UPDATE ON OREGON WATER SCIENCE CENTER ACTIVITIES FOR COLUMBIA BASIN RESTORATION PROGRAM WORKING GROUP—OCTOBER 2021

PFAS PROJECT IN THE COLUMBIA SLOUGH

Contact: Elena Nilsen (enislen@usgs.gov)

USGS collected multiple species of resident fish from several reaches of the Columbia Slough, OR, in 2019 and 2020. Fish muscle, blood and liver samples are being analyzed for 50 target PFAS compounds at the highly specialized laboratory of Dr. Jennifer Field at Oregon State University (OSU). Data are being finalized and we hope to publish the results of the study within the next year.

CONTAMINANTS IN STURGEON IN THE HANFORD REACH

Contact: Sean Payne (spayne@usgs.gov)

Through a collaborative USGS and US Fish and Wildlife Service Science Partnership Project, white sturgeon were collected from 5 sites in the Hanford Reach of the Columbia River in 2009 and analyzed for contaminants. White sturgeon are long-lived, late-maturing, benthic-feeding fish that are ideal candidates for assessing the bioaccumulation of persistent chemicals. Composite tissue samples at each site were analyzed for the concentrations of individual chemicals as well as the total concentrations of four chemical classes: organochlorine (OC) pesticides, industrial or personal care products, polybrominated diphenyl ether (PBDE) congeners, and polychlorinated biphenyl (PCB) congeners. Chemicals from all four classes were present in the fish, and all but industrial or personal care products were present in all tissues and at all sites. Gonad tissues generally had the highest total concentration of each chemical class, followed by brains, livers, and fillets. The concentrations of several chemicals or chemical classes exceeded many of the human-health benchmarks for two different populations (general/recreational consumers and subsistence/Tribal consumers), and this was especially true for the total concentrations of DDT degradation products and PCB congeners. A USGS report is very close to being released.

DEVELOPING A LIBRARY OF SPECTRAL REFLECTANCE FOR ALGAE

Contact: Kurt Carpenter (kdcar@usgs.gov)

A group from several different Centers and disciplines are working on developing a library of spectral reflectance, for both planktonic and benthic types of algae (including HABs) to detect some of the more problematic taxa, including *Microcystis*, with hyperspectral information from satellites. As an example, this technology utilized the spectra from a space-station camera and the SMASH algorithm to identify *Aphanizomenon* in Upper Klamath Lake, at a time when a sample from the lake provided verification of 98% biovolume by *Aphanizomenon*. This library and method will be described in an upcoming report. The paper listed below came out last summer and describes the basic library development and microscope methods for 13 Cyanobacteria genera. Additionally, a group is developing a similar method for identifying periphyton in the Clackamas, North Santiam, and McKenzie River basins.

Slonecker, T., Bufford, B., Graham, J., Carpenter, K., Opstal, D., Simon, N. and Hall, N., 2021, Hyperspectral Reflectance Characteristics of Cyanobacteria: Advances in Remote Sensing, vol. 10, pages 66-77. Available at https://doi.org/10.4236/ars.2021.103004.