

# HARMFUL MARINE CYANOBACTERIA & ITS POSSIBLE ROLE IN NET PEN LIVER DISEASE

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MICROTHALASSIA

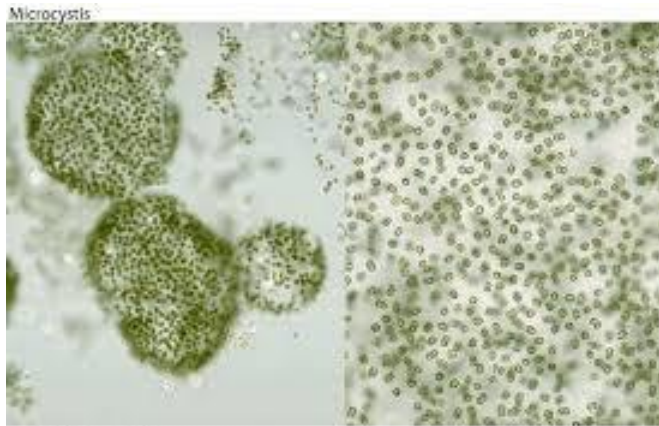
# Outline

- A quick intro to cyanobacteria
- Toxic cyanobacteria
- Possible roles of cyanobacteria in net pen liver disease
- Future steps



# Cyanobacteria

- also referred to as 'blue-green algae'
- Prokaryotic, photosynthetic cells
- single cells (sometimes in colonies) or filamentous types
- planktonic or growing on surfaces: other algae or nets etc.
- marine, brackish, and freshwater species



# Toxic cyanobacteria

- Mostly freshwater
- Neurotoxins, hepatotoxins e.g. microcystins, other toxins



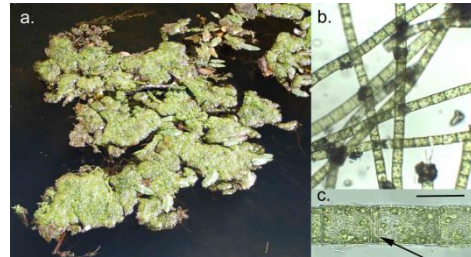
*Microcystis* species

- freshwater and brackish
- microcystins



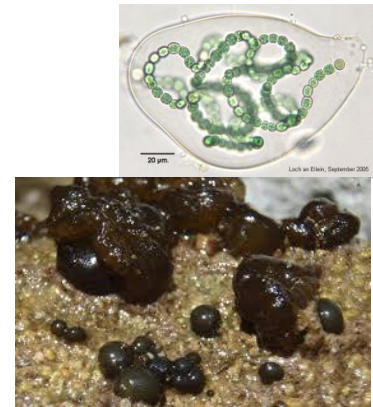
*Lyngbya* species

- freshwater and marine
- neurotoxins, other toxins



*Oscillatoria* species

- freshwater and marine
- microcystins?, other toxins



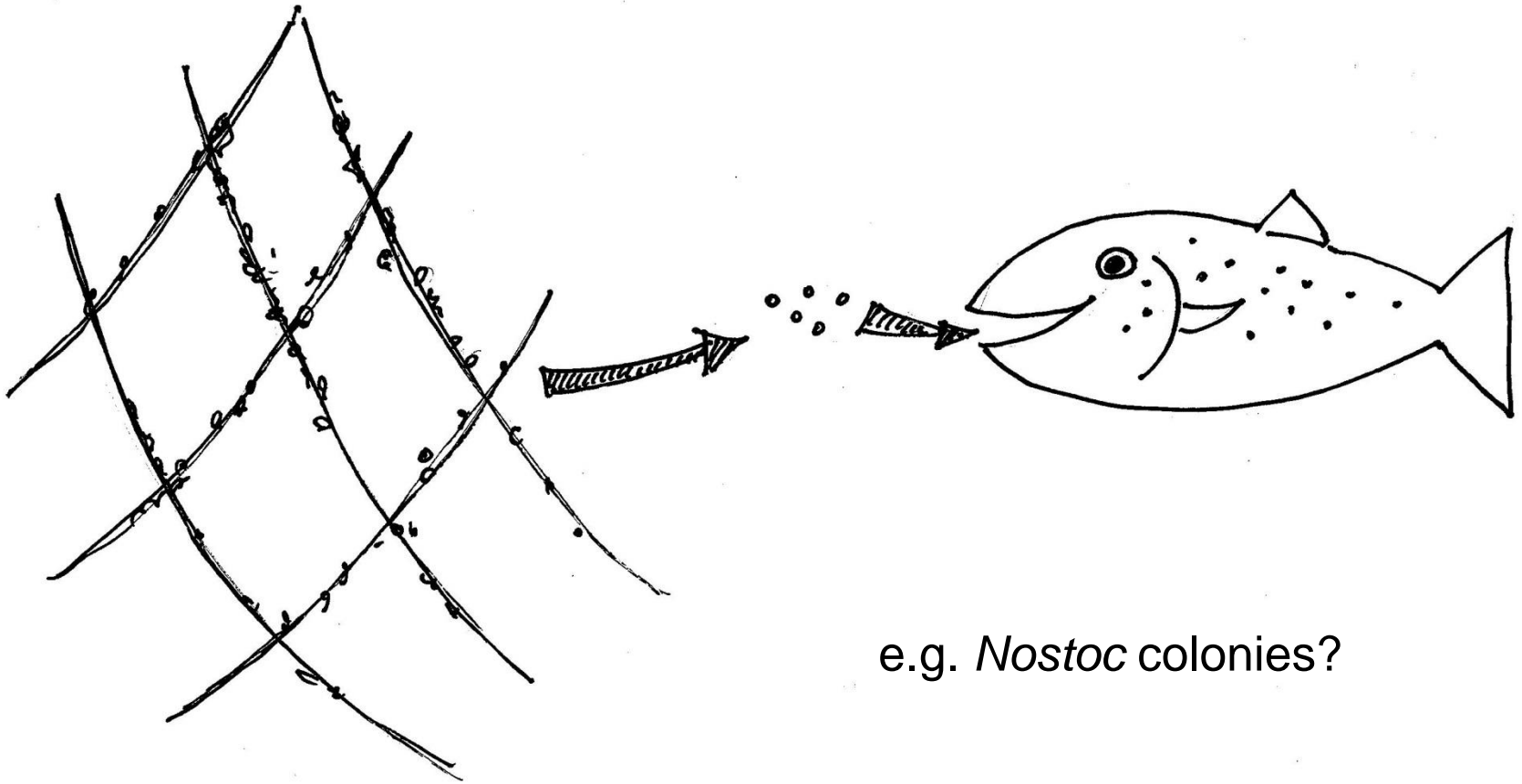
*Nostoc* species

- freshwater, marine, terrestrial
- microcystins

# Possible roles of cyanobacteria in NPLD

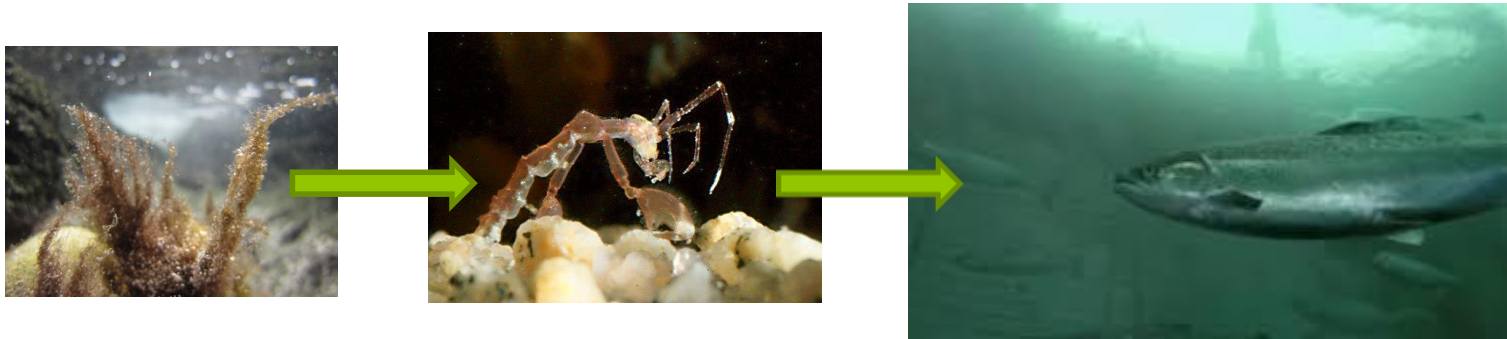
- Net fouling (benthic species)
  - direct consumption
  - secondary accumulation, e.g. *Caprella*
- Run-off bringing freshwater bloom species – gill exposure
- Others?

# Direct consumption?



e.g. *Nostoc* colonies?

# Secondary accumulation?



Grazers on toxic algae, such as *Caprella*, accumulate toxins and are ingested by salmon

# Contamination from run-off?



- thick blooms in streams of e.g. *Microcystis*
- high flow with spring rains scours streams and brings algae into marine environment, affecting nearby farms



# Next steps:

- Sampling net algae
- Sampling *Caprella*
- Water samples
- Sample analysis
  - microscope ID – water and net samples
  - toxin analysis – water, net samples and *Caprella*

Thank you

