

ABSTRACT

The Water Quality and Circulation Patterns of Foul Bay and Folly Bay in the
Morant Wetlands area, East Coast, Jamaica

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The water quality and circulation patterns of Foul Bay and Folly Bay, two remote bays along the south eastern coast of Jamaica, were explored in this study. The aim was to determine the capacity of the system to retain water long enough to result in a change of its characteristics, and to determine if the circulation pattern allowed for westward export of water. Phytoplankton biomass and physicochemical characteristics were sampled across the study area to determine water quality, and indicate current patterns. Sampling of these variables was done monthly over an annual cycle to ensure that the ranges of variability of the parameters sampled were captured. Current speed and direction were recorded at select stations across the area. Sampling events were scheduled to coincide with the full moon, new moon and quarter moon phases of the lunar cycle. An extreme wind event was also captured and is represented in the data set. The water quality was found to be pristine, with phytoplankton biomass within the range of 0.32 to 0.14 mg m⁻³ throughout the annual cycle. The Dalvy canal is the only point source of runoff into the study area. It has a localized influence on abiotic characteristics and a more important impact on the distribution of phytoplankton biomass. The

bays are flushed by strong tidal currents that reverse every four to eight hours, and attain speeds up to 43 cm s^{-1} . The dominant sea breeze from the south east intensifies currents when speeds exceed 12 to 15 knots (about 7 m s^{-1}), and may overwhelm the influence of tide when wind speeds of 18 to knots 20 (about 10.3 m s^{-1}) are attained.

Keywords: Inilek Wilmot; Phytoplankton biomass distribution, circulation patterns, St. Thomas, Foul Bay, Folly Bay, Jamaica, tidally driven circulation