

Water Institute Symposium Abstract

Dissolved Oxygen Dynamics in Tussock-forming Aquatic Macrophytes

Stabilization of lake levels due to altered hydrology exacerbates the rate at which dense vegetation mats (i.e., tussocks) form. Tussocks affect water quality (e.g., dissolved oxygen and temperature) and substrate (i.e., accumulation of organic material), and thus, may affect fish community composition. I identified spatial and temporal trends in dissolved oxygen (DO) with respect to tussock-forming macrophyte species (i.e., cattail, pickerelweed, water primrose, smartweed, and torpedograss) and biomass levels. In dense vegetated habitats, DO tended to be hypoxic during night and morning hours with an increase in DO during the afternoon, but the magnitude of the increase was influenced by macrophyte species and/or biomass levels. Some habitats exhibited anoxia throughout the diel DO profile. Poeciliids and Cyprinodontids (89% of total catch) dominated the fish community in tussock habitats during fish collections at Lake Kissimmee, Florida. These fish are adapted to such environmental extremes (i.e., hypoxia/anoxia and hyperthermia). Management strategies to limit tussock formation will decrease the extent and longevity of hypoxia/anoxia and create habitats that can maximize the diversity of fish communities and increase abundance of species that support fisheries.

Key Words: hypoxia, dissolved oxygen, tussocks, aquatic macrophytes, lake levels

Challenge: Wildlife health, ecosystem health, and water resource sustainability