

**KHA Corner** — Jerry Kyle, Koi Health Advisor (“KHA”)**This Month in the Koi Pond**

It is still cold in the California Central Valley but signs of spring are emerging. Water barely creeping to about 50°F but it is going up. Of course it is still early and still winter so can be expected to go down again, and up, and down, and .... Well, you know this since this is normal for this time of the year. Light sweater one day and Klondike jacket the next.

I just completed the Common Bacteria of Koi Diseases course developed by Prof. Richard Strange from the University of Tennessee specifically for the KHA program. Some of the other KHA-ers had positive things to say about the course and needing CE, continuing education, points I took the class. When one has attended a number of labs and/or lectures and has taken numerous scrapings from his and other's koi there is a certain routine-ness that sets in. Sometimes one has been there before but keeps coming back because there is always something new to learn if you pay attention. That is what KHA CE (continuing education) is all about. Things change as new information becomes available. Much of the latest and greatest information I could get about koi husbandry in 2000 when I started looking into this hobby is obsolete today. Newer information is always being developed which is why medical doctors and veterinarians are required to earn CE credits and the KHA program has determined we must also continue to learn or lose our certification. Mine is good through 2008 so needing CE credits as an excuse, I happily took the course.

The second assignment stated: “Assignment 2: Try to see bacteria with your microscope. Take a bacterial smear from the slime of a koi or from some substrate in your pond (perhaps the bio filter) and put it in a drop of water. Examine the slide under your highest power, changing the focus and lighting... what do you see?”

It was ten o'clock at night, dark, and cold outside. I was not interested in trying to catch a koi, attempting to be warmer down at the 5 ½ foot depth who didn't want to be caught, in order to get a smear from the slime coat. Took the easier way out and got a smear off the wall of the vortex fed by the bottom drain. Much easier to do and back inside where it was warm in two minutes flat. Now I have scraped some koi in my life and have seen through the scope lots of things but, never have I seen the likes of what I found on the wall of my “clean” vortex. I discovered the most amazing world. Having taken a fairly large hunk of stuff off that wall, I saw microscopic critters of all shapes and dimensions wriggling, sliding, crawling, and jerking about. I watched things that looked like snakes, beetles, and a thing that looked like a crab forage through the algae for an hour.

At 40x and 100x power there is a fascinating array of life in the pond. Zooplankton, a microbe zoo full of fascinating whirling critters, and bacteria abound. Flavobacteriums were there. They are long straw shaped bacteria some of which clump up looking like “haystacks” and are what we call opportunistic bacteria. Lots of Epistylis also. These parasites are filter feeders that ingest organic debris and do not feed on koi but attach themselves by a stalk and the tiny lesions invite opportunistic Aeromonas bacteria to infect. This may be especially critical in the spring before the water warms up and immune systems are suppressed.

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What to do? Flush the toilet for one thing. We have all heard that koi live in their own toilet. Since it looks clean and the winter water is clear, it is amazing how many pond keepers have not cleaned their ponds, thinking it didn't need it, since last fall. Winter rains clean the air and dump the dirt in the pond. Algae die and sloughs off the walls in the cold water. Look closely. See that thin (or thick?) layer of mulm made of wind blown dirt and dead algae? That is where all manner of things hang out. Things like my Epi-stylis and Flavobacterium, Aeromonas bacteria, and Costia is probably there too. Costia outbreaks in the spring are common and they thrive down there waiting for the right moment. If your filter is gravity fed, like mine, close off the pipes from the pond and clean and flush out the prefilters. If you raise the pond water level before you open the lines again that will make a stronger flush. Look at all the debris that comes out of the pipes as the water rushes to refill the empty chamber. Do it again until the water flushes clear. That pipe is one of the favorite places for lots of bad stuff to hide out waiting for spring warm up. Bacteria is part of life and we can not get rid of them but we can certainly reduce the numbers so the koi's immune system has a fighting chance next month as we approach spring warm up. Is it that this is so easy that we often don't do it? If you do this simple thing, something else will have happened to make you a hero. You will have made a partial water change. Wow, how long has it been since you did that? If you consider water changes may dilute many pathogens as well as just nitrates it may make sense to you to make changes every month rather than once in a while in the summer. Who is it that says over an over, "Now, go do the right thing?"

Next month we will get rid of that costia and epistylis along with some other stuff. Stay tuned