**Evaluating the Feasibility and Sustainability of an Integrated Multi-trophic Recirculating Aquaculture System Using Striped Bass (*Morone saxatilis*), Sand Worms (*Alitta virens*), and Sea Beans (*Salicornia bigelovii*)**Michael Acquafredda\*1, Christopher Spino2, John Rosendale2, & Beth Phelan21Haskin Shellfish Research Laboratory, Rutgers University 6959 Miller Avenue, Port Norris, NJ 08349 United States 2NOAA NEFSC James J. Howard Marine Sciences Laboratory
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In many ways, striped bass (*Morone saxatilis*) aquaculture production using recirculating aquaculture systems (RAS) is commercially ready in the United States. However, as with other forms of finfish aquaculture, waste management is a major challenge constraining its expansion. The objective of this project was to investigate whether integrated multi-trophic aquaculture (IMTA) is a suitable strategy for mitigating the wastes produced by RAS-reared striped bass. Specifically, we tested the capacity of sand worms (*Alitta* *virens* = *Nereis virens*) and sea beans (*Salicornia bigelovii*) to utilize solid and dissolved wastes, respectively. In this experiment, two nearly identical RAS were established: one system was designed for striped bass monoculture and the other was designed for bass–worm–sea bean IMTA. Over the course of the five-month experiment, we measured and assessed the growth of the focal organisms, waste accumulation and reduction, and striped bass and system-wide feed conversion ratios (FCR). We found that the monoculture and IMTA-reared striped bass grew at statistically similar rates. Approximately 45% of the total solid waste collected from the IMTA system was recycled as worm feed, and total worm biomass increased by ~114%. Dissolved waste mitigation was also observed in the IMTA system. Compared to the monoculture, the IMTA system exhibited significant reductions in nitrate and phosphate concentrations and a significant increase in pH. More than 24.5 kg of sea beans were also produced during the study. Finally, while the striped bass of both systems exhibited a similar FCR (~1.2), the IMTA system-wide FCR was ~64% lower than the monoculture system-wide FCR. Taken together, this project demonstrates that striped bass, sand worms, and sea beans can be successfully co-cultured in RAS. Future studies should investigate the economic costs (e.g., added labor and utility costs) and benefits (e.g., diversification and new sources of income) of this IMTA system.