

Cyanobacteria in inland floodplain wetlands

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Environment,
Climate Change
& Water



Australian Government Water Fund
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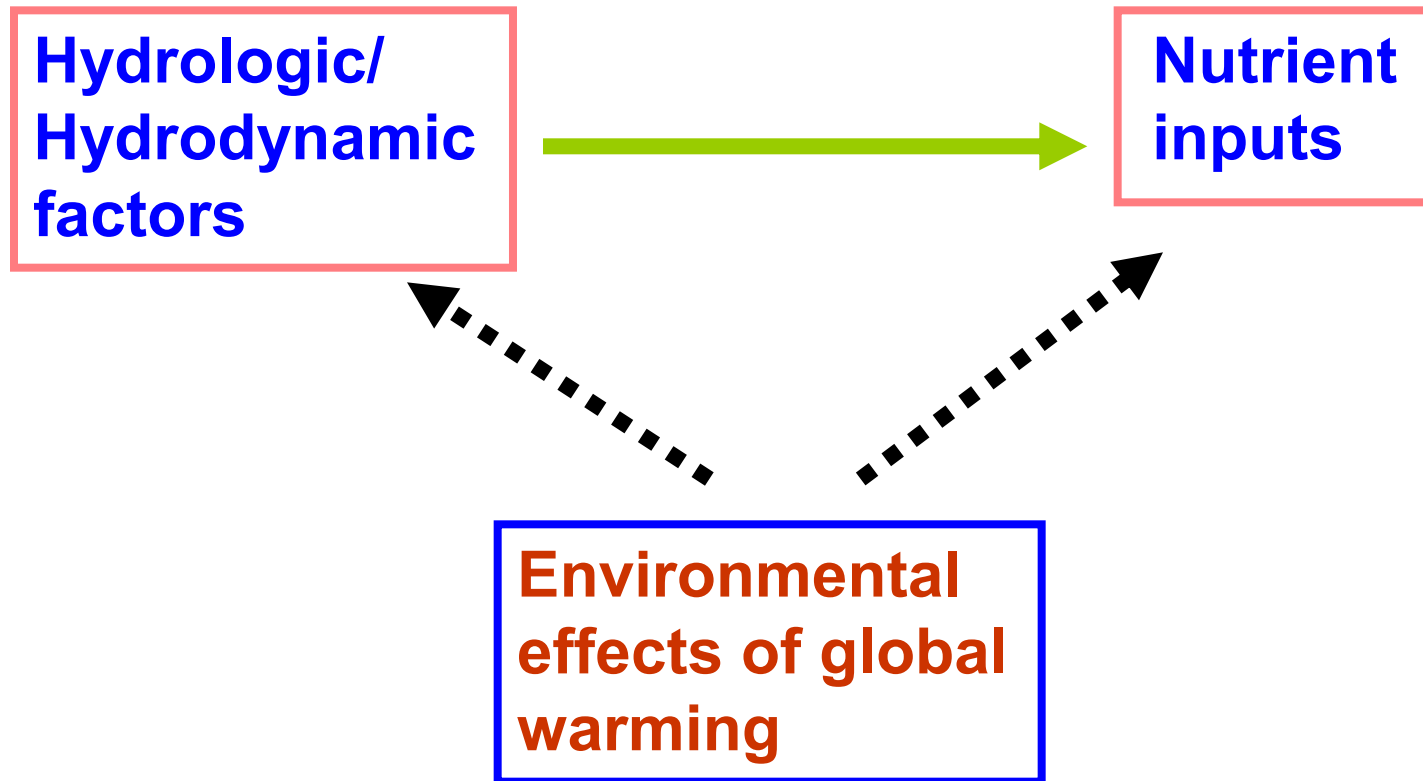
Recent scientific articles on cyanobacteria with alarming titles

Wiedner C, et al. (2007) Climate change affects timing and size of populations of an invasive cyanobacterium in temperate regions. *Oecologia* 154: 473–484

Jöhnk KD, et al. (2008) Summer heatwaves promote blooms of harmful cyanobacteria. *Global Change Biology* 14: 495–512

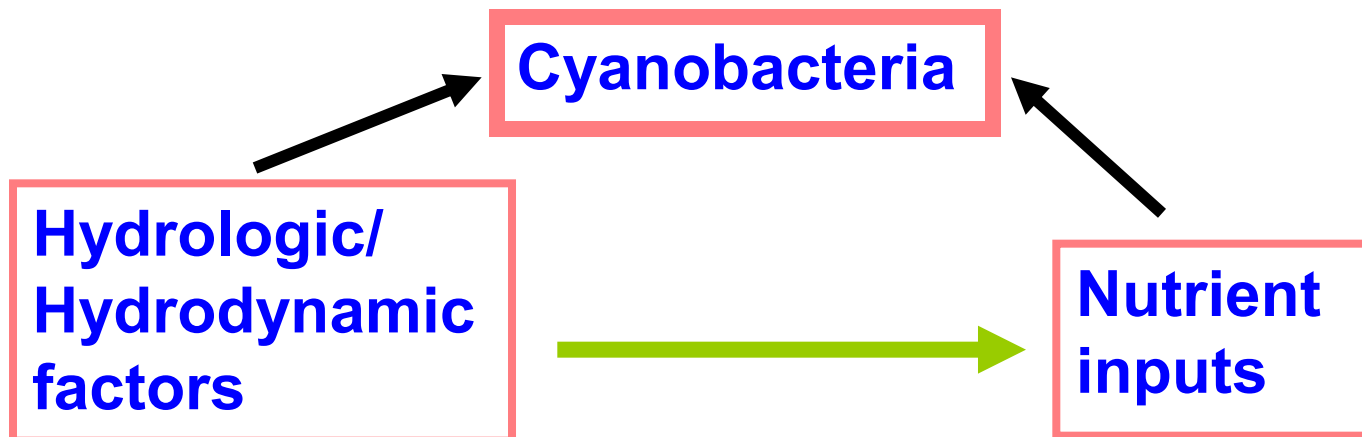
Paerl HW, Huisman J (2009) Climate change: a catalyst for global expansion of harmful cyanobacterial blooms *Environmental Microbiology Reports* 1, 27–37

Cyanobacteria in inland floodplain wetlands: unknown ecology

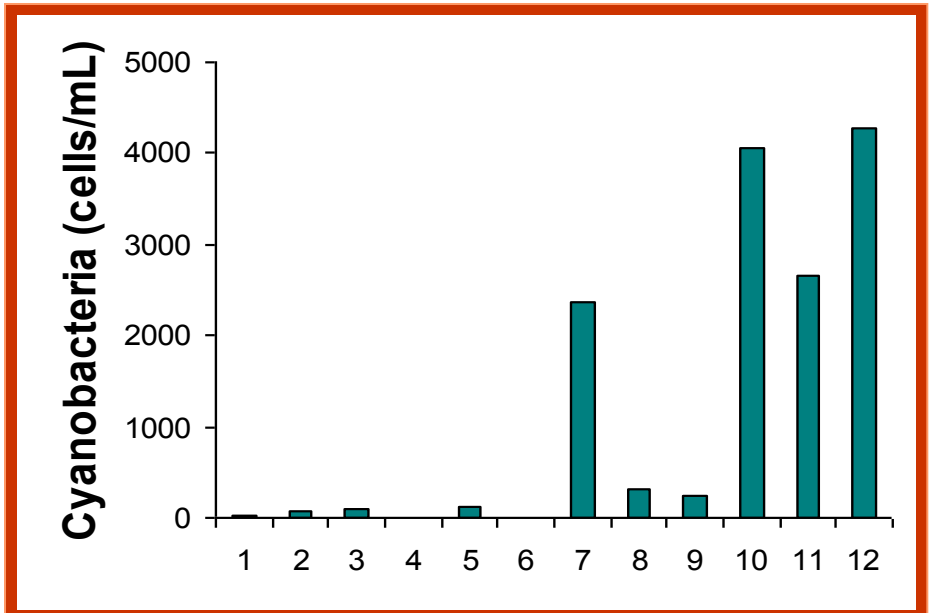
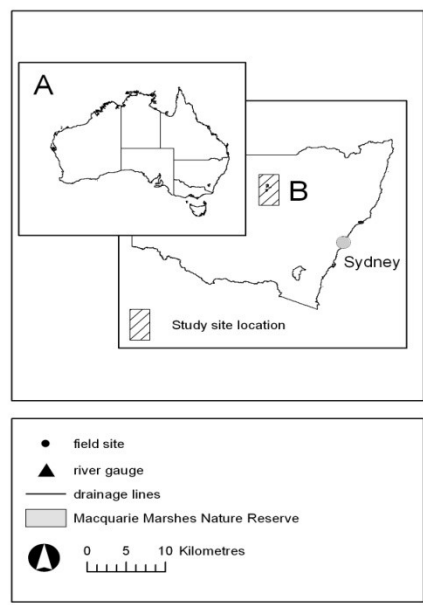
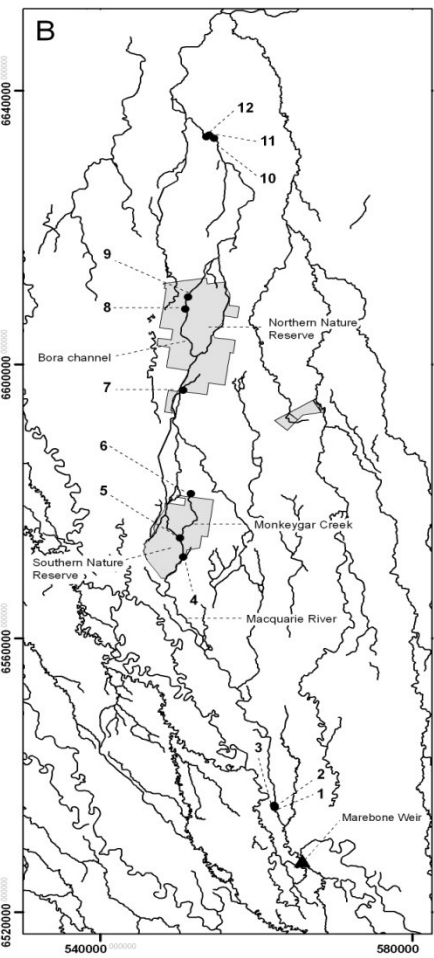
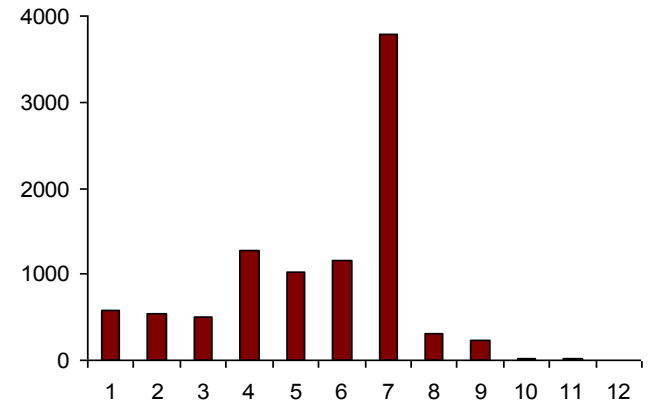
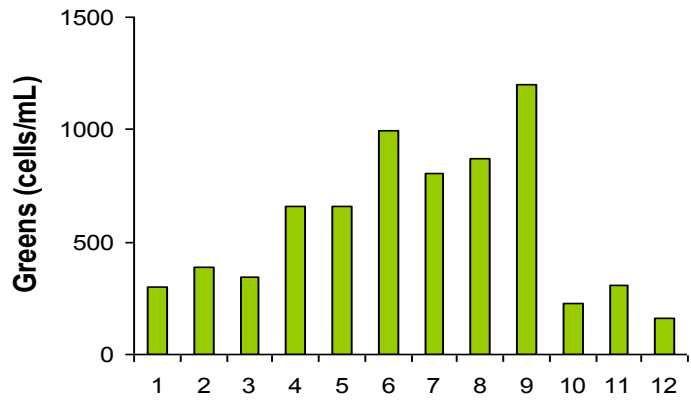


Cyanobacteria in inland floodplain wetlands: unknown ecology

- Do cyanobacteria exist in inland floodplain wetlands?
- Do hydrologic/hydrodynamic factors affect their community structure?
- Are cyanobacteria nutrient-limited?



**In-channel
phytoplankton
(median, n=2) in the
Macquarie Marshes
(Nov. 2006)**



***Anabaena aphanizomenioides*,
Anabaena circinalis, *Aphanocapsa*,
Merismopedia, *Oscillatoria*, *Planktothrix*,
Pseudanabaena and *Raphidiopsis***

Experimental inundation of dry floodplain sediments of Macquarie Marshes (March 2009)

Emergence of cyanobacteria in the overlaying flood water:

Anabaena oscillarioides

Cylindrospermopsis raciborskii

Cylindrospermum sp.

Nostoc sp.

Planktolyngbya sp.



Photomicrograph: D. Cannon (PHYTO-ID)

Cyanobacteria in inland floodplain wetlands: unknown ecology

- Inland floodplain wetlands are a complex ecosystem**
- Cyanobacteria in inland floodplain wetlands, especially where grazing and human-related activities occur, should be recorded and monitored**
- Such information provides an initial framework to assess the frequency and extent of harmful cyanobacterial blooms in inland floodplain wetlands and help to understand the ecological control factors of the blooms across a range of inland water bodies, including rivers, lakes and reservoirs**

Acknowledgments

Derek Cannon (PHYTO-ID) performed identifications and cell counts of cyanobacteria. This work was partially funded by the NSW Wetland Recovery Program and the NSW Rivers Environmental Restoration Programme, which are jointly funded by the NSW Government and the Australian Government's Water Smart Australia programme.



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