Handout
Agenda Item 11.8
Date Jun 6, 2015

https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=10847&
UC Division of Agriculture and Natural Resources

In natural environments, bacteria, nematodes, other insects, crustaceans, and fish often keep numbers of mosquito larvae low. Conserve predators such as dragonflies and backswimmers, which may have colonized ponds, by avoiding broad-spectrum insecticides and consider introducing fish. County vector control services may provide free mosquito fish, voracious consumers of mosquito larvae and pupae. Never release mosquito fish into natural water bodies, since these fish aren't native to California and can disrupt ecosystems.

https://engineering.purdue.edu/SafeWater/Ponds/WQ-41-W.pdf

Ponds and wetlands in the landscape provide for diverse flora and fauna, including birds, bats, aquatic insects, fish, and amphibians; all of which feed on mosquitoes. In addition to these positive aspects, ponds and wetlands provide recreational opportunities for many Hoosiers, including fishing, swimming, boating, and hunting.

Although under some circumstances ponds and wetlands can increase mosquito populations, predators of mosquitoes such as fish and other aquatic organisms will usually control mosquito populations if the pond or wetland supports a well-balanced ecosystem. This publication describes problems that make ponds and wetlands especially inviting to mosquitoes and how to develop and promote an ecosystem in your pond or wetland that controls mos- quito populations by natural predation.

A well-functioning pond is characterized by a living ecosystem that includes fish and other aquatic organisms, stable banks with good plant cover, and a diversity of insect and animal life. Such a pond will have water with adequate and stable levels of oxygen, some surface wave action, and possibly a slight greenish tint from the presence of phytoplankton.

Ecologically stable ponds normally do not produce problem mosquito populations be- cause the natural factors of fish predation and surface wave action tend to kill mosquito larvae. Ponds stocked with fish, such as Large Mouth Bass and Blue Gill, will greatly reduce or eliminate mosquito larvae.

Key Factors in Ponds that Reduce and Destroy Mosquito Larvae

Fish and aquatic insects

Surface wave action

Disturbance from rainfall

Other birds, aquatic insects, dragonflies, fish, and amphibians all consume mosquitoes and their larvae and together serve as natural mosquito control.

Ponds receiving excess nutrients can favor algae blooms and submersed aquatic vegetation. This situation can lead to increased mosquito egg laying
in these ponds and pools due to excess plant cover, providing the larvae with protection from predators, wave action, and rainfall.[3] Mosquito larvae also feed on organic debris in water. These problem ponds need to be addressed by restoring the ponds with aeration and stocking them with fish.

Make sure that high quality vegetative buffers are in place around ponds. These will slow or trap sedi- ment, pesticides, and nutrients. Encouraging natural vegetation on the banks and shoreline of larger ponds may provide some adult mosquito habitat, however it also has many benefits for pond quality. Tall vegetation surrounding a pond makes it less attractive to geese. Large numbers of geese can degrade pond water quality and have also been implicated as vectors

of West Nile virus.[4] In addition, natural vegetation surrounding large ponds provides habitat for predators of adult mosquitoes and their larvae.

Use top feeding minnows and other fish to reduce or eliminate mosquito larvae.

Contrary to popular belief, natural wetlands can reduce the population of mosquitoes compared with drained or degraded wetland areas. The IDNR fact sheet, *Did you know? Healthy wetlands devour mosquitoes* <www.in.gov/dnr/fishwild/publications/inwetcon/hlywet.pdf>, provides an example of one mosquito control project that documented a reduction of 90 percent in the mosquito population after restoring a 1,500 acre wetland area.[10]

However, in areas where wetlands have been drained, mosquito populations thrive when these former wetland areas become inundated after rain storms.[10] Following rain, intermittent moist muddy or shallow stagnant water combined with an absence of predators of mosquitoes can allow the mosquito population to explode.

Consider that just one inch of water in an ordinary coffee can may result in as many as 1,000 mosquitoes every seven days.