Effect of salinification and plankton communities with different historical salinity exposures on *Prymnesium parvum* population dynamics

Prymnesium parvum, a harmful algal species, has invaded reservoirs throughout Texas, causing serious water quality issues in systems where blooms have occurred. During bloom events, toxic compounds produced by *P. parvum* can reach high concentration levels, causing fish kills of large magnitude and resulting in millions of dollars of economic losses for surrounding communities. To date, blooms have occurred throughout 5 Texas river basins, with 30 reservoirs being negatively impacted. Results from previous monitoring studies, have shown that bloom occurrence in some systems is linked to site specific salinity thresholds. Understanding what causes these salinity thresholds to differ between water bodies, even reservoirs along the same river basin, is important to facilitate proactive management and bloom prevention in lakes. To understand the mechanism underlying these thresholds we conducted in-field mesocosm experiments allowing for analysis of the impacts of salinity and plankton communities from different reservoirs on *P. parvum* dynamics. Based on results, we suggest that the differential effects of salinization on the assemblages examined here were likely due to differences in historical exposure to fluctuations of this nature. Our results suggest that the assemblage that had experienced higher magnitudes of historical salinity fluctuation was better able to withstand the imposed salinity disturbance, likely allowing it to maintain niche positions and remain stable when exposed to invasion by *P. parvum*. Our findings highlight the important role of increased and compounded disturbance in aquatic ecosystems and the role it may play in species invasions as the frequency of these occurrences increases. Additionally, we stress the importance of environmental flows that maintain salinity levels in reservoirs that are below bloom thresholds.