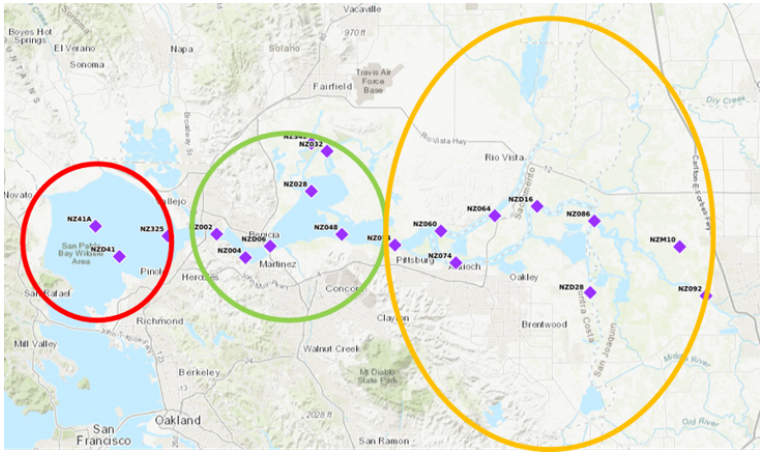
# Winter 2017-2018
# IEP Status and Trends Report

Interagency Ecological Program for the San Francisco Estuary
This report shows trends in water quality, plankton, and fish across multiple IEP surveys for December of 2017, January and February of 2018.

**Contents**

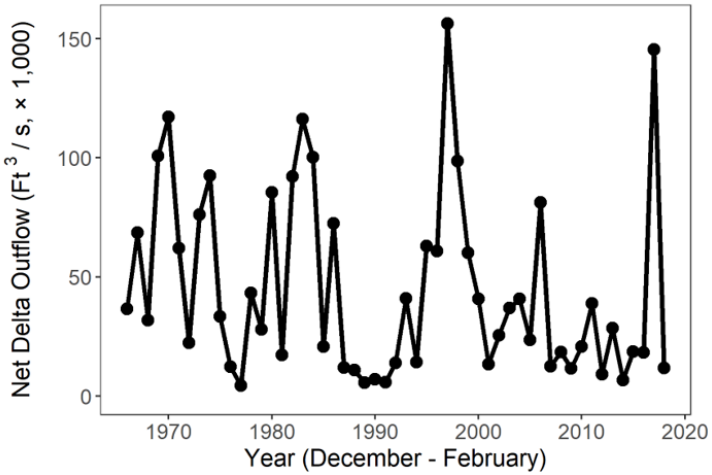


## Regions of the Estuary




- San Pablo Bay is salty, similar to San Francisco Bay, with influence from the Pacific Ocean.
- Suisun is brackish in the summer, fresher in the winter/spring, and contains a lot of wetlands.
- The Delta is fresh, with many distributary channels.

## Delta Outflow

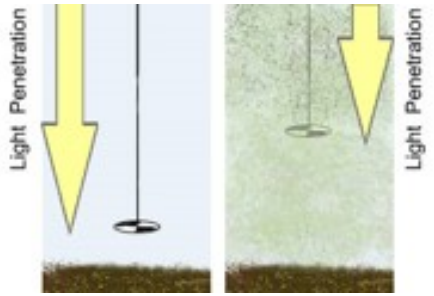



- Freshwater flow is one of the controlling factors in the estuary.
- Winter flow is driven primarily by rainfall and upstream dam releases.

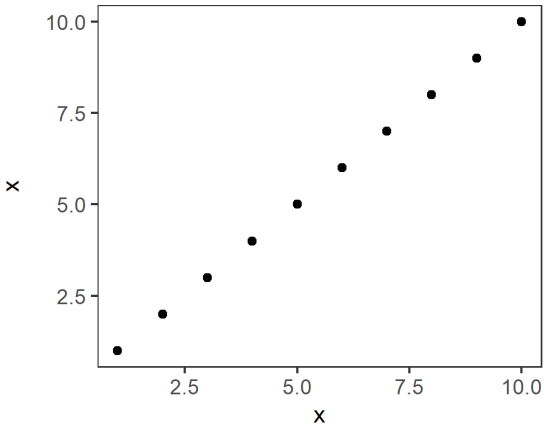
DISCLAIMER: Use this data at your own risk

# Secchi Depth

- Organisms in this ecosystem are adapted to high turbidity conditions, and reductions in turbidity can have many negative ecological effects. Higher values for Secchi depth indicate lower turbidity.
- Secchi depth is measured monthly by DWR's Environmental monitoring program by dropping a black-and-white disk in the water until it disappears.

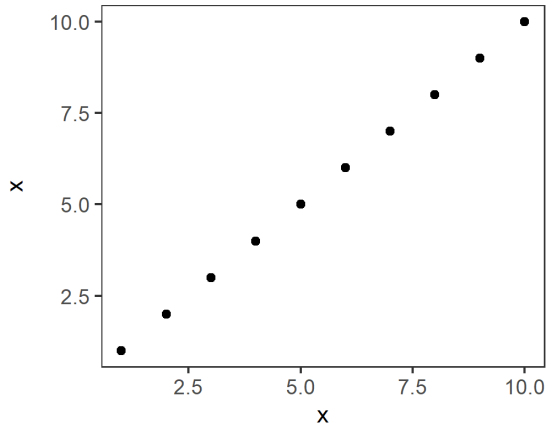



## San Pablo Bay



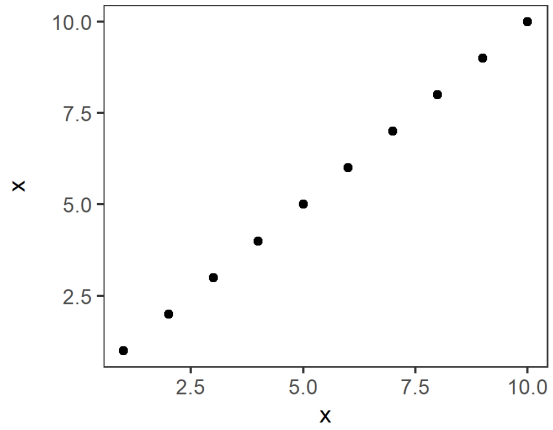

- San Pablo bay is pretty clear.

## Suisun Bay




- Suisun Bay is pretty murky (low Secchi depth).

## The Delta

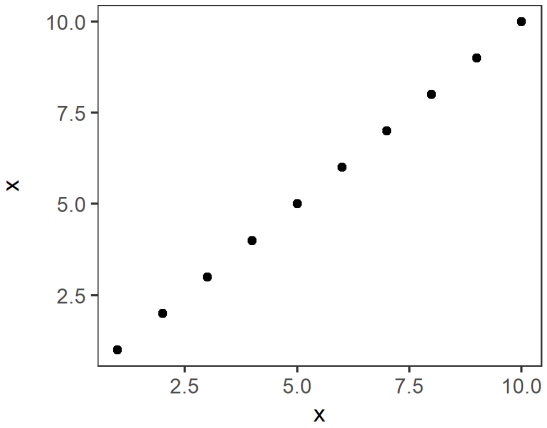



- The Delta has been getting clearer over time.

# Temperature

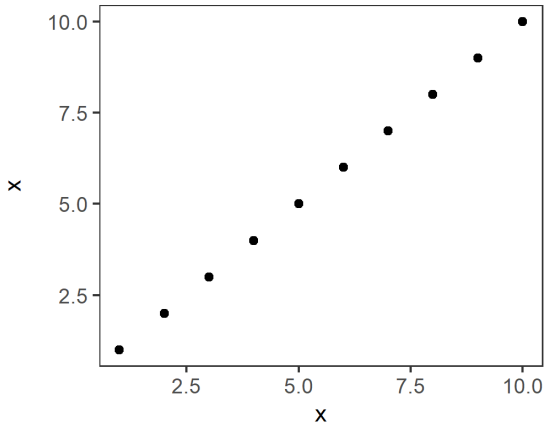
- Temperature is monitored monthly by DWR's Environmental Monitoring Program.
- Most fish have temperature tolerances necessary for growth and reproduction.
- Increasing winter temperatures may lower Delta Smelt fecundity.

## San Pablo Bay



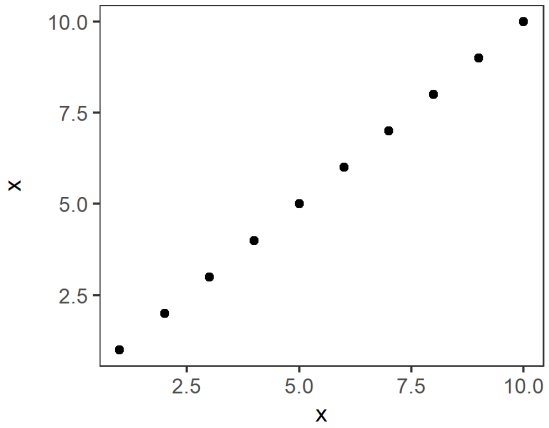

- San Pablo Bay is slightly warmer than the Delta in the winter.

## Suisun Bay



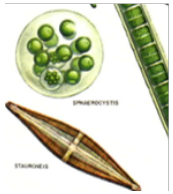

- Suisun Bay is usually similar to the Delta.

## The Delta



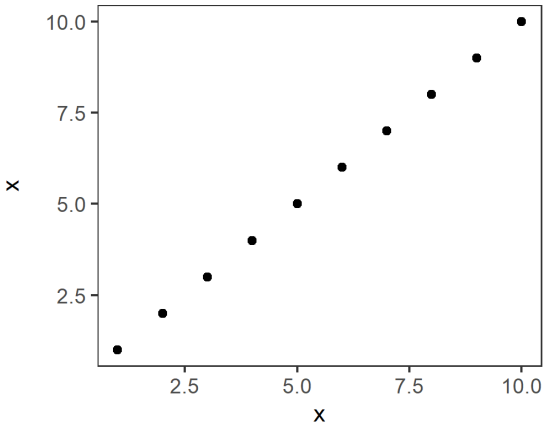

- Delta temperatures are closely linked to air temperature.

# Chlorophyll



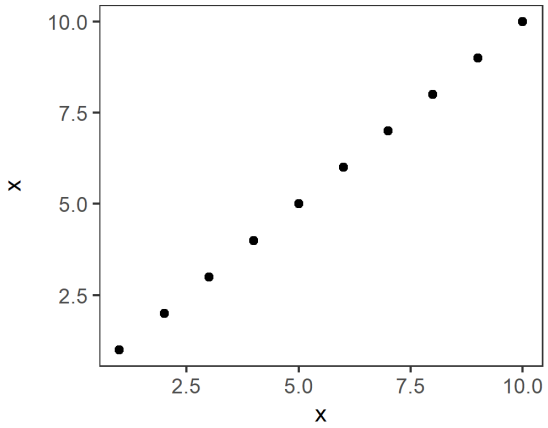
- Chlorophyll is an indicator of phytoplankton production, which tends to be low during the winter.
- Phytoplankton are the base of the pelagic food web. It is sampled monthly by DWR's Environmental Monitoring Program.
- The invasive clam *Potamocorbula amurensis* caused a decline in phytoplankton and zooplankton – especially in Suisun Bay.

## San Pablo Bay



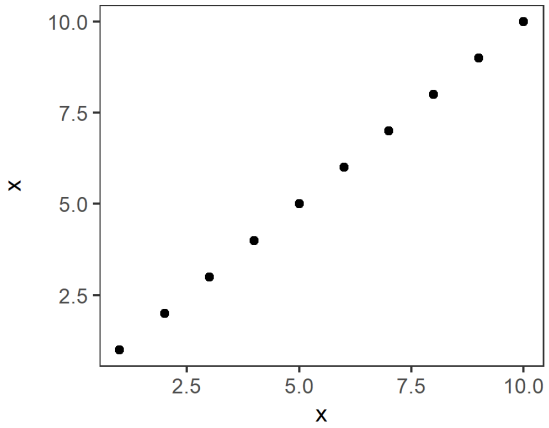

- Winter chlorophyll has been consistently low in San Pablo Bay.

## Suisun Bay



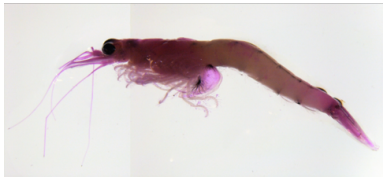

- The clam invasion lowered chlorophyll in Suisun more than other regions.

## The Delta



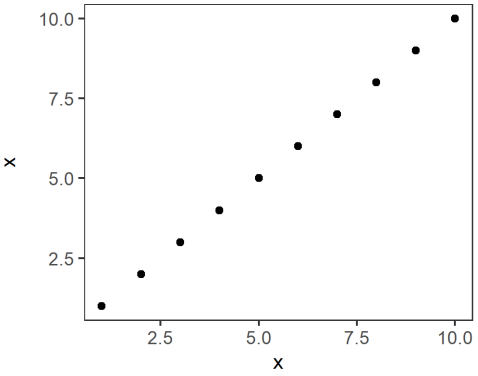

- Winter chlorophyll levels have been consistently low in the Delta.

# Zooplankton



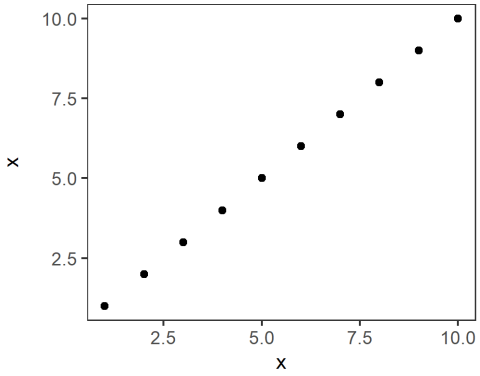
- Zooplankton is sampled monthly by the CDFW/DWR Environmental Monitoring Program, but sampling in winter did not begin until 1995.
- Zooplankton are an important food source for pelagic fish. Calanoid copepods and mysids are good fish food. Cyclopoid copepods are not as good for fish food.
- Biomass tends to be low in the winter.

## San Pablo Bay



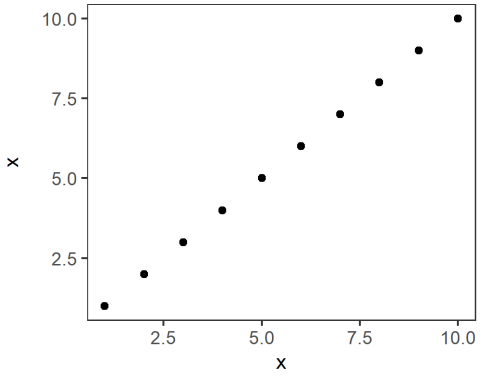

- San Pablo Bay is dominated by calanoid copepods.

## Suisun Bay




- Suisun has a lot of cyclopoid copepods.

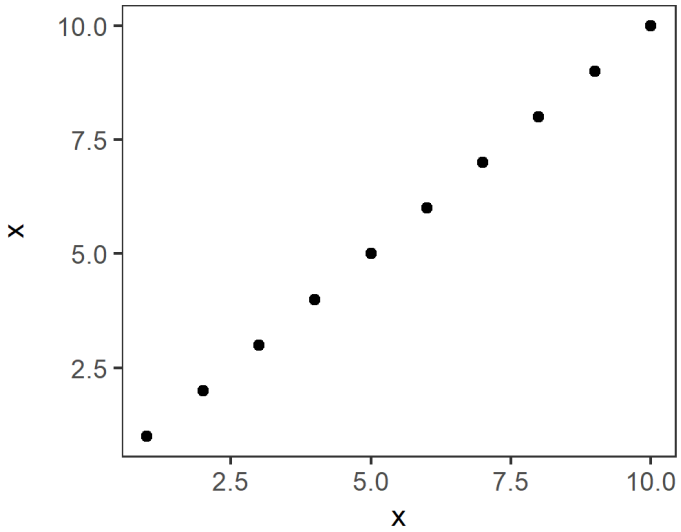
## The Delta




- The Delta has low zooplankton abundance during the winter.

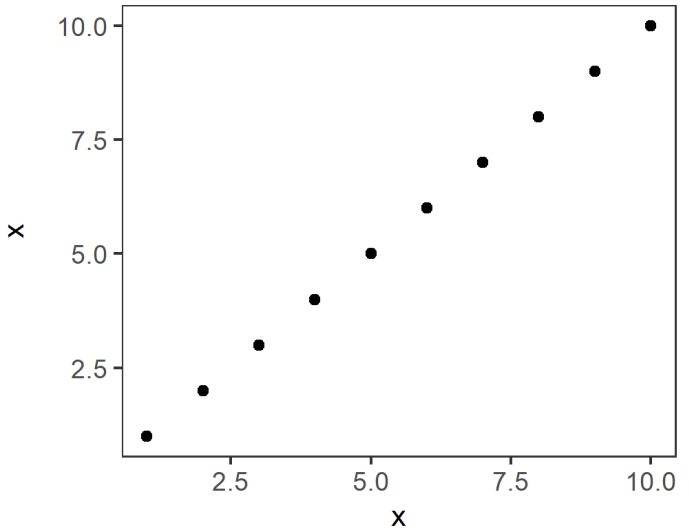
# Fish

**White Sturgeon – Bay Study**




- White sturgeon support a recreational fishery.
- Juvenile sturgeon are caught in CDFW's San Francisco Bay Study's otter trawl.

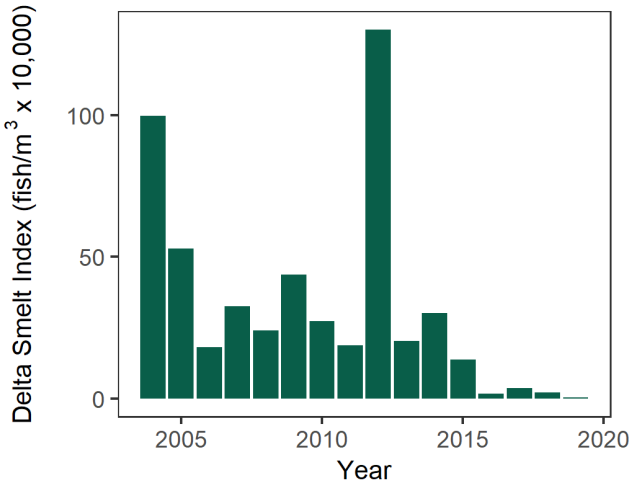
**Longfin Smelt – Bay Study**




- Longfin Smelt are listed as Threatened under CESA and have been in decline since the early 2000s.
- Longfin Smelt are sampled by CDFW's San Francisco Bay Study's midwater trawl.

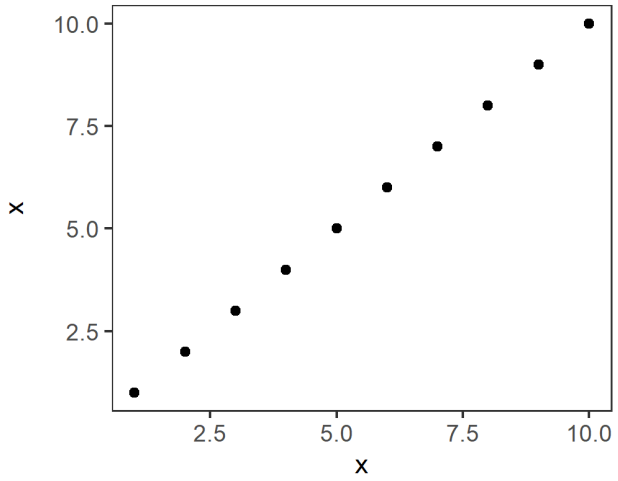
# Recent Trends

**Delta Smelt – SKT**



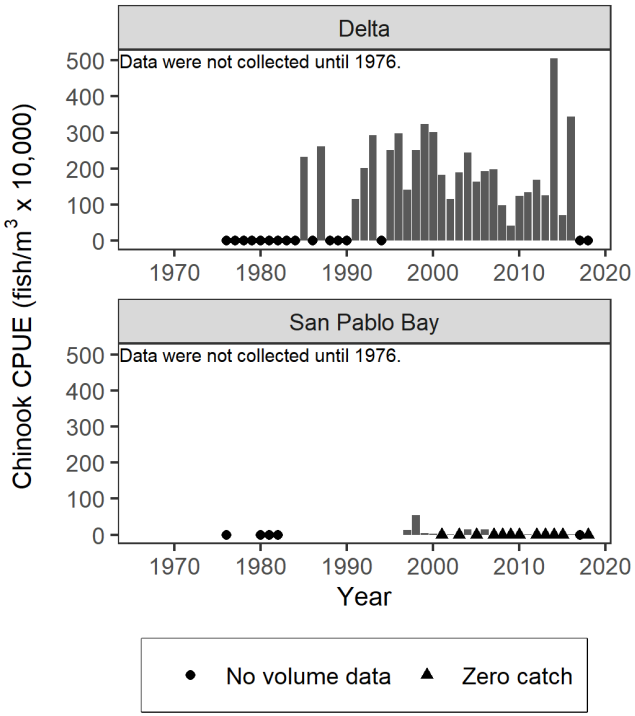

- Delta Smelt are ESA listed as Threatened, CESA listed as Endangered and have been in decline since the early 2000s
- CDFW's Spring Kodiak Trawl is designed to monitor adult Delta Smelt from January-March.

**Winter Run Chinook – RBDD**




- Juvenile Chinook pass Red Bluff Diversion Dam as they migrate from spawning grounds to the ocean.
- Sampling at the dam provides an estimate of production in the upper watershed.

**Juvenile Chinook – DJFMP**




- USFWS's Delta Juvenile Fish Monitoring Program runs beach seines to show landscape patterns of juvenile Chinook Salmon.
- Researchers use these patterns to determine differences in salmon life-history.