THE FILTER

WaterScapes
Aquatic Plant Nursery
TBAS TOUR

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TBAS . . . Since 1992

Photo Mike Jacobs . . . 2018

TAMPA BAY AQUARIUM SOCIETY

"THE FILTER"

Tampa/St. Pete, Florida

TBAS

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TBAS

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Greetings Everyone.

My name is Andres but everyone can call me Dre. I have been a TBAS member for 7-8 years and have been president prior to this year. I have not been very active in the club over the past several years but I am looking forward to this year as president to be able to help grow membership, bring in good speakers, and have some field trips for the membership.

Some one you made it out to WaterScapes Aquatic Plant Nursery on September 8th in which I gave a tour of the facility. I am the sales manager for Waterscapes and was able to invite the club members out for a view of the farm. I am going to be working on putting together more of these types of outings in the year to come. Keep an eye out for upcoming events.

Our annual auction is fast approaching this year and we are laying the groundwork for another huge auction. We will be at a new location, 1914 Plant City High School Community Center. You can expect the same great selection of fish and dry goods as in years past. We look forward to seeing everyone on Saturday November 17. If you are interested in helping with the auction we please contact myself or Patty for details on where we need help.

Dre

Dre Alvarado, Pesident TBAS

Amatitlania nigrofasciata
Pink Convict Cichlid
Photo by Mike Jacobs 2018

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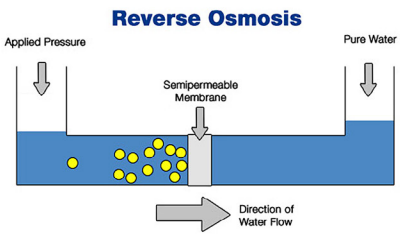
Understanding REVERSE OSMOSIS Part 2



What is it?

by Joe Gargas

An alternative water treating process: Peat softening will generally give good results; however it is messy to use on a large scale. Peat should never be boiled or rinsed with water before use, as this renders it ineffective (Sterba, Gunther 1983). Buy peat from a greenhouse or gardening supply store. The peat will come in a bale with the pH marked on the label. The more acidic the peat is, the faster it will soften the water. The peat should be crumbly, since it contains a lot of parts of partially decomposed plants (Sterba, Gunther 1978).

The peat should not contain fertilizers. An indication of the presence of fertilizers is an increase in the phosphate PO_4^{3-} concentration of the water after peat treating. Since all peat contains some ammonia, testing for ammonia as an indication of the presence of fertilizer is not easy, unless one knows exactly what weight of dry peat was added to what volume of water and how much ammonia to expect in the absence of fertilizers.

I have never had a problem with fertilizers in peat which I buy from the greenhouses and gardening supplies. I try to get the peat with a pH in the range from 3.5 to 4.0. It should be placed in a canister filter, such as Eheim, with a thin layer of filter floss before and after the peat. The author favors the Eheim, since the water has a long contact time in the cylinder with the peat. This results in more reduction of hardness in a given pass through the filter. As peat will trap a lot of air in pockets, it will probably be necessary to restart the siphon more than once. The canister filter is put into a recycling loop on a large vessel, such as a 55 gallon plastic garbage container, preferably white in color so that the color of the peat treated water can be seen.

When is the peat exhausted? When the hardness on the discharge of the peat filter is tested and compared to the hardness of the water entering the peat filter, and if the readings are the same, the peat is exhausted and should be discarded. Peat treating must be controlled by total hardness, not by pH as is commonly believed.

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A good hardness test kit is required for this. The author uses a titrametric hardness kit manufactured by LaMotte Chemical Co. Continual use of this peat will result in anaerobic decomposition of it; as the pH rises hydrogen sulfide could be produced by anaerobic bacterial activity over a period of time. This would be very toxic to the fish . The author recommends dropping the hardness to 40 ppm; this may require placing a fresh charge of peat in the canister filter.

About 1 lb. of this peat will soften 55 gallons of Lake Michigan water from 140 ppm down to 40 ppm in a 48-hour period. The pH will drop from 7.4 to approximately 6.5 during this treatment. The water will turn amber in color. The amber color can be removed by a flocculating agent such as Filter Aid, manufactured by Aquarium Products Inc., with no ill effects. It is not advisable to perform flocculation in water containing live fish if the water is less than 50 ppm total hardness, as sudden death of the fish from osmoregulatory failure can occur.

Sodium softening is the common household water softening process which exchanges the sodium ion for whatever other cations may be present in the tap water. Provided that the feed water is not too high in hardness, it may be used to soften water for hatching. Such instances would be relatively rare, as I have tried to soften Lake Michigan water in this way for hatching discus and it did not work. For this to work, the feed water would have to be quite low in hardness. The author has observed that keeping discus for a long time in water with a high sodium concentration causes tiny pin holes in the head area of the fish.

Deionization reduces the ionic strength of the water by removing all the dissolved salts. A deionizer is commonly composed of two separate cylinders: a cation cylinder which removes all of the cations; and the following anion cylinder which removes most of anions if it is the common weak anion resin.

The weak base anion resin will not remove the bicarbonate ion ($HCOJ_3^-$). The acid from the cation resin causes the bicarbonate ion to hydrolyze to free carbon dioxide (CO_2). To remove the CO_2, the water must be strongly aerated for at least six hours before it could be pumped into the fish tanks. Alternatively, a strong base anion resin cylinder can be used which does remove CO_2 ; however it is then necessary to adjust the pH of the water before adding it to the tanks. There is also the mixed bed deionizer in which both the anion and cation resins are mixed together. While the mixed bed produces water free of CO_2, there is no way to regenerate the resins when they are mixed together. For this reason it is too expensive to use the mixed bed process on a large scale.

Reverse Osmosis for Spawning

Killifish: Of the approximately 22 genus of killifish only a few contain species requiring very low ionic strength water for spawning. This is particularly true of

the West African genera of killifish coming from the Congo Basin. I have included water quality data from several locations in West Africa and Argentina so that the killifish breeder may get a better idea of the requirements for spawning the species originating in these areas. Water data from a jungle stream in the region of Cribi in the Cameron gave a pH of 5.2, total hardness of 3.6 ppm and a temperature of 26°C. at 2 p.m. in the month of January (Hafelin, Walter 1976).

The genus Aphyosemion has several species requiring water very low in dissolved salts; these include: ***A. celiae, A. coelesti, A. cyanostictum, A. ocellatum, A . primigenium, A. schmitti*** as well as the members of the groups ***A. cognatum*** and ***A. ogoense***. Note that in the following that potassium permanganate demand ($KMnO_4$), is an index of the amount of total organic compounds present in the water; the higher the $KMnO_4$ demand, the higher the total dissolved organics present.

A water hole 30 kilometers east from Monila in Gabon gave the following:
pH = 6.6
Total hardness = 20 ppm
Chloride (Cl^-) = 1.4
$KMnO_4$ demand = 57
Conductivity = 54 micro Siemens

A swampy water hole near Lambarene, Gabon gave these results:
pH=6.1
Total hardness= 5 ppm
Chloride (Cl^-) = 2 ppm
$KMnO_4$ demand= 63 ppm
Conductivity= 16 micro Siemens

A clear mountain stream at an elevation of 800 meters between Atogafina and Mala in Gabon gave:
pH=6.1
Total hardness = 8.6 ppm
Chloride (Cl^-)=2 ppm
$KMnO_4$ demand = 47 ppm
Conductivity = 20 micro Siemens
A waterhole by Cape Esterias north of Libreville in the coastal rain forest gave:
pH=4.1
Total hardness = 4 ppm
Chloride (Cl^-) = 6 ppm
$KMnO_4$ demand = 426 ppm

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Conductivity = 30 micro Siemens

The foregoing data come from (Bech, Reinhold, 1979). Note the low values of pH and hardness. Also the last sample shows by its high $KMnO_4$ demand that the water was heavily loaded with organics.

South American Killifish will tolerate a much higher concentration of dissolved salts than the Congo Basin killifish. The only possible exceptions to this are some species belonging to the genus Rivilus which inhabits the headwaters of the Amazon basin.

In Argentina in the province of Buenos Aires, ***Cynolebias bellottii*** and Cynolebias elongatus were found to inhabit water with the following characteristics:
pH =6.9
Total hardness = 40 ppm
Chloride (Cl^-) = 24 ppm
$KMnO_4$ demand = 144 ppm
Conductivity= 380 micro Siemens

In ponds which were almost dried out, ***Cynolebias bellottii*** and ***Cynolebias nigripinnis*** were found to be inhabiting a tea colored water with these characteristics:
pH = 7.4
Total hardness = 20
Chloride (Cl^-) = 62 ppm
$KMnO_4$ demand = 492 ppm
Conductivity = 1150 micro Siemens
The foregoing water data is from (Luling, Heinz 1979).

A sample of rain water taken from the grassy pampas near Buenos Aires where ***Cynolebias bellotii*** and ***C. elongatus*** were found gave the following:
pH=6.5
Total hardness = 9 ppm
Chloride (Cl^-) = 100 ppm
$KMnO_4$ demand = 196 ppm
Conductivity = 726 micro Siemens
The foregoing data comes from (Bech, Reinhold, 1979) and it can be seen in these cases that the chlorides can be quite high; however the hardness is never very high.

Tetras require water low in dissolved salts and hardness in the range of

15 to 50 ppm, although some species may tolerate somewhat higher hardness. Neon tetras require very soft water of 15 to 30 ppm in hardness and a slightly acid pH of 5.0 to 6.5.

Dwarf cichlids of some species will require water of 10 to 30 ppm in total hardness with a pH of 5.5 to 6.5.

Discus require water very low in ionic strength and a hardness of 20 to 40 ppm, and a pH between 5.0 and 6.5. It has been the experience of this author that we are able to get a sufficient percentage of fertilized eggs in hard alkaline water; but the eggs do not survive to hatching as they are rapidly attacked by bacteria and then fungi. It is possible. that the egg membrane is weakened due to the high osmotic gradient across it in the presence of dissolved salts in the water. The membrane, thus weakened, is then more susceptible to bacterial attack.

Marine Application

Recently the reverse osmosis process is being used in make-up water for marine systems. A properly designed reverse osmosis unit will remove 99% copper which has to be removed for invertebrates and will also remove 99% of phosphate, polyphosphate and nitrate from make-up water.

It will remove 98% of silica acid ($Si0_2$) which has been implicated in golden diatom blooms. Therefore reverse osmosis is the best process for removing excessive nutrients from make-up water when the desire is to eliminate microalgae.

Medical Application

The reverse osmosis process has been used quite extensively for kidney patients. Reverse osmosis will remove 96% of sodium in tap water.

Conclusion

As we all know, due to heavy industrial and waste problems, the water quality in the world today is not like it was many, many years ago and is gradually getting worse. With the introduction of reverse osmosis to the aquarium trade it is now possible to breed species of fish which were once considered hard to keep alive. It is by far the simplest method of desalination available to the aquarist.

References

1. Jenkins, David and Snoeyink, Vernon, Water Chemistry, John Wiley & Sons, 1980; Fig 4-17, p 164.

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2. Lewis, G.N. and Randall, M. J. Am. Chern. Soc., 43: 1111, 1921.
3. Sterba Gunther, The Aquarist's Encyclopedia, Blandford Books Ltd., 1983, page 436.
4. Hafelin, Walter, Wir Fingen Killy-Fische, Aquarien Terrarien, May-June, 1976, page 165.
5. Bech, Reinhold, Die Heimatgebiete der Eierlegenden Zahnkarpfen, Aquarien Terrarien, June 1968, page 204.
6. Luling, Karl Heinz, Fische in temporaren und in Kleingewassern der Provinz Buenos Aires 2, Aquarien Terrarien, August 1979.

Aqua Research Center
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photo:Mike Jacobs 2018

Kind of a new one:
***Rineloricaria* sp . . . Red Lizard Whiptail**

http://www.sks1.com

Did you ever think of KILLIFISH??? Come find out about them at the SKS meetings!!! See the ad to the left!

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MEMBERSHIP DUES!!!!

Membership Dues for TBAS are due on the anniversary of your sign-up date every year. Please make sure you check the "sign-in" list on the table at every meeting to check your "Dues-Date" . . . Thanks!!!

USE PAYPAL ON THE TBAS WEBSITE . . . TBAS1.COM . . . !!!!!

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TBAS Tour of:

WATERSCAPES

Aquatic Plant Nursery

Folks, this was an absolutely **WONDERFUL** morning!!! TBAS president, Dre Alvarado, who works at Waterscapes, gave the TBAS members the Grand Tour of Waterscapes, and it was simply wonderful and educating! The crowd all gathered about 8:30am and the tour began and absolutely everything was explained!! The next time TBAS gets the tour you really don't want to miss it! There is so much for us to learn about the plants we all use in our aquariums it isn't even funny . . . and we all **THINK** we know plants because some of us have been planting them in our tanks for 20-30-40 years . . . trust me, one tour and you will double your knowledge of plants!

WE ALL STARTED GATHERED ABOUT 8:10am

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. . .AND THEN THE CROWD REALLY GOT THERE ABOUT 8:20am

THEN OFF WE ALL WENT ON THE TOUR!!

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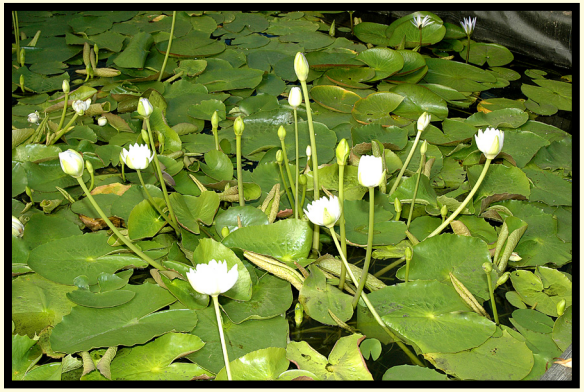


Dre was a wonderful guide . . . and we were protected by the neighbors' great dog all day!

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Fundlopanchax gardneri Killifish

Fundlopanchax gardneri
"Udi Mountain"

Two different varieties of the same fish -
Fundlopanchax gardneri
approx. 2.5"

Fundlopanchax gardneri
"Misaje"

Photos: Mike Jacobs

Killifish Video Click on the to See Video

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Angels Plus
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Click on the

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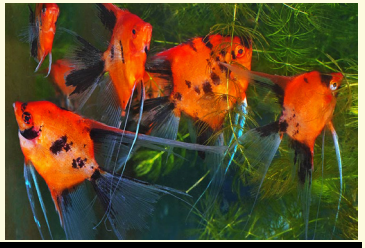

THE BEST KOI ANGELFISH IN THE UNIVERSE

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Red Ruby Peacock . . . *Aulonocara rubescens*

photo: Mike Jacobs 2017

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