

Cruise Report for the
Surface Waters Ambient Monitoring Program (SWAMP)
Safe to Eat Workgroup (STEW)

**Bioaccumulation Monitoring Program Realignment
Monitoring in the San Diego Region**

Sampling Dates: May 15th, 2022-October 4th, 2022

Prepared by the Marine Pollution Studies Laboratory (MPSL) at Moss Landing
Marine Laboratories

Introduction

Since 2007, SWAMP Bioaccumulation Monitoring Program has sampled fish for contaminants in freshwater and marine environments across California. Programmatic Realignment in the San Diego Region (Region 9) began in 2021, in conjunction with the Statewide Tribal Engagement Plan, to ensure bioaccumulation monitoring continues to be aligned with the public’s needs, particularly in areas where California Native American Tribes (tribes) and communities rely on fishing for consumption, subsistence, sustenance, and/or cultural purposes. Sites chosen were informed by the San Diego Region Realignment Advisory Committee (Committee), which is composed of representatives from Tribal governments or advocates and community-based organizations. State and federal agencies involved in protecting water quality or human health, habitat restoration or resource management were also invited to observe and contribute to the process.

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1.0 Cruise Report

1.1 Objectives

MPSL field crew collected fish from four freshwater sites and six marine sites, as well as harmful algal bloom samples from each of 4 freshwater sites. Primary and secondary fish species to be collected were defined by water body type, marine or freshwater, as outlined in the Bioaccumulation Monitoring Program Realignment Monitoring and Analysis Workplan for the San Diego Region (Monitoring Plan). Analytes to be tested are also outlined in the Monitoring Plan (see Table 2).

Sample sites were accessed by boat, when possible, or from shore. Fish were collected by electrofisher boat (freshwater only), hook-and-line, trawling and other nets (beach seine, gill net, cast net). Additionally, invertebrate samples, including lobster and bivalves, were collected by Region 9 Water Board staff but are not reported here.

All attempts were made to obtain the requested species, number of fish and size ranges for each site.

1.2 MPSL Sampling personnel

Wesley Heim	Project Director
Gary Ichikawa	Research Assistant, Crew Lead
William Jakl	Project Associate, Crew Lead
Scot Lucas	Research Technician, Crew Lead
Chris Beebe	Research Technician
April Sjoboen-Guimarães	Research Technician
Jon Goetzl	Research Assistant
Artemis Mavrakos	Research Assistant
Adrienne Chenette	Research Assistant

1.3 Authorization to collect samples

All work was completed under MPSL scientific collecting permit # S-183470004-20339-002 authorized by the California Department of Fish and Wildlife. MPSL personnel were contracted through San Jose State University Research Foundation (SJSURF) and the SWRCB to conduct the sample collection activities listed herein.

1.4 Station selection

Ten stations were targeted for sampling: six coastal marine sites and four inland freshwater sites. Stations were selected to collect data on fish frequently caught by recreational anglers and more specifically, to measure contaminant levels in fish targeted by underrepresented communities, including Tribal traditions, culture, and subsistence fishers in San Diego area waterbodies.

1.5 Summary of types of samples authorized to be collected

Targeted species were determined by what are frequently caught and consumed by anglers in each of the selected sampling locations. Upon collection, each fish was tagged with a unique ID corresponding to the station where it was collected. Physical parameters collected for each individual fish include: weight, total length, fork length (if fork present), and presence of any abnormalities. Fish samples were stored on dry ice until returned to the laboratory facility for dissection.

Specific details on sampling and analysis can be found in the Monitoring Plan.

1.6 Results

A detailed fish catch summary can be found below. Maps of all stations are provided showing locations of successful fishing effort and unsuccessful fishing effort. Tables below each figure summarize the types, quantity, and sizes (total length [TL] in mm) of fish caught at each site. The [Table of Contents](#) above indicates on which page collection details for each station can be found.

Figure Key

Symbol	Description
	successful hook and line
	unsuccessful hook and line
	successful trawl
	unsuccessful trawl
	successful gill net, beach seine or cast net
	unsuccessful gill net, beach seine or cast net
	estimated electrofishing area

Dana Point Harbor and Jetties (90110DANA)

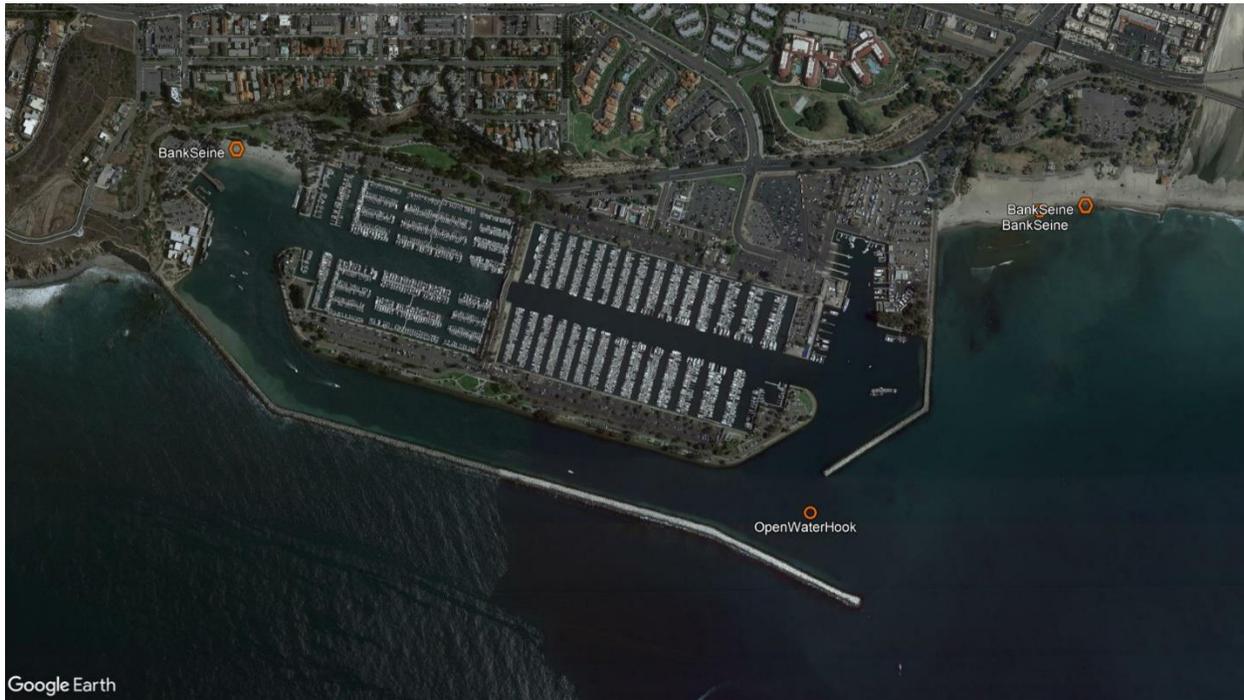
Latitude: 33.45830

Longitude: -117.69700

Collection Method: Hook-and-Line, Beach Seine

Dates of Collection: 10/03/2022 and 10/04/2022

Samplers: Scot Lucas, Gary Ichikawa and Jon Goetzl



Striped Mullet, TL (mm)				
388	510	485	432	510

Chub Mackerel, TL (mm)				
256	267	265	260	277

Jacksmelt, TL (mm)				
236	322	225	200	222

Walleye Surfperch, TL (mm)				
156	175	165	159	161

Pacific Bonito, TL (mm)		
346	341	346

Comments: Mullet were collected by beach seine inside the harbor at a small beach adjacent the West jetty. Our 17' Whaler was launched and used to fish in and around the harbor mouth for bonito, perch, smelt and mackerel.

Oceanside Harbor (90208OCNH)

Latitude: 33.20900

Longitude: -117.40100

Collection Method: Hook-and-Line, Beach Seine

Dates of Collection: 08/30/2022

Samplers: Scot Lucas, William Jakl and Gary Ichikawa



Barred Surfperch, TL (mm)				
200	210	217	259	266

Chub Mackerel, TL (mm)				
228	234	239	246	269

Jacksmelt, TL (mm)				
227	236	238	251	304

Spotfin Croaker, TL (mm)				
381	407	445	456	485

Pacific Bonito, TL (mm)	
326	328

Comments: Mackerel, smelt and bonito were collected by hook-and-line from our boat in and around the harbor mouth. Perch and spotfin croaker were collected by beach seine at the beach outside/adjacent to the South jetty. This beach was loaded with perch and very large croaker.

Oceanside Pier (903OCPIER)

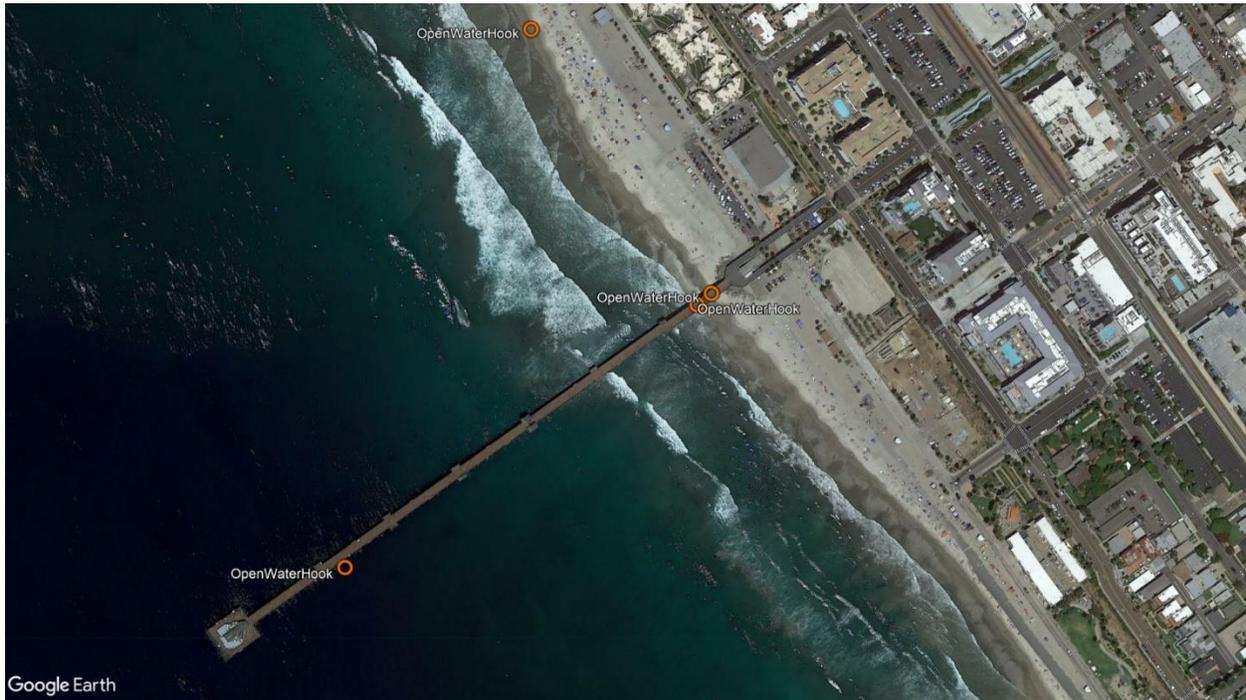
Latitude: 33.19313

Longitude: -117.38634

Collection Method: Hook-and-Line, Beach Seine

Dates of Collection: 08/24/25, 08/25/2002 and 08/31/2022

Samplers: Scot Lucas, Wesley Heim, Adrienne Chenette, William Jakl and Gary Ichikawa



Barred Surfperch, TL (mm)						
205	206	206	207	233	275	275

Spotfin Croaker, TL (mm)					
350	526	568	575	580	593

Barred Sand Bass, TL (mm)	
235	255

Jacksmelt, TL (mm)	
130	148

Queenfish, TL (mm)	
142	198

Yellowfin Croaker, TL (mm)	
213	

Comments: At the first visit to this site, all effort was with hook-and-line due to large amounts of drift kelp inshore (and crowded beaches) preventing beach seining. There was lots of variety off the pier but no consistent bite, which made fishing slow. The next week, this site was revisited and we were able to beach seine, collecting the perch and croaker.

Mission Bay Jetties (906MBCJTY)

Latitude: 32.75890

Longitude: -117.25562

Collection Method: Hook-and-Line, Beach Seine

Dates of Collection: 08/29/2022 and 08/30/2022

Samplers: Scot Lucas, William Jakl and Gary Ichikawa



Chub Mackerel, TL (mm)					
271	275	277	293	296	258

Jacksmelt, TL (mm)				
258	285	286	317	318

Spotfin Croaker, TL (mm)				
458	477	480	480	482

Pacific Bonito, TL (mm)
329

Comments: Like the other sites, we were able to get the coastal pelagic species (mackerel, smelt, bonito) using hook-and-line from the boat and croaker using a beach seine. High winds and rough seas kept us in the harbor while fishing from the boat.

San Diego Bay (912SDBYWD)

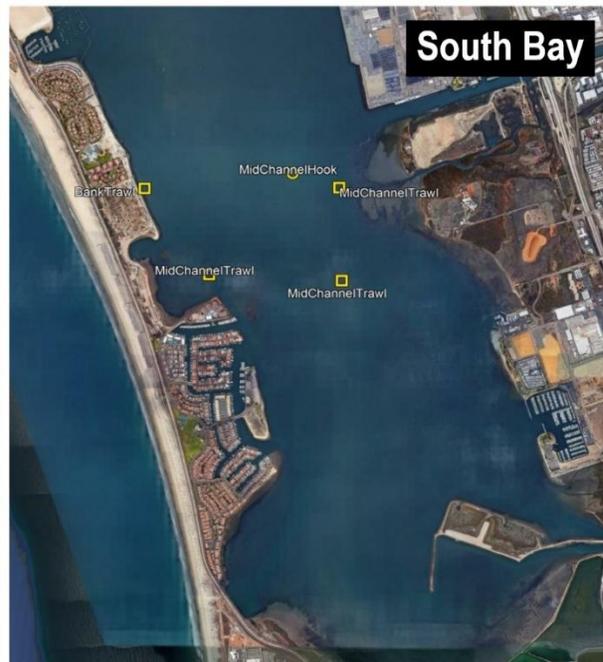
Latitude: 32.69246

Longitude: -117.15654

Collection Method: Hook and Line, Trawl Net

Dates of Collection: 06/13/2022 through 06/15/2022

Samplers: Scot Lucas and William Jakl



Spotted Sand Bass, TL (mm)					
209	223	247	260	261	262
287	303	307	310	317	322

Kelp Bass, TL (mm)					
190	202	210	223	288	301

Jack Mackerel, TL (mm)				
178	179	180	180	185
189	193	195	196	196
198	200	205	205	212

Spotfin Croaker, TL (mm)			
203	212	235	241
244	246	256	281

Comments: All fish kept were collected by hook-and-line fishing from the boat. Several hours were spent using the 12' otter trawl in the South end of the Bay but none of the requested species were seen and the nets were loaded with round sting rays.

Imperial Beach Pier (911IBPIER)

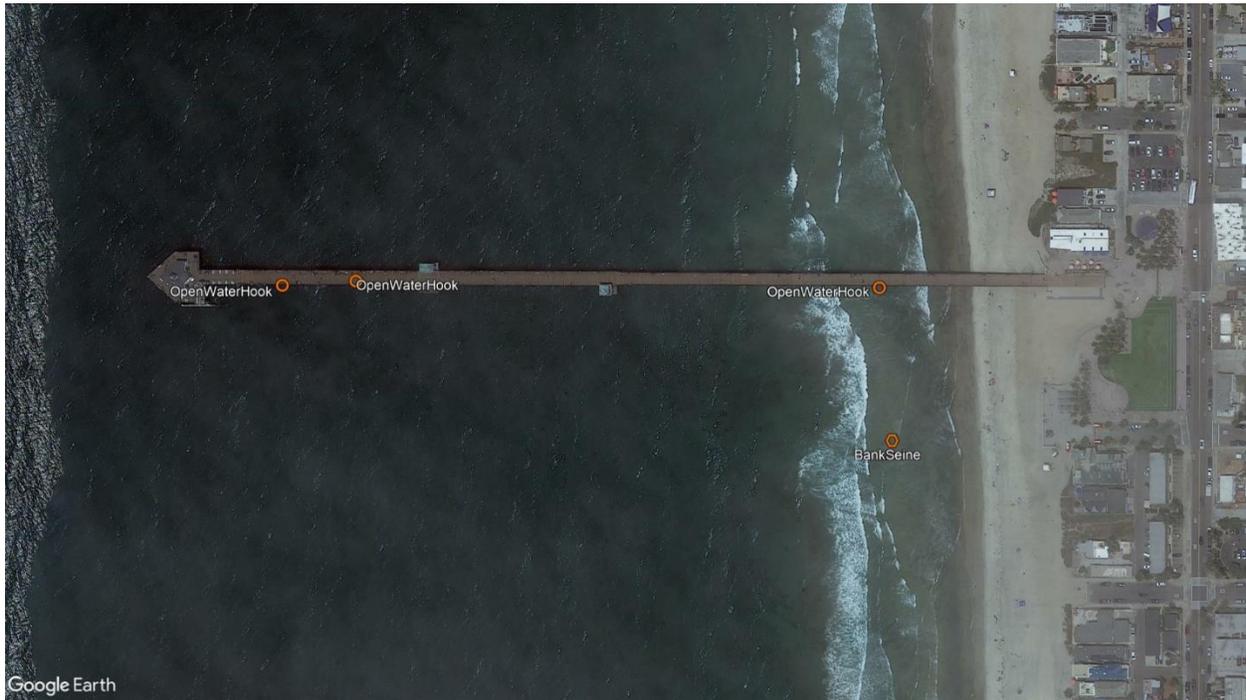
Latitude: 32.579564

Longitude: -117.137282

Collection Method: Hook-and-Line, Beach Seine

Dates of Collection: 08/22/2022 and 08/23/2022

Samplers: Scot Lucas, Wesley Heim and Adrienne Chenette



California Corbina, TL (mm)						
211	212	221	223	224	235	238
242	254	257	274	278	353	

Barred Surfperch, TL (mm)				
128	134	136	182	197

Pacific Bonito, TL (mm)				
300	320	323	330	331

Pacific Sardine, TL (mm)				
164	176	182	185	194

Queenfish, TL (mm)				
142	152	156	178	187

Chub Mackerel, TL (mm)	
287	305

Jacksmelt, TL (mm)	
154	235

Comments: Perch and corbina were caught using the beach seine and the rest of the fish were caught fishing off the pier. The fishing was more consistent here than at Oceanside pier but was also a lot more crowded, especially the side facing up coast, where the majority of the bonito were being caught.

Lake Cuyamaca (907CUYRES)

Latitude: 32.9886

Longitude: -116.582

Collection Method: Electrofisher Boat

Dates of Collection: 05/17/2022

Samplers: Gary Ichikawa and Jon Goetzl



Black Crappie, TL (mm)				
218	220	225	243	271

Bluegill, TL (mm)				
42	43	51	52	54
54	55	57	62	93
100	116	123	125	155

Common Carp, TL (mm)				
454	455	455	478	500

Green Sunfish, TL (mm)				
52	57	58	58	59
59	62	67	79	82

Largemouth Bass, TL (mm)				
220	242	252	260	357
360	385	390	405	423
428	430	454	470	485
508	518	520	537	

Rainbow Trout, TL (mm)				
345	405	410	420	461

Comments: All fish were collected using our electrofisher boat. The entire lake was sampled yielding a nice cross section of requested fish, including three species of prey-sized fish. Prey sized largemouth bass were not seen, despite collecting 19 adult/subadult largemouth across a broad size range.

Chollas Reservoir (908CHLLAS)

Latitude: 32.736940

Longitude: -117.063567

Collection Method: Electrofisher Boat

Dates of Collection: 05/16/2022

Samplers: Gary Ichikawa and Jon Goetzl



Bluegill, TL (mm)				
168	172	172	175	179

Common Carp, TL (mm)				
538	582	595	609	630

Largemouth Bass, TL (mm)				
213	245	275	290	340
340	340	342	355	358
358	358	360	370	385
406	460	479	490	

Redear Sunfish, TL (mm)				
150	150	154	158	160

Comments: Only four species were seen at this lake and samples of each were collected using electrofishing. Sampling covered the entire lake.

San Diego River Ponds (907P2BAxx)

Latitude: 32.761289

Longitude: -117.203745

Collection Method: Electrofisher Boat, Hook-and-Line

Dates of Collection: 08/16/2022

Samplers: Scot Lucas, Gary Ichikawa, Chris Beebe and April Sjoboen-Guimarães



Brown Bullhead, TL (mm)			
171	249	255	260

Bluegill, TL (mm)		
135	192	209

Common Carp, TL (mm)	
581	633

Largemouth Bass, TL (mm)	
357	395

Comments: With a crew of four, we were able to split into two teams with one team hook-and-line fishing from shore and the other team electrofishing from the boat. Access to the water for the boat was difficult due to its urban location, overgrown banks and shallow water shore launch. We were able to find access from under an overpass encompassing a homeless camp but were able to safely overcome this. Despite a full effort, fishing was slow, even with the electrofisher.

Sweetwater River Morrison Pond (909LSRMPD)

Latitude: 32.672702

Longitude: -117.023690

Collection Method: Hook and Line, Cast Net

Dates of Collection: 08/17/2022

Samplers: Scot Lucas, Gary Ichikawa, Chris Beebe and April Sjoboen-Guimarães



Bluegill, TL (mm)					
100	102	103	104	107	112
113	113	113	122	124	

Comments: This site had low water level and dense vegetation on the shore. Despite our best efforts, we were not able to safely lower the boat down to the water and therefore all effort was from shore with hook-and-line and a cast net. Four samplers fished the equivalent of a full day each with no real bites to speak of. Very little evidence of fish activity was seen on the water's surface, however derelict fishing gear (line, containers for worms, etc.) was seen at the few access points around the lake providing evidence of local fishing effort. We were able to cast net up a large number of bluegill but only kept the 11 that were over 100 mm total length. In addition to bluegill, dense schools of (tiny) mosquito fish were observed near shore indicating prey items were available for larger fish, but we were unable to catch any, if present.

1.7 Discussion

In the initial phase of this project, data collected here will inform future sampling as a baseline for comparison of environmental toxins presently found at these sites. The next phase will likely include increasing the number of freshwater stations to be sampled with additional focus on cyanotoxins and harmful algal blooms, among potential indicators of overall environmental health.