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Zachary A. Sutphin and Christopher A. Myrick. 2015. *Effects of Temperature and Simulated Loading Stress on the Oxygen Consumption and Ammonia Production Rates of Fishes of the Sacramento-San Joaquin River Delta*, California. 40 pp.

Total ammonia nitrogen production rates (MTAN) and oxygen consumption rates (MO2) were measured before and after simulated fishloading stress (30-s air exposure), at 12, 15, 18, and 21ºC for delta smelt Hypomesus transpacificus, 12, 16, 21, and 24 ºC Chinook salmon Oncorhynchus tshawytscha, and 12, 18, 24 and 28 °C for striped bass Morone saxatilis and threadfin shad Dorosoma petenense. Pre- and post-stress MO2 and MTAN of all species generally increased with temperature. Simulated fish-loading stress did not affect threadfin shad or delta smelt MO2 and MTAN, likely because their stress levels had already plateaued from the combination of handling and confinement in the respirometry chambers. Mean MO2 for delta smelt ranged from 0.05 to 0.08 mg O2/g/h and MTAN ranged from 0.002 to 0.01 mg TAN/g/h over the tested temperature range. Threadfin shad MO2 increased from 0.05 to 0.19 mg O2/g/h and MTAN increased from 0.001 to 0.01 mg TAN/g/h as temperature increased from 12 to 28 °C. Simulated loading stress increased striped bass (13–40%) and Chinook salmon (17 – 34%) MO2 and MTAN rates. Striped bass pre-stress MO2 ranged from 0.03 mg O2/g/ h at 12 °C to 0.09 mg O2/g/h at 28 °C, and MTAN ranged from 0.001 to 0.004 mg TAN/g/h. Chinook salmon tested between 12 and 28 °C had MO2 and MTAN values that ranged from 0.04 to 0.13 mg O2/g/h, and from 0.001 to 0.003 mg TAN/g/h, respectively. These results indicate fishloading stress affected Chinook salmon and striped bass MO2 and MTAN, though the magnitude of response was species-specific. Also, Chinook salmon and striped bass experienced a reduced ability to cope with simulated fish-loading stress, and return to pre-stress MO2 and MTAN, as temperatures increased.