

STORMWATER POND PLANTINGS AS A STRATEGY FOR IMPROVING WATER QUALITY

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There are currently over 76,000 stormwater ponds in Florida. These engineered ecosystems are designed to provide flood control and to prevent nutrient runoff from urban landscapes into natural water bodies. Nevertheless, studies suggest stormwater ponds are ineffective at achieving this latter goal. Given the increased reliance on this BMP, strategies are needed to enhance the ability of stormwater ponds to mitigate the impacts of urban nutrient runoff. One potential strategy for enhancing the ability of stormwater ponds to remove nutrients is incorporating plants into stormwater ponds. Plantings may also help stormwater ponds provide other ecological functions, e.g. wildlife habitat. However, residents living around stormwater ponds often perceive plantings negatively, as they feel that they detract from pond aesthetics. In this instance, ornamental plantings may help to balance the need for water protection with the aesthetics desired by homeowners.

To determine the potential for the balance between aesthetics and ecological function, we compared water quality in paired stormwater ponds with and without ornamental plantings in Lakewood Ranch, FL. Plantings occurred along 20% to 30% of each planted stormwater pond's littoral shelf and bank, costing approximately \$3,000 per pond. Water samples collected from multiple locations within each pond revealed no overall effects of plantings on pond water quality. However, water samples collected from planted and non-planted littoral shelves within each planted pond revealed 28% less ortho-phosphate in planted areas. In addition, total organic nitrogen (TON) was 14% lower in planted vs. non-planted littoral shelves in the fall; this effect reversed in the spring when planted littoral shelves had 38% higher TON. These effects suggest that plantings may benefit water quality only when they are incorporated at much greater abundance. Continued monitoring of planted vs. non-planted littoral shelves, and of stormwater ponds varying in plant biomass, will improve our understanding of the degree to which stormwater pond plantings can protect downstream aquatic ecosystems.

PRESENTER BIO: Dr. Iannone studies the ecology of greenspaces and designed/designer ecosystems contained within urban and residential landscapes. His research and extension programs inform the design, construction, and management of urban and residential landscapes with the aim of enhancing biodiversity and the ecological functions and services that these landscapes provide.