipment, nets, and hook and line. Fish species included American shad, brown bullhead, carp, channel catfish, signal crayfish, hardhead, largemouth bass, rainbow trout, redear sunfish, Sacramento pikeminnow, Sacramento sucker, smallmouth bass, and white catfish, although for a number of these species, only one or a few individuals of legal or edible size were collected. Fish were measured (in fork length) and weighed, and analyzed as individuals or composites using skin-off muscle fillet<sup>2</sup>. Prior to 1997, composite samples were homogenized at the WPCL and analyzed for total mercury by cold vapor atomic absorption spectrophotometry; since 1997, samples were analyzed for mercury and other trace metals by MLML using FIMS or DMA.

Researchers from UCD collected Asiatic clams primarily by hand, and crayfish (signal crayfish, red swamp crayfish, and a single northern crayfish) using baited traps, from numerous locations in the Northern Delta. Clams were maintained live in clean water, changed twice a day for four days to purge them of all major gut contents and associated sediment, and frozen for storage. Crayfish were also frozen after digestive tracts were removed (Slotton *et al.*, 2002). Clams were measured as the maximum shell diameter and weighed, and soft tissues were extracted for analysis of total mercury and, for some of the samples, methylmercury. Clams were analyzed either as individuals or composites. Crayfish were measured as carapace length and weighed; tail muscle was extracted and analyzed for total mercury. Crayfish were analyzed as individuals. Shellfish samples were dried at 60°C, powdered, and analyzed on a dry weight basis for total mercury by UCD using a FIMS cold vapor atomic absorption system (Slotton *et al.*, 2002). Moisture percentage was determined for all sample types to allow conversion of dry weight analytical results. Wet weight concentrations were calculated using a consistent multiplier determined from moisture percentage for sample type; a multiplier of 0.1312 was used for clam data and 0.22 was used for crayfish (Ayers, 2006). Some clams were analyzed for methylmercury concentrations by Battelle Marine Science Laboratories in Sequim Washington (Slotton *et al.*, 2002). Measures of methylmercury (compared to total mercury) provide more accurate representations of the levels in shellfish such as clams because the proportion of methylmercury is more variable and generally much lower than it is in finfish. Most clam

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<sup>1</sup> White catfish and bullheads from the CALFED study “Contaminant Concentrations in Fish from the Sacramento-San Joaquin Delta and Lower San Joaquin River, 1998” (Davis *et al.*, 2000) were prepared as skin off fillets. Other species (*e.g.*, bass) were prepared as skin-on fillets.

<sup>2</sup> TSMP has historically prepared samples as skin-off muscle fillets in accordance with guidance from OEHHA when the program was founded.

samples, however, were analyzed only for total mercury. Therefore, total mercury was used in the evaluation. Concentrations of methylmercury in the clam samples, when measured, were lower than total mercury.

Sufficient numbers of legal or edible-sized fish or shellfish were available to evaluate mercury concentrations and issue safe eating guidelines for the following species from the Sacramento River or Northern Delta: American shad, Asiatic clam, bluegill, brown bullhead, carp, channel catfish, Chinook salmon, crappie, hardhead, largemouth bass, rainbow trout, redear sunfish, Sacramento pikeminnow, Sacramento sucker, white catfish, and crayfish (mixed species). Striped bass were also collected but not evaluated, as described further below. Other fish and shellfish species collected in fewer numbers or locations were hitch, goldfish, smallmouth bass, spotted bass, steelhead trout, and tule perch. When possible, these species were compared to closely related species to develop guidelines for consumption. Samples were collected from 86 locations on the Sacramento River or in creeks, sloughs, or other water bodies in the Northern Delta or associated with the Sacramento River. Sampling sites are listed in Table 1 and shown in Figures 4 and 5.

## Other Contaminants

In addition to the data on mercury concentrations, OEHHA evaluated fish samples that were analyzed for chlorinated hydrocarbon contaminants including pesticides and polychlorinated biphenyls (PCBs). Fish tissues collected under the FMP in 2005 and 2006 were archived for analysis of chlorinated hydrocarbon contaminants pending receipt of funding from other sources. Some of these samples were subsequently analyzed at the WPCL and the preliminary data were made available to OEHHA. Although the FMP data were not public at the time of writing, OEHHA reviewed the data in draft form for this evaluation. In addition, chlorinated hydrocarbon contaminants were also measured in a limited number of historical samples of fish and shellfish in TSMP and SRWP. OEHHA downloaded TSMP data from the State Water Resources Control Board Web site ([http://www.swrcb.ca.gov/swamp/mussel\\_watch.html](http://www.swrcb.ca.gov/swamp/mussel_watch.html)) and received a data file from SFEI containing results from analysis of chlorinated hydrocarbon contaminants in fish samples by SRWP. OEHHA was not able to verify each sample from SRWP with the original datasets. SRWP data files received directly from the laboratory contained values for the sum of PCB congeners that did not match those included in the SFEI data file for SRWP. The differences were discussed with SFEI staff and OEHHA decided to use the SFEI data file because it contained complete results for individual congeners whereas the file from the laboratory included only summary values, and therefore, it was not possible to verify these values. Only those samples collected and analyzed since 1997 were used in this evaluation because analytical methods, including detection limits, have greatly improved over time and older data were considered less reliable. In addition, review of the historical dataset by OEHHA and SFEI (Greenfield *et al.*, 2004) showed that concentrations for these chemical groups have decreased substantially since the older data were obtained. OEHHA used the combined contaminant data from the FMP and historical datasets to determine whether any locations showed excessively high concentrations of total chlordanes, dieldrin, toxaphene, total dichlorodiphenyltrichloroethane and its metabolites (DDTs), or total PCBs, common contaminants found in California sport fish. Sixty-one samples were available for evaluation of chlorinated hydrocarbon contaminants from SRWP and TSMP; and the FMP provided results for 36 samples from the Sacramento River and Northern Delta.

## Evaluation Approach

Some of the historical data used in this evaluation were not collected specifically with the intention of developing fish consumption advisories; however, they can be used for that purpose providing certain sampling criteria are met. For example, U.S. EPA recommends a minimum of three replicate composite samples of three fish per composite (nine total fish) in order to begin assessing the magnitude of contamination at a site. U.S. EPA also recommends that at least two fish species be sampled per location. Although composite analysis is generally the most cost-efficient method of estimating the average concentration of chemicals in a fish species, analysis of individual fish provides a better measure of the range and variability of contaminant levels in a fish population (U.S. EPA, 2000a). Using these guidelines, OEHHA believes that a minimum of three replicates of three fish per composite or, preferably, nine individual fish samples of multiple species constitute the minimum acceptable sample size for a sampling site that will provide representative mean concentrations of chemicals for the fish populations in a water body with, approximately, a one-mile radius.

The Sacramento River and other water bodies in the Northern Delta cover an extensive geographic range, and the Delta is comprised of numerous rivers, creeks, channels, sloughs, and wetlands. Therefore, evaluation of the data for this large and complex area required a different approach than what is described above in which two species each represented by a minimum of nine individuals per location are considered for the development of consumption guidelines for that particular water body. This alternate approach, explained below, relied heavily on creation of a GIS-linked database and maps for evaluations.

Summary statistics including mean mercury concentrations for fish and shellfish from the Sacramento River and Northern Delta were calculated for each sampling location. All sampling sites from the Sacramento River area and Northern Delta evaluated in this draft report are listed in Table 1, which shows site names as revised to represent combined locations (*i.e.*, when sampling sites on the same water body were within approximately one mile of each other). The table also indicates when more than one project sampled the same location. Original site names are shown when they differed from the revised name, and are also provided in the case summaries in Appendix V. Mean mercury concentrations were compared across all sampling locations and within and across subdivided areas of the overall region using a step-wise process to determine the most logical way to organize data from different locations, or groupings of locations, in order to develop safe eating guidelines.

After reviewing similarities and differences in the summary statistics, multiple regression correlation analysis (MRC) was used to compare locations by assessing the degree to which fish length and location influenced mean mercury concentrations. Fish length is known to be an important variable that correlates with mercury concentrations for many species. Furthermore, MRC can be used to assess the influence of location after controlling for differences in fish length between these locations. MRC was performed using white catfish, largemouth bass, Sacramento pikeminnow, and Sacramento sucker samples, the four species that were collected in large numbers from different parts of the overall region and therefore provided sufficient results to perform the analysis.

Samples were first grouped according to whether they were collected in the Northern Delta, or outside of the Delta, and whether they were from the Sacramento River, or other water bodies resulting in four subregions: 1) Northern Delta, Sacramento River, 2) Northern Delta, non-river, 3) non-Delta, Sacramento River, and 4) non-Delta, non-river (as designated in Table 1).

Statistical comparisons of these four areas using MRC did not reveal any consistent patterns in mercury concentrations, and therefore, these groupings were not continued.

The next step made use of hydrologic “subareas” as proposed by the CVRWQCB and presented in a draft report in which the CVRWQCB divided the Sacramento-San Joaquin Delta (defined by statute) into eight regions based on hydrologic characteristics and mixing of source waters (CVRWQCB, 2006; Figure 6). This approach was also used in the evaluation and development of draft advisories for the San Joaquin River and Southern Delta. It should be noted that the CVRWQCB “subareas” are preliminary and subject to approval during the process of developing a Total Maximum Daily Load for methylmercury for the Delta. Nevertheless, OEHHA used the CVRWQCB subareas to evaluate fish and shellfish from the Delta because they provided a logical means of organizing the data for this large area. MRC was used to test for differences between subareas. The results of this analysis, as described below, were used to make determinations of how to organize the data and develop safe eating guidelines.

## **EVALUATION OF MERCURY LEVELS IN FISH AND SHELLFISH FROM THE SACRAMENTO RIVER AND NORTHERN DELTA**

Mercury concentrations in fish and other biota are dependent, in general, on the mercury level of the environment, which can vary based on differences in pH, redox potential, temperature, alkalinity, buffering capacity, suspended sediment load, and geomorphology of individual water bodies (Andren and Nriagu, 1979; Berlin, 1986; WHO, 1989). Other factors also affect the accumulation of mercury in fish tissue, including fish diet, species and age (as inferred from length) (WHO, 1989; 1990). Fish at the highest trophic levels (*i.e.*, predatory fish) generally have the highest levels of mercury. Additionally, because of the long biological half-life of methylmercury in fish (approximately 2 years), tissue concentrations in fish increase with increased duration of exposure (Krehl, 1972; Stopford and Goldwater, 1975; Tollefson and Cordle, 1986). As a result, tissue methylmercury concentrations are expected to increase with increasing age and length within a given species, particularly in piscivorous fish.

Chemical concentrations for the data are reported in wet weight. Arithmetic means, rather than geometric means, were used to represent the central tendency (average) of mercury concentrations for all species in this report. In general, arithmetic means for environmental chemical exposures are more health-protective than geometric means, and are commonly used in human health risk assessments. OEHHA evaluated mercury concentrations in 1,429 fish and shellfish samples (including a total of 2,194 individuals) from a total of 60 sampling sites<sup>1</sup> on the Sacramento River and other water bodies principally in the Northern Delta. The mean mercury concentrations, lengths, and sample sizes for each species are shown in Table 3. Mercury concentrations, lengths, and sampling sites for each unique sample are presented in the case summaries in Appendix V. All fish lengths that were reported in fork length were converted to total length for the purpose of calculating mean lengths; conversion factors for estimating total length from measured fork lengths were determined for each species by OEHHA based on the

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<sup>1</sup> Sampling sites from the same water body within a one-mile radius were combined. Some of these locations were sampled under different projects sampling in the same area. As a result, the original reported number of sampling sites (86) was reduced to 60.

degree of the angle in the fork of the tail fin because species-specific conversion factors were not available. The lengths as originally reported are included in Appendix V.

The species with the lowest overall mean mercury concentrations were American shad, Asiatic clams, Chinook salmon, and steelhead and rainbow trout, followed by red swamp crayfish and redear sunfish. Bluegill, sucker, signal crayfish, brown bullhead, carp, hardhead, channel catfish, crappie, and white catfish had somewhat higher levels of mercury. Black bass (including largemouth, smallmouth, and spotted bass) and Sacramento pikeminnow had the highest mercury levels. To develop safe eating guidelines, the degree of variability in chemical concentrations in the species and geographic differences were considered. Additionally, other factors such as the ease of communicating the advice needed to be addressed. Further discussion of these considerations is provided below.

## Comparisons of subareas

Mean mercury concentrations were calculated for each species in each Northern Delta subarea<sup>1</sup> (Table 4). To test for regional differences in mercury levels in the Northern Delta, MRC was performed on white catfish, largemouth bass, Sacramento sucker, and Sacramento pikeminnow collected from CVRWQCB proposed Northern Delta subareas. The following three subareas are located in the Northern Delta: Delta Yolo Bypass South, Delta Yolo Bypass North, and the Delta Sacramento River subarea<sup>2</sup> (Figure 6, Northern Delta subarea names shown in bold). As can be seen in Figure 6, a small portion of the Delta Central Delta subarea is located between the Sacramento and San Joaquin Rivers. Samples from these locations, including White Slough and Potato Slough, were previously evaluated for the Southern Delta draft advisory. These samples were not specifically included in that draft advisory, however, because the San Joaquin River was selected to represent the northern boundary of the Southern Delta to simplify the description of it, and these samples were collected from the area north of the San Joaquin River.

Comparisons of the three Northern Delta subareas, with samples from the northern portion of the Delta Central Delta subarea included as a fourth subarea, confirmed that mercury concentrations in these samples (from White Slough and Potato Slough) were consistent with fish and shellfish from the remainder of the Delta Central Delta subarea, south of the San Joaquin River, which had lower mercury concentrations than samples of the same species in the Northern Delta. A summary of the results in Table 5 shows differences in mean mercury concentrations between subareas; the full results of the MRC analysis are provided in Appendix VI. OEHHA therefore concluded that the Delta Central Delta subarea, both north and south of the San Joaquin River, should be considered together as part of the Southern Delta draft safe eating guidelines. As a result, it was necessary to change the boundary of the Southern Delta draft safe eating guidelines. As stated above, the location of Highway 12 approximated the northern boundary of the Delta Central Delta subarea and provided a simpler and more recognizable way to describe the boundary compared to the subarea boundary itself.

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<sup>1</sup> The part of the Sacramento River outside the Delta is not included in the subareas defined by the CVRWQCB. Likewise, creeks and sloughs located outside the Delta are not part of any subarea. For comparisons, however, summary statistics were also calculated for the samples from these two areas, as shown in Table 4.

<sup>2</sup> One sampling site, Sacramento River at Decker Island, is located within the Delta West Delta subarea. However, because it is on the Sacramento River, it was included in this evaluation and advisory. The only species collected there were clams and crayfish. Two sturgeon were collected from the Sacramento River at Channel Marker 33, also in the Delta West Delta subarea; however, sturgeon were not evaluated.

Comparisons of mercury concentrations between the three Northern Delta subareas (Delta Yolo Bypass South, Delta Yolo Bypass North, and the Delta Sacramento River subarea) were repeated (excluding the Delta Central Delta subarea). In this evaluation, MRC results showed that location (subarea) was significant in only one of four species, largemouth bass, and explained less than two percent of the mercury variance<sup>1</sup> (Appendix VII). These findings confirmed that the Delta Central Delta differed from the three Northern Delta subareas because subarea explained a larger percent of the variance when the Delta Central Delta subarea was included in the analysis. Furthermore, the results indicated that mercury levels in fish from the three Northern Delta subareas were not different and it would not be appropriate to issue different consumption advice for each Northern Delta subarea.

This analysis did not address mercury concentrations in samples collected from the Sacramento River and other water bodies north of (outside) the Delta. Therefore, the samples from the Sacramento River and other creeks and sloughs<sup>2</sup> associated with the Sacramento River outside the Delta were considered as a “subregion” and compared to samples from the Northern Delta using MRC. The Northern Delta subareas were combined and also considered a “subregion.” As before, white catfish, largemouth bass, Sacramento sucker, and Sacramento pikeminnow were used in the analysis, and carp was also tested due to its large sample size in the two subregions. The results of this analysis (Appendix VIII) showed that after controlling for length in each species, the influence of location was not significant in white catfish, Sacramento pikeminnow, or carp. Location was significant in Sacramento sucker and largemouth bass, although location (subregion) explained only three percent of the mercury variance in these two species, whereas length explained 45 percent and 36 percent of the mercury variance in sucker and largemouth bass, respectively. The interaction variable was also significant for largemouth bass, which makes it more difficult to interpret the small percentage of variance explained by location. Location was therefore not considered an important variable and based on these results, it was concluded that these two subregions, the Northern Delta, and the Sacramento River and associated creeks and sloughs outside the Delta, would be considered as one combined region for safe eating guidelines, which were based on the overall grand mean mercury concentrations for each species.

## **Mean mercury concentrations for fish and shellfish species and species groups**

OEHHA has developed advisory tissue levels for methylmercury and other contaminants found in fish (Klasing and Brodberg, 2008) similar to risk-based consumption limits recommended by U.S. EPA (2000b). Advisory tissue levels relate the number and size of recommended fish meals to mercury concentrations found in fish (Table 6). These values were designed so that individuals consuming no more than a preset number of meals should not exceed the RfD for methylmercury or other contaminants, on average, or a risk level of  $1 \times 10^{-4}$  for carcinogens. Meal sizes were based on a standard eight-ounce (227 grams) portion of uncooked fish, which is approximately six ounces after cooking, for adults who weigh roughly 70 kilograms (equivalent to 154 pounds). OEHHA recommends that people who weigh less than 70 kilograms eat smaller portions of fish and that, in particular, children up to age 12 eat about half as much as adults.

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<sup>1</sup> For white catfish, location was barely non-significant ( $p=0.053$ ), and the interaction variable was significant.

<sup>2</sup> Big Chico Creek, Butte Creek, Colusa Drain, Sutter Bypass, Cross Canal, Reclamation Slough, and Sacramento Slough

Advisory tissue levels for methylmercury for women over 45 years and men are approximately three times higher than for sensitive populations because of the three-fold higher RfD level used for this population group. The sensitive population is defined as women 18-45 years (including women who are pregnant or breastfeeding) and children 1-17.

To simplify consumption advice, OEHHA commonly combines related species in safe eating guidelines. Individual related species can be hard to differentiate and usually have similar mercury levels. Typically, small sunfish species (including bluegill, green sunfish, and redear sunfish) are combined, as are black bass species (largemouth, smallmouth, and spotted bass) and crayfish (northern, signal, and red swamp crayfish). Catfish species, including bullheads, are also commonly combined, as are trout species. When sampled, carp and goldfish are also combined.

Two sunfish species were collected in sufficient numbers for evaluation in the Sacramento River and Northern Delta: bluegill and redear sunfish. The mean mercury concentrations in redear sunfish were generally lower than in bluegill as reflected by their overall mean concentrations of 0.14 ppm and 0.19 ppm, respectively (Table 3). The mean concentrations were within a fairly narrow range, however, and the overall mean mercury concentration for all bluegill and redear sunfish samples combined (0.16 ppm) was used to develop guidelines for this species group.

Data for three catfish species (white catfish, channel catfish, and brown bullhead) were available for this evaluation. White catfish were generally found to have more variable and higher concentrations of mercury than channel catfish and brown bullhead (0.44 ppm, 0.28 ppm, and 0.24 ppm, respectively; Table 4), although MRC showed that location was not a significant factor. Mean mercury concentrations in white catfish varied among sampling sites within subareas and were in the “no consumption” range for women ages 18-45 and children ages 1-17 at the following locations in the Northern Delta: Sacramento River at Hood, Cache Slough near Ryer Island Ferry, Little Holland Tract, and Toe Drain; and outside the Delta in Sacramento Slough. Basing advice on the overall mean mercury concentration for the three species combined would keep the safe eating guidelines for catfish consistent and simpler, but might lead to some consumption of higher-mercury white catfish. It is unclear why white catfish in these locations have higher mercury concentrations, and this environmental variability can not be explained or easily incorporated in the advice. Separating out white catfish would be more health protective but would complicate the safe eating guidelines. OEHHA decided not to separate them, and to base the guidelines on the grand mean for all catfish species sampled (0.38 ppm).

Crayfish were collected from throughout the Northern Delta. Crayfish species also varied in mean mercury concentrations, but can be difficult to distinguish especially because coloration can vary within a species. Mean mercury concentrations in all crayfish samples ranged from 0.04 ppm to 0.66 ppm, and within the same species, ranged from 0.05 ppm to 0.66 ppm. OEHHA used the overall mean mercury concentration for all crayfish samples combined (0.20 ppm) to develop consumption guidelines.

The majority of black bass samples from the Sacramento River and Northern Delta were largemouth bass. Mean mercury concentrations were similarly high in largemouth, smallmouth, and spotted bass. In keeping with all other advisories in which OEHHA has combined black bass species, the mean mercury concentration for the species group (0.65 ppm) was used to develop consumption guidelines.

Several species, including steelhead trout, were not collected in sufficient numbers to evaluate, but could be compared to a related species. Steelhead and rainbow trout are essentially behavioral variations of the same species, and the average mercury concentration of steelhead trout, although only represented by four fish, was similar to rainbow trout (0.07 ppm and 0.04 ppm, respectively) and corresponded to the same consumption category. Both species were included together in the guidelines.

Eleven Chinook salmon were collected from the Sacramento River outside the Delta. Although the sample size was relatively small (even though it met the criterion), the range in mercury concentrations was narrow (0.04 ppm to 0.09 ppm). Additional samples of adult river-run salmon collected as they returned to salmon hatcheries (FMP data not shown) had comparably low mercury levels. Furthermore, salmon and trout are related (salmonid family) and individuals from salmonid species are typically similarly low in mercury when collected from free-flowing water bodies (as opposed to landlocked lakes and reservoirs). Therefore, the data were considered adequate to characterize the species. Salmon is one of the best sources of “omega-3” fatty acids, and therefore, providing consumption guidelines for river-run salmon is important to provide health-promoting options for consumers.

Goldfish were represented by only four fish but had a mean mercury concentration that was consistent with its relative, carp (0.26 ppm and 0.24 ppm, respectively). Hitch and hardhead also belong to the same family as carp and goldfish, and had comparable mean mercury concentrations (0.26 ppm and 0.26 ppm, respectively), though only seven hitch were included in this dataset. The individual species means and the combined species mean correspond to the same consumption category. Therefore, all four species were included in the advisory and assigned the same consumption advice.

The sample of tule perch consisted of only six individuals. This species belongs to the surfperch family, consisting mainly of marine species. Tule perch could not be compared to a related species in this evaluation and were not included in the guidelines. The two sturgeon<sup>1</sup> that were collected were insufficient for evaluation. The current advisory for San Francisco Bay applies to sturgeon from the Delta and is included here with the safe eating guidelines developed for the Sacramento River and Northern Delta.

For Sacramento pikeminnow, the MRC analysis showed that length explained over 50 percent of the mercury variance. Given the strong relationship between fish length and mercury concentration observed in the data for this species, issuing size-specific advice was considered for pikeminnow. The scatterplot in Appendix IX depicts the relationship between length and mercury concentrations in all samples of Sacramento pikeminnow from the Sacramento River and Northern Delta. The graph shows that, using the 95 percent confidence interval around the mean mercury concentration, pikeminnow of all sizes could exceed the threshold for no consumption. Therefore, OEHHA decided not to assign size-specific advice, and the overall species mean mercury concentration was used to develop guidelines for pikeminnow. The mean mercury concentration for pikeminnow was very close to the threshold between consumption and no consumption. Because there is no evidence to date that pikeminnow contain high levels of “omega-3” fatty acids, the decision was made to provide the more conservative guidelines. This

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<sup>1</sup> Ten sturgeon were collected as part of the FMP; however, the laboratory did not analyze the sturgeon samples with the other FMP samples, nor did they subsequently provide analytical results to OEHHA.

decision is an example of using best professional judgment to balance the risks and benefits of fish consumption (Klasing and Brodberg, 2008).

Fifty-one striped bass were collected from various locations in the Northern Delta and Sacramento River (outside the Delta), and in Fremont Weir (also outside the Delta); the mean mercury concentration was 0.38 ppm. Striped bass were not included in the evaluation for the following reason. The FMP initiated a special study of striped bass that is underway at the time of writing. The study will analyze a total of about 100 striped bass from the Delta to provide data suitable for considering regional advice for this species and for updating the interim guidelines for striped bass that are currently included in the San Francisco Bay/Delta fish consumption advisory. In the time period until the special study is completed and evaluated, the San Francisco Bay fish consumption advisory for striped bass in the Delta remains in effect.

## **EVALUATION OF OTHER CONTAMINANTS IN FISH AND SHELLFISH FROM THE SACRAMENTO RIVER AND NORTHERN DELTA**

Analysis of chlorinated hydrocarbon contaminants (including pesticides and PCBs) was planned as part of the sampling design for the FMP advisory sampling sites because developing comprehensive safe eating guidelines requires consideration of all potential chemicals of concern. The FMP, however, was funded by CBDA for the express purpose of assessing mercury contamination, and thus, outside sources of funding were sought for analysis of these other chemical contaminants. Fish tissues collected under the FMP were archived, and some of them were subsequently analyzed with support from the CVRWQCB and SRWP. As indicated above, OEHHA reviewed the preliminary data. In addition, data from limited analyses for select chlorinated hydrocarbon contaminants from historical datasets were also examined to determine whether any locations showed excessively high concentrations of these contaminants such that safe eating guidelines based on mercury would not be sufficiently health protective. The evaluation focused on the most common chlorinated hydrocarbon contaminants found in California sport fish: total PCBs; and the pesticides dieldrin, toxaphene, total chlordanes, and total DDTs. As was done with mercury data, OEHHA compared chlorinated hydrocarbon contaminant levels in fish and shellfish to OEHHA advisory tissue levels (Table 6), which are designed so that individuals consuming no more than a preset number of meals should not exceed predetermined thresholds for exposure to chemical contaminants.

Historical data on chlorinated hydrocarbon contaminants from the prior ten years (1997 to 2007) for the Sacramento River and Northern Delta region included 57 samples analyzed under SRWP from ten sampling locations and including nine species (Table 7). The concentrations of PCBs (analyzed as congeners) were slightly above the advisory tissue level (21 parts per billion, or ppb; Table 6) at which consumption recommendations would be limited to two meals a week in the following samples: one composite sample of pikeminnow from the Sacramento River at Alamar<sup>1</sup> (22 ppb); white catfish from the Sacramento River at Alamar, based on the mean of two samples (24 ppb); and an individual striped bass from the Sacramento River at Colusa (24 ppb). The species mean for two samples of Sacramento sucker from the Sacramento River at River Mile 44 was higher (42 ppb) but still within the same advice category as the above-mentioned samples. The mean concentrations of PCBs for these samples would not warrant advice more

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<sup>1</sup> The Sacramento River at Alamar is the same location as the Sacramento River at Veteran's Bridge.

restrictive than that based on mercury. Pesticides in all SRWP samples were either low or not detected and were not of concern.

Four samples from the Sacramento River or Northern Delta were analyzed for chlorinated hydrocarbon contaminants in TSMP in the last ten years. One sample, which consisted of a composite of six white catfish collected in 1998 from the Sacramento River at Hood had the highest measured concentration of PCBs (200 ppb, measured as Aroclors; Table 8). At the same location, a composite of smallmouth bass had a low concentration of PCBs (10 ppb), and PCBs were not detected in a single largemouth bass. PCBs were not detected in the fourth sample, a composite of five largemouth bass from Prospect Slough. Pesticides were either low or not detected in these samples and were not of concern. The single catfish sample with elevated PCBs was not considered adequate to develop consumption advice due to the small sample size and lack of additional supporting data. However, it indicates that further sampling for chlorinated hydrocarbon contaminants is warranted.

In the FMP samples, 36 composite samples were analyzed from 13 sampling sites in the Sacramento River and Northern Delta region. Of these, two samples of channel catfish had elevated concentrations of PCBs (100 ppb from the Sacramento River at Colusa and 53 ppb from the Sacramento River at Veteran's Bridge); and one sample of carp, also from the Sacramento River at Veteran's Bridge, had a slightly elevated concentration of PCBs (26 ppb). PCB concentrations in these three samples were measured as the sum of 48 congeners (Table 9). At each of these sampling locations, an additional composite sample of Sacramento sucker had low total PCBs (measured as the sum of 48 congeners). The draft safe eating guidelines for both catfish and carp based on mercury would be protective for the PCBs content for women ages 18-45 and children ages 1-17. The channel catfish samples, however, suggest that more restrictive advice might be warranted for women over 45 and men because recommendations for this population based on mercury are less restrictive than for women ages 18-45 and children. The results for PCBs, however, are not only limited, but do not show consistent patterns either on a regional or more localized basis. High levels of PCBs were not found in species most likely to accumulate PCBs from multiple locations within an area, and no sampling sites had consistently high concentrations of PCBs in multiple species. The remaining 33 FMP samples collected from sampling locations on the Sacramento River or in the Northern Delta had non-detectable or low concentrations of PCBs. All FMP samples analyzed for chlorinated hydrocarbon contaminants had non-detectable or low concentrations of pesticides and were not of concern. Therefore, safe eating guidelines for the Sacramento River and Northern Delta were based on mercury concentrations only.

## **GUIDELINES FOR FISH CONSUMPTION**

OEHHA generally issues site-specific consumption advice beginning at a consumption frequency of one eight-ounce meal per week (a total of six ounces of cooked fish per week), which is equivalent to two three-ounce servings or the minimum weekly fish consumption rate recommended by the American Heart Association (AHA, 2007). Fish that can be eaten at this frequency represent fish with relatively low levels of mercury or other contaminants. If fish can be consumed even more frequently than one "meal" or a total of six ounces of cooked fish per week, based on very low contaminant concentrations, advice for consumption of two or three meals per week may also be provided. In addition, because of the potential beneficial effects from regular fish consumption, thought to stem largely from unique "omega-3" fatty acids in fish, OEHHA encourages people of all ages, especially women 18-45 years and children 1-17

years, to eat fish that are low in mercury or other contaminants and high in “omega-3” fatty acids. OEHHA recommends that consumers avoid regular consumption of fish that cannot be safely eaten at a minimum of six ounces (after cooking) a week.

Mean mercury concentrations for species and species groups were compared to advisory tissue levels, as discussed above, to ascertain the appropriate recommendations for consumption, or safe eating guidelines presented below. Concentrations of PCBs were also compared to advisory tissue concentrations for PCBs, and the corresponding advice categories were reviewed to determine whether the mercury guidelines were adequately health protective for PCBs as well. As indicated above, safe eating guidelines derived from mercury concentrations were found to be health protective for PCBs based on the available data.

### ***Recommendations for women 18-45 years, including pregnant and breastfeeding women, and children 1-17 years for eating fish and shellfish from the Sacramento River and Northern Delta***

- Women 18-45 years and children 1-17 years can eat a total of three servings a week from the following species: Asiatic clams, rainbow trout, steelhead trout, Chinook salmon, and American shad. Serving size for women is six ounces of fish after cooking (equal to eight ounces before cooking). Serving size for children up to age 12 is about half as much as adults (three ounces of cooked fish).
- Alternatively, a maximum of one serving a week can be eaten of one of the following species: Sacramento sucker, sunfish (including bluegill and redear sunfish), crayfish, carp, goldfish, hardhead, hitch, crappie, or catfish (including channel or white catfish, or bullhead).
- It is recommended that Sacramento pikeminnow and black bass (including largemouth, smallmouth, and spotted bass) not be eaten.
- The 1994 advisory for San Francisco Bay and the Delta recommends that women ages 18-45 and children eat no striped bass over 27 inches. The San Francisco Bay/Delta advisory allows for consumption of one meal a month of smaller legal-sized striped bass, or sturgeon, but if striped bass or sturgeon is eaten by women ages 18-45 or children, it is recommended that no other fish be eaten that month. In this advisory, a meal was defined as six ounces of fish after cooking (eight ounces before cooking) for a 160-pound adult; children should eat smaller meals.

### ***Recommendations for women over 45 years and men for eating fish and shellfish from the Sacramento River and Northern Delta***

- Women over 45 and men can eat one serving a *day* from the following species: Asiatic clams, rainbow trout, steelhead trout, Chinook salmon, and American shad. Serving size is six ounces of fish after cooking (about eight ounces before cooking) for an adult weighing about 160 pounds. Serving size can be adjusted to add one ounce for every 20 pounds above, or subtract one ounce for every 20 pounds below, the average weight of 160 pounds.
- As an alternative, women over 45 and men can eat up to three servings a week from the following species: Sacramento sucker, sunfish (including bluegill and redear sunfish), and crayfish.

- Alternatively, women over 45 and men can eat up to two servings a week from the following species: carp, goldfish, hardhead, hitch, crappie, or catfish (including channel and white catfish, or bullhead).
- Alternatively, women over 45 and men can eat a maximum of one serving a week of pikeminnow or black bass (including largemouth, smallmouth, and spotted bass).
- The 1994 advisory for San Francisco Bay and the Delta recommends that women over 45 and men eat no more than two meals a month of sturgeon or striped bass from the bay or Delta, and eat no striped bass over 35 inches. If striped bass or sturgeon is eaten by women over 45 years or men, however, it is recommended that no other fish be eaten that month. In this advisory, a meal was defined as six ounces of fish after cooking (eight ounces before cooking) for a 160-pound adult.

### **Other Recommendations**

Regular consumption of fish is recommended as part of a healthy diet due to evidence for health benefits associated with consistent fish consumption (AHA, 2007, IOM, 2007). The “one meal a month” advice used in previous advisories has been combined with the “no consumption” category in recent advisory tables and labeled “do not eat” to reflect that eating fish from this category is not health protective because the higher levels of mercury prevent regular safe consumption of fish. The San Francisco Bay/Delta advisory, however, recommended consumption for women 18-45 years and children of up to one meal a month, and for women over 45 and men, up to two meals a month. These guidelines currently apply to striped bass and sturgeon from the Delta and Sacramento River, as well as other San Francisco Bay fish. This advice will be maintained until the results of the striped bass study, as mentioned above, are evaluated, although it is not consistent with recent OEHHA guidelines to avoid fish that can only be eaten once a month. It should be noted that even though striped bass do contain fairly high “omega-3” fatty acid levels, consumption of one or two meals a *month* will not provide an adequate intake of “omega-3” fatty acids. Therefore, OEHHA encourages consumers to select fish for consumption that can be safely eaten more than once or twice a month and that contain higher levels of “omega-3” fatty acids. Typically, these species include river-run salmon and trout, and for women over 45 and men only, black bass including largemouth, smallmouth, and spotted bass. To obtain adequate levels of “omega-3” fatty acids, especially at water bodies with limited or no species that can be eaten one or more times a week), consumers are advised to maintain regular consumption of fish by eating sport fish from other water bodies with less restrictive advice, or low-mercury commercial fish that are high in “omega-3” fatty acids from stores or restaurants (including salmon, trout, herring, and sardines), in order to obtain the health benefits from fish consumption. Newer safe eating guidelines from OEHHA will indicate fish species with high “omega-3” levels.

It is very important to note that if an individual consumes multiple species or catches fish from more than one location with an advisory, the recommended guidelines for different species and locations should not be combined (*i.e.*, added). If a person eats six ounces of cooked fish with a recommendation of one serving a week, no other fish should be eaten that week. An individual can eat one species of fish one week, and the same or a different species from the one-serving category the next week. When the recommended consumption is two or three servings a week, fish species in that category can be interchanged, but not added to consumption of a species from the one-serving-a-week category. Salmon and trout are among the best choices for all consumers

because they are very low in mercury and high in “omega-3” fatty acids. Regular consumption of salmon and trout by pregnant women can confer neurological advantages to the developing fetus (Oken *et al.*, 2005; Cohen, *et al.*, 2005).

OEHHA also recommends that women ages 18-45 and children ages 1-17 follow the Joint Federal Advisory for Mercury in Fish for commercial fish (U.S. EPA, 2004, see <http://www.epa.gov/waterscience/fishadvice/advice.html>). This advisory recommends that these individuals do not eat shark, swordfish, king mackerel, or tilefish<sup>1</sup> because of the high levels of mercury in these species. The federal advisory also states that these individuals can safely eat up to two meals (12 ounces cooked) of a variety of other fish purchased at stores or restaurants such as shrimp, canned light tuna, wild salmon, pollock, or (farm-raised) catfish. Albacore (“white”) tuna is known to contain more mercury than canned light tuna; it is therefore recommended that no more than six ounces of albacore tuna (*e.g.*, one six-ounce can) be consumed per week.

For fish consumers who only eat sport fish occasionally, for example, on an annual vacation, consumption of a relatively high mercury species such as striped bass or largemouth bass from the Sacramento River or Northern Delta would not be a cause for concern provided their other fish intake did not include regular consumption of high-mercury commercial fish.

For general advice on how to limit your exposure to chemical contaminants in sport fish (*e.g.*, eating smaller fish of legal size), as well as a fact sheet on methylmercury in sport fish, see the California Sport Fish Consumption Advisories (<http://www.oehha.ca.gov/fish.html>) and Appendices I and III. Unlike the case for many fat-soluble chlorinated hydrocarbon contaminants (*e.g.*, DDTs and PCBs), however, various cooking and cleaning techniques will not reduce the methylmercury content of fish. Additionally, there are no known ways to prepare fish (such as soaking in milk) that will reduce the methylmercury content of the fish. Meal sizes should be adjusted to body weight. Consumers weighing less than 160 pounds should eat smaller portions than the standard eight-ounce portion (equal to six ounces after cooking), and children should also eat smaller portions, about half as much as adults for children up to the age of 12. The complete draft recommendations (safe eating guidelines) for consumption of fish and shellfish from the Sacramento River and Northern Delta for women 18-45 years and children 1-17 years, and for women over 45 years and men are presented in the guides below.

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<sup>1</sup> King mackerel and tilefish are common on the east coast but rarely found in California or other western states, whereas shark and swordfish are more commonly available on the west coast.

# DRAFT SAFE EATING GUIDELINES

Based on Mercury in Fish from the

## Sacramento River and Northern Delta

Including the Sacramento River from below Shasta Lake to Pittsburg and other water bodies in the Delta north of Highway 12

**A guide to eating fish caught in the northern Delta and Sacramento River**  
 For women ages 18 - 45, especially those who are pregnant or breastfeeding, and children ages 1 - 17

**Mercury Meter** (Low, Medium, High)

**Low Mercury:** American Shad, Asiatic Clam, Trout ♥, Salmon ♥

**Medium Mercury:** Carp and Goldfish, Sucker, Crappie, Catfish, Hitch, Sunfish, Hardhead, Crayfish

**High Mercury:** Striped Bass\*, Largemouth Bass, Sturgeon\*, Pikeminnow

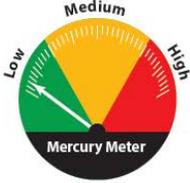
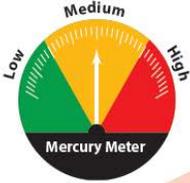
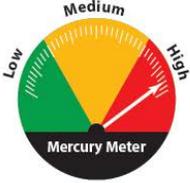
♥ = High in Omega 3s

**Safe to eat 3 servings per week** OR **Safe to eat 1 serving per week** **Do not eat**

\*Striped bass under 27 inches or sturgeon: safe to eat 1 serving per month.

# A guide to eating fish caught in the northern Delta and Sacramento River

Women over 45 and men over 17

 <p>American Shad</p> <p>Asiatic Clam</p> <p>Trout ♥</p> <p>Salmon ♥</p> <p>♥ = High in Omega 3s</p>	 <p>Carp and Goldfish</p> <p>Sucker</p> <p>Crappie</p> <p>Catfish</p> <p>Hitch</p> <p>Sunfish</p> <p>Hardhead</p> <p>Crayfish</p>	 <p>Striped Bass*</p> <p>Largemouth Bass</p> <p>Sturgeon*</p> <p>Pikeminnow</p>
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Safe to eat 1 serving daily

OR

Safe to eat 3 servings per week

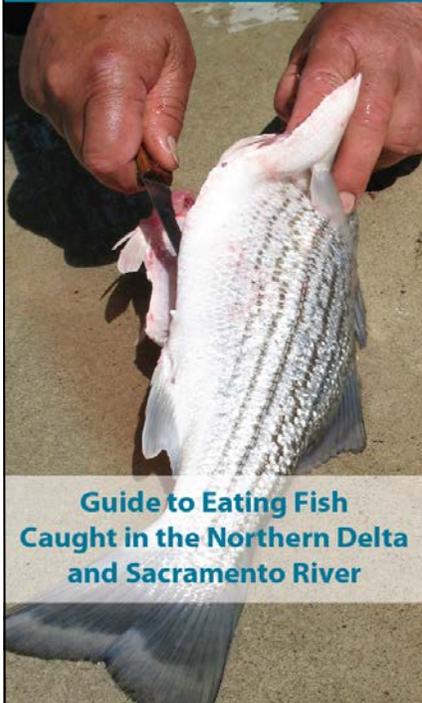
OR

Safe to eat 1 serving per week

\*Striped bass under 35 inches or sturgeon: safe to eat 2 servings per month.

Do not eat striped bass over 35 inches.

# Eat fish. Be safe. Choose wisely.



**Guide to Eating Fish  
Caught in the Northern Delta  
and Sacramento River**

## Why eat fish?

Eating fish is good for your health. Fish have Omega 3s that can reduce your risk for heart disease and improve how the brain develops in unborn babies and children.

## What is the concern?

**Some fish have high levels of mercury** that can negatively affect how the brain develops in unborn babies and children.

## What should I do?

- Use this guide to choose fish lower in mercury and high in Omega 3s.
- Eat smaller fish of legal size. Fish build up mercury in their bodies as they grow.

## More fish eating advice for women ages 18 – 45 and children ages 1 – 17

- You can eat 2 servings per week of fish from stores or restaurants. But, do not eat fish caught by you, friends or family in the same week.
- Only one of your two servings of fish per week should be canned albacore (white) tuna.
- When shopping for fish, good choices are salmon, pollock, catfish, tilapia, and shrimp.
- Do not eat shark, swordfish, tilefish, or king mackerel. These fish are very high in mercury.

## What is a serving?



For Adults

For Children

The recommended serving of fish is about the size and thickness of your hand. Use your hand to measure a serving of fish. Give children smaller servings.

For more advice about what you can do to protect your family from mercury in fish, contact:



<http://www.oehha.ca.gov/fish.html>.

(916) 327-7319 or (510) 622-3170

California Environmental Protection Agency  
Office of Environmental Health Hazard Assessment  
1515 Clay Street, 16th floor  
Oakland, California 94612

## **RECOMMENDATIONS FOR FURTHER SAMPLING**

Several local fish species were collected in very small numbers or not at all, for example, tule perch and Sacramento perch, respectively. Data on the abundance of these species and their popularity for consumption are needed to determine whether further sampling and analysis of these species would be recommended. The results of sampling and analysis of fish and shellfish for chlorinated hydrocarbon contaminants (including pesticides and PCBs) in recent years have generally indicated low levels of these contaminants in the Sacramento River and Northern Delta; however, a few samples have shown somewhat elevated concentrations of PCBs at a few locations. Additional evaluation of PCBs would be useful to confirm that PCBs are not accumulating to levels of concern in the Sacramento River or Northern Delta. OEHHA also recommends that salmon and trout be evaluated for chlorinated hydrocarbon chemicals.

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**Table 1. List of Sampling Sites for the Sacramento River and Northern Delta**

Project	Sampling Site Name	Original Site Name (when different) <sup>1</sup>	Sacramento River in the Delta	Other water bodies in the Delta	Sacramento River outside the Delta	Other water bodies outside the Delta
TSMP	Beach Lake			X		
SRWP	Big Chico Creek near mouth					X
FMP	Butte Creek at Colusa Highway					X
UCD	Bypass Slough			X		
UCD	Cache Slough			X		
FMP	Cache Slough2	Sacramento River at Cache Slough		X		
UCD	Cache Slough (lower)			X		
FMP	Cache Slough at Miner Slough	Sacramento River at Miner Slough		X		
SRWP	Cache Slough near Ryer Island Ferry			X		
CALFED	Cache Slough near Ryer Island Ferry 2			X		
SRWP	Colusa Basin Drain					X
TSMP	Colusa Drain/Abel Road					X
FMP	Colusa Drain/Knights Landing	Colusa Basin Drain at Road 99E				X
TSMP	Colusa Drain/Knights Landing					X
FMP	Cross Canal					X
TSMP	Cross Canal					X
UCD	Delta Cross Canal			X		
UCD	Delta Meadows			X		
FMP	Fremont Weir					X
FMP	Georgiana Slough			X		
UCD	Georgiana Slough			X		
CALFED	Green's Lake			X		
UCD	Lindsey Slough			X		
UCD	Little Hastings Tract			X		
UCD	Little Holland Tract 1			X		
CALFED	Little Holland Tract 2			X		
UCD	Miner Slough			X		
UCD	Prospect Island			X		
FMP	Prospect Slough/Liberty Island	Liberty Island		X		
FMP	Prospect Slough/Liberty Island	Prospect Slough		X		
TSMP	Prospect Slough/Liberty Island			X		
UCD	Prospect Slough/Liberty Island	Old Prospect Slough		X		
TSMP	Reclamation Slough					X
FMP	Rio Vista Fish Derby1		X			

<sup>1</sup> Sampling sites within one mile were combined (including similar or dissimilar site names) and are represented by a common site name as shown in the table.

Project	Sampling Site Name	Original Site Name (when different) <sup>1</sup>	Sacramento River in the Delta	Other water bodies in the Delta	Sacramento River outside the Delta	Other water bodies outside the Delta
FMP	Rio Vista Fish Derby2		X			
FMP	Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park		X			
FMP	Sacramento River at Bend Bridge				X	
FMP	Sacramento River at Bend Bridge near Red Bluff	Sacramento River at Bend Bridge Near Red Bluff			X	
SRWP	Sacramento River at Bend Bridge near Red Bluff				X	
FMP	Sacramento River at Butte City				X	
FMP	Sacramento River at Channel Marker 33		X			
FMP	Sacramento River at Colusa				X	
FMP	Sacramento River at Grimes				X	
SRWP	Sacramento River at Hamilton				X	
FMP	Sacramento River at Hamilton City				X	
FMP	Sacramento River at Knights Landing				X	
TSMP	Sacramento River at Knights Landing	Sacramento River/Knights Landing			X	
FMP	Sacramento River at Ord Bend				X	
CALFED	Sacramento River at RM 44	Sacramento River at RM 44 - 2	X			
FMP	Sacramento River at RM 44	Sacramento River at RM44	X			
SRWP	Sacramento River at RM 44	Sacramento River at RM 44 - 1	X			
TSMP	Sacramento River at RM 44	Sacramento River/RM 44	X			
FMP	Sacramento River at Tisdale Boat Ramp AKA River Bend Marina				X	
FMP	Sacramento River at Veterans Bridge				X	
SRWP	Sacramento River at Veterans Bridge				X	
TSMP	Sacramento River at Veterans Bridge	Sacramento River/u/s I-5 Overcrossing			X	
FMP	Sacramento River at Woodson Bridge				X	
SRWP	Sacramento River below Keswick				X	
UCD	Sacramento River Deep Water Ship Channel			X		

Project	Sampling Site Name	Original Site Name (when different) <sup>1</sup>	Sacramento River in the Delta	Other water bodies in the Delta	Sacramento River outside the Delta	Other water bodies outside the Delta
FMP	Sacramento River near Deschutes Rd				X	
FMP	Sacramento River near Hamilton	Sacramento River Near Hamilton (Scotty's Boat Landing)			X	
TSMP	Sacramento River near Hamilton	Sacramento River/Hamilton City			X	
CALFED	Sacramento River near Isleton		X			
UCD	Sacramento River near Isleton	Sacramento River/Isleton	X			
FMP	Sacramento River near Verona	Sacramento River Near Verona Marina, Village Resort AKA Joe's Place			X	
TSMP	Sacramento River near Verona	Sacramento River/Verona 1			X	
SRWP	Sacramento River/Colusa	Sacramento River at Colusa			X	
TSMP	Sacramento River/Colusa				X	
TSMP	Sacramento River/d/s Shasta Dam				X	
UCD	Sacramento River/Decker Island (inner channel)		X			
TSMP	Sacramento River/Hood		X			
TSMP	Sacramento River/Keswick				X	
FMP	Sacramento River/Rio Vista	Sacramento River at Rio Vista	X			
TSMP	Sacramento River/Rio Vista		X			
UCD	Sacramento River/Rio Vista		X			
FMP	Sacramento Slough	Sacramento Slough at Karnak				X
SRWP	Sacramento Slough					X
TSMP	Sacramento Slough					X
FMP	Snodgrass Slough near Delta Meadows	Snodgrass Slough Near Delta Meadows		X		
UCD	Snodgrass Slough near Delta Meadows	Snodgrass Slough/nr Delta Meadows		X		
FMP	Steamboat Slough			X		
UCD	Steamboat Slough			X		
TSMP	Sutter Bypass					X
FMP	Sutter Bypass below Kirkville Road					X
FMP	Toe Drain			X		
UCD	Toe Drain			X		

**Table 2. Legal or Edible Size Criteria for Fish and Shellfish Species**

Common Name	Minimum Size (Total Length mm)	Species Name
American shad	275	<i>Alosa sapidissima</i>
Asiatic clam	- <sup>1</sup>	<i>Corbicula fluminea</i>
Bluegill	100	<i>Lepomis macrochirus</i>
Brown Bullhead	200	<i>Ameiurus nebulosus</i>
Carp	200	<i>Cyprinus carpio</i>
Channel Catfish	200	<i>Ictalurus punctatus</i>
Chinook salmon	-	<i>Oncorhynchus tshawytscha</i>
Crappie	150	<i>Pomoxis spp.</i>
Crayfish, Northern	35 <sup>2</sup>	<i>Orconectes virilis</i>
Crayfish, Red Swamp		<i>Procambarus clarkia</i>
Crayfish, Signal		<i>Pacifastacus leniusculus</i>
Hardhead	250	<i>Mylopharodon conocephalus</i>
Hitch	150	<i>Lavinia exilicauda</i>
Largemouth Bass	305	<i>Micropterus salmoides</i>
Rainbow trout	200	<i>Oncorhynchus mykiss</i>
Redear Sunfish	130	<i>Lepomis microlophus</i>
Sacramento Pikeminnow	250	<i>Ptychocheilus grandis</i>
Sacramento Sucker	200	<i>Catostomus occidentalis</i>
Smallmouth bass	305	<i>Micropterus dolomieu</i>
Spotted bass	305	<i>Micropterus punctulatus</i>
Striped Bass (freshwater)	457	<i>Morone saxatilis</i>
White Catfish	200	<i>Ameiurus catus</i>

<sup>1</sup> All sizes in dataset accepted

<sup>2</sup> Carapace length

**Table 3. Descriptive Statistics for Mercury Concentrations (ppm) and Length (mm) for Legal or Edible-sized Fish from the Sacramento River and Northern Delta by Species**

<i>Species</i>	<i>Mean Mercury (ppm)</i>	<i>Min</i>	<i>Max</i>	<i>SD</i>	<i>Mean Total Length (mm)</i>	<i>Min</i>	<i>Max</i>	<i>SD</i>	<i># Samples</i>	<i># Individuals</i>
American shad	.07	.03	.34	.06	422	286	571	66	31	35
Asiatic clam	.02	.01	.04	.01	24	16	42	4	99	209
Bluegill	.19	.07	.42	.09	146	111	206	24	42	46
Redear sunfish	.14	.04	.49	.08	182	130	252	24	86	99
Sunfish	.15	.04	.49	.08	170	111	252	29	128	145
Brown bullhead	.24	.20	.58	.10	265	222	389	55	3	13
Channel catfish	.28	.11	1.3	.17	401	201	726	112	87	121
White catfish	.44	.13	1.1	.19	288	199	587	39	148	282
Catfish	.38	.11	1.3	.20	321	199	726	86	238	416
Carp	.24	.06	.94	.12	493	340	770	87	97	170
Chinook salmon	.07	.04	.09	.01	782	599	920	86	9	11
Crappie	.33	.08	.69	.17	244	170	395	51	24	40
Signal crayfish (Crayfish1 & Crayfish4)	.21	.05	.66	.13	46	33.0	65.0	6.8	122.0	152
Red swamp crayfish (Crayfish2)	.10	.04	.34	.08	46	37	56	6	12	12
Northern crayfish (Crayfish3)	.10	.10	.10	.	43	43	43	.	1	1
Crayfish	.20	.04	.66	.13	46	33	65	7	135	165
Goldfish	.26	.09	.49	.18	324	265	375	55	4	4
Hardhead	.26	.09	.81	.19	368	314	444	38	16	20
Hitch	.26	.05	.36	.12	347	260	387	47	7	7
Largemouth bass	.65	.22	1.5	.27	373	307	560	41	180	271
Smallmouth bass	.86	.57	1.4	.28	371	338	479	44	5	13
Spotted bass	.58	.37	1.0	.17	348	305	421	35	15	15
Black bass	.65	.22	1.5	.27	371	305	560	41	200	299
Rainbow trout	.04	.00	.08	.02	354	200	449	51	59	175
Sacramento pikeminnow	.44	.06	2.0	.36	359	249	638	99	141	185
Sacramento sucker	.16	.00	.60	.12	400	199	574	78	170	242
Steelhead trout	.07	.05	.10	.02	566	449	630	80	4	4
Striped bass	.38	.13	.72	.14	624	458	1014	139	59	59
Tule perch	.22	.18	.31	.05	140	130	158	11	6	6
White sturgeon	.21	.20	.23	.02	1582	1324	1840	365	2	2

**Table 4. Mean Mercury (wet wt ppm), Mean Length (mm Total Length), and Sample Size (# Individuals in parentheses) in Sacramento River and Northern Delta Fish and Shellfish by Subarea and Overall Species Totals<sup>1</sup>**

Species Common Name	Delta West Delta Subarea	Delta Yolo Bypass North Subarea	Delta Yolo Bypass South Subarea	Delta Sac. River Subarea	Sacramento River Outside of Delta	Sloughs, etc. Outside of Delta	Overall Species
American Shad					<b>.06</b> <b>396</b> <b>(12)</b>	<b>.07</b> <b>435</b> <b>(23)</b>	<b>.07</b> <b>422</b> <b>31 (35)</b>
Asiatic Clam	<b>.04</b> <b>23</b> <b>(17)</b>		<b>.02</b> <b>22</b> <b>(54)</b>	<b>.02</b> <b>25</b> <b>(138)</b>			<b>.02</b> <b>24</b> <b>99 (209)</b>
Bluegill			.32 145 (6)	.14 156 (22)	.17 134 (9)	.23 134 (9)	.19 146 42 (46)
Brown Bullhead						.24 265 (13)	.24 265 3 (13)
Carp		.28 421 (10)	.28 455 (28)	.28 577 (54)	.24 492 (23)	.19 444 (55)	.24 493 97 (170)
Channel Catfish			.36 440 (15)	.22 446 (8)	.34 435 (37)	.23 366 (61)	.28 401 87 (121)
Chinook Salmon				.06 779 (10)	.09 806 (1)		.07 782 9 (11)
Crappie		.50 258 (10)	.27 235 (15)	.37 223 (6)		.20 259 (9)	.33 244 24 (40)
Signal crayfish	.18 50 (4)		.24 51 (42)	.22 45 (70)	.09 49 (15)		.20 46 135 (165)
Red swamp crayfish			.10 48 (10)	.12 39 (2)			
Northern crayfish			.10 43 (1)				
Goldfish			.26 324 (4)				.26 324 4 (4)
Hardhead					.26 368 (20)		.26 368 16 (20)
Hitch			.08 283 (2)	.32 373 (5)			.26 347 7 (7)

<sup>1</sup> Results in **BOLD** indicate samples with sufficient numbers of individuals; those not in bold do not meet the minimum criterion of nine individuals.

Species Common Name	Delta West Delta Subarea	Delta Yolo Bypass North Subarea	Delta Yolo Bypass South Subarea	Delta Sac. River Subarea	Sacramento River Outside of Delta	Sloughs, etc. Outside of Delta	Overall Species
<b>Largemouth Bass</b>		.60 365 (1)	<b>.61</b> <b>367</b> <b>(41)</b>	<b>.71</b> <b>370</b> <b>(126)</b>	<b>.71</b> <b>369</b> <b>(40)</b>	<b>.50</b> <b>384</b> <b>(63)</b>	<b>.65</b> <b>373</b> <b>180 (271)</b>
<b>Rainbow Trout</b>					<b>.04</b> <b>354</b> <b>(175)</b>		<b>.04</b> <b>354</b> <b>59 (175)</b>
<b>Redear Sunfish</b>			.23 220 (2)	<b>.14</b> <b>195</b> <b>(40)</b>	<b>.12</b> <b>179</b> <b>(28)</b>	<b>.14</b> <b>164</b> <b>(29)</b>	<b>.14</b> <b>182</b> <b>86 (99)</b>
<b>Sacramento Pikeminnow</b>			.26 285 (4)	<b>.51</b> <b>382</b> <b>(49)</b>	<b>.42</b> <b>355</b> <b>(127)</b>	.48 288 (5)	<b>.44</b> <b>359</b> <b>141 (185)</b>
<b>Sacramento Sucker</b>			<b>.20</b> <b>396</b> <b>(12)</b>	<b>.24</b> <b>454</b> <b>(76)</b>	<b>.12</b> <b>376</b> <b>(148)</b>	.18 339 (6)	<b>.16</b> <b>400</b> <b>170 (242)</b>
<b>Smallmouth Bass</b>				<b>.86</b> <b>371</b> <b>(13)</b>			<b>.86</b> <b>371</b> <b>5 (13)</b>
<b>Spotted Bass</b>				<b>.58</b> <b>348</b> <b>(15)</b>			<b>.58</b> <b>348</b> <b>15 (15)</b>
<b>Steelhead Trout</b>				.06 517 (2)	.09 616 (2)		<b>.07</b> <b>566</b> <b>4 (4)</b>
<b>Striped bass</b>			<b>.32</b> <b>550</b> <b>(18)</b>	.33 625 (4)	<b>.46</b> <b>565</b> <b>(13)</b>	<b>.38</b> <b>712</b> <b>(24)</b>	<b>.38</b> <b>624</b> <b>59 (59)</b>
<b>Tule Perch</b>			.22 140 (6)				<b>.22</b> <b>140</b> <b>(6)</b>
<b>White Catfish</b>			<b>.46</b> <b>281</b> <b>(64)</b>	<b>.44</b> <b>296</b> <b>(170)</b>	<b>.40</b> <b>287</b> <b>(12)</b>	<b>.35</b> <b>265</b> <b>(36)</b>	<b>.44</b> <b>288</b> <b>148 (282)</b>
<b>White Sturgeon</b>	.21 1582 (2)						<b>.21</b> <b>1582</b> <b>2 (2)</b>

**Table 5. Comparison of Mercury Concentrations in Northern Delta and Central Delta Subareas**

**White Catfish**

<b>Delta Subarea</b>	<b>Mean Mercury ppm (Standard Deviation)</b>	<b># Samples</b>	<b># Individuals</b>
Delta Central Delta	<b>0.08</b> (0.03)	26	31
Delta Sacramento River (Northern Delta)	<b>0.45</b> (0.20)	77	170
Delta Yolo Bypass South (Northern Delta)	<b>0.47</b> (0.16)	57	65

**Largemouth Bass**

<b>Delta Subarea</b>	<b>Mean Mercury ppm (Standard Deviation)</b>	<b># Samples</b>	<b># Individuals</b>
Delta Central Delta	<b>0.31</b> (0.16)	52	56
Delta Sacramento River (Northern Delta)	<b>0.64</b> (0.31)	103	154
Delta Yolo Bypass South (Northern Delta)	<b>0.54</b> (0.28)	43	51

Note: Sacramento pikeminnow and Sacramento sucker are not presented here because only one and four fish, respectively, were collected in the Delta Central Delta subarea.

**Table 6: Advisory Tissue Levels for Methylmercury or Total Mercury for Two Population Groups and Advisory Tissue Levels for PCBs**

Advisory Tissue Levels for Selected Fish Contaminants Based on Cancer or Non-Cancer Risk (ppb, wet weight) Using an 8-Ounce Serving Size (Prior to Cooking)				
Contaminant	Three 8-ounce Meals a Week	Two 8-ounce Meals a Week	One 8-ounce Meal a Week	No Consumption
Methylmercury (Women 18-45 and children)	≤ 70	> 70-150	> 150-440	> 440
Methylmercury (Women over 45 and men)	≤ 220	> 220-440	> 440-1,300	> 1,300
PCBs	≤ 21	> 21-42	> 42-120	> 120

**Tabled values are rounded based on laboratory reporting of three significant digits in results, where the third reported digit is uncertain (estimated). Tabled values are rounded to the second digit, which is certain. When data are compared to this table they should also first be rounded to the second significant digit as in this table.**

The values in this table are based on the assumption that 100 percent of total mercury measured in fish is methylmercury. This may not be true for shellfish, so methylmercury needs to be measured directly in these species for use in this table.

The recommended level for consumption of fish contaminated with a non-carcinogenic chemical such as methylmercury or PCBs is below or equivalent to the chemical's reference level. People could eat more fish with a lower tissue concentration (before they exceed the reference level) than fish with a higher concentration. The following general equation can be used to calculate the fish tissue concentration (in mg/kg) at which the consumption exposure from a chemical with a non-carcinogenic effect is equal to the reference level for that chemical at any consumption level:

$$\text{Tissue concentration} = \frac{(\text{RfD mg/kg} \cdot \text{day})(\text{kg Body Weight})(\text{RSC})}{\text{CR kg/day}}$$

where,

RfD = Chemical specific reference dose or other reference level

BW = Body weight of consumer

RSC = Relative source contribution of fish to total exposure

CR = Consumption rate as the daily amount of fish consumed

There is an almost unlimited number of potential meal frequency categories with which to provide fish consumption advice, ranging from 0.5 meals per month, or less, to one meal per day (30 meals per month) or more. OEHHA considers it reasonable to provide advice for the consumption frequency categories shown in the table including: low contaminant fish that are safe to eat in quantities meeting American Heart Association (AHA, 2007) and the Institute of Medicine (IOM, 2007) recommendations (eight ounces per week, prior to cooking); very low contaminant fish that are safe to eat in even higher quantities (two or three eight-ounce, prior to cooking, meals a week); and higher contaminant fish whose consumption should be avoided (*i.e.*, fish that should not be consumed or cannot be eaten in quantities meeting AHA and IOM recommendations).

The equation above was applied in the table above to determine tissue concentrations of PCBs and methylmercury (assuming 100% of measured total mercury is methylmercury in fish) in sport fish that would be below or equivalent to the chemical's reference level for multiple consumption frequencies.

*Meal sizes and frequencies used in this table:* Although people eat different meal sizes, their typical portion size is related to their individual body weight in a fairly consistent manner. The standard portion size eaten by an average adult (body weight 70 kg or 154 pounds) is eight ounces (227 g) (U.S. EPA, 2000b). A standard portion of one fish meal a week is equivalent to  $32.4 \times 10^{-3}$  kg/day, two meals per week is equivalent to  $64.8 \times 10^{-3}$  kg/day, and three meals per week is equivalent to  $97.3 \times 10^{-3}$  kg/day. In some cases, fish tissue concentrations corresponding to intermediate meal frequencies were incorporated into the standard meal categories used for providing “safe eating guidelines” such that the hazard quotient (the ratio of exposure to the reference dose) did not exceed an average of approximately 1.0, over the range of exposures.

**Table 7. Concentrations of PCBs in Historical Data Samples from SRWP<sup>1</sup>**

Sample ID	Year	Location	Species	Mean Length (mm)	Sum of PCB Congeners <sup>2</sup> (ppb)
00-1146	2000	Big Chico Creek near mouth	Largemouth Bass	359	2.5
00-1147	2000	Big Chico Creek near mouth	Sacramento Pike Minnow	288	5.1
00-1150	2000	Cache Slough near Ryer Island Ferry	Largemouth Bass	362	4.5
98-020-t	1998	Cache Slough near Ryer Island Ferry	Largemouth Bass	367	BRL <sup>3</sup>
99-1047-t	1999	Cache Slough near Ryer Island Ferry	Largemouth Bass	375	6.5
<i>Mean</i>		Cache Slough near Ryer Island Ferry	Largemouth Bass	368	3.7
00-1124	2000	Cache Slough near Ryer Island Ferry	White Catfish	288	8.3
99-1048-t	1999	Cache Slough near Ryer Island Ferry	White Catfish	288	16
<i>Mean</i>		Cache Slough near Ryer Island Ferry	White Catfish	288	12
00-1130/00-1519	2000	Colusa Basin Drain	Carp	372	3.6
02-0360	2001	Colusa Basin Drain	Carp	398	6.0
98-010-t	1998	Colusa Basin Drain	Carp	386	BRL
<i>Mean</i>		Colusa Basin Drain	Carp	385	3.1
B0802	2001	Colusa Basin Drain	Channel Catfish	-	10
00-1085/00-1089	2000	Sacramento River at Alamar (Veteran's Bridge)	Largemouth Bass	371	3.4
98-013-t	1998	Sacramento River at Alamar (Veteran's Bridge)	Largemouth Bass	335	BRL
<i>Mean</i>		Sacramento River at Alamar (Veteran's Bridge)	Largemouth Bass	353	1.7
00-1086/00-1088	2000	Sacramento River at Alamar (Veteran's Bridge)	Sacramento Pike Minnow	266	22
99-1038-t	1999	Sacramento River at Alamar (Veteran's Bridge)	Sacramento Sucker	318	19
00-1090	2000	Sacramento River at Alamar (Veteran's Bridge)	White Catfish	264	38
96-416	1997	Sacramento River at Alamar (Veteran's Bridge)	White Catfish	249	11
<i>Mean</i>		Sacramento River at Alamar (Veteran's Bridge)	White Catfish	256	24
00-1102	2000	Sacramento River at Bend Bridge near Red Bluff	Rainbow Trout	350	6.1
96-415	1997	Sacramento River at Bend Bridge near Red Bluff	Rainbow Trout	313	7.3
<i>Mean</i>		Sacramento River at Bend Bridge near Red Bluff	Rainbow Trout	332	6.7
98-003-t	1998	Sacramento River at Bend Bridge near Red Bluff	Sacramento Pike Minnow	254	BRL
00-1103	2000	Sacramento River at Bend Bridge near Red Bluff	Sucker	457	10
98-006-t	1998	Sacramento River at Colusa	Carp	398	BRL
00-1079	2000	Sacramento River at Colusa	Sacramento Pike Minnow	275	11
98-007-t	1998	Sacramento River at Colusa	Sacramento Pike Minnow	278	BRL
<i>Mean</i>		Sacramento River at Colusa	Sacramento Pike Minnow	277	5.4
00-1075	2000	Sacramento River at Colusa	Striped Bass	451	23
00-1078	2000	Sacramento River at Colusa	Sucker	290	3.8
00-1104	2000	Sacramento River at Hamilton	Sacramento Pike Minnow	298	9.1
98-005-t	1998	Sacramento River at Hamilton	Sacramento Pike Minnow	286	BRL
<i>Mean</i>		Sacramento River at Hamilton	Sacramento Pike Minnow	292	4.5
00-1105	2000	Sacramento River at Hamilton	Sucker	316	0.63
98-004-t	1998	Sacramento River at Hamilton	Sucker	322	ND <sup>4</sup>
<i>Mean</i>		Sacramento River at Hamilton	Sucker	319	0.30
00-0948	2000	Sacramento River at RM 44	Largemouth Bass	369	11

<sup>1</sup> Data source is Excel file "SRWP\_Copy\_ForMargy" received from SFEI.

<sup>2</sup> The number of congeners summed varied by year. Forty-seven congeners and 38 congeners were analyzed in 1996 and 1998, respectively. Beginning in 1999, 48 congeners have been analyzed.

<sup>3</sup> BRL = below reporting limit. Reporting limits were not provided for PCB congeners; 0 (zero) was used for these samples when summing and averaging.

<sup>4</sup> Non-detect

Sample ID	Year	Location	Species	Mean Length (mm)	Sum of PCB Congeners <sup>2</sup> (ppb)
98-016-t	1998	Sacramento River at RM 44	Largemouth Bass	345	BRL
98-019-t	1998	Sacramento River at RM 44	Largemouth Bass	334	0.30
99-1054-t	1999	Sacramento River at RM 44	Largemouth Bass	-	36
99-1055-t	1999	Sacramento River at RM 44	Largemouth Bass	-	11
<i>Mean</i>		Sacramento River at RM 44	Largemouth Bass	-	12
00-0949	2000	Sacramento River at RM 44	Sacramento Pike Minnow	252	4.1
02-0370/0364	2001	Sacramento River at RM 44	Sacramento Pike Minnow	271	13
<i>Mean</i>		Sacramento River at RM 44	Sacramento Pike Minnow	262	9.0
2002-2344/2355/2356	2002	Sacramento River at RM 44	Sacramento Sucker	493	63
00-0947	2000	Sacramento River at RM 44	Sucker	452	20
<i>Mean</i>		Sacramento River at RM 44	Sacramento Sucker	472	42
02-0359	2001	Sacramento River at RM 44	Smallmouth Bass	338	6.0
00-1007	2000	Sacramento River at RM 44	White Catfish	288	35
96-413	1997	Sacramento River at RM 44	White Catfish	256	33
96-417	1997	Sacramento River at RM 44	White Catfish	258	9.4
98-017-t	1998	Sacramento River at RM 44	White Catfish	250	1.0
98-018-t	1998	Sacramento River at RM 44	White Catfish	286	0.80
99-1070-t	1999	Sacramento River at RM 44	White Catfish	-	18
99-1071-t	1999	Sacramento River at RM 44	White Catfish	-	25
99-1076-t	1999	Sacramento River at RM 44	White Catfish	-	26
<i>Mean</i>		Sacramento River at RM 44	White Catfish	-	19
00-1100	2000	Sacramento River below Keswick	Rainbow Trout	422	11
02-0361/0362	2001	Sacramento River below Keswick	Rainbow Trout	321	10
96-412	1997	Sacramento River below Keswick	Rainbow Trout	366	24
98-002-t	1998	Sacramento River below Keswick	Rainbow Trout	399	0.50
<i>Mean</i>		Sacramento River below Keswick	Rainbow Trout	377	11
00-1010/00-1023	2000	Sacramento Slough	Largemouth Bass	355	4.3
98-009-t	1998	Sacramento Slough	Largemouth Bass	381	BRL
99-1044-t	1999	Sacramento Slough	Largemouth Bass	381	11
<i>Mean</i>		Sacramento Slough	Largemouth Bass	372	5.1
00-1011/00-1012	2000	Sacramento Slough	White Catfish	262	26
99-1043-t	1999	Sacramento Slough	White Catfish	263	1.2
<i>Mean</i>		Sacramento Slough	White Catfish	262	14

**Table 8. Concentrations of PCBs in Historical Data Samples from TSMP**

Sample ID	Year	Location	Species	Mean Length (mm)	Sum of PCB Aroclors <sup>1</sup> (ppb)
013.002.F.01	2001	Prospect Slough/Liberty Island	Largemouth Bass	373.0	ND <sup>2</sup>
013.001.F.01	2001	Sacramento River/Hood	Smallmouth Bass	344.0	10
013.004.F.98	1998	Sacramento River/Hood	Largemouth Bass	357.0	ND
013.001.F.98	1998	Sacramento River/Hood	White Catfish	282.0	200

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<sup>1</sup> Measured as the sum of Aroclors 1248, 1256, and 1260

<sup>2</sup> Non-detect

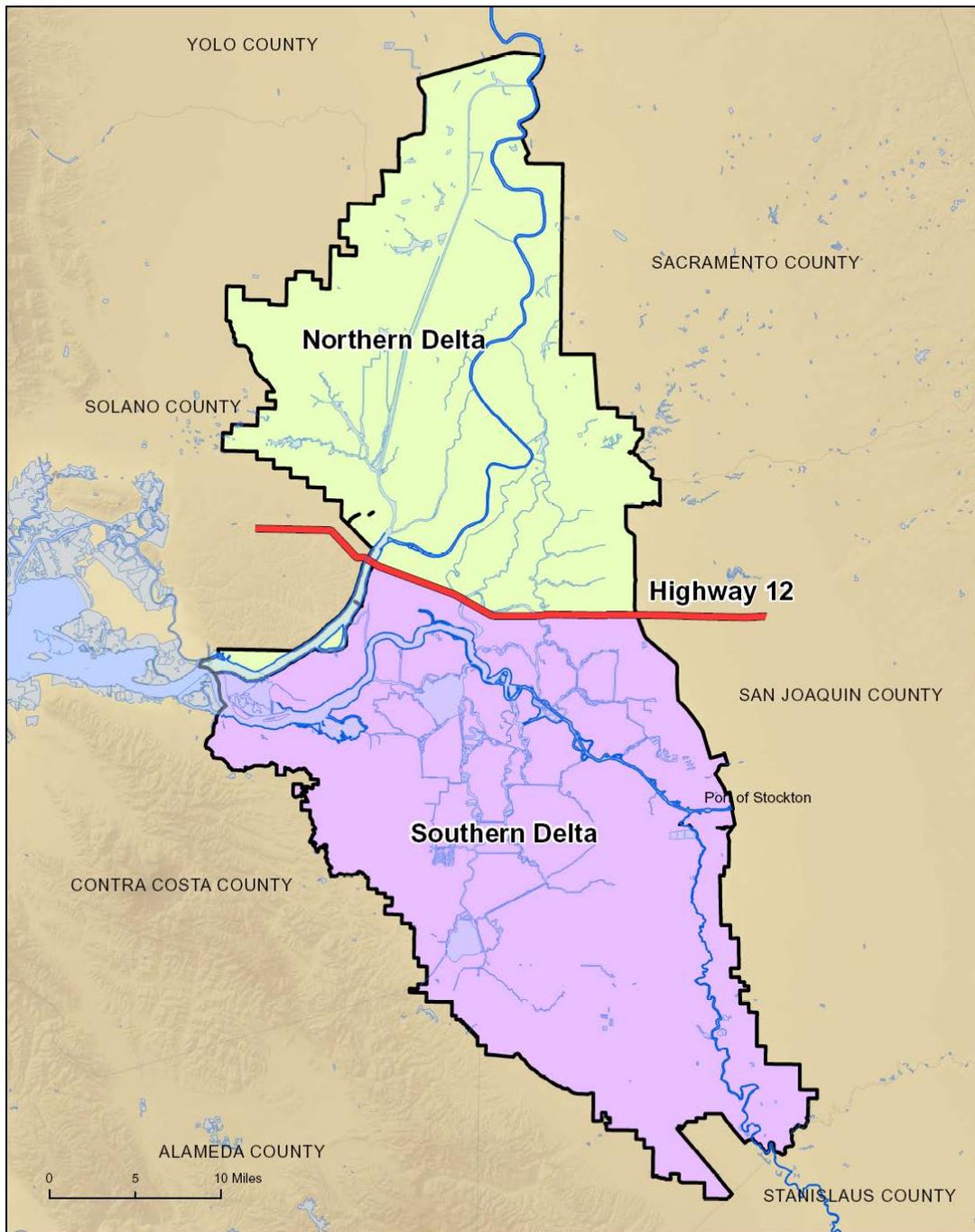
**Table 9. FMP Samples with Elevated Concentrations of PCBs**

Sample ID	Year	Station Name	Common Name	# in Comp	Mean Length (mm)	Sum of PCB Congeners <sup>1</sup> (ppb)
05-5196 Comp 1	2005	Sacramento River @ Colusa	Channel Catfish	4	470	<b>100</b>
05-5839 Comp 1	2005	Sacramento River at Veterans Bridge	Channel Catfish	4	526	<b>53</b>
05-5838 Comp 1	2005	Sacramento River at Veterans Bridge	Carp	4	484	<b>26</b>

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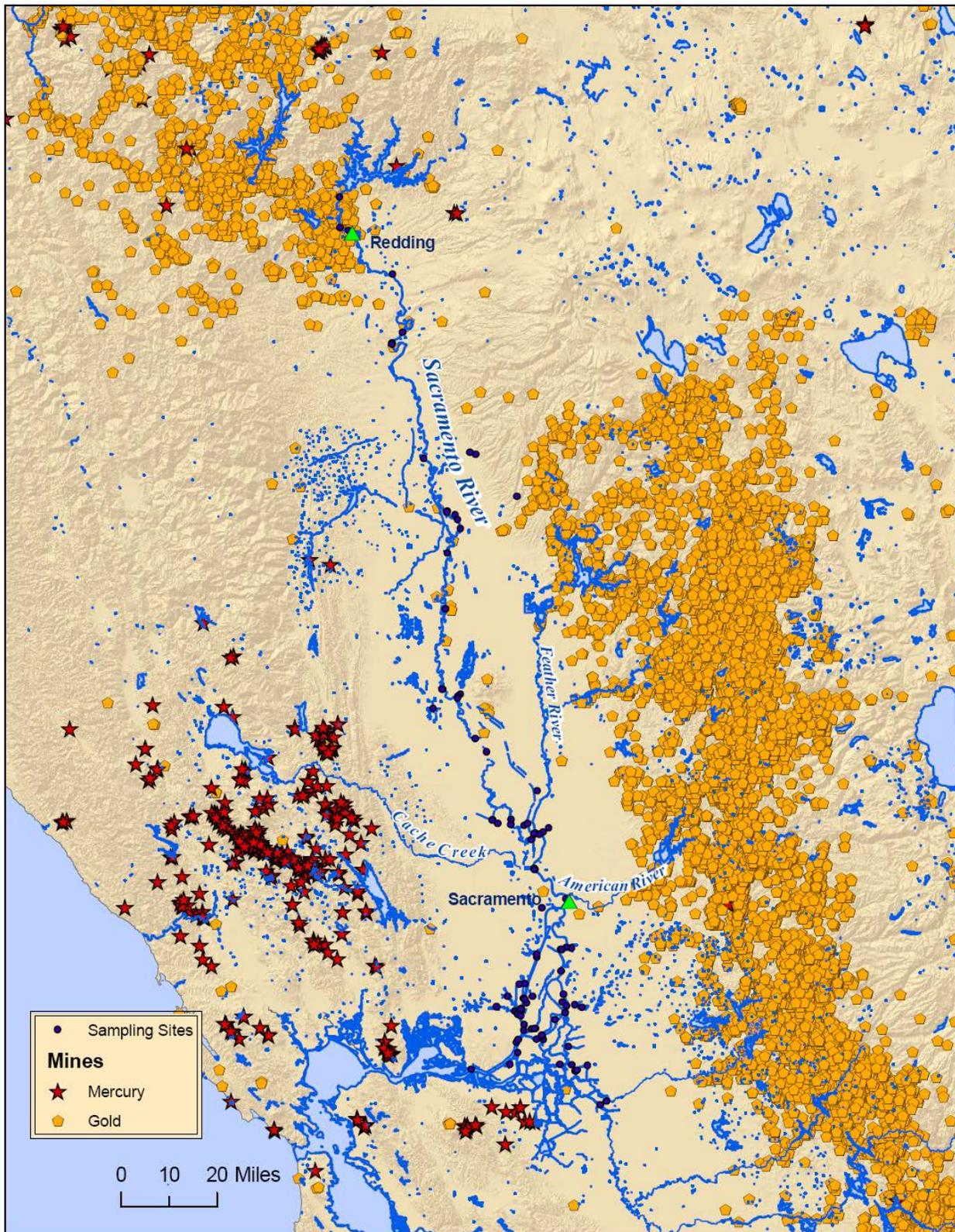
<sup>1</sup> Measured as the sum of 48 congeners

**Figure 1. Map Delineating the Northern Delta and Southern Delta**



The Southern Delta draft advisory was previously defined to include the San Joaquin River and other water bodies in the Delta *south* of the San Joaquin River. The Southern Delta draft advisory boundaries have been redefined here to extend north to Highway 12 as shown in this map. Water bodies in the Southern Delta - with the exception of the San Joaquin River south of the Port of Stockton - are included in the Southern Delta advisory. The San Joaquin River from the Port of Stockton to Friant Dam is included in a separate “San Joaquin River” advisory.

**Figure 2. Map of Mercury and Gold Mines in the Vicinity of the Sacramento Valley**



**Figure 3. Map of the Sacramento Valley**



## Figure 4. Maps of Sampling Locations in the Sacramento River North of the Delta

The study area is divided into three maps from north to south: The first two maps show 1) the upper portion of the Lower<sup>1</sup> Sacramento River, and 2) the middle section of the Sacramento River. The third map (Figure 5) shows sampling sites in the Northern Delta including the lower section of the Sacramento River.

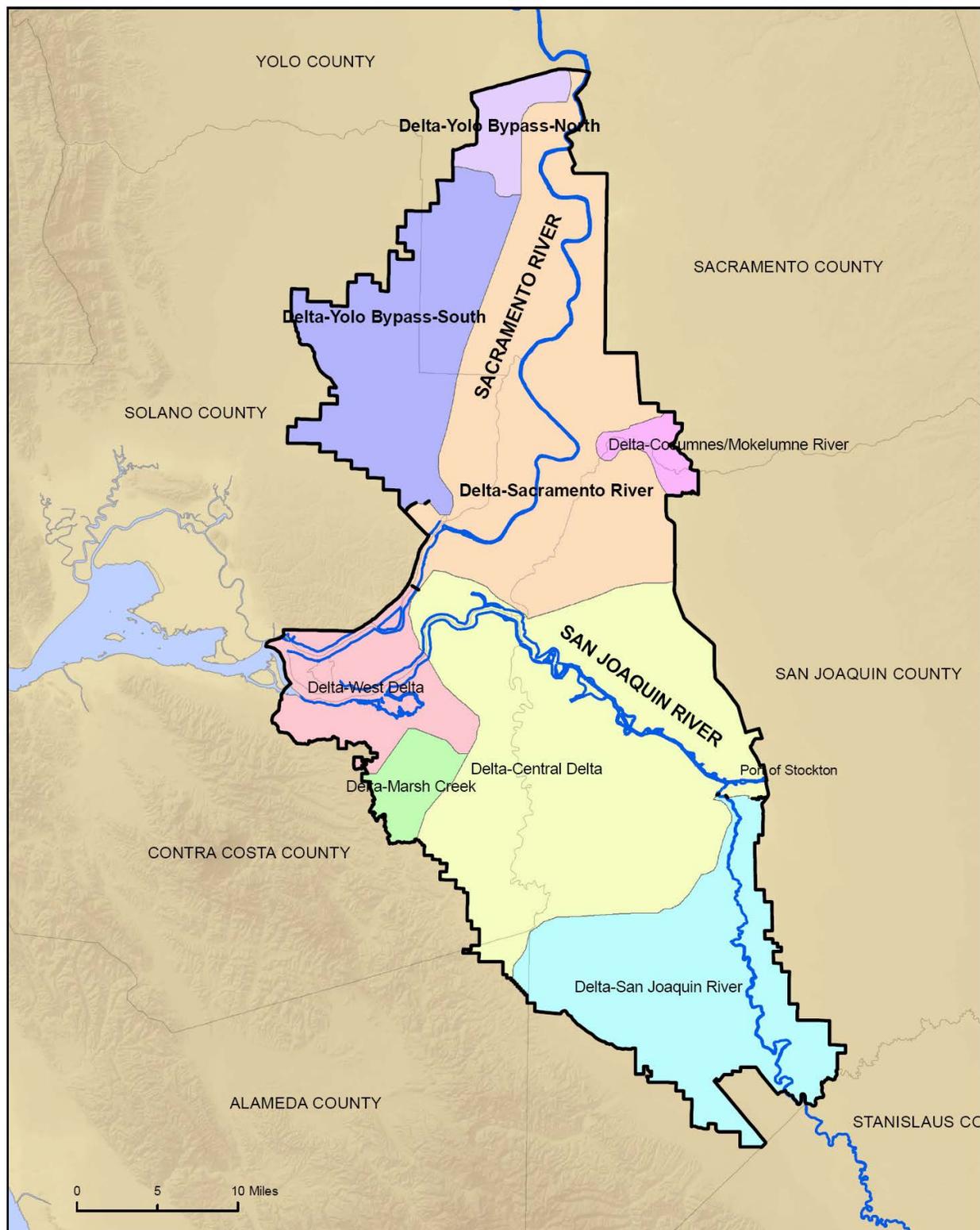


<sup>1</sup> “Lower Sacramento River” refers to the portion of the river south of Shasta Lake.

**Figure 5. Map of Sampling Locations in the Northern Delta**



**Figure 6. Sacramento-San Joaquin Delta and Eight Subareas**



## **Appendix I: Methylmercury in Sport Fish: Information for Fish Consumers**

Methylmercury is a form of mercury that is found in most freshwater and saltwater fish. In some lakes, rivers, and coastal waters in California, methylmercury has been found in some types of fish at concentrations that may be harmful to human health. The Office of Environmental Health Hazard Assessment (OEHHA) has issued health advisories to fishers and their families giving recommendations on how much of the affected fish in these areas can be safely eaten. In these advisories, women ages 18-45 and children are encouraged to be especially careful about following the advice because of the greater sensitivity of fetuses and children to methylmercury.

Fish are nutritious and should be a part of a healthy, balanced diet. As with many other kinds of food, however, it is prudent to consume fish in moderation. OEHHA provides advice to the public so that people can continue to eat fish without putting their health at risk.

### **WHERE DOES METHYLMERCURY IN FISH COME FROM?**

Methylmercury in fish comes from mercury in the aquatic environment. Mercury, a metal, is widely found in nature in rock and soil, and is washed into surface waters during storms. Mercury evaporates from rock, soil, and water into the air, and then falls back to the earth in rain, often far from where it started. Human activities redistribute mercury and can increase its concentration in the aquatic environment. The coastal mountains in northern California are naturally rich in mercury in the form of cinnabar ore, which was processed to produce quicksilver, a liquid form of inorganic mercury. This mercury was taken to the Sierra Nevada, Klamath mountains, and other regions, where it was used in gold mining. Historic mining operations and the remaining tailings from abandoned mercury and gold mines have contributed to the release of large amounts of mercury into California's surface waters. Mercury can also be released into the environment from industrial sources, including the burning of fossil fuels and solid wastes, and disposal of mercury-containing products.

Once mercury gets into water, much of it settles to the bottom where bacteria in the mud or sand convert it to the organic form of methylmercury. Fish absorb methylmercury when they eat smaller aquatic organisms. Larger and older fish absorb more methylmercury as they eat other fish. In this way, the amount of methylmercury builds up as it passes through the food chain. Fish eliminate methylmercury slowly, and so it builds up in fish in much greater concentrations than in the surrounding water. Methylmercury generally reaches the highest levels in predatory fish at the top of the aquatic food chain.

### **HOW MIGHT I BE EXPOSED TO METHYLMERCURY?**

Eating fish is the main way that people are exposed to methylmercury. Each person's exposure depends on the amount of methylmercury in the fish that they eat and how much and how often they eat fish.

Women can pass methylmercury to their babies during pregnancy, and this includes methylmercury that has built up in the mother's body even before pregnancy. For this reason, women 18-45 are encouraged to be especially careful to follow consumption advice, even if they are not pregnant. In addition, nursing mothers can pass methylmercury to their child through breast milk.

You may be exposed to inorganic forms of mercury through dental amalgams (fillings) or accidental spills, such as from a broken thermometer. For most people, these sources of exposure to mercury are minor and of less concern than exposure to methylmercury in fish.

#### **AT WHAT LOCATIONS IN CALIFORNIA HAVE ELEVATED LEVELS OF MERCURY BEEN FOUND IN FISH?**

Methylmercury is found in most fish, but some fish and some locations have higher amounts than others. Methylmercury is one of the chemicals in fish that most often creates a health concern. Consumption advisories due to high levels of methylmercury in fish have been issued in about 40 states. In California, methylmercury advisories have been issued for San Francisco Bay and the Delta; Tomales Bay in Marin County; and at the following inland lakes: Lake Nacimiento in San Luis Obispo County; Lake Pillsbury and Clear Lake in Lake County; Lake Berryessa in Napa County; Guadalupe Reservoir and associated reservoirs in Santa Clara County; Lake Herman in Solano County; San Pablo Reservoir in Contra Costa County; Black Butte Reservoir in Glenn and Tehama Counties; Lake Natoma and the lower American River in Sacramento County; Trinity Lake in Trinity County; and certain lakes and river stretches in the Sierra Nevada foothills in Nevada, Placer, and Yuba counties. Other locations may be added in the future as more fish and additional water bodies are tested.

#### **HOW DOES METHYLMERCURY AFFECT HEALTH?**

Much of what we know about methylmercury toxicity in humans stems from several mass poisoning events that occurred in Japan during the 1950s and 1960s, and Iraq during the 1970s. In Japan, a chemical factory discharged vast quantities of mercury into several bays near fishing villages. Many people who consumed large amounts of fish from these bays became seriously ill or died over a period of several years. In Iraq, thousands of people were poisoned by eating contaminated bread that was mistakenly made from seed grain treated with methylmercury.

From studying these cases, researchers have determined that the main target of methylmercury toxicity is the central nervous system. At the highest exposure levels experienced in these poisonings, methylmercury toxicity symptoms included such nervous system effects as loss of coordination, blurred vision or blindness, and hearing and speech impairment. Scientists also discovered that the developing nervous systems of fetuses are particularly sensitive to the toxic effects of methylmercury. In the Japanese outbreak, for example, some fetuses developed methylmercury toxicity during pregnancy even when their mothers did not. Symptoms reported in the Japan and Iraq epidemics resulted from methylmercury levels that were much higher than what fish consumers in the U.S. would experience.

Individual cases of adverse health effects from heavy consumption of commercial fish containing moderate to high levels of methylmercury have been reported only rarely. Nervous system symptoms reported in these instances included headaches, fatigue, blurred vision, tremor, and/or some loss of concentration, coordination, or memory. However, because there was no clear link between the severity of symptoms and the amount of mercury to which the person was exposed, it is not possible to say with certainty that these effects were a consequence of methylmercury exposure and not the result of other health problems. The most subtle symptoms in adults known to be clearly associated with methylmercury toxicity are numbness or tingling in the hands and feet or around the mouth; however, these symptoms are also associated with other medical conditions not related to methylmercury exposure.

In recent studies of high fish-eating populations in different parts of the world, researchers have been able to detect more subtle effects of methylmercury toxicity in children whose mothers frequently ate seafood containing low to moderate mercury concentrations during their pregnancy. Several studies found slight decreases in learning ability, language skills, attention and/or memory in some of these children. These effects were not obvious without using very specialized and sensitive tests. Children may have increased susceptibility to the effects of methylmercury through adolescence, as the nervous system continues to develop during this time.

Methylmercury builds up in the body if exposure continues to occur over time. Exposure to relatively high doses of methylmercury for a long period of time may also cause problems in other organs such as the kidneys and heart.

#### **CAN MERCURY POISONING OCCUR FROM EATING SPORT FISH IN CALIFORNIA?**

No case of mercury poisoning has been reported from eating California sport fish. The levels of mercury in California fish are much lower than those that occurred during the Japanese outbreak. Therefore, overt poisoning resulting from sport fish consumption in California would not be expected. At the levels of mercury found in California fish, symptoms associated with methylmercury are unlikely unless someone eats much more than what is recommended or is particularly sensitive. The fish consumption guidelines are designed to protect against subtle effects that would be difficult to detect but could still occur following unrestricted consumption of California sport fish. This is especially true in the case of fetuses and children.

#### **IS THERE A WAY TO REDUCE METHYLMERCURY IN FISH TO MAKE THEM SAFER TO EAT?**

There is no specific method of cleaning or cooking fish that will significantly reduce the amount of methylmercury in the fish. However, fish should be cleaned and gutted before cooking because some mercury may be present in the liver and other organs of the fish. These organs should not be eaten.

In the case of methylmercury, fish size is important because large fish that prey upon smaller fish can accumulate more of the chemical in their bodies. It is better to eat the smaller fish within the same species, provided that they are legal size.

#### **IS THERE A MEDICAL TEST TO DETERMINE EXPOSURE TO METHYLMERCURY?**

Mercury in blood and hair can be measured to assess methylmercury exposure. However, this is not routinely done. Special techniques in sample collection, preparation, and analysis are required for these tests to be accurate. Although tests using hair are less invasive, they are also less accurate. It is important to consult with a physician before undertaking medical testing because these tests alone cannot determine the cause of personal symptoms.

#### **HOW CAN I REDUCE THE AMOUNT OF METHYLMERCURY IN MY BODY?**

Methylmercury is eliminated from the body over time provided that the amount of mercury taken in is reduced. Therefore, following the OEHHA consumption advice and eating less of the fish that have higher levels of mercury can reduce your exposure and help to decrease the levels of methylmercury already in your body if you have not followed these recommendations in the past.

## **WHAT IF I EAT FISH FROM OTHER SOURCES SUCH AS RESTAURANTS, STORES, OR OTHER WATER BODIES THAT MAY NOT HAVE AN ADVISORY?**

Most commercial fish have relatively low amounts of methylmercury and can be eaten safely in moderate amounts. However, several types of fish such as large, predatory, long-lived fish have high levels of methylmercury, and could cause overly high exposure to methylmercury if eaten often. The U.S. Food and Drug Administration (FDA) is responsible for the safety of commercial seafood. In 2004, FDA and the U.S. Environmental Protection Agency (U.S. EPA) issued a Joint Federal Advisory for Mercury in Fish advising women who are pregnant or could become pregnant, nursing mothers, and young children not to eat shark, swordfish, king mackerel, or tilefish. The federal advisory also recommends that these individuals can safely eat up to an average of 12 ounces (two average meals) per week of a variety of other cooked fish purchased in stores or restaurants, such as shrimp, canned light tuna, salmon, pollock, or (farm-raised) catfish. Albacore (“white”) tuna is known to contain more mercury than canned light tuna; it is therefore recommended that no more than six ounces of albacore tuna be consumed per week. In addition, the federal advisory recommends that women who are pregnant or may become pregnant, nursing mothers, and young children consume no more than one meal per week of locally caught fish, when no other advice is available, and eat no other fish that week. The federal advisory can be found at <http://www.cfsan.fda.gov/~dms/admehg.html> or <http://www.epa.gov/ost/fishadvice/advice.html>.

In addition, OEHHA offers the following general advice that can be followed to reduce exposure to methylmercury in fish. Chemical levels can vary from place to place. Therefore, your overall exposure to chemicals is likely to be lower if you fish at a variety of places, rather than at one location that might have high contamination levels. Furthermore, some fish species have higher chemical levels than others in the same location. If possible, eat smaller amounts of several different types of fish rather than a large amount of one type that may be high in contaminants. Smaller fish of a species will usually have lower chemical levels than larger fish in the same location because some of the chemicals may become more concentrated in larger, older fish. It is advisable to eat smaller fish (of legal size) more often than larger fish. Cleaning and cooking fish in a manner that removes fat and organs is an effective way to reduce other contaminants that may be present in fish.

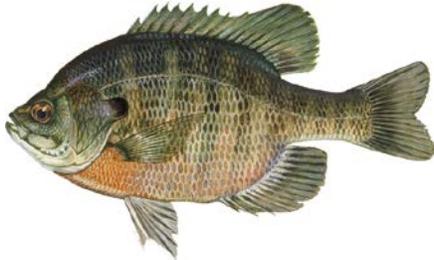
### **WHERE CAN I GET MORE INFORMATION?**

The health advisories for sport fish are printed in the California Sport Fishing Regulations booklet, which is available wherever fishing licenses are sold. OEHHA also offers a booklet containing the advisories, and additional materials such as this fact sheet on related topics. Additional information and documents related to fish advisories are available on the OEHHA Web Site at <http://www.oehha.ca.gov/fish.html>. County departments of environmental health may have more information on specific fishing areas.

## Appendix II. Images of Fish and Shellfish from the Sacramento River and Northern Delta

Note: Images may not be to scale

**Bluegill** (*Lepomis macrochirus*)



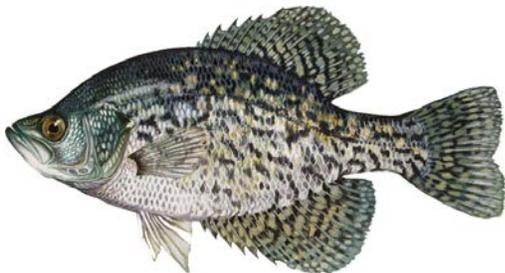
Duane Raver, USFWS

**Redear sunfish** (*Lepomis microlophus*)



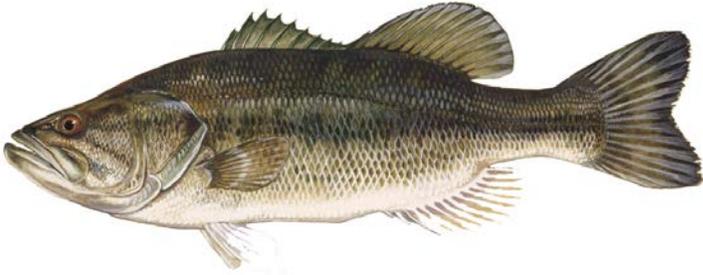
Duane Raver, USFWS

**Black crappie** (*Pomoxis nigromaculatus*)



Duane Raver, USFWS

**Largemouth bass** (*Micropterus salmoides*)



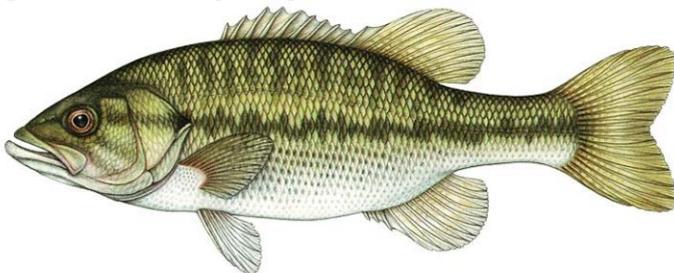
Duane Raver, USFWS

**Smallmouth Bass** (*Micropterus dolomieu*)



Duane Raver, USFWS

**Spotted Bass** (*Micropterus punctulatus*)



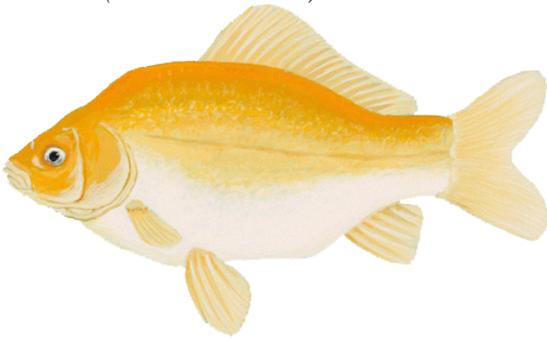
© 2003 ODNR, Division of Wildlife

**Carp** (*Cyprinus carpio*)



Duane Raver, USFWS

**Goldfish** (*Carassius auratus*)



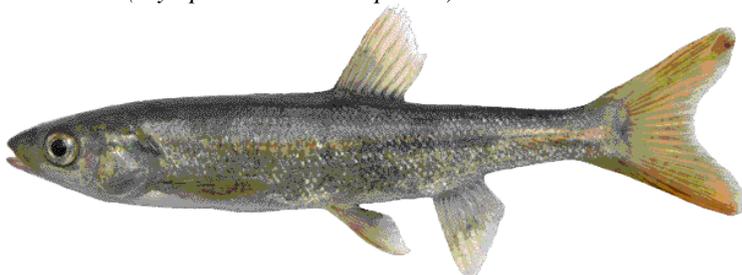
Duane Raver, USFWS

**Hitch** (*Lavinia exilicauda*)



René Reyes, USBR

**Hardhead** (*Mylopharodon conocephalus*)



René Reyes, USBR

**Sacramento pikeminnow** (*Ptychocheilus grandis*)



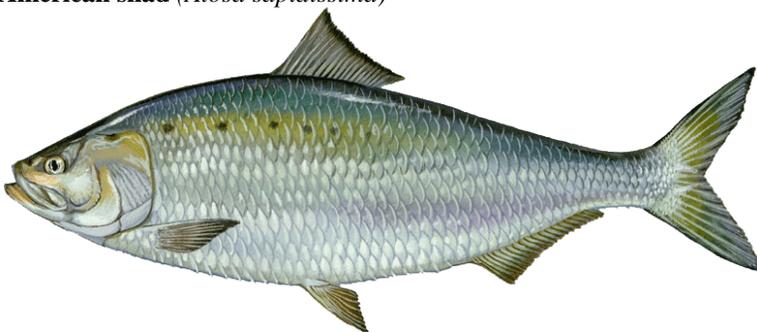
René Reyes, USBR

**Sacramento sucker** (*Catostomus occidentalis*)



Rene' Reyes, USBR

**American shad** (*Alosa sapidissima*)



Duane Raver, USFWS

**Channel catfish** (*Ictalurus punctatus*)



Duane Raver, USFWS

**White catfish** (*Ameiurus catus*)



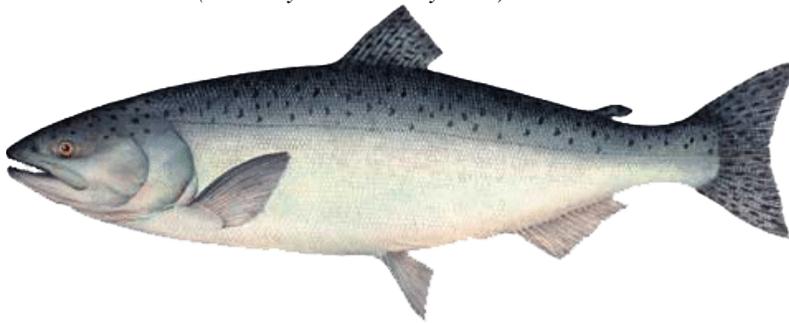
Duane Raver, USFWS

**Brown bullhead** (*Ameiurus nebulosus*)



Duane Raver, USFWS

**Chinook salmon** (*Oncorhynchus tshawytscha*)



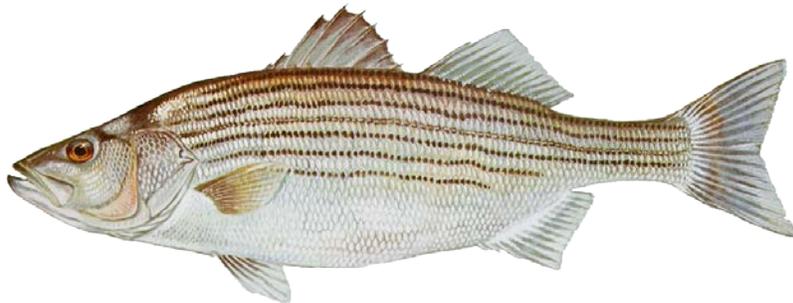
USBR Battlecreek

**Rainbow trout/Steelhead trout** (*Oncorhynchus mykiss*)



Duane Raver, USFWS

**Striped bass** (*Morone saxatilis*)



Duane Raver, USFWS

**White sturgeon** (*Acipenser transmontanus*)



California DFG

**Asiatic clam** (*Corbicula fluminea*)



©Noel M. Burkhead, USGS

**Signal crayfish** (*Pacifastacus leniusculus*)



© James W. Fetzner Jr.

**Red swamp crayfish** (*Procambarus clarkii*)



© Keith A. Crandall

**Northern crayfish** (*Orconectes virilis*)



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## Appendix III. General Advice for Sport Fish Consumption

You can reduce your exposure to chemical contaminants in sport fish by following the recommendations below. Follow as many of them as you can to increase your health protection. This general advice is not meant to take the place of advisories for specific areas, but should be followed in addition to them. Sport fish in most water bodies in the state have not been evaluated for their safety for human consumption. This is why we strongly recommend following the general advice given below.

### ***Fishing Practices***

Chemical levels can vary from place to place. Your overall exposure to chemicals is likely to be lower if you eat fish from a variety of places rather than from one usual spot that might have high contamination levels.

Be aware that OEHHA may issue new advisories or revise existing ones. Consult the Department of Fish and Game regulations booklet or check with OEHHA on a regular basis to see if there are any changes that could affect you.

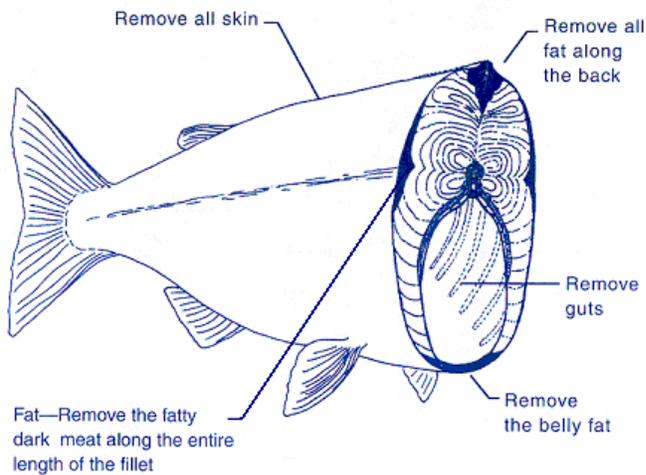
### ***Consumption Guidelines***

**Fish Species:** Some fish species have higher chemical levels than others in the same location. If possible, eat smaller amounts of several different types of fish rather than a large amount of one type that may be high in contaminants.

**Fish Size:** Smaller fish of a species will usually have lower chemical levels than larger fish in the same location because some of the chemicals may accumulate as the fish grows. It is advisable to eat smaller fish (of legal size).

### ***Fish Preparation and Consumption***

- Eat only the fillet portions. Do not eat the guts and liver because chemicals usually concentrate in those parts. Also, avoid frequent consumption of any reproductive parts such as eggs or roe.
- Many chemicals are stored in the fat. To reduce the levels of these chemicals, skin the fish when possible and trim any visible fat.
- Use a cooking method such as baking, broiling, grilling, or steaming that allows the juices to drain away from the fish. The juices will contain chemicals in the fat and should be thrown away. Preparing and cooking fish in this way can remove 30 to 50 percent of the chemicals stored in fat. If you make stews or chowders, use fillet parts.
- Raw fish may be infested by parasites. Cook fish thoroughly to destroy the parasites.



### **Advice for Women 18-45 Years, including Pregnant and Breastfeeding Women, and Children**

Children and fetuses are more sensitive to the toxic effects of methylmercury, the form of mercury of health concern in fish. For this reason, OEHHA’s advisories that are based on mercury provide special advice for women ages 18-45 and children. Women should follow this advice throughout their childbearing years.

The U.S. Food and Drug Administration (FDA) is responsible for the safety of commercial seafood. Most commercial fish have relatively low amounts of methylmercury and can be eaten safely in moderate amounts. However, several types of fish such as large, predatory, long-lived fish have high levels of methylmercury, and could cause overly high exposure to methylmercury if eaten often. In 2004, FDA and the U.S. Environmental Protection Agency (U.S. EPA) issued a Joint Federal Advisory for Mercury in Fish advising women who are pregnant or could become pregnant, nursing mothers, and young children not to eat shark, swordfish, king mackerel, or tilefish. The federal advisory also recommends that these individuals can safely eat up to an average of 12 ounces (two average meals) per week of a variety of other cooked fish purchased in stores or restaurants, such as shrimp, canned light tuna, salmon, pollock, or (farm-raised) catfish. Albacore (“white”) tuna is known to contain more mercury than canned light tuna; it is therefore recommended that no more than six ounces of albacore tuna be consumed per week. In addition, the federal advisory recommends that women who are pregnant or may become pregnant, nursing mothers, and young children consume no more than one meal per week of locally caught fish, when no other advice is available, and eat no other fish that week. The federal advisory can be found at <http://www.cfsan.fda.gov/~dms/admehg.html> or <http://www.epa.gov/ost/fishadvice/advice.html>.

## Appendix IV: Sacramento River and Northern Delta Advisory Data File Comments

1. Samples from Sycamore Slough at Knights Landing and Sycamore Slough at Yolo-Colusa County Line and Colusa Drain/Yolo-Colusa County Line were excluded because coordinates provided placed them in counties outside study area and real location could not be verified.
2. Excluded Sherman Island, Central Drain/Norman-Princeton Rd, Logan Creek/Norman-Princeton Road, Bounde Creek – Norman Princeton Rd, and Sacramento River above Shasta samples from the dataset because outside project boundaries.
3. TSMP sample 246.001.F.89 from Butte Creek/Colusa Highway was excluded because the latitude and longitude could not be verified; coordinates showed it to be in Sutter County but not on a water body and > 5 miles from Sacramento River.
4. Prospect Slough and Prospect Slough/Liberty Island sites were combined and named Prospect Slough/Liberty Island.
5. Sacramento River at RM 44 and Sacramento River at RM44 sites were combined and named Sacramento River at RM 44.
6. Sacramento Slough and Sacramento Slough at Karnak were combined and named Sacramento Slough.
7. Sacramento River at Colusa and Sacramento River/Colusa were kept separate because of distance apart.
8. Sacramento River at Bend Bridge near Red Bluff and Sacramento River Near Red Bluff were combined and called Sacramento River at Bend Bridge near Red Bluff. Sacramento River at Bend Bridge remains a separate site.
9. Sacramento River at Hamilton, Sacramento River at Hamilton City, and Sacramento River near Hamilton were considered three sites.
10. Sacramento River/Rio Vista and Sacramento River at Rio Vista were combined and named Sacramento River/Rio Vista.
11. Sacramento River/Knights Landing includes Colusa Basin Drain at Road 99E due to proximity of locations.
12. SRWP samples from Sacramento River below Keswick are about 2 miles north of Sacramento River/Keswick, so kept as two distinct sampling sites.
13. Sutter Bypass included because it is an overflow area for the Sacramento River.
14. In some cases, the number of significant digits reported by the analytical laboratories exceeded the method sensitivity of three significant figures. In these cases, OEHHA dropped the additional numerals.

## Appendix V. Case Summaries

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Fremont Weir	American Shad	FMP	2006	<b>.055</b>	1	.	286	1
Fremont Weir	American Shad	FMP	2006	<b>.071</b>	1	.	330	1
Fremont Weir	American Shad	FMP	2006	<b>.337</b>	1	.	334	1
Fremont Weir	American Shad	FMP	2006	<b>.257</b>	1	.	359	1
Fremont Weir	American Shad	FMP	2006	<b>.039</b>	1	.	362	1
Fremont Weir	American Shad	FMP	2006	<b>.108</b>	1	.	375	1
Fremont Weir	American Shad	FMP	2006	<b>.050</b>	1	.	384	1
Fremont Weir	American Shad	FMP	2006	<b>.034</b>	1	.	394	1
Fremont Weir	American Shad	FMP	2006	<b>.050</b>	1	.	424	1
Fremont Weir	American Shad	FMP	2006	<b>.044</b>	1	.	425	1
Fremont Weir	American Shad	FMP	2006	<b>.051</b>	1	.	425	1
Fremont Weir	American Shad	FMP	2006	<b>.035</b>	1	.	436	1
Fremont Weir	American Shad	FMP	2006	<b>.037</b>	1	.	445	1
Fremont Weir	American Shad	FMP	2006	<b>.051</b>	1	.	445	1
Fremont Weir	American Shad	FMP	2006	<b>.040</b>	1	.	446	1
Fremont Weir	American Shad	FMP	2006	<b>.033</b>	1	.	461	1
Fremont Weir	American Shad	FMP	2006	<b>.038</b>	1	.	467	1
Fremont Weir	American Shad	FMP	2006	<b>.042</b>	1	.	506	1
Fremont Weir	American Shad	FMP	2006	<b>.046</b>	1	.	509	1
Fremont Weir	American Shad	FMP	2006	<b>.034</b>	1	.	524	1
Fremont Weir	American Shad	FMP	2006	<b>.047</b>	1	.	541	1
Fremont Weir	American Shad	FMP	2006	<b>.033</b>	1	.	564	1
Fremont Weir	American Shad	FMP	2006	<b>.056</b>	1	.	571	1
Sacramento River at Colusa	American Shad	FMP	2006	<b>.029</b>	1	.	397	1
Sacramento River at Colusa	American Shad	FMP	2006	<b>.057</b>	1	.	430	1
Sacramento River at Knights Landing	American Shad	FMP	2006	<b>.062</b>	1	.	334	1
Sacramento River at Knights Landing	American Shad	FMP	2006	<b>.087</b>	1	.	353	1
Sacramento River at Knights Landing	American Shad	FMP	2006	<b>.067</b>	1	.	391	1
Sacramento River at Knights Landing	American Shad	FMP	2006	<b>.086</b>	1	.	406	1
Sacramento River at Knights Landing	American Shad	FMP	2006	<b>.037</b>	1	.	426	1
Sacramento River near Verona	American Shad	TSMP	2003	<b>.066</b>	5	350	403	1
Bypass Slough	Asiatic Clam	UCDavis3	1999	<b>.026</b>	2	.	24	1
Cache Slough	Asiatic Clam	UCDavis3	1999	<b>.030</b>	2	.	27	1
Cache Slough (lower)	Asiatic Clam	UCDavis3	1999	<b>.022</b>	36	.	21	1
Delta Cross Canal	Asiatic Clam	UCDavis3	1999	<b>.022</b>	4	.	22	1
Delta Meadows	Asiatic Clam	UCDavis3	1999	<b>.007</b>	10	.	21	1
Lindsey Slough	Asiatic Clam	UCDavis3	1999	<b>.038</b>	1	.	26	1
Little Hastings Tract	Asiatic Clam	UCDavis3	1999	<b>.018</b>	5	.	25	1
Prospect Slough/Liberty Island	Asiatic Clam	UCDavis3	1999	<b>.022</b>	6	.	23	1
Sacramento River Deep Water Ship Channel	Asiatic Clam	UCDavis3	1999	<b>.016</b>	1	.	26	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.021</b>	1	.	20	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.029</b>	1	.	20	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.027</b>	1	.	21	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.017</b>	1	.	22	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.020</b>	1	.	23	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.021</b>	1	.	23	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.025</b>	1	.	23	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.028</b>	1	.	24	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.019</b>	1	.	25	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.022</b>	1	.	25	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.024</b>	1	.	25	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.033</b>	1	.	25	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	1999	<b>.028</b>	8	.	26	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.031</b>	1	.	26	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.036</b>	1	.	26	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.037</b>	1	.	26	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.042</b>	1	.	26	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.017</b>	1	.	27	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.028</b>	1	.	27	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.036</b>	1	.	27	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.036</b>	1	.	27	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.027</b>	1	.	28	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.034</b>	1	.	28	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.041</b>	1	.	28	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.045</b>	1	.	28	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.030</b>	1	.	29	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.038</b>	1	.	29	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.038</b>	1	.	29	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.017</b>	1	.	30	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.028</b>	1	.	30	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.031</b>	1	.	30	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.019</b>	1	.	31	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.029</b>	1	.	31	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.043</b>	1	.	31	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.017</b>	1	.	32	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.019</b>	1	.	32	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.018</b>	1	.	33	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.034</b>	1	.	34	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.029</b>	1	.	36	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.039</b>	1	.	36	1
Sacramento River near Isleton	Asiatic Clam	UCDavis3	2000	<b>.044</b>	1	.	37	1
Sacramento River/Decker Island (inner channel)	Asiatic Clam	UCDavis3	1999	<b>.036</b>	17	.	23	1
Sacramento River/Rio Vista	Asiatic Clam	UCDavis3	1999	<b>.022</b>	22	.	24	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.024</b>	1	.	16	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.027</b>	1	.	16	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.020</b>	1	.	17	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.026</b>	1	.	17	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.027</b>	1	.	17	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.035</b>	1	.	17	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.018</b>	1	.	18	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.020</b>	1	.	18	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.020</b>	1	.	18	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.021</b>	1	.	18	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.022</b>	1	.	18	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.023</b>	1	.	18	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.032</b>	1	.	18	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.021</b>	1	.	19	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.022</b>	1	.	19	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.023</b>	1	.	19	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.023</b>	1	.	19	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.024</b>	1	.	19	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.025</b>	1	.	19	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.027</b>	1	.	19	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.020</b>	1	.	20	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.020</b>	1	.	20	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.023</b>	1	.	20	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.024</b>	1	.	20	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.026</b>	1	.	20	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.019</b>	1	.	22	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.023</b>	1	.	22	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.021</b>	1	.	23	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.017</b>	1	.	25	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.017</b>	1	.	26	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.020</b>	1	.	26	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.016</b>	1	.	27	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.017</b>	1	.	27	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.018</b>	1	.	27	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.030</b>	1	.	27	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.015</b>	1	.	28	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.015</b>	1	.	30	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.023</b>	1	.	30	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.018</b>	1	.	31	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.016</b>	1	.	32	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.019</b>	1	.	33	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.015</b>	1	.	35	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.024</b>	1	.	36	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.042</b>	1	.	39	1
Snodgrass Slough near Delta Meadows	Asiatic Clam	UCDavis3	2000	<b>.044</b>	1	.	42	1
Steamboat Slough	Asiatic Clam	UCDavis3	1999	<b>.020</b>	9	.	26	1
Toe Drain	Asiatic Clam	UCDavis3	1999	<b>.018</b>	1	.	25	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Butte Creek at Colusa Highway	Bluegill	FMP	2006	<b>.248</b>	1	.	120	1
Butte Creek at Colusa Highway	Bluegill	FMP	2006	<b>.127</b>	1	.	132	1
Butte Creek at Colusa Highway	Bluegill	FMP	2006	<b>.351</b>	1	.	136	1
Butte Creek at Colusa Highway	Bluegill	FMP	2006	<b>.329</b>	1	.	142	1
Butte Creek at Colusa Highway	Bluegill	FMP	2006	<b>.273</b>	1	.	160	1
Colusa Drain/Knights Landing	Bluegill	FMP	2005	<b>.209</b>	1	.	111	1
Sacramento River at Knights Landing	Bluegill	FMP	2006	<b>.237</b>	1	.	124	1
Sacramento River at Knights Landing	Bluegill	FMP	2006	<b>.067</b>	1	.	131	1
Sacramento River at Knights Landing	Bluegill	FMP	2006	<b>.216</b>	1	.	137	1
Sacramento River at Knights Landing	Bluegill	FMP	2006	<b>.178</b>	1	.	140	1
Sacramento River at RM 44	Bluegill	SRWP	1999	<b>.103</b>	5	.	185	1
Sacramento River near Verona	Bluegill	FMP	2006	<b>.109</b>	1	.	117	1
Sacramento River near Verona	Bluegill	FMP	2006	<b>.137</b>	1	.	130	1
Sacramento River near Verona	Bluegill	FMP	2006	<b>.176</b>	1	.	134	1
Sacramento River near Verona	Bluegill	FMP	2006	<b>.091</b>	1	.	141	1
Sacramento River near Verona	Bluegill	FMP	2006	<b>.308</b>	1	.	153	1
Sacramento River/Rio Vista	Bluegill	FMP	2005	<b>.114</b>	1	.	115	1
Sacramento River/Rio Vista	Bluegill	FMP	2005	<b>.111</b>	1	.	120	1
Sacramento River/Rio Vista	Bluegill	FMP	2005	<b>.110</b>	1	.	141	1
Sacramento River/Rio Vista	Bluegill	FMP	2005	<b>.144</b>	1	.	161	1
Sacramento River/Rio Vista	Bluegill	FMP	2005	<b>.068</b>	1	.	175	1
Sacramento River/Rio Vista	Bluegill	FMP	2005	<b>.242</b>	1	.	192	1
Sacramento River/Rio Vista	Bluegill	FMP	2005	<b>.184</b>	1	.	206	1
Snodgrass Slough near Delta Meadows	Bluegill	FMP	2006	<b>.215</b>	1	.	120	1
Snodgrass Slough near Delta Meadows	Bluegill	FMP	2006	<b>.144</b>	1	.	127	1
Snodgrass Slough near Delta Meadows	Bluegill	FMP	2006	<b>.171</b>	1	.	135	1
Snodgrass Slough near Delta Meadows	Bluegill	FMP	2006	<b>.301</b>	1	.	136	1
Snodgrass Slough near Delta Meadows	Bluegill	FMP	2006	<b>.239</b>	1	.	146	1
Steamboat Slough	Bluegill	FMP	2006	<b>.085</b>	1	.	130	1
Steamboat Slough	Bluegill	FMP	2006	<b>.095</b>	1	.	131	1
Steamboat Slough	Bluegill	FMP	2006	<b>.082</b>	1	.	132	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Steamboat Slough	Bluegill	FMP	2006	<b>.093</b>	1	.	163	1
Steamboat Slough	Bluegill	FMP	2006	<b>.169</b>	1	.	166	1
Sutter Bypass below Kirkville Road	Bluegill	FMP	2006	<b>.110</b>	1	.	117	1
Sutter Bypass below Kirkville Road	Bluegill	FMP	2006	<b>.181</b>	1	.	140	1
Sutter Bypass below Kirkville Road	Bluegill	FMP	2006	<b>.225</b>	1	.	145	1
Toe Drain	Bluegill	FMP	2006	<b>.246</b>	1	.	125	1
Toe Drain	Bluegill	FMP	2006	<b>.219</b>	1	.	126	1
Toe Drain	Bluegill	FMP	2006	<b>.377</b>	1	.	133	1
Toe Drain	Bluegill	FMP	2006	<b>.419</b>	1	.	151	1
Toe Drain	Bluegill	FMP	2006	<b>.237</b>	1	.	159	1
Toe Drain	Bluegill	FMP	2006	<b>.419</b>	1	.	173	1
Colusa Drain/Abel Road	Brown Bullhead	TSMP	1980	<b>.580</b>	1	215	222	1
Colusa Drain/Abel Road	Brown Bullhead	TSMP	1980	<b>.200</b>	10	237	244	1
Reclamation Slough	Brown Bullhead	TSMP	1980	<b>.240</b>	2	378	389	1
Beach Lake	Carp	TSMP	1985	<b>.150</b>	6	483	531	1
Butte Creek at Colusa Highway	Carp	FMP	2006	<b>.270</b>	1	.	367	1
Butte Creek at Colusa Highway	Carp	FMP	2006	<b>.425</b>	1	.	403	1
Butte Creek at Colusa Highway	Carp	FMP	2006	<b>.250</b>	1	.	430	1
Butte Creek at Colusa Highway	Carp	FMP	2006	<b>.303</b>	1	.	474	1
Butte Creek at Colusa Highway	Carp	FMP	2006	<b>.206</b>	1	.	475	1
Butte Creek at Colusa Highway	Carp	FMP	2006	<b>.440</b>	1	.	487	1
Butte Creek at Colusa Highway	Carp	FMP	2006	<b>.309</b>	1	.	489	1
Butte Creek at Colusa Highway	Carp	FMP	2006	<b>.411</b>	1	.	583	1
Butte Creek at Colusa Highway	Carp	FMP	2006	<b>.482</b>	1	.	701	1
Butte Creek at Colusa Highway	Carp	FMP	2006	<b>.475</b>	1	.	770	1
Cache Slough near Ryer Island Ferry	Carp	SRWP	1999	<b>.107</b>	5	.	352	1
Cache Slough near Ryer Island Ferry 2	Carp	CalFed	2000	<b>.281</b>	3	.	484	1
Colusa Basin Drain	Carp	SRWP	2000	<b>.179</b>	5	.	372	1
Colusa Basin Drain	Carp	SRWP	1998	<b>.106</b>	5	.	386	1
Colusa Basin Drain	Carp	SRWP	2001	<b>.166</b>	5	.	398	1
Colusa Basin Drain	Carp	SRWP	2002	<b>.408</b>	3	.	504	1
Colusa Drain/Abel Road	Carp	TSMP	1981	<b>.100</b>	2	419	461	1
Colusa Drain/Knights Landing	Carp	FMP	2005	<b>.246</b>	1	.	340	1
Colusa Drain/Knights Landing	Carp	FMP	2005	<b>.186</b>	1	.	403	1
Colusa Drain/Knights Landing	Carp	FMP	2005	<b>.113</b>	1	.	463	1
Colusa Drain/Knights Landing	Carp	FMP	2005	<b>.159</b>	1	.	480	1
Cross Canal	Carp	FMP	2006	<b>.122</b>	1	.	373	1
Cross Canal	Carp	FMP	2006	<b>.162</b>	1	.	379	1
Cross Canal	Carp	FMP	2006	<b>.059</b>	1	.	421	1
Cross Canal	Carp	FMP	2006	<b>.123</b>	1	.	439	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Cross Canal	Carp	FMP	2006	<b>.266</b>	1	.	464	1
Cross Canal	Carp	TSMP	1988	<b>.120</b>	6	391	430	1
Cross Canal	Carp	TSMP	1986	<b>.120</b>	6	436	480	1
Georgiana Slough	Carp	FMP	2006	<b>.182</b>	1	.	581	1
Green's Lake	Carp	CalFed	2000	<b>.220</b>	5	.	409	1
Green's Lake	Carp	CalFed	2000	<b>.335</b>	5	.	433	1
Little Holland Tract 2	Carp	CalFed	2000	<b>.243</b>	5	.	450	1
Little Holland Tract 2	Carp	CalFed	2000	<b>.239</b>	5	.	457	1
Prospect Slough/Liberty Island	Carp	FMP	2005	<b>.252</b>	1	.	438	1
Prospect Slough/Liberty Island	Carp	FMP	2005	<b>.430</b>	1	.	514	1
Prospect Slough/Liberty Island	Carp	FMP	2005	<b>.128</b>	1	.	517	1
Prospect Slough/Liberty Island	Carp	FMP	2005	<b>.354</b>	1	.	535	1
Prospect Slough/Liberty Island	Carp	FMP	2005	<b>.484</b>	1	.	583	1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Carp	FMP	2006	<b>.227</b>	1	.	520	1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Carp	FMP	2006	<b>.364</b>	1	.	530	1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Carp	FMP	2006	<b>.121</b>	1	.	556	1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Carp	FMP	2006	<b>.259</b>	1	.	582	1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Carp	FMP	2006	<b>.217</b>	1	.	604	1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Carp	FMP	2006	<b>.241</b>	1	.	606	1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Carp	FMP	2006	<b>.441</b>	1	.	629	1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Carp	FMP	2006	<b>.221</b>	1	.	641	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Carp	FMP	2006	<b>.330</b>	1	.	674	1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Carp	FMP	2006	<b>.558</b>	1	.	679	1
Sacramento River at Knights Landing	Carp	FMP	2006	<b>.106</b>	1	.	529	1
Sacramento River at Knights Landing	Carp	FMP	2006	<b>.249</b>	1	.	529	1
Sacramento River at Knights Landing	Carp	FMP	2006	<b>.288</b>	1	.	602	1
Sacramento River at Knights Landing	Carp	FMP	2006	<b>.349</b>	1	.	602	1
Sacramento River at Knights Landing	Carp	FMP	2006	<b>.083</b>	1	.	671	1
Sacramento River at RM 44	Carp	CalFed	2000	<b>.256</b>	3	.	566	1
Sacramento River at Tisdale Boat Ramp AKA River Bend Marina	Carp	FMP	2006	<b>.199</b>	1	.	460	1
Sacramento River at Tisdale Boat Ramp AKA River Bend Marina	Carp	FMP	2006	<b>.126</b>	1	.	469	1
Sacramento River at Tisdale Boat Ramp AKA River Bend Marina	Carp	FMP	2006	<b>.167</b>	1	.	473	1
Sacramento River at Tisdale Boat Ramp AKA River Bend Marina	Carp	FMP	2006	<b>.273</b>	1	.	553	1
Sacramento River at Veterans Bridge	Carp	FMP	2005	<b>.070</b>	1	.	406	1
Sacramento River at Veterans Bridge	Carp	FMP	2005	<b>.300</b>	1	.	454	1
Sacramento River at Veterans Bridge	Carp	FMP	2005	<b>.269</b>	1	.	495	1
Sacramento River at Veterans Bridge	Carp	FMP	2005	<b>.558</b>	1	.	581	1
Sacramento River near Verona	Carp	FMP	2006	<b>.228</b>	1	.	422	1
Sacramento River near Verona	Carp	FMP	2006	<b>.339</b>	1	.	467	1
Sacramento River near Verona	Carp	FMP	2006	<b>.186</b>	1	.	471	1
Sacramento River near Verona	Carp	FMP	2006	<b>.378</b>	1	.	558	1
Sacramento River near Verona	Carp	FMP	2006	<b>.303</b>	1	.	584	1
Sacramento River/Colusa	Carp	SRWP	1998	<b>.186</b>	5	.	398	1
Sacramento River/Hood	Carp	TSMP	1987	<b>.160</b>	6	498	548	1
Sacramento River/Hood	Carp	TSMP	1985	<b>.340</b>	6	519	571	1
Sacramento River/Hood	Carp	TSMP	1986	<b>.280</b>	6	536	590	1
Sacramento River/Rio Vista	Carp	FMP	2005	<b>.330</b>	1	.	545	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento River/Rio Vista	Carp	FMP	2005	<b>.306</b>	1	.	557	1
Sacramento River/Rio Vista	Carp	FMP	2005	<b>.353</b>	1	.	567	1
Sacramento River/Rio Vista	Carp	FMP	2005	<b>.265</b>	1	.	595	1
Sacramento River/Rio Vista	Carp	FMP	2005	<b>.303</b>	1	.	600	1
Sacramento River/Rio Vista	Carp	FMP	2005	<b>.264</b>	1	.	607	1
Snodgrass Slough near Delta Meadows	Carp	FMP	2006	<b>.227</b>	1	.	568	1
Snodgrass Slough near Delta Meadows	Carp	FMP	2006	<b>.335</b>	1	.	597	1
Snodgrass Slough near Delta Meadows	Carp	FMP	2006	<b>.279</b>	1	.	604	1
Snodgrass Slough near Delta Meadows	Carp	FMP	2006	<b>.203</b>	1	.	634	1
Snodgrass Slough near Delta Meadows	Carp	FMP	2006	<b>.529</b>	1	.	702	1
Steamboat Slough	Carp	FMP	2006	<b>.503</b>	1	.	541	1
Steamboat Slough	Carp	FMP	2006	<b>.297</b>	1	.	571	1
Steamboat Slough	Carp	FMP	2006	<b>.369</b>	1	.	572	1
Steamboat Slough	Carp	FMP	2006	<b>.415</b>	1	.	585	1
Steamboat Slough	Carp	FMP	2006	<b>.380</b>	1	.	599	1
Sutter Bypass	Carp	TSMF	1981	<b>.130</b>	1	425	468	1
Sutter Bypass below Kirkville Road	Carp	FMP	2006	<b>.216</b>	1	.	415	1
Sutter Bypass below Kirkville Road	Carp	FMP	2006	<b>.099</b>	1	.	468	1
Sutter Bypass below Kirkville Road	Carp	FMP	2006	<b>.109</b>	1	.	470	1
Toe Drain	Carp	FMP	2006	<b>.085</b>	1	.	355	1
Toe Drain	Carp	FMP	2006	<b>.275</b>	1	.	446	1
Toe Drain	Carp	FMP	2006	<b>.420</b>	1	.	458	1
Toe Drain	Carp	FMP	2006	<b>.591</b>	1	.	550	1
Toe Drain	Carp	FMP	2006	<b>.938</b>	1	.	599	1
Butte Creek at Colusa Highway	Channel Catfish	FMP	2006	<b>.182</b>	1	.	370	1
Butte Creek at Colusa Highway	Channel Catfish	FMP	2006	<b>.645</b>	1	.	405	1
Butte Creek at Colusa Highway	Channel Catfish	FMP	2006	<b>.328</b>	1	.	425	1
Butte Creek at Colusa Highway	Channel Catfish	FMP	2006	<b>.231</b>	1	.	465	1
Butte Creek at Colusa Highway	Channel Catfish	FMP	2006	<b>.297</b>	1	.	490	1
Butte Creek at Colusa Highway	Channel Catfish	FMP	2006	<b>.611</b>	1	.	490	1
Butte Creek at Colusa Highway	Channel Catfish	FMP	2006	<b>.387</b>	1	.	497	1
Butte Creek at Colusa Highway	Channel Catfish	FMP	2006	<b>.355</b>	1	.	505	1
Butte Creek at Colusa Highway	Channel Catfish	FMP	2006	<b>.315</b>	1	.	517	1
Butte Creek at Colusa Highway	Channel Catfish	FMP	2006	<b>.339</b>	1	.	534	1
Butte Creek at Colusa Highway	Channel Catfish	FMP	2006	<b>.587</b>	1	.	560	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Butte Creek at Colusa Highway	Channel Catfish	FMP	2006	<b>.517</b>	1	.	726	1
Cache Slough near Ryer Island Ferry 2	Channel Catfish	CalFed	2000	<b>.236</b>	2	.	412	1
Colusa Drain/Abel Road	Channel Catfish	TSMP	1988	<b>.140</b>	5	205	236	1
Colusa Drain/Abel Road	Channel Catfish	TSMP	1988	<b>.160</b>	5	208	239	1
Colusa Drain/Abel Road	Channel Catfish	TSMP	1981	<b>.150</b>	4	309	355	1
Colusa Drain/Knights Landing	Channel Catfish	TSMP	1987	<b>.190</b>	8	205	236	1
Colusa Drain/Knights Landing	Channel Catfish	TSMP	1981	<b>.120</b>	6	302	347	1
Prospect Slough/Liberty Island	Channel Catfish	FMP	2005	<b>.295</b>	1	.	437	1
Prospect Slough/Liberty Island	Channel Catfish	FMP	2005	<b>.162</b>	1	.	505	1
Reclamation Slough	Channel Catfish	TSMP	1980	<b>.170</b>	1	232	267	1
Reclamation Slough	Channel Catfish	TSMP	1981	<b>.230</b>	4	414	476	1
Sacramento River at Colusa	Channel Catfish	FMP	2005	<b>.121</b>	1	.	201	1
Sacramento River at Colusa	Channel Catfish	FMP	2005	<b>.255</b>	1	.	319	1
Sacramento River at Colusa	Channel Catfish	FMP	2005	<b>.197</b>	1	.	347	1
Sacramento River at Colusa	Channel Catfish	FMP	2005	<b>.266</b>	1	.	348	1
Sacramento River at Colusa	Channel Catfish	FMP	2005	<b>.333</b>	1	.	350	1
Sacramento River at Colusa	Channel Catfish	FMP	2005	<b>.265</b>	1	.	433	1
Sacramento River at Colusa	Channel Catfish	FMP	2005	<b>.397</b>	1	.	449	1
Sacramento River at Colusa	Channel Catfish	FMP	2005	<b>.542</b>	1	.	490	1
Sacramento River at Colusa	Channel Catfish	FMP	2005	<b>.409</b>	1	.	509	1
Sacramento River at Colusa	Channel Catfish	FMP	2005	<b>.458</b>	1	.	614	1
Sacramento River at Grimes	Channel Catfish	FMP	2005	<b>.238</b>	1	.	509	1
Sacramento River at Grimes	Channel Catfish	FMP	2005	<b>.447</b>	1	.	554	1
Sacramento River at Grimes	Channel Catfish	FMP	2005	<b>.362</b>	1	.	601	1
Sacramento River at Grimes	Channel Catfish	FMP	2005	<b>.378</b>	1	.	614	1
Sacramento River at Grimes	Channel Catfish	FMP	2005	<b>.290</b>	1	.	623	1
Sacramento River at Grimes	Channel Catfish	FMP	2005	<b>.177</b>	1	.	646	1
Sacramento River at Knights Landing	Channel Catfish	FMP	2006	<b>.213</b>	1	.	266	1
Sacramento River at Knights Landing	Channel Catfish	FMP	2006	<b>.147</b>	1	.	293	1
Sacramento River at Knights Landing	Channel Catfish	FMP	2006	<b>.135</b>	1	.	297	1
Sacramento River at Knights Landing	Channel Catfish	FMP	2006	<b>.174</b>	1	.	306	1
Sacramento River at Knights Landing	Channel Catfish	FMP	2006	<b>.157</b>	1	.	326	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento River at Knights Landing	Channel Catfish	FMP	2006	<b>.209</b>	1	.	349	1
Sacramento River at Knights Landing	Channel Catfish	FMP	2006	<b>.286</b>	1	.	394	1
Sacramento River at Knights Landing	Channel Catfish	FMP	2006	<b>.329</b>	1	.	428	1
Sacramento River at Knights Landing	Channel Catfish	FMP	2006	<b>.444</b>	1	.	429	1
Sacramento River at Knights Landing	Channel Catfish	FMP	2006	<b>.405</b>	1	.	448	1
Sacramento River at Knights Landing	Channel Catfish	FMP	2006	<b>.471</b>	1	.	448	1
Sacramento River at Veterans Bridge	Channel Catfish	FMP	2005	<b>.229</b>	1	.	370	1
Sacramento River at Veterans Bridge	Channel Catfish	FMP	2005	<b>.181</b>	1	.	375	1
Sacramento River at Veterans Bridge	Channel Catfish	FMP	2005	<b>.343</b>	1	.	384	1
Sacramento River at Veterans Bridge	Channel Catfish	FMP	2005	<b>.355</b>	1	.	390	1
Sacramento River at Veterans Bridge	Channel Catfish	FMP	2005	<b>.414</b>	1	.	442	1
Sacramento River at Veterans Bridge	Channel Catfish	FMP	2005	<b>.193</b>	1	.	464	1
Sacramento River at Veterans Bridge	Channel Catfish	FMP	2005	<b>.919</b>	1	.	475	1
Sacramento River at Veterans Bridge	Channel Catfish	FMP	2005	<b>.298</b>	1	.	535	1
Sacramento River at Veterans Bridge	Channel Catfish	FMP	2005	<b>1.265</b>	1	.	630	1
Sacramento River near Verona	Channel Catfish	FMP	2006	<b>.436</b>	1	.	428	1
Sacramento River/Hood	Channel Catfish	TSMP	1993	<b>.150</b>	1	295	339	1
Sacramento River/Hood	Channel Catfish	TSMP	1982	<b>.190</b>	3	438	504	1
Sacramento River/Rio Vista	Channel Catfish	FMP	2005	<b>.112</b>	1	.	403	1
Sacramento Slough	Channel Catfish	FMP	2005	<b>.335</b>	1	.	274	1
Sacramento Slough	Channel Catfish	FMP	2005	<b>.254</b>	1	.	289	1
Sacramento Slough	Channel Catfish	FMP	2005	<b>.183</b>	1	.	296	1
Sacramento Slough	Channel Catfish	FMP	2005	<b>.258</b>	1	.	315	1
Sacramento Slough	Channel Catfish	FMP	2005	<b>.202</b>	1	.	346	1
Sacramento Slough	Channel Catfish	FMP	2005	<b>.255</b>	1	.	359	1
Sacramento Slough	Channel Catfish	FMP	2005	<b>.175</b>	1	.	363	1
Sacramento Slough	Channel Catfish	FMP	2005	<b>.202</b>	1	.	367	1
Sacramento Slough	Channel Catfish	FMP	2005	<b>.742</b>	1	.	471	1
Sacramento Slough	Channel Catfish	FMP	2005	<b>.292</b>	1	.	646	1
Snodgrass Slough near Delta Meadows	Channel Catfish	FMP	2006	<b>.229</b>	1	.	490	1
Steamboat Slough	Channel Catfish	FMP	2006	<b>.358</b>	1	.	341	1
Steamboat Slough	Channel Catfish	FMP	2006	<b>.321</b>	1	.	486	1
Sutter Bypass	Channel Catfish	TSMP	1981	<b>.190</b>	6	384	442	1
Toe Drain	Channel Catfish	FMP	2006	<b>.431</b>	1	.	340	1
Toe Drain	Channel Catfish	FMP	2006	<b>.420</b>	1	.	348	1
Toe Drain	Channel Catfish	FMP	2006	<b>.468</b>	1	.	418	1
Toe Drain	Channel Catfish	FMP	2006	<b>.511</b>	1	.	423	1
Toe Drain	Channel Catfish	FMP	2006	<b>.467</b>	1	.	425	1
Toe Drain	Channel Catfish	FMP	2006	<b>.277</b>	1	.	444	1
Toe Drain	Channel Catfish	FMP	2006	<b>.431</b>	1	.	469	1
Toe Drain	Channel Catfish	FMP	2006	<b>.450</b>	1	.	473	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Toe Drain	Channel Catfish	FMP	2006	<b>.408</b>	1	.	494	1
Toe Drain	Channel Catfish	FMP	2006	<b>.347</b>	1	.	496	1
Toe Drain	Channel Catfish	FMP	2006	<b>.243</b>	1	.	499	1
Sacramento River at RM 44	Chinook Salmon	FMP	2005	<b>.042</b>	1	.	599	1
Sacramento River at RM 44	Chinook Salmon	FMP	2005	<b>.080</b>	1	.	656	1
Sacramento River at RM 44	Chinook Salmon	FMP	2005	<b>.065</b>	1	.	779	1
Sacramento River at RM 44	Chinook Salmon	FMP	2005	<b>.071</b>	1	.	781	1
Sacramento River at RM 44	Chinook Salmon	FMP	2005	<b>.074</b>	1	.	829	1
Sacramento River at RM 44	Chinook Salmon	FMP	2005	<b>.062</b>	1	.	833	1
Sacramento River at RM 44	Chinook Salmon	FMP	2005	<b>.069</b>	1	.	920	1
Sacramento River at RM 44	Chinook Salmon	TSMP	2002	<b>.058</b>	3	798	798	1
Sacramento River at Tisdale Boat Ramp AKA River Bend Marina	Chinook Salmon	FMP	2006	<b>.094</b>	1	.	806	1
Butte Creek at Colusa Highway	Crappie	FMP	2006	<b>.364</b>	1	.	195	1
Cache Slough near Ryer Island Ferry	Crappie	SRWP	2000	<b>.315</b>	5	.	231	1
Colusa Basin Drain	Crappie	SRWP	2001	<b>.078</b>	5	.	241	1
Green's Lake	Crappie	CalFed	2000	<b>.591</b>	5	.	186	1
Green's Lake	Crappie	CalFed	2000	<b>.407</b>	5	.	329	1
Prospect Slough/Liberty Island	Crappie	FMP	2005	<b>.147</b>	1	.	257	1
Prospect Slough/Liberty Island	Crappie	FMP	2005	<b>.280</b>	1	.	258	1
Prospect Slough/Liberty Island	Crappie	FMP	2005	<b>.134</b>	1	.	281	1
Prospect Slough/Liberty Island	Crappie	FMP	2005	<b>.346</b>	1	.	289	1
Sacramento River/Rio Vista	Crappie	FMP	2005	<b>.138</b>	1	.	231	1
Snodgrass Slough near Delta Meadows	Crappie	FMP	2006	<b>.432</b>	1	.	212	1
Snodgrass Slough near Delta Meadows	Crappie	FMP	2006	<b>.424</b>	1	.	227	1
Snodgrass Slough near Delta Meadows	Crappie	FMP	2006	<b>.686</b>	1	.	270	1
Steamboat Slough	Crappie	FMP	2006	<b>.251</b>	1	.	170	1
Steamboat Slough	Crappie	FMP	2006	<b>.284</b>	1	.	225	1
Sutter Bypass below Kirkville Road	Crappie	FMP	2006	<b>.426</b>	1	.	260	1
Sutter Bypass below Kirkville Road	Crappie	FMP	2006	<b>.382</b>	1	.	280	1
Sutter Bypass below Kirkville Road	Crappie	FMP	2006	<b>.227</b>	1	.	395	1
Toe Drain	Crappie	FMP	2006	<b>.117</b>	1	.	190	1
Toe Drain	Crappie	FMP	2006	<b>.180</b>	1	.	190	1
Toe Drain	Crappie	FMP	2006	<b>.158</b>	1	.	207	1
Toe Drain	Crappie	FMP	2006	<b>.359</b>	1	.	222	1
Toe Drain	Crappie	FMP	2006	<b>.373</b>	1	.	235	1
Toe Drain	Crappie	FMP	2006	<b>.390</b>	1	.	245	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Cache Slough (lower)	Crayfish1 (Pacifastacus)	UCDavis3	1999	.317	1	.	46	1
Cache Slough (lower)	Crayfish1 (Pacifastacus)	UCDavis3	1999	.520	1	.	47	1
Delta Cross Canal	Crayfish1 (Pacifastacus)	UCDavis3	1999	.104	1	.	37	1
Delta Cross Canal	Crayfish1 (Pacifastacus)	UCDavis3	1999	.135	1	.	39	1
Delta Cross Canal	Crayfish1 (Pacifastacus)	UCDavis3	1999	.103	1	.	40	1
Delta Cross Canal	Crayfish1 (Pacifastacus)	UCDavis3	1999	.148	1	.	41	1
Delta Cross Canal	Crayfish1 (Pacifastacus)	UCDavis3	1999	.139	1	.	42	1
Delta Cross Canal	Crayfish1 (Pacifastacus)	UCDavis3	1999	.234	1	.	44	1
Delta Cross Canal	Crayfish1 (Pacifastacus)	UCDavis3	1999	.260	1	.	44	1
Delta Cross Canal	Crayfish1 (Pacifastacus)	UCDavis3	1999	.314	1	.	44	1
Delta Cross Canal	Crayfish1 (Pacifastacus)	UCDavis3	1999	.583	1	.	51	1
Delta Cross Canal	Crayfish1 (Pacifastacus)	UCDavis3	1999	.212	1	.	53	1
Georgiana Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.181	1	.	41	1
Georgiana Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.195	1	.	43	1
Georgiana Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.226	1	.	45	1
Georgiana Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.194	1	.	47	1
Georgiana Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.110	1	.	49	1
Georgiana Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.325	1	.	49	1
Georgiana Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.141	1	.	50	1
Georgiana Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.153	1	.	50	1
Georgiana Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.220	1	.	51	1
Georgiana Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.283	1	.	58	1
Lindsey Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.158	1	.	43	1
Lindsey Slough	Crayfish1 (Pacifastacus)	UCDavis3	1998	.167	1	.	43	1
Lindsey Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.182	1	.	44	1
Lindsey Slough	Crayfish1 (Pacifastacus)	UCDavis3	1998	.227	1	.	44	1
Lindsey Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.106	1	.	45	1
Lindsey Slough	Crayfish1 (Pacifastacus)	UCDavis3	1998	.179	1	.	45	1
Lindsey Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.112	1	.	47	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Lindsey Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.139	1	.	47	1
Lindsey Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.255	1	.	49	1
Lindsey Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.138	1	.	51	1
Lindsey Slough	Crayfish1 (Pacifastacus)	UCDavis3	1998	.193	1	.	51	1
Lindsey Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.143	1	.	52	1
Lindsey Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.209	1	.	52	1
Lindsey Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.190	1	.	53	1
Lindsey Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.260	1	.	53	1
Lindsey Slough	Crayfish1 (Pacifastacus)	UCDavis3	1998	.417	1	.	54	1
Lindsey Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.157	1	.	55	1
Lindsey Slough	Crayfish1 (Pacifastacus)	UCDavis3	1998	.297	1	.	55	1
Lindsey Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.354	1	.	55	1
Lindsey Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.223	1	.	56	1
Lindsey Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.354	1	.	58	1
Lindsey Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.186	1	.	63	1
Lindsey Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.345	1	.	65	1
Miner Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.190	1	.	38	1
Miner Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.132	1	.	39	1
Miner Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.133	1	.	39	1
Miner Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.102	1	.	40	1
Miner Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.123	1	.	41	1
Miner Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.175	1	.	41	1
Miner Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.191	1	.	42	1
Miner Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.247	1	.	43	1
Miner Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.179	1	.	45	1
Miner Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.257	1	.	45	1
Miner Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.392	1	.	45	1
Miner Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.116	1	.	47	1
Miner Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.195	1	.	47	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Miner Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.135	1	.	48	1
Miner Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.296	1	.	48	1
Miner Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.326	1	.	48	1
Miner Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.461	1	.	50	1
Miner Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.353	1	.	51	1
Miner Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	.387	1	.	58	1
Prospect Island	Crayfish1 (Pacifastacus)	UCDavis3	1998	.121	1	.	44	1
Prospect Slough/Liberty Island	Crayfish1 (Pacifastacus)	UCDavis3	1999	.134	1	.	38	1
Prospect Slough/Liberty Island	Crayfish1 (Pacifastacus)	UCDavis3	1999	.169	1	.	41	1
Prospect Slough/Liberty Island	Crayfish1 (Pacifastacus)	UCDavis3	1999	.184	1	.	48	1
Prospect Slough/Liberty Island	Crayfish1 (Pacifastacus)	UCDavis3	1999	.164	1	.	52	1
Prospect Slough/Liberty Island	Crayfish1 (Pacifastacus)	UCDavis3	1999	.229	1	.	52	1
Prospect Slough/Liberty Island	Crayfish1 (Pacifastacus)	UCDavis3	1999	.190	1	.	53	1
Prospect Slough/Liberty Island	Crayfish1 (Pacifastacus)	UCDavis3	1998	.496	1	.	53	1
Prospect Slough/Liberty Island	Crayfish1 (Pacifastacus)	UCDavis3	1999	.164	1	.	57	1
Prospect Slough/Liberty Island	Crayfish1 (Pacifastacus)	UCDavis3	1999	.291	1	.	57	1
Prospect Slough/Liberty Island	Crayfish1 (Pacifastacus)	UCDavis3	1999	.190	1	.	58	1
Prospect Slough/Liberty Island	Crayfish1 (Pacifastacus)	UCDavis3	1998	.238	1	.	59	1
Prospect Slough/Liberty Island	Crayfish1 (Pacifastacus)	UCDavis3	1999	.292	1	.	60	1
Prospect Slough/Liberty Island	Crayfish1 (Pacifastacus)	UCDavis3	1999	.662	1	.	61	1
Prospect Slough/Liberty Island	Crayfish1 (Pacifastacus)	UCDavis3	1998	.390	1	.	64	1
Sacramento River Deep Water Ship Channel	Crayfish1 (Pacifastacus)	UCDavis3	1999	.205	1	.	36	1
Sacramento River Deep Water Ship Channel	Crayfish1 (Pacifastacus)	UCDavis3	1999	.098	1	.	42	1
Sacramento River near Isleton	Crayfish1 (Pacifastacus)	UCDavis3	1999	.186	1	.	33	1
Sacramento River near Isleton	Crayfish1 (Pacifastacus)	UCDavis3	1999	.147	1	.	34	1
Sacramento River near Isleton	Crayfish1 (Pacifastacus)	UCDavis3	1999	.247	1	.	40	1
Sacramento River near Isleton	Crayfish1 (Pacifastacus)	UCDavis3	1999	.220	1	.	42	1
Sacramento River near Isleton	Crayfish1 (Pacifastacus)	UCDavis3	1999	.585	1	.	42	1
Sacramento River near Isleton	Crayfish1 (Pacifastacus)	UCDavis3	1999	.507	1	.	46	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento River near Isleton	Crayfish1 (Pacifastacus)	UCDavis3	1999	<b>.421</b>	1	.	48	1
Sacramento River near Isleton	Crayfish1 (Pacifastacus)	UCDavis3	1999	<b>.237</b>	1	.	49	1
Sacramento River near Isleton	Crayfish1 (Pacifastacus)	UCDavis3	1999	<b>.278</b>	1	.	54	1
Sacramento River near Isleton	Crayfish1 (Pacifastacus)	UCDavis3	1999	<b>.604</b>	1	.	58	1
Sacramento River/Decker Island (inner channel)	Crayfish1 (Pacifastacus)	UCDavis3	1999	<b>.107</b>	1	.	44	1
Sacramento River/Decker Island (inner channel)	Crayfish1 (Pacifastacus)	UCDavis3	1999	<b>.106</b>	1	.	47	1
Sacramento River/Decker Island (inner channel)	Crayfish1 (Pacifastacus)	UCDavis3	1999	<b>.286</b>	1	.	51	1
Sacramento River/Decker Island (inner channel)	Crayfish1 (Pacifastacus)	UCDavis3	1999	<b>.224</b>	1	.	58	1
Sacramento River/Rio Vista	Crayfish1 (Pacifastacus)	UCDavis3	1999	<b>.551</b>	1	.	37	1
Sacramento River/Rio Vista	Crayfish1 (Pacifastacus)	UCDavis3	1999	<b>.181</b>	1	.	40	1
Sacramento River/Rio Vista	Crayfish1 (Pacifastacus)	UCDavis3	1999	<b>.327</b>	1	.	40	1
Sacramento River/Rio Vista	Crayfish1 (Pacifastacus)	UCDavis3	1999	<b>.435</b>	1	.	40	1
Sacramento River/Rio Vista	Crayfish1 (Pacifastacus)	UCDavis3	1999	<b>.251</b>	1	.	43	1
Sacramento River/Rio Vista	Crayfish1 (Pacifastacus)	UCDavis3	1999	<b>.313</b>	1	.	45	1
Sacramento River/Rio Vista	Crayfish1 (Pacifastacus)	UCDavis3	1999	<b>.347</b>	1	.	47	1
Sacramento River/Rio Vista	Crayfish1 (Pacifastacus)	UCDavis3	1999	<b>.380</b>	1	.	48	1
Sacramento River/Rio Vista	Crayfish1 (Pacifastacus)	UCDavis3	1999	<b>.291</b>	1	.	49	1
Sacramento River/Rio Vista	Crayfish1 (Pacifastacus)	UCDavis3	1999	<b>.370</b>	1	.	52	1
Steamboat Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	<b>.350</b>	1	.	33	1
Steamboat Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	<b>.207</b>	1	.	35	1
Steamboat Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	<b>.264</b>	1	.	37	1
Steamboat Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	<b>.244</b>	1	.	39	1
Steamboat Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	<b>.200</b>	1	.	41	1
Steamboat Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	<b>.210</b>	1	.	42	1
Steamboat Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	<b>.266</b>	1	.	45	1
Steamboat Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	<b>.348</b>	1	.	46	1
Steamboat Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	<b>.234</b>	1	.	47	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Steamboat Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	<b>.523</b>	1	.	49	1
Steamboat Slough	Crayfish1 (Pacifastacus)	UCDavis3	1999	<b>.404</b>	1	.	51	1
Cache Slough	Crayfish2 (Procambarus)	UCDavis3	1999	<b>.044</b>	1	.	37	1
Cache Slough	Crayfish2 (Procambarus)	UCDavis3	1999	<b>.054</b>	1	.	47	1
Cache Slough	Crayfish2 (Procambarus)	UCDavis3	1999	<b>.048</b>	1	.	48	1
Cache Slough	Crayfish2 (Procambarus)	UCDavis3	1999	<b>.082</b>	1	.	50	1
Delta Meadows	Crayfish2 (Procambarus)	UCDavis3	1998	<b>.063</b>	1	.	41	1
Little Holland Tract 1	Crayfish2 (Procambarus)	UCDavis3	1998	<b>.339</b>	1	.	47	1
Miner Slough	Crayfish2 (Procambarus)	UCDavis3	1999	<b>.166</b>	1	.	37	1
Prospect Island	Crayfish2 (Procambarus)	UCDavis3	1999	<b>.080</b>	1	.	45	1
Prospect Island	Crayfish2 (Procambarus)	UCDavis3	1998	<b>.151</b>	1	.	46	1
Prospect Island	Crayfish2 (Procambarus)	UCDavis3	1999	<b>.047</b>	1	.	47	1
Prospect Island	Crayfish2 (Procambarus)	UCDavis3	1999	<b>.057</b>	1	.	56	1
Prospect Island	Crayfish2 (Procambarus)	UCDavis3	1999	<b>.083</b>	1	.	56	1
Cache Slough	Crayfish3 (Orconectes)	UCDavis3	1999	<b>.097</b>	1	.	43	1
Sacramento River at Veterans Bridge	crayfish4 (Signal)	TSMP	1991	<b>.090</b>	5	.	48	1
Sacramento River at Veterans Bridge	crayfish4 (Signal)	TSMP	1991	<b>.080</b>	5	.	49	1
Sacramento River at Veterans Bridge	crayfish4 (Signal)	TSMP	1991	<b>.090</b>	5	.	49	1
Sacramento River/Hood	crayfish4 (Signal)	TSMP	1991	<b>.050</b>	7	.	38	1
Sacramento River/Hood	crayfish4 (Signal)	TSMP	1991	<b>.070</b>	7	.	39	1
Sacramento River/Hood	crayfish4 (Signal)	TSMP	1991	<b>.070</b>	7	.	39	1
Toe Drain	Goldfish	FMP	2006	<b>.163</b>	1	.	265	1
Toe Drain	Goldfish	FMP	2006	<b>.087</b>	1	.	290	1
Toe Drain	Goldfish	FMP	2006	<b>.315</b>	1	.	367	1
Toe Drain	Goldfish	FMP	2006	<b>.488</b>	1	.	375	1
Sacramento River at Bend Bridge	Hardhead	FMP	2005	<b>.127</b>	1	.	316	1
Sacramento River at Bend Bridge	Hardhead	FMP	2005	<b>.304</b>	1	.	381	1
Sacramento River at Bend Bridge	Hardhead	FMP	2005	<b>.280</b>	1	.	389	1
Sacramento River at Bend Bridge	Hardhead	FMP	2005	<b>.545</b>	1	.	391	1
Sacramento River at Bend Bridge	Hardhead	FMP	2005	<b>.329</b>	1	.	423	1
Sacramento River at Hamilton City	Hardhead	FMP	2005	<b>.094</b>	1	.	314	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento River at Hamilton City	Hardhead	FMP	2005	<b>.184</b>	1	.	342	1
Sacramento River at Hamilton City	Hardhead	FMP	2005	<b>.259</b>	1	.	345	1
Sacramento River at Hamilton City	Hardhead	FMP	2005	<b>.172</b>	1	.	385	1
Sacramento River at Hamilton City	Hardhead	FMP	2005	<b>.810</b>	1	.	385	1
Sacramento River near Hamilton	Hardhead	FMP	2006	<b>.114</b>	1	.	356	1
Sacramento River near Hamilton	Hardhead	FMP	2006	<b>.164</b>	1	.	390	1
Sacramento River near Hamilton	Hardhead	FMP	2006	<b>.496</b>	1	.	397	1
Sacramento River near Hamilton	Hardhead	FMP	2006	<b>.553</b>	1	.	423	1
Sacramento River near Hamilton	Hardhead	FMP	2006	<b>.160</b>	1	.	444	1
Sacramento River near Hamilton	Hardhead	TSMP	1981	<b>.130</b>	5	334	334	1
Prospect Slough/Liberty Island	Hitch	FMP	2005	<b>.113</b>	1	.	260	1
Prospect Slough/Liberty Island	Hitch	FMP	2005	<b>.046</b>	1	.	306	1
Sacramento River/Rio Vista	Hitch	FMP	2005	<b>.261</b>	1	.	355	1
Sacramento River/Rio Vista	Hitch	FMP	2005	<b>.329</b>	1	.	364	1
Sacramento River/Rio Vista	Hitch	FMP	2005	<b>.364</b>	1	.	375	1
Sacramento River/Rio Vista	Hitch	FMP	2005	<b>.333</b>	1	.	385	1
Sacramento River/Rio Vista	Hitch	FMP	2005	<b>.336</b>	1	.	387	1
Beach Lake	Largemouth Bass	TSMP	1987	<b>.480</b>	6	354	372	1
Beach Lake	Largemouth Bass	TSMP	1985	<b>.580</b>	6	369	388	1
Beach Lake	Largemouth Bass	TSMP	1985	<b>.510</b>	6	382	401	1
Beach Lake	Largemouth Bass	TSMP	1986	<b>.650</b>	6	415	436	1
Big Chico Creek near mouth	Largemouth Bass	SRWP	2000	<b>.331</b>	5	.	359	1
Butte Creek at Colusa Highway	Largemouth Bass	FMP	2006	<b>.685</b>	1	.	337	1
Butte Creek at Colusa Highway	Largemouth Bass	FMP	2006	<b>.479</b>	1	.	344	1
Butte Creek at Colusa Highway	Largemouth Bass	FMP	2006	<b>.301</b>	1	.	350	1
Butte Creek at Colusa Highway	Largemouth Bass	FMP	2006	<b>.402</b>	1	.	352	1
Butte Creek at Colusa Highway	Largemouth Bass	FMP	2006	<b>.505</b>	1	.	354	1
Butte Creek at Colusa Highway	Largemouth Bass	FMP	2006	<b>.449</b>	1	.	356	1
Butte Creek at Colusa Highway	Largemouth Bass	FMP	2006	<b>.284</b>	1	.	386	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Butte Creek at Colusa Highway	Largemouth Bass	FMP	2006	<b>.681</b>	1	.	389	1
Butte Creek at Colusa Highway	Largemouth Bass	FMP	2006	<b>.947</b>	1	.	400	1
Butte Creek at Colusa Highway	Largemouth Bass	FMP	2006	<b>.598</b>	1	.	413	1
Butte Creek at Colusa Highway	Largemouth Bass	FMP	2006	<b>.554</b>	1	.	420	1
Butte Creek at Colusa Highway	Largemouth Bass	FMP	2006	<b>.731</b>	1	.	470	1
Cache Slough near Ryer Island Ferry	Largemouth Bass	SRWP	2000	<b>.393</b>	1	.	270	0
Cache Slough near Ryer Island Ferry	Largemouth Bass	SRWP	2000	<b>.308</b>	1	.	290	0
Cache Slough near Ryer Island Ferry	Largemouth Bass	SRWP	2000	<b>.819</b>	1	.	319	1
Cache Slough near Ryer Island Ferry	Largemouth Bass	SRWP	2000	<b>.528</b>	1	.	340	1
Cache Slough near Ryer Island Ferry	Largemouth Bass	SRWP	1999	<b>.747</b>	1	.	340	1
Cache Slough near Ryer Island Ferry	Largemouth Bass	SRWP	1999	<b>.872</b>	1	.	340	1
Cache Slough near Ryer Island Ferry	Largemouth Bass	SRWP	2000	<b>.314</b>	1	.	348	1
Cache Slough near Ryer Island Ferry	Largemouth Bass	SRWP	2000	<b>.494</b>	1	.	348	1
Cache Slough near Ryer Island Ferry	Largemouth Bass	SRWP	2000	<b>.592</b>	1	.	365	1
Cache Slough near Ryer Island Ferry	Largemouth Bass	SRWP	1998	<b>.723</b>	5	.	367	1
Cache Slough near Ryer Island Ferry	Largemouth Bass	SRWP	1999	<b>1.180</b>	1	.	380	1
Cache Slough near Ryer Island Ferry	Largemouth Bass	SRWP	2000	<b>.485</b>	1	.	382	1
Cache Slough near Ryer Island Ferry	Largemouth Bass	SRWP	1999	<b>.877</b>	1	.	385	1
Cache Slough near Ryer Island Ferry	Largemouth Bass	SRWP	2000	<b>.604</b>	1	.	388	1
Cache Slough near Ryer Island Ferry	Largemouth Bass	SRWP	2000	<b>1.137</b>	1	.	400	1
Cache Slough near Ryer Island Ferry	Largemouth Bass	SRWP	1999	<b>.898</b>	1	.	429	1
Cache Slough near Ryer Island Ferry	Largemouth Bass	SRWP	2000	<b>1.267</b>	1	.	560	1
Cross Canal	Largemouth Bass	FMP	2006	<b>.303</b>	1	.	307	1
Cross Canal	Largemouth Bass	FMP	2006	<b>.298</b>	1	.	314	1
Cross Canal	Largemouth Bass	FMP	2006	<b>.444</b>	1	.	322	1
Cross Canal	Largemouth Bass	FMP	2006	<b>.325</b>	1	.	351	1
Cross Canal	Largemouth Bass	FMP	2006	<b>.418</b>	1	.	365	1
Cross Canal	Largemouth Bass	FMP	2006	<b>.443</b>	1	.	381	1
Cross Canal	Largemouth Bass	FMP	2006	<b>.428</b>	1	.	410	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Cross Canal	Largemouth Bass	FMP	2006	<b>.557</b>	1	.	412	1
Cross Canal	Largemouth Bass	FMP	2006	<b>.546</b>	1	.	421	1
Cross Canal	Largemouth Bass	FMP	2006	<b>.524</b>	1	.	435	1
Cross Canal	Largemouth Bass	FMP	2006	<b>.635</b>	1	.	445	1
Cross Canal	Largemouth Bass	FMP	2006	<b>.711</b>	1	.	535	1
Cross Canal	Largemouth Bass	TSMP	1990	<b>.400</b>	6	365	383	1
Cross Canal	Largemouth Bass	TSMP	1987	<b>1.100</b>	2	446	468	1
Georgiana Slough	Largemouth Bass	FMP	2006	<b>.317</b>	1	.	231	0
Georgiana Slough	Largemouth Bass	FMP	2006	<b>.400</b>	1	.	307	1
Georgiana Slough	Largemouth Bass	FMP	2006	<b>.315</b>	1	.	310	1
Georgiana Slough	Largemouth Bass	FMP	2006	<b>.772</b>	1	.	425	1
Green's Lake	Largemouth Bass	CalFed	2000	<b>.596</b>	1	.	365	1
Prospect Slough/Liberty Island	Largemouth Bass	FMP	2005	<b>.170</b>	1	.	261	0
Prospect Slough/Liberty Island	Largemouth Bass	FMP	2005	<b>.185</b>	1	.	303	0
Prospect Slough/Liberty Island	Largemouth Bass	FMP	2005	<b>.291</b>	1	.	315	1
Prospect Slough/Liberty Island	Largemouth Bass	FMP	2005	<b>.332</b>	1	.	315	1
Prospect Slough/Liberty Island	Largemouth Bass	FMP	2005	<b>.337</b>	1	.	322	1
Prospect Slough/Liberty Island	Largemouth Bass	FMP	2005	<b>.403</b>	1	.	333	1
Prospect Slough/Liberty Island	Largemouth Bass	FMP	2005	<b>.265</b>	1	.	355	1
Prospect Slough/Liberty Island	Largemouth Bass	FMP	2005	<b>.334</b>	1	.	368	1
Prospect Slough/Liberty Island	Largemouth Bass	TSMP	2001	<b>.688</b>	5	373	392	1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Largemouth Bass	FMP	2006	<b>.975</b>	1	.	376	1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Largemouth Bass	FMP	2006	<b>.814</b>	1	.	394	1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Largemouth Bass	FMP	2006	<b>.865</b>	1	.	428	1
Sacramento River at Butte City	Largemouth Bass	FMP	2005	<b>.127</b>	1	.	176	0

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento River at Butte City	Largemouth Bass	FMP	2005	<b>.140</b>	1	.	200	0
Sacramento River at Butte City	Largemouth Bass	FMP	2005	<b>.158</b>	1	.	209	0
Sacramento River at Butte City	Largemouth Bass	FMP	2005	<b>.318</b>	1	.	296	0
Sacramento River at Butte City	Largemouth Bass	FMP	2005	<b>.747</b>	1	.	320	1
Sacramento River at Butte City	Largemouth Bass	FMP	2005	<b>.413</b>	1	.	353	1
Sacramento River at Butte City	Largemouth Bass	FMP	2005	<b>.733</b>	1	.	362	1
Sacramento River at Butte City	Largemouth Bass	FMP	2005	<b>.626</b>	1	.	380	1
Sacramento River at Butte City	Largemouth Bass	FMP	2005	<b>.689</b>	1	.	382	1
Sacramento River at Butte City	Largemouth Bass	FMP	2005	<b>.577</b>	1	.	390	1
Sacramento River at Colusa	Largemouth Bass	FMP	2005	<b>.241</b>	1	.	236	0
Sacramento River at Colusa	Largemouth Bass	FMP	2005	<b>.292</b>	1	.	289	0
Sacramento River at Colusa	Largemouth Bass	FMP	2005	<b>.577</b>	1	.	331	1
Sacramento River at Colusa	Largemouth Bass	FMP	2005	<b>.383</b>	1	.	346	1
Sacramento River at Colusa	Largemouth Bass	FMP	2005	<b>.599</b>	1	.	349	1
Sacramento River at Colusa	Largemouth Bass	FMP	2005	<b>.531</b>	1	.	353	1
Sacramento River at Colusa	Largemouth Bass	FMP	2005	<b>.651</b>	1	.	384	1
Sacramento River at Colusa	Largemouth Bass	FMP	2005	<b>.762</b>	1	.	424	1
Sacramento River at Colusa	Largemouth Bass	FMP	2005	<b>.754</b>	1	.	461	1
Sacramento River at Colusa	Largemouth Bass	FMP	2005	<b>.847</b>	1	.	509	1
Sacramento River at Knights Landing	Largemouth Bass	FMP	2006	<b>.206</b>	1	.	251	0
Sacramento River at Knights Landing	Largemouth Bass	FMP	2006	<b>.289</b>	1	.	307	1
Sacramento River at Knights Landing	Largemouth Bass	FMP	2006	<b>.337</b>	1	.	324	1
Sacramento River at Knights Landing	Largemouth Bass	FMP	2006	<b>.784</b>	1	.	382	1
Sacramento River at Knights Landing	Largemouth Bass	FMP	2006	<b>.447</b>	1	.	458	1
Sacramento River at Knights Landing	Largemouth Bass	TSMP	2002	<b>.763</b>	5	361	379	1
Sacramento River at Knights Landing	Largemouth Bass	TSMP	2002	<b>.604</b>	1	400	420	1
Sacramento River at RM 44	Largemouth Bass	FMP	2005	<b>.189</b>	1	.	180	0
Sacramento River at RM 44	Largemouth Bass	FMP	2005	<b>.203</b>	1	.	265	0
Sacramento River at RM 44	Largemouth Bass	FMP	2005	<b>.233</b>	1	.	293	0

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento River at RM 44	Largemouth Bass	FMP	2005	<b>.290</b>	1	.	296	0
Sacramento River at RM 44	Largemouth Bass	FMP	2005	<b>.448</b>	1	.	296	0
Sacramento River at RM 44	Largemouth Bass	FMP	2005	<b>.232</b>	1	.	316	1
Sacramento River at RM 44	Largemouth Bass	FMP	2005	<b>.577</b>	1	.	415	1
Sacramento River at RM 44	Largemouth Bass	SRWP	2000	<b>.177</b>	1	.	227	0
Sacramento River at RM 44	Largemouth Bass	SRWP	2000	<b>.342</b>	1	.	247	0
Sacramento River at RM 44	Largemouth Bass	SRWP	2000	<b>.441</b>	1	.	281	0
Sacramento River at RM 44	Largemouth Bass	SRWP	2000	<b>.454</b>	1	.	286	0
Sacramento River at RM 44	Largemouth Bass	SRWP	1999	<b>.775</b>	1	.	315	1
Sacramento River at RM 44	Largemouth Bass	SRWP	1999	<b>.867</b>	1	.	317	1
Sacramento River at RM 44	Largemouth Bass	SRWP	2000	<b>.918</b>	1	.	327	1
Sacramento River at RM 44	Largemouth Bass	SRWP	1998	<b>.895</b>	5	.	334	1
Sacramento River at RM 44	Largemouth Bass	SRWP	1999	<b>.524</b>	1	.	341	1
Sacramento River at RM 44	Largemouth Bass	SRWP	1999	<b>1.050</b>	1	.	341	1
Sacramento River at RM 44	Largemouth Bass	SRWP	2000	<b>.699</b>	1	.	343	1
Sacramento River at RM 44	Largemouth Bass	SRWP	1998	<b>.748</b>	5	.	345	1
Sacramento River at RM 44	Largemouth Bass	SRWP	2000	<b>.889</b>	1	.	345	1
Sacramento River at RM 44	Largemouth Bass	SRWP	2003	<b>.680</b>	5	.	347	1
Sacramento River at RM 44	Largemouth Bass	SRWP	2000	<b>.862</b>	1	.	350	1
Sacramento River at RM 44	Largemouth Bass	SRWP	1999	<b>1.350</b>	1	.	350	1
Sacramento River at RM 44	Largemouth Bass	SRWP	1999	<b>.750</b>	1	.	355	1
Sacramento River at RM 44	Largemouth Bass	SRWP	2000	<b>.742</b>	1	.	356	1
Sacramento River at RM 44	Largemouth Bass	SRWP	1999	<b>.883</b>	1	.	358	1
Sacramento River at RM 44	Largemouth Bass	SRWP	2000	<b>.858</b>	1	.	359	1
Sacramento River at RM 44	Largemouth Bass	SRWP	2000	<b>1.109</b>	1	.	359	1
Sacramento River at RM 44	Largemouth Bass	SRWP	2000	<b>1.064</b>	1	.	376	1
Sacramento River at RM 44	Largemouth Bass	SRWP	1999	<b>1.010</b>	1	.	379	1
Sacramento River at RM 44	Largemouth Bass	SRWP	1999	<b>1.370</b>	1	.	381	1
Sacramento River at RM 44	Largemouth Bass	SRWP	1999	<b>1.340</b>	1	.	385	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento River at RM 44	Largemouth Bass	SRWP	2000	<b>1.256</b>	1	.	386	1
Sacramento River at RM 44	Largemouth Bass	SRWP	2000	<b>1.084</b>	1	.	392	1
Sacramento River at RM 44	Largemouth Bass	SRWP	2002	<b>.887</b>	5	.	392	1
Sacramento River at RM 44	Largemouth Bass	SRWP	2002	<b>.928</b>	5	.	393	1
Sacramento River at RM 44	Largemouth Bass	SRWP	2003	<b>1.368</b>	5	.	408	1
Sacramento River at Veterans Bridge	Largemouth Bass	FMP	2005	<b>.207</b>	1	.	200	0
Sacramento River at Veterans Bridge	Largemouth Bass	FMP	2005	<b>.224</b>	1	.	202	0
Sacramento River at Veterans Bridge	Largemouth Bass	FMP	2005	<b>.267</b>	1	.	241	0
Sacramento River at Veterans Bridge	Largemouth Bass	FMP	2005	<b>.244</b>	1	.	281	0
Sacramento River at Veterans Bridge	Largemouth Bass	FMP	2005	<b>.417</b>	1	.	302	0
Sacramento River at Veterans Bridge	Largemouth Bass	FMP	2005	<b>.423</b>	1	.	322	1
Sacramento River at Veterans Bridge	Largemouth Bass	FMP	2005	<b>.410</b>	1	.	345	1
Sacramento River at Veterans Bridge	Largemouth Bass	FMP	2005	<b>.652</b>	1	.	368	1
Sacramento River at Veterans Bridge	Largemouth Bass	FMP	2005	<b>1.069</b>	1	.	382	1
Sacramento River at Veterans Bridge	Largemouth Bass	FMP	2005	<b>1.534</b>	1	.	386	1
Sacramento River at Veterans Bridge	Largemouth Bass	SRWP	1998	<b>.818</b>	5	.	335	1
Sacramento River at Veterans Bridge	Largemouth Bass	SRWP	2000	<b>.958</b>	5	.	371	1
Sacramento River near Isleton	Largemouth Bass	CalFed	2000	<b>.143</b>	1	.	226	0
Sacramento River near Isleton	Largemouth Bass	CalFed	2000	<b>.413</b>	1	.	245	0
Sacramento River near Isleton	Largemouth Bass	CalFed	2000	<b>.318</b>	1	.	254	0
Sacramento River near Isleton	Largemouth Bass	CalFed	2000	<b>.434</b>	1	.	303	0
Sacramento River near Isleton	Largemouth Bass	CalFed	2000	<b>.330</b>	1	.	325	1
Sacramento River near Isleton	Largemouth Bass	CalFed	2000	<b>.331</b>	1	.	341	1
Sacramento River near Isleton	Largemouth Bass	CalFed	2000	<b>.833</b>	1	.	342	1
Sacramento River near Isleton	Largemouth Bass	CalFed	2000	<b>.979</b>	1	.	345	1
Sacramento River near Isleton	Largemouth Bass	CalFed	2000	<b>1.012</b>	1	.	372	1
Sacramento River near Isleton	Largemouth Bass	CalFed	2000	<b>.955</b>	1	.	385	1
Sacramento River near Verona	Largemouth Bass	FMP	2006	<b>.433</b>	1	.	285	0
Sacramento River near Verona	Largemouth Bass	FMP	2006	<b>.344</b>	1	.	310	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento River/Hood	Largemouth Bass	TSMP	1987	<b>.280</b>	3	280	294	0
Sacramento River/Hood	Largemouth Bass	TSMP	1988	<b>.390</b>	6	343	360	1
Sacramento River/Hood	Largemouth Bass	TSMP	1998	<b>.779</b>	1	357	375	1
Sacramento River/Rio Vista	Largemouth Bass	FMP	2005	<b>.226</b>	1	.	226	0
Sacramento River/Rio Vista	Largemouth Bass	FMP	2005	<b>.233</b>	1	.	238	0
Sacramento River/Rio Vista	Largemouth Bass	FMP	2005	<b>.191</b>	1	.	240	0
Sacramento River/Rio Vista	Largemouth Bass	FMP	2005	<b>.290</b>	1	.	270	0
Sacramento River/Rio Vista	Largemouth Bass	FMP	2005	<b>.329</b>	1	.	280	0
Sacramento River/Rio Vista	Largemouth Bass	FMP	2005	<b>.395</b>	1	.	281	0
Sacramento River/Rio Vista	Largemouth Bass	FMP	2005	<b>.242</b>	1	.	290	0
Sacramento River/Rio Vista	Largemouth Bass	FMP	2005	<b>.319</b>	1	.	309	1
Sacramento River/Rio Vista	Largemouth Bass	FMP	2005	<b>.222</b>	1	.	315	1
Sacramento River/Rio Vista	Largemouth Bass	FMP	2005	<b>.307</b>	1	.	331	1
Sacramento River/Rio Vista	Largemouth Bass	FMP	2005	<b>.246</b>	1	.	340	1
Sacramento River/Rio Vista	Largemouth Bass	FMP	2005	<b>.382</b>	1	.	340	1
Sacramento River/Rio Vista	Largemouth Bass	FMP	2005	<b>.512</b>	1	.	340	1
Sacramento River/Rio Vista	Largemouth Bass	FMP	2005	<b>.575</b>	1	.	350	1
Sacramento River/Rio Vista	Largemouth Bass	FMP	2005	<b>1.087</b>	1	.	401	1
Sacramento River/Rio Vista	Largemouth Bass	FMP	2005	<b>1.285</b>	1	.	430	1
Sacramento River/Rio Vista	Largemouth Bass	FMP	2005	<b>.871</b>	1	.	475	1
Sacramento Slough	Largemouth Bass	FMP	2005	<b>.279</b>	1	.	239	0
Sacramento Slough	Largemouth Bass	FMP	2005	<b>.245</b>	1	.	247	0
Sacramento Slough	Largemouth Bass	FMP	2005	<b>.201</b>	1	.	256	0
Sacramento Slough	Largemouth Bass	FMP	2005	<b>.198</b>	1	.	279	0
Sacramento Slough	Largemouth Bass	FMP	2005	<b>.293</b>	1	.	319	1
Sacramento Slough	Largemouth Bass	FMP	2005	<b>.259</b>	1	.	352	1
Sacramento Slough	Largemouth Bass	FMP	2005	<b>.392</b>	1	.	358	1
Sacramento Slough	Largemouth Bass	FMP	2005	<b>.337</b>	1	.	363	1
Sacramento Slough	Largemouth Bass	FMP	2005	<b>.857</b>	1	.	466	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento Slough	Largemouth Bass	FMP	2005	<b>.895</b>	1	.	484	1
Sacramento Slough	Largemouth Bass	SRWP	2000	<b>.492</b>	5	.	355	1
Sacramento Slough	Largemouth Bass	SRWP	1999	<b>.442</b>	5	.	381	1
Sacramento Slough	Largemouth Bass	SRWP	1998	<b>.506</b>	5	.	381	1
Snodgrass Slough near Delta Meadows	Largemouth Bass	FMP	2006	<b>.362</b>	1	.	266	0
Snodgrass Slough near Delta Meadows	Largemouth Bass	FMP	2006	<b>.518</b>	1	.	299	0
Snodgrass Slough near Delta Meadows	Largemouth Bass	FMP	2006	<b>.360</b>	1	.	315	1
Snodgrass Slough near Delta Meadows	Largemouth Bass	FMP	2006	<b>.328</b>	1	.	317	1
Snodgrass Slough near Delta Meadows	Largemouth Bass	FMP	2006	<b>.345</b>	1	.	324	1
Snodgrass Slough near Delta Meadows	Largemouth Bass	FMP	2006	<b>.403</b>	1	.	335	1
Snodgrass Slough near Delta Meadows	Largemouth Bass	FMP	2006	<b>.434</b>	1	.	369	1
Snodgrass Slough near Delta Meadows	Largemouth Bass	FMP	2006	<b>.496</b>	1	.	381	1
Snodgrass Slough near Delta Meadows	Largemouth Bass	FMP	2006	<b>.549</b>	1	.	390	1
Snodgrass Slough near Delta Meadows	Largemouth Bass	FMP	2006	<b>.528</b>	1	.	400	1
Snodgrass Slough near Delta Meadows	Largemouth Bass	FMP	2006	<b>.390</b>	1	.	410	1
Snodgrass Slough near Delta Meadows	Largemouth Bass	FMP	2006	<b>.588</b>	1	.	420	1
Steamboat Slough	Largemouth Bass	FMP	2006	<b>.305</b>	1	.	288	0
Steamboat Slough	Largemouth Bass	FMP	2006	<b>.475</b>	1	.	296	0
Steamboat Slough	Largemouth Bass	FMP	2006	<b>.340</b>	1	.	307	1
Steamboat Slough	Largemouth Bass	FMP	2006	<b>.365</b>	1	.	307	1
Steamboat Slough	Largemouth Bass	FMP	2006	<b>.375</b>	1	.	307	1
Steamboat Slough	Largemouth Bass	FMP	2006	<b>.399</b>	1	.	319	1
Steamboat Slough	Largemouth Bass	FMP	2006	<b>.342</b>	1	.	323	1
Steamboat Slough	Largemouth Bass	FMP	2006	<b>.366</b>	1	.	336	1
Steamboat Slough	Largemouth Bass	FMP	2006	<b>.822</b>	1	.	347	1
Steamboat Slough	Largemouth Bass	FMP	2006	<b>.867</b>	1	.	355	1
Steamboat Slough	Largemouth Bass	FMP	2006	<b>.916</b>	1	.	415	1
Steamboat Slough	Largemouth Bass	FMP	2006	<b>1.230</b>	1	.	430	1
Steamboat Slough	Largemouth Bass	FMP	2006	<b>.751</b>	1	.	472	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sutter Bypass below Kirkville Road	Largemouth Bass	FMP	2006	<b>.191</b>	1	.	273	0
Sutter Bypass below Kirkville Road	Largemouth Bass	FMP	2006	<b>.216</b>	1	.	280	0
Sutter Bypass below Kirkville Road	Largemouth Bass	FMP	2006	<b>.301</b>	1	.	285	0
Sutter Bypass below Kirkville Road	Largemouth Bass	FMP	2006	<b>.353</b>	1	.	290	0
Sutter Bypass below Kirkville Road	Largemouth Bass	FMP	2006	<b>.352</b>	1	.	350	1
Sutter Bypass below Kirkville Road	Largemouth Bass	FMP	2006	<b>.380</b>	1	.	363	1
Sutter Bypass below Kirkville Road	Largemouth Bass	FMP	2006	<b>.402</b>	1	.	378	1
Sutter Bypass below Kirkville Road	Largemouth Bass	FMP	2006	<b>.627</b>	1	.	420	1
Sutter Bypass below Kirkville Road	Largemouth Bass	FMP	2006	<b>.712</b>	1	.	468	1
Toe Drain	Largemouth Bass	FMP	2006	<b>.154</b>	1	.	213	0
Toe Drain	Largemouth Bass	FMP	2006	<b>.142</b>	1	.	260	0
Toe Drain	Largemouth Bass	FMP	2006	<b>.176</b>	1	.	270	0
Toe Drain	Largemouth Bass	FMP	2006	<b>.223</b>	1	.	279	0
Toe Drain	Largemouth Bass	FMP	2006	<b>.371</b>	1	.	282	0
Toe Drain	Largemouth Bass	FMP	2006	<b>.126</b>	1	.	285	0
Toe Drain	Largemouth Bass	FMP	2006	<b>.315</b>	1	.	308	1
Toe Drain	Largemouth Bass	FMP	2006	<b>.221</b>	1	.	311	1
Toe Drain	Largemouth Bass	FMP	2006	<b>.269</b>	1	.	317	1
Toe Drain	Largemouth Bass	FMP	2006	<b>.607</b>	1	.	324	1
Toe Drain	Largemouth Bass	FMP	2006	<b>.338</b>	1	.	332	1
Toe Drain	Largemouth Bass	FMP	2006	<b>.537</b>	1	.	342	1
Toe Drain	Largemouth Bass	FMP	2006	<b>.317</b>	1	.	354	1
Toe Drain	Largemouth Bass	FMP	2006	<b>.588</b>	1	.	367	1
Toe Drain	Largemouth Bass	FMP	2006	<b>.570</b>	1	.	399	1
Toe Drain	Largemouth Bass	FMP	2006	<b>.449</b>	1	.	402	1
Toe Drain	Largemouth Bass	FMP	2006	<b>1.020</b>	1	.	467	1
Sacramento River at Bend Bridge	Rainbow Trout	FMP	2005	<b>.011</b>	1	.	160	0
Sacramento River at Bend Bridge	Rainbow Trout	FMP	2005	<b>.015</b>	1	.	178	0
Sacramento River at Bend Bridge	Rainbow Trout	FMP	2005	<b>.020</b>	1	.	180	0

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento River at Bend Bridge	Rainbow Trout	FMP	2005	<b>.013</b>	1	.	192	0
Sacramento River at Bend Bridge	Rainbow Trout	FMP	2005	<b>.018</b>	1	.	200	1
Sacramento River at Bend Bridge	Rainbow Trout	FMP	2005	<b>.014</b>	1	.	255	1
Sacramento River at Bend Bridge	Rainbow Trout	FMP	2005	<b>.027</b>	1	.	302	1
Sacramento River at Bend Bridge	Rainbow Trout	FMP	2005	<b>.024</b>	1	.	333	1
Sacramento River at Bend Bridge	Rainbow Trout	FMP	2005	<b>.066</b>	1	.	350	1
Sacramento River at Bend Bridge	Rainbow Trout	FMP	2005	<b>.037</b>	1	.	369	1
Sacramento River at Bend Bridge	Rainbow Trout	FMP	2005	<b>.031</b>	1	.	382	1
Sacramento River at Bend Bridge	Rainbow Trout	FMP	2005	<b>.049</b>	1	.	391	1
Sacramento River at Bend Bridge near Red Bluff	Rainbow Trout	FMP	2006	<b>.022</b>	1	.	209	1
Sacramento River at Bend Bridge near Red Bluff	Rainbow Trout	FMP	2006	<b>.042</b>	1	.	219	1
Sacramento River at Bend Bridge near Red Bluff	Rainbow Trout	FMP	2006	<b>.033</b>	1	.	271	1
Sacramento River at Bend Bridge near Red Bluff	Rainbow Trout	FMP	2006	<b>.027</b>	1	.	282	1
Sacramento River at Bend Bridge near Red Bluff	Rainbow Trout	FMP	2006	<b>.030</b>	1	.	324	1
Sacramento River at Bend Bridge near Red Bluff	Rainbow Trout	FMP	2006	<b>.039</b>	1	.	336	1
Sacramento River at Bend Bridge near Red Bluff	Rainbow Trout	FMP	2006	<b>.035</b>	1	.	341	1
Sacramento River at Bend Bridge near Red Bluff	Rainbow Trout	FMP	2006	<b>.043</b>	1	.	344	1
Sacramento River at Bend Bridge near Red Bluff	Rainbow Trout	FMP	2006	<b>.026</b>	1	.	359	1
Sacramento River at Bend Bridge near Red Bluff	Rainbow Trout	FMP	2006	<b>.053</b>	1	.	360	1
Sacramento River at Bend Bridge near Red Bluff	Rainbow Trout	FMP	2006	<b>.063</b>	1	.	364	1
Sacramento River at Bend Bridge near Red Bluff	Rainbow Trout	FMP	2006	<b>.064</b>	1	.	372	1
Sacramento River at Bend Bridge near Red Bluff	Rainbow Trout	SRWP	1998	<b>.032</b>	5	.	313	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento River at Bend Bridge near Red Bluff	Rainbow Trout	SRWP	2000	<b>.043</b>	5	.	350	1
Sacramento River at Hamilton City	Rainbow Trout	FMP	2005	<b>.014</b>	1	.	255	1
Sacramento River at Hamilton City	Rainbow Trout	FMP	2005	<b>.039</b>	1	.	351	1
Sacramento River below Keswick	Rainbow Trout	SRWP	2001	<b>.002</b>	5	.	321	1
Sacramento River below Keswick	Rainbow Trout	SRWP	1998	<b>.032</b>	5	.	366	1
Sacramento River below Keswick	Rainbow Trout	SRWP	1998	<b>.036</b>	5	.	399	1
Sacramento River below Keswick	Rainbow Trout	SRWP	2000	<b>.035</b>	4	.	422	1
Sacramento River near Deschutes Rd	Rainbow Trout	FMP	2006	<b>.044</b>	1	.	259	1
Sacramento River near Deschutes Rd	Rainbow Trout	FMP	2006	<b>.027</b>	1	.	261	1
Sacramento River near Deschutes Rd	Rainbow Trout	FMP	2006	<b>.033</b>	1	.	261	1
Sacramento River near Deschutes Rd	Rainbow Trout	FMP	2006	<b>.027</b>	1	.	266	1
Sacramento River near Deschutes Rd	Rainbow Trout	FMP	2006	<b>.030</b>	1	.	280	1
Sacramento River near Deschutes Rd	Rainbow Trout	FMP	2006	<b>.042</b>	1	.	291	1
Sacramento River near Deschutes Rd	Rainbow Trout	FMP	2006	<b>.069</b>	1	.	296	1
Sacramento River near Deschutes Rd	Rainbow Trout	FMP	2006	<b>.025</b>	1	.	299	1
Sacramento River near Deschutes Rd	Rainbow Trout	FMP	2006	<b>.038</b>	1	.	314	1
Sacramento River near Deschutes Rd	Rainbow Trout	FMP	2006	<b>.046</b>	1	.	324	1
Sacramento River near Deschutes Rd	Rainbow Trout	FMP	2006	<b>.035</b>	1	.	341	1
Sacramento River near Deschutes Rd	Rainbow Trout	FMP	2006	<b>.056</b>	1	.	346	1
Sacramento River/d/s Shasta Dam	Rainbow Trout	TSMP	1985	<b>.020</b>	6	418	429	1
Sacramento River/Keswick	Rainbow Trout	TSMP	1982	<b>.060</b>	5	278	285	1
Sacramento River/Keswick	Rainbow Trout	TSMP	1980	<b>.050</b>	5	291	298	1
Sacramento River/Keswick	Rainbow Trout	TSMP	1981	<b>.030</b>	6	293	300	1
Sacramento River/Keswick	Rainbow Trout	TSMP	1993	<b>.030</b>	6	295	302	1
Sacramento River/Keswick	Rainbow Trout	TSMP	1990	<b>.080</b>	6	312	320	1
Sacramento River/Keswick	Rainbow Trout	TSMP	1983	<b>.080</b>	6	338	347	1
Sacramento River/Keswick	Rainbow Trout	TSMP	1988	<b>.040</b>	6	343	352	1
Sacramento River/Keswick	Rainbow Trout	TSMP	1996	<b>.020</b>	6	346	355	1
Sacramento River/Keswick	Rainbow Trout	TSMP	1984	<b>.010</b>	6	356	365	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento River/Keswick	Rainbow Trout	TSMP	1997	<b>.017</b>	6	361	370	1
Sacramento River/Keswick	Rainbow Trout	TSMP	1998	<b>.048</b>	6	361	370	1
Sacramento River/Keswick	Rainbow Trout	TSMP	1989	<b>.060</b>	6	361	370	1
Sacramento River/Keswick	Rainbow Trout	TSMP	1986	<b>.060</b>	6	363	372	1
Sacramento River/Keswick	Rainbow Trout	TSMP	1987	<b>.010</b>	6	386	396	1
Sacramento River/Keswick	Rainbow Trout	TSMP	1992	<b>.050</b>	6	389	399	1
Sacramento River/Keswick	Rainbow Trout	TSMP	2002	<b>.062</b>	6	402	412	1
Sacramento River/Keswick	Rainbow Trout	TSMP	1985	<b>.010</b>	6	424	435	1
Sacramento River/Keswick	Rainbow Trout	TSMP	1999	<b>.045</b>	6	438	449	1
Butte Creek at Colusa Highway	Redear Sunfish	FMP	2006	<b>.214</b>	1	.	130	1
Butte Creek at Colusa Highway	Redear Sunfish	FMP	2006	<b>.092</b>	1	.	142	1
Butte Creek at Colusa Highway	Redear Sunfish	FMP	2006	<b>.278</b>	1	.	166	1
Butte Creek at Colusa Highway	Redear Sunfish	FMP	2006	<b>.231</b>	1	.	190	1
Cross Canal	Redear Sunfish	FMP	2006	<b>.109</b>	1	.	140	1
Cross Canal	Redear Sunfish	FMP	2006	<b>.087</b>	1	.	148	1
Cross Canal	Redear Sunfish	FMP	2006	<b>.104</b>	1	.	153	1
Cross Canal	Redear Sunfish	FMP	2006	<b>.243</b>	1	.	169	1
Cross Canal	Redear Sunfish	FMP	2006	<b>.198</b>	1	.	191	1
Cross Canal	Redear Sunfish	TSMP	1988	<b>.160</b>	6	171	175	1
Georgiana Slough	Redear Sunfish	FMP	2006	<b>.092</b>	1	.	178	1
Georgiana Slough	Redear Sunfish	FMP	2006	<b>.063</b>	1	.	180	1
Georgiana Slough	Redear Sunfish	FMP	2006	<b>.109</b>	1	.	193	1
Georgiana Slough	Redear Sunfish	FMP	2006	<b>.492</b>	1	.	205	1
Georgiana Slough	Redear Sunfish	FMP	2006	<b>.156</b>	1	.	214	1
Prospect Slough/Liberty Island	Redear Sunfish	FMP	2005	<b>.208</b>	1	.	215	1
Prospect Slough/Liberty Island	Redear Sunfish	FMP	2005	<b>.253</b>	1	.	225	1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Redear Sunfish	FMP	2006	<b>.085</b>	1	.	149	1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Redear Sunfish	FMP	2006	<b>.159</b>	1	.	165	1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Redear Sunfish	FMP	2006	<b>.065</b>	1	.	170	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Redear Sunfish	FMP	2006	<b>.131</b>	1	.	177	1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Redear Sunfish	FMP	2006	<b>.100</b>	1	.	192	1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Redear Sunfish	FMP	2006	<b>.112</b>	1	.	192	1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Redear Sunfish	FMP	2006	<b>.229</b>	1	.	201	1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Redear Sunfish	FMP	2006	<b>.074</b>	1	.	221	1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Redear Sunfish	FMP	2006	<b>.221</b>	1	.	233	1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Redear Sunfish	FMP	2006	<b>.208</b>	1	.	236	1
Sacramento River at Colusa	Redear Sunfish	FMP	2005	<b>.104</b>	1	.	146	1
Sacramento River at Colusa	Redear Sunfish	FMP	2005	<b>.106</b>	1	.	156	1
Sacramento River at Colusa	Redear Sunfish	FMP	2005	<b>.186</b>	1	.	181	1
Sacramento River at Colusa	Redear Sunfish	FMP	2005	<b>.113</b>	1	.	182	1
Sacramento River at Colusa	Redear Sunfish	FMP	2005	<b>.204</b>	1	.	184	1
Sacramento River at Colusa	Redear Sunfish	FMP	2005	<b>.211</b>	1	.	198	1
Sacramento River at Colusa	Redear Sunfish	FMP	2005	<b>.085</b>	1	.	201	1
Sacramento River at Grimes	Redear Sunfish	FMP	2005	<b>.040</b>	1	.	161	1
Sacramento River at Grimes	Redear Sunfish	FMP	2005	<b>.085</b>	1	.	162	1
Sacramento River at Grimes	Redear Sunfish	FMP	2005	<b>.100</b>	1	.	166	1
Sacramento River at Grimes	Redear Sunfish	FMP	2005	<b>.057</b>	1	.	196	1
Sacramento River at Grimes	Redear Sunfish	FMP	2005	<b>.204</b>	1	.	209	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento River at Grimes	Redear Sunfish	FMP	2005	<b>.223</b>	1	.	225	1
Sacramento River at Knights Landing	Redear Sunfish	FMP	2006	<b>.087</b>	1	.	160	1
Sacramento River at Knights Landing	Redear Sunfish	FMP	2006	<b>.080</b>	1	.	165	1
Sacramento River at Knights Landing	Redear Sunfish	FMP	2006	<b>.195</b>	1	.	174	1
Sacramento River at Knights Landing	Redear Sunfish	FMP	2006	<b>.100</b>	1	.	191	1
Sacramento River at Knights Landing	Redear Sunfish	FMP	2006	<b>.101</b>	1	.	214	1
Sacramento River at RM 44	Redear Sunfish	FMP	2005	<b>.055</b>	1	.	172	1
Sacramento River at RM 44	Redear Sunfish	FMP	2005	<b>.058</b>	1	.	179	1
Sacramento River at RM 44	Redear Sunfish	FMP	2005	<b>.104</b>	1	.	186	1
Sacramento River at RM 44	Redear Sunfish	FMP	2005	<b>.072</b>	1	.	191	1
Sacramento River at RM 44	Redear Sunfish	FMP	2005	<b>.128</b>	1	.	210	1
Sacramento River at Veterans Bridge	Redear Sunfish	FMP	2005	<b>.042</b>	1	.	167	1
Sacramento River at Veterans Bridge	Redear Sunfish	FMP	2005	<b>.042</b>	1	.	171	1
Sacramento River at Veterans Bridge	Redear Sunfish	FMP	2005	<b>.077</b>	1	.	175	1
Sacramento River at Veterans Bridge	Redear Sunfish	FMP	2005	<b>.073</b>	1	.	187	1
Sacramento River at Veterans Bridge	Redear Sunfish	FMP	2005	<b>.061</b>	1	.	210	1
Sacramento River near Verona	Redear Sunfish	FMP	2006	<b>.074</b>	1	.	151	1
Sacramento River near Verona	Redear Sunfish	FMP	2006	<b>.085</b>	1	.	156	1
Sacramento River near Verona	Redear Sunfish	FMP	2006	<b>.231</b>	1	.	157	1
Sacramento River near Verona	Redear Sunfish	FMP	2006	<b>.103</b>	1	.	170	1
Sacramento River near Verona	Redear Sunfish	FMP	2006	<b>.173</b>	1	.	184	1
Sacramento River/Rio Vista	Redear Sunfish	FMP	2005	<b>.079</b>	1	.	162	1
Sacramento River/Rio Vista	Redear Sunfish	FMP	2005	<b>.058</b>	1	.	172	1
Sacramento River/Rio Vista	Redear Sunfish	FMP	2005	<b>.085</b>	1	.	172	1
Sacramento River/Rio Vista	Redear Sunfish	FMP	2005	<b>.095</b>	1	.	180	1
Sacramento River/Rio Vista	Redear Sunfish	FMP	2005	<b>.102</b>	1	.	194	1
Sacramento River/Rio Vista	Redear Sunfish	FMP	2005	<b>.113</b>	1	.	204	1
Sacramento River/Rio Vista	Redear Sunfish	FMP	2005	<b>.088</b>	1	.	214	1
Sacramento River/Rio Vista	Redear Sunfish	FMP	2005	<b>.098</b>	1	.	214	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento River/Rio Vista	Redear Sunfish	FMP	2005	<b>.372</b>	1	.	220	1
Sacramento River/Rio Vista	Redear Sunfish	FMP	2005	<b>.153</b>	1	.	252	1
Sacramento Slough	Redear Sunfish	TSMP	1989	<b>.120</b>	9	156	160	1
Snodgrass Slough near Delta Meadows	Redear Sunfish	FMP	2006	<b>.060</b>	1	.	171	1
Snodgrass Slough near Delta Meadows	Redear Sunfish	FMP	2006	<b>.221</b>	1	.	174	1
Snodgrass Slough near Delta Meadows	Redear Sunfish	FMP	2006	<b>.113</b>	1	.	182	1
Snodgrass Slough near Delta Meadows	Redear Sunfish	FMP	2006	<b>.309</b>	1	.	188	1
Snodgrass Slough near Delta Meadows	Redear Sunfish	FMP	2006	<b>.153</b>	1	.	190	1
Steamboat Slough	Redear Sunfish	FMP	2006	<b>.090</b>	1	.	183	1
Steamboat Slough	Redear Sunfish	FMP	2006	<b>.108</b>	1	.	209	1
Steamboat Slough	Redear Sunfish	FMP	2006	<b>.201</b>	1	.	210	1
Steamboat Slough	Redear Sunfish	FMP	2006	<b>.246</b>	1	.	228	1
Steamboat Slough	Redear Sunfish	FMP	2006	<b>.352</b>	1	.	229	1
Sutter Bypass below Kirkville Road	Redear Sunfish	FMP	2006	<b>.093</b>	1	.	160	1
Sutter Bypass below Kirkville Road	Redear Sunfish	FMP	2006	<b>.068</b>	1	.	165	1
Sutter Bypass below Kirkville Road	Redear Sunfish	FMP	2006	<b>.106</b>	1	.	165	1
Sutter Bypass below Kirkville Road	Redear Sunfish	FMP	2006	<b>.192</b>	1	.	170	1
Sutter Bypass below Kirkville Road	Redear Sunfish	FMP	2006	<b>.097</b>	1	.	180	1
Big Chico Creek near mouth	Sacramento Pikeminnow	SRWP	2000	<b>.484</b>	5	.	288	1
Georgiana Slough	Sacramento Pikeminnow	FMP	2006	<b>.061</b>	1	.	175	0
Georgiana Slough	Sacramento Pikeminnow	FMP	2006	<b>.091</b>	1	.	191	0
Georgiana Slough	Sacramento Pikeminnow	FMP	2006	<b>.112</b>	1	.	214	0
Georgiana Slough	Sacramento Pikeminnow	FMP	2006	<b>.091</b>	1	.	221	0
Georgiana Slough	Sacramento Pikeminnow	FMP	2006	<b>.108</b>	1	.	262	1
Prospect Slough/Liberty Island	Sacramento Pikeminnow	FMP	2005	<b>.432</b>	1	.	238	0
Prospect Slough/Liberty Island	Sacramento Pikeminnow	FMP	2005	<b>.271</b>	1	.	240	0
Prospect Slough/Liberty Island	Sacramento Pikeminnow	FMP	2005	<b>.189</b>	1	.	246	0
Prospect Slough/Liberty Island	Sacramento Pikeminnow	FMP	2005	<b>.170</b>	1	.	270	1
Prospect Slough/Liberty Island	Sacramento Pikeminnow	FMP	2005	<b>.222</b>	1	.	279	1
Prospect Slough/Liberty Island	Sacramento Pikeminnow	FMP	2005	<b>.240</b>	1	.	280	1
Prospect Slough/Liberty Island	Sacramento Pikeminnow	FMP	2005	<b>.390</b>	1	.	310	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Sacramento Pikeminnow	FMP	2006	<b>.104</b>	1	.	174	0
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Sacramento Pikeminnow	FMP	2006	<b>.109</b>	1	.	202	0
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Sacramento Pikeminnow	FMP	2006	<b>.126</b>	1	.	216	0
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Sacramento Pikeminnow	FMP	2006	<b>.270</b>	1	.	275	1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Sacramento Pikeminnow	FMP	2006	<b>.402</b>	1	.	291	1
Sacramento River at Bend Bridge	Sacramento Pikeminnow	FMP	2005	<b>.186</b>	1	.	272	1
Sacramento River at Bend Bridge	Sacramento Pikeminnow	FMP	2005	<b>.169</b>	1	.	297	1
Sacramento River at Bend Bridge	Sacramento Pikeminnow	FMP	2005	<b>.217</b>	1	.	304	1
Sacramento River at Bend Bridge	Sacramento Pikeminnow	FMP	2005	<b>.216</b>	1	.	316	1
Sacramento River at Bend Bridge	Sacramento Pikeminnow	FMP	2005	<b>.143</b>	1	.	340	1
Sacramento River at Bend Bridge	Sacramento Pikeminnow	FMP	2005	<b>.195</b>	1	.	364	1
Sacramento River at Bend Bridge	Sacramento Pikeminnow	FMP	2005	<b>.413</b>	1	.	374	1
Sacramento River at Bend Bridge	Sacramento Pikeminnow	FMP	2005	<b>.277</b>	1	.	392	1
Sacramento River at Bend Bridge	Sacramento Pikeminnow	FMP	2005	<b>.420</b>	1	.	415	1
Sacramento River at Bend Bridge	Sacramento Pikeminnow	FMP	2005	<b>.913</b>	1	.	442	1
Sacramento River at Bend Bridge near Red Bluff	Sacramento Pikeminnow	FMP	2006	<b>.383</b>	1	.	394	1
Sacramento River at Bend Bridge near Red Bluff	Sacramento Pikeminnow	FMP	2006	<b>.521</b>	1	.	421	1
Sacramento River at Bend Bridge near Red Bluff	Sacramento Pikeminnow	SRWP	1998	<b>.119</b>	5	.	254	1
Sacramento River at Colusa	Sacramento Pikeminnow	FMP	2005	<b>.080</b>	1	.	205	0
Sacramento River at Colusa	Sacramento Pikeminnow	FMP	2005	<b>.226</b>	1	.	274	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento River at Colusa	Sacramento Pikeminnow	FMP	2005	<b>.307</b>	1	.	316	1
Sacramento River at Colusa	Sacramento Pikeminnow	FMP	2005	<b>.409</b>	1	.	324	1
Sacramento River at Colusa	Sacramento Pikeminnow	FMP	2005	<b>.184</b>	1	.	336	1
Sacramento River at Colusa	Sacramento Pikeminnow	FMP	2005	<b>.272</b>	1	.	406	1
Sacramento River at Colusa	Sacramento Pikeminnow	FMP	2005	<b>.613</b>	1	.	479	1
Sacramento River at Colusa	Sacramento Pikeminnow	FMP	2005	<b>.897</b>	1	.	511	1
Sacramento River at Colusa	Sacramento Pikeminnow	FMP	2005	<b>.744</b>	1	.	533	1
Sacramento River at Colusa	Sacramento Pikeminnow	FMP	2005	<b>.821</b>	1	.	554	1
Sacramento River at Grimes	Sacramento Pikeminnow	FMP	2005	<b>.084</b>	1	.	189	0
Sacramento River at Grimes	Sacramento Pikeminnow	FMP	2005	<b>.115</b>	1	.	256	1
Sacramento River at Grimes	Sacramento Pikeminnow	FMP	2005	<b>.197</b>	1	.	279	1
Sacramento River at Grimes	Sacramento Pikeminnow	FMP	2005	<b>.167</b>	1	.	284	1
Sacramento River at Grimes	Sacramento Pikeminnow	FMP	2005	<b>.259</b>	1	.	305	1
Sacramento River at Grimes	Sacramento Pikeminnow	FMP	2005	<b>.643</b>	1	.	484	1
Sacramento River at Grimes	Sacramento Pikeminnow	FMP	2005	<b>.627</b>	1	.	487	1
Sacramento River at Grimes	Sacramento Pikeminnow	FMP	2005	<b>.792</b>	1	.	539	1
Sacramento River at Grimes	Sacramento Pikeminnow	FMP	2005	<b>.960</b>	1	.	559	1
Sacramento River at Grimes	Sacramento Pikeminnow	FMP	2005	<b>.801</b>	1	.	572	1
Sacramento River at Hamilton	Sacramento Pikeminnow	SRWP	1998	<b>.216</b>	5	.	286	1
Sacramento River at Hamilton	Sacramento Pikeminnow	SRWP	2000	<b>.290</b>	5	.	298	1
Sacramento River at Hamilton City	Sacramento Pikeminnow	FMP	2005	<b>.215</b>	1	.	219	0
Sacramento River at Hamilton City	Sacramento Pikeminnow	FMP	2005	<b>.290</b>	1	.	286	1
Sacramento River at Hamilton City	Sacramento Pikeminnow	FMP	2005	<b>.157</b>	1	.	295	1
Sacramento River at Hamilton City	Sacramento Pikeminnow	FMP	2005	<b>.180</b>	1	.	310	1
Sacramento River at Hamilton City	Sacramento Pikeminnow	FMP	2005	<b>.486</b>	1	.	316	1
Sacramento River at Hamilton City	Sacramento Pikeminnow	FMP	2005	<b>.232</b>	1	.	340	1
Sacramento River at Hamilton City	Sacramento Pikeminnow	FMP	2005	<b>.294</b>	1	.	378	1
Sacramento River at Hamilton City	Sacramento Pikeminnow	FMP	2005	<b>.406</b>	1	.	380	1
Sacramento River at Hamilton City	Sacramento Pikeminnow	FMP	2005	<b>1.150</b>	1	.	395	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento River at Knights Landing	Sacramento Pikeminnow	FMP	2006	<b>.686</b>	1	.	526	1
Sacramento River at Knights Landing	Sacramento Pikeminnow	FMP	2006	<b>1.000</b>	1	.	539	1
Sacramento River at Knights Landing	Sacramento Pikeminnow	FMP	2006	<b>.605</b>	1	.	544	1
Sacramento River at Knights Landing	Sacramento Pikeminnow	FMP	2006	<b>.744</b>	1	.	546	1
Sacramento River at Knights Landing	Sacramento Pikeminnow	FMP	2006	<b>.986</b>	1	.	549	1
Sacramento River at Ord Bend	Sacramento Pikeminnow	FMP	2005	<b>.073</b>	1	.	215	0
Sacramento River at Ord Bend	Sacramento Pikeminnow	FMP	2005	<b>.047</b>	1	.	236	0
Sacramento River at Ord Bend	Sacramento Pikeminnow	FMP	2005	<b>.059</b>	1	.	292	1
Sacramento River at Ord Bend	Sacramento Pikeminnow	FMP	2005	<b>.258</b>	1	.	314	1
Sacramento River at Ord Bend	Sacramento Pikeminnow	FMP	2005	<b>.085</b>	1	.	349	1
Sacramento River at Ord Bend	Sacramento Pikeminnow	FMP	2005	<b>.285</b>	1	.	359	1
Sacramento River at Ord Bend	Sacramento Pikeminnow	FMP	2005	<b>.240</b>	1	.	361	1
Sacramento River at Ord Bend	Sacramento Pikeminnow	FMP	2005	<b>.539</b>	1	.	470	1
Sacramento River at Ord Bend	Sacramento Pikeminnow	FMP	2005	<b>.596</b>	1	.	491	1
Sacramento River at Ord Bend	Sacramento Pikeminnow	FMP	2005	<b>1.144</b>	1	.	511	1
Sacramento River at RM 44	Sacramento Pikeminnow	CalFed	2000	<b>.068</b>	1	.	220	0
Sacramento River at RM 44	Sacramento Pikeminnow	CalFed	2000	<b>.103</b>	1	.	236	0
Sacramento River at RM 44	Sacramento Pikeminnow	CalFed	2000	<b>.166</b>	1	.	240	0
Sacramento River at RM 44	Sacramento Pikeminnow	CalFed	2000	<b>.167</b>	1	.	273	1
Sacramento River at RM 44	Sacramento Pikeminnow	CalFed	2000	<b>.096</b>	1	.	292	1
Sacramento River at RM 44	Sacramento Pikeminnow	FMP	2005	<b>.226</b>	1	.	340	1
Sacramento River at RM 44	Sacramento Pikeminnow	FMP	2005	<b>.279</b>	1	.	372	1
Sacramento River at RM 44	Sacramento Pikeminnow	FMP	2005	<b>.412</b>	1	.	401	1
Sacramento River at RM 44	Sacramento Pikeminnow	FMP	2005	<b>.526</b>	1	.	415	1
Sacramento River at RM 44	Sacramento Pikeminnow	FMP	2005	<b>.483</b>	1	.	459	1
Sacramento River at RM 44	Sacramento Pikeminnow	FMP	2005	<b>1.100</b>	1	.	560	1
Sacramento River at RM 44	Sacramento Pikeminnow	FMP	2005	<b>1.323</b>	1	.	638	1
Sacramento River at RM 44	Sacramento Pikeminnow	SRWP	2000	<b>.115</b>	5	.	252	1
Sacramento River at RM 44	Sacramento Pikeminnow	SRWP	2001	<b>.179</b>	5	.	271	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento River at Tisdale Boat Ramp AKA River Bend Marina	Sacramento Pikeminnow	FMP	2006	<b>.091</b>	1	.	238	0
Sacramento River at Tisdale Boat Ramp AKA River Bend Marina	Sacramento Pikeminnow	FMP	2006	<b>.112</b>	1	.	271	1
Sacramento River at Tisdale Boat Ramp AKA River Bend Marina	Sacramento Pikeminnow	FMP	2006	<b>.077</b>	1	.	281	1
Sacramento River at Tisdale Boat Ramp AKA River Bend Marina	Sacramento Pikeminnow	FMP	2006	<b>.078</b>	1	.	283	1
Sacramento River at Tisdale Boat Ramp AKA River Bend Marina	Sacramento Pikeminnow	FMP	2006	<b>.119</b>	1	.	330	1
Sacramento River at Veterans Bridge	Sacramento Pikeminnow	FMP	2005	<b>.168</b>	1	.	236	0
Sacramento River at Veterans Bridge	Sacramento Pikeminnow	FMP	2005	<b>.230</b>	1	.	237	0
Sacramento River at Veterans Bridge	Sacramento Pikeminnow	FMP	2005	<b>.213</b>	1	.	249	1
Sacramento River at Veterans Bridge	Sacramento Pikeminnow	FMP	2005	<b>.301</b>	1	.	271	1
Sacramento River at Veterans Bridge	Sacramento Pikeminnow	FMP	2005	<b>.385</b>	1	.	305	1
Sacramento River at Veterans Bridge	Sacramento Pikeminnow	FMP	2005	<b>.237</b>	1	.	365	1
Sacramento River at Veterans Bridge	Sacramento Pikeminnow	FMP	2005	<b>.254</b>	1	.	457	1
Sacramento River at Veterans Bridge	Sacramento Pikeminnow	FMP	2005	<b>1.131</b>	1	.	473	1
Sacramento River at Veterans Bridge	Sacramento Pikeminnow	FMP	2005	<b>1.542</b>	1	.	480	1
Sacramento River at Veterans Bridge	Sacramento Pikeminnow	FMP	2005	<b>1.712</b>	1	.	496	1
Sacramento River at Veterans Bridge	Sacramento Pikeminnow	FMP	2005	<b>1.615</b>	1	.	503	1
Sacramento River at Veterans Bridge	Sacramento Pikeminnow	SRWP	2000	<b>.251</b>	4	.	266	1
Sacramento River at Woodson Bridge	Sacramento Pikeminnow	FMP	2005	<b>.207</b>	1	.	249	1
Sacramento River at Woodson Bridge	Sacramento Pikeminnow	FMP	2005	<b>.275</b>	1	.	249	1
Sacramento River at Woodson Bridge	Sacramento Pikeminnow	FMP	2005	<b>.279</b>	1	.	266	1
Sacramento River at Woodson Bridge	Sacramento Pikeminnow	FMP	2005	<b>.086</b>	1	.	291	1
Sacramento River at Woodson Bridge	Sacramento Pikeminnow	FMP	2005	<b>.267</b>	1	.	308	1
Sacramento River at Woodson Bridge	Sacramento Pikeminnow	FMP	2005	<b>1.264</b>	1	.	405	1
Sacramento River at Woodson Bridge	Sacramento Pikeminnow	FMP	2005	<b>1.003</b>	1	.	432	1
Sacramento River at Woodson Bridge	Sacramento Pikeminnow	FMP	2005	<b>.772</b>	1	.	449	1
Sacramento River at Woodson Bridge	Sacramento Pikeminnow	FMP	2005	<b>1.003</b>	1	.	466	1
Sacramento River at Woodson Bridge	Sacramento Pikeminnow	FMP	2005	<b>.544</b>	1	.	484	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento River near Deschutes Rd	Sacramento Pikeminnow	FMP	2006	<b>.218</b>	1	.	369	1
Sacramento River near Deschutes Rd	Sacramento Pikeminnow	FMP	2006	<b>.224</b>	1	.	381	1
Sacramento River near Deschutes Rd	Sacramento Pikeminnow	FMP	2006	<b>.658</b>	1	.	393	1
Sacramento River near Deschutes Rd	Sacramento Pikeminnow	FMP	2006	<b>.545</b>	1	.	394	1
Sacramento River near Deschutes Rd	Sacramento Pikeminnow	FMP	2006	<b>.330</b>	1	.	423	1
Sacramento River near Hamilton	Sacramento Pikeminnow	FMP	2006	<b>.221</b>	1	.	365	1
Sacramento River near Hamilton	Sacramento Pikeminnow	FMP	2006	<b>.301</b>	1	.	375	1
Sacramento River near Hamilton	Sacramento Pikeminnow	FMP	2006	<b>.418</b>	1	.	394	1
Sacramento River near Hamilton	Sacramento Pikeminnow	FMP	2006	<b>.304</b>	1	.	410	1
Sacramento River near Hamilton	Sacramento Pikeminnow	FMP	2006	<b>.334</b>	1	.	454	1
Sacramento River near Isleton	Sacramento Pikeminnow	CalFed	2000	<b>.273</b>	1	.	297	1
Sacramento River near Isleton	Sacramento Pikeminnow	CalFed	2000	<b>.145</b>	1	.	303	1
Sacramento River near Isleton	Sacramento Pikeminnow	CalFed	2000	<b>1.210</b>	1	.	400	1
Sacramento River near Isleton	Sacramento Pikeminnow	CalFed	2000	<b>.670</b>	1	.	405	1
Sacramento River near Isleton	Sacramento Pikeminnow	CalFed	2000	<b>2.039</b>	1	.	435	1
Sacramento River near Isleton	Sacramento Pikeminnow	CalFed	2000	<b>1.521</b>	1	.	465	1
Sacramento River near Isleton	Sacramento Pikeminnow	CalFed	2000	<b>.798</b>	1	.	495	1
Sacramento River near Isleton	Sacramento Pikeminnow	CalFed	2000	<b>1.442</b>	1	.	510	1
Sacramento River near Isleton	Sacramento Pikeminnow	CalFed	2000	<b>1.045</b>	1	.	538	1
Sacramento River near Isleton	Sacramento Pikeminnow	CalFed	2000	<b>.830</b>	1	.	605	1
Sacramento River near Verona	Sacramento Pikeminnow	FMP	2006	<b>.224</b>	1	.	267	1
Sacramento River near Verona	Sacramento Pikeminnow	FMP	2006	<b>.332</b>	1	.	269	1
Sacramento River near Verona	Sacramento Pikeminnow	FMP	2006	<b>.280</b>	1	.	291	1
Sacramento River near Verona	Sacramento Pikeminnow	FMP	2006	<b>.268</b>	1	.	294	1
Sacramento River near Verona	Sacramento Pikeminnow	FMP	2006	<b>.273</b>	1	.	301	1
Sacramento River near Verona	Sacramento Pikeminnow	FMP	2006	<b>.486</b>	1	.	334	1
Sacramento River near Verona	Sacramento Pikeminnow	FMP	2006	<b>.529</b>	1	.	360	1
Sacramento River near Verona	Sacramento Pikeminnow	FMP	2006	<b>.394</b>	1	.	389	1
Sacramento River near Verona	Sacramento Pikeminnow	FMP	2006	<b>.707</b>	1	.	511	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento River/Colusa	Sacramento Pikeminnow	SRWP	2000	<b>.148</b>	5	.	275	1
Sacramento River/Colusa	Sacramento Pikeminnow	SRWP	1998	<b>.301</b>	5	.	278	1
Sacramento River/Colusa	Sacramento Pikeminnow	TSMP	2002	<b>.505</b>	5	248	273	1
Sacramento River/Rio Vista	Sacramento Pikeminnow	FMP	2005	<b>.070</b>	1	.	255	1
Sacramento River/Rio Vista	Sacramento Pikeminnow	FMP	2005	<b>.216</b>	1	.	259	1
Sacramento River/Rio Vista	Sacramento Pikeminnow	FMP	2005	<b>.198</b>	1	.	336	1
Sacramento River/Rio Vista	Sacramento Pikeminnow	FMP	2005	<b>.276</b>	1	.	354	1
Sacramento River/Rio Vista	Sacramento Pikeminnow	FMP	2005	<b>.405</b>	1	.	510	1
Sacramento River/Rio Vista	Sacramento Pikeminnow	FMP	2005	<b>.858</b>	1	.	513	1
Sacramento River/Rio Vista	Sacramento Pikeminnow	FMP	2005	<b>.861</b>	1	.	534	1
Sacramento River/Rio Vista	Sacramento Pikeminnow	FMP	2005	<b>.649</b>	1	.	570	1
Sacramento River/Rio Vista	Sacramento Pikeminnow	FMP	2005	<b>1.012</b>	1	.	572	1
Sacramento River/Rio Vista	Sacramento Pikeminnow	FMP	2005	<b>.724</b>	1	.	575	1
Sacramento River/Rio Vista	Sacramento Pikeminnow	TSMP	1987	<b>.340</b>	6	349	384	1
Steamboat Slough	Sacramento Pikeminnow	FMP	2006	<b>.368</b>	1	.	205	0
Steamboat Slough	Sacramento Pikeminnow	FMP	2006	<b>.372</b>	1	.	221	0
Steamboat Slough	Sacramento Pikeminnow	FMP	2006	<b>.512</b>	1	.	228	0
Steamboat Slough	Sacramento Pikeminnow	FMP	2006	<b>.227</b>	1	.	229	0
Steamboat Slough	Sacramento Pikeminnow	FMP	2006	<b>.736</b>	1	.	275	1
Cache Slough near Ryer Island Ferry	Sacramento Sucker	SRWP	2000	<b>.107</b>	5	.	394	1
Colusa Drain/Knights Landing	Sacramento Sucker	TSMP	1981	<b>.070</b>	1	248	273	1
Cross Canal	Sacramento Sucker	FMP	2006	<b>.094</b>	1	.	264	1
Cross Canal	Sacramento Sucker	FMP	2006	<b>.131</b>	1	.	295	1
Cross Canal	Sacramento Sucker	FMP	2006	<b>.165</b>	1	.	333	1
Cross Canal	Sacramento Sucker	FMP	2006	<b>.258</b>	1	.	407	1
Cross Canal	Sacramento Sucker	FMP	2006	<b>.358</b>	1	.	461	1
Georgiana Slough	Sacramento Sucker	FMP	2006	<b>.174</b>	1	.	412	1
Georgiana Slough	Sacramento Sucker	FMP	2006	<b>.366</b>	1	.	418	1
Georgiana Slough	Sacramento Sucker	FMP	2006	<b>.328</b>	1	.	473	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Georgiana Slough	Sacramento Sucker	FMP	2006	<b>.562</b>	1	.	506	1
Prospect Slough/Liberty Island	Sacramento Sucker	FMP	2005	<b>.130</b>	1	.	292	1
Prospect Slough/Liberty Island	Sacramento Sucker	FMP	2005	<b>.150</b>	1	.	315	1
Prospect Slough/Liberty Island	Sacramento Sucker	FMP	2005	<b>.083</b>	1	.	402	1
Prospect Slough/Liberty Island	Sacramento Sucker	FMP	2005	<b>.313</b>	1	.	425	1
Prospect Slough/Liberty Island	Sacramento Sucker	FMP	2005	<b>.259</b>	1	.	438	1
Prospect Slough/Liberty Island	Sacramento Sucker	FMP	2005	<b>.390</b>	1	.	445	1
Prospect Slough/Liberty Island	Sacramento Sucker	FMP	2005	<b>.491</b>	1	.	462	1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Sacramento Sucker	FMP	2006	<b>.262</b>	1	.	373	1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Sacramento Sucker	FMP	2006	<b>.148</b>	1	.	379	1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Sacramento Sucker	FMP	2006	<b>.328</b>	1	.	406	1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Sacramento Sucker	FMP	2006	<b>.352</b>	1	.	434	1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Sacramento Sucker	FMP	2006	<b>.478</b>	1	.	502	1
Sacramento River at Bend Bridge	Sacramento Sucker	FMP	2005	<b>.042</b>	1	.	279	1
Sacramento River at Bend Bridge	Sacramento Sucker	FMP	2005	<b>.025</b>	1	.	301	1
Sacramento River at Bend Bridge	Sacramento Sucker	FMP	2005	<b>.057</b>	1	.	319	1
Sacramento River at Bend Bridge	Sacramento Sucker	FMP	2005	<b>.028</b>	1	.	336	1
Sacramento River at Bend Bridge	Sacramento Sucker	FMP	2005	<b>.040</b>	1	.	348	1
Sacramento River at Bend Bridge	Sacramento Sucker	FMP	2005	<b>.051</b>	1	.	385	1
Sacramento River at Bend Bridge	Sacramento Sucker	FMP	2005	<b>.100</b>	1	.	413	1
Sacramento River at Bend Bridge	Sacramento Sucker	FMP	2005	<b>.035</b>	1	.	420	1
Sacramento River at Bend Bridge	Sacramento Sucker	FMP	2005	<b>.064</b>	1	.	420	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento River at Bend Bridge	Sacramento Sucker	FMP	2005	<b>.088</b>	1	.	465	1
Sacramento River at Bend Bridge near Red Bluff	Sacramento Sucker	FMP	2006	<b>.032</b>	1	.	371	1
Sacramento River at Bend Bridge near Red Bluff	Sacramento Sucker	FMP	2006	<b>.083</b>	1	.	436	1
Sacramento River at Bend Bridge near Red Bluff	Sacramento Sucker	FMP	2006	<b>.117</b>	1	.	454	1
Sacramento River at Bend Bridge near Red Bluff	Sacramento Sucker	FMP	2006	<b>.054</b>	1	.	476	1
Sacramento River at Bend Bridge near Red Bluff	Sacramento Sucker	FMP	2006	<b>.116</b>	1	.	486	1
Sacramento River at Bend Bridge near Red Bluff	Sacramento Sucker	SRWP	2000	<b>.103</b>	5	.	457	1
Sacramento River at Butte City	Sacramento Sucker	FMP	2005	<b>.055</b>	1	.	174	0
Sacramento River at Butte City	Sacramento Sucker	FMP	2005	<b>.080</b>	1	.	196	0
Sacramento River at Butte City	Sacramento Sucker	FMP	2005	<b>.083</b>	1	.	199	1
Sacramento River at Butte City	Sacramento Sucker	FMP	2005	<b>.098</b>	1	.	230	1
Sacramento River at Butte City	Sacramento Sucker	FMP	2005	<b>.036</b>	1	.	254	1
Sacramento River at Butte City	Sacramento Sucker	FMP	2005	<b>.219</b>	1	.	420	1
Sacramento River at Butte City	Sacramento Sucker	FMP	2005	<b>.231</b>	1	.	462	1
Sacramento River at Butte City	Sacramento Sucker	FMP	2005	<b>.597</b>	1	.	481	1
Sacramento River at Butte City	Sacramento Sucker	FMP	2005	<b>.394</b>	1	.	489	1
Sacramento River at Butte City	Sacramento Sucker	FMP	2005	<b>.323</b>	1	.	504	1
Sacramento River at Colusa	Sacramento Sucker	FMP	2005	<b>.053</b>	1	.	263	1
Sacramento River at Colusa	Sacramento Sucker	FMP	2005	<b>.050</b>	1	.	282	1
Sacramento River at Colusa	Sacramento Sucker	FMP	2005	<b>.053</b>	1	.	286	1
Sacramento River at Colusa	Sacramento Sucker	FMP	2005	<b>.039</b>	1	.	292	1
Sacramento River at Colusa	Sacramento Sucker	FMP	2005	<b>.045</b>	1	.	312	1
Sacramento River at Colusa	Sacramento Sucker	FMP	2005	<b>.088</b>	1	.	376	1
Sacramento River at Colusa	Sacramento Sucker	FMP	2005	<b>.063</b>	1	.	389	1
Sacramento River at Colusa	Sacramento Sucker	FMP	2005	<b>.047</b>	1	.	411	1
Sacramento River at Colusa	Sacramento Sucker	FMP	2005	<b>.078</b>	1	.	411	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento River at Colusa	Sacramento Sucker	FMP	2005	<b>.187</b>	1	.	430	1
Sacramento River at Grimes	Sacramento Sucker	FMP	2005	<b>.045</b>	1	.	251	1
Sacramento River at Grimes	Sacramento Sucker	FMP	2005	<b>.039</b>	1	.	264	1
Sacramento River at Grimes	Sacramento Sucker	FMP	2005	<b>.078</b>	1	.	271	1
Sacramento River at Grimes	Sacramento Sucker	FMP	2005	<b>.034</b>	1	.	272	1
Sacramento River at Grimes	Sacramento Sucker	FMP	2005	<b>.069</b>	1	.	356	1
Sacramento River at Grimes	Sacramento Sucker	FMP	2005	<b>.075</b>	1	.	386	1
Sacramento River at Grimes	Sacramento Sucker	FMP	2005	<b>.132</b>	1	.	412	1
Sacramento River at Grimes	Sacramento Sucker	FMP	2005	<b>.286</b>	1	.	419	1
Sacramento River at Grimes	Sacramento Sucker	FMP	2005	<b>.272</b>	1	.	444	1
Sacramento River at Grimes	Sacramento Sucker	FMP	2005	<b>.288</b>	1	.	496	1
Sacramento River at Hamilton	Sacramento Sucker	SRWP	2000	<b>.002</b>	5	.	316	1
Sacramento River at Hamilton	Sacramento Sucker	SRWP	1998	<b>.030</b>	5	.	322	1
Sacramento River at Hamilton City	Sacramento Sucker	FMP	2005	<b>.012</b>	1	.	214	1
Sacramento River at Hamilton City	Sacramento Sucker	FMP	2005	<b>.016</b>	1	.	225	1
Sacramento River at Hamilton City	Sacramento Sucker	FMP	2005	<b>.030</b>	1	.	304	1
Sacramento River at Hamilton City	Sacramento Sucker	FMP	2005	<b>.017</b>	1	.	315	1
Sacramento River at Hamilton City	Sacramento Sucker	FMP	2005	<b>.020</b>	1	.	325	1
Sacramento River at Hamilton City	Sacramento Sucker	FMP	2005	<b>.034</b>	1	.	344	1
Sacramento River at Hamilton City	Sacramento Sucker	FMP	2005	<b>.067</b>	1	.	363	1
Sacramento River at Hamilton City	Sacramento Sucker	FMP	2005	<b>.073</b>	1	.	454	1
Sacramento River at Hamilton City	Sacramento Sucker	FMP	2005	<b>.147</b>	1	.	496	1
Sacramento River at Hamilton City	Sacramento Sucker	FMP	2005	<b>.126</b>	1	.	515	1
Sacramento River at Knights Landing	Sacramento Sucker	FMP	2006	<b>.079</b>	1	.	338	1
Sacramento River at Knights Landing	Sacramento Sucker	FMP	2006	<b>.198</b>	1	.	402	1
Sacramento River at Knights Landing	Sacramento Sucker	FMP	2006	<b>.273</b>	1	.	416	1
Sacramento River at Knights Landing	Sacramento Sucker	FMP	2006	<b>.253</b>	1	.	421	1
Sacramento River at Knights Landing	Sacramento Sucker	FMP	2006	<b>.126</b>	1	.	436	1
Sacramento River at Knights Landing	Sacramento Sucker	TSMP	2002	<b>.194</b>	5	403	443	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento River at Ord Bend	Sacramento Sucker	FMP	2005	<b>.027</b>	1	.	151	0
Sacramento River at Ord Bend	Sacramento Sucker	FMP	2005	<b>.019</b>	1	.	200	1
Sacramento River at Ord Bend	Sacramento Sucker	FMP	2005	<b>.032</b>	1	.	293	1
Sacramento River at Ord Bend	Sacramento Sucker	FMP	2005	<b>.027</b>	1	.	331	1
Sacramento River at Ord Bend	Sacramento Sucker	FMP	2005	<b>.058</b>	1	.	333	1
Sacramento River at Ord Bend	Sacramento Sucker	FMP	2005	<b>.109</b>	1	.	459	1
Sacramento River at Ord Bend	Sacramento Sucker	FMP	2005	<b>.158</b>	1	.	464	1
Sacramento River at Ord Bend	Sacramento Sucker	FMP	2005	<b>.164</b>	1	.	487	1
Sacramento River at Ord Bend	Sacramento Sucker	FMP	2005	<b>.407</b>	1	.	505	1
Sacramento River at Ord Bend	Sacramento Sucker	FMP	2005	<b>.330</b>	1	.	569	1
Sacramento River at RM 44	Sacramento Sucker	FMP	2005	<b>.046</b>	1	.	329	1
Sacramento River at RM 44	Sacramento Sucker	FMP	2005	<b>.191</b>	1	.	416	1
Sacramento River at RM 44	Sacramento Sucker	FMP	2005	<b>.112</b>	1	.	419	1
Sacramento River at RM 44	Sacramento Sucker	FMP	2005	<b>.120</b>	1	.	432	1
Sacramento River at RM 44	Sacramento Sucker	FMP	2005	<b>.122</b>	1	.	441	1
Sacramento River at RM 44	Sacramento Sucker	FMP	2005	<b>.252</b>	1	.	459	1
Sacramento River at RM 44	Sacramento Sucker	FMP	2005	<b>.274</b>	1	.	484	1
Sacramento River at RM 44	Sacramento Sucker	FMP	2005	<b>.323</b>	1	.	499	1
Sacramento River at RM 44	Sacramento Sucker	FMP	2005	<b>.167</b>	1	.	502	1
Sacramento River at RM 44	Sacramento Sucker	FMP	2005	<b>.451</b>	1	.	574	1
Sacramento River at RM 44	Sacramento Sucker	SRWP	2003	<b>.125</b>	5	.	443	1
Sacramento River at RM 44	Sacramento Sucker	SRWP	2000	<b>.221</b>	5	.	452	1
Sacramento River at RM 44	Sacramento Sucker	SRWP	2003	<b>.233</b>	5	.	490	1
Sacramento River at RM 44	Sacramento Sucker	SRWP	2002	<b>.209</b>	5	.	493	1
Sacramento River at RM 44	Sacramento Sucker	SRWP	2002	<b>.209</b>	5	.	493	1
Sacramento River at Tisdale Boat Ramp AKA River Bend Marina	Sacramento Sucker	FMP	2006	<b>.251</b>	1	.	402	1
Sacramento River at Tisdale Boat Ramp AKA River Bend Marina	Sacramento Sucker	FMP	2006	<b>.173</b>	1	.	415	1
Sacramento River at Tisdale Boat Ramp AKA River Bend Marina	Sacramento Sucker	FMP	2006	<b>.233</b>	1	.	436	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento River at Tisdale Boat Ramp AKA River Bend Marina	Sacramento Sucker	FMP	2006	<b>.323</b>	1	.	442	1
Sacramento River at Tisdale Boat Ramp AKA River Bend Marina	Sacramento Sucker	FMP	2006	<b>.198</b>	1	.	443	1
Sacramento River at Veterans Bridge	Sacramento Sucker	FMP	2005	<b>.128</b>	1	.	242	1
Sacramento River at Veterans Bridge	Sacramento Sucker	FMP	2005	<b>.085</b>	1	.	286	1
Sacramento River at Veterans Bridge	Sacramento Sucker	FMP	2005	<b>.154</b>	1	.	383	1
Sacramento River at Veterans Bridge	Sacramento Sucker	FMP	2005	<b>.213</b>	1	.	395	1
Sacramento River at Veterans Bridge	Sacramento Sucker	FMP	2005	<b>.114</b>	1	.	402	1
Sacramento River at Veterans Bridge	Sacramento Sucker	FMP	2005	<b>.229</b>	1	.	409	1
Sacramento River at Veterans Bridge	Sacramento Sucker	FMP	2005	<b>.138</b>	1	.	410	1
Sacramento River at Veterans Bridge	Sacramento Sucker	FMP	2005	<b>.312</b>	1	.	430	1
Sacramento River at Veterans Bridge	Sacramento Sucker	SRWP	1999	<b>.098</b>	5	.	318	1
Sacramento River at Woodson Bridge	Sacramento Sucker	FMP	2005	<b>.032</b>	1	.	277	1
Sacramento River at Woodson Bridge	Sacramento Sucker	FMP	2005	<b>.048</b>	1	.	286	1
Sacramento River at Woodson Bridge	Sacramento Sucker	FMP	2005	<b>.022</b>	1	.	294	1
Sacramento River at Woodson Bridge	Sacramento Sucker	FMP	2005	<b>.023</b>	1	.	326	1
Sacramento River at Woodson Bridge	Sacramento Sucker	FMP	2005	<b>.021</b>	1	.	331	1
Sacramento River at Woodson Bridge	Sacramento Sucker	FMP	2005	<b>.045</b>	1	.	396	1
Sacramento River at Woodson Bridge	Sacramento Sucker	FMP	2005	<b>.520</b>	1	.	447	1
Sacramento River at Woodson Bridge	Sacramento Sucker	FMP	2005	<b>.064</b>	1	.	465	1
Sacramento River at Woodson Bridge	Sacramento Sucker	FMP	2005	<b>.250</b>	1	.	479	1
Sacramento River at Woodson Bridge	Sacramento Sucker	FMP	2005	<b>.355</b>	1	.	481	1
Sacramento River near Deschutes Rd	Sacramento Sucker	FMP	2006	<b>.198</b>	1	.	467	1
Sacramento River near Deschutes Rd	Sacramento Sucker	FMP	2006	<b>.067</b>	1	.	474	1
Sacramento River near Deschutes Rd	Sacramento Sucker	FMP	2006	<b>.118</b>	1	.	476	1
Sacramento River near Deschutes Rd	Sacramento Sucker	FMP	2006	<b>.129</b>	1	.	486	1
Sacramento River near Deschutes Rd	Sacramento Sucker	FMP	2006	<b>.158</b>	1	.	514	1
Sacramento River near Hamilton	Sacramento Sucker	FMP	2006	<b>.047</b>	1	.	373	1
Sacramento River near Hamilton	Sacramento Sucker	FMP	2006	<b>.059</b>	1	.	390	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento River near Hamilton	Sacramento Sucker	FMP	2006	<b>.073</b>	1	.	396	1
Sacramento River near Hamilton	Sacramento Sucker	FMP	2006	<b>.097</b>	1	.	414	1
Sacramento River near Hamilton	Sacramento Sucker	FMP	2006	<b>.266</b>	1	.	480	1
Sacramento River near Isleton	Sacramento Sucker	CalFed	2000	<b>.261</b>	5	.	460	1
Sacramento River near Isleton	Sacramento Sucker	CalFed	2000	<b>.222</b>	5	.	468	1
Sacramento River near Verona	Sacramento Sucker	FMP	2006	<b>.225</b>	1	.	350	1
Sacramento River near Verona	Sacramento Sucker	FMP	2006	<b>.153</b>	1	.	371	1
Sacramento River near Verona	Sacramento Sucker	FMP	2006	<b>.300</b>	1	.	389	1
Sacramento River near Verona	Sacramento Sucker	FMP	2006	<b>.271</b>	1	.	394	1
Sacramento River near Verona	Sacramento Sucker	FMP	2006	<b>.208</b>	1	.	410	1
Sacramento River/Colusa	Sacramento Sucker	SRWP	2000	<b>.059</b>	5	.	290	1
Sacramento River/Colusa	Sacramento Sucker	TSMP	2002	<b>.076</b>	6	281	309	1
Sacramento River/Keswick	Sacramento Sucker	TSMP	1987	<b>.020</b>	5	336	370	1
Sacramento River/Keswick	Sacramento Sucker	TSMP	1982	<b>.030</b>	2	336	370	1
Sacramento River/Rio Vista	Sacramento Sucker	FMP	2005	<b>.151</b>	1	.	414	1
Sacramento River/Rio Vista	Sacramento Sucker	FMP	2005	<b>.131</b>	1	.	475	1
Sacramento River/Rio Vista	Sacramento Sucker	FMP	2005	<b>.425</b>	1	.	479	1
Sacramento River/Rio Vista	Sacramento Sucker	FMP	2005	<b>.362</b>	1	.	495	1
Sacramento River/Rio Vista	Sacramento Sucker	FMP	2005	<b>.555</b>	1	.	518	1
Sacramento River/Rio Vista	Sacramento Sucker	TSMP	1987	<b>.100</b>	7	387	426	1
Snodgrass Slough near Delta Meadows	Sacramento Sucker	FMP	2006	<b>.182</b>	1	.	274	1
Snodgrass Slough near Delta Meadows	Sacramento Sucker	FMP	2006	<b>.228</b>	1	.	309	1
Snodgrass Slough near Delta Meadows	Sacramento Sucker	FMP	2006	<b>.210</b>	1	.	370	1
Snodgrass Slough near Delta Meadows	Sacramento Sucker	FMP	2006	<b>.360</b>	1	.	389	1
Snodgrass Slough near Delta Meadows	Sacramento Sucker	FMP	2006	<b>.465</b>	1	.	570	1
Steamboat Slough	Sacramento Sucker	FMP	2006	<b>.228</b>	1	.	395	1
Steamboat Slough	Sacramento Sucker	FMP	2006	<b>.249</b>	1	.	450	1
Steamboat Slough	Sacramento Sucker	FMP	2006	<b>.408</b>	1	.	463	1
Steamboat Slough	Sacramento Sucker	FMP	2006	<b>.425</b>	1	.	471	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Steamboat Slough	Sacramento Sucker	FMP	2006	<b>.517</b>	1	.	471	1
Sacramento River at RM 44	Smallmouth Bass	FMP	2005	<b>.323</b>	1	.	251	0
Sacramento River at RM 44	Smallmouth Bass	FMP	2005	<b>1.408</b>	1	.	407	1
Sacramento River at RM 44	Smallmouth Bass	FMP	2005	<b>1.161</b>	1	.	439	1
Sacramento River at RM 44	Smallmouth Bass	FMP	2005	<b>1.093</b>	1	.	479	1
Sacramento River at RM 44	Smallmouth Bass	SRWP	2001	<b>.568</b>	5	.	338	1
Sacramento River/Hood	Smallmouth Bass	TSMP	2001	<b>.948</b>	5	344	361	1
Sacramento River/Rio Vista	Smallmouth Bass	FMP	2005	<b>.284</b>	1	.	281	0
Georgiana Slough	Spotted Bass	FMP	2006	<b>.240</b>	1	.	217	0
Georgiana Slough	Spotted Bass	FMP	2006	<b>.204</b>	1	.	222	0
Georgiana Slough	Spotted Bass	FMP	2006	<b>.253</b>	1	.	228	0
Georgiana Slough	Spotted Bass	FMP	2006	<b>.296</b>	1	.	234	0
Georgiana Slough	Spotted Bass	FMP	2006	<b>.390</b>	1	.	248	0
Georgiana Slough	Spotted Bass	FMP	2006	<b>.435</b>	1	.	271	0
Georgiana Slough	Spotted Bass	FMP	2006	<b>.441</b>	1	.	276	0
Georgiana Slough	Spotted Bass	FMP	2006	<b>.468</b>	1	.	292	0
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Spotted Bass	FMP	2006	<b>.390</b>	1	.	267	0
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Spotted Bass	FMP	2006	<b>.447</b>	1	.	268	0
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Spotted Bass	FMP	2006	<b>.397</b>	1	.	274	0
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Spotted Bass	FMP	2006	<b>.557</b>	1	.	284	0
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Spotted Bass	FMP	2006	<b>.555</b>	1	.	305	1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Spotted Bass	FMP	2006	<b>.701</b>	1	.	316	1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Spotted Bass	FMP	2006	<b>.505</b>	1	.	331	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Spotted Bass	FMP	2006	<b>.559</b>	1	.	331	1
Sacramento River - West Sacramento at Rivermile 59 - Between Discovery Park and Miller Park	Spotted Bass	FMP	2006	<b>.471</b>	1	.	351	1
Sacramento River at RM 44	Spotted Bass	FMP	2005	<b>.249</b>	1	.	269	0
Sacramento River at RM 44	Spotted Bass	FMP	2005	<b>.264</b>	1	.	295	0
Sacramento River at RM 44	Spotted Bass	FMP	2005	<b>.487</b>	1	.	305	1
Sacramento River at RM 44	Spotted Bass	FMP	2005	<b>.474</b>	1	.	315	1
Sacramento River at RM 44	Spotted Bass	FMP	2005	<b>.366</b>	1	.	341	1
Sacramento River at RM 44	Spotted Bass	FMP	2005	<b>.570</b>	1	.	346	1
Sacramento River at RM 44	Spotted Bass	FMP	2005	<b>.601</b>	1	.	351	1
Sacramento River at RM 44	Spotted Bass	FMP	2005	<b>.458</b>	1	.	359	1
Sacramento River at RM 44	Spotted Bass	FMP	2005	<b>.596</b>	1	.	361	1
Sacramento River at RM 44	Spotted Bass	FMP	2005	<b>.431</b>	1	.	384	1
Sacramento River at RM 44	Spotted Bass	FMP	2005	<b>.927</b>	1	.	409	1
Sacramento River at RM 44	Spotted Bass	FMP	2005	<b>.991</b>	1	.	421	1
Sacramento River near Verona	Spotted Bass	FMP	2006	<b>.317</b>	1	.	239	0
Sacramento River near Verona	Spotted Bass	FMP	2006	<b>.617</b>	1	.	260	0
Sacramento River near Verona	Spotted Bass	FMP	2006	<b>.498</b>	1	.	290	0
Sacramento River near Verona	Spotted Bass	FMP	2006	<b>.311</b>	1	.	298	0
Sacramento River at Grimes	Steelhead Trout	FMP	2005	<b>.075</b>	1	.	602	1
Sacramento River at Hamilton City	Steelhead Trout	FMP	2005	<b>.097</b>	1	.	630	1
Sacramento River at RM 44	Steelhead Trout	FMP	2005	<b>.060</b>	1	.	449	1
Sacramento River at RM 44	Steelhead Trout	FMP	2005	<b>.049</b>	1	.	584	1
Cache Slough at Miner Slough	Striped Bass	FMP	2006	<b>.284</b>	1	.	321	0
Cache Slough at Miner Slough	Striped Bass	FMP	2006	<b>.098</b>	1	.	327	0
Cache Slough at Miner Slough	Striped Bass	FMP	2006	<b>.286</b>	1	.	404	0
Cache Slough at Miner Slough	Striped Bass	FMP	2006	<b>.228</b>	1	.	661	1
Cache Slough2	Striped Bass	FMP	2006	<b>.219</b>	1	.	600	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Fremont Weir	Striped Bass	FMP	2006	.142	1	.	342	0
Fremont Weir	Striped Bass	FMP	2006	.353	1	.	424	0
Fremont Weir	Striped Bass	FMP	2006	.389	1	.	450	0
Fremont Weir	Striped Bass	FMP	2006	.571	1	.	469	1
Fremont Weir	Striped Bass	FMP	2006	.228	1	.	488	1
Fremont Weir	Striped Bass	FMP	2006	.362	1	.	527	1
Fremont Weir	Striped Bass	FMP	2006	.402	1	.	573	1
Fremont Weir	Striped Bass	FMP	2006	.397	1	.	576	1
Fremont Weir	Striped Bass	FMP	2006	.418	1	.	606	1
Fremont Weir	Striped Bass	FMP	2006	.457	1	.	613	1
Fremont Weir	Striped Bass	FMP	2006	.438	1	.	629	1
Fremont Weir	Striped Bass	FMP	2006	.308	1	.	669	1
Fremont Weir	Striped Bass	FMP	2006	.324	1	.	677	1
Fremont Weir	Striped Bass	FMP	2006	.236	1	.	678	1
Fremont Weir	Striped Bass	FMP	2006	.452	1	.	690	1
Fremont Weir	Striped Bass	FMP	2006	.341	1	.	704	1
Fremont Weir	Striped Bass	FMP	2006	.367	1	.	713	1
Fremont Weir	Striped Bass	FMP	2006	.399	1	.	728	1
Fremont Weir	Striped Bass	FMP	2006	.333	1	.	746	1
Fremont Weir	Striped Bass	FMP	2006	.399	1	.	749	1
Fremont Weir	Striped Bass	FMP	2006	.259	1	.	751	1
Fremont Weir	Striped Bass	FMP	2006	.364	1	.	802	1
Fremont Weir	Striped Bass	FMP	2006	.362	1	.	884	1
Fremont Weir	Striped Bass	FMP	2006	.463	1	.	894	1
Fremont Weir	Striped Bass	FMP	2006	.369	1	.	921	1
Fremont Weir	Striped Bass	FMP	2006	.467	1	.	985	1
Fremont Weir	Striped Bass	FMP	2006	.448	1	.	1014	1
Prospect Slough/Liberty Island	Striped Bass	FMP	2006	.426	1	.	343	0
Prospect Slough/Liberty Island	Striped Bass	FMP	2006	.339	1	.	356	0
Prospect Slough/Liberty Island	Striped Bass	FMP	2006	.289	1	.	399	0
Prospect Slough/Liberty Island	Striped Bass	FMP	2006	.265	1	.	458	1
Prospect Slough/Liberty Island	Striped Bass	FMP	2006	.493	1	.	465	1
Prospect Slough/Liberty Island	Striped Bass	FMP	2006	.296	1	.	470	1
Prospect Slough/Liberty Island	Striped Bass	FMP	2006	.213	1	.	479	1
Prospect Slough/Liberty Island	Striped Bass	FMP	2006	.314	1	.	483	1
Prospect Slough/Liberty Island	Striped Bass	FMP	2006	.660	1	.	495	1
Prospect Slough/Liberty Island	Striped Bass	FMP	2006	.257	1	.	526	1
Prospect Slough/Liberty Island	Striped Bass	FMP	2006	.172	1	.	535	1
Prospect Slough/Liberty Island	Striped Bass	FMP	2006	.157	1	.	550	1
Prospect Slough/Liberty Island	Striped Bass	FMP	2006	.258	1	.	550	1
Prospect Slough/Liberty Island	Striped Bass	FMP	2006	.182	1	.	575	1
Prospect Slough/Liberty Island	Striped Bass	FMP	2006	.385	1	.	750	1
Prospect Slough/Liberty Island	Striped Bass	FMP	2005	.208	1	.	252	0

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Prospect Slough/Liberty Island	Striped Bass	FMP	2005	<b>.205</b>	1	.	283	0
Prospect Slough/Liberty Island	Striped Bass	FMP	2005	<b>.311</b>	1	.	291	0
Prospect Slough/Liberty Island	Striped Bass	FMP	2005	<b>.300</b>	1	.	376	0
Prospect Slough/Liberty Island	Striped Bass	FMP	2005	<b>.497</b>	1	.	494	1
Rio Vista Fish Derby1	Striped Bass	FMP	2006	<b>.252</b>	1	.	595	1
Rio Vista Fish Derby2	Striped Bass	FMP	2006	<b>.337</b>	1	.	742	1
Sacramento River at Knights Landing	Striped Bass	FMP	2006	<b>.274</b>	1	.	308	0
Sacramento River at Knights Landing	Striped Bass	FMP	2006	<b>.344</b>	1	.	376	0
Sacramento River at Knights Landing	Striped Bass	FMP	2006	<b>.423</b>	1	.	449	0
Sacramento River at Knights Landing	Striped Bass	FMP	2006	<b>.132</b>	1	.	458	1
Sacramento River at Knights Landing	Striped Bass	FMP	2006	<b>.175</b>	1	.	469	1
Sacramento River at Knights Landing	Striped Bass	FMP	2006	<b>.464</b>	1	.	469	1
Sacramento River at Knights Landing	Striped Bass	FMP	2006	<b>.420</b>	1	.	487	1
Sacramento River at Knights Landing	Striped Bass	FMP	2006	<b>.476</b>	1	.	496	1
Sacramento River at Knights Landing	Striped Bass	FMP	2006	<b>.343</b>	1	.	504	1
Sacramento River at Knights Landing	Striped Bass	FMP	2006	<b>.622</b>	1	.	528	1
Sacramento River at Knights Landing	Striped Bass	FMP	2006	<b>.433</b>	1	.	540	1
Sacramento River at Knights Landing	Striped Bass	FMP	2006	<b>.717</b>	1	.	591	1
Sacramento River at Knights Landing	Striped Bass	FMP	2006	<b>.585</b>	1	.	851	1
Sacramento River at RM 44	Striped Bass	FMP	2005	<b>.194</b>	1	.	269	0
Sacramento River at RM 44	Striped Bass	FMP	2005	<b>.600</b>	1	.	401	0
Sacramento River at RM 44	Striped Bass	FMP	2005	<b>.454</b>	1	.	503	1
Sacramento River at RM 44	Striped Bass	FMP	2005	<b>.266</b>	1	.	661	1
Sacramento River at RM 44	Striped Bass	SRWP	2000	<b>.343</b>	1	.	450	0
Sacramento River at Tisdale Boat Ramp AKA River Bend Marina	Striped Bass	FMP	2006	<b>.538</b>	1	.	440	0
Sacramento River at Tisdale Boat Ramp AKA River Bend Marina	Striped Bass	FMP	2006	<b>.717</b>	1	.	592	1
Sacramento River at Tisdale Boat Ramp AKA River Bend Marina	Striped Bass	FMP	2006	<b>.321</b>	1	.	685	1
Sacramento River near Hamilton	Striped Bass	FMP	2006	<b>.224</b>	1	.	370	0
Sacramento River near Hamilton	Striped Bass	FMP	2006	<b>.338</b>	1	.	418	0

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento River near Hamilton	Striped Bass	FMP	2006	<b>.559</b>	1	.	674	1
Sacramento River/Colusa	Striped Bass	SRWP	2000	<b>.303</b>	1	.	451	0
Toe Drain	Striped Bass	FMP	2006	<b>.486</b>	1	.	558	1
Toe Drain	Striped Bass	FMP	2006	<b>.412</b>	1	.	569	1
Toe Drain	Striped Bass	FMP	2006	<b>.265</b>	1	.	680	1
Prospect Slough/Liberty Island	Tule Perch	FMP	2005	<b>.196</b>	1	.	130	1
Prospect Slough/Liberty Island	Tule Perch	FMP	2005	<b>.196</b>	1	.	130	1
Prospect Slough/Liberty Island	Tule Perch	FMP	2005	<b>.204</b>	1	.	135	1
Prospect Slough/Liberty Island	Tule Perch	FMP	2005	<b>.180</b>	1	.	140	1
Prospect Slough/Liberty Island	Tule Perch	FMP	2005	<b>.209</b>	1	.	146	1
Prospect Slough/Liberty Island	Tule Perch	FMP	2005	<b>.307</b>	1	.	158	1
Cache Slough near Ryer Island Ferry	White Catfish	SRWP	2000	<b>.255</b>	1	.	228	1
Cache Slough near Ryer Island Ferry	White Catfish	SRWP	2000	<b>.135</b>	1	.	254	1
Cache Slough near Ryer Island Ferry	White Catfish	SRWP	2000	<b>.435</b>	1	.	258	1
Cache Slough near Ryer Island Ferry	White Catfish	SRWP	2000	<b>.534</b>	1	.	259	1
Cache Slough near Ryer Island Ferry	White Catfish	SRWP	2000	<b>.397</b>	1	.	265	1
Cache Slough near Ryer Island Ferry	White Catfish	SRWP	1999	<b>.602</b>	1	.	270	1
Cache Slough near Ryer Island Ferry	White Catfish	SRWP	1997	<b>.415</b>	5	.	271	1
Cache Slough near Ryer Island Ferry	White Catfish	SRWP	1999	<b>.680</b>	1	.	274	1
Cache Slough near Ryer Island Ferry	White Catfish	SRWP	2000	<b>.523</b>	1	.	275	1
Cache Slough near Ryer Island Ferry	White Catfish	SRWP	2000	<b>.210</b>	1	.	276	1
Cache Slough near Ryer Island Ferry	White Catfish	SRWP	1997	<b>.552</b>	5	.	279	1
Cache Slough near Ryer Island Ferry	White Catfish	SRWP	1999	<b>.497</b>	1	.	280	1
Cache Slough near Ryer Island Ferry	White Catfish	SRWP	1999	<b>.513</b>	1	.	285	1
Cache Slough near Ryer Island Ferry	White Catfish	SRWP	2000	<b>.490</b>	1	.	290	1
Cache Slough near Ryer Island Ferry	White Catfish	SRWP	2000	<b>.452</b>	1	.	305	1
Cache Slough near Ryer Island Ferry	White Catfish	SRWP	2000	<b>.478</b>	1	.	323	1
Cache Slough near Ryer Island Ferry	White Catfish	SRWP	2000	<b>.615</b>	1	.	325	1
Cache Slough near Ryer Island Ferry	White Catfish	SRWP	2000	<b>.372</b>	1	.	328	1
Cache Slough near Ryer Island Ferry	White Catfish	SRWP	1999	<b>.833</b>	1	.	330	1
Cache Slough near Ryer Island Ferry	White Catfish	SRWP	2000	<b>1.004</b>	1	.	385	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Colusa Basin Drain	White Catfish	SRWP	2000	.211	5	.	259	1
Colusa Basin Drain	White Catfish	SRWP	1997	.304	5	.	288	1
Colusa Drain/Knights Landing	White Catfish	FMP	2005	.117	1	.	155	0
Colusa Drain/Knights Landing	White Catfish	FMP	2005	.109	1	.	160	0
Colusa Drain/Knights Landing	White Catfish	FMP	2005	.118	1	.	160	0
Colusa Drain/Knights Landing	White Catfish	FMP	2005	.138	1	.	170	0
Colusa Drain/Knights Landing	White Catfish	FMP	2005	.121	1	.	175	0
Colusa Drain/Knights Landing	White Catfish	FMP	2005	.120	1	.	180	0
Colusa Drain/Knights Landing	White Catfish	FMP	2005	.197	1	.	182	0
Colusa Drain/Knights Landing	White Catfish	FMP	2005	.100	1	.	190	0
Colusa Drain/Knights Landing	White Catfish	FMP	2005	.131	1	.	193	0
Colusa Drain/Knights Landing	White Catfish	FMP	2005	.174	1	.	212	1
Colusa Drain/Knights Landing	White Catfish	FMP	2005	.160	1	.	229	1
Colusa Drain/Knights Landing	White Catfish	FMP	2005	.157	1	.	230	1
Colusa Drain/Knights Landing	White Catfish	FMP	2005	.197	1	.	260	1
Little Holland Tract 2	White Catfish	CalFed	2000	.724	1	.	193	0
Little Holland Tract 2	White Catfish	CalFed	2000	.527	1	.	218	1
Little Holland Tract 2	White Catfish	CalFed	2000	.514	1	.	227	1
Little Holland Tract 2	White Catfish	CalFed	2000	.369	1	.	228	1
Little Holland Tract 2	White Catfish	CalFed	2000	.452	1	.	228	1
Little Holland Tract 2	White Catfish	CalFed	2000	.572	1	.	253	1
Little Holland Tract 2	White Catfish	CalFed	2000	.539	1	.	256	1
Little Holland Tract 2	White Catfish	CalFed	2000	.649	1	.	262	1
Little Holland Tract 2	White Catfish	CalFed	2000	.330	1	.	270	1
Little Holland Tract 2	White Catfish	CalFed	2000	.754	1	.	281	1
Little Holland Tract 2	White Catfish	CalFed	2000	.376	1	.	284	1
Little Holland Tract 2	White Catfish	CalFed	2000	.430	1	.	285	1
Little Holland Tract 2	White Catfish	CalFed	2000	.344	1	.	302	1
Little Holland Tract 2	White Catfish	CalFed	2000	.682	1	.	315	1
Little Holland Tract 2	White Catfish	CalFed	2000	.334	1	.	328	1
Prospect Slough/Liberty Island	White Catfish	FMP	2005	.207	1	.	199	1
Prospect Slough/Liberty Island	White Catfish	FMP	2005	.396	1	.	212	1
Prospect Slough/Liberty Island	White Catfish	FMP	2005	.297	1	.	215	1
Prospect Slough/Liberty Island	White Catfish	FMP	2005	.546	1	.	220	1
Prospect Slough/Liberty Island	White Catfish	FMP	2005	.287	1	.	270	1
Prospect Slough/Liberty Island	White Catfish	FMP	2005	.294	1	.	273	1
Prospect Slough/Liberty Island	White Catfish	FMP	2005	.260	1	.	290	1
Prospect Slough/Liberty Island	White Catfish	FMP	2005	.395	1	.	300	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Prospect Slough/Liberty Island	White Catfish	FMP	2005	<b>.472</b>	1	.	308	1
Prospect Slough/Liberty Island	White Catfish	FMP	2005	<b>.279</b>	1	.	315	1
Prospect Slough/Liberty Island	White Catfish	FMP	2005	<b>.393</b>	1	.	325	1
Prospect Slough/Liberty Island	White Catfish	FMP	2005	<b>.230</b>	1	.	330	1
Prospect Slough/Liberty Island	White Catfish	FMP	2005	<b>.196</b>	1	.	334	1
Reclamation Slough	White Catfish	TSMP	1982	<b>.210</b>	6	213	234	1
Sacramento River at RM 44	White Catfish	SRWP	2000	<b>.236</b>	1	.	207	1
Sacramento River at RM 44	White Catfish	SRWP	2000	<b>.223</b>	1	.	227	1
Sacramento River at RM 44	White Catfish	SRWP	1999	<b>.204</b>	1	.	233	1
Sacramento River at RM 44	White Catfish	SRWP	1998	<b>.258</b>	5	.	250	1
Sacramento River at RM 44	White Catfish	SRWP	1999	<b>.197</b>	1	.	250	1
Sacramento River at RM 44	White Catfish	SRWP	1998	<b>.390</b>	5	.	256	1
Sacramento River at RM 44	White Catfish	SRWP	1998	<b>.285</b>	5	.	258	1
Sacramento River at RM 44	White Catfish	SRWP	2000	<b>.185</b>	1	.	259	1
Sacramento River at RM 44	White Catfish	SRWP	1999	<b>.327</b>	1	.	259	1
Sacramento River at RM 44	White Catfish	SRWP	1999	<b>.238</b>	1	.	261	1
Sacramento River at RM 44	White Catfish	SRWP	2000	<b>.238</b>	1	.	265	1
Sacramento River at RM 44	White Catfish	SRWP	1999	<b>.536</b>	1	.	265	1
Sacramento River at RM 44	White Catfish	SRWP	1999	<b>1.140</b>	1	.	265	1
Sacramento River at RM 44	White Catfish	SRWP	2000	<b>.155</b>	1	.	270	1
Sacramento River at RM 44	White Catfish	SRWP	1999	<b>.237</b>	1	.	275	1
Sacramento River at RM 44	White Catfish	SRWP	1999	<b>.563</b>	1	.	277	1
Sacramento River at RM 44	White Catfish	SRWP	1999	<b>.515</b>	1	.	281	1
Sacramento River at RM 44	White Catfish	SRWP	1999	<b>.448</b>	1	.	283	1
Sacramento River at RM 44	White Catfish	SRWP	1998	<b>.518</b>	5	.	286	1
Sacramento River at RM 44	White Catfish	SRWP	1999	<b>.673</b>	1	.	286	1
Sacramento River at RM 44	White Catfish	SRWP	2000	<b>.387</b>	7	.	288	1
Sacramento River at RM 44	White Catfish	SRWP	1999	<b>.256</b>	1	.	290	1
Sacramento River at RM 44	White Catfish	SRWP	2000	<b>.246</b>	1	.	294	1
Sacramento River at RM 44	White Catfish	SRWP	1999	<b>.375</b>	1	.	295	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento River at RM 44	White Catfish	SRWP	2000	<b>.286</b>	1	.	296	1
Sacramento River at RM 44	White Catfish	SRWP	1999	<b>.271</b>	1	.	305	1
Sacramento River at RM 44	White Catfish	SRWP	1999	<b>.426</b>	1	.	309	1
Sacramento River at RM 44	White Catfish	SRWP	2000	<b>1.035</b>	1	.	314	1
Sacramento River at RM 44	White Catfish	SRWP	2000	<b>.562</b>	1	.	317	1
Sacramento River at RM 44	White Catfish	SRWP	2000	<b>.718</b>	1	.	345	1
Sacramento River at Veterans Bridge	White Catfish	SRWP	1998	<b>.553</b>	5	.	249	1
Sacramento River at Veterans Bridge	White Catfish	SRWP	2000	<b>.215</b>	5	.	264	1
Sacramento River near Isleton	White Catfish	CalFed	2000	<b>.411</b>	1	.	295	1
Sacramento River near Isleton	White Catfish	CalFed	2000	<b>.645</b>	1	.	328	1
Sacramento River near Verona	White Catfish	FMP	2006	<b>.235</b>	1	.	292	1
Sacramento River near Verona	White Catfish	FMP	2006	<b>.693</b>	1	.	587	1
Sacramento River/Hood	White Catfish	TSMP	1992	<b>.250</b>	1	195	215	1
Sacramento River/Hood	White Catfish	TSMP	1991	<b>.140</b>	1	227	250	1
Sacramento River/Hood	White Catfish	TSMP	1981	<b>.340</b>	6	235	259	1
Sacramento River/Hood	White Catfish	TSMP	1980	<b>.440</b>	6	244	269	1
Sacramento River/Hood	White Catfish	TSMP	1992	<b>.350</b>	1	246	271	1
Sacramento River/Hood	White Catfish	TSMP	1992	<b>.280</b>	1	256	282	1
Sacramento River/Hood	White Catfish	TSMP	1992	<b>.260</b>	1	262	288	1
Sacramento River/Hood	White Catfish	TSMP	1991	<b>.430</b>	1	263	289	1
Sacramento River/Hood	White Catfish	TSMP	1992	<b>.410</b>	1	265	292	1
Sacramento River/Hood	White Catfish	TSMP	1993	<b>.250</b>	6	267	294	1
Sacramento River/Hood	White Catfish	TSMP	1992	<b>.300</b>	1	271	298	1
Sacramento River/Hood	White Catfish	TSMP	1992	<b>.300</b>	1	271	298	1
Sacramento River/Hood	White Catfish	TSMP	1992	<b>.300</b>	1	272	299	1
Sacramento River/Hood	White Catfish	TSMP	1992	<b>.310</b>	1	272	299	1
Sacramento River/Hood	White Catfish	TSMP	1992	<b>.290</b>	1	273	300	1
Sacramento River/Hood	White Catfish	TSMP	1985	<b>.450</b>	10	275	303	1
Sacramento River/Hood	White Catfish	TSMP	1978	<b>.830</b>	6	276	304	1
Sacramento River/Hood	White Catfish	TSMP	1979	<b>.760</b>	6	278	306	1
Sacramento River/Hood	White Catfish	TSMP	1998	<b>.476</b>	6	282	310	1
Sacramento River/Hood	White Catfish	TSMP	1986	<b>.420</b>	8	287	316	1
Sacramento River/Hood	White Catfish	TSMP	1991	<b>.300</b>	1	289	318	1
Sacramento River/Hood	White Catfish	TSMP	1986	<b>.410</b>	7	290	319	1
Sacramento River/Hood	White Catfish	TSMP	1982	<b>.670</b>	6	294	323	1
Sacramento River/Hood	White Catfish	TSMP	1983	<b>.580</b>	5	296	326	1
Sacramento River/Hood	White Catfish	TSMP	1983	<b>.940</b>	6	296	326	1
Sacramento River/Hood	White Catfish	TSMP	1991	<b>.540</b>	1	305	336	1
Sacramento River/Hood	White Catfish	TSMP	1984	<b>.590</b>	6	316	348	1
Sacramento River/Rio Vista	White Catfish	FMP	2005	<b>.416</b>	1	.	256	1
Sacramento River/Rio Vista	White Catfish	FMP	2005	<b>.220</b>	1	.	275	1
Sacramento River/Rio Vista	White Catfish	FMP	2005	<b>.441</b>	1	.	280	1
Sacramento River/Rio Vista	White Catfish	FMP	2005	<b>.349</b>	1	.	285	1

Sampling Site	Species	Study	Year	Mercury (ppm wet wt)	Number	Fork Length (mm)	Total Length (mm)	Legal or Edible Size = 1
Sacramento River/Rio Vista	White Catfish	FMP	2005	<b>.134</b>	1	.	293	1
Sacramento River/Rio Vista	White Catfish	FMP	2005	<b>.159</b>	1	.	296	1
Sacramento River/Rio Vista	White Catfish	FMP	2005	<b>.242</b>	1	.	300	1
Sacramento River/Rio Vista	White Catfish	FMP	2005	<b>.340</b>	1	.	303	1
Sacramento River/Rio Vista	White Catfish	FMP	2005	<b>.225</b>	1	.	311	1
Sacramento River/Rio Vista	White Catfish	FMP	2005	<b>.145</b>	1	.	315	1
Sacramento River/Rio Vista	White Catfish	FMP	2005	<b>.232</b>	1	.	331	1
Sacramento River/Rio Vista	White Catfish	FMP	2005	<b>.323</b>	1	.	335	1
Sacramento River/Rio Vista	White Catfish	FMP	2005	<b>.141</b>	1	.	395	1
Sacramento Slough	White Catfish	SRWP	2000	<b>.441</b>	5	.	262	1
Sacramento Slough	White Catfish	SRWP	1999	<b>.639</b>	5	.	263	1
Sacramento Slough	White Catfish	SRWP	1997	<b>.438</b>	5	.	274	1
Snodgrass Slough near Delta Meadows	White Catfish	FMP	2006	<b>.134</b>	1	.	298	1
Snodgrass Slough near Delta Meadows	White Catfish	FMP	2006	<b>.198</b>	1	.	306	1
Snodgrass Slough near Delta Meadows	White Catfish	FMP	2006	<b>.173</b>	1	.	347	1
Snodgrass Slough near Delta Meadows	White Catfish	FMP	2006	<b>.309</b>	1	.	348	1
Snodgrass Slough near Delta Meadows	White Catfish	FMP	2006	<b>.258</b>	1	.	370	1
Sutter Bypass	White Catfish	TSMP	1982	<b>.410</b>	1	437	481	1
Toe Drain	White Catfish	FMP	2006	<b>.493</b>	1	.	263	1
Toe Drain	White Catfish	FMP	2006	<b>.506</b>	1	.	268	1
Toe Drain	White Catfish	FMP	2006	<b>.608</b>	1	.	276	1
Toe Drain	White Catfish	FMP	2006	<b>.507</b>	1	.	304	1
Toe Drain	White Catfish	FMP	2006	<b>.632</b>	1	.	304	1
Toe Drain	White Catfish	FMP	2006	<b>.452</b>	1	.	314	1
Toe Drain	White Catfish	FMP	2006	<b>.549</b>	1	.	324	1
Toe Drain	White Catfish	FMP	2006	<b>.446</b>	1	.	334	1
Toe Drain	White Catfish	FMP	2006	<b>.531</b>	1	.	339	1
Sacramento River at Channel Marker 33	White Sturgeon	FMP	2006	<b>.202</b>	1	.	1324	1
Sacramento River at Channel Marker 33	White Sturgeon	FMP	2006	<b>.226</b>	1	.	1840	1

# Appendix VI: Comparisons of Mercury in Fish from Northern Delta Subareas including the Central Delta Subarea in White Catfish, Largemouth Bass, Sacramento Pikeminnow, and Sacramento Sucker

## White catfish

White catfish ALL SIZES Mean Mercury (ppm) and Length (mm) by Species and Delta Subarea

		Mercury Wet Wgt ppm				Length mm Type=Total					
		Mean	Min	Max	SD	Mean	Min	Max	SD	# Samples	# Fish
White Catfish	Delta Central Delta Subarea	.081	.006	.167	.033	305	231	390	42	26	31
	Delta Sac R Subarea	.445	.134	1.140	.204	296	207	395	30	77	170
	Delta Yolo South Subarea	.468	.135	1.004	.157	280	193	385	38	57	65
	Total	.408	.006	1.140	.217	293	193	395	34	160	266

### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.180 <sup>a</sup>	.032	.025	.71294	.032	4.391	2	263	.013
2	.794 <sup>b</sup>	.630	.625	.44239	.598	211.020	2	261	.000
3	.809 <sup>c</sup>	.654	.645	.43038	.024	5.925	3	258	.001

a. Predictors: (Constant), lngth\_sq, Length mm Type=Total

b. Predictors: (Constant), lngth\_sq, Length mm Type=Total, DeltaSacR\_1, DeltaYoloSo\_1

c. Predictors: (Constant), lngth\_sq, Length mm Type=Total, DeltaSacR\_1, DeltaYoloSo\_1, lngthSq\_X\_DelYoloSo, lngthSq\_X\_DelSacR, lngthXDel\_YoloSo

### Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-7.421	2.138		-3.471	.001	-11.631	-3.211
	Length mm Type=Total	.044	.015	2.067	2.958	.003	.015	.073
	lngth_sq	-7.4E-005	.000	-2.049	-2.932	.004	.000	.000
2	(Constant)	-5.916	1.354		-4.370	.000	-8.581	-3.251
	Length mm Type=Total	.020	.009	.933	2.097	.037	.001	.038
	lngth_sq	-2.9E-005	.000	-.792	-1.784	.076	.000	.000
	DeltaSacR_1	1.718	.088	1.145	19.470	.000	1.544	1.891
DeltaYoloSo_1	1.876	.099	1.118	18.968	.000	1.681	2.070	
3	(Constant)	-8.717	1.951		-4.467	.000	-12.559	-4.874
	Length mm Type=Total	.042	.013	1.999	3.279	.001	.017	.067
	lngth_sq	-7.1E-005	.000	-1.977	-3.363	.001	.000	.000
	DeltaSacR_1	.845	.347	.563	2.435	.016	.161	1.528
	DeltaYoloSo_1	8.684	2.833	5.178	3.065	.002	3.105	14.262
	lngthXDel_YoloSo	-.049	.020	-8.328	-2.518	.012	-.088	-.011
	lngthSq_X_DelSacR	9.12E-006	.000	.567	2.500	.013	.000	.000
lngthSq_X_DelYoloSo	8.66E-005	.000	4.310	2.561	.011	.000	.000	

a. Dependent Variable: hg\_log

## Largemouth bass

Largemouth bass ALL Sizes Mean mercury (ppm) and Length (mm) by Species and Delta Subarea

		Mercury Wet Wgt ppm				Length mm Type=Total					
		Mean	Min	Max	SD	Mean	Min	Max	SD	# Samples	# Fish
Largemouth Bass	Delta Central Delta Subarea	.306	.075	.951	.159	364	204	529	77	52	56
	Delta CosMo Subarea	.486	.290	.822	.173	334	289	474	60	9	9
	Delta Sac R Subarea	.640	.143	1.370	.311	351	180	475	54	103	154
	Delta Yolo South Subarea	.536	.126	1.267	.284	348	213	560	57	43	51
	Total	.546	.075	1.370	.305	353	180	560	60	207	270

### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.584 <sup>a</sup>	.341	.336	.49374	.341	68.993	2	267	.000
2	.769 <sup>b</sup>	.592	.584	.39080	.251	54.065	3	264	.000
3	.786 <sup>c</sup>	.617	.603	.38191	.026	3.486	5	259	.005

a. Predictors: (Constant), lngth\_sq, Length mm Type=Total

b. Predictors: (Constant), lngth\_sq, Length mm Type=Total, DeltaYoloSo\_1, DeltaCentral\_1, DeltaSacR\_1

c. Predictors: (Constant), lngth\_sq, Length mm Type=Total, DeltaYoloSo\_1, DeltaCentral\_1, DeltaSacR\_1, lngthSq\_X\_DelCentral, lngthSq\_X\_DelYoloSo, lngthSq\_X\_DelSacR, lngthXDelCentral, lngthXDel\_YoloSo

### Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-5.289	.664		-7.969	.000	-6.596	-3.982
	Length mm Type=Total	.021	.004	2.036	5.442	.000	.013	.028
	lngth_sq	-2.1E-005	.000	-1.501	-4.012	.000	.000	.000
2	(Constant)	-3.926	.548		-7.161	.000	-5.005	-2.846
	Length mm Type=Total	.013	.003	1.261	4.169	.000	.007	.019
	lngth_sq	-9.6E-006	.000	-6.73	-2.219	.027	.000	.000
	DeltaCentral_1	-.703	.141	-.471	-4.977	.000	-.981	-.425
	DeltaSacR_1	.093	.134	.076	.694	.488	-.171	.357
DeltaYoloSo_1	-.094	.141	-.061	-.664	.507	-.372	.184	
3	(Constant)	-4.626	1.020		-4.537	.000	-6.633	-2.618
	Length mm Type=Total	.019	.005	1.882	3.644	.000	.009	.029
	lngth_sq	-2.2E-005	.000	-1.526	-2.904	.004	.000	.000
	DeltaCentral_1	2.052	1.346	1.376	1.524	.129	-.599	4.704
	DeltaSacR_1	-.281	.388	-.230	-.725	.469	-1.046	.483
	DeltaYoloSo_1	-1.409	1.531	-.912	-.920	.358	-4.424	1.606
	lngthXDelCentral	-.017	.007	-4.258	-2.348	.020	-.031	-.003
	lngthXDel_YoloSo	.003	.008	.642	.347	.729	-.013	.019
	lngthSq_X_DelCentral	2.55E-005	.000	2.586	2.491	.013	.000	.000
	lngthSq_X_DelSacR	3.21E-006	.000	.363	1.015	.311	.000	.000
	lngthSq_X_DelYoloSo	2.96E-006	.000	.255	.265	.791	.000	.000

a. Dependent Variable: hg\_log

## Sacramento pikeminnow

Sacramento pikeminnow ALL SIZES Mean Mercury (ppm) and Length (mm) by Species and Delta Subarea

		Mercury Wet Wgt ppm				Length mm Type=Total					
		Mean	Min	Max	SD	Mean	Min	Max	SD	# Samples	# Fish
Sacramento Pikeminnow	Delta Central Delta Subarea	.129	.129	.129	.	229	229	229	.	1	1
	Delta Sac R Subarea	.435	.061	2.039	.422	344	174	638	125	50	63
	Delta Yolo South Subarea	.273	.170	.432	.100	266	238	310	26	7	7
	Total	.415	.061	2.039	.403	335	174	638	121	58	71

### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.815 <sup>a</sup>	.664	.654	.50719	.664	67.112	2	68	.000
2	.821 <sup>b</sup>	.674	.660	.50285	.011	2.179	1	67	.145
3	.822 <sup>c</sup>	.675	.655	.50610	.001	.141	1	66	.709

a. Predictors: (Constant), lngth\_sq, Length mm Type=Total

b. Predictors: (Constant), lngth\_sq, Length mm Type=Total, DeltaSacR\_1

c. Predictors: (Constant), lngth\_sq, Length mm Type=Total, DeltaSacR\_1, lngthXDel\_SacR

### Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-4.085	.622		-6.563	.000	-5.327	-2.843
	Length mm Type=Total	.011	.004	1.534	3.120	.003	.004	.018
	lngth_sq	-6.72E-006	.000	-.734	-1.492	.140	.000	.000
2	(Constant)	-3.870	.634		-6.103	.000	-5.136	-2.604
	Length mm Type=Total	.011	.003	1.543	3.165	.002	.004	.018
	lngth_sq	-6.60E-006	.000	-.720	-1.476	.145	.000	.000
	DeltaSacR_1	-.285	.193	-.105	-1.476	.145	-.672	.101

a. Dependent Variable: hg\_log

## Sacramento sucker

Sacramento sucker ALL SIZES Mean Mercury (ppm) and Length (mm) by Species and Delta Sub-Area

		Mercury Wet Wgt ppm				Length mm Type=Total					
		Mean	Min	Max	SD	Mean	Min	Max	SD	# Samples	# Fish
Sacramento Sucker	Delta Central Delta Subarea	.287	.225	.325	.043	481	458	495	16	4	4
	Delta CosMo Subarea	.400	.281	.552	.102	450	403	481	32	5	5
	Delta Sac R Subarea	.238	.046	.562	.113	454	274	574	49	42	76
	Delta Yolo South Subarea	.196	.083	.491	.135	396	292	462	49	8	12

	Total	.243	.046	.562	.119	447	274	574	51	59	97
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### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.521 <sup>a</sup>	.272	.256	.43809	.272	17.530	2	94	.000
2	.578 <sup>b</sup>	.335	.306	.42326	.063	4.350	2	92	.016
3	.621 <sup>c</sup>	.386	.345	.41118	.051	3.743	2	90	.027

a. Predictors: (Constant), lngth\_sq, Length mm Type=Total

b. Predictors: (Constant), lngth\_sq, Length mm Type=Total, DeltaSacR\_1, DeltaYoloSo\_1

c. Predictors: (Constant), lngth\_sq, Length mm Type=Total, DeltaSacR\_1, DeltaYoloSo\_1, lngthSq\_X\_DelYoloSo, lngthSq\_X\_DelSacR

### Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-.127	1.796		-.071	.944	-3.693	3.438
	Length mm Type=Total	-.012	.008	-1.243	-1.457	.149	-.029	.004
	lngth_sq	2.02E-005	.000	1.742	2.041	.044	.000	.000
2	(Constant)	.678	1.762		.385	.701	-2.821	4.177
	Length mm Type=Total	-.014	.008	-1.411	-1.707	.091	-.030	.002
	lngth_sq	2.19E-005	.000	1.886	2.283	.025	.000	.000
	DeltaSacR_1	-.440	.150	-.359	-2.939	.004	-.738	-.143
3	(Constant)	4.471	2.289		1.953	.054	-.076	9.019
	Length mm Type=Total	-.023	.009	-2.328	-2.638	.010	-.040	-.006
	lngth_sq	2.38E-005	.000	2.051	2.142	.035	.000	.000
	DeltaSacR_1	-2.200	1.206	-1.793	-1.825	.071	-4.595	.195
	DeltaYoloSo_1	-3.618	1.344	-2.357	-2.692	.008	-6.287	-.948
	lngthSq_X_DelSacR	8.09E-006	.000	1.499	1.457	.149	.000	.000
lngthSq_X_DelYoloSo	1.68E-005	.000	1.791	2.529	.013	.000	.000	

a. Dependent Variable: hg\_log

# Appendix VII. Statistical Comparison of Mean Mercury Concentrations in White Catfish, Largemouth Bass, Sacramento Pikeminnow, and Sacramento Sucker by Northern Delta Subarea

## White Catfish

White catfish ALL Sizes Mean mercury (ppm) and Length (mm) by Species and Northern Delta Subarea

		Mercury_wet_wgt_ug/g				TOTAL LENGTH_mm					
		Mean	Min	Max	SD	Mean	Min	Max	SD	# Samples	# Fish
White	Delta Sac R Subarea	.445	.134	1.140	.204	296.0	207.0	395.0	29.8	77	170
Catfish	Delta Yolo South Subarea	.468	.135	1.004	.157	280.1	193.0	385.0	37.7	57	65
	Total	.451	.134	1.140	.192	291.6	193.0	395.0	32.9	134	235

White catfish Edible Size Only: Mean mercury (ppm) and Length (mm) by Species and Northern Delta Subarea

		Mercury_wet_wgt_ug/g				TOTAL LENGTH_mm					
		Mean	Min	Max	SD	Mean	Min	Max	SD	# Samples	# Fish
White	Delta Sac R Subarea	.445	.134	1.140	.204	296.0	207.0	395.0	29.8	77	170
Catfish	Delta Yolo South Subarea	.464	.135	1.004	.155	281.5	199.0	385.0	36.4	56	64
	Total	.450	.134	1.140	.192	292.0	199.0	395.0	32.3	133	234

### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.297 <sup>a</sup>	.088	.080	.184370	.088	11.231	2	232	.000
2	.321 <sup>b</sup>	.103	.091	.183272	.015	3.786	1	231	.053
3	.394 <sup>c</sup>	.156	.137	.178596	.053	7.127	2	229	.001

a. Predictors: (Constant), lngth\_sq, TOTAL LENGTH\_mm

b. Predictors: (Constant), lngth\_sq, TOTAL LENGTH\_mm, Delta Sac River=1; other=0

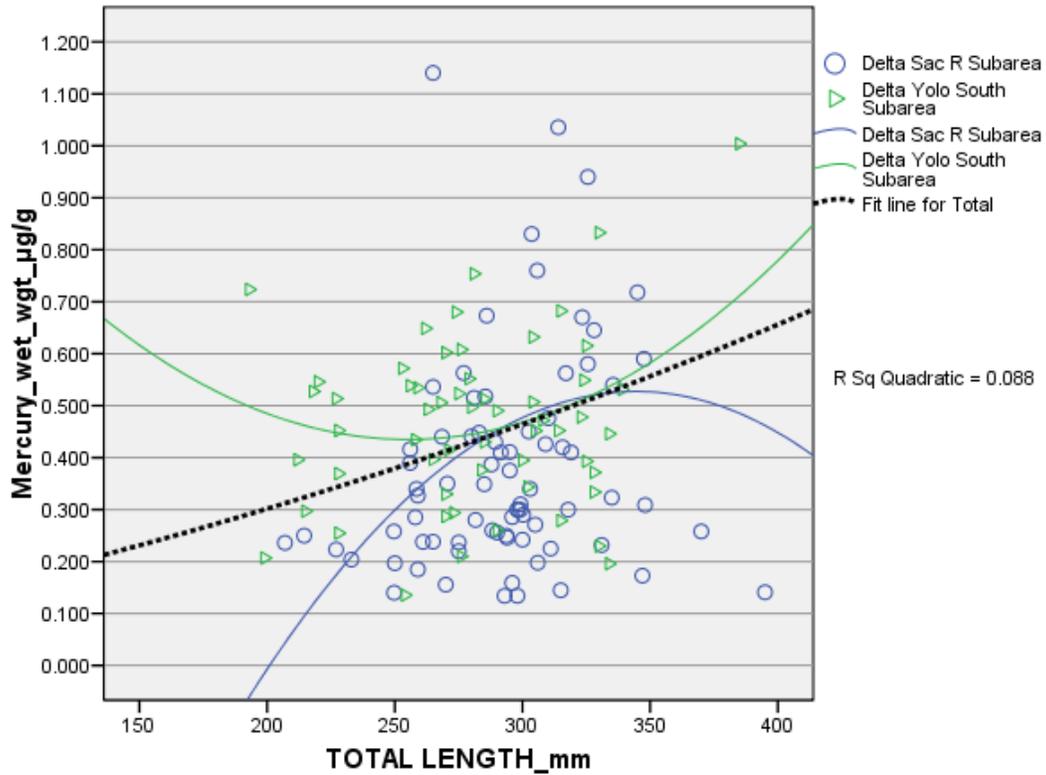
c. Predictors: (Constant), lngth\_sq, TOTAL LENGTH\_mm, Delta Sac River=1; other=0, lngthSqXSacR, lngthXSacR

### Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.064	.605		.105	.917	-1.129	1.256
	TOTAL LENGTH_mm	.001	.004	.154	.214	.831	-.007	.009
	lngth_sq	1.45E-006	.000	.143	.199	.843	.000	.000
2	(Constant)	-.108	.608		-.178	.859	-1.307	1.090
	TOTAL LENGTH_mm	.002	.004	.379	.523	.602	-.006	.011
	lngth_sq	-5.62E-007	.000	-.055	-.077	.939	.000	.000
	Delta Sac River=1; other=0	-.054	.028	-.125	-1.946	.053	-.108	.001

a. Dependent Variable: Mercury\_wet\_wgt\_ug/g

### White Catfish Scatterplot



Cases weighted by NO IN COMP

## Largemouth Bass

Largemouth bass ALL Sizes Mean mercury (ppm) and Length (mm) by Species and Northern Delta Subarea

		Mercury_wet_wgt_µg/g				TOTAL LENGTH_mm					
		Mean	Min	Max	SD	Mean	Min	Max	SD	# Samples	# Fish
Largemouth Bass	Delta Sac R Subarea	.640	.143	1.370	.311	351.3	180.0	475.0	53.6	103	154
	Delta Yolo North Subarea	.596	.596	.596	.	365.0	365.0	365.0	.	1	1
	Delta Yolo South Subarea	.536	.126	1.267	.284	348.3	213.0	560.0	57.4	43	51
	Total	.614	.126	1.370	.306	350.6	180.0	560.0	54.3	147	206

Largemouth bass LEGAL Size Only: Mean mercury (ppm) and Length (mm) by Species and Northern Delta Subarea

		Mercury_wet_wgt_µg/g				TOTAL LENGTH_mm					
		Mean	Min	Max	SD	Mean	Min	Max	SD	# Samples	# Fish
Largemouth Bass	Delta Sac R Subarea	.712	.222	1.370	.295	369.9	307.0	475.0	37.2	77	126
	Delta Yolo North Subarea	.596	.596	.596	.	365.0	365.0	365.0	.	1	1
	Delta Yolo South Subarea	.611	.221	1.267	.262	367.1	308.0	560.0	46.3	33	41
	Total	.687	.221	1.370	.289	369.2	307.0	560.0	39.3	111	168

### Model Summary

Model	R	RSquare	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.630 <sup>a</sup>	.397	.391	.238927	.397	66.769	2	203	.000
2	.644 <sup>b</sup>	.414	.406	.236003	.018	6.061	1	202	.015
3	.647 <sup>c</sup>	.419	.404	.236268	.004	.773	2	200	.463

a. Predictors: (Constant), lngth\_sq, TOTAL LENGTH\_mm

b. Predictors: (Constant), lngth\_sq, TOTAL LENGTH\_mm, Delta Sac River=1; other=0

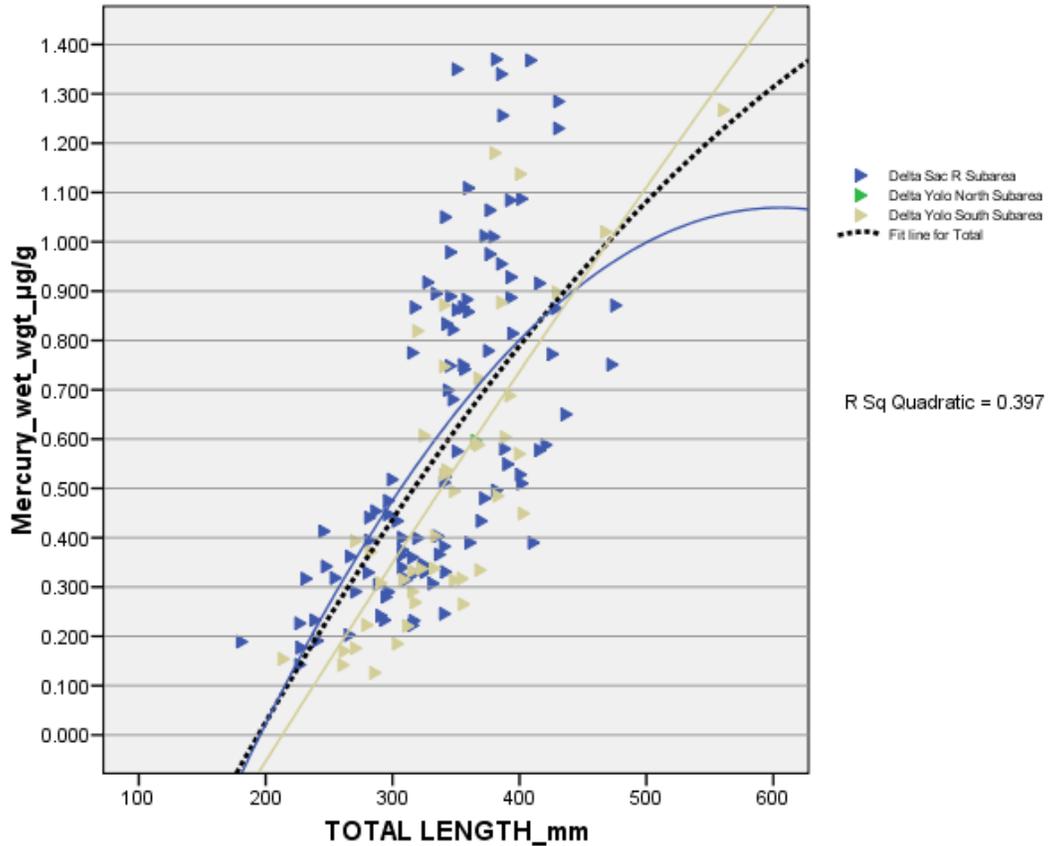
c. Predictors: (Constant), lngth\_sq, TOTAL LENGTH\_mm, Delta Sac River=1; other=0, lngthSqXSacR, lngthXSacR

### Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-.976	.411		-2.372	.019	-1.787	-.165
	TOTAL LENGTH_mm	.006	.002	.994	2.367	.019	.001	.010
	lngth_sq	-2.98E-006	.000	-.369	-.879	.380	.000	.000
2	(Constant)	-1.015	.407		-2.495	.013	-1.816	-.213
	TOTAL LENGTH_mm	.005	.002	.965	2.324	.021	.001	.010
	lngth_sq	-2.76E-006	.000	-.343	-.825	.410	.000	.000
	Delta Sac River=1; other=0	.093	.038	.133	2.462	.015	.019	.168

a. Dependent Variable: Mercury\_wet\_wgt\_µg/g

# Largemouth Bass



Cases weighted by NO IN COMP

There was only one sample in the Yolo North Subarea, therefore only Sacramento River and Yolo South Subarea regressions are displayed.

## Sacramento Pikeminnow

Sacramento pikeminnow ALL Sizes Mean mercury (ppm) and Length (mm) by Species and Northern Delta Subarea

		Mercury_wet_wgt_µg/g				TOTAL LENGTH_mm					
		Mean	Min	Max	SD	Mean	Min	Max	SD	# Samples	# Fish
Delta samples	Delta Sac R Subarea	.435	.061	2.039	.422	344.0	174.0	638.0	124.6	50	63
	Delta Yolo South Subarea	.273	.170	.432	.100	266.1	238.0	310.0	26.4	7	7
	Total	.419	.061	2.039	.404	336.2	174.0	638.0	120.7	57	70

Sacramento pikeminnow Edible Size Only: Mean Mercury (ppm) and Length (mm) by Species and Delta Subarea

		Mercury_wet_wgt_µg/g				TOTAL LENGTH_mm					
		Mean	Min	Max	SD	Mean	Min	Max	SD	# Samples	# Fish
Sacramento Pikeminnow	Delta Sac R Subarea	.508	.070	2.039	.448	381.7	252.2	638.0	115.9	36	49
	Delta Yolo South Subarea	.256	.170	.390	.094	284.8	270.0	310.0	17.4	4	4
	Total	.489	.070	2.039	.436	374.4	252.2	638.0	114.4	40	53

### Model Summary<sup>d,e</sup>

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
	Select = SRND data (Selected)				R Square Change	F Change	df1	df2	Sig. F Change
1	.740 <sup>a</sup>	.548	.535	.275847	.548	40.652	2	67	.000
2	.741 <sup>b</sup>	.549	.528	.277733	.001	.093	1	66	.761
3	.742 <sup>c</sup>	.551	.523	.279330	.002	.247	1	65	.621

a. Predictors: (Constant), lngth\_sq, TOTAL LENGTH\_mm

b. Predictors: (Constant), lngth\_sq, TOTAL LENGTH\_mm, Delta Sac River=1; other=0

c. Predictors: (Constant), lngth\_sq, TOTAL LENGTH\_mm, Delta Sac River=1; other=0, lngthXSacR

d. Unless noted otherwise, statistics are based only on cases for which Select = SRND data.

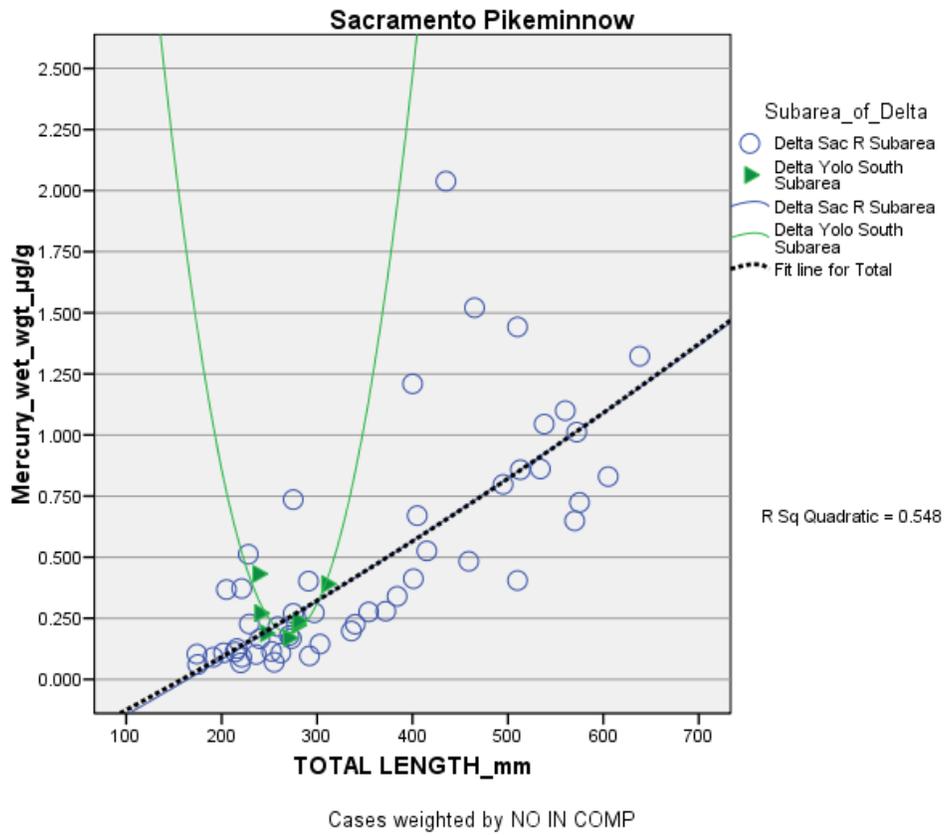
e. Dependent Variable: Mercury\_wet\_wgt\_µg/g

### Coefficients<sup>a,b</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-.329	.340		-.967	.337	-1.009	.350
	TOTAL LENGTH_mm	.002	.002	.591	1.031	.306	-.002	.006
	lngth_sq	6.46E-007	.000	.151	.263	.793	.000	.000
2	(Constant)	-.300	.356		-.840	.404	-1.011	.412
	TOTAL LENGTH_mm	.002	.002	.588	1.019	.312	-.002	.006
	lngth_sq	6.80E-007	.000	.159	.275	.784	.000	.000
	Delta Sac River=1; other=0	-.034	.113	-.026	-.305	.761	-.260	.191

a. Dependent Variable: Mercury\_wet\_wgt\_µg/g

b. Selecting only cases for which Select = SRND data



## Sacramento Sucker

Sacramento sucker ALL Sizes = Edible Size Mean Mercury (ppm) and Length (mm) by Species and Delta Subarea

		Mercury_wet_wgt_µg/g				TOTAL LENGTH_mm					
		Mean	Min	Max	SD	Mean	Min	Max	SD	# Samples	# Fish
Sacramento Sucker	Delta Sac R Subarea	.238	.046	.562	.113	453.6	274.0	574.0	49.2	42	76
	Delta Yolo South Subarea	.196	.083	.491	.135	395.6	292.0	462.0	49.4	8	12
	Total	.232	.046	.562	.116	445.7	274.0	574.0	52.9	50	88

### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.541 <sup>a</sup>	.292	.276	.098912	.292	17.567	2	85	.000
2	.545 <sup>b</sup>	.297	.272	.099201	.004	.504	1	84	.480
3	.594 <sup>c</sup>	.353	.322	.095710	.056	7.241	1	83	.009

a. Predictors: (Constant), lngth\_sq, TOTAL LENGTH\_mm

b. Predictors: (Constant), lngth\_sq, TOTAL LENGTH\_mm, Delta Sac River=1; other=0

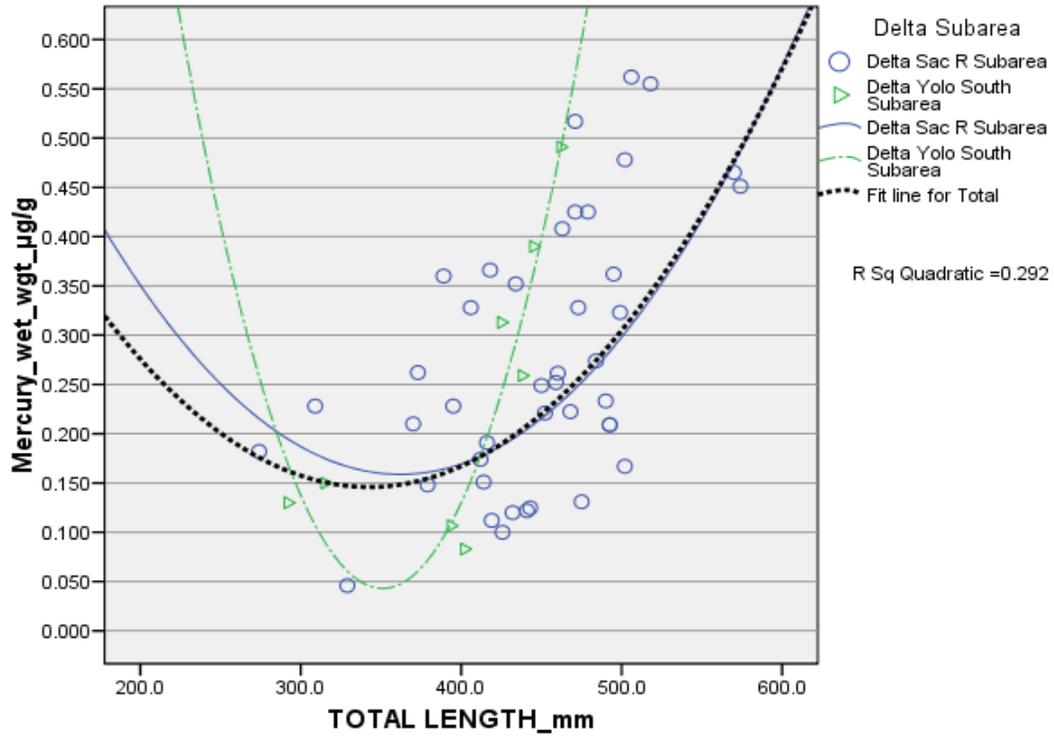
c. Predictors: (Constant), lngth\_sq, TOTAL LENGTH\_mm, Delta Sac River=1; other=0, lngthSqXSacR

### Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.896	.408		2.198	.031	.086	1.707
	TOTAL LENGTH_mm	-.004	.002	-1.993	-2.282	.025	-.008	-.001
	lngth_sq	6.40E-006	.000	2.482	2.840	.006	.000	.000
2	(Constant)	.896	.409		2.191	.031	.083	1.709
	TOTAL LENGTH_mm	-.004	.002	-1.978	-2.257	.027	-.008	-.001
	lngth_sq	6.43E-006	.000	2.493	2.844	.006	.000	.000
	Delta Sac River=1; other=0	-.024	.033	-.070	-.710	.480	-.090	.043

a. Dependent Variable: Mercury\_wet\_wgt\_µg/g

### Sacramento Sucker Scatterplot



Cases weighted by NO IN COMP

## Appendix VIII. Statistical Comparison of Mean Mercury Concentrations in White Catfish, Largemouth Bass, Sacramento Pikeminnow, Sacramento Sucker, and Carp by Subregion: Northern Delta versus Sacramento River and Associated Creeks and Sloughs outside the Delta

### White Catfish

White Catfish ALL Sizes Mean Mercury and Length by Species and Subregion

Subregion	MERCURY_wet_wgt_µg/g				TOTAL LENGTH_mm				# Samples	# Fish
	Mean	Min	Max	SD	Mean	Min	Max	SD		
Outside Delta	.324	.100	.693	.174	255.3	155.0	587.0	65.1	24	57
Delta samples	.451	.134	1.140	.192	291.6	193.0	395.0	32.9	134	235
Total	.426	.100	1.140	.195	284.5	155.0	587.0	43.5	158	292

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.418 <sup>a</sup>	.175	.169	.177913	.175	30.680	2	289	.000
2	.428 <sup>b</sup>	.183	.175	.177368	.008	2.780	1	288	.097
3	.430 <sup>c</sup>	.185	.170	.177819	.002	.271	2	286	.763

a. Predictors: (Constant), lngth\_sq, TOTAL LENGTH\_mm

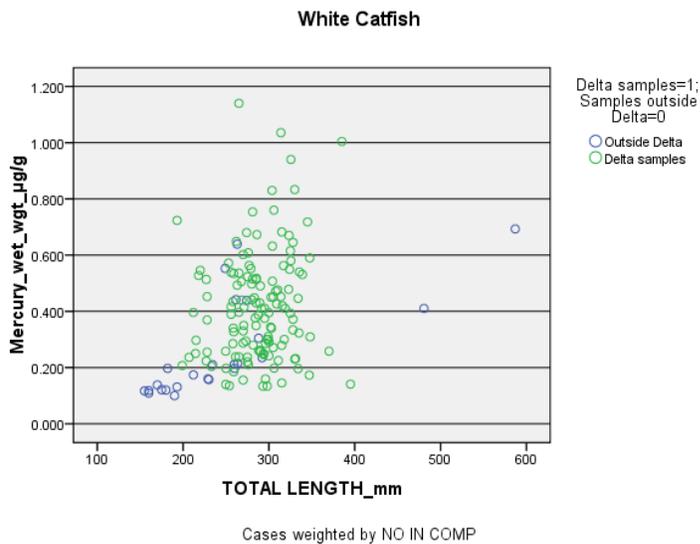
b. Predictors: (Constant), lngth\_sq, TOTAL LENGTH\_mm, Delta samples=1; Samples outside Delta=0

c. Predictors: (Constant), lngth\_sq, TOTAL LENGTH\_mm, Delta samples=1; Samples outside Delta=0, lngthSqXDelta, lngthXDelta

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			B	
							Lower Bound	Upper Bound
1	(Constant)	-.505	.175		-2.886	.004	-.849	-.160
	TOTAL LENGTH_mm	.005	.001	1.033	4.205	.000	.002	.007
	lngh_sq	-4.683E-6	.000	-.655	-2.667	.008	.000	.000
2	(Constant)	-.389	.187		-2.077	.039	-.758	-.020
	TOTAL LENGTH_mm	.004	.001	.831	3.045	.003	.001	.006
	lngh_sq	-3.455E-6	.000	-.483	-1.820	.070	.000	.000
	Delta samples=1; Samples outside Delta=0	.050	.030	.102	1.667	.097	-.009	.109
3	(Constant)	-.447	.256		-1.748	.082	-.951	.056
	TOTAL LENGTH_mm	.004	.002	.913	2.606	.010	.001	.007
	lngh_sq	-3.976E-6	.000	-.556	-1.795	.074	.000	.000
	Delta samples=1; Samples outside Delta=0	.511	.637	1.039	.801	.424	-.744	1.765
	lnghXDelta	-.003	.004	-1.957	-.734	.464	-.012	.005
	lnghSqXDelta	5.426E-6	.000	1.062	.736	.463	.000	.000

a. Dependent Variable: Mercury\_wet\_wgt\_µg/g



## Largemouth bass

### Largemouth Bass ALL Sizes Mean mercury and Length by Species and Subregion

Subregion	MERCURY_wet_wgt_μg/g				TOTAL LENGTH_mm				# Samples	# Fish
	Mean	Min	Max	SD	Mean	Min	Max	SD		
Outside Delta	.524	.127	1.534	.247	357.3	176.0	535.0	63.4	90	124
Delta samples	.614	.126	1.370	.306	350.6	180.0	560.0	54.3	147	206
Total	.580	.126	1.534	.288	353.1	176.0	560.0	57.9	237	330

### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.596 <sup>a</sup>	.355	.351	.232153	.355	89.941	2	327	.000
2	.622 <sup>b</sup>	.387	.382	.226583	.032	17.277	1	326	.000
3	.634 <sup>c</sup>	.402	.393	.224579	.014	3.921	2	324	.021

a. Predictors: (Constant), lngth\_sq, TOTAL LENGTH\_mm

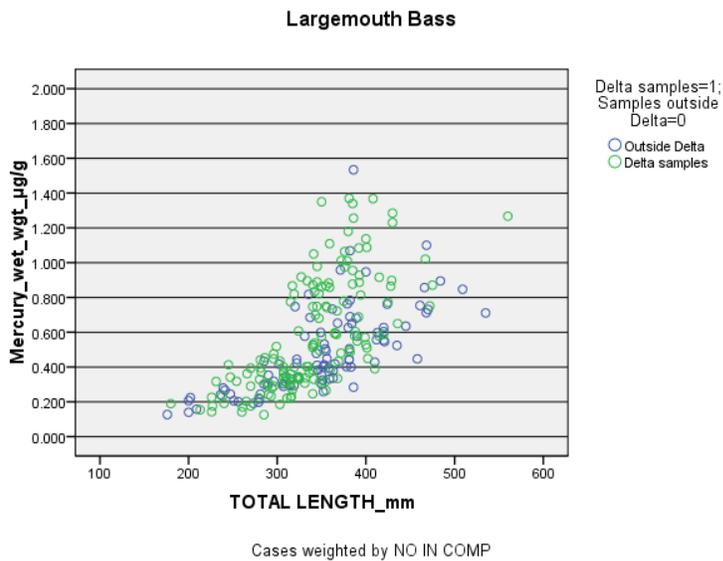
b. Predictors: (Constant), lngth\_sq, TOTAL LENGTH\_mm, Delta samples=1; Samples outside Delta=0

c. Predictors: (Constant), lngth\_sq, TOTAL LENGTH\_mm, Delta samples=1; Samples outside Delta=0, lngthSqXDelta, lngthXDelta

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-.823	.276		-2.978	.003	-1.366	-.279
	TOTAL LENGTH_mm	.005	.002	1.024	3.212	.001	.002	.008
	lngh_sq	-3.090E-6	.000	-.435	-1.366	.173	.000	.000
2	(Constant)	-.802	.270		-2.972	.003	-1.332	-.271
	TOTAL LENGTH_mm	.005	.002	.907	2.905	.004	.001	.008
	lngh_sq	-2.183E-6	.000	-.307	-.984	.326	.000	.000
	Delta samples=1; Samples outside Delta=0	.108	.026	.181	4.157	.000	.057	.159
3	(Constant)	-.476	.372		-1.279	.202	-1.208	.256
	TOTAL LENGTH_mm	.003	.002	.666	1.553	.121	.000	.008
	lngh_sq	-1.402E-6	.000	-.197	-.461	.645	.000	.000
	Delta samples=1; Samples outside Delta=0	-.500	.537	-.841	-.931	.352	-1.556	.556
	lnghXDelta	.002	.003	1.393	.742	.459	-.004	.008
	lnghSqXDelta	-1.577E-6	.000	-.372	-.358	.721	.000	.000

a. Dependent Variable: Mercury (wet) ppm



# Sacramento Pikeminnow

## Sacramento Pikeminnow ALL Sizes Mean Mercury and Length by Species and Subregion

Subregion	MERCURY_wet_wgt_μg/g				TOTAL LENGTH_mm				# Samples	# Fish
	Mean	Min	Max	SD	Mean	Min	Max	SD		
Outside Delta	.402	.047	1.712	.321	345.1	189.0	572.0	94.3	109	140
Delta samples	.419	.061	2.039	.404	336.2	174.0	638.0	120.7	57	70
Total	.408	.047	2.039	.350	342.2	174.0	638.0	103.6	166	210

### Model Summary<sup>d,e</sup>

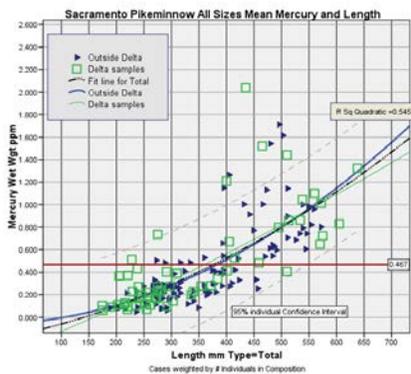
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
	Select = SRND data (Selected)				R Square Change	F Change	df1	df2	Sig. F Change
1	.738 <sup>a</sup>	.545	.540	.237283	.545	123.829	2	207	.000
2	.739 <sup>b</sup>	.546	.539	.237512	.001	.602	1	206	.439
3	.740 <sup>c</sup>	.547	.536	.238379	.001	.252	2	204	.777

- a. Predictors: (Constant), lngth\_sq, TOTAL LENGTH\_mm
- b. Predictors: (Constant), lngth\_sq, TOTAL LENGTH\_mm, Delta samples=1; Samples outside Delta=0
- c. Predictors: (Constant), lngth\_sq, TOTAL LENGTH\_mm, Delta samples=1; Samples outside Delta=0, lngthSqXDelta, lngthXDelta
- d. Unless noted otherwise, statistics are based only on cases for which Select = SRND data.
- e. Dependent Variable: Mercury\_wet\_wgt\_μg/g

### Coefficients<sup>a,b</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-.176	.216		-818	.414	-.602	.249
	TOTAL LENGTH_mm	.001	.001	.289	.817	.415	-.001	.003
	lngth_sq	1.96E-006	.000	.451	1.277	.203	.000	.000
2	(Constant)	-.235	.229		-1.027	.306	-.685	.216
	TOTAL LENGTH_mm	.001	.001	.369	1.002	.318	-.001	.004
	lngth_sq	1.62E-006	.000	.371	1.008	.315	.000	.000
	Delta samples=1; Samples outside Delta=0	.028	.036	.038	.776	.439	-.043	.100

- a. Dependent Variable: Mercury\_wet\_wgt\_μg/g
- b. Selecting only cases for which Select = SRND data



The red line on the graph is incorrectly labeled as 0.467 ppm. It should be 0.438 ppm.

## Sacramento Sucker

### Sacramento Sucker ALL Sizes Mean Mercury and Length by Species and Subregion

Subregion	MERCURY_wet_wgt_μg/g				TOTAL LENGTH_mm				# Samples	# Fish
	Mean	Min	Max	SD	Mean	Min	Max	SD		
Outside Delta	.117	.002	.597	.105	370.5	151.0	569.0	82.0	123	157
Delta samples	.232	.046	.562	.116	445.7	274.0	574.0	52.9	50	88
Total	.158	.002	.597	.122	397.5	151.0	574.0	81.2	173	245

### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.670 <sup>a</sup>	.448	.444	.091326	.448	98.329	2	242	.000
2	.693 <sup>b</sup>	.480	.473	.088873	.031	14.546	1	241	.000
3	.697 <sup>c</sup>	.486	.476	.088676	.007	1.537	2	239	.217

a. Predictors: (Constant), lngth\_sq, TOTAL LENGTH\_mm

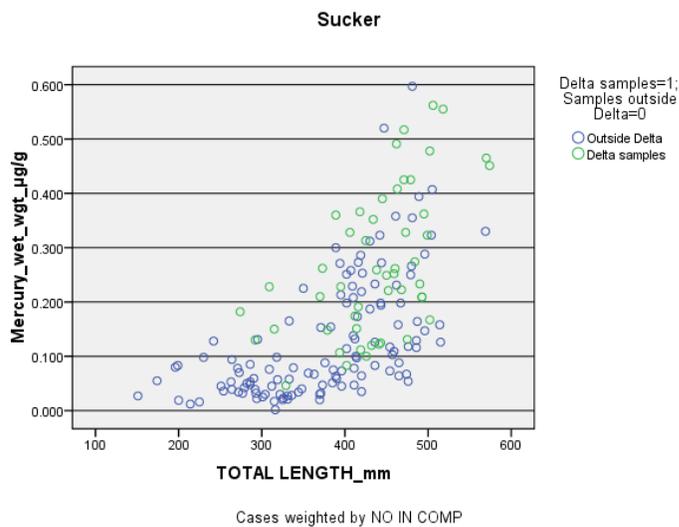
b. Predictors: (Constant), lngth\_sq, TOTAL LENGTH\_mm, Delta samples=1; Samples outside Delta=0

c. Predictors: (Constant), lngth\_sq, TOTAL LENGTH\_mm, Delta samples=1; Samples outside Delta=0, lngthSqXDelta, lngthXDelta

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.221	.106		2.077	.039	.011	.431
	TOTAL LENGTH_mm	-.002	.001	-1.013	-2.647	.009	-.003	.000
	lngh_sq	3.304E-6	.000	1.662	4.345	.000	.000	.000
2	(Constant)	.233	.104		2.245	.026	.029	.437
	TOTAL LENGTH_mm	-.002	.001	-1.015	-2.726	.007	-.003	.000
	lngh_sq	3.132E-6	.000	1.576	4.224	.000	.000	.000
	Delta samples=1; Samples outside Delta=0	.050	.013	.198	3.814	.000	.024	.077
3	(Constant)	.174	.118		1.473	.142	-.059	.408
	TOTAL LENGTH_mm	-.001	.001	-.806	-1.826	.069	-.003	.000
	lngh_sq	2.724E-6	.000	1.371	3.002	.003	.000	.000
	Delta samples=1; Samples outside Delta=0	.722	.384	2.834	1.879	.062	-.035	1.479
	lnghXDelta	-.003	.002	-5.603	-1.716	.087	-.007	.000
	lnghSqXDelta	3.676E-6	.000	3.016	1.660	.098	.000	.000

a. Dependent Variable: Mercury\_wet\_wgt\_µg/g



## Carp

**Carp ALL Sizes Mean Mercury and Length by Species and Subregion**

Subregion	MERCURY_wet_wgt_µg/g				TOTAL LENGTH_mm				# Samples	# Fish
	Mean	Min	Max	SD	Mean	Min	Max	SD		
Outside Delta	.206	.059	.558	.113	458.3	340.0	770.0	79.6	49	78
Delta samples	.276	.085	.938	.125	523.2	352.0	702.0	81.1	48	92
Total	.244	.059	.938	.124	493.4	340.0	770.0	86.5	97	170

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.518 <sup>a</sup>	.268	.260	.106754	.268	30.641	2	167	.000
2	.528 <sup>b</sup>	.279	.266	.106329	.010	2.337	1	166	.128
3	.529 <sup>c</sup>	.280	.258	.106891	.001	.129	2	164	.879

a. Predictors: (Constant), lngth\_sq, TOTAL LENGTH\_mm

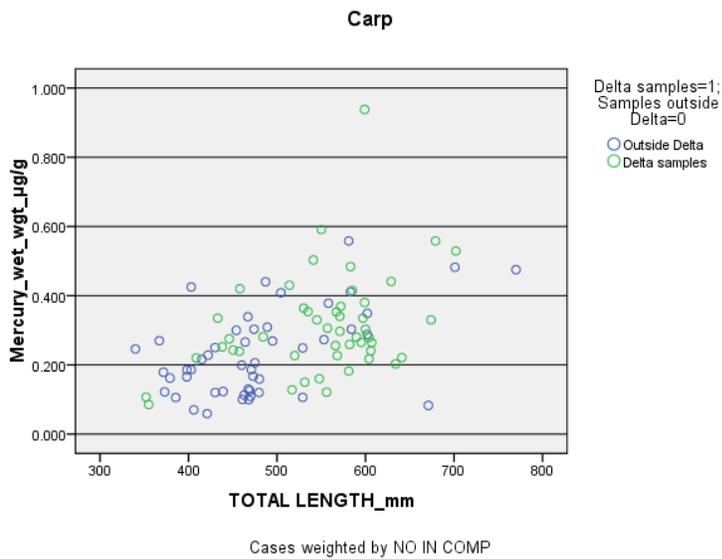
b. Predictors: (Constant), lngth\_sq, TOTAL LENGTH\_mm, Delta samples=1; Samples outside Delta=0

c. Predictors: (Constant), lngth\_sq, TOTAL LENGTH\_mm, Delta samples=1; Samples outside Delta=0, lngthSqXDelta, lngthXDelta

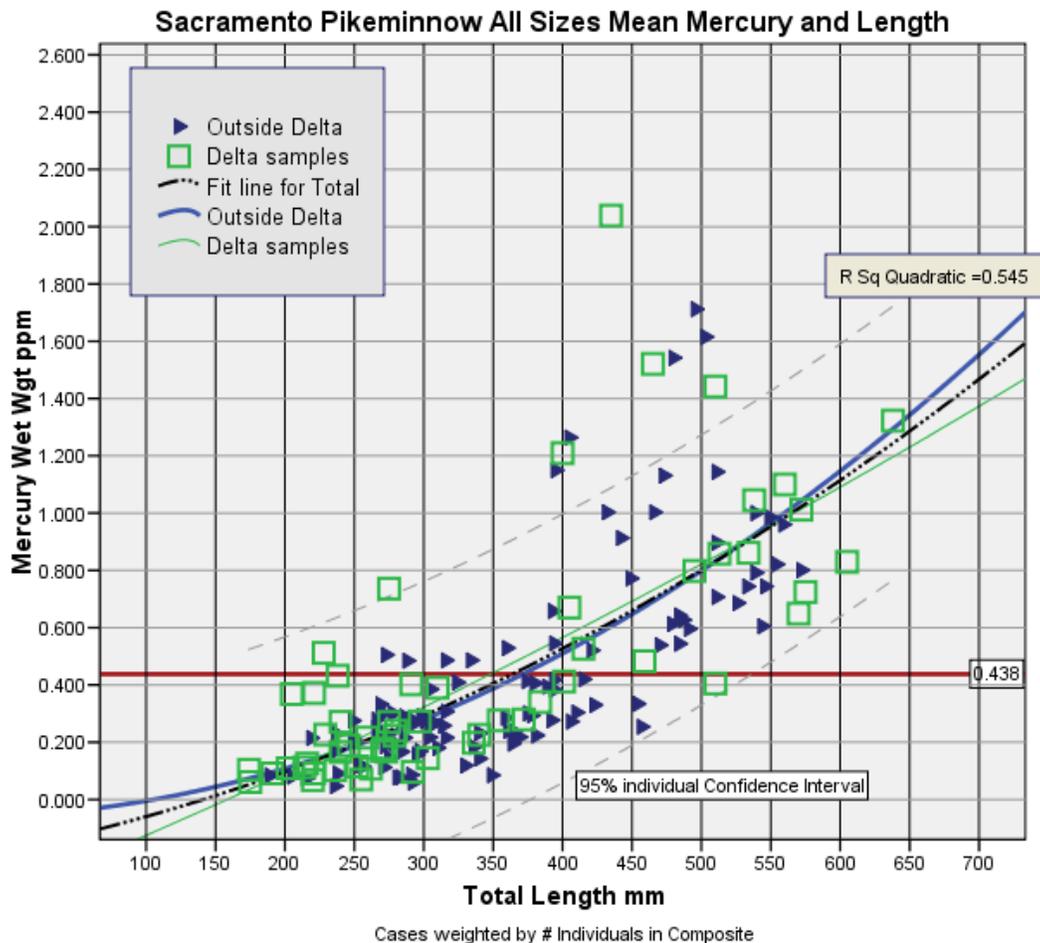
**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.033	.235		.140	.889	-.432	.498
	TOTAL LENGTH_mm	.000	.001	.080	.121	.904	-.002	.002
	lngh_sq	6.160E-7	.000	.439	.670	.504	.000	.000
2	(Constant)	.091	.237		.383	.703	-.378	.560
	TOTAL LENGTH_mm	.000	.001	-.084	-.128	.899	-.002	.002
	lngh_sq	7.892E-7	.000	.562	.856	.393	.000	.000
	Delta samples=1; Samples outside Delta=0	.027	.018	.110	1.529	.128	-.008	.062
3	(Constant)	.095	.317		.301	.764	-.530	.721
	TOTAL LENGTH_mm	.000	.001	-.128	-.147	.883	-.003	.002
	lngh_sq	9.007E-7	.000	.642	.752	.453	.000	.000
	Delta samples=1; Samples outside Delta=0	-.024	.492	-.097	-.049	.961	-.996	.948
	lnghXDelta	.000	.002	.649	.154	.878	-.004	.004
	lnghSqXDelta	-3.889E-7	.000	-.478	-.204	.839	.000	.000

a. Dependent Variable: Mercury\_wet\_wgt\_µg/g



## Appendix IX. Mercury Concentrations and Length in Sacramento Pikeminnow in the Sacramento River and Northern Delta



The horizontal red line at 0.438 ppm represents the mercury concentration above which fish consumption is not recommended for women ages 18-45 and children. For pikeminnow, the threshold at 0.438 ppm mercury corresponds to a length in the range of 150 mm to 530 mm using the 95 percent confidence interval.