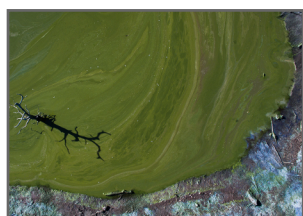


2017 LOWER KLAMATH WATER QUALITY

The Lower Klamath River extends from above the confluence of the Trinity River to the Klamath Estuary. Water quality here tends to be better than up-river, but is still degraded from upstream diversions, nutrient runoff from agriculture, and dams. A legacy of mining, logging, and fire suppression throughout the watershed also impacts local water quality. Microcystin toxin from blue-green algae is a major human health concern. High water temperatures can be bad for fish and other tribal trust species, as can high pH and low dissolved oxygen from excessive algae growth driven by the high nutrients.



Algal Toxins in the Lower Klamath River



The blue-green algae that produces microcystin toxin blooms

in the nutrient-rich waters of Copco and Iron Gate reservoirs, and is then released into the Klamath River. Microcystin toxin in the Lower Klamath was on average six times higher than the Yurok Tribe's warning level and the State of California's caution level (0.8 µg/L) during August and September of 2017. Young children and pets are at greatest risk of exposure because they often ingest water while swimming and playing in the river.

Figure 1. Seasonal microcystin trends compared among years (colored lines) show that average toxin levels increased in late summer above the caution and warning levels (dashed lines).

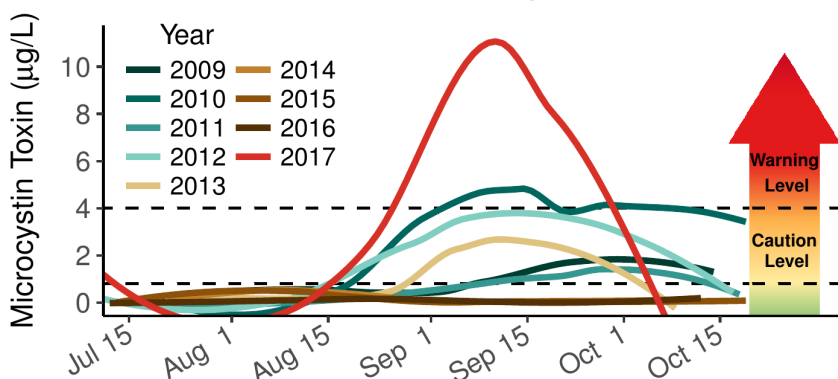
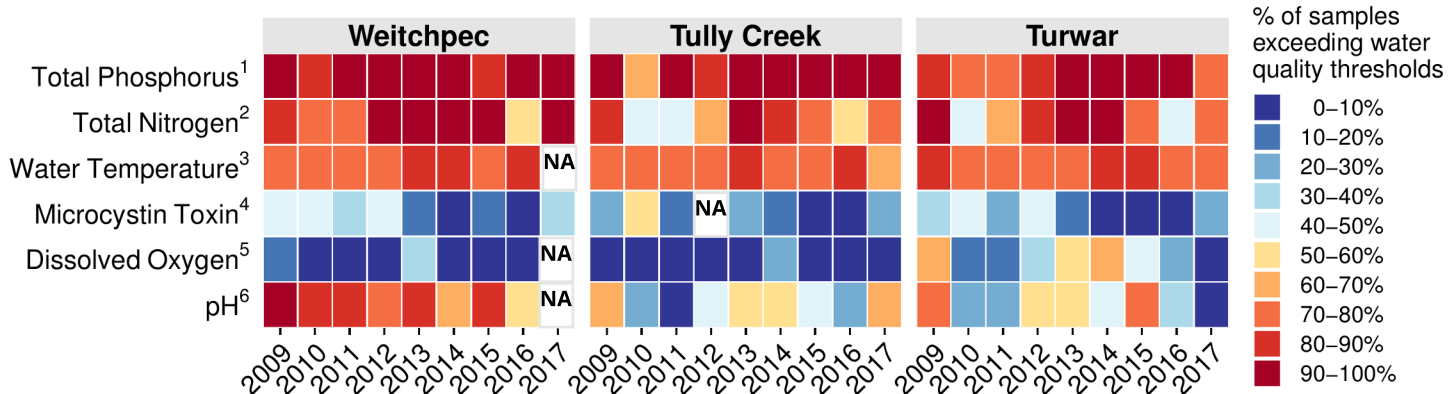


Table 1. Summary of microcystin toxin sample results at Lower Klamath River sites for August–September 2017

Sample Site	River Mile (from Ocean)	Average Microcystin Toxin (µg/L)	Highest Microcystin Toxin (µg/L)	Number of Samples
Weitchpec	43	6.1	30	13
Tully Creek	38	5.5	21	4
Turwar	7	3.9	13	12
Lower Estuary	0.5	4.6	17	4
South Slough	0.2	2.5	9	9

Figure 2. Water Quality Compared to Past Years: Percent of samples that exceeded water quality thresholds in the summer (July–October) by year at 3 Lower Klamath sites



2017 WATER QUALITY RESULTS

Poor water quality in the Lower Klamath River is a threat to human health and fisheries. Tribal natural resource departments monitor water quality to inform state and federal processes, to observe changing conditions, and to inform the public about the status of the river. Below are the 2017 results.

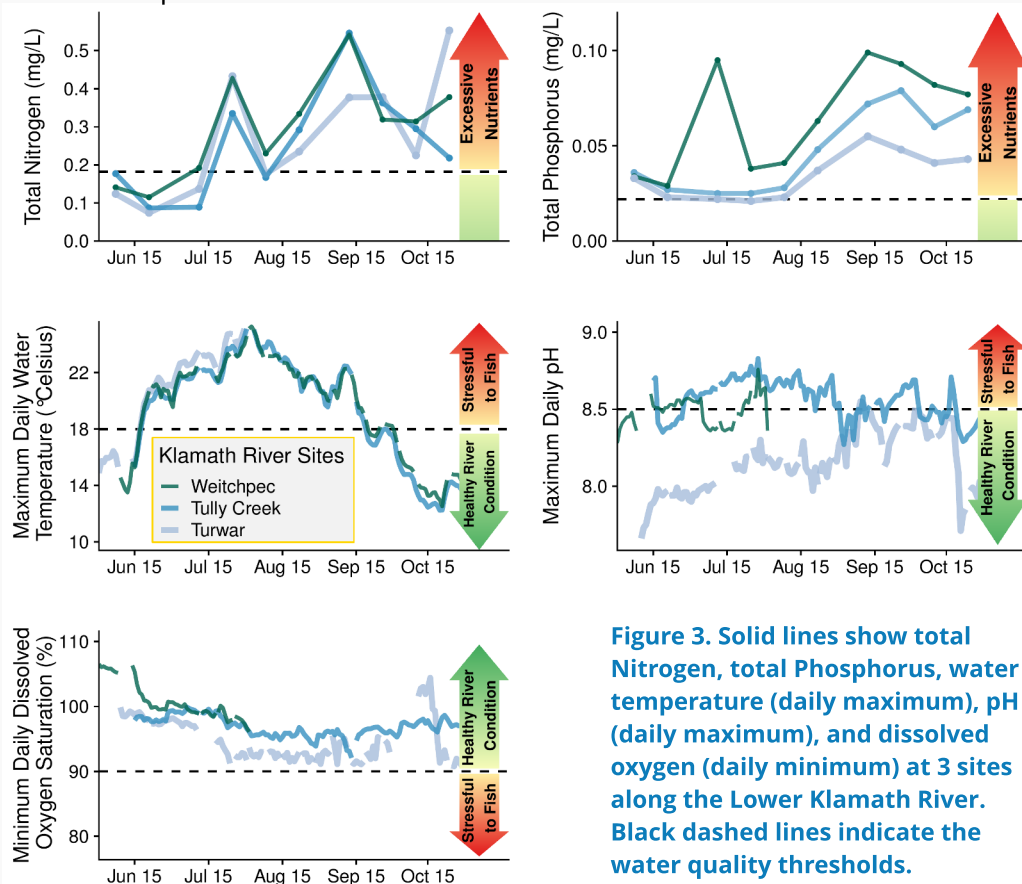


Figure 3. Solid lines show total Nitrogen, total Phosphorus, water temperature (daily maximum), pH (daily maximum), and dissolved oxygen (daily minimum) at 3 sites along the Lower Klamath River. Black dashed lines indicate the water quality thresholds.



Water quality followed similar trends in 2017 as in previous years:

Nutrients generally exceeded water quality thresholds, with highest concentrations in late summer

Maximum daily water temperature was above 18°C from mid-June to mid-September

Maximum daily pH generally decreased in a downstream direction from Weitchpec to Turwar

Minimum daily dissolved oxygen was maintained at higher (good) levels in 2017 than during most previous years



Stay informed about Klamath water quality!

For current information about blue-green algae blooms and water quality in the Lower Klamath, check out the **Blue-Green Algae Tracker** at <http://kbmp.net>

The Klamath Tribal Water Quality Consortium created this handout using funding from U.S. EPA region 9. Published November 2018. The full report can be found at www.klamathwaterquality.com



Water Quality Thresholds are based on Tribal and State Water Quality Objectives. When seasonal and site-specific thresholds were presented, a single threshold was selected for use in this analysis. **1. Total Phosphorus:** 0.022 mg/L (upper limit); **2. Total Nitrogen:** 0.182 mg/L (upper limit); **3. Water temperature:** 18 °C (upper limit); **4. Microcystin:** 0.8 µg/L (caution level, upper limit); **5. Dissolved oxygen:** 90% (lower limit); **6. pH:** range of 7.0–8.5