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# Saint Lucie County Pond Appeal Series: What's Buggin' Your Pond?

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**Several Saint Lucie County residents living adjacent to storm water retention ponds complained about the emergence of large swarms of pestiferous aquatic midges. Pond Appeal is an educational program developed by the University of Florida Saint Lucie County Cooperative Extension to educate residents about pond best management practices that would result in a reduction in aquatic midge emergences. One hundred and fifty people participated in the Pond Appeal Series program in Saint Lucie County. Of the surveyed participants, 100% indicated that they increased their understanding of pond management techniques and adopted practice changes that enabled them to better manage their storm water ponds. This resulted in a reduction in pestiferous aquatic midges.**

Approximately 70% of the population of Saint Lucie County, FL, relocated to the county from areas of the country where environmental conditions are significantly different. New communities are being constructed to accommodate this influx of new residents. Developers are required to create storm water retention systems as part of their site development plans, within which storm water retention ponds play an integral role. Unfortunately, there is a gap in knowledge between what these new residents expect from their ponds and the ponds' actual function. This knowledge gap has resulted in pond management inadequacies and resident complaints.

Aquatic midges are mosquito-like diptera belonging to the families Chironomidae and Chaoboridae (Koehler, 2003). Chironomids are commonly referred to as "blind mosquitoes" and chaoborids are commonly referred to as "phantom predatory midges." Midge eggs, larvae, and pupae live in ponds, and their larvae thrive in low oxygen zones. These insects do not bite, suck blood, or carry diseases; however, they emerge from ponds in large numbers, primarily in April through November.

Unfortunately, the emergence of these aquatic midges impacts the quality of life of the residents living around many storm water retention ponds. Adult midges prefer to rest in shady areas in the day and are often found in large numbers under eaves, on patio screens, and in foyers. A one-time count found that there were as many as 20 midges per square inch coating the shaded areas of homes. Residents were selling their homes because they found the situation untenable, and this issue became a political thorn for the elected officials overseeing the St. Lucie West Services District.

Because these insects are difficult to control, the St. Lucie West Services District contacted the St. Lucie County Extension and requested help in devising and implementing an aquatic midge integrated pest management (IPM) Plan. The IPM plan that was adopted by the district featured the use of insect growth regulators, insectivorous fish, light traps, and algae control strategies. The Pond Appeal Series was developed by the extension office to educate the residents of the community about this IPM plan.

The first strategy discussed in Pond Appeal was the use of insect growth regulators (IGRs) to control midge pupae. (S)-Methoprene pellets were used. (S)-Methoprene can effectively stop the formation of midge pupae in the water (Ali, 1991). These pellets release IGR for up to 30 d. The (S)-methoprene label recommends a dosage of 5–10 lbs/acre and should be applied 20 ft from the water's edge. Although the use of (S)-methoprene is effective at controlling aquatic midge pupae, it can be expensive. Additional aquatic midge management tactics were necessary.

The second strategy discussed in Pond Appeal was the use of insectivorous fish to biologically control aquatic midges in these ponds. Ponds can be stocked with bream and bass to control nuisance aquatic insects and provide recreational fishing opportunities. According to the Florida Fish and Wildlife Conservation Commission, bream should be stocked at a rate of 500 fingerlings per acre. Bream (70% blue gill/30% readear) should be stocked in the fall, allowing them to spawn. One hundred bass fingerlings per acre were stocked in the spring when feeder fish were available. Stocking in the summer was not recommended, as high temperatures could have stressed the fish (Cichra, 1995).

The third strategy discussed in Pond Appeal was the use of light traps to control adult midges (Ali et al., 1994). Lights were installed in upland buffers adjacent to the infested ponds. The plan called for these lights to shine downward on white boards to attract adult aquatic midges at night. Insecticides were then used to control the adult midges that were attracted to the light traps.

The fourth strategy discussed in Pond Appeal was algae control. Larval chironomids graze on algal detritus that settles to the bottom of these ponds. Ponds can be treated with chemicals, such as copper, to control algae; however, it was decided that a nutrient abatement strategy should also be implemented. This strategy involved the enforcement of the Florida Green Industry Standards for fertilizer application to turf around ponds. According to the Florida Department of Environmental Protection (2002), for flat

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turf, the district should adopt the use of 3-ft untreated buffers if a fertilizer spreader with a deflector shield is used or a 10-ft untreated buffer if a spreader without a deflector shield is used. For steeply sloped turf, larger buffers were recommended. Other environmentally friendly practices, such as avoiding blowing grass clippings into the water and using slow-release fertilizers, are also featured in this nutrient abatement strategy.

In conclusion, the Pond Appeal Series was an effective way to educate the community about pond best management practices and the aquatic midge integrated pest management plan. It was attended by 150 participants. Each participant came away with a better understanding of the function of storm water ponds in their communities and how best management practices are necessary to manage problems such as the aquatic midge problem faced by residents of St. Lucie West.

## Literature Cited


Ali, A. 1991. Perspectives on management of pestiferous Chironomidae (*Diptera*), an emerging global problem. J. Amer. Mosquito Control Assoc. 7:260–281.

Ali, A., G. Ceretti, L. Barbato, G. Marchese, F. D'Andrea, and B. Stanley. 1994. Attraction of *Chironomus salinarius* (*Diptera*: Chironomidae) to artificial light on an island in the saltwater lagoon of Venice, Italy. J. Amer. Mosquito Control Assoc. 10:35–41.

Cichra, C. 1995. Managing Florida ponds for fishing. Univ. of Florida/IFAS Circ. 802.

Department of Environmental Protection. 2002. Florida green industries best management practices for protection of water resources in Florida.

Florida Fish and Wildlife Conservation Commission. Producers of fish for stocking purposes. Retrieved on 20 May 2007. <http://www.myfwc.com/Fishing/docum/fish-sup.html>.

Koehler, P. 2003. Blind mosquitoes (aquatic midges). Univ. of Florida/FAS. Retrieved 30 May 2007. <http://edis.ifas.ufl.edu/IG092>.