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Variation in Winter Estuarine Habitat Use by Bluefish in Northeastern Florida with Implications for Growth and Condition

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Abstract
Age and growth were determined from otoliths for 181 juvenile bluefish, Pomatomus saltatrix, collected using a variety of gear in northeast Florida during 2003 and 2005. Three distinct cohorts were identified recruiting to the near shore waters during spring, summer and fall. Growth rates were high regardless of cohort or season. To compare pre- and post-recruitment growth rates, models were fit to individual growth trajectories using change point analysis. Post-estuarine growth rates were generally higher. Growth rates and hatching times were within the range of those obtained in other bluefish studies conducted at higher latitudes. As this is the only area where winter recruitment of bluefish has been observed, coastal Florida habitats may be essential for the bluefish stock and will need to be carefully monitored in future studies.

A technique to estimate the lipid content of bluefish was developed using fat stage (subjectively assigned based on mesenteric fat around the

stomach), fish length, and fish weight. A highly significant relationship was observed between fat stage and lipid content in a generalized linear model. The visual lipid content technique provides rapid results, is inexpensive and could be easily implemented into current fisheries sampling methods. Total lipids were also extracted from potential bluefish prey species collected during sampling. Prey lipids ranged from 0.88% to 19.52%. Regular prey species from the MAB; Atlantic silverside and bay anchovy contained 3.49% and 3.19% mean lipids respectively. Highest lipid content was observed in mullet (Mugil spp.) (19.52%) and was significantly higher than other available prey species. A previous study indentified a decline in bluefish lipids as winter progressed as well as a prey preference for mullet. We propose mullet are the preferred prey choice due to their high lipid content.

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