



July, 2009  
Volume 17 Issue 11

# THE TBAS . . . Since 1992 FILTER



1st Place Fish Shirt . . . Mike LoBello pic by MFJacobs 2009

## Bowl Show July:

- 1) Barbs & Rasboras
- 2) Danios, White Clouds & Rainbows

## July Program

Killifish . . . by Chris Butcher

Change the water in your tanks!

# Tampa Bay Aquarium Society



## “The Filter”

Tampa/St. Pete, Florida

**Volume 17 Issue 11**  
**July, 2009**

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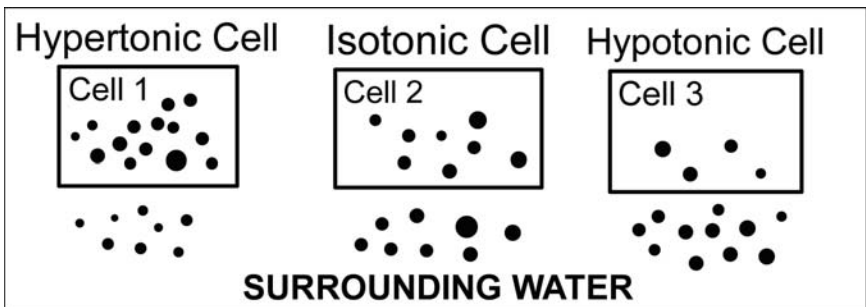


Hank's gone Pirate . . . pic by mfjacobs 2009

# DIFFUSION OSMOSIS

by MF Jacobs

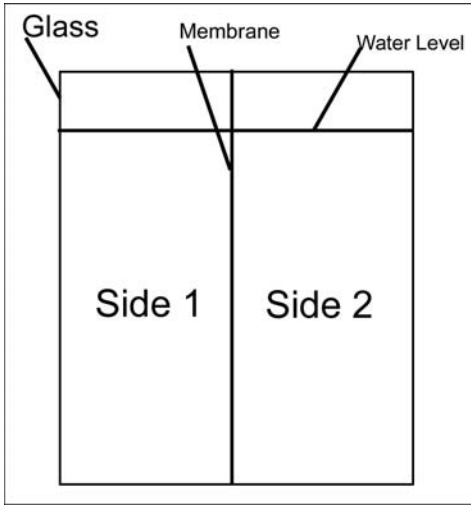
OK . . . now we all know what Hypotonic, Isotonic and Hypertonic stand for (from last month's bulletin) but remember, it matters from what reference you are talking. Example: If the cell is Hypertonic then it, the cell, has more ions in solution than the surrounding water . . . if the surrounding water is hypertonic then the surrounding water has more ions than the cell.



**Diffusion:** Diffusion is when, for example, a drop of red dye is put into a glass of water and let to sit for a while, totally still. Sooner or later with no help from anyone the glass of water will be entirely red (Pink . . . diluted red). This will happen without stirring the water and without moving the glass. This will happen even if there is a membrane somewhere in the glass as long as the membrane has holes large enough for the red dye to pass through the membrane (permeable membrane). I'm sure you have to remember this from your<sup>9</sup>or 10<sup>th</sup> grade Biology class.

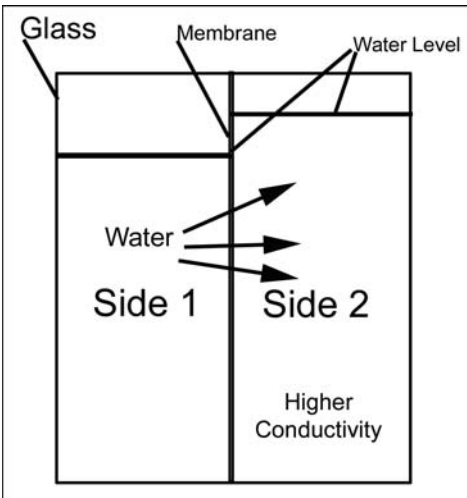
**Osmosis:** Osmosis differs from Diffusion and here is where everyone starts to get confused. Let me try and help. Let's say there is a glass of water and in the middle of the glass where the liquid is going from top to the bottom of the glass there is a membrane that has holes. The holes in the membrane are big enough to allow water molecules through but not any other ions or molecules (semi-

permeable membrane). Now what is going to happen when on one side of the membrane you put a bunch of water with a lot of minerals and stuff in it . . . the conductivity is HIGH and on the other side of the membrane you put the same amount of fluid (water and minerals and stuff in it) but the conductivity of this side is less than the conductivity of the other side . . . here's the picture and here's what's going to happen . . . you are probably going to guess wrong unless you understand Osmosis.



Remember now, the water on Side 2 has more minerals and ions and “stuff” (the conductivity is higher on Side 2 than Side 1 . . . that’s critically important to your understanding. There is more “stuff” on Side 2 but there is EXACTLY the same amount of fluid in both sides . . . that means there is more WATER in Side 1 than Side 2. WATER . . . that’s what is critical . . . there is more WATER in SIDE 1 . . . and the water is what can pass through the membrane. The water wants to DIFFUSE and move to the side where there is LESS WATER . . .

which is Side 2 . . . that is OSMOSIS . . . the movement of WATER from a lesser conductivity to that of a greater conductivity . . . not the movement of the “stuff” . . . just the water molecules . . . BINGO . . . OSMOSIS!



We will discuss the importance of DIFFUSION and fish and Osmoregulation in the next month’s issue. Stay aboard and think water and conductivity and how it helps you decide when to change your water for your fish . . . that is critically important to your fish!

## The Meeting Program for the July TBAS meeting will be . . .

# KILLIFISH

**By Chris Butcher**

Hi, I am Chris Butcher and I have been hands on with killifish since I was 9 years old. I have worked with 200 species on a hobbyist level over the years. I currently work with 40 species on a commercial level.

I reside outside Jacksonville, Florida, where I did aquaculture research and marine biology research at UNF (University of North Florida). The marine biology research at UNF involved eco-systems in brackish water where many killifish were observed and studied. My degree major is in Biology with a minor in Chemistry I have managed multimillion dollar pet shops as well as worked as a R&D chemist for Johnson & Johnson.

During the past few years with the American Killifish Association, I have become a member of the Killifish Conservation Committee, sent fish to numerous shows, donated fish to the AKA as well as local clubs, and listed in the Business & News Letter. My father, Steve, and myself have distributed many thousand pairs of killifish throughout the US. The types of killifish I focus on are mainly *Nothobranchius*, *Aphyosemion*, and *Fundulopanchax* species. I am also a member of the Suncoast Killifish Society right here in the St. Pete/Tampa area.

I will be donating many young pairs of killifish to the TBAS auction on July 13 so come ready to learn about the killifish and to take some home!



## *Julidochromis ornatus*

by **Jim Norris** Pictures by **Jim Norris**

I have keep a colony of *Julidochromis ornatus* cichlids for over five years now. The Julies are originally from LakeTanganyika in the heart ofAfrica. Lake Tanganyika is the 2nd largest freshwater lake in the world by volume and it is home to more then 2,000 plant and animal species, and is one of the richest freshwater systems in the world. It has been said that about 600 different fish exist in the lake watershed that are found no where else.

Lake Tanganyika is bordered by four countries, Burundi, Congo, Tanzania and Zambia. At 4,823 feet in depth it is only exceeded by Lake Baikal in Russia. Geologists estimate that it is over 10 million years old. *Julidochromis ornatus* is a cave spawner which is easy to understand with the boulder strewn shore of the lake. The lake is roughly 50 miles wide by 400 miles long. This is were my Julies ancestors come from. The color patterns on mine are creamy-white with black stripes with a lot of yellow and blue along the tips of the fins.

Sexing them can be a bit challenging its best to start off with a group of 5 to 6 and hope a pair forms. The females are rounder than the males. In some you can see the male's papillae. The tank I have has a colony in a 45 gallon which is the same area as a 55 gallon but shorterI was originally given 3 Julies by one of the TBAS club members and have had them ever since. The colony is established they keep on reproducing frequently. The water stays about 78 degrees. I use crushed coral mixed with standard aquarium gravel. The pH is 7.6 to 7.8, it's on the low side for Tanganyika but I've haven't had any problems at



this level. I have piles of rocks, cichlid caves and flower pots giving the adults plenty of places to hide and lay eggs. I have 2 large non-ornatus fishes in the tank which help keep the population down which would soon overwhelm the tank.

One of the things I find neat about these fish is that you can have multiple generations existing in the tank without any problems. I have large 3 to 3 1/2 inch adults living with the tiniest of fry peacefully. Once the colony is established this behavior is fascinating to watch. A lot of prominent aquarist have written extensively of the old wise tale that Julies do better in water that has not been changed is **false** and that weekly water changes are the thing to do. I believe this myself but I have noticed that the Julies I have seem to be more prolific if I only change the water once a month. I do not recommend this as it would be detrimental to the fish's health in the long run. It is easy to see how the old wise tale started as Julies seem to be sensitive to water changes.

easy to keep. I recommend *Julidochromis ornatus* as a good fish to start keeping African Cichlids.

African Dwarf Cichlids are

# Conductivity VS METERS TDS

by Joe Gargas

The Difference Between Conductivity Meters/Pens that Measure in MicroSiemens and TDS Meters/Pens that Measure in ppm TDS  
When using a meter to measure either the ppm of total dissolved solids or conductivity of a liquid, the meters already come factory calibrated however on occasion it may be necessary to periodically calibrate the meter using a calibration standard solution. There are, however, special considerations to be given to each type of calibration. **Whereas conductivity measured in MicroSiemens (uS) is an absolute measurement with calibrations that are transferable from one type of solution to another, because you are taking the total electrical conductivity of all the substances together you can go from sample to sample or tank to tank with no problem.**

**Using a TDS meter or pen that reads in ppm total dissolved solids the calibrations for this type of pen and or meter are specific to one type of dissolved solid solution and must not be transferred from one type of dissolved solids solution or sample to the next. Doing this will result in some serious errors in measurement.**

Although the basis for testing ppm of total dissolved solids is the conductivity of the solution, it is not correct to assume that this measurement is absolute, as is conductivity measured in MicroSiemens (uS). **It is always necessary to calibrate all total dissolved solids meters with parts per million total dissolved solids standard calibration solution that contains the same type of salts or mixtures of salts as the solution to be tested. Failure to do this will result in serious errors in the measurement of total dissolved solids.**

*This is because total dissolved solids meters (TDS Meters) are calibrated by correlating the conductivity of the solution to the ppm dissolved solid and this correlation varies considerably from one species of dissolved solid to the next.*

So TDS meters are usually calibrate with a NaCl- Sodium Chloride salt solution so when a measurement or reading is taking by one of these meters it is

expressed as Sodium Chloride. So if you take your TDS meter and dip it in your aquarium and it reads 350 ppm – it is 350 ppm as Sodium Chloride. However, we all know that there are many other ions and minerals in the water besides sodium chloride. This is why the reading will not be accurate as total dissolved solids as there are other substances in the water besides Sodium Chloride (NaCl) table salt.

Another example: an engineer is checking his boiler water for corrosion control and say if he uses Sodium Hydrogen Carbonate to increase alkalinity He would calibrate his TDS pen using Hydrogen Carbonate so his TDS reading would be seen as parts per million Sodium Hydrogen Carbonate.

This is why for the purpose of Tropical Fish Keeping all Aquarist should use a Conductivity meter or pen that measures the results in MicroSiemens uS instead of a TDS meter or pen that measures in ppm parts per million.

I hope that sheds some light on this issue.

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# Tampa Bay Aquarium Society's

## Board of Directors Meetings <sup>2008-09</sup>

... of course you are all welcome!!!!

- ~~November 2008~~ ~~Bob Heagey~~
- ~~December 2008~~ ~~Gene Linkoski~~
- ~~January 2009~~ ~~Mike Jacobs~~
- ~~February 2009~~ ~~Patty Monerief~~  
(held at State Fair)
- ~~March 2009~~ ~~Bob Heagey~~
- ~~April 2009~~ ~~Mike Jacobs~~
- ~~May 2009~~ ~~John Papp~~
- ~~June 2009~~ ~~Joe Hiduke~~
- ~~July 2009~~ ~~Hank Darin~~
- August 2009      Ludo Van Den Bogaert

# Monthly Bowl Show Results

OK, guys . . . we have a horse race going on here. We have 1/2 of the year left . . . that can make all of the difference in the standings!!! Good participation!!

| <u>PERSON</u>   | <u>POINTS to DATE</u> | <u>PERSON</u>  | <u>POINTS to DATE</u> |
|-----------------|-----------------------|----------------|-----------------------|
| Hank Darin      | 49                    | Mike LoBello   | 6                     |
| John Papp       | 38                    | Fred Tonte     | 4                     |
| Joe Berberich   | 30                    | Thelma Frias   | 2                     |
| Barbara Kusich  | 21                    | Jackie Friesen | 1                     |
| Hugh Moore      | 17                    | Joe Short      | 1                     |
| Joe Emmons      | 19                    | Nan Smith      | 1                     |
| Ken Freisen     | 14                    | Tina Waigman   | 1                     |
| Andres Alvarado | 13                    |                |                       |
| Jim Norris      | 10                    |                |                       |

## June Fish Results



1st Place . . . Hank Darin



2nd Place . . . Barb Kusich



3rd Place . . . Joe Berberich

# Monthly Bowl Show

## January

- 1) Livebearers
- 2) Egglayers

## February

- 1) Killies Top
- 2) Killies Bottom

## March

- 1) Old World Cichlids
- 2) New World Cichlids

## April

- 1) Sucker Catfish
- 2) All Other Cats

## May

- 1) Livebearers Spawned & Raised
- 2) Egglayers Spawned & Raised

## June

- 1) Open
- 2) Fish Shirt (must be worn)

## December

Awards +

## July

- 1) Barbs & Rasboras
- 2) Danios, White Clouds & Rainbows

## August

- 1) Bettas
- 2) Anabantids

## September

- 1) Characins
- 2) Sharks, Loaches & Eels

## October

- 1) Native Florida Fish
- 2) Any Plants

## November

- 1) Goldfish & Koi
- 2) Participant Created FishArt

P.O. Box 27044 Tampa, Florida 33623



Tampa Bay Aquarium Society...

stamp