

# Florida LAKEWATCH



## Swimmer's Itch: A Very Personal Case Study

Emma N. I. Weeks

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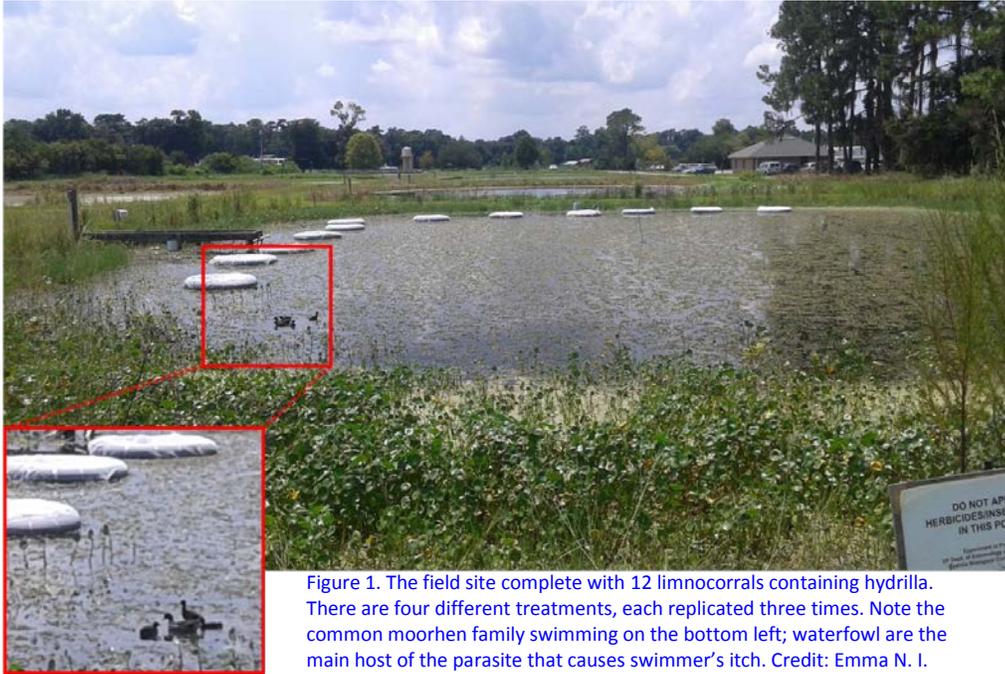


Figure 1. The field site complete with 12 limnocorrals containing hydrilla. There are four different treatments, each replicated three times. Note the common moorhen family swimming on the bottom left; waterfowl are the main host of the parasite that causes swimmer's itch. Credit: Emma N. I. Weeks, UF/IFAS.

In the summer of 2015 I spent a lot of time in and around ponds whilst completing experiments to test combinations of methods for hydrilla integrated weed management as part of a project funded by the United States Department of Agriculture (NIFA-CPPM program; **2014-70006-22517**). The experiments were established in limnocorrals in ponds at the UF/IFAS Center for Aquatic and Invasive Plants. Limnocorrals are floating experimental units that allow us to split up the ponds and test different treatments in one area (Fig. 1). Unfortunately, I found out why a wetsuit is bet-

ter than waders when working in deep water. My waders kept filling with water, so eventually I abandoned them to complete the work in my shorts and T-shirt. It was not until later as I was drying off that I noticed a rash on each of my legs and arms. At first I thought it was just an irritation from the plants or water, but later as it got worse I realized it was something more interesting...swimmer's itch!

### ***What is swimmer's itch?***

Swimmer's itch or cercarial dermatitis is a skin rash caused by infection with a parasitic worm that usually infects birds

and other vertebrates in the U.S. In other countries, there are species that infect humans as their main host and cause a disease known as schistosomiasis (in this article, I will not cover this disease in any detail). In the U.S., humans are an accidental host of this parasite, and although the rash is uncomfortable, the worms cannot develop or cause disease in humans.

### ***What causes swimmer's itch?***

Parasitic flatworms in the family Schistosomatidae cause swimmer's itch. There are several different species that cause swimmer's itch in hu-

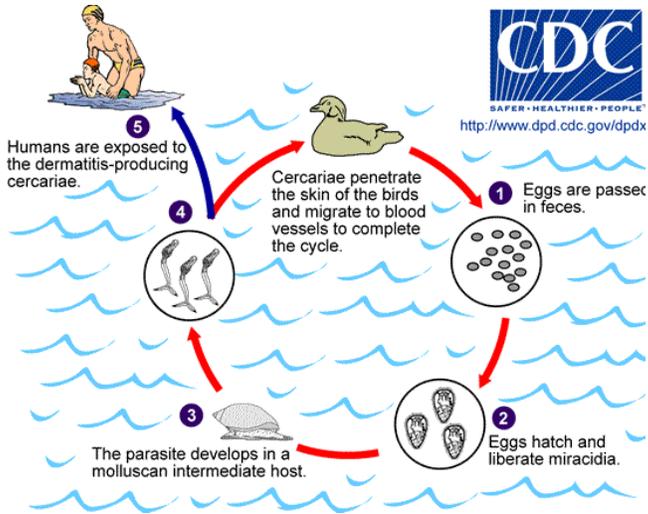


Figure 2. Life cycle of the parasites that cause swimmer's itch. Credit: Centers for Disease Control and Prevention (CDC).

mans in the U.S., and they all normally parasitize other vertebrate species, especially waterfowl. The parasite's life cycle includes a stage in an aquatic snail species (Fig. 2). The snail is infected by a free-swimming stage known as a miracidium; inside the snail, the parasite replicates and then leaves the snail as another free-swimming stage, the cercaria. These cercariae search for a vertebrate host, which is usually a water bird, to complete the next stage of the life cycle. They penetrate the skin, usually of the foot, and once inside the vertebrate host, the worms mature, mate and migrate through the circulatory system to the veins surrounding the gut, where they lay eggs. The eggs make their way into the gut, where they are expelled when the bird defecates into the water, where miracidia hatch from the eggs and the life cycle continues. The parasite may be

present wherever its snail and vertebrate hosts are present in fresh or brackish water.

#### Why do humans get infected?

The cercariae (Fig. 3) are searching for a host, which is usually a water bird and sometimes another vertebrate that lives in close association with water, but occasionally the host is an unsuspecting person swimming or wading in the water. The cercariae penetrate the skin of the human but soon

die because the host is incompatible. Unfortunately, this is not the end of the problem, because our immune systems attack these foreign bodies causing an inflammatory reaction that can be very itchy and uncomfortable — this is swimmer's itch.

#### How do you know if you have swimmer's itch?

When you dry off, the skin may tingle and the rash will appear shortly after swimming (within 12 hours). The red spots will get redder and become itchier as time progresses before eventually subsiding (Fig. 4). Each red spot is the site where a single cercaria (immature worm) penetrated the skin. A small papule (pimple) will appear at each penetration site. The degree of discomfort varies between individuals, with repeated exposures usually resulting in more intense reactions. Swimmer's itch can be mistaken for a poison ivy reaction. However, the rash caused by the parasitic flatworms results in small raised papules,



Figure 3. A schistosomal cercaria (150x magnification). Credit: Centers for Disease Control and Prevention / Minnesota Department of Health, R. N. Barr Library; Librarians Melissa Rethlefsen and Marie Jones, Prof. William A. Riley.

whereas that caused by poison ivy usually results in fluid-filled blisters. Chigger bites and sea-bathers eruption (caused by small jellyfish) may also be misdiagnoses. However, in both of those cases, the bites or stings from the organisms will be mainly around the edges of clothing. In swimmer's itch, the papules are usually on areas of exposed skin and not on areas of skin that were covered by tight-fitting garments. In my case, my lower legs and arms from my elbow to wrist were covered with papules, but the areas that had been covered by my shorts and T-shirt had none.

#### **How to treat swimmer's itch?**

As the parasites will be killed by your immune system, it is only necessary to treat in order to reduce discomfort due to the rash. Avoid scratching the rash (easier said than done!), because breaking the skin may result in secondary infections.

Over-the-counter anti-itch medications, such as lotions and anti-histamines, will work well to control the symptoms. Your pharmacist should be able to recommend something suitable to help ease your symptoms if necessary.

#### **How to avoid swimmer's itch?**

Swimmer's itch is not that common because the parasites that cause it are species specific. In order for a swim in a body of water to result in swimmer's itch, the correct invertebrate (snail) and vertebrate (e.g., duck) host species must be present. Even if all the right species are present, the number of cercariae present may not be enough to cause swimmer's itch when you enjoy a swim in your favorite lake. However, if the lake has abundant snails (usually associated with aquatic plants such as hydrilla) and many aquatic birds, the probability of having swimmer's itch cases increases.

In this situation, the following steps can minimize the risk of a swimmer's itch problem:

- Do not swim in shallow water for long periods of time — these are areas where the snails are present and the water birds wade, so they may have high concentrations of cercariae.
- Rinse and dry off immediately after getting out of the water — some species penetrate as the water dries on the body.
- Avoid swimming on sunny warm days in the mornings — laboratory-based studies showed that cercariae were shed most rapidly from snails at these times.

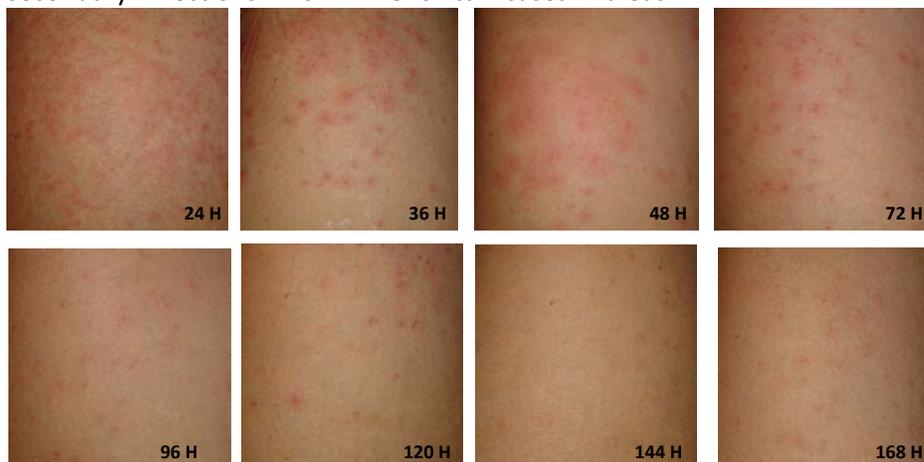


Figure 4. The development of the swimmer's itch rash over a week (168 hours), a case study. Credit: Emma N. I. Weeks. UF/IFAS.

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