

Benthic Cyanobacteria in the Eel River

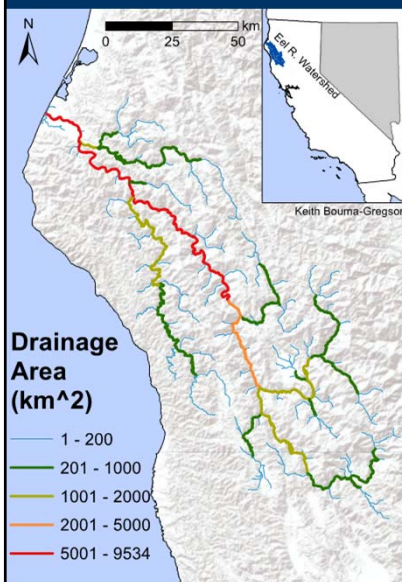


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Mary Power¹

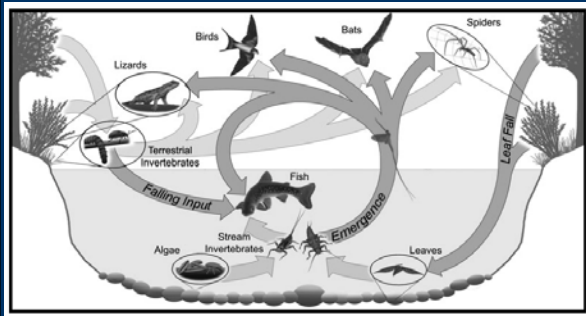
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Benthic Cyano WG | July 10, 2017

The Eel River



Algae fuels aquatic summer food webs



Baxter et al. 2005, *FW Bio.*



Power et al. 2009, *FW Bio.*

Algae kill dogs in the Eel river



Puschner et al. 2008, *J. Vet. Diag. Invest.*
Power, Bouma-Gregson, et al. 2015, *Copeia*

What is the temporal and spatial distribution of cyanobacteria in the Eel River?

Monitoring sites:

- Visited weekly June – Sep. 2013 and 2014
- Collected algal samples
- Measured cyanotoxin concentrations (SPATT)



Cyanobacteria in the Eel

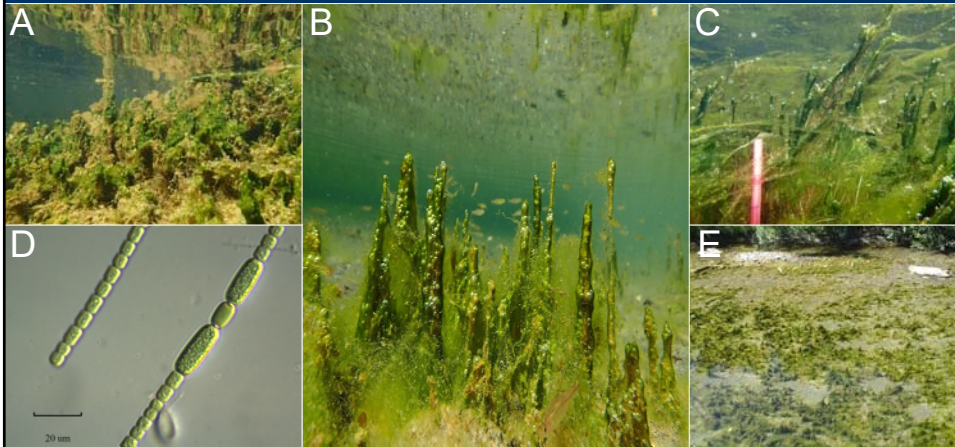


Benthic mats,
not
planktonic soups



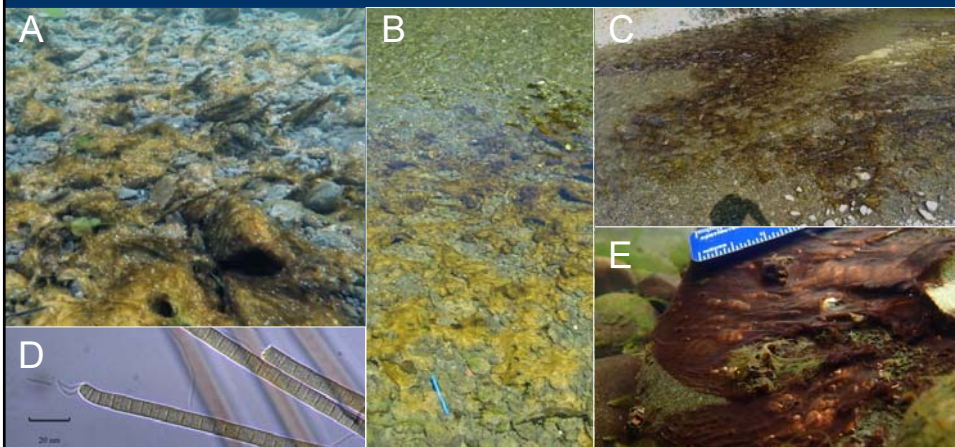
Observed common cyano. taxa

Anabaena spp.: slow water, fragile, on algae



Observed common cyano. taxa

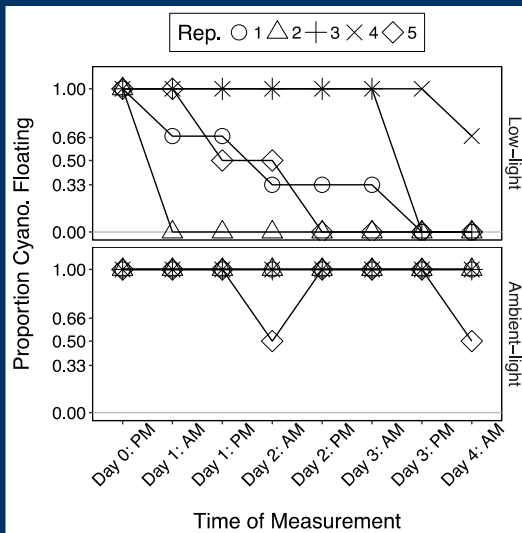
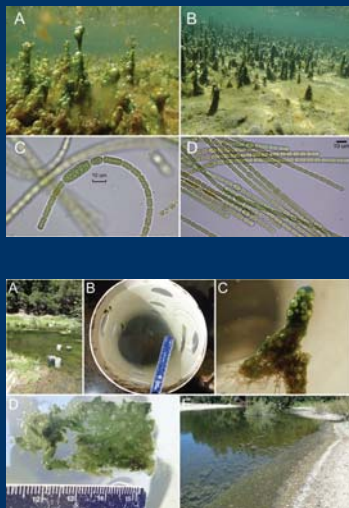
Phormidium spp.: fast water, robust, on rocks



Floating Cyanobacteria

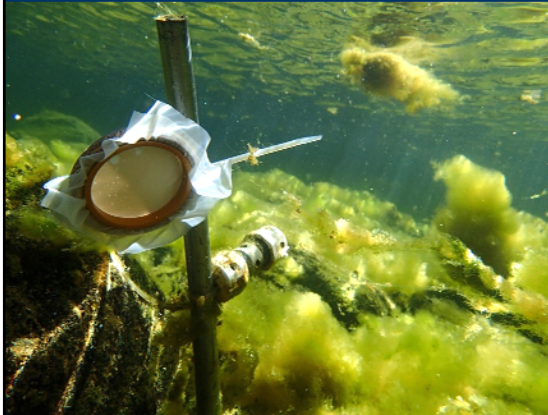


Floating Cyanobacteria



SPATT Samplers

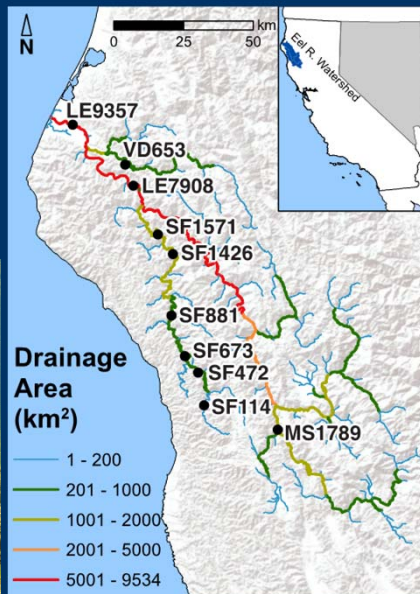
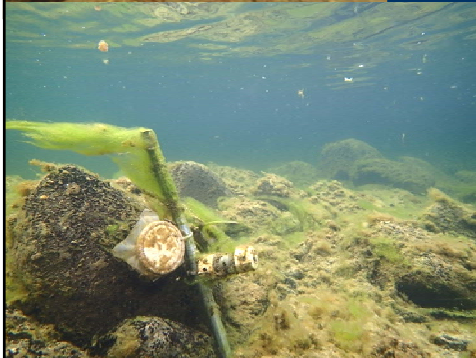
Solid Phase Adsorption Toxin Tracking (SPATT)



Dr. Raphael Kudela UCSC, oceandatacenter.ucsc.edu
Lane et al. 2010, *Limnology and Oceanography: Methods* Kudela
2011, *Harmful Algae*

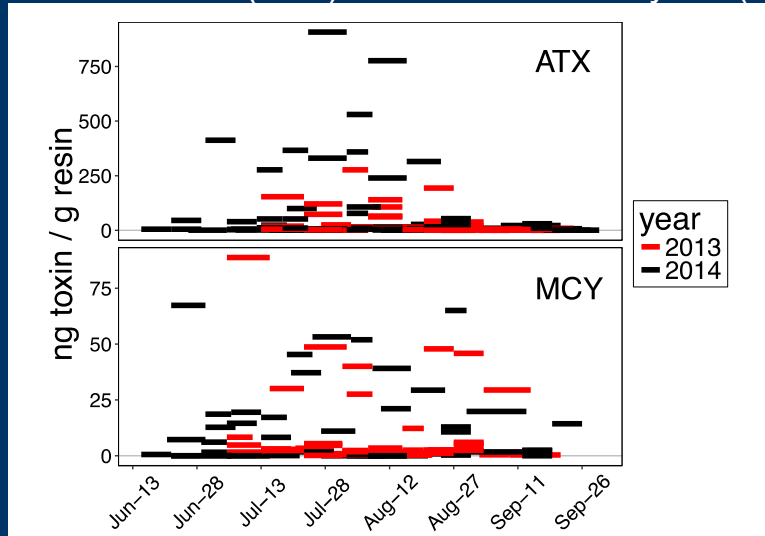
- Time integrative
- Multiple toxins detected (anatoxin-a and microcystins)
- Low limit of detection
- Easy to deploy and analyze
- HP20 DIAION resin not expensive
- Difficult to compare to regulatory limits

SPATT Samplers

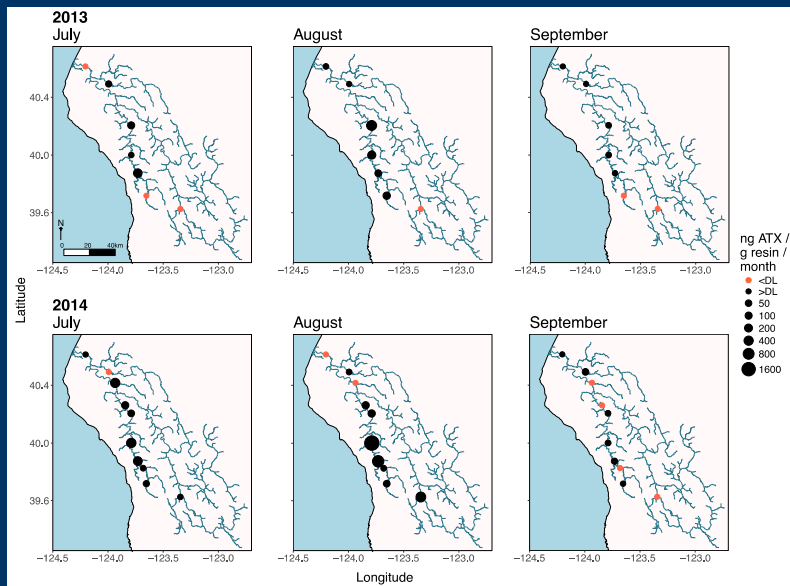


SPATT Results

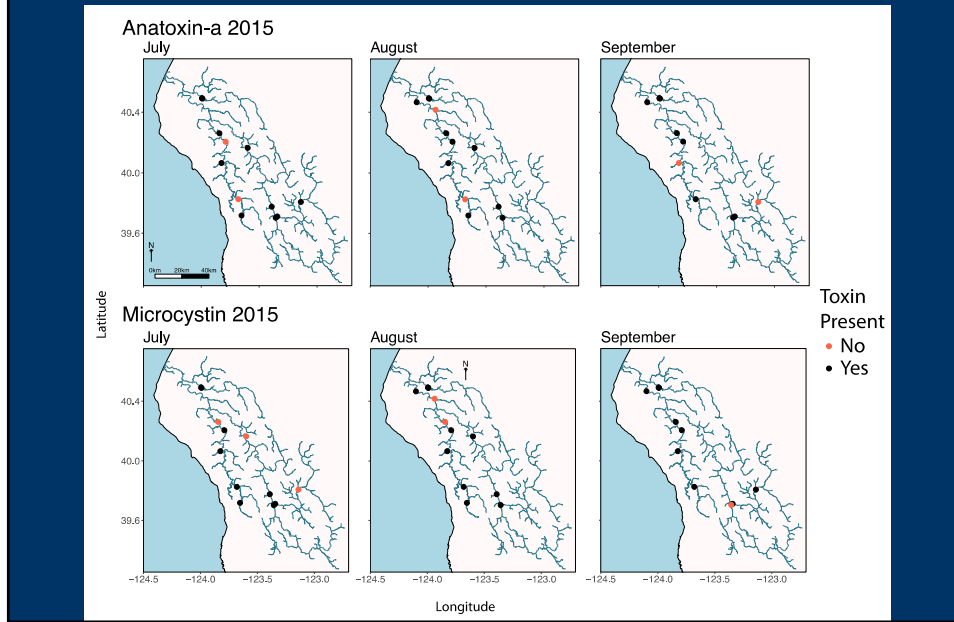
Higher anatoxin-a (ATX) levels than microcystin (MCY)



SPATT Results

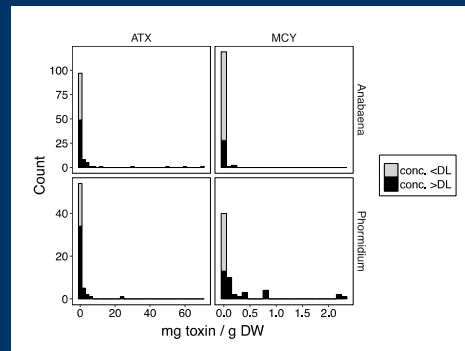
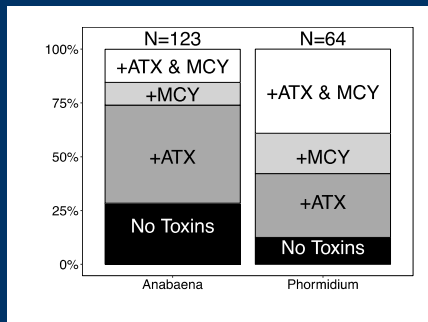


SPATT 2015 Results



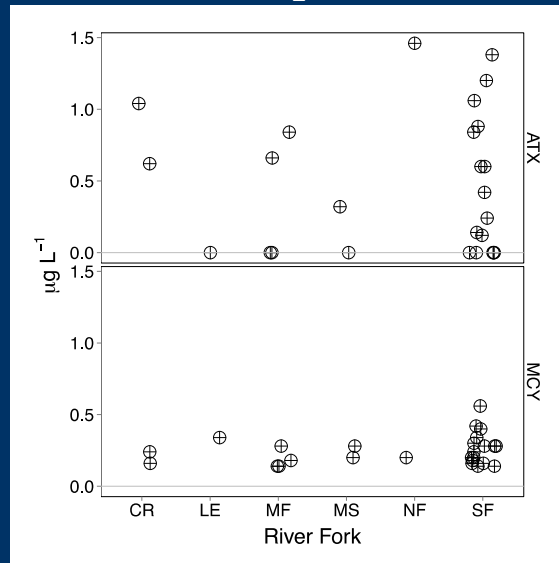
Cyano. Mat Cyanotoxins

Higher ATX concentrations than MCY concentrations
 More frequent ATX detections



2015 H₂O Samples

Unfiltered H₂O samples



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Lab Members: Hiromi Uno, Phil Georgakakos, Gina Hervey, Caroline Ribet, Jeanine Porzio, Arianna Nuri, Natalie Soto, Wes Cooperman, Nick Lapaglia



Questions?

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