

How a clogged canal affects ecological and human health in a tropical urban wetland ecosystem

Autumn Oczkowski, Cathy Wigand, Alana Hanson

The coastal city of San Juan, Puerto Rico is a tropical urban ecosystem woven among a series of interconnected bays, lagoons, drains, canals, and mangroves. As the city has expanded, infilling and urban development by the region's poorest residents has choked an important canal and reduced flushing of the San José and Los Corozos Lagoons, which have no direct ocean exchange. Once 200 feet wide, in the last century the channel has essentially been dammed. As a result, the adjacent low lying communities experience frequent flooding by a potent mixture of stormwater and raw sewage, and the water quality of the lagoons has declined. Local monitoring efforts have counted fecal coliform levels >40,000 CFU per 100 ml in the canal and >4,500 CFU per 100 ml in the lagoons. These levels are two to three orders of magnitude greater than EPA recommendations and are suspected to cause human health problems. We seek to document how reduced flushing and declining water quality are impacting the ecology of the adjacent lagoons and associated ecosystems. We use a combination of stable isotope measurements of the ecosystem components and sediment core analysis across the San Juan estuarine gradient, which ranges from urban to forested (mangrove), to identify the sources and extent of the ecosystem impacts of this clogged canal artery.