

ENCHANTED LAKE RESIDENTS ASSOCIATION

Newsletter

Summer 2011

Algae Bloom Covers Lake

by Bob Bourke

Beginning last May, residents noted an unusually early and unusually large bloom of algae in the lake. The algae, or Ogo, identified as *Gracilaria tikvahiae* is a red algae introduced to Hawaii in the late 1960s as a possible aquaculture crop. It has been abundant in Kaelepulu Pond since at least 1980. The algae has been grown as a substitute for native Ogo by local aquaculturists. Every spring the algae naturally responds to the increasing temperature and nutrients in the water with an increased growth rate. Many fish in the pond, particularly the Awa (milkfish), become fat from eating the algae during

the spring and summer growth season.

This year the growth of the algae is much, much more than has ever been experienced in the past. By the end of May, residents were reporting massive islands of algae floating along the shoreline and across the lake's surface. The algae growth is most abundant on the western side of the lake (Kukilakila and the wetland) but is also very apparent around the entire perimeter shoreline. In early June, when the lake level dropped following an opening of the sand berm at Kailua Beach, huge masses of the algae were stranded to

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Bob Bourke and his lake cleanup crew tackled the algae removal initially. It's great they can still smile after hours of wrestling algae! Photo by Don & Reva Hamilton. Top: The algae problem makes the front page of the newspaper and the evening news in two stories by KITV reporter Shayne Enright.

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bake in the warm sun. The smell of rotting algae was just beginning when we were blessed with high tides and an unseasonable rain that lifted the elevation of the lake water and prevented a die-off.

But the algae has continued to grow. During July the surface of the Ogo began to be coated with a thin film of fine green algae known as *Enteromorpha*. This algae typically grows only where there are large concentrations of nutrients.

Why is the algae bloom so much greater this year?

Algae grows best when the water warms up, when there is lots of sun for photosynthesis, and when there are enough nutrients (fertilizer) in the water. We can't control the seasonal temperatures or summer sun, but we can control the amount of nutrients that enter the pond. This past winter a local contractor (see Keopa Construction story in the ELRA Spring 2011 newsletter available on www.kaelepulupond.org) allowed tons of sediment to wash into our lake. In an attempt to stop the erosion at their construction site, they sprayed a green coating of grass seed and fertilizer over the exposed soil on the steep slopes. They did this on at



Pono Pacific workers pull up a huge scoopful of algae from an area in front of Kukilakila. Bob Bourke modified his barge with the addition of a specially constructed algae "shovel" that can be lowered into the water to scoop up large amounts of the seaweed.

least two separate occasions, both times within days prior to a major rainfall that effectively washed most of this material (including the fertilizer) into the lake. It is very likely that the nutrients in the sediments and fertilizer from the construction site have caused the algae bloom in the lake.

Who's going to clean up this mess?

In response to this massive algae bloom the lake cleanup crew assisted by lake-side volunteers began removing algae from the lake. Efforts on May 22, June

11, June 18, June 26, and July 3 removed a total of 60 cubic yards of algae from the pond. Individual homeowners around the lake have also removed large quantities from their frontage. However, with an estimated 500 cubic yards of algae in the lake, we quickly realized that our small crew was not up to this challenge. With a great deal of assistance from Kukilakila resident Kelly Adams, the ELRA advertised for and hired a contractor, Pono Pacific, to conduct full-time algae removal.

ELRA has contracted Pono Pacific for just under \$30,000 to remove ap-



The Pono Pacific crew has averaged about 20 cubic yards of algae removed each day during the first two weeks of work. Pictured here is one of the floats used to get into shallow areas to remove algae.



The collected algae is loaded into a truck at the Kukilakila boat ramp and taken to farms for use as compost.

You can help!

If 150 homeowners scoop algae from the lake in front of their own homes and each fill a greenwaste container, it will add up to roughly 80 cubic yards of algae. At \$50 a cubic yard, that's a lot of Ogo!

proximately 500 cubic yards of algae over a one-month time period. Working five days a week since July 15, the Pono Pacific crew has averaged about 20 cubic yards of algae removed each day during the first two weeks of work. The algae, however, continues to grow. It is anticipated that an additional two months of labor (~\$90,000 total) will need to be contracted to overcome the algae bloom problem.

Who's gonna pay for this?

Who pays for the cleanup will depend upon the result of conversations between our ELRA lawyer and lawyers for the Keopa Subdivision developer, Delta Construction. For the present, our ELRA savings are being used to pay for the initial one-month of labor from Pono Pacific.

So what? Let it grow, it's nature's cycle.

Nope, we really don't want to let this happen, because the end result of this "natural" process is a die-off of the algae in the fall when temperatures begin to fall, the day light shortens, and the lake level drops exposing the thick algae over the mud bottom. When this happens, the algae begins to rot and will absorb all of the oxygen out of the water. When the oxygen levels get low enough, all of the fish and crabs will begin to die. When the dead algae, fish, and crabs all begin to rot....

This is a completely foreseeable problem and it is our responsibility as the stewards of the pond to do all we can to prevent this catastrophe from occurring. Even with doing all we can, there is still a chance that we will not be able to avert a major die-off in the lake.

What next? Midges!!!

by Cindy Turner and Bob Bourke

Residents around the lake have been reporting a massive infestation of mosquito-like insects called midges. One resident estimated 15,000 on his lanai ceiling and another 100,000 on the outside walls and windows! Some are vacuuming their ceilings twice a day, others have tried all the different cans of flying insect sprays, soap and water sprays, citronella oil candles, sweeping them away, bug zappers and blowing them with a power blower. But nothing seems to be effective against these pests.

Midges, commonly called "lake flies" are *Chironomus hawaiiensis* and are non-biting relatives of mosquitoes. Their larvae, which look like red worms, hatch from eggs laid in the water by adult females. Usually we don't have a problem with midges in Kaelepulu because the brackish water kills the eggs. What appears to be happening in the lake now, is that the eggs may be held up near the fresher surface water by the layer of green muck formed by the growth of *Enteromorpha* algae on the surface. On hatching, the midges first feed on the gel of the egg mass, and then begin to feed on the nutrient-rich muck until ready to pupate. The pupated fly transitions to the adult form while still buried in the muck, then — once it fully matures in its pupal casing — it breaks out of its prison and floats upward to the surface of the water, where it emerges as an adult fly.

Lake flies need anaerobic, poor water quality and cannot survive where the water is clean and where dissolved oxygen levels are high. Adult flies are not dangerous to humans or other animals, though their swarms can be quite annoying and disruptive to people living nearby. The adult midges appear to be very susceptible to wind, and tend to gather in any area sheltered from the persistent trade winds.

So — how did this happen?

Poor control of sediment and nutrient runoff from a local developer cause



Hawaiian midges are plentiful due to the algae in the Lake.

the lake to have high nutrients.

High nutrients cause a bloom of the red algae *Gracilaria tikvahiae* to form massive colonies on the lake surface.

Fresh water from summer rains bring more nutrients into the lake and form a low salinity layer on top of the *Gracilaria*.

Enteromorpha green algae grows in a thick mucky layer over the *Gracilaria*.

Midges lay eggs in the anaerobic muck within the *Enteromorpha* growth.

The next step in the progression is that some predator, hopefully geckos, will take advantage and start to feed on the midge population. In other areas of the country where midge infestations have become prolonged, they are eventually controlled by an explosive growth of spider populations. We're voting for the geckos!

Notice of proposed dredging

ELRA has applied for a permit to do maintenance dredging at the lake outlet. The application is available for review at www.kaelepulupond.org/dredging/

Photos wanted

We're planning on putting together a lake slideshow at the Annual Meeting. If you have photos pertaining to life on the lake, please share them with us! Email them to elra@kaelepulupond.org



Enchanted Lake Residents Association

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ADDRESS CORRECTION REQUESTED

The 4th of July flotilla goes off with a bang!

What a great 4th of July we had this year! 25 people and two dogs were out on the lake in three barges, five kayaks, and one zodiac to celebrate in true ELRA style. While I was motoring about prior to the joining of boats, I was also glad to see how many of you were also celebrating in your yards and enjoying the beauty of the lake!

Those participating had a great time enjoying the lake. Even when the engine of one of the barges did not work, we joined together (literally) to keep ev-

eryone in line for optimal viewing and celebrating. As so many of you know firsthand, we had an amazing show this year with plenty of fireworks to light up the sky and the pops and bangs to complete the experience too. The new fireworks shapes and color combinations ensured plenty of “oohs” and “aahs,” keeping us on the edge of our seats with anticipation of what might come next.

Enjoyment of the lake and its use for recreation by surrounding residents is very important to me and to the entire ELRA board. If you all have new ideas for community activities or ideas to improve current activities, by all means please let us know, otherwise we will see you Sunday, December 18th for the Annual Holiday Flotilla!

Hope to see you out on the lake, I know my family and I will be there!

Your president, Bob Sanders

See Something Fishy?

If you spot suspicious or illegal activities on the lake be sure to call our Lake Watch Phone Number 808-366-6479.

ELRA Board Profiles

We have two new members to the ELRA board: Darren Rogers and Kelly Adams.

Darren Rogers has served on the ELRA board before and we’re delighted to welcome him back!

Darren has lived on the lake for 10 years and in Hawaii for 24 years. He’s an airline pilot and his favorite hobby is fishing. Darren says he is extremely worried about the ecological problems of the lake and everything that it entails, including its negative effects on health, recreation and property values.

Kelly Adams grew up on the water and knew that she wanted to live near it when she and her husband moved to Hawaii two years ago. They bought a lake-front home in Kukilakila where they love watching the birds, the barracuda, and the view of the Koolaua. Kelly is currently a business manager for Parsons. She was originally an Environmental Engineer with the firm.

Kelly and her husband, James, have two young children and a dog. She enjoys kayaking, going to the beach and reading. She is particularly interested in improving communication with the community and government agencies.

Annual Meeting Oct 15

Don’t miss this year’s Annual Meeting on October 15 at the Mid Pac Country Club, starting at 5:30 p.m. There will be interesting guest speakers, delicious food, board elections and lots to discuss.

More details will be mailed to you in September.

Your participation in this once-a-year event is important and the ELRA board looks forward to seeing you there!