PUBLIC EDUCATION AND OUTREACH SUPPORT SERVICES

LAKE ELSINORE & SAN JACINTO WATERHSEDS AUTHORITY

OCTOBER 15, 2020

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COMMUNICATIONS UPDATE

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CANYON LAKE ALGAE BLOOM OUTREACH

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GOALS

- To educate residents about algae blooms, the cause of the blooms, safety and how to minimize algae in the lake
- Educate regarding recreation vs drinking water standards at the lake
- To inform residents of the roles of EVMWD, the City of Canyon Lake, LESJWA and Canyon Lake's POA in maintaining Canyon Lake and showing a cohesive effort by all entities in maintaining the lake

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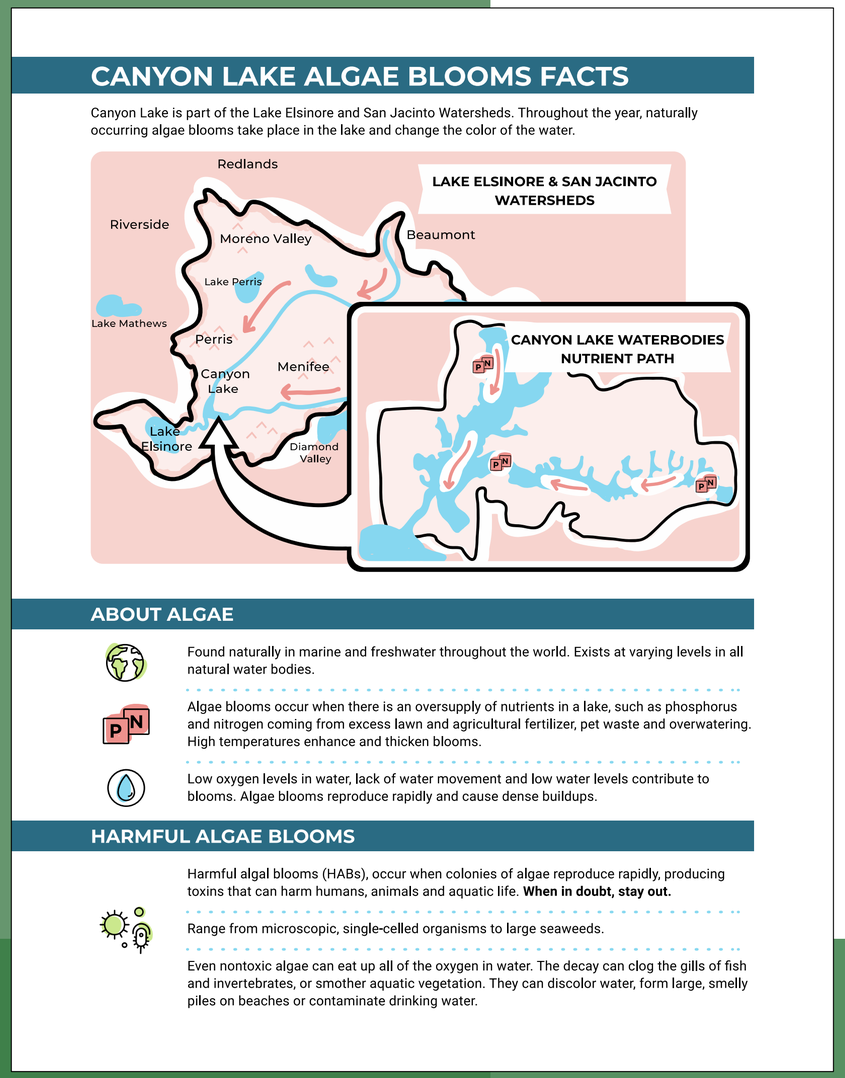


CANYON LAKE ALGAE BLOOMS FACTS

Canyon Lake is part of the Lake Elsinore and San Jacinto Watersheds. Throughout the year, naturally occurring algae blooms take place in the lake and change the color of the water.

ABOUT ALGAE

Found naturally in marine and freshwater throughout the world. Exists at varying levels in all natural water bodies.

Algae blooms occur when there is an oversupply of nutrients in a lake, such as phosphorus and nitrogen coming from excess lawn and agricultural fertilizer, pet waste and overwatering. High temperatures enhance and thicken blooms.

Low oxygen levels in water, lack of water movement and low water levels contribute to blooms. Algae blooms reproduce rapidly and cause dense buildups.

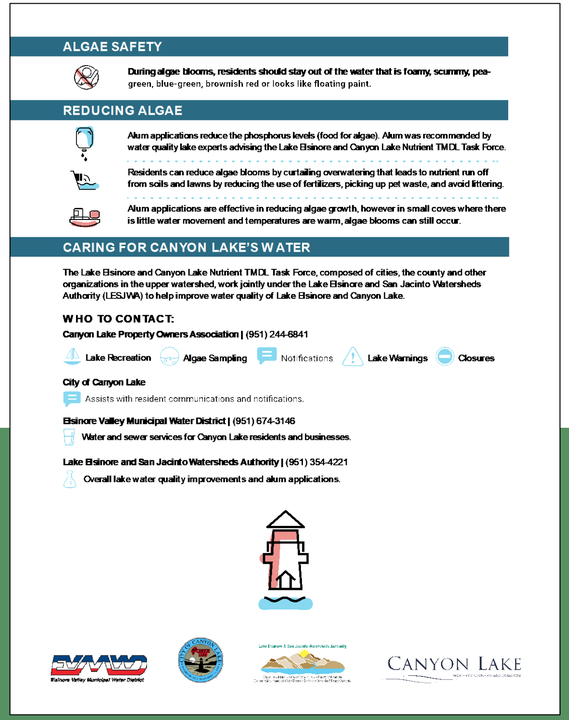
HARMFUL ALGAE BLOOMS

Harmful algal blooms (HABs), occur when colonies of algae reproduce rapidly, producing toxins that can harm humans, animals and aquatic life. **When in doubt, stay out.**

Range from microscopic, single-celled organisms to large seaweeds.

Even nontoxic algae can eat up all of the oxygen in water. The decay can clog the gills of fish and invertebrates, or smother aquatic vegetation. They can discolor water, form large, smelly piles on beaches or contaminate drinking water.

- Drafted outreach plan
- Developed fact sheet
- Reviewed op-ed



ALGAE SAFETY

During algae blooms, residents should stay out of the water that is foamy, scummy, pea-green, blue-green, brownish red or looks like floating paint.

REDUCING ALGAE

Alum applications reduce the phosphorus levels (food for algae). Alum was recommended by water quality lake experts advising the Lake Elsinore and Canyon Lake Nutrient TMDL Task Force.

Residents can reduce algae blooms by curtailing overwatering that leads to nutrient run off from soils and lawns by reducing the use of fertilizers, picking up pet waste, and avoid littering.

Alum applications are effective in reducing algae growth, however in small coves where there is little water movement and temperatures are warm, algae blooms can still occur.

CARING FOR CANYON LAKE'S WATER

The Lake Elsinore and Canyon Lake Nutrient TMDL Task Force, composed of cities, the county and other organizations in the upper watershed, work jointly under the Lake Elsinore and San Jacinto Watersheds Authority (LESJWA) to help improve water quality of Lake Elsinore and Canyon Lake.

WHO TO CONTACT:

Canyon Lake Property Owners Association | (951) 244-6841

Lake Recreation · Algae Sampling · Notifications · Lake Warnings · Closures

City of Canyon Lake

Assists with resident communications and notifications.

Elsinore Valley Municipal Water District | (951) 674-3146

Water and sewer services for Canyon Lake residents and businesses.

Lake Elsinore and San Jacinto Watersheds Authority | (951) 354-4221

Overall lake water quality improvements and alum applications.

EVMWD · CANYON LAKE

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COMMUNICATIONS PLAN

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BACKGOUND

- Builds off the foundation of the 2015-2020 Plan
- Includes new research, goals, objectives, strategies and tactics
- Serves as a roadmap to improve stakeholder perceptions of LESJWA and, its efforts and role in the community
- Designed as a working document, strategies can be carried over for future years

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GUIDING PRINCIPALS

- Communicating transparently and proactively
- Leveraging partnerships and collaboration
- Increasing awareness

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HIGHLIGHTS

- Leverage new website as an outreach tool
- Create engaging content to support lobbying efforts
- Utilize key messages: commitment to water quality and stewardship, commitment to collaboration

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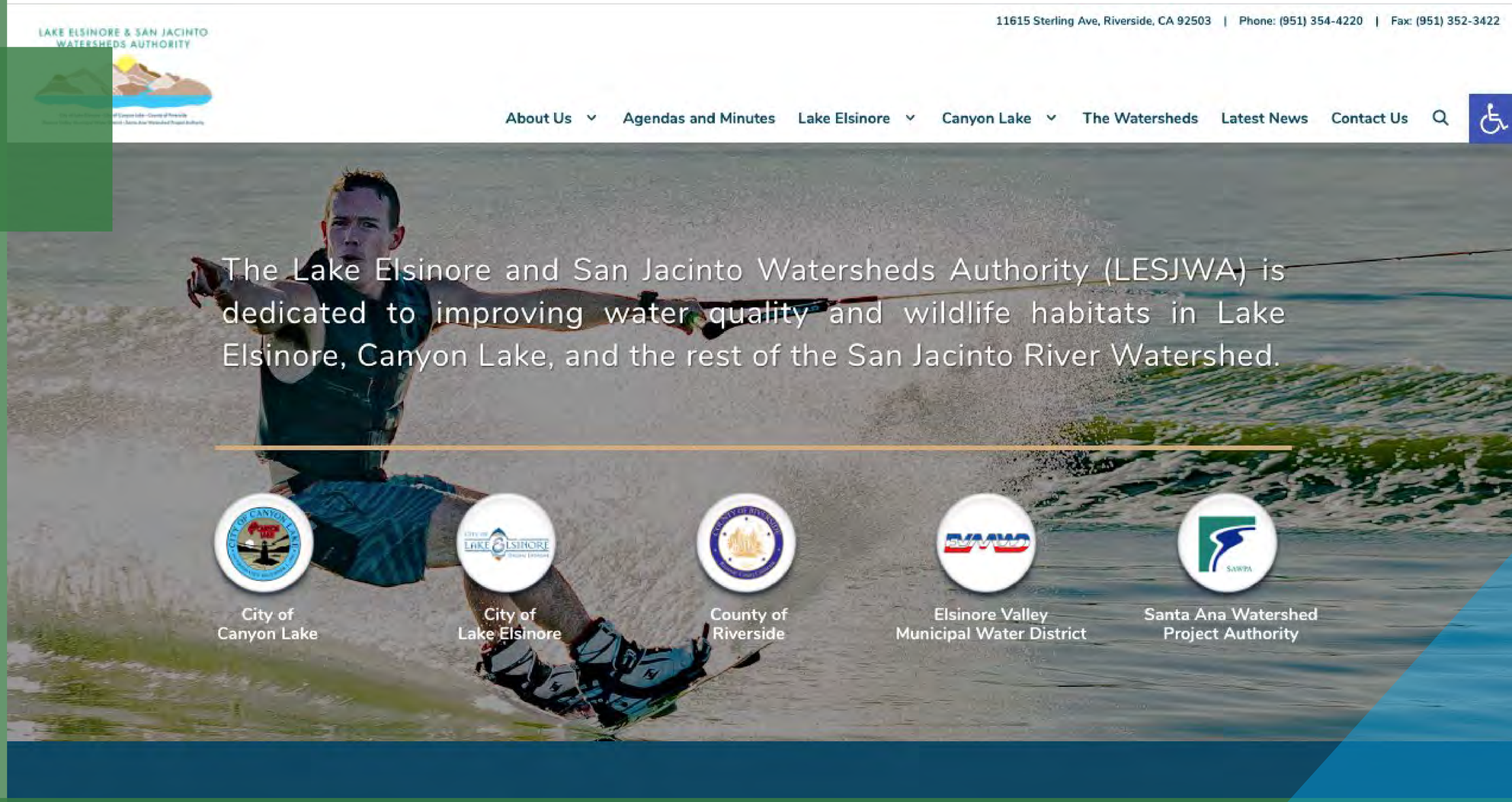
WEBSITE



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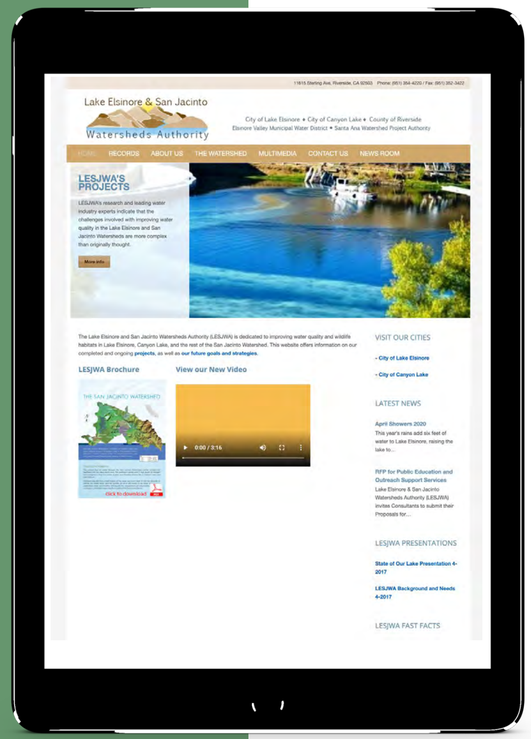
BEFORE



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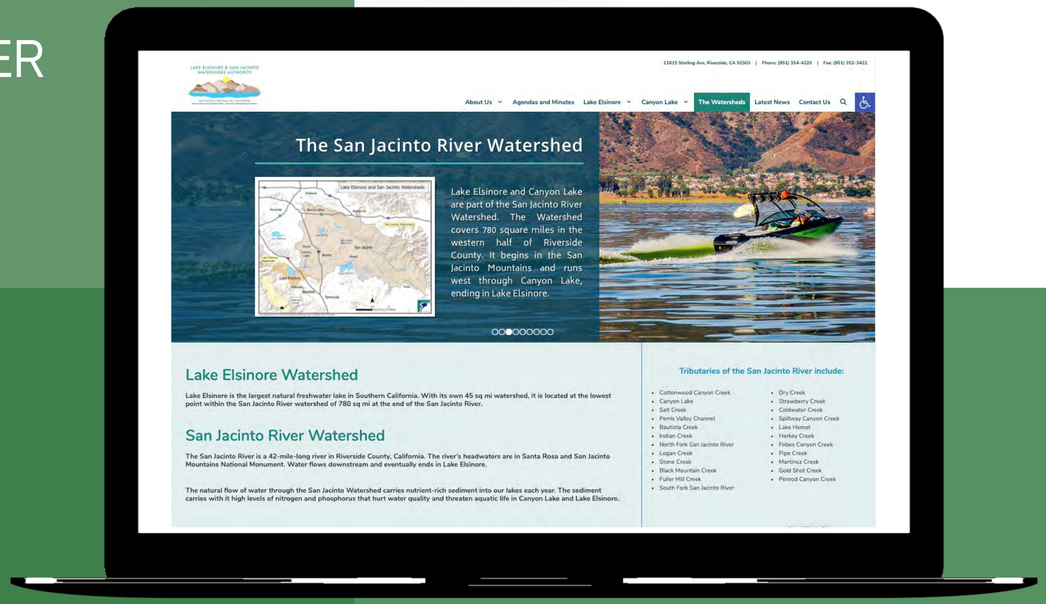

- Tells the story of LESJWA's past, present, future
- User-friendly navigation
- ADA compliant
- Updated content
- Current photo and video images

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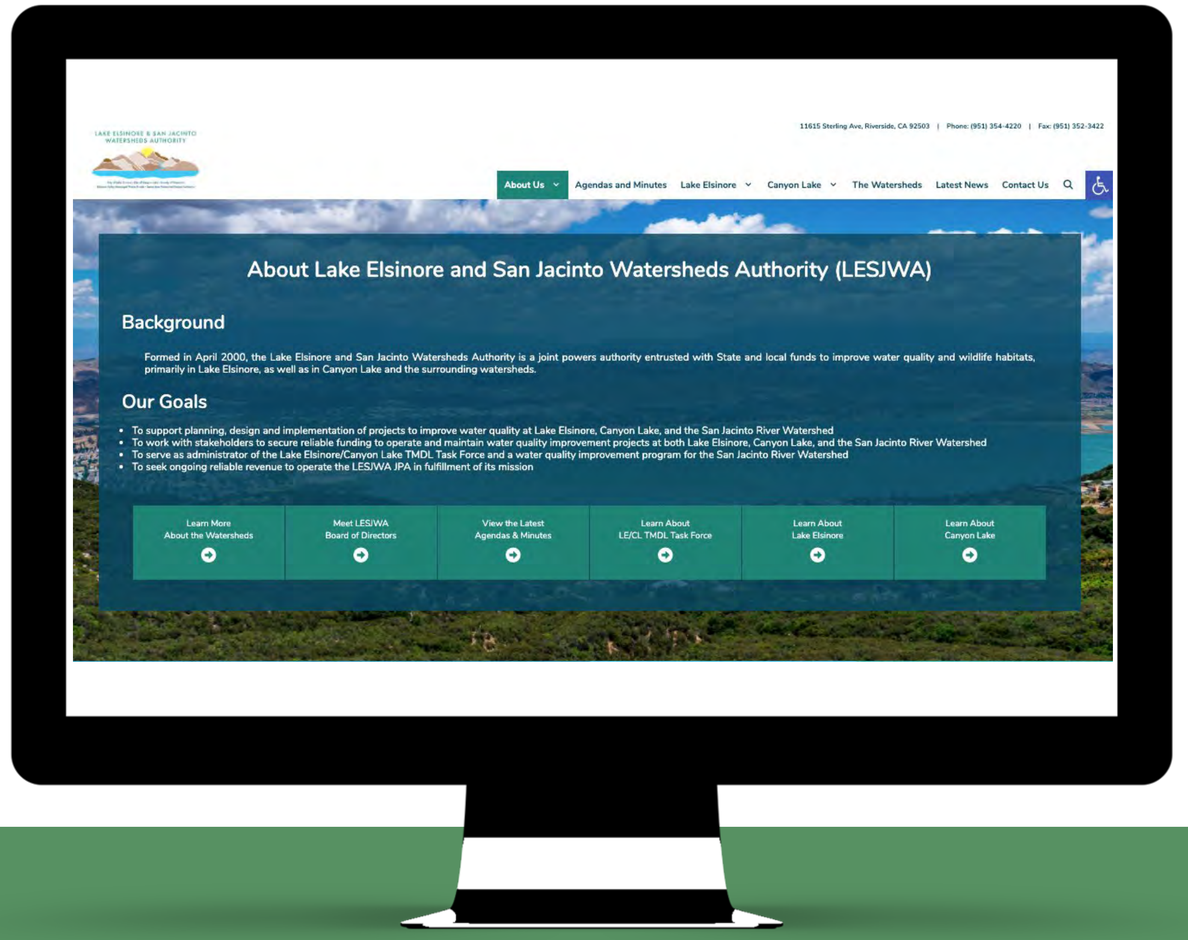
DEMO



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QUESTIONS?

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Lake Elsinore Fisheries Management Report

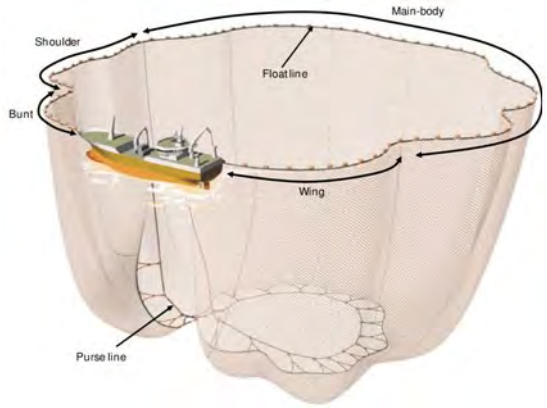
Study Purpose and Objectives

- Study Purpose
  - Assess the current status of the Lake Elsinore fishery and identify potential management measures to further improve the fishery and supporting aquatic habitat
- Study Objectives
  - Determine the need for additional removal of fish nuisance species impacting water quality;
  - Determine appropriate fish species for future fish stockings;
  - Develop recommendations to improve the fishery and habitat to support efforts to implement the revised nutrient TMDL; and
  - Determine potential for a 303(d) de-listing of Lake Elsinore for PCBs and DDTs.

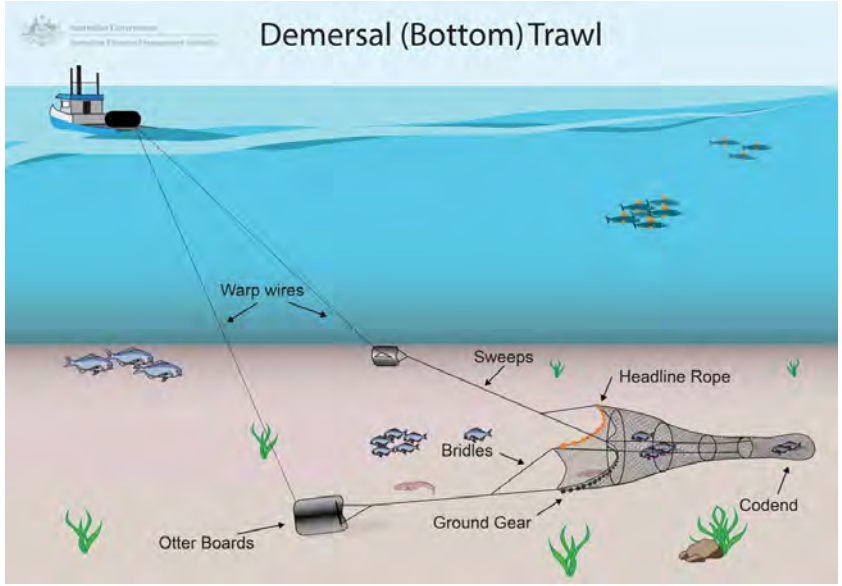
Study Design

- Fish Surveys
  - Beach seines (shallow/nearshore) – 9/4, 9/24 and 10/15, 2019
  - Purse seines (pelagic community in deeper areas) – 10/9, 2019
  - Otter trawls (deeper bottom-dwelling fish community) - 10/10, 2019
- Plankton Surveys
  - Zooplankton – July 26 and October 17, 2019; February 18, 2020
  - Phytoplankton – August 27 and October 17, 2019; February 18, 2020

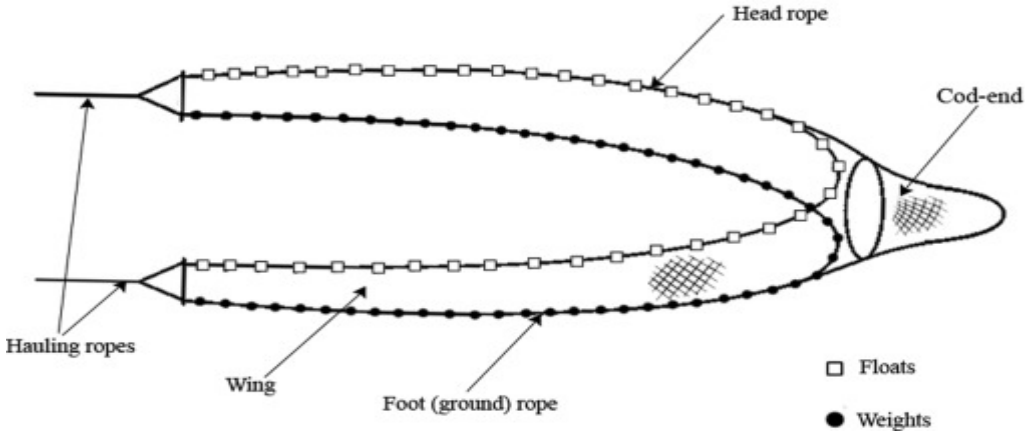
Lake Elsinore Fisheries Management: Gear Types



Purse Seine: Deep Water Upper Column

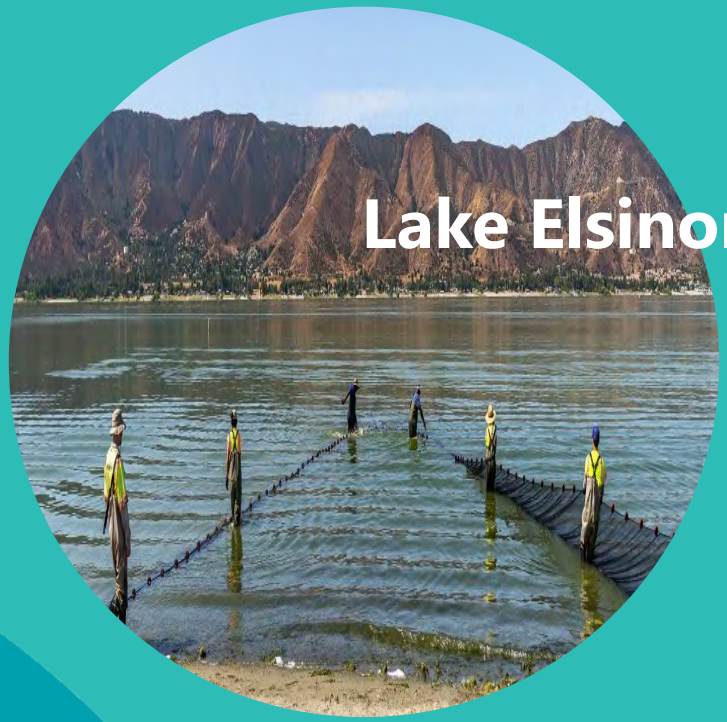


Otter Trawl: Deep Water Bottom



Beach Seine: Top to Bottom
Shallow Water

Lake Elsinore – Survey Locations



Lake Elsinore Fishery Management Report

Fish Survey Observations

Fish Survey Results – Species Captured

Bluegill

Black Crappie

Channel Catfish

Largemouth Bass

Green Sunfish

Common Carp

Mosquitofish

Threadfin Shad

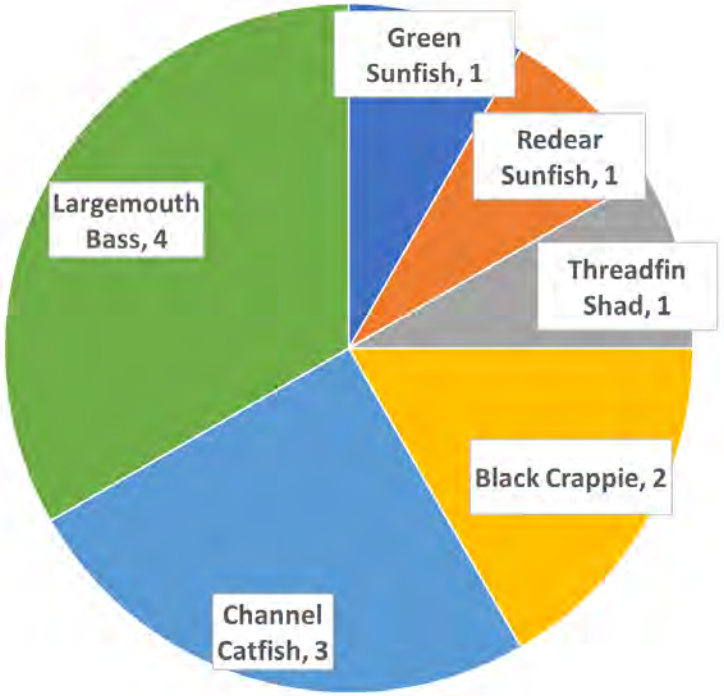
Red Ear Sunfish

Silverside Minnow

Fish Survey Results by Method and Depth (feet)

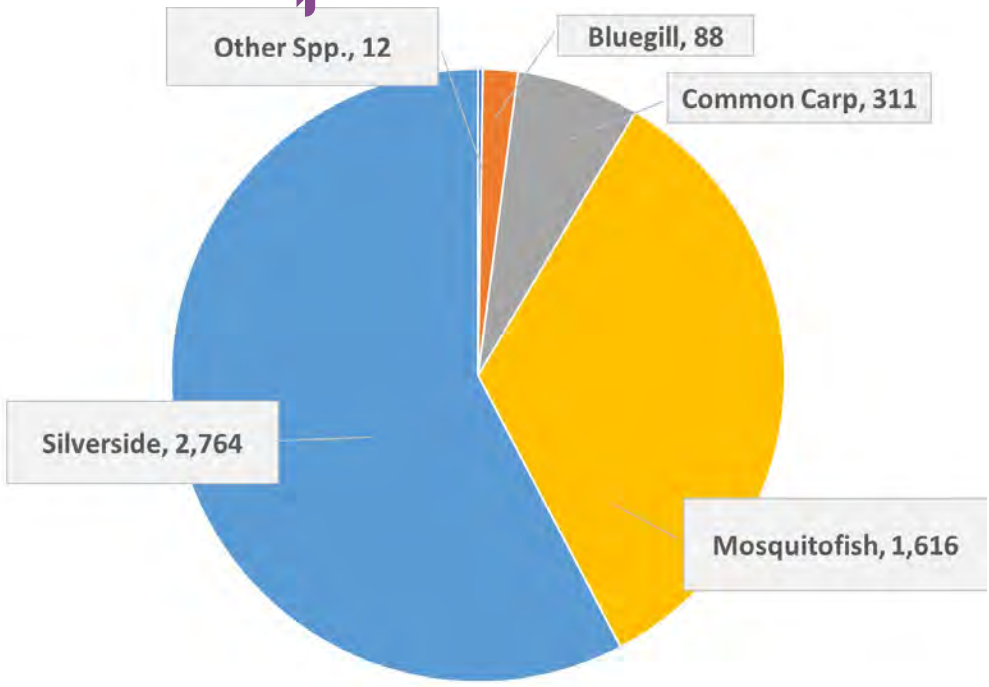
Fish Species	Beach Seine	Purse Seine		Otter Trawl			All Methods & Depths
	0 – 8	8.1 - 16	> 16	0 - 8	8.1 - 16	> 16	
Black Crappie	0	1	1	0	0	0	2
Bluegill	62	0	0	11	15	0	88
Channel Catfish	2	0	0	1	0	0	3
Common Carp	289	2	2	8	8	2	311
Green Sunfish	1	0	0	0	0	0	1
Silverside Minnow	2,350	340	74	0	0	0	2,764
Largemouth Bass	4	0	0	0	0	0	4
Mosquitofish	1,567	36	13	0	0	0	1,616
Redear Sunfish	1	0	0	0	0	0	1
Threadfin Shad	1	0	0	0	0	0	1
Grand Total	4,277	379	90	20	23	2	4,791

Fish Survey: Few Species Dominate Community

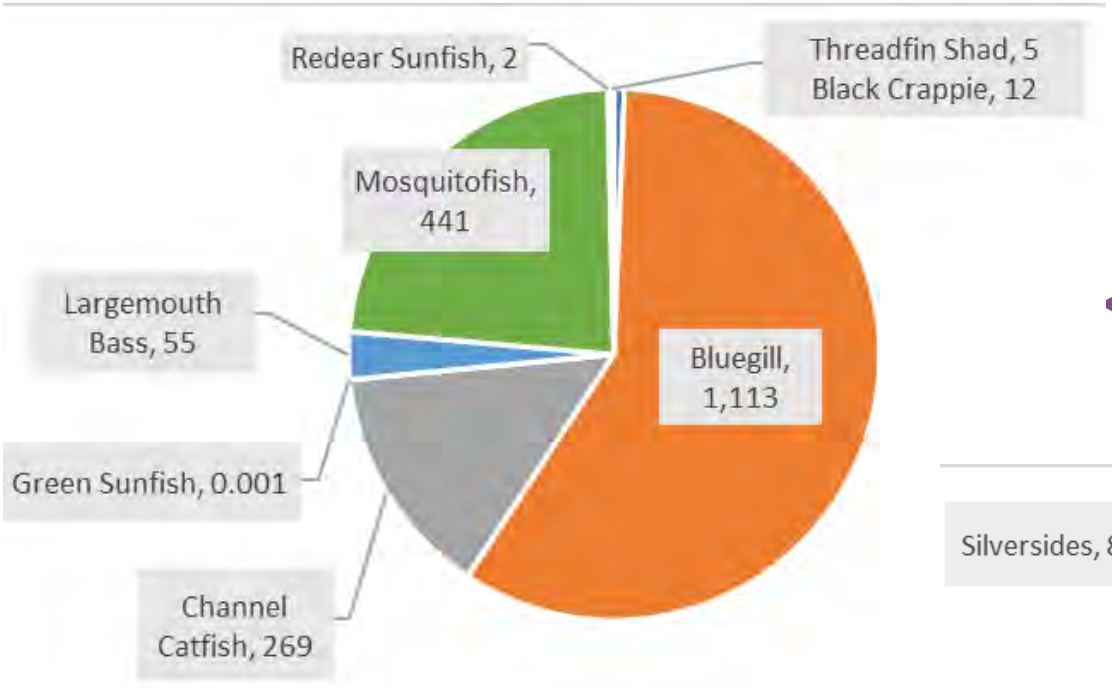


Other Species

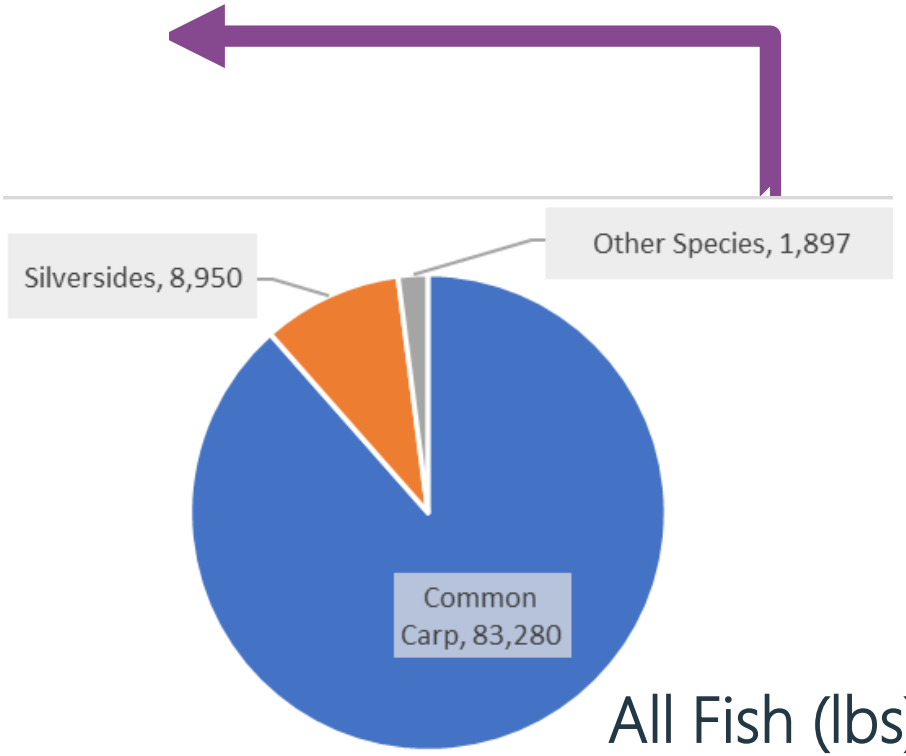
All Fish



Fish Survey: Lake Biomass Dominated by Carp



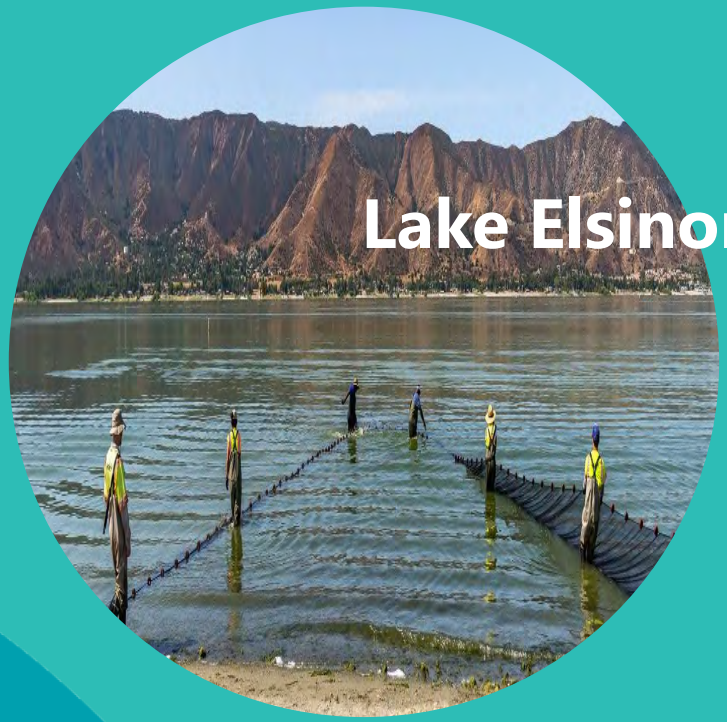
Other Species (lbs)



All Fish (lbs)

Dominant Species (% Abundance) Has Shifted

- 2002 – Dominated (% abundance) by four species: Common Carp (34%), Threadfin Shad (23%), Channel Catfish (22%) and Largemouth Bass (10%)
- 2003 – Dominated (% abundance) by Common Carp (88%); Channel Catfish second most common (8.7%)
- 2008-2009 – Dominated (% abundance) by Common Carp and Bluegill (~80%); Threadfin Shad common in 2008; not observed in 2009
- 2015 – Threadfin Shad dominate (~96% of abundance) (based on hydroacoustic survey that assumed small fish were Shad, but could also have included silverside minnows or Mosquitofish)
- 2019 – Dominated by silverside minnows and Mosquitofish comprising (combined more than 90% of fish abundance); Carp third most common species (~7%)



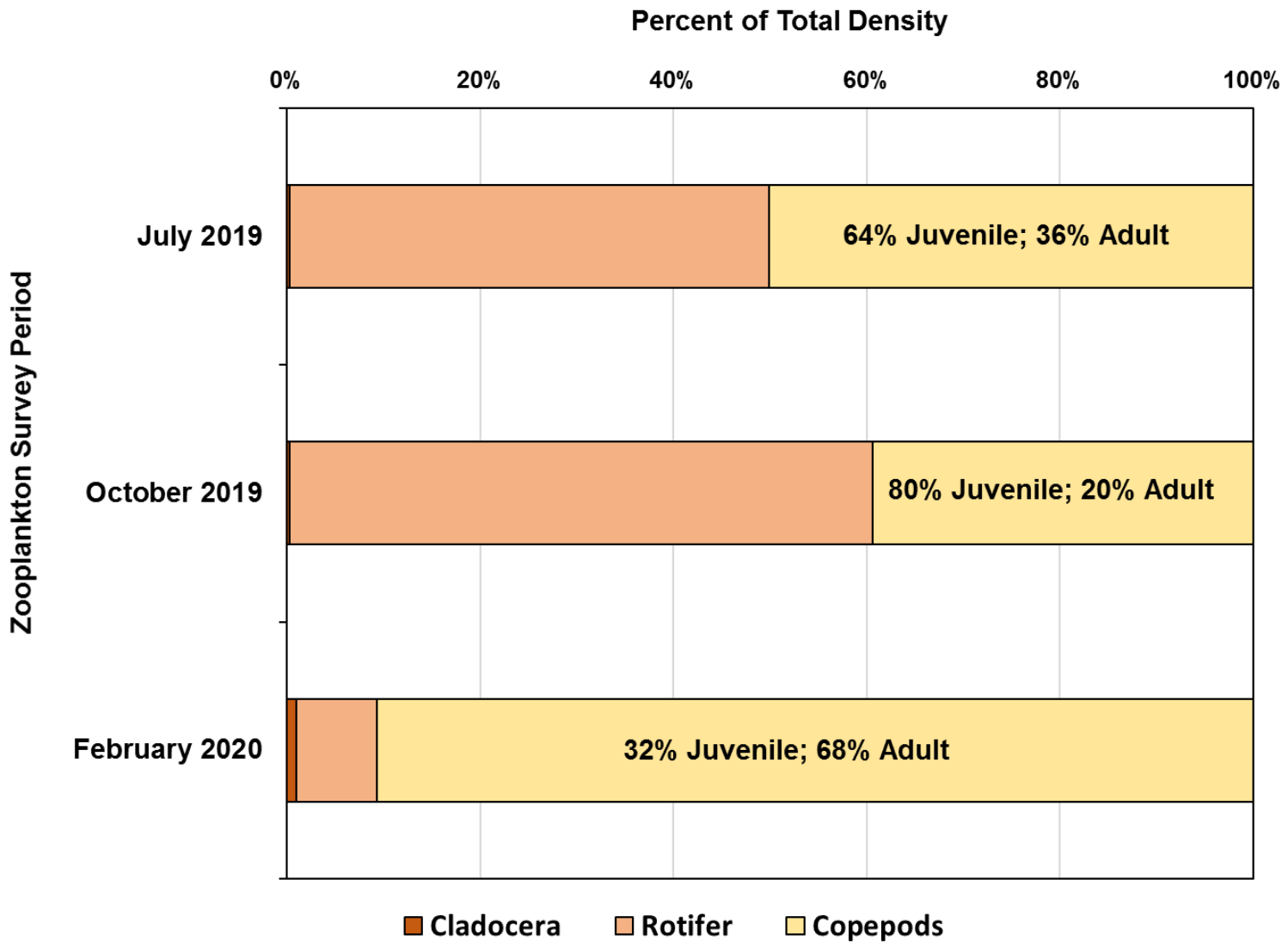
Lake Elsinore Fishery Management Report

Zooplankton Observations

Zooplankton Community

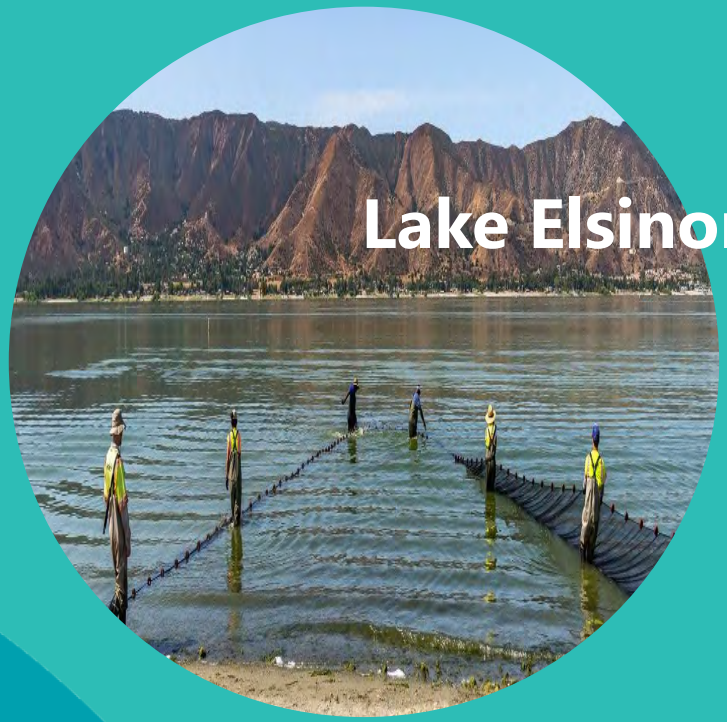
Zooplankton Group	Unique Taxon
Cladocera 	*Daphnia rosea*
	Daphnia sp.
	Diaphanosoma sp.
Copepoda 	*Acanthocyclops robustus*
	Calanoida - copepodites
	Cyclopoida - copepodites
	Leptodiaptomus siciloides
	Copepoda - nauplii (juvenile)
Rotifera 	*Brachionus angularis*
	Brachionus caudatus
	Brachionus plicatilis
	Filinia longiseta
	Filinia terminalis
	Keratella valga

Zooplankton Density



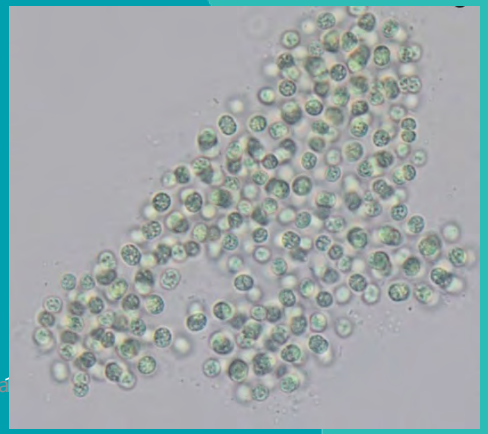
Zooplankton: Long-term Observations

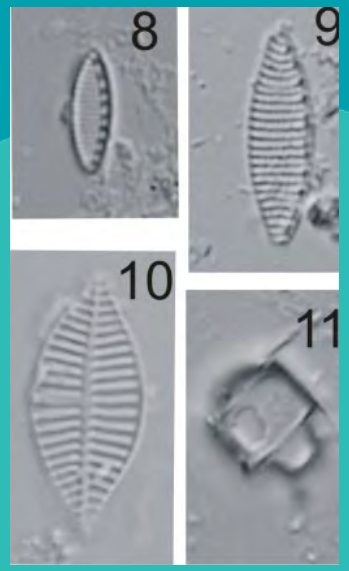
- Two previous surveys to compare to: 2003/2004 and 2009/2010 (however, some apparent differences may be result of variations in collection methodology, i.e., net mesh size)
- 2019-2020 density much higher than 2009/2010 survey but generally lower than 2003/2004 survey:
  - Cladocera continue to have very low density/abundance
  - Copepods are typically most common in the winter; rotifers tend to dominate in the summer



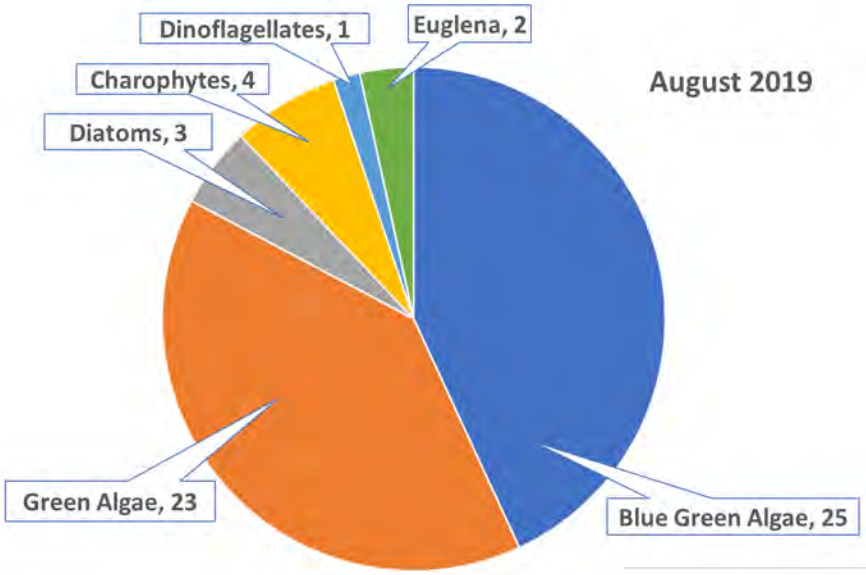
Lake Elsinore Fishery Management Report

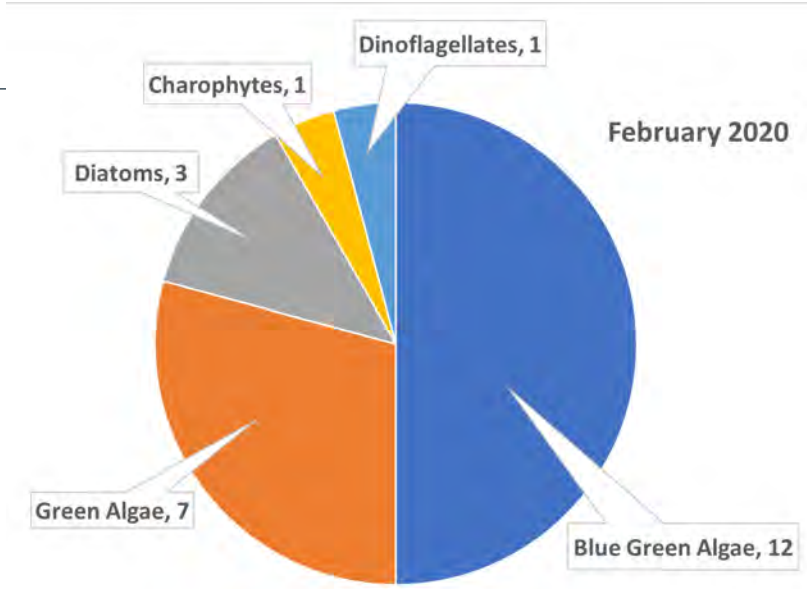
Phytoplankton Observations

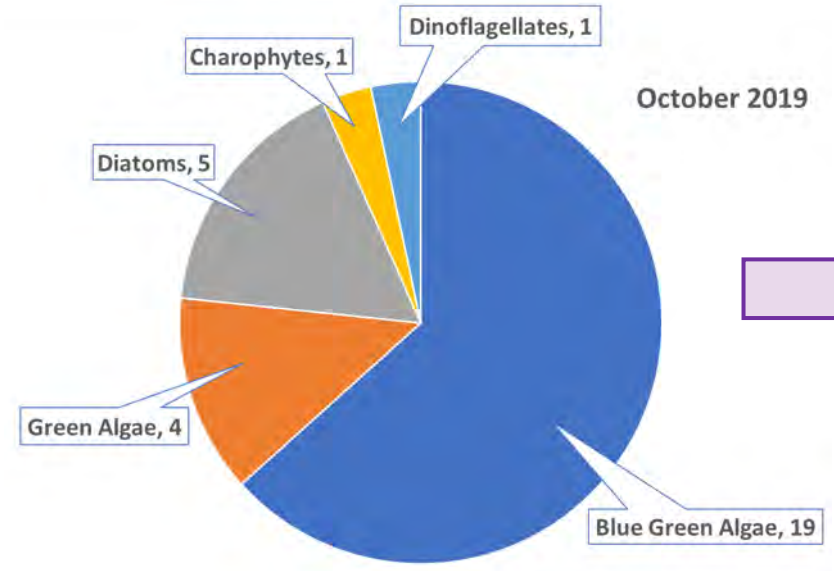




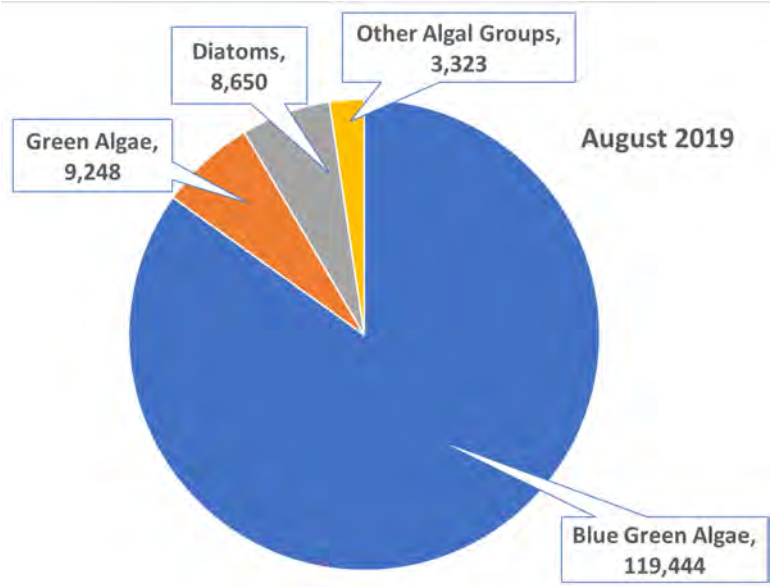
Phytoplankton Richness

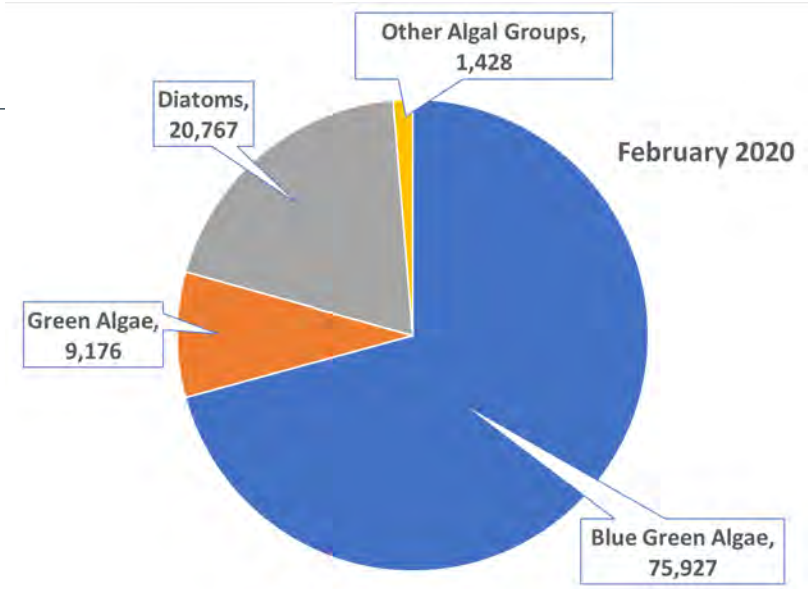


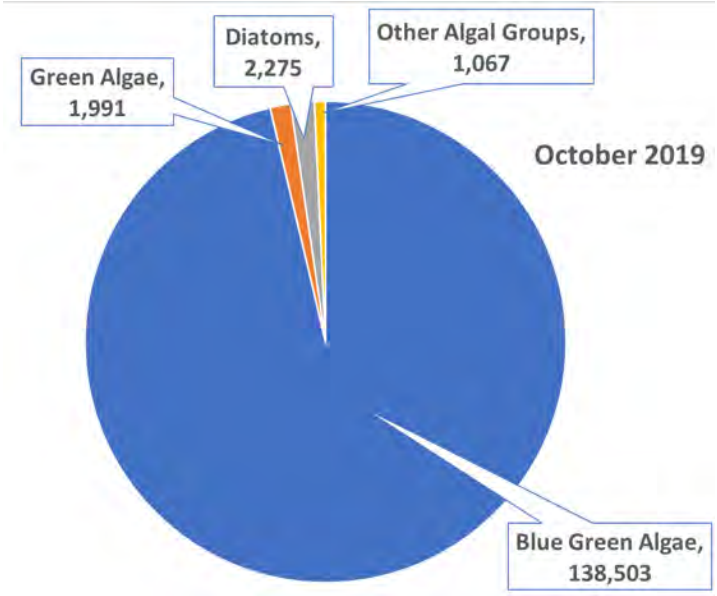




Phytoplankton Density

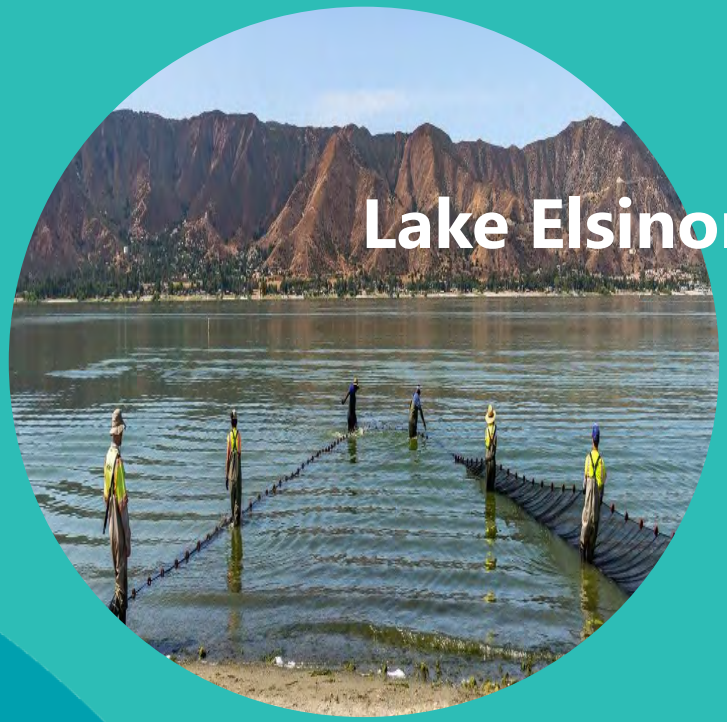






Phytoplankton: Long-term Observations

- Highest algal densities were observed in August and October, during the period of warmer water temperatures
- Blue-green algae were dominant during all sample events in 2019-2020, consistent with previous surveys
- Several blue-green algae taxa observed in the 2019 survey have the potential to produce harmful cyanotoxins; however, many other blue-green algae relatively abundant during 2019-2020 survey are not known to be harmful.

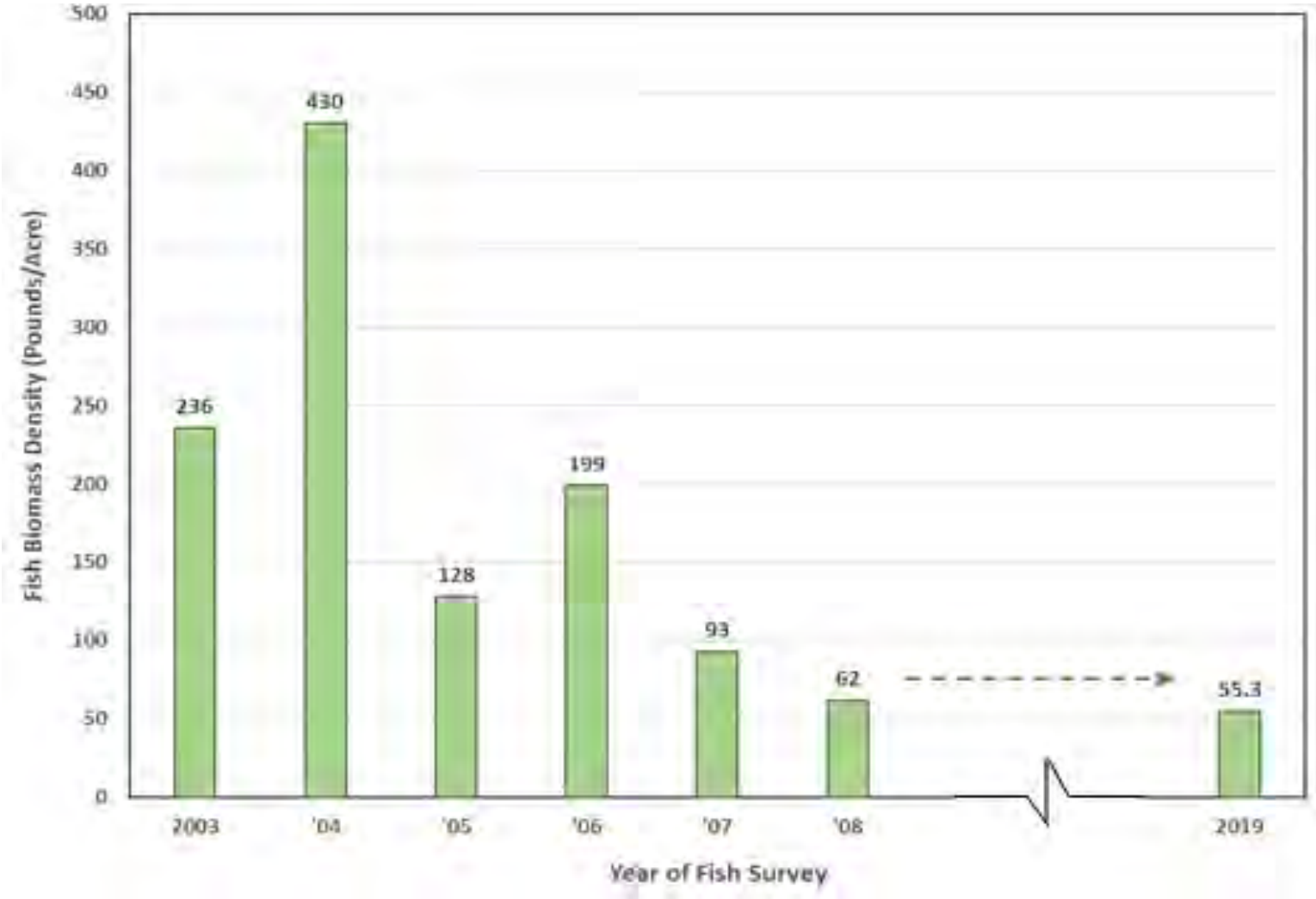


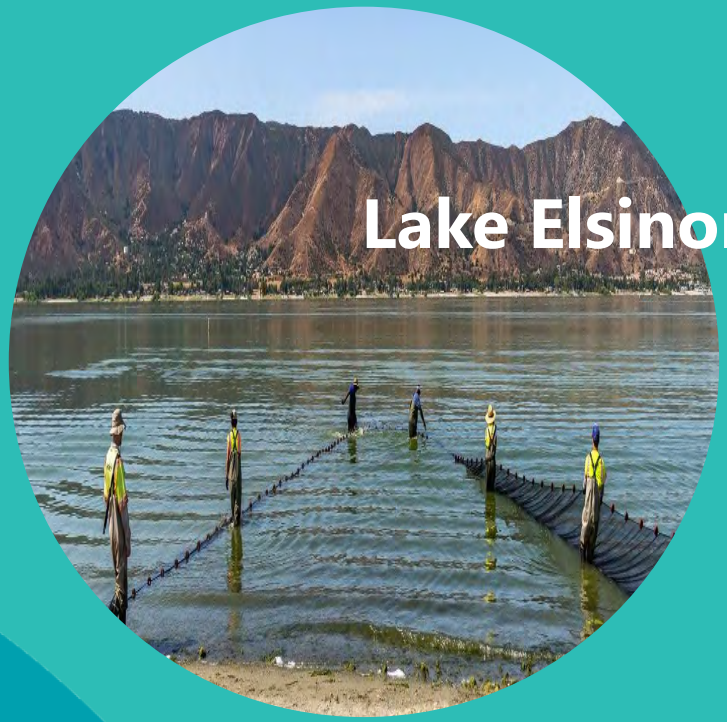
Lake Elsinore Fishery Management Report

Study Objective: Determine Need for Additional Removal of Fish Nuisance Species

Common Carp Population Remains Stable

- Survey findings show no need to implement a carp removal program at this time; conduct periodic surveys to re-evaluate



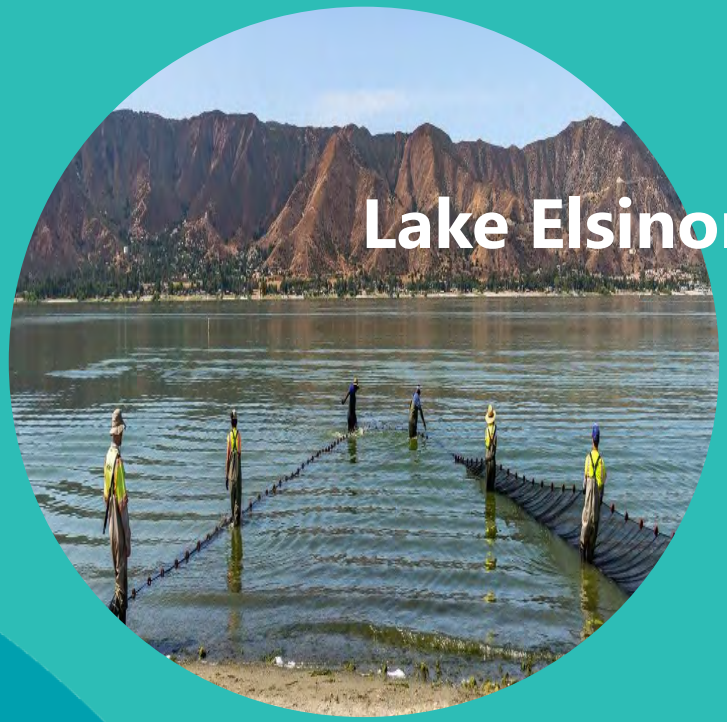


Lake Elsinore Fishery Management Report

Study Objective: Determine Appropriate Fish Species for Future Fish Stockings

Objective: Determine Appropriate Fish Species for Future Fish Stockings

- Recommendation No. 1: Stock Striped/White Bass hybrids ("Hybrid Bass") (aka "Wipers") of size > 100-125 mm in length
- Recommendation No. 2: Discontinue stocking Channel Catfish, Largemouth Bass, and Redear Sunfish; 2019 data suggest survival of these stocked species has been very poor.
- Recommendation No. 3: Continue stocking Black Crappie and Bluegill (>150 mm in length to avoid Hybrid Bass predation) as survival of these stocked species appears to have been good
- Recommendation No. 4: Do not stock baitfish; silverside and Mosquitofish are present in high numbers and appear to be reproducing and maintaining a viable population
- Recommendation No. 5: Conduct periodic fish surveys to evaluate success of ongoing fish stocking activities, potential to modify the species stocked and evaluate populations of other species

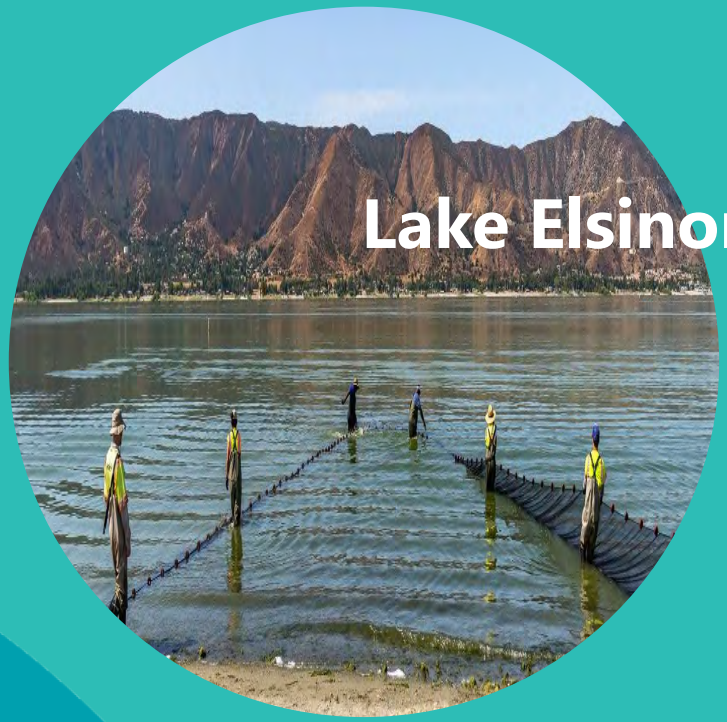


Lake Elsinore Fishery Management Report

Study Objective: Develop Recommendations to Improve the Fishery and Habitat to Support Efforts to Implement Revised Nutrient TMDL

Objective: Recommendations to Improve Fishery and Habitat to Support TMDL Implementation

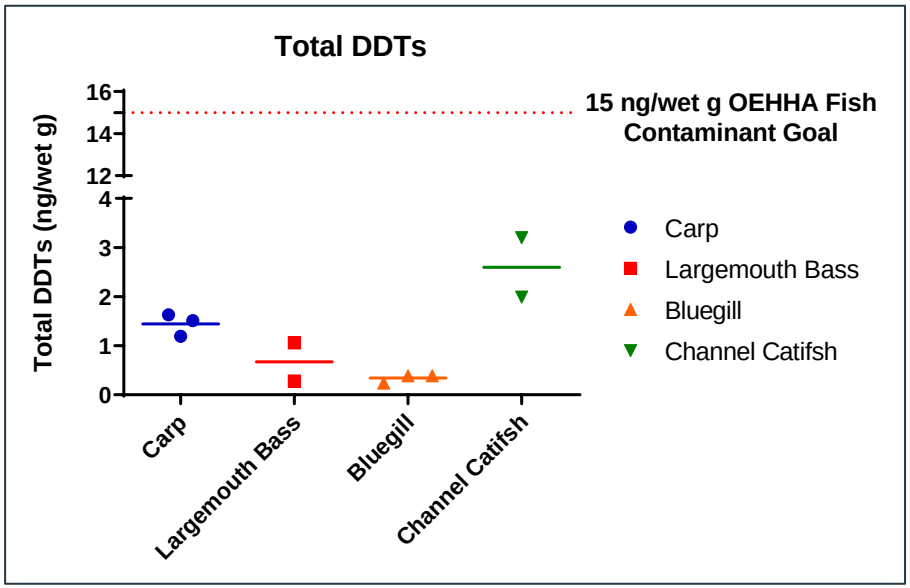
- Recommendation No. 1: Plant rooted aquatic and emergent vegetation (as originally recommended in 2005).
- Recommendation No. 2: Until appropriate water levels can be maintained, a temporary alternative to planting shoreline vegetation is to consider installation of anchored floating vegetation mats
- Recommendation No. 3: Create physical, non-plant structures to serve as fish habitat (originally proposed 2005), e.g., addition of gravel patches, rock piles, large woody materials, brush piles, or other fish attractors.

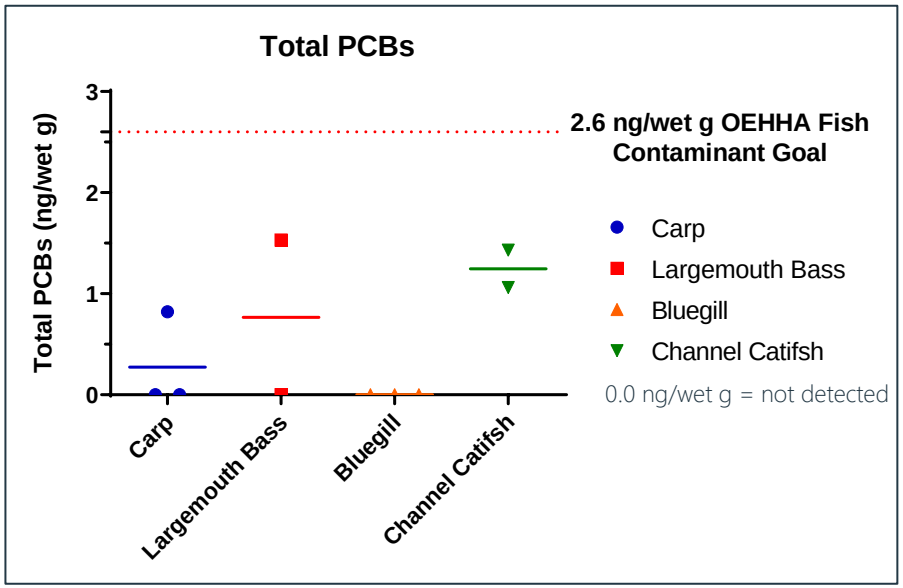


Lake Elsinore Fishery Management Report

Study Objective: Determine Potential for a 303(d) Delisting of Lake Elsinore for PCBs and DDTs.

Summary of DDT and PCB Concentrations for 2019 Fish Tissue Collections





Questions

Summary of DDT and PCB Concentrations for 2019 Fish Tissue Collections

Analyte	Carp Rep 1	Carp Rep 2	Carp Rep 3	LMB Small Fish	LMB Large Fish	Bluegill Rep 1	Bluegill Rep 2	Bluegill Rep 3	Catfish Small Fish	Catfish Large Fish
# Fish in Composite	5	5	5	2	1	5	4	2	2	1
Total DDTs (ng/wet g)	1.51	1.19	1.63	0.28	1.06	0.39	0.39	0.24	1.99	3.20
Total PCBs (ng/wet g)	ND	ND	0.82	ND	1.53	ND	ND	ND	1.06	1.43
Aroclor 1248 (ng/wet g)	ND	ND							ND	ND
Aroclor 1254 (ng/wet g)	ND	ND							ND	ND
Aroclor 1260 (ng/wet g)	ND	ND							ND	ND
Total Nitrogen (% wet wt)	5.3	5.3	5.3	5.8	6.0	5.8	5.9	5.7	5.2	5.2
Total Phosphorus (µg/wet g)	10710	10610	13730	15360	16310	11700	15770	16760	11080	10730
Lipids (%)	1.12	0.75	1.29	0.38	1.3	0.78	0.42	0.49	3.21	1.68
Solids (%)	19.5	20.7	20.1	19.5	22.2	20.3	19.3	20.6	21.5	21.0

OEHHA Fish Contaminant Goal (June 2008)
Total DDT 15 ng/wet g
Total PCB 2.6 ng/wet g