

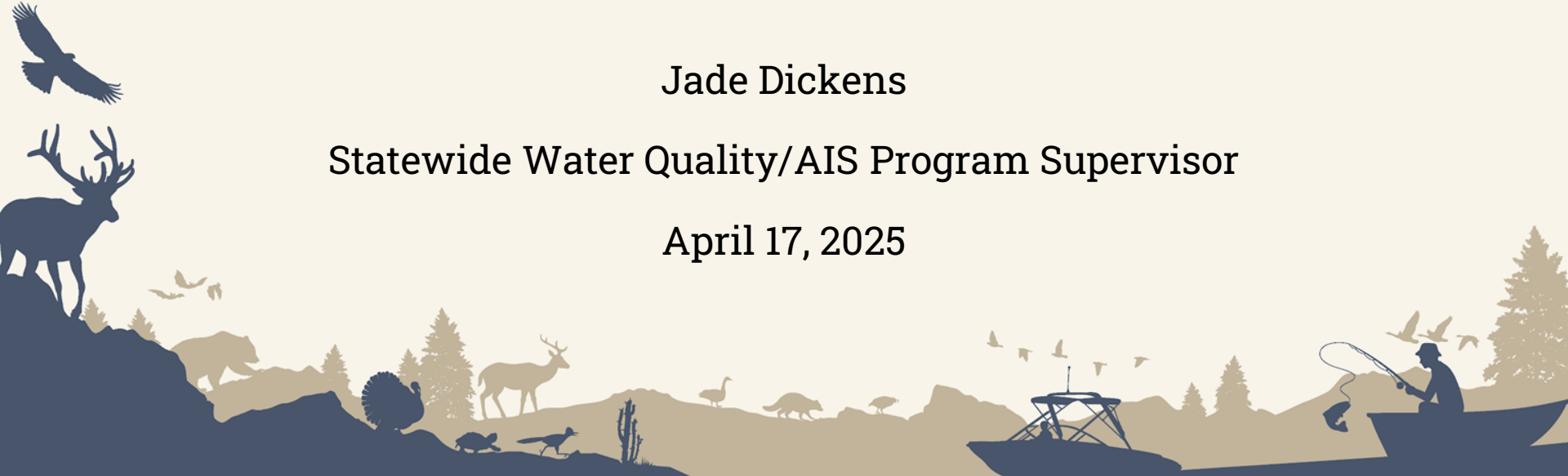


# What's in Arizona's Waters?

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Statewide Water Quality/AIS Program Supervisor

April 17, 2025



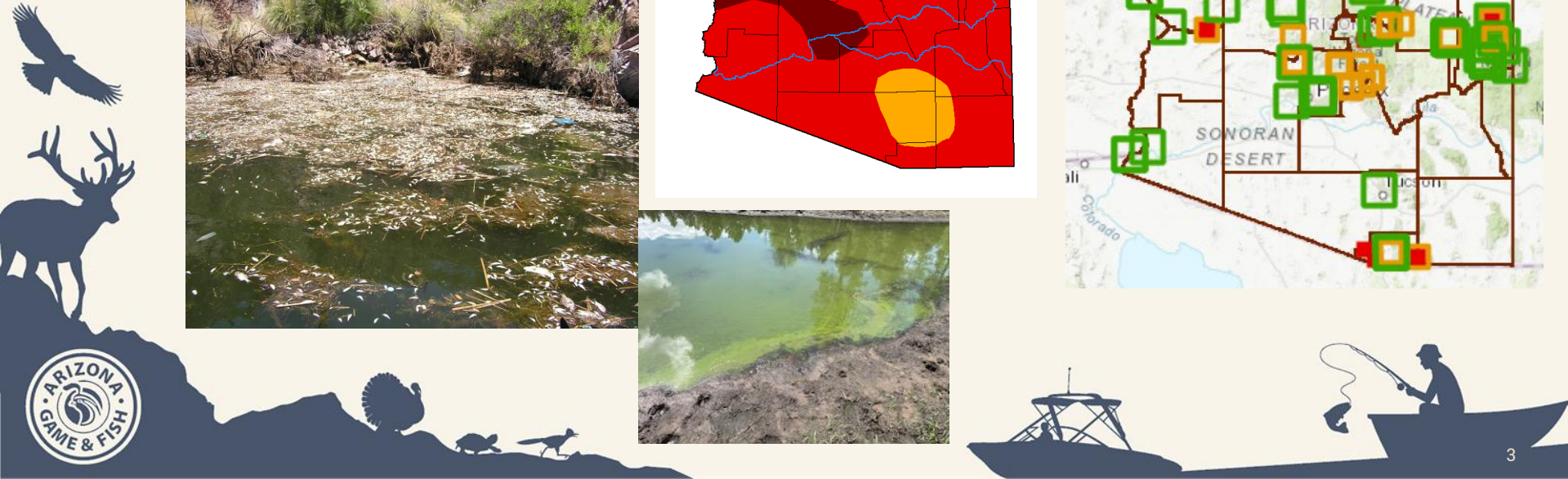
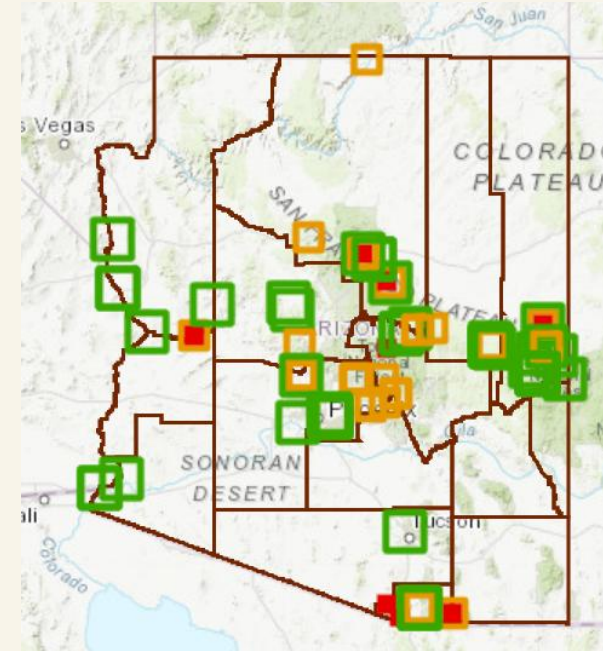
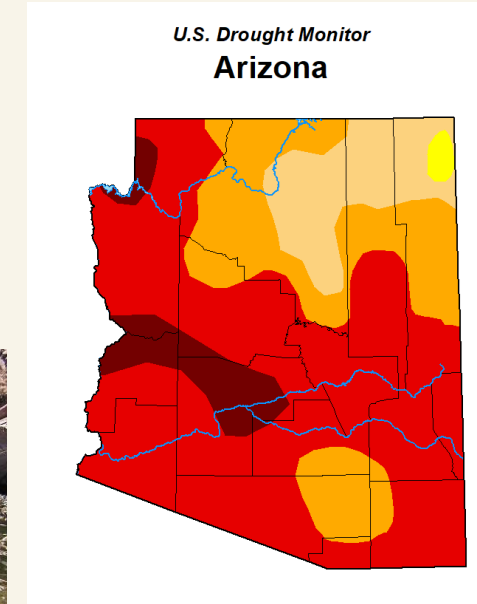
# AZGFD Water Quality Program

- Responsible for obtaining and maintaining compliance with AZPDES permits for hatcheries (Canyon Creek, Tonto Creek, Page Springs/Bubbling Ponds)
- Monthly sampling and analysis of hatchery discharge
- Maintain ADHS certified environmental laboratory to analyze hatchery samples
- Conduct resource damage investigations (i.e. fish kills, algae blooms, etc.)
- Identify algal species under microscope
- Partner with ADEQ to collect fish for and communicate fish consumption advisories



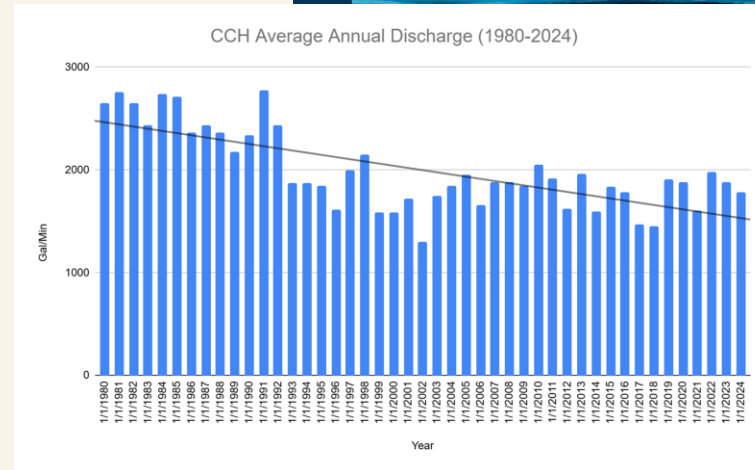
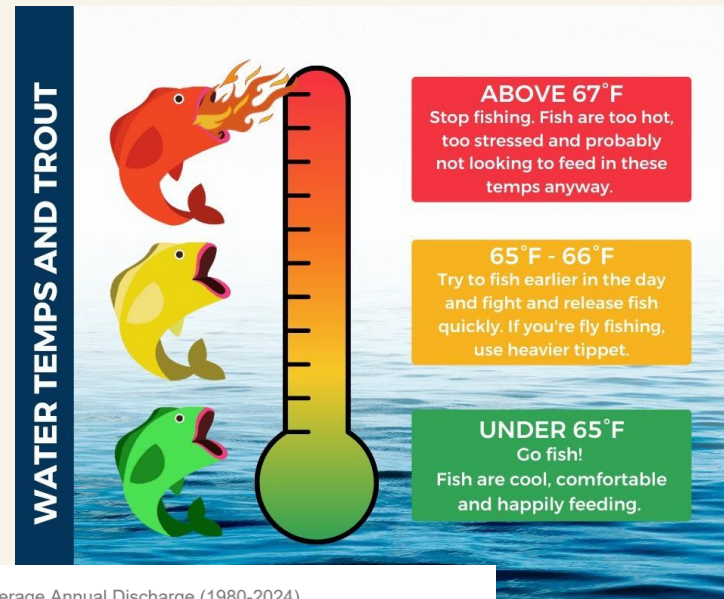
# Factors Affecting AZ Water Quality

- Drought
- Algae
- Mercury
- PFAs



# Drought

- As of April 8, 2025, 99% of Arizona in some kind of drought
- 66% in extreme/exceptional drought
- Hatchery and stream flows are decreasing from historic averages
- Lake levels are dropping
- With decreases in water comes
  - Increased temperatures
  - Decreased dissolved oxygen
  - Increased algae blooms
  - Higher concentrations of nutrients
  - Less habitat/forage for fish





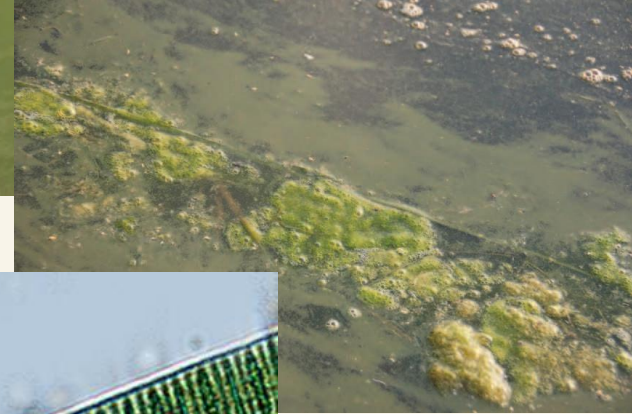
# Golden Algae

- *Prymnesium parvum*
- Microscopic, single-celled algae
- Produces toxins that destroy fish gills
- First identified in Arizona in 2005
- Prefers higher conductivity, higher pH, phosphorus deficiencies
- Found in Salt River chain lakes, Salt River, canals, and urban lakes around Phoenix



# Harmful Algae Blooms (HABs)

- Pose a risk to human recreators
  - Microcystis
  - Dolichospermum (Anabaena)
  - Oscillatoria
- All algae blooms can cause fish kills by reducing dissolved oxygen, although rare
- Most common in lentic systems, although can be found in lotic also



# Mercury in Fish Tissue

- Most common contaminant of fish tissue in the US and Arizona
- Feeding habits and food chain structure cause the methylmercury to accumulate
- Partner with ADEQ to collect fish for analysis and issue fish consumption advisories as well as “green light fisheries”
- Total of 29 fish consumption advisories in Arizona
- There are no known fish consumption advisories for any trout in Arizona
- Many of the green light fisheries are for trout
- ADEQ has an interactive map of all known fish consumption advisories and green light fisheries

- <https://adeq.maps.arcgis.com/apps/webappviewer/index.html?id=1de0dffdb957485c941041fca4dd6709>

**What is a serving?** As a guide, use the palm of your hand.



**Pregnancy and breastfeeding:**

1 serving is 4 ounces

**Eat 2 to 3 servings a week from the “Best Choices” list**  
(OR 1 serving from the “Good Choices” list).



**Childhood:**

On average, a serving is about:

1 ounce at age 1 to 3  
2 ounces at age 4 to 7  
3 ounces at age 8 to 10  
4 ounces at age 11

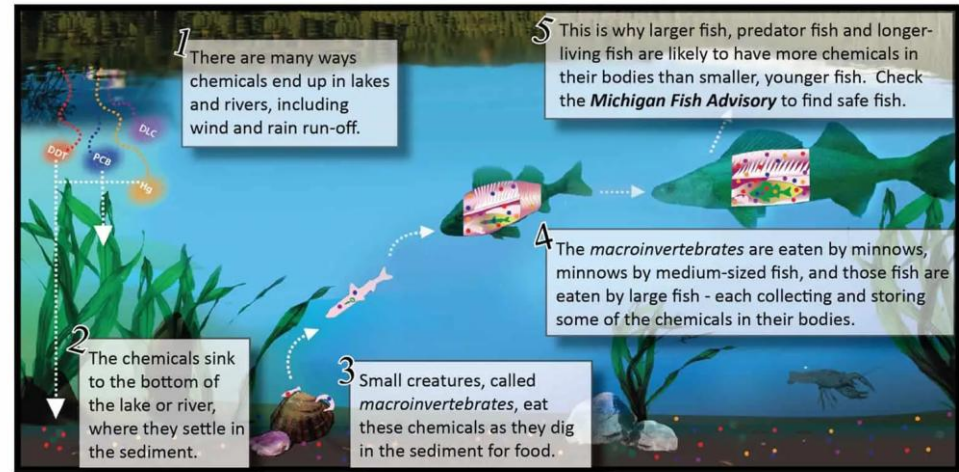
**Eat 2 servings a week from the “Best Choices” list.**



# PFAs in Fish Tissue

- Manufactured additives widely used since 1950s in consumer nonstick and stain resistant products
- Called “forever chemicals”
  - Fail to break down in environment
- No standards set by EPA or USDA for fish consumption
- PFOS Screening Levels
  - Noncancer (subsistence fishers) - 11 ng/g
  - Noncancer (general consumers) - 46 ng/g
- Study in 2019 showed no fish in Arizona were above the screening level

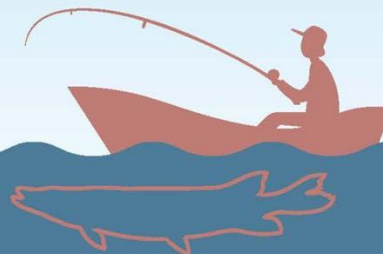
## Bioaccumulation in Action





# Bioaccumulation in Fish

Bioaccumulation is the gradual buildup of substances, such as mercury or other chemicals, in the body of an organism. These chemicals will not break down in the body or are not able to be excreted. This will cause the chemical to accumulate over time. The larger a fish becomes, the more it can bioaccumulate. Size should also be considered when deciding which fish to keep to eat.



## MEDIUM Bioaccumulation Potential

- Bass (Yellow, White)
- Bullhead (Black/Yellow)\*
- Channel Catfish
- Crappie (Black/White)
- Suckers (Desert/Sonoran)\*
- Sunfish (Redear, Green)
- Trout (Brown, Tiger)
- Yellow Perch\*



## LOWER Bioaccumulation Potential

- Arctic Grayling\*
- Bigmouth Buffalo\*
- Bluegill
- Tilapia
- Trout (Rainbow, Cutthroat, Brook, Apache, Gila)

## HIGH Bioaccumulation Potential

- Buffalo (Bigmouth, Smallmouth, Black)\*
- Carp (Common, Mirror, Grass)
- Flathead Catfish
- Northern Pike
- Bass (Striped, Largemouth, Smallmouth)
- Walleye

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AVOID  
CONSUMPTION

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EAT ONLY A FEW  
PER MONTH

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STANDARD  
CONSUMPTION

BIOACCUMULATION  
LEVEL



Note:

Some waters may have information on a specific kind of fish. Before consuming fish from a specific water, check for consumption advisories at [azdeg.gov/fca](http://azdeg.gov/fca).

EPA-FDA Advice about Eating Fish and Shellfish: [epa.gov/fish-tech/epa-fda-advice-about-eating-fish-and-shellfish](http://epa.gov/fish-tech/epa-fda-advice-about-eating-fish-and-shellfish).

\* Indicates fish that are not commonly caught in Arizona

Arizona Green Light Fishery  
and Fish Consumption  
Advisory interactive eMap



THANK YOU!

