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Environmental influences on resident and transient fishes across shallow estuarine beaches and tidal flats in a Brazilian World Heritage area

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ABSTRACT

The consistency and environmental correlates of habitat- and season-related differences among shallow-water fish assemblages inhabiting estuarine beaches (EB) and tidal flats (TF) were examined in the subtropical Paranaguá estuary, which borders a World Heritage listed area. Assemblages were diurnally sampled each month (May 2003–March 2004) using small-meshed beach seines. Forty-six and 49 species were captured at EB (24 families) and TF (23 families), with most individuals at the latter (66 and 54% by number and biomass). Resident fishes accounted for 74% of individuals, but only 31% of all species. Most species were juvenile marine transients, but occurred sporadically and in low numbers. Three residents (*Sphoeroides testudineus*, *Atherinella brasiliensis* and *Sphoeroides greeleyi*) dominated assemblages and contributed the most to the index of relative importance of each habitat. Habitat-related differences in assemblages and key population parameters were complex and generally depended on the month sampled rather than water salinity or temperature (owing to comparable temporal variability). Ocean proximity was probably the cause of some differences, with more recruits of marine species early in the wet season at EB, but later at TF. Nevertheless, some resident gobiids and paralichthyids displayed habitat partitioning, possibly related to sediment preferences. There were strong seasonal differences in assemblages, primarily due to more juveniles of resident and transient species during the wet and possibly reflecting more optimal conditions for the young-of-the-year survival due to increased primary and secondary productivity. Environmental

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