

FinTASTic

The Angelfish Society Newsletter

JUNE 2013 ISSUE 29

**IN REMEMBRANCE OF
Tamar Stephens**
Life In Her Own Words

**Singin' the
Mycobacteria Blues**

**KEEPING ANGELS
IN A DUTCH STYLE
PLANTED AQUARIUM**

**Exploring the Otoliths of
*Pterophyllum scalare***

Altums in the Office

Tom shares his 220g display tank

Welcome to the new FinTAStic!

Susan and I are excited to share this fresh take and hope you enjoy reading this issue as much as we enjoyed putting it together. As a newer society member, volunteering to get the newsletter back

online seemed like a perfect opportunity to immediately contribute, but it would have been just pretty pages without your content. Thanks to everyone who heeded the call to write and send in photos!

This effort has been about embracing our future, but it is equally important to pay tribute to those who paved the way. Tamar Stephens, a longtime leader of The Angelfish Society, selflessly devoted countless hours to the betterment of the group. In this issue we share her story on [page 3](#).

Recently, while visiting AngelfishUSA, I had my first personal encounter with wild altums and they were a sight to behold! Tom Sontag combined his love of altums and woodworking to create a 220g-display masterpiece. Tom expects more growth, from both fish and plants, in this young tank, which is a perfect excuse for a future follow-up. Read about his experiences on [page 6](#).

Fernandez Roca shares research work from Spain on [page 13](#) regarding the otolith morphometric characteristics of the species *Pterophyllum scalare*. Even more impressive, the entire work was translated from Spanish and neatly packaged for inclusion here.

My main objective for this issue was a reboot as TV & film reboots have been well received lately (think BBC's Sherlock, J.J. Abrams' Star Trek and George Lucas' Star Wars—scratch the last one, two out of three is still pretty good odds!) While there's still plenty of ways to improve and grow, hopefully you'll agree we are heading down the right path.

Shawn Vann (shawnleon on TAF-II)
Newsletter Committee Chairman



CONTENTS

- 3 Farewell to Tamar Stephens**
Learn about the life of our former leader
- 4 Photography & Post Production**
How-to column from photo to Photoshop
- 4 From the Web**
A few items of interest from the internet
- 5 Singin' the Mycobacteria Blues**
We all dread the moment when an unknown disease strikes. Susan consulted Cornell University for an expert opinion
- 6 220g Altum Show Tank**
This issue's cover story takes us into the world of keeping altums
- 9 Angels in a Dutch Style Aquarium**
Our planted tank department debuts
- 11 Snapshots**
Each issue we'll showcase your favorite photos
- 13 Otoliths of *Pterophyllum scalare***
Research study into this angel's anatomy



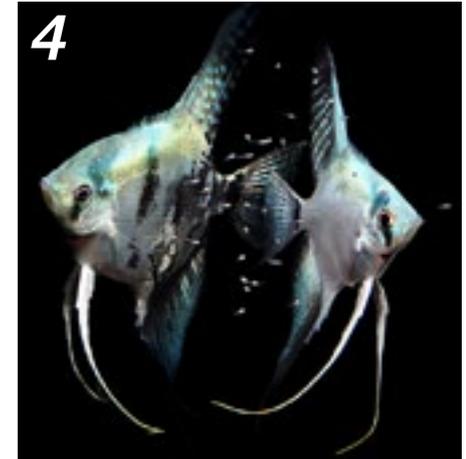
We are a collection of Angelfish enthusiasts, hobbyists and breeders who are interested in the advancement of our hobby through improvements in the quality of the fish we keep and breed. The Angelfish Society was founded in 2000.

To learn more or join, visit <http://theangelfishsociety.org>

Navigation Tips



This interactive PDF makes it easy to move between pages. The bottom left of each page has previous, next and home buttons. Follow multi-page stories using similar icons. Web addresses and **highlighted links** are active and will open pages in your web browser.



Farewell to Tamar Stephens

Tamar Stephens was devoted to her family and passions, including angelfish, until she passed peacefully on March 23, 2013. It was a terrible loss to all of us who knew her. Members described her as a mentor, friend and trusted leader, someone who cared deeply for, and gave much to, TAS. She will be remembered for her guidance, which led the society through good and tough times, and shaped the organization into what it is today.

Given all Tamar accomplished as a leading member and seven-year president of TAS, it would be easy to assume angelfish were her only interest. In actuality, it was only the tip of the iceberg. Our beloved friend and shepherd led a full life filled with diverse interests. Learn more about Tamar, in her own words, in the passages below. Her greatest gift to TAS was working relentlessly for its advancement. Our gift to her is steadfastly continuing her work.

I was born at home in Waubeka Wisconsin a long time ago. At present, my life revolves around work, family, bagpipes, and freshwater angelfish.

Work: I work for the State of Alaska doing oversight on cleanup of contamination at old military facilities. This has allowed me to travel to parts of Alaska many people never see. I often travel to remote Native villages on the North Slope and Seward Peninsula regions. I am amazed that people ever learned to survive and thrive in these remote areas where conditions are harsh most of the year.

Before moving to Alaska, I taught science classes at Ramona High School in Riverside, California. After moving to Alaska, I ended up going back to school to get my MS in Environmental Quality Science. While job-hunting for a “real” job, I did substitute teaching, drove a taxi, and did a lot of math tutoring of school age kids.

Family: I am happily married, have two wonderful sons, both married to comparably wonderful women, and I have two grandchildren, three grand-dogs, and one grand-cat. I like my family and treasure them deeply in my heart.

Bagpipes: I have been playing bagpipes since I was a teenager, and have been teaching for many, many years. My first instructor, John Rosenberger, was wonderful and introduced me to a very broad repertoire of tunes. This is the one musical instrument I was able to excel on, and it has been an important part of my life. I have been a member of the Fairbanks Red Hackle Pipe Band for over 20 years. In the past, I played with the Gordon Greys Pipe Band (now disbanded) and the Cameron Highlanders Pipe Band (still going strong, in San Diego, CA).

Angelfish: I started keeping freshwater angelfish as a hobby about 12 years ago, and have been a member of The Angelfish Society for several years. I have served in the past as Vice President, Secretary, and am currently President. I have also spent a lot of time on various committee work. I am proudest of my work on development of the Phenotype Library, and of the many PowerPoint presentations I have developed and presented for educational purposes at our monthly meetings.

My personal values include a deep caring for the environment, a desire to help people become more self-sufficient (I have started providing micro-loans through KIVA), respect for the rights and dignity of all people. I get some of my greatest satisfaction in life when I am giving of myself in some way that increases someone else’s capacity. I love teaching bagpipes and passing this musical tradition on to future generations. I have tutored for the Literacy Council of Alaska, and that has been very rewarding.

I am an avid reader. I have written one children’s book about a young boy who learns to play bagpipes from his grandfather that I think turned out well, but it needs some editing. I want to either



submit it for publication or self-publish it. I have a concept for another book. I would like to find time and energy to do more gardening, as I did when I was younger. I would like to find ways to do meaningful volunteer work, and expect that when I retire, I will devote much more time to volunteering.

Other hobbies I have enjoyed in the past include sewing, gardening, beekeeping, making home-made bread. There are other hobbies I would like to dabble with, such as trying my hand at soapmaking, quilting, or fulfilling my secret dream of building a harpsichord (and learning to play it).

My photo was taken at my younger son’s wedding in November, 2006. I played my bagpipes for the processional and recessional. It was a wonderful, colorful wedding, with a radiant bride and incredibly handsome men decked out in kilts in our family tartan. I’m not usually very photogenic, and this is the best photo of me in years! ❖

“Wind of Change” bagpipe music courtesy of <http://caber-records.com/music/>

Photography & Post-Production

By **Matt Pedersen**
Photos by Author

Matt recently shared the amazing results possible with a solid photography work-flow and we wanted to share his methods here. This excerpt is courtesy of Reef To Rainforest Media LLC, publishers of AMAZONAS and CORAL Magazines, and Reef2Rainforest.com.

Most of my Angelfish breeding has been accomplished using artificial incubation. But when all the larval tanks are full, parents are left to do with their eggs as they please. For the first time, this pairing of a male Gibb's Blue Smokey (Sm/+ - pb/pb) and a Lee Gordon 50% wild F2 Blue Ghost (S/+ - pb/pb) decided to be good parents, at least for a little while, showing off the

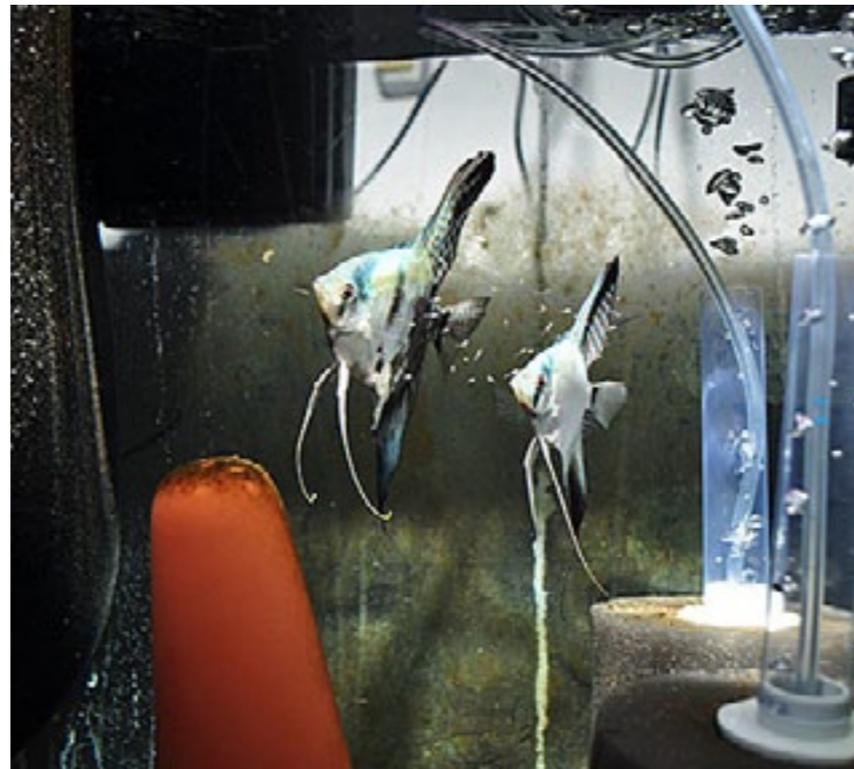


A male Blue Smokey Angelfish, left, from breeder Mike Gibbs, and female Blue Ghost Angel from Lee Gordon, guard their young family.

parental care that Cichlids are known for (a behavior I sorely miss in my marine fish breeding projects). The Angel pair decided to cooperate and gave me some great shots.

Of course, the above photo didn't come out of the camera looking that way. To give you a sense of context, here's what their tank actually looks like.

Read the full article on Reef2Rainforest.com to see Matt's process. ▶



This is a fair representation of the tank I was photographing.

Meet Matt Pedersen



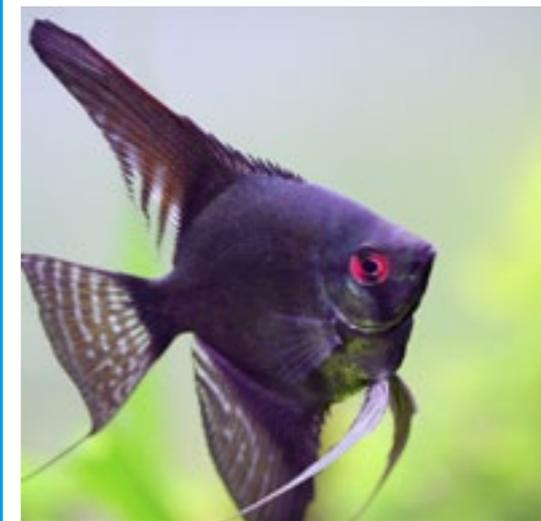
Matt is a Sr. Editor and Associate Publisher with Reef2Rainforest Media, LLC, including AMAZONAS & CORAL Magazines. Matt has 31 years as an aquarist, has worked in most facets of the aquarium trade, is an active hobbyist and fish breeder (both marine and freshwater), and was recognized as the 2009 MASNA Aquarist of the Year.

Here's a few of the interesting things we've found on the web. If you have that one special bookmark you visit often, please share a link!



Mikolji Documentaries has a series of cool videos where they visit a locale and visually share the area while stocking an aquarium using fish and plants. See the video on Youtube.com.

Inspired by the planted tanks featured here? Looking for a robust nutrient calculator to help you get started? Visit [Yet Another Nutrient Calculator](#) (Yes, this is really the name!) and build custom dosing plans for various manufacturers using multiple fertilizing systems.



Flickr user sakichin has a small collection of aquarium photos that'll make you grab your gear and get to shooting. See the captivating images in the "My Aquarium" photosteam [here](#).

FinTASTic claims no ownership of the above items.

Singin' the Mycobacteria Blues

By Susan Schuster

WHAT WAS THIS? Actually, the jury's still out. Here's my story...

A group of pre-breeders I'd bought were beginning to pair up, so I moved them from the lower tank they were in to a tank where I could keep a closer eye on them. Not long after I discovered that one (the smallest of the bunch) had several pink lesions on its body and had unilateral exophthalmia. I quickly quarantined it, then discovered that two of the others also had the same pink lesions, one of which, on one of them, looked like a mini crater that was dangerously close to the eye. Something...call it intuition, or whatever you will...was telling me that I had big troubles. "What would I not want to have in my fish room?" I thought. Well, what little I knew about a mycobacterial infection had that right up at the top of the list.

First of all, what is it? Actually, there are several species within the genus *Mycobacterium*, some of which can cause serious illness in humans. But the mycobacteriosis in fish, although commonly referred to as "Fish TB," is actually caused by non-tuberculous bacteria. Worse yet though, it's transmissible to humans. It's found everywhere there's water, but in the aquarium it can be found not only in affected fish, but also in biofilms and filters, or shed right into the water.

Mycobacteriosis is a progressive disease with presenting symptoms that can take many forms. You might find scale loss, skin lesions or deep hemorrhagic ulcers, a history of reproductive problems, a refusal to eat, sluggishness, or extreme abdominal distention/fluid accumulation. Currently the only way to make a definitive diagnosis is to sacrifice the fish. If there is a mycobacterial infection a necropsy should reveal evidence of granulomas, i.e. small nodular lesions, on the liver, kidneys, and spleen. The operative word being "should," because this, too, is not always the case.

So as I was slowly wallowing my way through this maze this is what was happening in the fish room. I had euthanized the small angel with the original presenting symptoms because after a round of antibiotics there was not only no evidence of improvement, but a progressive decline in condition. There was a continual refusal to

eat and a listlessness that bordered on distress. I "nuked" the tank of the remaining five fish with a round of Kanamycin/Furan-2 combination, which only resulted in destroying my biological filter but seemed to do nothing for the skin lesions. Now I wanted answers, so it was on to the Department of Microbiology and Immunology in the Aquatic Animal Health Program at Cornell University with the two fish that had the skin lesions.

I was extremely concerned with the utilitarian aspects of dealing with this disease. The following questions of mine were answered by the Professor of Aquatic Animal Medicine who was in charge of my case:

Q: How are mycobacteria transmitted?

A: Not only fish to fish through water or ingestion of bacteria (by a fish eating a dead fish), which is known as horizontal transmission, but also vertically from adult to offspring within the reproductive products.

Q: Does antibacterial soap kill mycobacteria on hands?

A: "In spite of what you may read in the popular aquarium literature or on the internet, there are no antibiotic treatments that have been proven to be effective for the treatment of mycobacteria in fish." The big issue is that overuse of antibacterial soap could lead to more antibacterial resistance, so the use of rubber gloves is suggested.

Q: Do mycobacteria live out of water?

A: "These bacteria are ubiquitous and have an extremely tough exterior wall. They can live outside of water; but I am not aware of any studies of how long mycobacteria capable of infecting fish can live out of water. Probably the big key is "how dry" does a mycobacteria need to be to kill it. I don't think anyone knows the answer to this. I think the cleaning of aquaria and associated equipment with Lysol [professional grade, not household] would be the best option to practice."

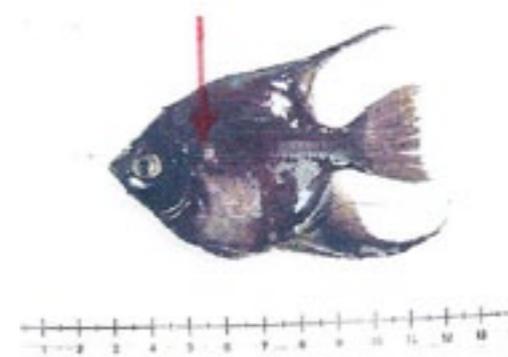
Q: How long should a fish be medicated if it is a mycobacterial infection?

A: "The general consensus of the scientific community is that there are no effective treatments for mycobacterial infections in fish."

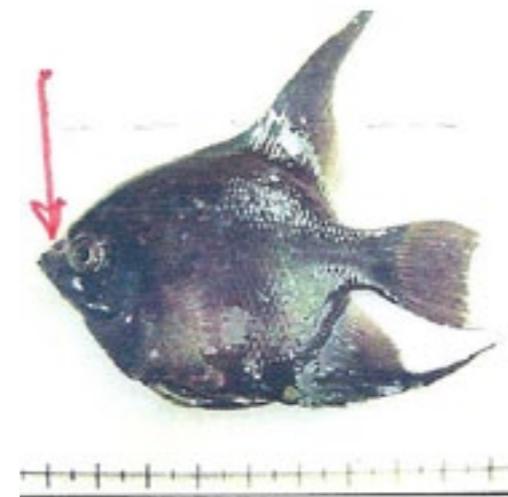
Q: Are infected fish carriers?

A: "Our recommendation is that the fish be destroyed. If these fish are used as broodfish they will prolong the infection in the system."

The necropsies of the fish I sent consisted of both gross and micro-



Scanned photos from Cornell University's response letter to Susan



scopic external examinations, bacterial cultures from the kidneys, and histopathology of internal organs and the external lesions. The eventual diagnosis was Methemoglobinemia, most likely due to the build of nitrite and/or ammonia from the havoc my over-

zealous use of Kanamycin/Furan-2 had wreaked on the biological filter (Methemoglobinemia is a blood disorder; it is a form of hemoglobin caused by excessive nitrite that cannot release oxygen effectively to the tissues). There were no significant bacteriological findings. So since the Methemoglobinemia symptoms were secondary to the original external lesions I'm still left with no definitive answers.

And while all of this was unfolding, things were still going on in the tank of three remaining fish here. I'd corrected the water parameters and was continuing to carry out continual water changes in hopes of a positive effect. But now all three fish appeared "moth eaten" and all fins except the pectorals began to look ratty. During the initial external evaluation of the fish sent to Cornell some small protozoans were found on their skin. I thought maybe that was it, so I dosed the three remaining fish with a round of Flubendazole. Two showed improvement, and the remaining one, though acting/eating normally, now has an extremely distended abdomen and has been isolated. *Continued on page 15* ▶

An Altum Show Tank in the Office

By Tom Sontag
Photos by Author

I originally brought a 75 gallon (280 liter) aquarium into my office about ten years ago. My job as an investment broker was particularly stressful during the tech stock collapse and bear market of 2002. It just seemed that what was needed was some of the peace I had enjoyed from fish keeping in my youth. I enjoyed having *P. scalare* swim around their aquatic garden of live plants near my desk so much that when I moved into a larger office, I decided to get a larger tank. Why? (Do I really need to explain this?) Not only because it would be larger, but because a taller tank could house altums and my dream tank could become reality. ▶

Fitting In: The single *Inirida* altum on the left hangs out with the Atabapo crowd.



Above: The hardscape and plants in this overview shot show how the scenic backdrop can double as hiding places. **Below:** A torn caudal fin does not reduce this altum's beauty.



I liked having scalare, but I sold them to step up to the superior look and size of wild altums. So last spring I built a stand. My primary hobby of woodworking came in handy when it came time to build a furniture grade stand out of walnut. The stand houses two large Eheim canister filters and the hose I use to reach the kitchen 50' (16m) away. The tank is a standard 220 gallon, which has a 6' by 2' footprint and is 30" tall (830 liters, 183 x 61 x 76 cm). I kept the 75 and use it as a CO₂-injected nursery for propagating plants to move into the larger space. For example, the *Nymphoides* sp. 'Taiwan' lily that you see all over the big tank began as two plants in the 75.

The altum import season began just as the tank was cycling and I excitedly brought in fish before I had completed my water change setup. I soon learned the importance of regular large changes and how I could make them happen in my situation. An office setting is not ideal for an RO system so I have a 55 gallon water barrel hidden behind a screen for aging water. I make a 25% water change twice per week which always seems appreciated, but I lost a few altums before I perfected this system. They now reside in a pH of ~7.0; temperature is around 80 degrees F (27C). I am fortunate to live a mile from my office, so special trips for water changes and tank



maintenance are less trouble than they could be.

I ended up with 4 altums from Rio Inirida and another 7 altums from Rio Atabapo. This is what my suppliers had in stock. I do not expect large differences in how they look as adults, but I can see differences now, primarily due to a difference in their size and maturity. All are last year's spawn – just over one year old now – and are beginning to get the size and shape of full adults. The Inirida fish are just beginning to get the red spots and iridescence on their crown that the larger Atabapo fish already have in abundance. They all exhibit majestic grandeur that still takes my breath away.

The hardscape and plants are far from a true biotope – it was never my goal – but instead offer a scenic backdrop for the fish to display against. The only extra effort for the plants besides regular pruning is some root tabs inserted into the Flourite substrate. The denser plantings in back offer the fish a place to hide when I change water and at night. It is amazing how effectively they disappear when they want to. As soon as the lights come on though, they glide out front and make their group poses front and center. A school of forty-something rummynose tetras and a minimal cleanup crew complete the population. Why add anything else when the angels steal the show so completely? ▶

Subtle Color: The iridescence on the crown of two Atabapo fish.



I do manage to accomplish work in this setting. In between financial research and analysis there is no better place to rest my eyes than on these fish in this tank, where the pace and concerns are so far removed from my human ones that I can easily gain perspective and think. At only nine months old, the garden side of this project is no more mature than the angels. I am looking forward to watching it all grow. ◀

Good Company: The altums keep a tighter school than any group of *P. scalar* I have had.



Meet Tom Sontag

Tom lives in Saint Louis with his wife Susan and their standard poodle Fred. His interests include finance, chess, gardening, woodworking, urban logging, keeping freshwater fish tanks and aquatic gardening as well as life with a large rescue dog. He can be contacted at LumberLogsLLC@gmail.com

Angels in a *Dutch Style* Tank It's Possible!

By Janis Grieshaber
Photos by Author

My passion for keeping fish and plants started in the 60's. My father always had a tank or two and would collect local plants and even small fish. I've been totally enthralled ever since. I kept a 20g through my teens and after buying my first house in 1980 I bought my first larger aquarium along with my first angelfish. Since then my love for angelfish and planted tanks has only deepened, which lead me to invest in my current 220g heavily planted angelfish tank.

I would like to share the trials and successes of keeping a planted tank with angelfish. Angelfish are my absolute favorite freshwater fish and I wanted several, along with a lot of delicate and rare plants. This was, and still often is quite a challenge, but is obtainable with a little creativity.

I chose to do an organic potting soil substrate in this tank and can honestly say it was for the benefit of both the plants and fish. I used a product called Just Natural Organic Potting Soil that contains a very high concentration of peat. From past use I knew that once the peat began slowly breaking down it would act to naturally soften the water, which would be very beneficial to many of the plants and the angelfish. It also supplies a very nutritious substrate for plants to grow.

The soil is capped with Eco Complete to keep it nicely contained from any water disturbances, which prevents it making a mess in the tank. Both the soil and Eco Complete have a high CEC (cation exchange capacity), which allows the substrate to absorb and store nutrients from detritus and the water column for plant use. The soil is a win/win combination for both plants and Angels.



Overview photo of Janis' 220g tank featuring angels and her collection of unique flora. The project started with 14 juveniles but two adult males were removed due to aggressiveness.

The one thing I learned early on while keeping angelfish in planted tanks is that they love to nibble, sometimes quite aggressively, on many types of aquarium plants. They especially love plants with soft leaves, which of course include some of the most beautiful of all aquarium plants, such as *Rotala Wallichii*, *Cabomba's*, *Myrio's*, and even surprisingly *Pogostemon helferi*, which have much thicker leaves.

In the beginning of this tank's evolution I planted hardier, larger and tougher leafed plants, such as different species of swords and anubias. The tank was originally stocked with 14 dime sized Veil and Super Veil angelfish. The plants and angelfish equally shared being the main focus of the tank. Both plants and angels grew and matured for almost a year in relative harmony. After that time, however, the tank's dynamics changed.

The angelfish, as anticipated, began aggressively picking at plants and I was ready to transition from the large swords to more delicate and rare plants, making the tank more of a Dutch Style aquascape. I was determined to figure out a way to make my two loves coexist. I'm sure many in the planted tank community thought I was daft as Dutch Style aquascapes are focused entirely on plants with small, plant friendly fish added as an afterthought.

I added delicate plants species like *Rotala Wallichii*, among others, and waited to see how the angels reacted. No surprise... the new plant additions became their new favorite food items in the tank. I had anticipated this and put my plan to divert my angelfish's attention to vegetables instead of plants into motion. I had always fed cooked, shelled peas a couple times a week but this obviously didn't meet the angel's requirement or desire for plant material.

It seemed they enjoyed nibbling on plants throughout the day so I began first with feeding just a few smashed peas prepared as above daily, along with their normal daily feeding. This helped but not enough. My next plan of action was to add 2- 1/4" slices of zucchini (cooked, then rapidly cooled) hung on the glass with veggie clips. This allows the angels to pick at the zucchini throughout the day. I rotate between zucchini and pieces of broccoli florets every few days. This method has been working very well over the past months.

There are many new, and some rare plants, started in the tank and all has been progressing very well, plants growing and barely any interest much less taste testing on them. Finally after many years I have attained my planted dream tank along with having my beloved angels, both beautiful and coexisting peacefully. ▶



Close-Up: Various shoots of tank occupants, including majestic veil and super veil varieties.

The hardscape and plants are far from a true biotope – it was never my goal – but instead offer a scenic backdrop for the fish to display against. The only extra effort for the plants besides regular pruning is some root tabs inserted into the Flourite substrate. The denser plantings in back offer the fish a place to hide at night and when I conduct water changes. It is amazing how effectively they disappear when they want to. As soon as the lights come on though, they glide out front and make their group poses front and center. A school of forty-something rummynose tetras and a minimal cleanup crew complete the population. Why add anything else when the angels steal the show so completely?



Above: Cabomba furcara flower with Cardinal Tetras **Right:** Plants clockwise from top, Rotala Macrandra, Red Tiger Lotus (Nymphaea pubescens), Cabomba Furcata, Rotala Wallichii

I do manage to accomplish work in this setting. In between financial research and analysis there is no better place to rest my eyes than on these fish in this tank, where the pace and concerns are so far removed from my human ones that I can easily gain perspective and think. At only nine months old, the garden side of this project is no more mature than the angels. I am looking forward to watching it all grow up. 🌱

Platinum gold marble pearscale



Tank Set-up:

Tank: 220 gallon 72”Lx24”Wx30”H
Lighting: AquaticLife 72” fixture 3x150w HID metal halide, 4x 39w T5HO, 6x1W LED lunar light, all on timer. Running time is 10 hours for the T5HO’s with a 6 hour light burst for the Metal Halides
Filtration: 4 Fluval 406’s one with an Aqua Ultraviolet Advantage 2000+ 15 Watt UV Sterilizer
Heating: 3x 300W Fluval E Series Powerheads: 2x 240gph Hydor Koralia Nano pumps (for gentle added circulation due to tank size)
Substrate: 1-1/2” organic soil, capped with 1-1/2” Eco-Complete Liquid Carbon glutaraldehyde 1ml per 5 gallons daily
 *Note I do not use CO2

Water Parameters:

KH: 4
 GH: 5
 PH: 7.0
 Iron: .3
 Nitrates 10 ppm
 Phosphates: .2 ppm
 Ferts: dosing PPS Pro daily
 Water change 50% 1x week

Flora:

Ludwigia sp. ‘Senegalensis’
 Rotala Mini Butterfly
 Persicaria sp. ‘Kawagoeanum’
 Aciotis acuminifolia
 Ludwigia sp. ‘Atlantis’
 Ludwigia sp. ‘Tornado curly’
 Syngonanthus sp. ‘Belem’
 Persicaria sp. ‘Sao Paulo’

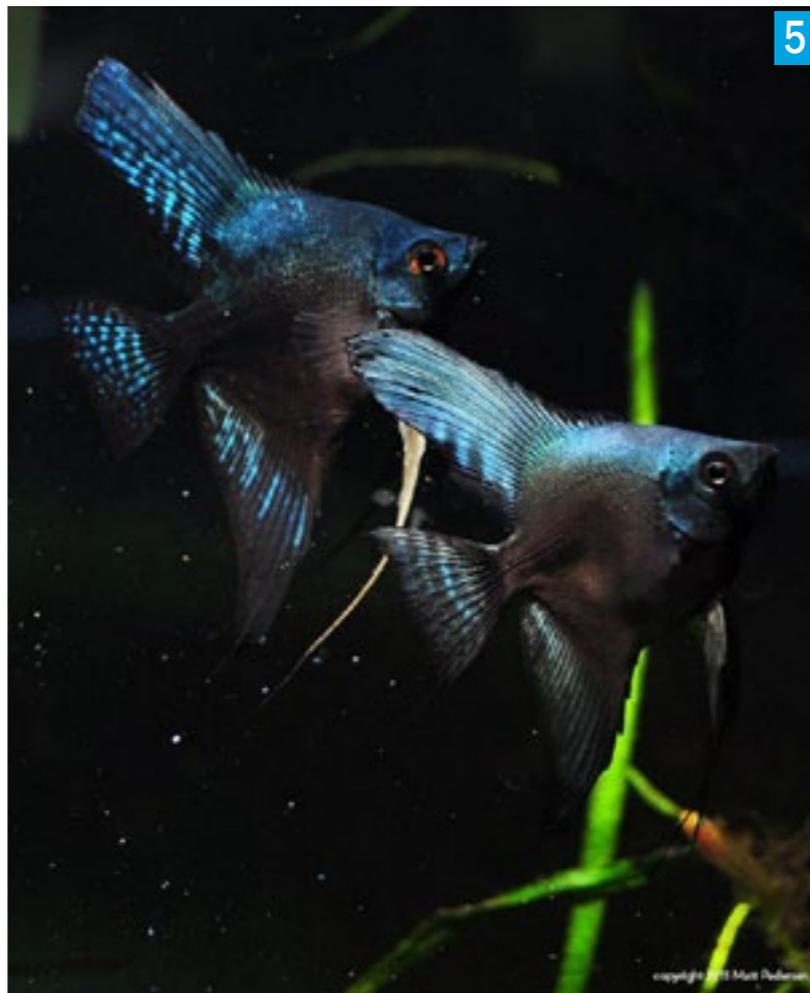
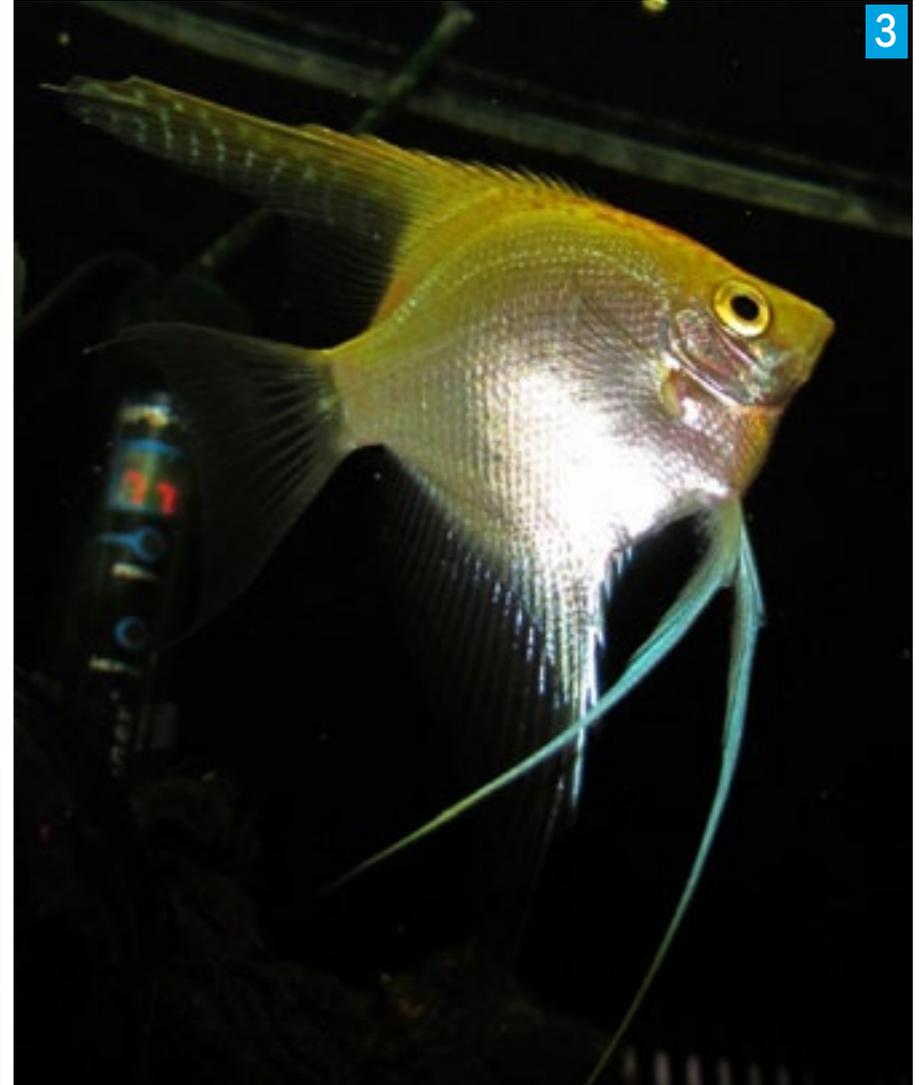
Limnophila aromatica ‘hippuroides’
 Proserpinaca Palustris
 Nesaea pedicellata ‘Golden’
 Rotala macrandra
 Rotala Wallichii
 Cabomba Furcata
 Alternanthera Reinekii mini
 Anubias barteri v. Nana
 Anubia Nana Petite
 Bolbitus heudelotii
 Pogostemon helferi
 Java Fern, Lace (Microsorium pteropus v. Windelov)
 Cryptocoryne wendtii ‘Florida Sunset’
 Tiger Lotus, Red (Nymphaea zenkeri)
 Cryptocoryne Parva

Fauna:

12 Veil and Super Veil angelfish
 20 Rummynose Tetras
 18 Cardinal Tetras
 1 Pair German Blue Rams
 3 YoYo loaches
 5 Corydoras sterbai
 5 Corydoras panda
 5 Corydoras agassizi
 6 Corydoras melini
 6 Corydoras julli
 8 Threadfin Rainbow Fish
 18 Otocinclus Catfish
 3 Whiptail Cats (Farlowella gracilis)
 1 Longfin Albino Bristlenose Pleco

Plants clockwise from top left: Corkscrew Vallisneria (Vallisneria americana var. biwaensis), Limnophila hippuroides, Rotala Wallichii, Rotala Macrandra, Crypt Wendtii Bronze, Nesaea pedicellata ‘Golden’, Proserpinaca palustris ‘Cuba’, and Java Fern ‘Wendilov’



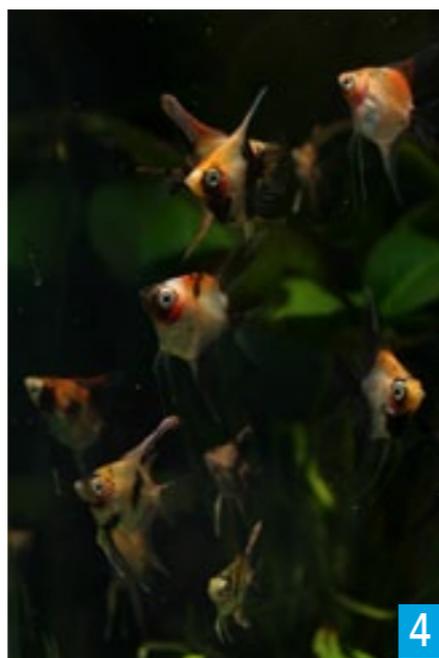
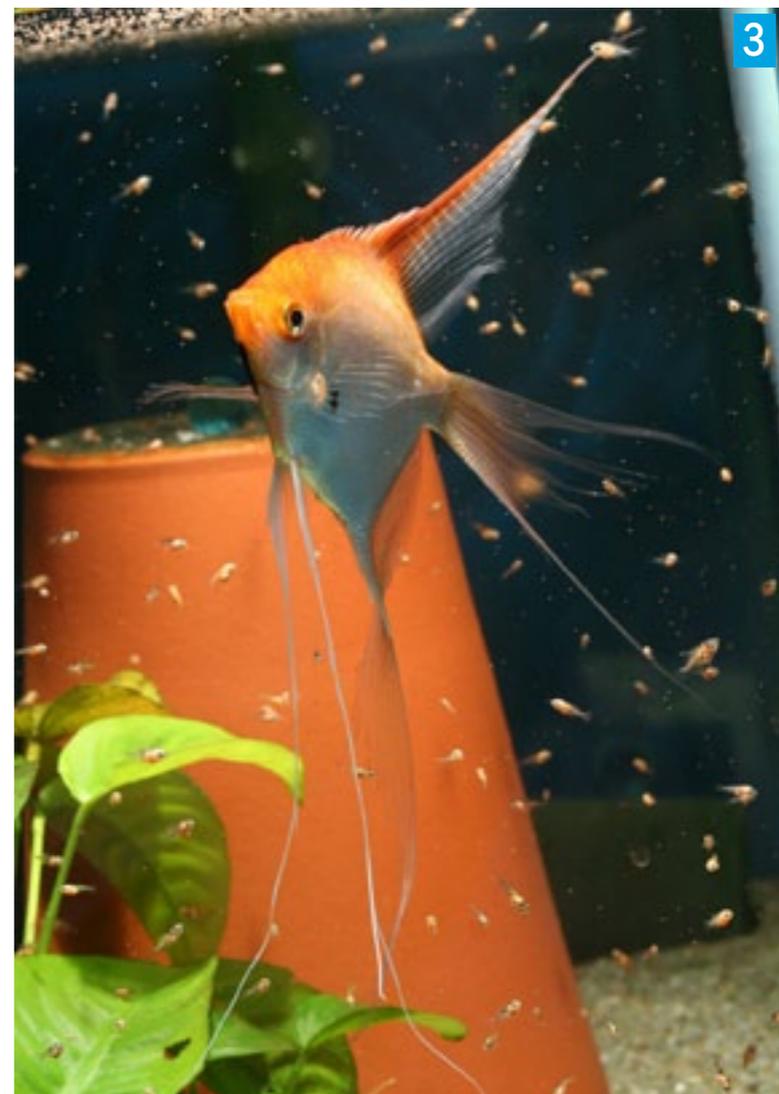
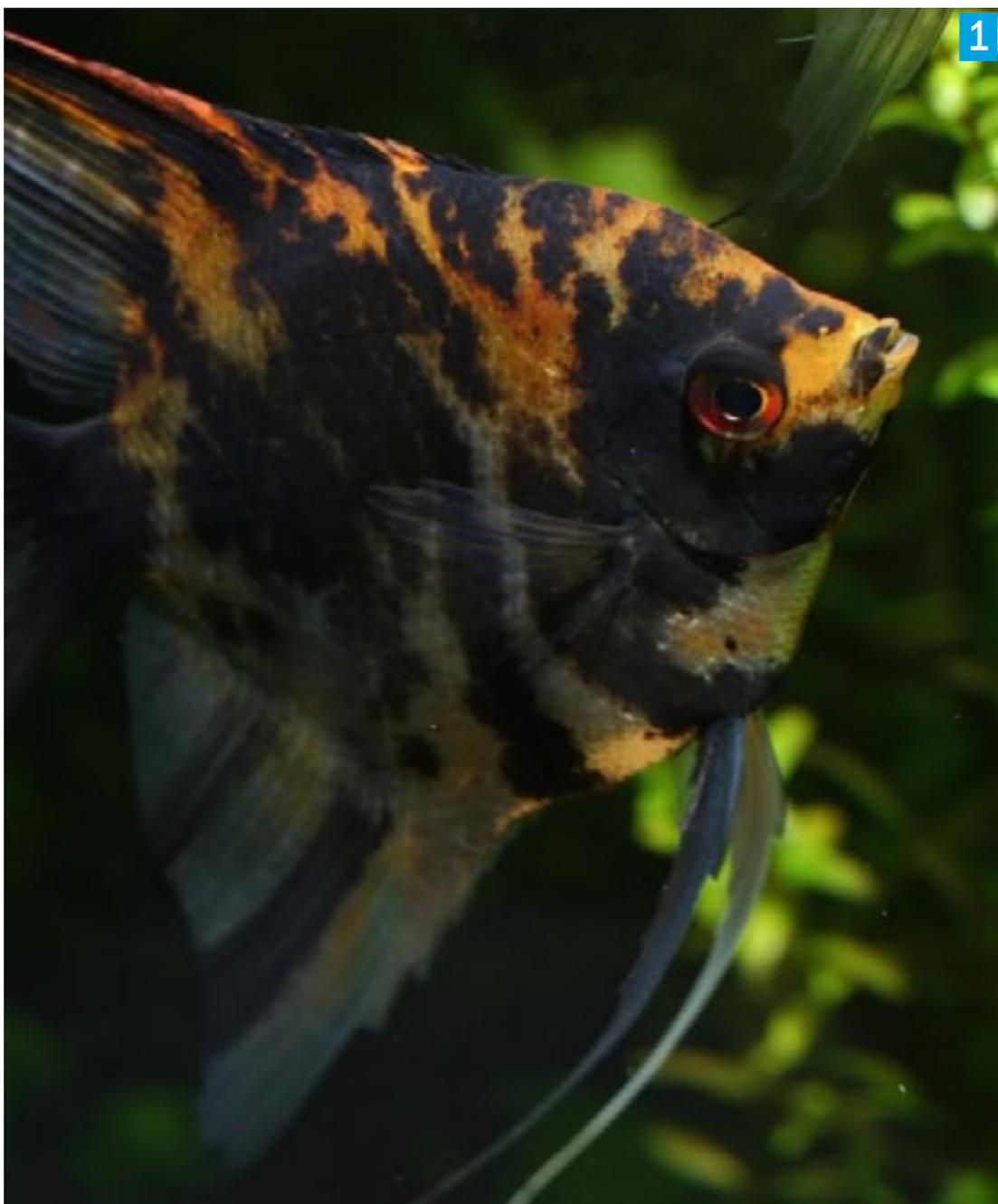


Photos by Neptune2 on TAF-II

- 1:** Green being my favorite color makes it easy to guess which is my favorite angel.
- 2:** My only Koi is a local pet shop buy that seems to keep on growing.
- 3:** The Gold and Platinum angels I have are very photogenic! They seem to pose for me even when it's not feeding time.

Photos by Matt Pedersen (mpedersen on TAF-II)

- 4:** The first one is a pair of "Tank Raised Altum Angelfish", at least that's how they were being offered at the local shop where I found them. They are not altums, and for that matter, probably not even the "Peruvian" Altum either. Simply a nice pair of silver angelfish.
- 5:** The second photo is 2 young Pinoy's; the one in the foreground is a Pinoy Ghost Widefin from Lee Gordon's breeding, the one in back is a Pinoy Smokey from Mike Gibb's breeding.



Photos by Rob Wilden, The Aquatic Habitat, UK (BigBen on TAF-II)

- 1:** For several years I've been working towards blue marbles, this fish came from a pairing of a male marble and a female blue silver, so it's het. for Philippine blue. What particularly pleased me about, not only this fish, but many of it's siblings. Although I no longer have this fish, I shall be working on the red orange expression with some of it's siblings.
- 2:** This is a young fish which I've not yet bred from, I believe it to be a streaked blue chocolate (probably ghost) but until I breed from it I can't be sure of that ID.
- 3:** Best to describe this one as a veiltail gold marble ghost (Gm/g - S/+ - V/+), but I've a hunch that there's something slightly unusual going on in this one's genetic make-up.

4: Koi of the quality of those available in the USA are simply not available here in the UK. I'm not the only one working on trying to improve that situation, these are a step in the road.

5: Is a sibling of photo 2, but taken when they were younger, it's a pinoy paraiba, almost certainly a chocolate (as opposed to a smokey)

Otoliths of *Pterophyllum scalare*

By Juan Fco. Fernández Roca
(Atreyu on The Angelfish Society Forum)

Summary: We present otolith morphometric characteristics of the species *Pterophyllum scalare*, making a tour of the otoliths, “Lapillus”, “Asteriscus” and “Sagitta”. This presentation will help us understand and publicize the importance of these elements of our Angelfish bone.

Introduction: When looking for previously published material on the otoliths of our Angelfish, I must admit that I only found one publication. “New contributions to the knowledge of the current fish” by Juan Bauza and Manuel Compte, pages 79, 80 and 92. So our work is to develop and expand specific information on Angelfish Otoliths.

The Otoliths

For those who are new to this world inside our fish, several questions will arise, but perhaps the most immediate, “What are they and what are they for?”



Figure 1

The otoliths are one of the most important parts of the inner ear of fish, particularly bony fish (teleosts) are calcareous forms constituted largely by deposition of aragonite (calcium carbonate CaCO₃) and protein conchiolin.

These are found within a few bags located in an area near the braincase and are known as “Otic Capsules.” To be precise, there are three pairs of members (six in total), known as Lapillus (2), Asteriscus (2), and Sagitta (2), one set of each of the pieces located in each satchet and on both sides of the fish.

Otoliths keep a similar characteristic shape in each species, taking into account that each however allow for identification and therefore categorization due to their main forms.

The Lapillus Otolith

Its size is very small and is the tiniest otolith, in some cases barely the size of a pinhead. These otoliths “Lapillus” *P. scalare* correspond to a standard size 5cm. Its shape resembles that of a kidney. These Otolith are included in a camera called “Utricle” and the same as the rest of the otic capsule it is submerged in a liquid that is the endolymph. The primary function of these otoliths is to act as informing level of position.



Figure 2



Figure 3



Figure 4



Figure 5

The Asteriscus Otolith

Another otolith is the “Asteriscus,” in most cases it is somewhat larger in size than the “Lapillus,” the otoliths correspond to specimen about 5cm standard length. The “Asteriscus” are located in a chamber called “Lagena.” These, together with the last otolith called “Sagitta,” are actually responsible for the heaving, being this otolith “Asteriscus,” who communicates the vibrations to the brain organs.



Figure 6



Figure 7



Figure 8



Figure 9



Figure 10



Figure 11



Figure 12



Figure 13

The Sagitta Otolith

The otolith “Sagitta” is the most interesting and under research, yielding valuable information on *P. scalare* growth and the stages through which it has passed through its life. Nowadays it is known that the endolymph liquid keeps on depositing these calcareous layers in a concentric way that creates some rings which corresponds to the different growth serials, so that observing the number of rings, we can guess the age of the fish.

Perhaps a common mistake is to think that the size will always correspond with the age of *P. scalare*, however it has been found that the size and deposit of these calcareous layers are influenced by the environment in which they develop. If this is more or less favorable, there will be more space between the rings. If the fish has gone through stages in which the habitat has not been favorable (including food of course), the rings will be closer together than in times of splendor.

The “Sagitta” is located in the camera called “Saccule” and it is the otolith that first receives the vibrations, therefore it will be the one that transmits the vibrations to the otolith “Asteriscus.” ▶

The following sagittas belong to species whose standard length 5cm round.



Figure 14



Figure 15



Figure 16



Figure 17



Figure 18



Figure 19



Figure 20



Figure 21



Figure 20



Figure 21

At this point, we will look into more details related to otolith “Sagitta” and its morphology. The otoliths “Sagitta” are described morphologically in some publications, their names are applicable to all species and in this case it will apply to *Pterophyllum scalare*.



Figure 24

The contour of the otolith from an external point of view allow us to establish comparisons, studies, etc. On the left we can identify the first element, “Face” and “Antirostrum,” between which a hollow is created called “Escotadura.” These prominences and depressions vary from ones to other otoliths, but we have observed that these patterns are always the same.

The top following with the “Antirostrum” is called “Dorsal Edge” and the bottom below the “Face” is “Edge Belly.” In the previous photos of otoliths “Sagitta” we can see the “Face” and “Antirostrum” keep some parallelisms, in the case of the regions “Edge Dorsal” and “Ventral edge” rather significant differences can appear. The differences highlight the presence in many of these otoliths, of a shape in the area called “Edge Belly.”



Figure 25

The next element we see in these otoliths is a depression in the limestone formation, running it from the “cutout” until almost the opposite region of the otolith. This depression is known as “Groove” (Sulcus Acusticus), is in contact with the “Mácula,” constituted by nerve endings, connected to the auditory nerve.

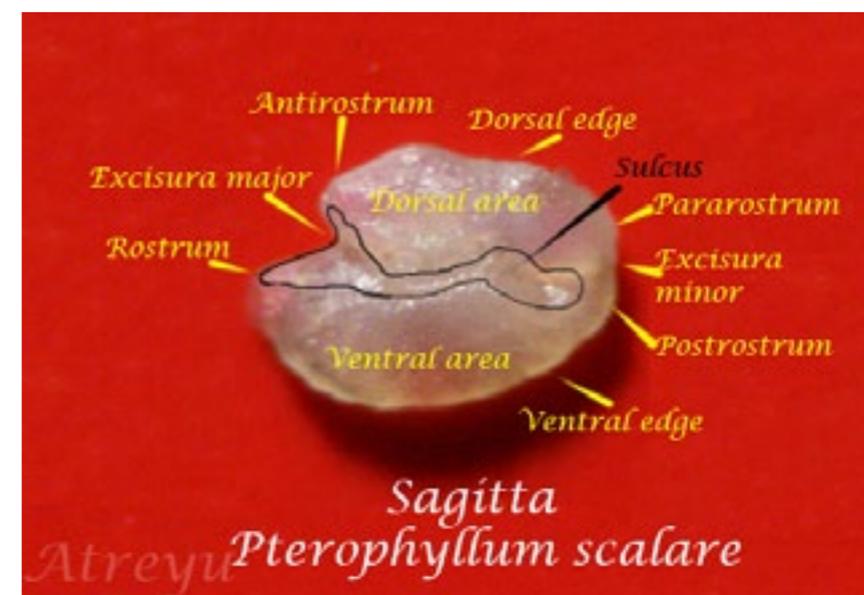


Figure 26

In the groove we can also identify some parts, starting from the area “Rostrum” and “Excisura major” we find the region called “Ostium.” In our *Pterophyllum* it is wide, narrowing as it starts the channel calling this area “Collum”, moving the channel it forms the area known as “Peaks,” where small salient are formed. The “Sulcus” will end up in an area called “Cauda.” This area increases significantly in size, presenting a depression over the face of the otolith and acquiring an oval shape. ▶



Figure 27

Discussion

Otolith “Sagitta” has a moderate thickness, oblong and shaped with not deep Sulcus. It presents perfectly differentiated the Cauda concavity (being oval), shows the edges in most analyzed sagittas in a rounded shape. ⚡

Conclusions

The otoliths “Sagitta” both left and right, have little difference, keeping symmetry in their formation.

References Graphics

- Fig.1 – Otoliths *Pterophyllum scalare*.
- Fig.2 – Otolith Lapillus, exemplary measures 04e.
- Fig.3 - Otolith Lapillus, exemplary measures 04f.
- Fig.4 - Otolith Lapillus, exemplary measures 01e.
- Fig.5 - Otolith Lapillus, exemplary measures 01f.
- Fig.6 – Otolith Asteriscus, exemplary measures 03c.
- Fig.7 – Otolith Asteriscus, exemplary measures 03d.
- Fig.8 – Otolith Asteriscus, exemplary measures 04c.
- Fig.9 – Otolith Asteriscus, exemplary measures 04d.
- Fig.10 – Otolith Asteriscus, exemplary measures 02c.
- Fig.11 – Otolith Asteriscus, exemplary measures 02d.
- Fig.12 – Otolith Asteriscus, exemplary measures 01c.
- Fig.13 – Otolith Asteriscus, exemplary measures 01d.
- Fig.14 – Otolith Sagitta, exemplary measures 01b.
- Fig.15 – Otolith Sagitta, exemplary measures 01a.
- Fig.16 – Otolith Sagitta, exemplary measures 02a.
- Fig.17 – Otolith Sagitta, exemplary measures 02b.
- Fig.18 – Otolith Sagitta, exemplary measures 03a.
- Fig.19 – Otolith Sagitta, exemplary measures 03b.
- Fig.20 – Otolith Sagitta, exemplary measures 04a.
- Fig.21 – Otolith Sagitta, exemplary measures 04b.

- Fig.22 – Otolith Sagitta, exemplary measures 05a.
- Fig.23 – Otolith Sagitta, exemplary measures 05b.
- Fig.24 – Otolith Sagitta, measures.
- Fig.25 – Otolith Sagitta, morphology_1.
- Fig.26 – Otolith Sagitta, morphology_2.
- Fig.27 – Otolith Sagitta, morphology_3.

Acknowledgments

I would like to thank the Newsletter Committee for the great efforts in adaptations and translations from texts trying to bridge differences between English and Spanish and the deference shown.

References

- Gallardo Cabello, M. 2012. Study of the otoliths of Stripped Mullet Mugil cephalus Linnaeus, 1758 in Mexican Central Pacific. Journal of Fisheries and Aquatic Science 7 (6). pp: 346-363. ISSN: 1816-4927
- Nelly Aloisi, Patricia. 1990. Características morfológicas y morfométricas de los otolitos de tres especies de Pejerrey de la Costa Marplatense. Universidad Nacional De Mar Del Plata. Facultad de Ciencias Exactas y Naturales. págs: 25.
- Romero, Aldemaro. El lenguaje de los peces. Museo de zoología de Barcelona. Departamento de Hidrozoología. pp: 439-442 págs.
- Simmons John E. 2005. Cuidado manejo y conservación de las colecciones biológicas. Universidad Nacional de Colombia. Págs: 146. ISBN: 938-39-6969-1.
- Tuset Andújar, Víctor Manuel. Morfología del otolito sagitta y determinación del crecimiento en especies del género serranus (osteichthyes, serranidae). Universidad de la Laguna. Departamento de Biología animal. págs: 234.
- Tuset, Victor M. 2008. Otolith atlas for the western Mediterranean, north and central eastern Atlantic. Scientia Marina 72S1. Barcelona. págs: 192. ISSN: 0214-8358
- Viera, Martina. 2011. Características ecomorfológicas de los otolitos Sagitta de Genypterus blacodes y Genypterus brasiliensis provenientes de la zona común de pesca Argentino-Uruguay. Universidad de la República Uruguay. Facultad de ciencias. Págs: 36

Meet Fernandez Roca



Fernandez lives in Cartagena, Spain. He is a professor of electronic equipment. For the past 10 years he has been dedicated exclusively to the study of *Pterophyllum scalare* genetics, diseases, reproduction, anatomy, etc. He believes the *P. scalare* is “That great unknown.” He was a contributor to the now defunct Foro Dr. Pez. Currently he is a moderator at the Foro Planetacuario in his field of “Scalar and Related Sciences,” where, together with other partners, develops “The Encyclopedia of Pterophyllum.” He can be contacted at cartagena@fernandezroca.com

◀ *Mycobacteria continued from page 5*

Suffice it to say I am anal about keeping whatever this is from the rest of my fish (so far so good). All equipment used on any isolation tank is kept separate. I use a professional grade germicide on all tanks and their contents that held infected fish. And I use shoulder length disposable gloves when doing anything in an infected tank that is occupied. Yep, now I have something in common with The Incredible Dr. Pol. Except that when I’m done I have water on my glove and he has, well, er, used grass on his.

If you’d like more information on mycobacteria go to <http://bettasource.com/more-betta/disease-id-treatment/mycobacteria/>. The article’s author, Sherolyn Craig of Basement Bettas, knows firsthand the devastation a mycobacterial infection can bring when it gains a foothold in your breeding operation.

Meanwhile I continue hopeful optimism, steadfast skepticism, and perpetual vigilance. This is the melody that is currently playing out in the Schuster fish room. ⚡

American Cichlid Association National Convention July 18-21, 2013 Denver, Colorado



The Rocky Mountain Cichlid Association proudly welcomes you! There will be world-class speakers, tours, auctions, friends and fish.

Learn more at www.2013aca.com

East Coast Monster Fish Konvention September 20-22, 2013 Sheraton Hotel Parsippany, New Jersey



Learn more at <http://eastcoastmonsterfish.com/>

Contribute to FinTAStic

We want to share your story! Articles on various aspects of fish keeping, including breeding, general health, collecting and more are welcome. Write us as newslettercommittee@theangelfishsociety.org

It’s never too early to participate in the next issue, the longer you wait, the more life will get in the way. Send your story as a text file and attach the photos... **it’s that easy to start!** We’ll reach out with questions and guidance as needed.

[Additional submission tips & guidelines here](#)