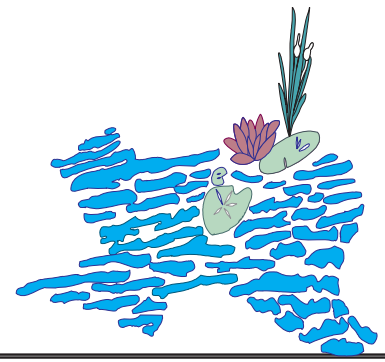


Water Works



Newsletter of the North Texas Water Garden Society

December/January, 2008

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Next NTWGS Meeting

January 13, 2009
7:00 PM

Kevin Fuess
Behind the Scene Look at
Water Gardening

Dallas Water Utilities
Building, 8915 Adlora Lane,
Dallas, TX. Mapsco 27T



Who, Me!



Kevin Fuess, KHA

The first indication of a healthy bio-converter is a zero reading of ammonia in your pond.

Ammonia which you have probably used as a cleaning agent, is also used for such things as the production of nitric acid, fertilizer, disinfectant and even illicit drug manufacture. So why is this in our pond? Ammonium ions are a toxic waste product of the metabolism in animals and to a lesser extent the decomposition of organic matter. In fishes and aquatic invertebrates, it is excreted directly into the water. In mammals, sharks, and amphibians, it is converted in the urea cycle to urea, because it is less toxic and can be stored more efficiently. In birds, reptiles, and terrestrial snails, metabolic ammonium is converted into uric acid, which is solid, and can therefore be excreted with minimal water loss. The key word to us in all of this is toxic. An accumulation of ammonia in our ponds is potentially lethal, but the formation of this substance is unavoidable. And our fish are the biggest contributors of this!

So what does this mean to us as pond keepers? How do we control and maintain an environment that insists on creating poison?

Although ammonia is a fertilizer, only a small amount is actually assimilated directly by the plants and algae in the pond. Ammonia is primarily removed through biological activity from the bacteria in the bio-converter and on the sides of the pond. This article began indicating zero ammonia is the ultimate goal, but that is not entirely accurate. In an environment where an organism is constantly producing a substance, even whilst it is being removed, there is no way to have a zero amount of that substance. This background level of ammonia in our ponds is known as ambient ammonia, and will vary throughout the day. But, it should remain undetectable at all times, and will as long as the bio-conversion is functioning and pond conditions are stable. How do we know if all is OK, or that there is a potential threat? Well, the fish will tell you. Ammonia blocks the oxygen transfer of the gills and can cause immediate and long term gill damage. It can destroy the mucus membranes reducing the slime coat. And fish suffering from ammonia poisoning are often sluggish and will stay at the surface gasping for air. Let's not wait till this happens! A simple ammonia test can avoid a lot of problems. There are two types of test kit available; Nessler reagent which consists of a liquid dropped into a sample of water and compared to a color chart, and the salicylate test which utilizes two or more reagents

See Ammonia, continued on Page 3

Water Works

Water Works is published monthly by the North Texas Water Garden Society.

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The North Texas Water Garden Society is a non-profit organization with the following objectives: To encourage a greater appreciation of and interest in water gardens; to disseminate information of interest and help to the members; and to stimulate the study and culture of aquatic plants, fish and ponds.

Editor, Susan Moore

email: susiemm@sbcglobal.net

North Texas Water Garden Society

<http://www.ntwgs.org>

Contributions to Water Works are always welcome and may be submitted to the editor by mail, fax or email. Letters to the Editor will be printed as space permits. NTWGS accepts no responsibility for the accuracy of the contents of this newsletter. Reproduction is permitted provided that this newsletter and the original source are credited.

The Water Garden's Tip of the Week

Do you have trouble with fish rooting around in the soil of the potted plants in your pond? Fish, especially koi, will root in the soil and make a mess as well as uproot some plants. If you have had this occur, try placing potato-sized cobblestones on top of the gravel or aquatic

President's Pad

The holiday season is well under way and most of us have winterized our ponds. I say most of us because I still haven't done that chore, and it's been too cold to want to do it lately. But if my tropical lilies are to survive, it must be done soon.

About three years ago, we embarked on the project of building our latest pond. After building two previous ponds, and doing a lot of reading and research, we now knew what we wanted and didn't want in our pond. We wanted it to be easier maintenance so we have an external pump and filter with bottom drain and skimmer. The filter has three compartments for different media and a bottom drain for anything that settles in the bottom. We also have a pump hooked to a solar panel to maintain the water level if the main pump is turned off or if the electricity goes off. Marvin does all the work on the pond, but he doesn't spend much time on it and the pond has been crystal clear since the first day, so I guess it's working well. And after losing half our fish to a heron, we didn't want shelves in our pond.

As much fun as it is to watch koi, I wasn't thrilled with the mess they made in the pond with my lilies and other plants, so one goal of the new pond was to put in a waterfall which divided the pond into two levels. One end has a depth of about four feet, and a shallow end with a depth of about two feet. The two ends are separated by a wide waterfall with stepping stones and bridge; its purpose is to keep our five little koi in the deep end and the goldfish in the shallow end. It is in the deep end of this new pond that I put my tropical water lilies for the winter. I put them in net laundry bags and drop them to the bottom, and anchor the draw strings of the bag over a

See President's, continued on Page 4

NTWGS Membership Information

Join the North Texas Water Garden Society.
Membership fees are:

Single Membership (per year) \$15.00

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Make your check payable to the North Texas Water Garden Society and send your name, address, phone number and information to:

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Ammonia, continued from Page 1

followed by a color chart. The Nessler type test is faster, but it is not compatible with ammonia blocking agents. So, if the pond has been recently treated with water conditioners, testing with this compound will not give accurate results. But both are very simple useful tests.

If ammonia is detected; unfortunately a positive reading is not the whole story. Temperature and pH have significant effect on the toxicity of ammonia. At a pH of 7.0 and 40 degrees, 8 pm of ammonia would be a probable short term upper limit. Warming the water to 70 degrees at the same pH and the toxic limit drops to around 2 pm. At a pH of 8.0 this is even reduced further to .2 pm as the upper limit. In a nut shell, high pH and high water temperature increase the toxicity of ammonia. Suffice it to say that a test reading of zero is the only good reading.

Are you wondering what would cause a sudden occurrence of ammonia? There are several things that can affect the ambient ammonia level or the buildup of toxic levels of ammonia. Adding a large number of fish can cause a spike in the ambient level while the bio-converter is trying to catch up; the bio-converter is not large enough to handle the fish load imposed on it; debris in the bio-converter may be causing the water to channel and bypass the media and beneficial bacteria; excess decaying debris in the pond may

cause water quality conditions that cause a pH crash rendering the bio-converter useless; and it could be the result of a new pond and the bio-converter is starting up for the first time, or maybe you are over cleaning the biological media (did you notice, if you were a bio-converter it would be all about me - me). We can add chemicals that bind the ammonia rendering it harmless but that does not get rid of it. The only way to actually remove the ammonia is through biological activity and is the first stage in the nitrification cycle. Let's digress here just a moment. Do you remember the warning last month? You just saw that one of the reasons for elevated ammonia could be as a result of a pH crash, wherein the biological activity has ceased or become greatly impaired. In this instance ammonia can develop rapidly. At a pH of 6 (beginning of the crash) your koi can handle 10 pm or more of ammonia. If you raise the pH to 7 to reactivate your bio-converter under these conditions you will kill your fish!

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Ammonia treatment ALWAYS takes precedent over pH.

So, you detected ammonia, what are you going to do about it!

- Increase the aeration
- If it is new pond reduce the feed by half, in an established pond quit feeding altogether
- Turn off UV sterilizer
- Perform a partial water change: for .1 pm change 10%, for 1.0 pm change 25%
- Chemically treat for 2X the amount of measured ammonia (do water change before adding treatment)
- In an established pond check for probable bio-converter clean out requirement, and pond debris accumulation
- Re-test in 24 hours

Another area we should explore in regards to ammonia before moving on is in the transportation of fish. The water in the transport bag with your fish is very likely to be low in pH due to carbon dioxide from respiration and high in ammonia. (Conditions very much like the pH crash we saw earlier) Applying what we have learned about pH and ammonia, you can see that the fish are perfectly OK in this situation as long as we keep the water cool. When it comes time to release the fish: never add pond water to the transport bag, and avoid, if possible,

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See Ammonia, continued on Page 4

Ammonia, continued from Page 3

allowing the transport water to enter the pond or quarantine tank.

Ok, so we took care of that problem and got rid of the ammonia. Actually we were successful in transforming it into nitrite; another poison for another topic.

President's, continued from Page 2

the edge of a rock. Then it's an easy matter to haul them up in the spring when the water is still too cold for either of us to get in it. The koi like the extra hiding places too, even though in the deep side is a koi condominium made of clay pipes. On top of the condo is a pot just under the water level so the koi can't get to the plants in it.

Our deck wraps one side and hangs over the edge of the pond so we can get a close look at the residents. Since I have forgotten to turn off the water hose on more than one occasion, I am now forbidden to fill the pond. Thus the reason for five tiny koi. But maybe these guys will get to grow up without further trauma. In my defense, the last few times, I did remember the water was running in time to make an emergency run to the store for dechlorinator and they not only survived, they still come to me at feeding time.

The lower level of the pond is for lilies and goldfish, and of course the frogs and toads, and it is easy to get to them from the deck too. Besides goldfish, frogs, and toads, we have had a few resident snakes too. Marvin assures me they are harmless, I don't know if he says that because it's true or because he can't catch them. I had noticed a decrease in our fall mouse population last year

but this year it is up again so maybe the snakes have moved on.

After hearing Bonnie Bradshaw from Wildcare Wildlife Rehabilitation in March, I decided to add a small wildlife pond with a wade-in beach area. It's got a rain garden behind it with some of my bog plants and is near a tree and wildflower area so it attracts quite a bit of wildlife. The downside is that the doves now prefer it to the big pond so we don't get to watch them as much. I put some fine sand on the beach area so I could check the footprints in the morning, but the rains have washed most of it away. But it was fun while it lasted.

Now that winter is here, I'd like to take out the bridge and the stream under it. However, after hearing Deborah Rothermel at our last meeting, Marvin wants to add a wetland filtration. If you missed that meeting and haven't seen Debbie's pond, you need to make time to attend next summer's pond tour. Two years ago when we were visiting ponds on the tour everyone told us we *had* to see her pond, and they were right. It is absolutely incredible, both in size and design. After seeing Debbie's pond, I have a huge case of pond expansion fever, but Marvin said he is not building another pond here. He never said he wouldn't build another pond somewhere else, so I'm thinking it may be time for us to move.

All this was started because our eight year old caught a toad. And now, the little girl who started all this is in

college and has very little time to visit the pond.

With all the travel, relatives, shopping, and excitement from Thanksgiving to New Year's, plus regular work schedule, it's hard to make time to squeeze in anything else. But I hope you will put NTWGS on your New Year Resolution list and try to come to some meetings. We'd love to get to know you, your pond, and have you share your ideas with us.

Martha Ward, President
North Texas Water Garden Society

The Mockingbird

I was just reminded about the time that I had a giant replica of the cartoon roadrunner in my front flower garden. I had meticulously painted rocks to match the colors of the cartoon character and then matched with plants of similar colors and was proud to have the State Bird in my front yard. So I was wrong! I'm from New England!

Of all the North American birds, the mockingbird is by far, the most famed for its vocal imitations. Besides its own rapturous song, the mockingbird's repertoire has been known to include over 40 different sounds including the barking of a dog. Mockingbirds can be fiercely

See Mockingbird, continued on Page 5



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NTWGS Featured Member

Hello Fellow Pond Enthusiasts, I am Steve Dumas. I am your 2009 Projects coordinator. I joined the NTWGS last year right after the Pond Tour 2008. I think my father is the one that got me interested in water gardening. He has had water gardens of one sort or another since the 1980's.

I have installed a water garden in every house that I have lived in since I moved to Texas in 1993. In 2007 I moved into a new construction home in Irving. Before laying the St Augustine lawn, I had designed and built a small (300-400 gallon) water garden. I used the leftover brick from the home. This was my first backyard water garden. Even though it is a mostly elevated pond, I did learn that I needed a fence around it to keep the curious Dachshunds out.

Thanks to the plant exchange at the NTWGS meetings I have not had to buy a single plant for the new pond. I have 5 small koi and a water testing goldfish that are currently chilling out in the bottom of the pond. We also added several mosquito fish last year which are hard enough to spot when they are moving.



Featured Member

With this issue we are introducing the featured member section to our newsletter. Every month we will have a section written by or about an NTWGS member so we can get to know each other and our ponds better. If you would like to submit an article about yourself and your pond, please send it to susiemm@sbcglobal.net. We look forward to getting to know you too!

Mockingbird, continued from Page 4

territorial during the mating season as they defend their nests and territories. Watching their behavior can be quite thrilling. The mockingbird is a very important visitor to your backyard. Not only is it's song enchanting, but they will help to eat many of your nuisance garden insects!

They are long streamlined gray birds reaching up to 9 inches in length, with white undersides and flashy white wing patches and outer tail feathers. The male and females look alike. The song is a mixture of

original and imitative phrases, each repeated several times. It will imitate other species' songs and calls, squeaky gates, pianos, sirens, barking dogs, etc. During the mating season, the male will mark his territory with song. You will see them singing incessantly, both night and day, hopping from one song post to another. If you see him jumping up and down in the air, he's catching a few insects! In the Fall, both the male and female will mark their territory to protect Fall and Winter food sources. Mockingbirds are attracted to your yard if you have the following:

- Placing a suet feeder in your yard

See Mockingbird, continued on Page 6

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- Offer chopped dried fruit grapes or raisins on a platform feeder
- Offer apples or pomegranates to mockingbirds on a special fruit feeder
- Make sure you have a bird bath or water source
- Plant berry bushes such as holly, mulberries, raspberries, Virginia creeper, blackberries, dogwood, elderberries, hackberry, brambles, pyracantha, cotoneaster, grapes or figs.

Koi and Water Garden Society of North Texas, January, 2008

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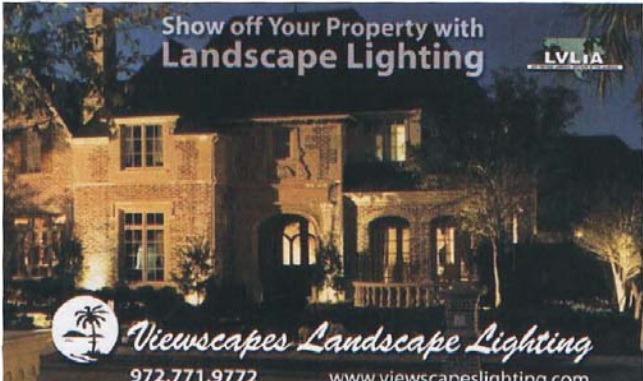
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3. I'm staying home to work on my cottage cheese sculpture.
4. It's my parakeet's bowling night.
5. I'm building a pig from a kit.
6. There's a disturbance in the Force.
7. I have to go to the post office to see if I'm still wanted.
8. I'm teaching my ferret to yodel.
9. I have to check the freshness dates on my dairy products.
10. My crayons all melted together.
11. My patent is pending.
12. I'm worried about my vertical hold.
13. I have some real hard words to look up in the dictionary.
14. None of my socks match.
15. I changed the lock on my door and now I can't get out.
16. I never go out on days that end in "Y".
17. There are important world issues that need worrying about.
18. I have to draw "Cubby" for an art scholarship.
19. I'm uncomfortable when I'm alone or with others.
20. I'm trying to be less popular.
21. My favorite commercial is on TV.
22. I've been traded to Cincinnati.
23. I have to rotate my crops.
24. I'm waiting to see if I'm already a winner.



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The annual Pond Tour is coming up in June and we need to start getting the ponds lined up.

Sign up online then keep the weekend of June 13th open for the tour.

THE DEADLINE FOR SIGNING UP IS APRIL 15.
Go to www.nwgs.org for more information.

Spring will be here soon!

Spring is always a busy time for the NTWGS.

Watch for spring projects coming soon such as:

- ✓ Dallas Zoo Stream Project
- ✓ Texas Discovery Gardens Pond Cleanup Project
- ✓ Free Aquatic Plant Potting Workshop
- ✓ NTWGS Booth



Membership

Notice, if you are not receiving an e-mail announcement of meetings and news events, then I do not have it, or your current e-mail address in our database is wrong.

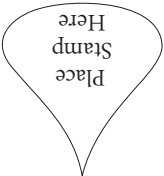
If you would like to be included in this form of communication please send me your email address at Kevin Fuess, Membership Chair, membership@ntwgs.org

Calendar of Events

- 12/31 New Year's Eve
- 1/1 New Year's Day
- 1/6 NTWGS Board Meeting
- 1/13 NTWGS Meeting
- 1/13 Stephen Forster Day
- 1/19 MLK Day

NTWGS Voice Mail Number
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REMINDER!
 Next Meeting February 10, 2009



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 Garden Society
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