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Biogeography of epiphytic foraminiferans in the tropical Western Atlantic

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Regional and landscape patterns of diversity, distribution and abundance are described for epiphytic foraminiferal biotas living on blades of the seagrass *Thalassia testudinum* collected from Jupiter Sound, Indian River Lagoon, Florida; the central region of the Mesoamerican Barrier Reef Complex, Belize; and the Bocas del Toro Archipelago, Panama. The total species richness recorded-to-date in Jupiter Sound is $S=23$, the total species richness recorded-to-date in Belize is $S=41$; and the total species richness recorded in the Bocas del Toro region is $S=25$. The total richness of the combined data sets is 55 species, 12 of which were broadly distributed and found at all three sites. Seven species occurred only in Jupiter Sound; 21 species occurred only in Belize; and 6 species occurred only in the Bocas del Toro region. The Jupiter Sound site and the Belize sites shared three species in common, compared to 21 species shared between Belize and Bocas del Toro, Panama. These latter two more tropical sites were more closely linked in cluster and non-metric multidimensional scaling analyses.

Values of Shannon's H ranged from 0.25-2.4, with the highest values calculated for mangrove sites in Belize. The lowest values of Shannon's H were recorded at disturbed sites in: Florida (post-hurricane recovery), Belize (heavy grazing & eutrophication), and Panama (heavy grazing, turbulence & low salinity). Values of evenness ranged from 0.11-0.68, with the highest values occurring at Cat Cay, Pelican Cays, Belize, and Rio Oeste, Bocas del Toro, Panama. The lowest values of evenness were recorded from a collecting locality in a mangrove channel near Bastimentos, Panama, and off Man O'War Cay, Belize. Mean densities of epiphytic foraminiferans ranged from 0.01-8.00 foraminiferans/cm² seagrass blade, with both the highest and lowest densities being recorded in the Bocas del Toro region of Panama. Mean foraminiferal densities were also high off Man O'War Cay relative to other sites in Belize, presumably as a response to nutrient enrichment from the guano-laden island.

At the Jupiter site, mean densities of epiphytic foraminiferans were the highest during the spring and early summer months of 2001, while the lowest densities recorded-to-date occurred in spring 2005 following Hurricanes Jeanne and Frances (Fall 2004).

In both Belize and Panama, the epiphytic foraminiferal biotas could be differentiated into characteristic mangrove-associated and open-water biotas, with relatively higher diversities and densities characterizing the mangrove sites. A latitudinal gradient in biodiversity was not observed for the epiphytic foraminiferal biotas living on *T. testudinum* in the tropical Western Atlantic, as has been observed for many other terrestrial and marine taxa, including benthic foraminiferans. The significance of this observation is unknown, but is a hypothesis that can be tested further with increased sampling effort at additional localities between these widely spaced sites.