

Blue-green Algae in Quamichan and Somenos Lakes

Research Approaches and Management Options



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Trophologic Aquatic Ecosystem Research

Blue-Green Algae in Somenos Lake



Photo: B. Hetschko

That Other Problem... Related?



Photo: B. Hetschko

Cyanobacteria Blooms in Somenos and Quamichan Lakes

- First probably observed in the 1950s
- Internal Loading
- Decreasing salmon habitat quality
- Associated physical and chemical issues
- Toxic chemicals
- Impossible to predict toxic cyanobacteria blooms
- Possible to predict cyanobacteria blooms

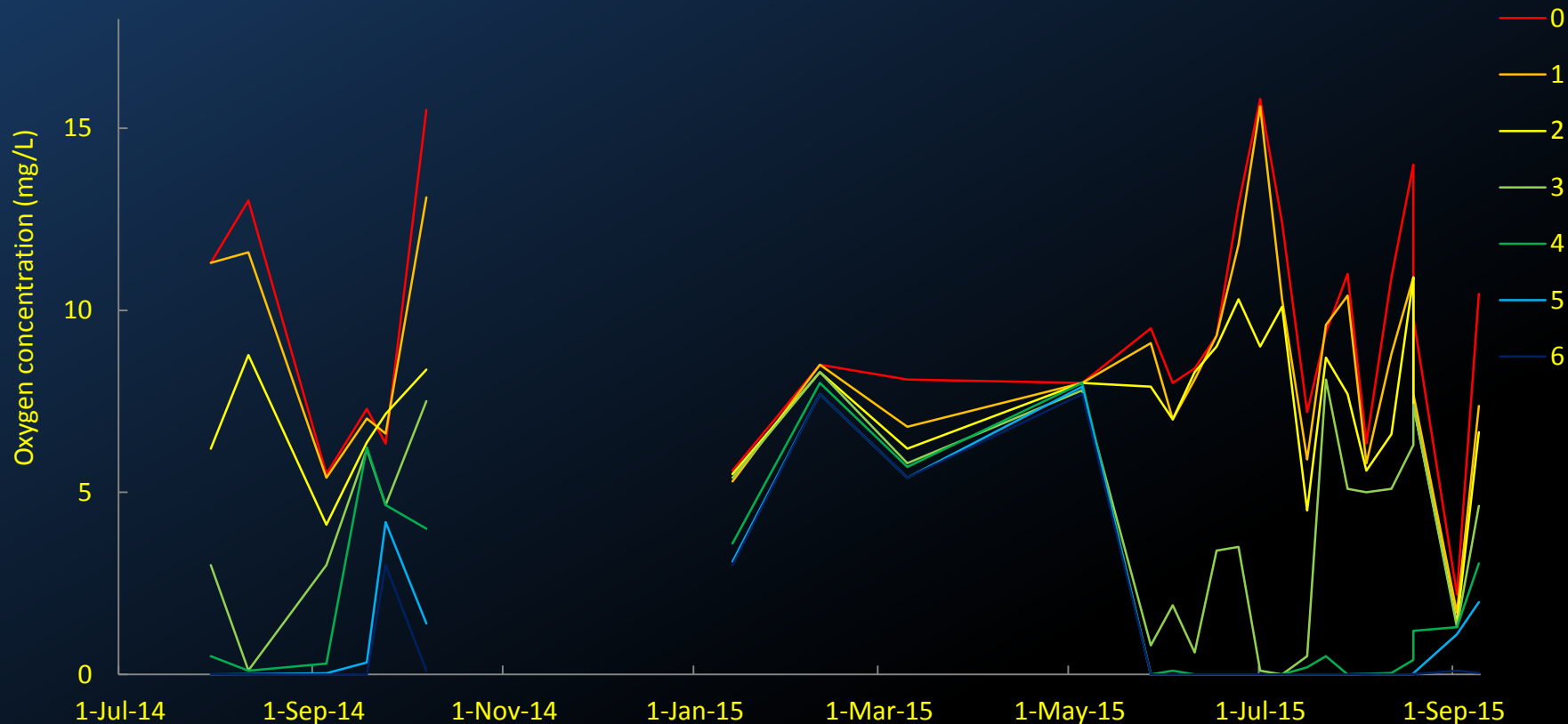
Now Everyone Take a Deep Breath

- This problem has been around for over 30 years
- It became an immediate concern with the appearance of chemicals toxic to humans and our companions
- Previous studies on both lakes investigated cyanobacteria management but funding and technology were insufficient
- Management will involve four aspects
 - controlling phosphorous going into the lakes (getting there)
 - controlling phosphorous accumulated in the lakes (the big one)
 - monitoring cyanobacteria and water quality (model in place)
 - monitoring cyanotoxins (need a plan + is expensive, BUT...)

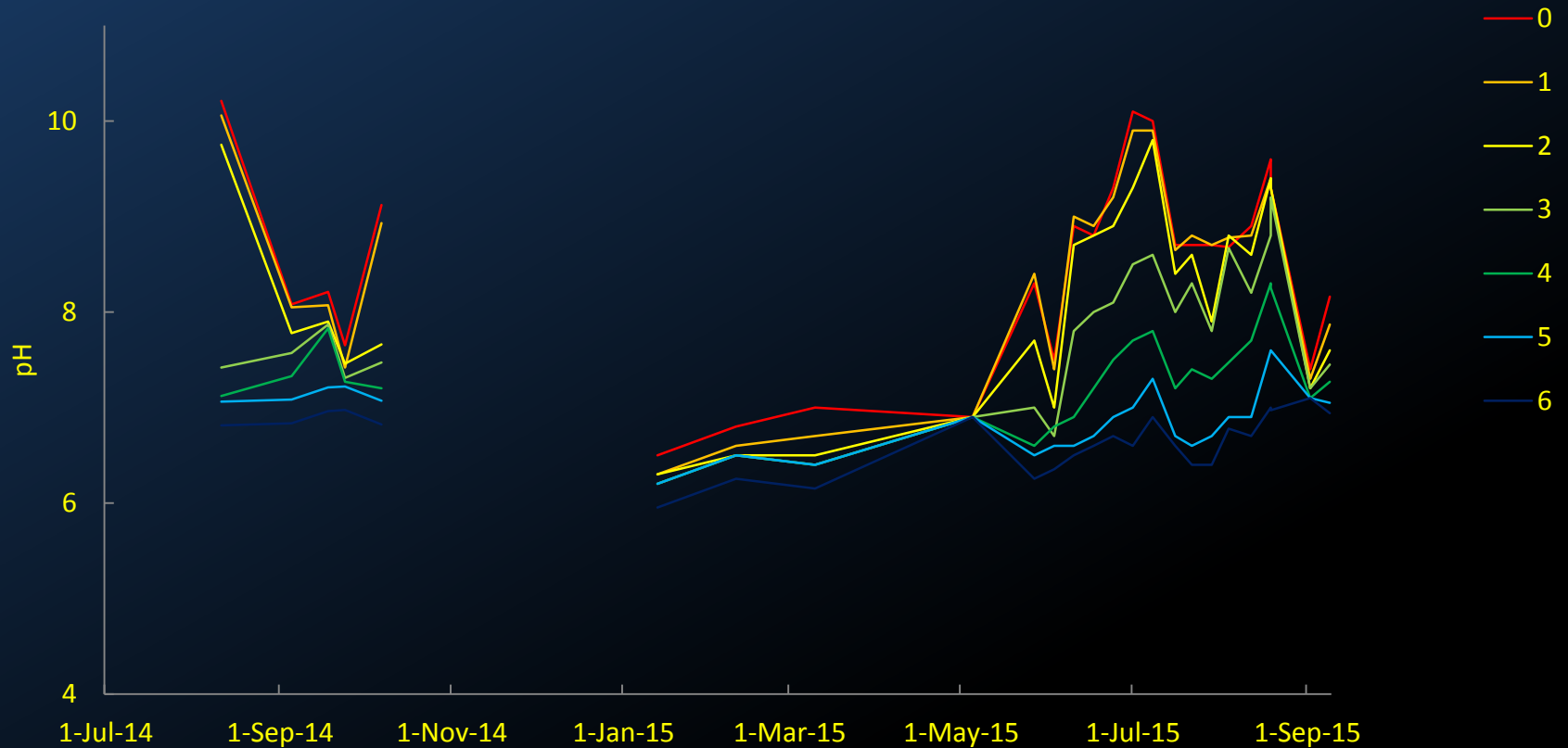
Monitoring Water Quality: Somenos Lake Daily Mean Temperature - 0m and 5m



Monitoring Water Quality: Somenos Lake Centre Station D.O.



Monitoring Water Quality: Somenos Lake Centre Station pH



Management Options

- Aluminum: pH issues, quick effect, long-term
- Iron: new approach, quick effect
- Aeration: moderately expensive, long-term
- Dredging: extremely expensive and invasive
- Nutrient Enrichment: moderate cost
- Mixing: quite expensive and invasive

- NB: costs of monitoring tend to be related to the cost of the management option (pharmacology vs. surgery)

Research and Steps to Management

- Examine costs and benefits of treatment options: economic, biological, social
- Define time frame of management interventions
- Determine biological baseline (monitoring) and define desired (and realistic) water quality targets
- Develop research in mesocosms to identify potential negative feedback effects and appropriate remediation treatments
- Develop management plan with targets for ecological, social and economic indicators
- Refine management plan based on ongoing monitoring and analysis and performance of project costs vs expected improvements