Biological and Physical Factors Affecting Cross-shelf Movement of Post Larval Nassau Grouper and other Fishes in Exuma Sound, Bahamas

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ABSTRACT

The onshore movement of post-larval Nassau groupers and other fishes was examined on the western side of Exuma Sound by suspending large nets in tidal channels between islands on the edge of Exuma Bank. Nets were fished continuously for two and a half months during winter 1990-1991, and for one month in late summer 1991. Moored current meters and a meteorological station provided data on oceanographic and weather conditions associated with onshore movement. Post larvae exhibited a distinct tendency for movement across the 2 km wide shelf during dark phases of the moon. This transport was enhanced during stormy periods characterized by northeast winds and on-shore surface water transport, and minimized during prevailing southeast winds and along-shore water movement. More than 95% of the approximately 1500 post-larval Nassau grouper collected during the winter portion of the study moved onshore during a six day storm event that coincided with the last quarter and new moon in February. The strong associations between fish recruitment, meteorological and oceanographic conditions, lunar phase and tidal cycles demonstrate that physical and behavioral factors play major roles in driving onshore transport of post-larvae.