Hypoxia-induced trade-offs on zooplankton vertical distribution and community structure in reservoirs

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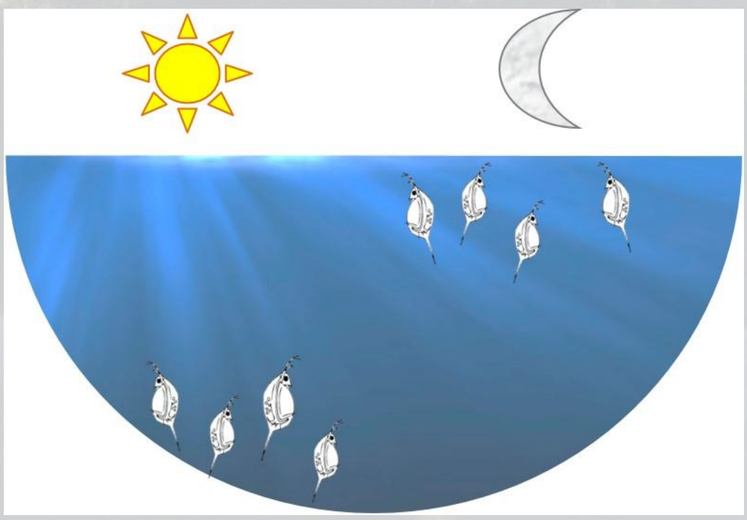
HIGHLIGHTS

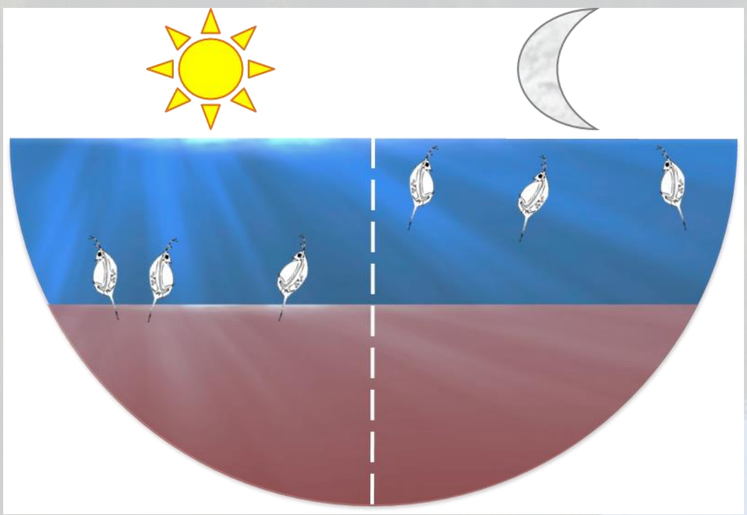
- With hypoxic hypolimnia, zooplankton are predominately in the epilimnion during the daytime
- Preliminary data suggest zooplankton do not exhibit diel vertical migration (DVM) under hypoxic conditions
- Zooplankton are smaller and typically less abundant in hypoxic vs. oxic conditions

BACKGROUND & QUESTION

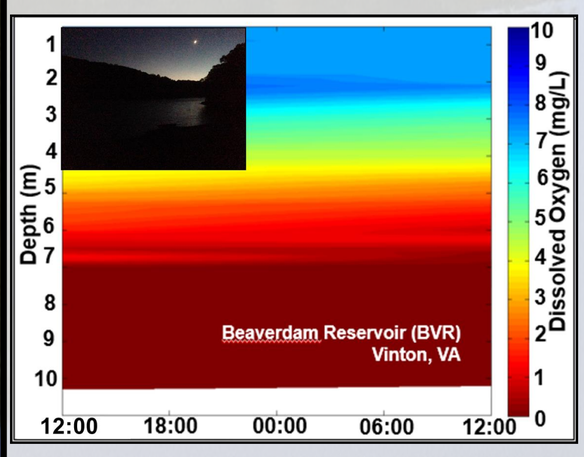
- Hypolimnetic hypoxia is increasing globally with eutrophication and climate change
- Zooplankton predictably exhibit DVM

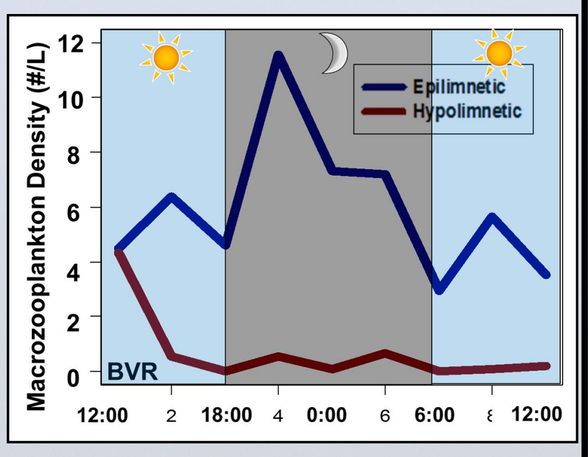


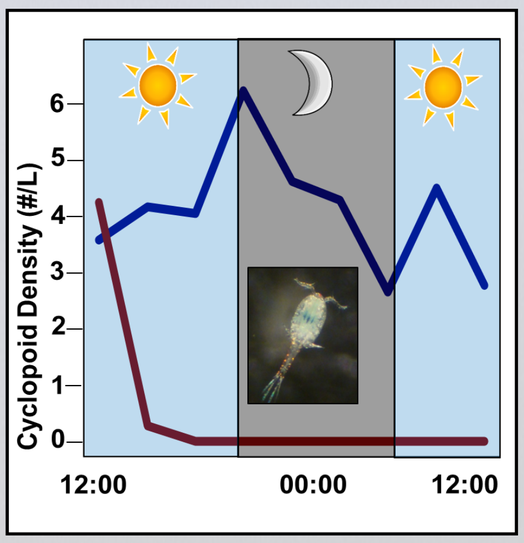
- With hypolimnetic hypoxia, do zooplankton still exhibit DVM?

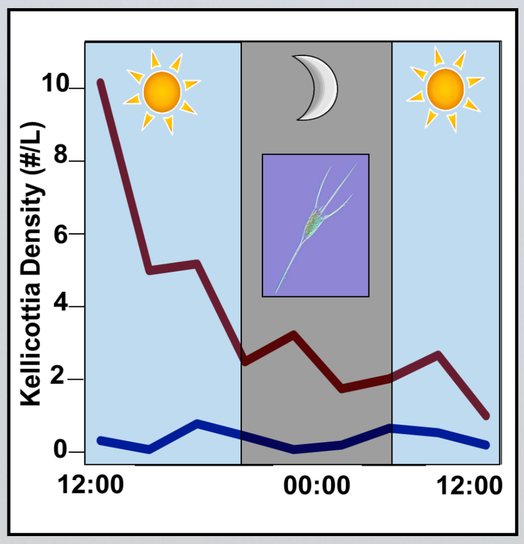


ZOOPLANKTON DO NOT EXHIBIT DVM WITH ANOXIC HYPOLIMNION

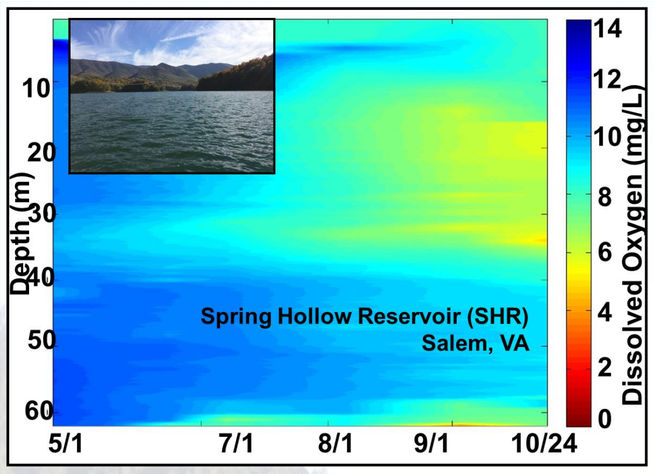


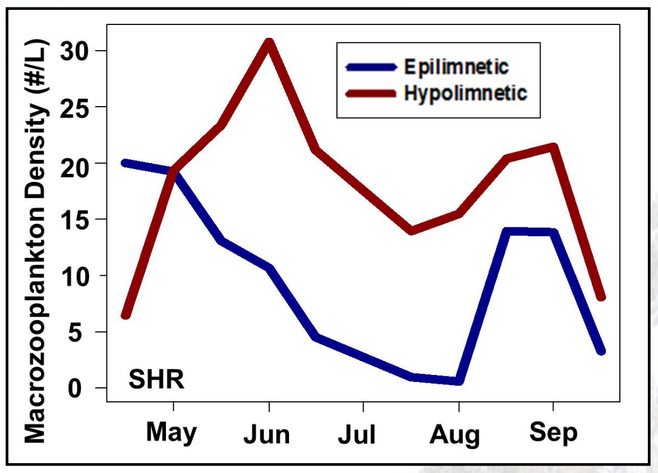


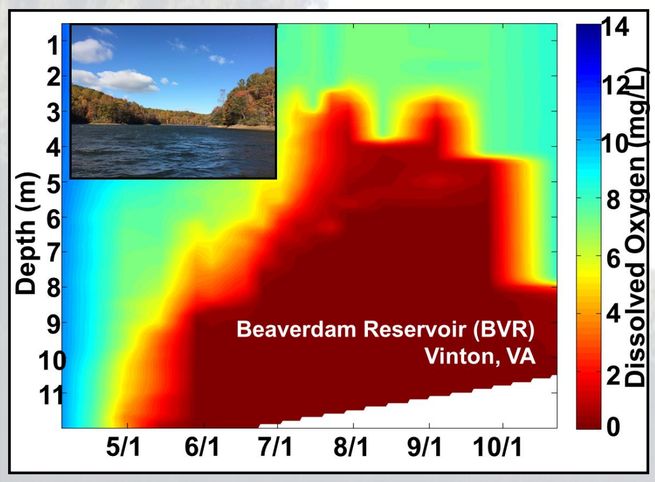


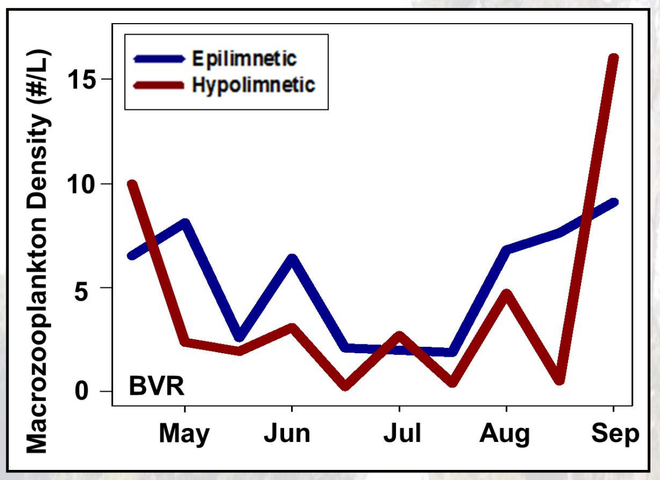


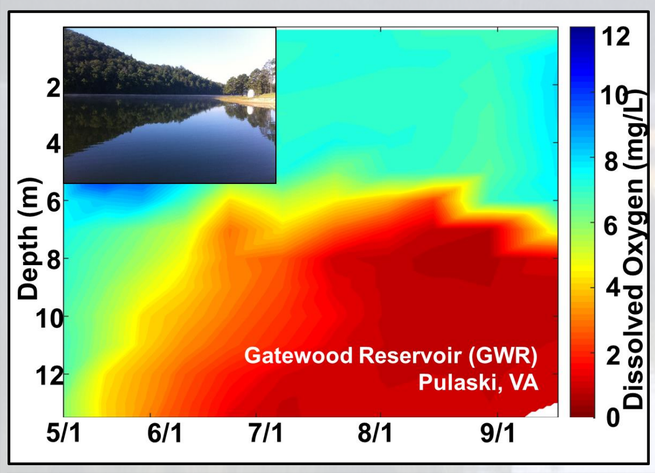
ZOOPLANKTON PREDOMINANTLY INHABIT EPILIMNION DURING THE DAY

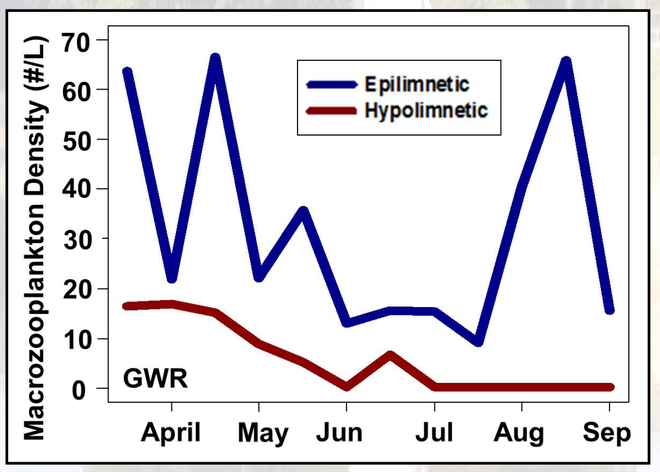


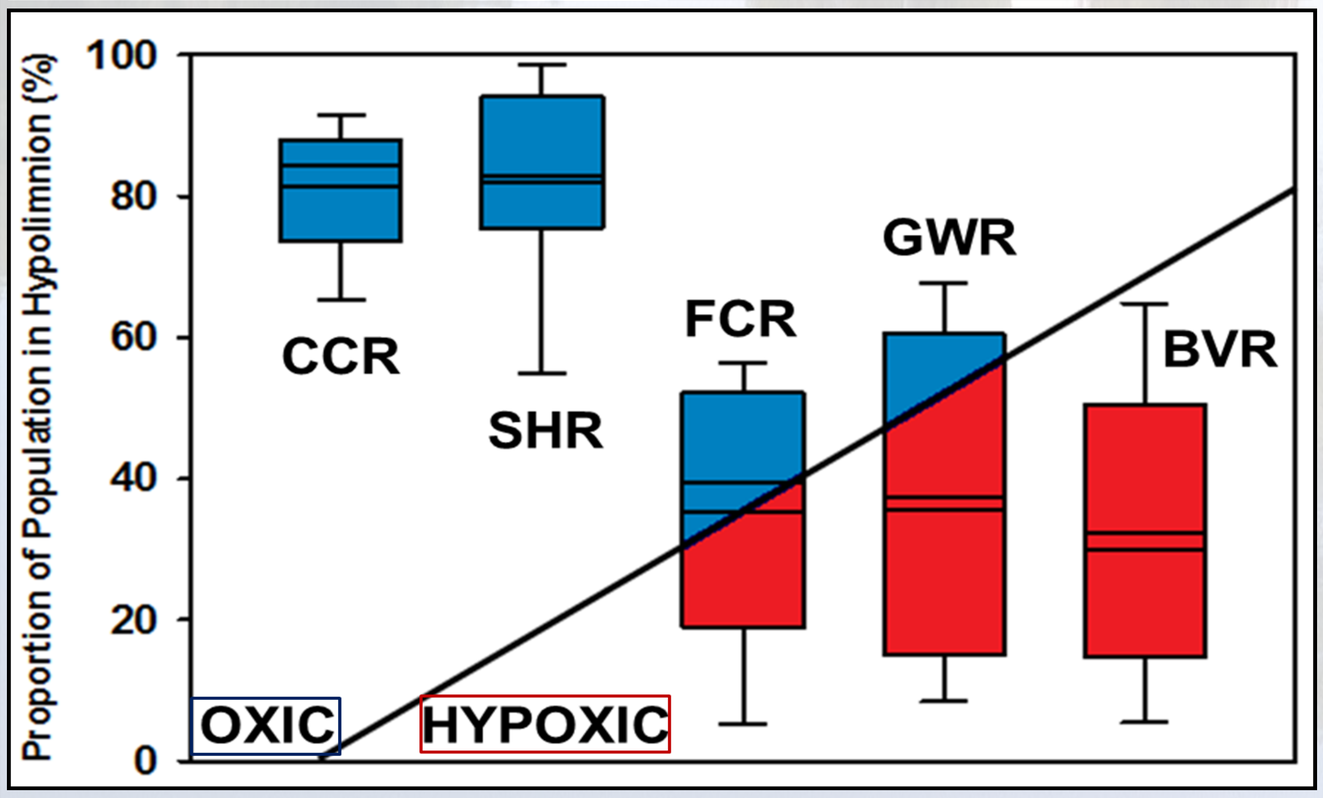












CONCLUSIONS & FUTURE DIRECTIONS

- In hypoxic conditions, zooplankton may be less abundant
- It appears that zooplankton may not predictably dominate the hypolimnion in hypoxic reservoirs during the daytime
- With an increase in hypolimnetic hypoxia in the future, zooplankton may have decreased abundances, which may increase algal populations with reduced grazing pressure
- Currently analyzing data from nine 24-h, high frequency data collection sampling campaigns in 2016 to better quantify effects of hypoxia on zooplankton communities

ACKNOWLEDGEMENTS

Thank you PRAGMA for financial support to attend PRAGMA 32 (NSF PRAGMA 1234983); NSF (DEB-1601061) and the Virginia Water Resources Research Center for financial support to conduct our research; the Western Virginia Water Authority & the Pulaski Parks and Facilities Department for sampling access to reservoirs