

ST. CATHARINES & AREA AQUARIUM SOCIETY NEWSLETTER: “The Scat”



MAY 2017: Vol. 29 #09



Behind the “Smile” of the Axolotl: An Aquatic & Medical Marvel

In recent years, I have enjoyed keeping and breeding the “axolotl” (pronounced “ACK-suh-LAH-tuhl”). Many aquarists are attracted to its unusual benevolent facial appearance or “smile” which explains the excitement it has generated in the hobby. Aquaria aside, the axolotl is an invaluable research animal, most notably for its ability to regenerate its body parts. In this article, I’d like to offer you not only an introduction to this fun aquarium creature, but explore some of its qualities which will fascinate you.

The axolotl is an amphibian and more specifically, a salamander. Its scientific name, “*Ambystoma mexicanum*” hints to its nature and origins. “*Ambystoma*” is a genus of salamanders known as “mole salamanders”. Their name ‘mole’ is apt as they live a *fossorial* lifestyle by digging and spending much of their lives underground. Like many mole salamanders, the axolotl exhibits beautiful colours and can grow quite large – some in excess of 30cm (1’) long. The adaptability of “*Ambystoma*” enables them to live throughout North America, native to Canada are: British Columbia’s coastal ‘Brown Salamander’ (“*A.gracile*”), impressively growing to 22cm (8.5”); the Tiger Salamander (“*A.tigrinum*”) of the Western provinces, our largest salamander growing more than 30cm (1’); and, the Yellow Spotted Salamander (“*A.maculatum*”) which is native to Eastern Canada. Many mole salamander varieties live in the USA, but the sole native habitat of the axolotl is a confined and ecologically compromised area of Mexico City.

Unfortunately, the axolotl is critically endangered in the wild, since it is highly sensitive to pollution and a victim of urban sprawl. It was once considered a sacred animal and a staple food source by the Aztecs and thrived in Lake Xochimilco. Over the centuries, man altered this lake to create a moat and irrigation system for ancient Mexico City. As the city mushroomed beyond the confines of the historical moated



section, areas of the lake were drained, leaving only a canal network, and drastically jeopardised the habitat of the axolotl. Worse, these deep channels ---which once carried cool, clean mountain runoff and sustained levels of dissolved oxygen for axolotls -- have become “the Venice of Mexico”, congested with overcrowded party boats not equipped to contain sewage (*see photo*). The vast grid of unnavigable water channels is further contaminated by nearby farmlands with modern and primitive fertilizers introducing excessive nutrients and stimulating algae

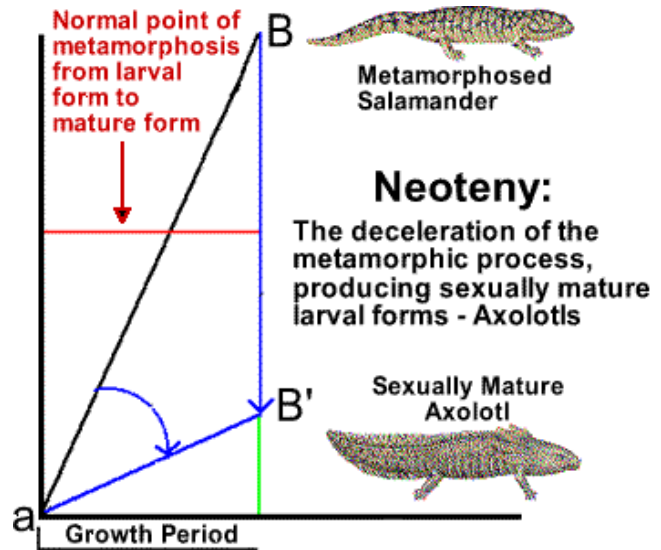
growth. In the last survey of Lake Xochimilco, no axolotls were found. Only a few years earlier, they were abundant, yet declining. The only axolotls now known to exist are found in a waterway built for an Olympic rowing competition, near the historical range.

Fortunately, axolotls are easily kept in captivity, prolific, popular and -- unlike most other species in the genus -- **fully aquatic for their entire lives**. Generally, amphibians experience metamorphosis from egg to larva and then to its adult form and sexual maturity. Axolotls are special in that they retain their larval physical features throughout their lives, do not experience metamorphosis and yet become sexually mature. This unusual phenomenon is called **neoteny** (*aka “Peter Pan Syndrome”*) (1). Only under rare conditions will axolotls undergo metamorphosis. Evidence of this neotenic phenomenon seen on adult axolotls are external feathery gills and gill slits (used for gas exchange in water) and a compressed tail (for moving in water). Their skeletal system also largely remains cartilaginous (*i.e. made up of flexible fibrous tissue*) and poorly calcified (*i.e. bones are weakly developed*) which makes tail and limb amputation and regeneration much faster and easier. Some of these neotenic features enable axolotls

to live as fully aquatic creatures, making it easier to keep them in captivity and in aquaria than terrestrial, burrowing types of amphibians. Their unique ability to regenerate many of their body parts, throughout their lives, without evidence of scarring, makes them interesting and important to modern medical scientists internationally who are studying them to unravel this evolutionary marvel.

Axolotls are easy to feed. Most land dwelling fossorial salamanders will eat only live food which means that crickets, dew worms, and/or other food items must be maintained. Also, this live food must be “gut loaded”, and/or dusted with minerals and vitamins in subtle and specific

quantities in order to offer the terrestrial salamanders balanced nutrition (*Editor’s Note: “Gut loading” is the procedure by which an animal’s prey is raised and fed nourishing foods with the aim of passing those nutrients to the animal for which the prey is to be fed*). Conversely, aquatic amphibians like axolotls may be fed pellets, frozen brine shrimp, blood worms and the like, all of which are easier to store, and offer uncomplicated complete nutrition. Only newly hatched larval axolotls require live food. Newly hatched brine shrimp (“*Artemia*”) is typically the food of choice for axolotl fry. Brine shrimp may be bought in canned, dry or dormant egg form and kept conveniently in a fridge. Hatching *Artemia* requires some equipment, but it is simple enough to do for the few weeks the axolotl fry require it. They will soon learn to eat either frozen/thawed brine shrimp and/or micro-pellets. Axolotl have voracious appetites and *will* cannibalize siblings if hungry. Once growing and eating pellet or thawed food, their nutritional



requirements are easily met by offering a staple of high quality sinking pelleted food. A cichlid or tropical fish pellet is typically more expensive, but higher quality than a much cheaper fish farm/aquaculture pellet and therefore recommended. Axolotls will learn to take various foods including earth worms, fish (whole or fillet), beef (ground or strips), shrimps and basically any tasty smelling food. Some foods relished by the axolotl are unhealthy. Often it has taken perseverance to convince even researchers to substitute “old-school” foods for aquatic carnivores/omnivores like beef-liver strips and imitation crab meat - both of which will be engulfed with zeal, but neither of which are nutritious. I’ve discovered a product called “*Grub Pie*” which is a powder containing insect meal, balanced out with everything that insectivorous reptiles need, as well as gelatin. The powder is added to boiling water and

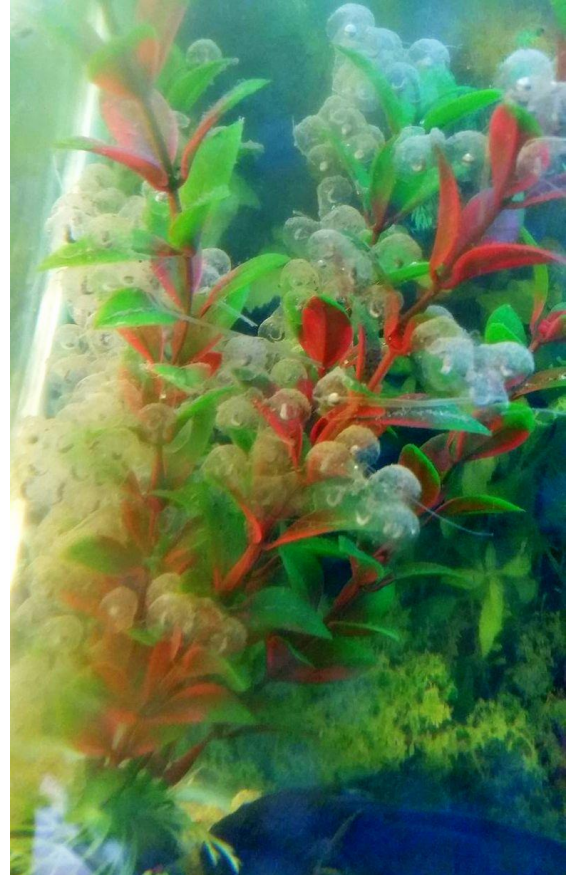
allowed to set. The gelatinous product, once cut into strips, is an excellent substitute for live earth worms. "Grub Pie" allows for some diversity from the staple pellet, yet maintains balanced nutrition and axolotls savour it. Observing axolotls eat is actually quite fascinating. They rapidly open their mouths and expand their throats to create a vacuum which sucks in water and food almost literally inhaling it. To avoid obesity adult axolotls should be kept at room temperature and be fed only 3 times a week. Their appetite will be sated within minutes, making portion control predictable after a few feedings. Overfeeding can also quickly foul the water. Axolotls may live about 15-20 years. A lean axolotl will likely outlive an obese one, and when housed individually, it is much easier to keep an axolotl lean. When they share a tank, they tend to nip at each other at the first pang of hunger, rather than wait for feeding time which means they must be kept very well fed to the point of risking obesity.



Axolotls are not social, and do not derive much benefit, if any, from being housed with conspecifics (*i.e. members of the same species*) outside of mating. They also are ill-suited to share their tank with other aquatic life such as fish as the axolotls would prey upon them. To create a pleasant atmosphere for your axolotl, offer him ample food, smooth and sinking hiding spots, cool/clean water, and a slow water flow. Although I have housed axolotls in both pairs and small groups, this is best accomplished with adults whose appetites are no longer aggressive. As mentioned, young axolotls are cannibalistic and will not only eat the tails, limbs and gills of others, but can devour entire axolotls if the size difference is anything more than slight. In larval *Abmystoma*, it has been well established that those axolotls, which begin to cannibalise sibling fry, experience a marked physical change whereby the cannibals' heads grow suddenly, presumably as a result of the extra nutrition. Literally, the cannibalistic mega meal goes directly to their head. This new big head enables even more cannibalistic behavior by allowing the big headed axolotls to have a greater physical advantage at swallowing other nearby larvae similar in size. Thus it is prudent to sort axolotls by size when rearing young and if housing paired or as a group.

The volume of water needed to raise juveniles varies depending on how often one is able to do water changes, and how many fry are being reared. It is very easy to end up with too many axolotls, and often a large number of the eggs are culled for fear of being swamped with larvae. Axolotl lay an average clutch of 300 eggs, but 1,000 is not unheard of. Thus, it is impossible to keep fry individually. The importance of feeding fry amply (*i.e., if group housed*) and to supply juveniles live cultured food makes it easy to see why keeping entire clutches can be overwhelming.

For larvae, slow/low water turbulence is vital and therefore most axolotl breeders do not filter nurseries, outside of the filtration live plants offer. Sponge filters can be used but only intermittently as they may interfere with feeding live food. The key to maintaining water quality for baby axolotls is frequent and high percentage water changes as discussed later. The requirements for housing juveniles and adults are much simpler versus fry. Once axolotl switch to pellet, frozen, thawed, or other non-living prey, water filtration can be used. Water turbulence remains somewhat of a concern however as strong current can cause stress in even the largest, healthiest axolotl. For this reason, **hang-on-back (HOB) filters are not recommended** unless a system is devised to break the waterfall. Also, HOB filters require the tank to be kept filled with water so close to the brim that lids are then needed to prevent escape. If an HOB filter is used, a large plate, or flat surface, resting at or below the water line can break and disperse the waterfall to acceptable turbulence levels. **Canister filters are the preferred choice**, as the flow rate can be modified in most models, and



activated carbon can be used to absorb nitrogenous wastes until the biological filtration becomes efficient (*i.e., while beneficial bacteria cultures grow to effective levels*). The downside is they are costly and only service one tank. Sponge filters are an effective and inexpensive alternative. However, because they rely mainly on biological filtration, 5-8 weeks of increased water changes and water quality monitoring must elapse after biofilter inoculation (*N.B: biofilter inoculation means seeding the filter with old bacterial cultures to hasten start-up*). Important to recall is that sponge filters must be cleaned in tank water as beneficial bacteria cultures can crash from thermal and chemical shock. Chemical shock would result from chlorine in tap water.

A 10g tank, $\frac{3}{4}$ full, will house 1 adult axolotl and provides enough volume that a single feeding and/or defecation will not cause a toxic spike in ammonia. **The use of aquarium gravel is risky with large axolotls and can cause intestinal impaction.** I recommend bare bottom tanks, unless aesthetics are crucial. The size of substrate which is safe for axolotls might be counterintuitive. Small axolotls, shorter than 7cm can become impacted intestinally if kept on fine substrate like sand. It is "**somewhat safer**" to keep them on gravel, but the stones carry risk for even smaller ones, especially if they actively scavenge for food eating most anything. Large axolotls, bigger than 7cm, can pass fine sand, although sand may complicate water changes as syphoning the water, debris and sediment from the bottom efficiently rids the system of pollutants. **The basic rule of thumb for substrate is that anything smaller than the axolotl's head is fair game to end up in its intestine.**

Axolotls prefer cool (16 – 18°C), “hard” water and, in Niagara, our room temperature water (20-25°C) is almost ideal. At 24°C or higher axolotls will develop problems and become sluggish. Thriving bacteria and depressed immune systems due to stress often result in skin lesions. These signs, along with anorexia, are the first indicators of improper husbandry and/or water quality parameters. Water hardness, or the amount of dissolved salts in water, is important. Locally, our city water is hard and is not artificially softened. If water is naturally soft in your area, the hardness may be increased by adding chemicals. Axolotls prefer water with a pH of 7-8. The pH of most municipal water sources is 6.5-8.5. Checking your pH level is easy and should be part of routine water testing from the outset as well as trouble shooting aquarium issues. Always test for chlorine. Chlorines and chloramines are added to tap water to control bacteria and both are poisonous to axolotls and fish. A chlorine remover (i.e. a liquid



additive) will remove them. Ageing water 24 hours ‘off gasses’ chlorine, **but it does not always remove chloramines**. Chlorine removers also bind with chloramines, heavy metals and other harmful ions which, in my view, justify their use when setting up new tanks or performing weekly 20% water changes.

Water conditions are a key consideration when keeping axolotls which brings the topic of nitrogenous waste to the forefront, namely ammonia, nitrites and nitrates. Nitrate should be tested weekly and biweekly in new set-ups. It is the most toxic of the 3 stages of nitrogenous waste and will quickly spike to harmful levels if overfeeding, defecation, death or stress trigger a high output of waste. Chemicals (e.g. chlorine neutralizers) will help detoxify ammonia, but a 50% water change is required, if ammonia levels are toxic. Water changes should always be gradual. In the case of emergency large volume water changes, the new water should be checked for temperature and pH irregularities before adding, and then again afterwards to ensure ammonia and pH levels are acceptable. Nitrites are less

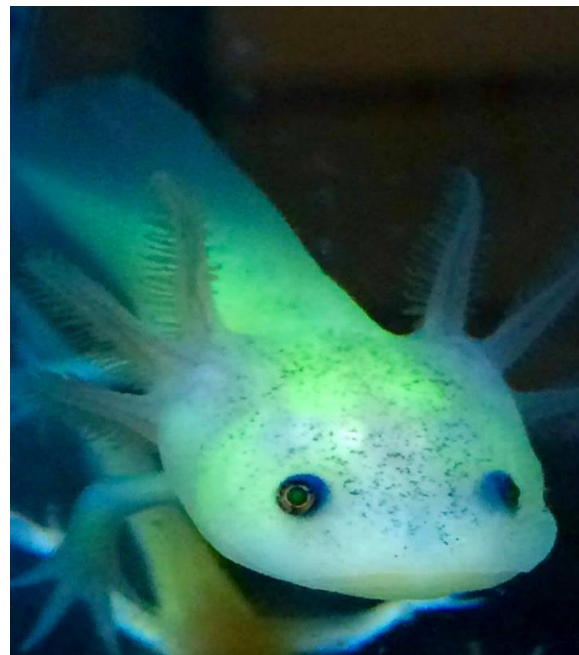
toxic, but can also lead to issues and must be evaluated weekly in new systems, and monthly in established tanks. An accumulation of nitrites and nitrates can indicate water changes are insufficient. Nitrates are relatively non-toxic and may lead to undesirable algal growth.

Breeding axolotls can be rewarding and fun. It often occurs spontaneously with a mature breeding couple. They reach sexual maturity at 12-18 months, but can be accelerated. Male axolotls can breed at 6 months old without ill effects, but because of the physiological stress of producing so many eggs, females should not be bred before 18 months old. Axolotls are also considered sexually mature at 20cm in length. There is a slight and noticeable dimorphism in that males have a swelling around the cloaca

(N.B.: “Cloaca is a common cavity that serves as the opening for the intestinal, genital, and urinary tracts). This swelling is best seen from the side and appears to be a ventral protrusion at the base of the tail. Females have a tiny bump whereas in males this bump is 3-4 times larger. It is obvious if comparing several axolotls. Axolotl females lay eggs in late winter or spring, up to three times yearly. It is possible to induce breeding by first cooling their water and reducing the photoperiod (*i.e.*, *light exposure period*) then gradually increasing the temperature and photoperiod. Fertilization is indirect. The male deposits his spermatophore (*i.e.*, *a capsule enclosing spermatozoa*) into the water once he senses the female is receptive and following. She will take up the spermatophore into her cloaca from where sperm can travel up the oviducts to fertilize her eggs internally. The volume of the eggs is astounding. The gelatinous outer layers of the egg swell to about the size of a marble (1-1.5cm) whereas the embryos themselves are about 1mm in diameter. In 2 weeks the embryo develops into a larva and hatch into a free swimming youngster. At this point, the larvae should be removed from their gelatinous eggs, as these remains tend to stick to live food and complicate feeding/cleaning. The embryos and eggs are multi-layered and robust, even if the outermost layer is broken, they should still develop and hatch.

Axolotl embryos are tough and easily genetically manipulated. Aside from their astounding regenerative capabilities, they have other attributes of interest to regenerative biologists and geneticists. Axolotls have a small genome (*i.e.*, *the organism’s complete set of DNA, including all of its genes*) and given the ease with which its cells and DNA may be manipulated and swapped, at the embryological stage or at the site of any amputations, inserting various genes and gene sequences is very much a reality. In the case of amputations, cells do not develop into scar tissue, but rather differentiate into *totipotent cells*.

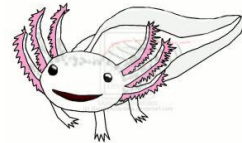
Totipotent cells are scientifically unique because they have the potential to develop into any cell found in the body. Today, there are axolotls with known genetic alterations including the axolotl with the “glow in the dark” gene (*see photo*). The gene sequence responsible for this is known as the **Green Fluorescent Protein (GFP)**. GFP is created by a gene sequence that originated in bioluminescent jellyfish (the *Jellyfish Protein*). Under black light, these proteins glow a beautiful bright green colour. It is possible to take cells from a GFP axolotl, homogenize them and place them on either a removed section of embryo or on the stump of a amputated limb and observe (using the GFP as an indicator) which tissues are then generated from surrounding tissues, and which are grown from the damaged (and now also glow in the dark) cells at the surface of injury. These man made



technologies and natural abilities of the axolotl combine to make the axolotl one of the favourite animal models in regenerative studies. If in the future, medicine discovers how to regenerate limbs through gene therapy, I think the axolotl will have played a significant role.

Axolotls are unique in appearance, beautiful or even cute in their own right and incredible to watch in their majestic means of moving. They are proficient predators with powerful vacuum mouths that they gladly display on even inanimate food pellets. They have a marvelous method of regenerating and healing. These amphibians once fed the ancient Aztecs of Mexico City when their numbers in the wild were akin to what they are now in captivity. Mankind has rendered their habitat inhospitable over time and we should treat them well and revere them as did the ancient Aztec people for the unique creatures that they are. I hope others are as lucky as I have been to meet and work with this interesting species.

Article By: Tom Eles



Courtesies:

Photo (GFP Axolotl, Tom Eles)

Photo (juveniles axolotls, Tom Eles)

Photo (swimming axolotl, Alison Beardmore)

Photo(axolotl eggs, Alison Beardmore)

Cover Photo: Attribution-NoDerivs, 2.0 Generic (CC BY-ND 2.0)

JE Jin

우파루파가 도롱뇽이라는 사실..

우파루파가 도롱뇽이라는 사실은
참 알았다. posted by 한잔

Flickr.com RedSoul405 (Editing: Photo horizontally flipped; colour; cropped; border added)

Photo Party Boats: (CC BY-SA 3.0); File:MariXoch.JPG Wikipedia.org

Uploaded: 16 December 2009 by JFlo23

(1) Frolich, L. Miami Dade College, Miami, FL "Evolution of Novelty" larryfrolich.com

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Much Ado About Fish: Upcoming Events

- ***CAOAC EVENTS** <https://www.caoac.ca/calendar.html>
- May 7 London Aquaria Society Auction
- **May 19-21 CAOAC Aquatic Expo 2017, hosted by Hamilton & District Aquarium Society, at Holiday Inn Burlington Hotel & Conference Centre. Excellent speakers.**
For tickets & more see <http://hdas.ca/convention>
(DETAILS BELOW)
- Sept. 22-24 Cataclysm 2017 (Mid-West Catfish Show), <http://catfish-cataclysm.com>
- CAOAC Newsletter <https://www.caoac.ca/newsletter.html>

SCAAS Meetings & Programmes Spring 2017:

- May 1 “Pondemonium: Designing an Oasis of Tranquility” by Sasha Hunter
Certified Landscape Designer
- June 5 “Annual Elections for SCAAS Executive” & Summer BBQ-Potluck



Hamilton & District Aquarium Society presents CAOAC Aquatic Expo 2017

May 19-21 at Holiday Inn Burlington Hotel & Conference Centre and will feature:

- Full weekend H&DAS fish show with specialty classes
- 3rd Annual IBC Sanctioned *Betta Breeders Canada* Betta show
- Vendors room
- Saturday banquet dinner, guest speakers Regina Spotti and Eric Bodrock
- Sunday auction
- Friday and Saturday guest speakers
 - Ian Fuller
 - Lawrence Kent
 - Eric Bodrock
 - Regina Spotti
 - Gerald Griffin

Show, auction & vendors room open to the public. Presented with Canadian Association of Aquarium Clubs, Betta Breeders Canada, Southern Ontario Killifish Society, Trans Canada Guppy Group

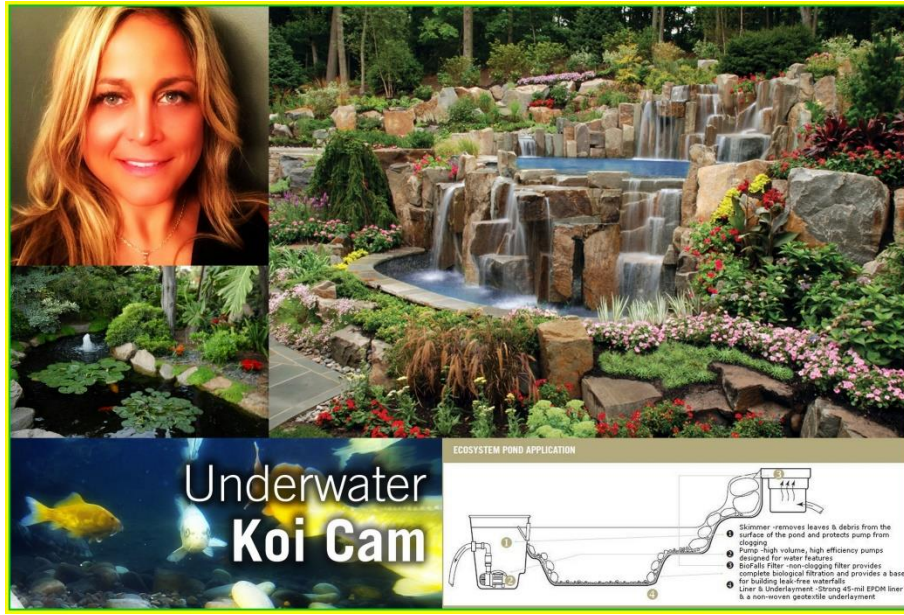
TICKETS:

Full convention – Early Bird – \$85 (AFTER APRIL 18TH \$90)

Speakers only -- \$45

Reserve at Holiday Inn Burlington Hotel & Conference Centre using Group Code **CAC** by April 18, 2017. (Visit <http://www.hiburlington.ca/> for rates. Rates dependent on the type of room booked)

For more detailed information, all updates and news, please visit <http://hdas.ca/convention>



“Pondemonium: Designing an Oasis of Tranquility”

MONDAY MAY 1st : Special speaker Sasha Hunter, Certified Landscape Designer, shares her wealth of experiences and knowledge about designing ponds, aqua-features, practical considerations and, of course, fish in her extensive upcoming presentation. This will appeal to pond rookies wishing to learn pond basics and to those who wish to turn their entire yard into a series of ponds and waterfall configurations with spectacular water features. Whether you’ve envisioned your own paradise for goldfish, shubunkins or koi, you are limited only by your imagination. Sasha will broach key concerns such as appropriate pond placement, important construction considerations, outdoor plant and rock aquascaping practicalities, rock balancing, pond depth, algae control, maintenance, critter prevention, filters, pond liners, pond pumps and how to position them all to create a stunning, healthy year round water feature for the fish of your choice. The functionality of the pond design is then married with perception and perspective along with the seasonal colour of the plantings. Lights, fountains and fire may be incorporated for magical nighttime effects and underwater cameras to see your pond fish even from your dining room. If you have no plans for a pond yet, this talk will surely wet your water garden appetite! **Jar Show Category for May is Guppies and AOV (All Other Varieties, including plants). Please verify rules in Newsletter under “Jar Show”.**

For the most up to date data on the St. Catharines & Area Society Events, please like and follow the official page at: <https://www.facebook.com/St-Catharines-and-area-Aquarium-Society-565883823470381/>



We are asking members if they have any suggestions or new ideas for the Executive. Compliments are welcome. Please email your suggestions to Pat Shriner, 2nd vice-president and copy to Pat Bridges, membership chair (gpshriner@cogeco.ca ; tp.bridges@sympatico.ca). Written comments accepted.



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Please contact any SCAAS Officers. Our rates are as below:

Full Page Advertisement	\$150
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WE WANT YOU!



TO JOIN THE CREW!

Hi All,

I would like to extend a special thank you to Art Commisso for his presentation, “*The Art of Aquascaping*” last month, and the creative tank that he designed before our very eyes. Tom Hillier, we are anxious to hear when you have it up and running!

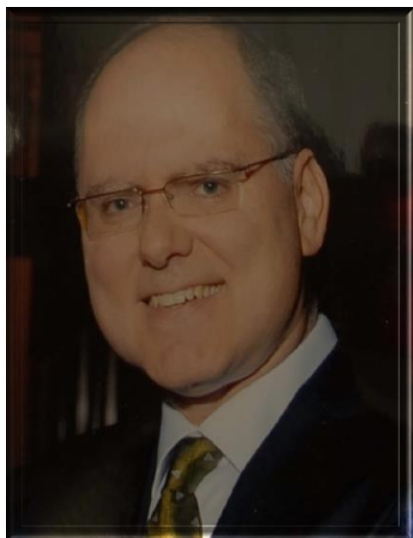
This May I will be continuing with the nominations for all SCAAS Executive positions with **Tom Bridges, the Official Steering Committee Chairman for 2017**. The positions of President, 1st vice president, 2nd vice president, Treasurer and Secretary all must be elected each June. Members should reflect on whether they know of someone they believe would fill these roles well or if they would like to assume one themselves. Positive, committed team players are required and I invite you to carefully review the details that Tom Bridges has outlined about these positions and the procedures on pg. 14 of this issue. Last meeting, Tom handed out a form necessary to complete for those interested or who would like to “encourage” a *willing* member to volunteer. The forms will be available at the May meeting also. New volunteers are needed to fill these roles as not all of us will be sitting for re-election.

Last month we approved the “Crowd Release Policy” addressing privacy concerns as they relate to SCAAS members and guests with respect to the Aquarium Society media coverage of meetings/events. I have contacted the Executive of other CAOAC Clubs which already have similar policies in effect. This Crowd Release Policy is on pg. 26 the Newsletter and I encourage you to please read it for details.

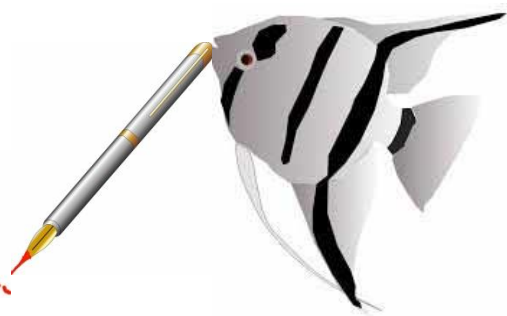
How many of you will be installing a Koi cam? See you tomorrow!

Paul Paradis .





EDITOR'S ANGEL



Dear Friends,

I would like to take this opportunity to thank the members who have contributed to the Newsletter with articles about the fish that they are keeping and interesting experiences we might never know about otherwise. It's great to have participation and know what members are doing at home. The Breeders reports are invaluable for those who wish to follow the footsteps of others and try spawning the particular species and also from the point of view of the member that just enjoys reading about the what you have achieved.

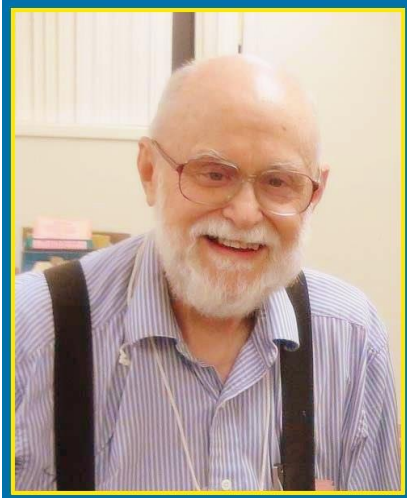
The articles and Aquarium-side chat participants will be entered into the Editor's Rewards Programme. It is not judged on any competitive basis but merely a thank you and encouragement for members to continue to submit articles and participate in the Aquarium-side chats. The "chats" enable us to know our membership better and not all Clubs include this aspect in the Newsletter. It forms part of the social side of the Club.

I will be anxious to accept articles all year long (even during summer) as it is beneficial to me to have a few in reserve for next year. If you would like to write one or be featured in an Aquarium-side chat, please don't hesitate to contact me for any details.

Cheers,

Dave Holland





Process & Procedure: Executive Elections

Each year our Society (SCAAS), must face and solve the question of which of our members will fill the next year's positions on the Executive. Essentially, we need to elect 5 interested members – one for each of the positions of President, 1st Vice-president, 2nd Vice president, Secretary and Treasurer. These individuals should be members in good standing who have been with SCAAS long enough to understand its nature and purpose, be regular attendees and **be willing to give extra time for necessary and important executive meetings**. This requires some work, and organizational skills, but so does any worthwhile endeavour and, it can be enjoyable.

Before nominating anyone for a position, please ensure that person is willing to run for election. It is also permissible to nominate yourself. Seconders are required, except for members of this past year's executive, who might agree to run again for next year. Nominations will be invited and may be submitted to me at the April and May meetings. At last 3 positions will be vacant.

Our club has existed continuously since 1958 largely because of the work of many dedicated executives. Please help me do my job and ensure that it will continue and even thrive in the coming year. The future of the Club could depend upon it.

Thank You
Tom Bridges, Steering Committee Chair 2017

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THE CAOAC REPORT

What is CAOAC you might be asking? CAOAC stands for The *Canadian Association of Aquarium Clubs (CAOAC)*. This is a non-profit corporation and composed of member aquarium, reptile & amphibian, pond & water garden, and similar clubs or societies from across Canada and the Northeastern United States. SCAAS is a member of CAOAC.

CAOAC was founded in 1959 (incorporated in 1963) to allow the clubs to work together for their common good and the good of the hobby. Legislative issues, promotion of events, a judging system, national awards, assistance for new clubs, & liability insurance are just a few areas where clubs can work and benefit together. CAOAC meets monthly. Recently, a Fish Rescue Program has begun. This has been developed with outside partners who also have an interest in our hobby and environmental issues.

The following topics were covered during the April CAOAC Meeting:

- the donation of a used 30g aquarium and accessories from a donor who contacted a CAOAC Executive member. The aquarium will be cleaned and auctioned off at the Convention and the proceeds will be added to the **Terry Little Fund** that helps children get involved in the hobby.
- the Treasurer position in the CAOAC executive will be open and a replacement is being sought. Anyone interested please contact Peter De Souza, the steering committee chair, his contact info is on the caoac website or at vp@hdas.ca
- **more helping hands are required for the CAOAC Convention.** Volunteers may contact a member of the host club Hamilton executive or Peter De Souza at vp@hdas.ca

I would like to call your attention the CAOAC NEWSLETTER (please see <http://www.caoac.ca/newsletters/201703.pdf>) which offers greater detail on some of the topics discussed above and the general CAOAC website (<https://www.caoac.ca/index.html>).

If SCAAS members have questions regarding CAOAC or news that occurs at monthly meetings I would be happy to answer them for you as the St. Catharines and Area Aquarium Society CAOAC Representative.

Sincerely,

Phil Barrett, "SCAAS" CAOAC Representative

May Jar Show Data, Rules & Jar Show Schedule 2017

*For the May Jar Show, the feature category will be guppies and **AOV** (i.e., **All Other Varieties, including plants!**) - Auction to follow. The jar show categories for the balance of this season will be **June** (Corys and Catfish, including Plecos).

****JAR SHOW RULES:** *While we appreciate the enthusiasm, members are permitted to enter a maximum of **THREE ENTRANTS PER MONTH** into the Jar Show.*

*****Jar Show containers must not be round and have at least **ONE FLAT SIDE**.**

April 2017 Jar Show Results:

*(Points Distribution: 1st place – 6 pts, 2nd place – 5 pts, 3rd place– 3pts and other entries – 1 point)**

APRIL JAR SHOW WINNERS:

Fish of the Month

1st place: Catherine Salmon

2nd place: Catherine Salmon

Best in Show:

Catherine Salmon



****JAR SHOW RULES:** *While we appreciate the enthusiasm, members are permitted to enter a maximum of **THREE ENTRANTS PER MONTH** into the Jar Show.*


*****Jar Show containers must not be round and have at least **ONE FLAT SIDE**.**

Why Don't You Have A Quarantine Tank?

The quarantine tank or hospital tank is a separate tank used to house newly acquired fish or fish you own that are ill/injured/overly-aggressive and require medication or isolation. Newly acquired fish sometimes have afflictions that are not visible which may or may not be an indicator of poor husbandry. Aquatic creatures become stressed when transported and their immune systems are less likely to fight off even the most common ailments which are present in an aquarium setting and eventually your own fish may fall sick despite your best practices. A quarantine/hospital tank can help with all of the above.



Like pneumonia is omnipresent in the human world, we are most susceptible to it when our immune systems are comprised and less able to fight it off. Ich in the fish world is an opportunistic disease present in the aquarium that works exactly the same way, targeting stressed or vulnerable inhabitants. Ich is a **highly contagious** parasitic infestation caused by the protozoan *Ichthyophthirius Multifillis* and its saltwater counterpart *Cryptocaryon Irritans*. The words "highly contagious" are in bold as the quarantine tank serves to prevent such parasites and vulnerable infected fish from entering your healthy aquarium and spreading ich, or similar diseases, rapidly to other tank mates. The quarantine tank contains these infested fish to a special area where they may be treated until they are fully recovered to transfer to the community tank. It spares the health and lives of your existing fish, and the medications used to treat the ailments will be less costly in a smaller controlled environment. Some of the medications you will require to treat new fish may not be safe for use in your show tank with other inhabitants (like snails/invertebrates) or have side effects on healthy fish. Finally, many plants are intolerant of medicinal additives.



Let's examine how common it is to keep a quarantine and/or hospital tank running with this random sampling of 52 aquarists of varying levels (see diagram of online poll). 56% are quarantining new fish and sick fish. 19% quarantine both new and sick fish, but do not keep the tank running at all times. Less than 1% quarantine only sick fish and do not quarantine new fish. **37% are not quarantining new or sick fish ever.** The 37% is a startlingly high figure to see when the use of a quarantine tank or hospital tank truly reflects the essence of the phrase "an ounce of prevention is worth a pound of cure". (Continued)

 **Dave Holland** created a poll. 19 April at 23:18 · 🌐

DO YOU KEEP A QUARANTINE OR HOSPITAL TANK UP AND RUNNING FOR NEW AND SICK FISH? Click in the circle next to your option please. 😊

<input checked="" type="radio"/>	YES	19 votes
<input type="radio"/>	NO	19 votes
<input type="radio"/>	I QUARANTINE BUT DON'T KEEP A TANK GOING ALL THE TIME	10 votes
<input type="radio"/>	ONLY FOR SICK FISH NOT NEW	4 votes
<input type="radio"/>	WHY WOULD I QUARANTINE ANY FISH?	No votes yet

 You, Will Town and 2 others  32 comments

 Like  Comment

Setting up a quarantine or hospital tank need not be complicated. Ideally, the tank is set-up and ready to go. You don't require separate tanks for both unless you have a fish room where numbers might warrant a general quarantine tank for new arrivals and another tank to treat illnesses. Keeping saltwater and freshwater fish is also a factor here too. The tank size you select will depend on the size of the fish you generally keep. A large 29 gallon tank is unsuitable if you are keeping tetras for example, but necessary if you have discus or seahorses. Generally, a suitable tank size for quarantine/hospital would be 10g. You might encounter some aquarists using 2g or 5g tanks to quarantine. Apart from an obvious lack of swimming room, the issues are, that in order to maintain these small tanks, frequent, high water changes are required, and medicine must be added with each water change, all factors which stress your fish out. These nano tanks simply are not as forgiving to water quality issues and fish that are new or sickly should not have more burdens to contend with. Determining proper dosing of medications in a 2g or 5g set-up may complicate this further, apart from quick dip baths. Quick dips might be appropriate in small containers for example when a high concentration of aquarium salt is required to cure a fish ailment. Very small containers shouldn't be used for other medications intended to remain in the tank for an extended period as a means of saving money on medication.

Items to include in your quarantine/hospital tank are not many. Use a spare seeded simple filter and heater. There should not be heavy water movement in a hospital tank, so set your filter to a low setting and the tank can have a bare bottom to help with tank maintenance – no gravel required. An adjustable heater is a must, as drastic changes in temperature can cause your fish stress and they will be in the quarantine tank longer than a few hours. Also, certain treatments require warmer water than usual. The tank should be equipped with a thermometer and in the case of saltwater fish, a refractometer to measure specific salinity (*salinity should eventually match the SG of your show tank*). You will be testing your water daily so your Master Test kit will be useful and ensure you are testing for ammonia which can be problematic in smaller tanks or in newly set up quarantine/hospital tanks. A simple light will suffice.



Remove the media from the filter or the carbon that is, as it can remove medications. Incorporate some décor (eg. PVC pipes, plastic plants) to offer hides which is easily cleansed and disinfected. Adding established media or substrate from the main tank will help with the nitrogen cycle and reduce the risk of toxic conditions caused by high ammonia and nitrate levels. This can be the issue encountered by some aquarists when illness suddenly strikes and no hospital tank is ready. 19% of the aquarists in the poll use both a quarantine tank/hospital tank, but do not keep the tank up and running. This is an acceptable practice if you have measures in place to ensure the new tank can be "cycled" promptly. This is possible if you keep a sponge filter in your main tank (or one of them). Water may be taken from the main tank and the sponge filter may be transferred immediately over to the newly set up quarantine tank, for example, if you plan to come home with new fish. An HOB filter may also be used in a

quarantine tank as the fish may be there for some time. If the filter has not been colonized with beneficial bacteria, setting up a quarantine tank suddenly will be problematic. It takes 6-8 weeks for tanks to cycle. During that process, you will experience spikes in nitrates and nitrites.

Try to offer your fish nourishing food it loves to eat to boost the immune system. Siphon/net the uneaten food and discard it after a few minutes so the water does not foul. Proceed to medicate with the proper dosage, for the full duration according to instructions – overdosing can be a problem. Ensure that your fish are tolerant of the medication and/or aquarium salt used.

The amount of time you choose to keep your sick fish in hospital tank will be determined by their recovery. However, you have the option of choosing how long new fish should remain in quarantine when newly acquired. Some veteran freshwater aquarists recommend a quarantine time of 75 days, given that the lifecycle on some parasites such as “Ich” is 72 days. Saltwater aquarists may keep new fish in quarantine a minimum of 4 weeks and to err on the side of caution, use *PaziPro* (antiparasitic) in quarantine as a preventive measure. In the marine tank, copper (eg. Cupramine) may be kept on hand for possible ick, marine velvet and other ailments and Maracyn II (bacterial) both to be used only if warranted. Generally, maintaining a first aid kit with typical medicines is advisable for freshwater and saltwater, particularly if you live in remote areas or to prepare for holiday store closures.

After the hospital visit, your fish may be returned to the main tank. If the problem re-occurs, evaluate the risks of treating your main tank. Ensure water parameters of the main tank are on target. Journalizing water changes, all aspects of cleaning, and routine testing of your main tank will help reduce the problems.



Proactively, acquire fish from reliable sources, even if it means paying more or going to extra effort to order, rather than buying from a source that neglects fish. The resources and time you invest attempting to cure new ailing fish (or others that catch their maladies) will outweigh any initial outlay. To avoid cross-contamination, buy separate nets for each of your tanks (including your quarantine tank). Do not overstock your tank or add many fish at once. Both can quickly foul water and will stress fish leading to disease. Even with the best practices in place, fish do and will become sick or injured at some point. Strict adherence to best practices is not an argument to support not having a quarantine or hospital tank. Your hospital tank may even be required because a fight has occurred with an overly aggressive fish which has resorted to attacking relentlessly.

Quarantine/hospital tanks take little effort to set up and may save many fish, your time and resources. The poll revealed 37% are unprepared. Fish illness/deaths can also be mentally stressing for the fish keeper even if cost is not a concern. Some may balk at the very notion of a quarantine/hospital tank. It isn't sexy, but it is easy insurance against the loss of your pets.

Article By: Dave Holland (Other References: Darlyn Kerner, Clark Lindquist, John Sandia; Photo: Anna Miller)



Aquarium-side Chat with: Ernest Biktimirov

I was born in Russia, but grew up in Uzbekistan, which is one of the Central Asian republics of the former Soviet Union. For the last 18 years, I have been living with my family in St. Catharines and teaching finance at Brock University.

I always loved pets, and throughout my childhood, I kept turtles, hamsters, Guinee pigs, budgies, and cats. Therefore, I started with my first aquarium when I still was still in kindergarten. However, neither my parents, nor I knew much about fishkeeping at that time. Soon after, all my fish slowly died off, and this aquarium became a luxurious, exotic swimming pool for my toy soldiers. My second crack at this hobby was much more successful. By that time I was a teen and had learned much more about fish. I was

happily breeding guppies and swordtails in two tanks, and trading them with my friends.

Now I have six aquariums, ranging in size from 6 to 75 gallons, which are spread throughout the house. A 37-gallon community tank, which contains a Plecostomus, Angelfish, guppies, and corydoras, is one of the main attractions of the living room. When children come to our house for my wife's piano lessons, they are quickly intrigued by this tank. Some kids are more interested in fish than in music.

One 10-gallon tank with corydoras sits on a desk near my home office computer. I like corydoras and they keep me company during my long nights behind a computer. We have other pets at home though. Our three cats enjoy watching fish in this 10 tank just mentioned. They are truly loyal tropical fish hobbyists. We also had a dog – a Rhodesian Ridgeback – who lived with us for ten years and passed away last year. This large breed was developed in South Africa to guard a house and to hunt lions. Thus now you know why no lions have been roaming on the streets of St. Catharines for the last ten years.

Besides keeping and breeding tropical fish, I enjoy collecting different items that have images of tropical fish on them, such as postal stamps, paper bills, coins, matchbox labels, cigarette cards, and pins. Six years ago, I made a presentation about my fish-related collections at our club's meeting. It was well received, and afterwards I was invited to present at aquarium clubs in Brantford and London.

Given my interest in fish, I enjoy eating out in Rainforest Cafes, which feature big aquariums of saltwater fish (The closest Rainforest Cafe is located in Niagara Falls). If I am in a new city that has a Rainforest Cafe, I always try to visit it and to purchase a souvenir for my collection. I am actually on a quest to visit all Rainforest Cafes around the world! I dined out in Rainforest Cafes in many locations in the United States, as well as in London, UK, and Paris, France, but I still have to visit the Tokyo and Dubai locations.

My family members' interests differ drastically in aquarium fish. It ranges from tolerance (wife) and indifference (older daughter) to slight curiosity (younger daughter) and genuine interest (Mom). Therefore, my mother, Venera, always comes to meetings with me. Although, her English language skills are limited, she still enjoys speaker presentations and our meetings' atmosphere. I also truly enjoy our club meetings, and I would like to take this opportunity to thank all the club executives and volunteers for their hard and productive work. Thank you for this opportunity to share my fish story.



Ask Larry Lobster!

This segment offers anyone a chance to pose questions via email submissions to “Larry Lobster” about their aquarium. Opinions will be sought to help answer the question by various resources, from veterans, those with experience and reliable online/journal research. Answers are “friendly opinions” only.

Dear Larry Lobster: *My husband and I sold our 125 gallon aquarium in order to downsize. We had a couple large freshwater sharks which we were sad to rehome. We placed the advertisement to sell the tank in a well-known online all-category classified site . We didn't mention any return policy. A man came to see the full tank and bought. We emptied it and he picked it up. Shortly after he emailed us back angry saying he had disassembled the tank and was resealing it and discovered chips under the trim and wanted half of his money back. What do we do? Should police be involved? He is saying bad things online about us. – Jen & Chris*

Firstly, always be careful that online sites you are using to sell you items do not include implicit return policies in their **TERMS OF SERVICE**. Some sites favour the buyer over the seller. Barring that situation, you are not required to return money to the buyer as he came to see the tank when it was holding water. He has also disassembled the tank and cannot prove that he did not damage the glass when doing so. Those defects if they were present were hidden. It is not uncommon to find small chips under the trim of the glass at any rate. I note that the man did not want to return the aquarium for all his money back, he only wanted a reduction. It is possible he decided to reseal the tank and thought he would try to bring the price down that he paid for it by claiming to have discovered defects. You stated you did not mention there was any return policy or warranty included in the deal. That would benefit you in small claims court (provided the site does not have an implicit one).

If you are selling items like this in future, it would further benefit you to prepare two receipts, that states what is being purchased, the selling price, the date, the names of the seller and purchasers, both parties contact information and any the terms of the sale. For example, if you are selling the tank for \$125 the receipt should include the same description you used to advertise it. Include a break-down if for example you discounted the selling price from what was advertised or added an item. It should state “total paid” and the form of payment. Return policies or warranties and their limitations should be stipulated. Also write “sold as is with no returns”. Don’t leave your receipt silent on the concept of returns. if no return policy exists and you want the sale to be final. This is a legal term which means that you are not responsible for any issues with the tank that should arise after the sale is complete. The words should appear within the body of the text rather than added in the margin. If it is added after

the fact in the margin, all parties must initial it. Additionally both parties must sign the two receipts. To strengthen the receipt further, a witness may sign both receipts (not a relative).

Keep a record of your advertisement so a buyer cannot state you misrepresented an item (and ensure you don't). It all seems very formal until someone tries to return an item unfairly. Do you really wish to take responsibility for what may have happened to the item while it was out of your control? Assume you did offer a return policy, another common scam in selling goods online is when someone buys your 50 gallon Marineland bowfront tank and then claims it is defective and wants all their money back. The buyer may already own a 50 gallon Marineland bowfront tank that is defective to return to you as though it were yours. You return the money that they gave you and they leave you with defective merchandise.

Meanwhile, they have your perfectly good tank or HOB filter or canister motor etc at home for free. A way to circumvent that is to write your initials on the trim of the tank in black ink or on any filter motors if you are going to accept returns. Other "red flags" to be wary of when selling is if you see a person looking for a very specific brand of tank or filter motor for example.

Sometimes this means they have one that is defective and are setting the trap up for you to sell your working one, only for them to claim later that you sold defective merchandise.



In this case, I would ignore further calls and contact police only if you are being threatened either online or by other means. Complain to forum administration about the situation otherwise. Remember when dealing with the public we may be selling to a person who is unscrupulous, afflicted with addiction or even anger issues. The safest way is to protect yourself legally and if possible to not invite strangers to into your home, although in the case of a large tank this may be difficult. Thank you for your question.



Ask Larry Lobster at scaaseditor@yahoo.com

Horticulturalist & Breeder Award Programmes & Reports:

The HAP (Horticulturist Award Program) and BAP (Breeders Award Program) allow members to collect points at different levels. Not only does this give the participant a goal to strive for, but it allows them to learn along the way. This knowledge can then be shared with other members and even club members. Please consult the BAP or AHAP Chairs for related information and forms may be found at:

<http://www.scaas.info/forms.html>

(***NOTE:** Any BAP & AHAP Reports for submission to the Newsletter Editor must be emailed 30 days in advance of the next meeting to meet press deadlines or they may be carried over. Reports will qualify as articles for the article rewards programme if they are 600 words or more with a photo).

BAP AWARDS:

Tom and Pat Bridges for *Cryptoheros nanoluteus* (Yellow Dwarf) 5 pts.

OAA AWARDS:

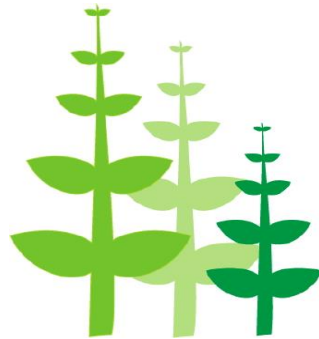
Dave Furness for *Tylomelania gemmifera* (Rabbit Snail) 5 pts.

Congratulations to Tom & Pat Bridges and Dave Furness on behalf of the St. Catharines and Area Aquarium Society Council and Members!

OAA stands for Other Aquatic Animals (mainly invertebrates, but includes vertebrates such as aquatic frogs). * Please Note: The points may change as we find out more regarding degrees of breeding difficulty. Appropriate certificate forms are available from the OAA Chairperson, Tom Bridges.

AHAP AWARDS:

No Awards To Report for March - Ryan Koch, AHAP Chairperson.



RED VELVET SWORDS IN THE POND FOR SUMMER: A LOOK BACK

A year ago this time, I decided to do something different in my above ground pond. These past few years I have put small koi in it for the kids to feed, but they do have to be rehomed before fall. To do something different, I chose to keep red velvet swords. The Swordtail (*Xiphophorus hellerii*) is extremely popular. It is one of the most attractive aquarium fish and very hardy. The activity of the live-bearers darting about and the constant emergence of new life through the pond was a joy for the entire family and virtually maintenance free.

Initially, we gave the 150 gallon pond a good cleaning and started to fill it up. I set up the filter as usual and put *Prime* in as water conditioner. You can double dose with *Prime* on ponds. I let the pond run for a week and then filled it up with water hyacinths. A week later, I introduced twelve Red Velvet Swords, three males and nine females. Only two weeks after introducing the swords to the pond and sure



enough there were many babies. The fry were all hiding in the roots of the water hyacinths. This last year in Southern Ontario was unusually hot, so no heater was required in our pond. Recall this pond is also above ground and black with a water temperature averaging 78F. With the drought we experienced during summer, it was necessary to top up the pond four times. The water hyacinths thrived in the pond and the roots were anywhere from 20" to 30" long. In my view, the secret to the amazing plant success was adding *Flourish by Seachem* as

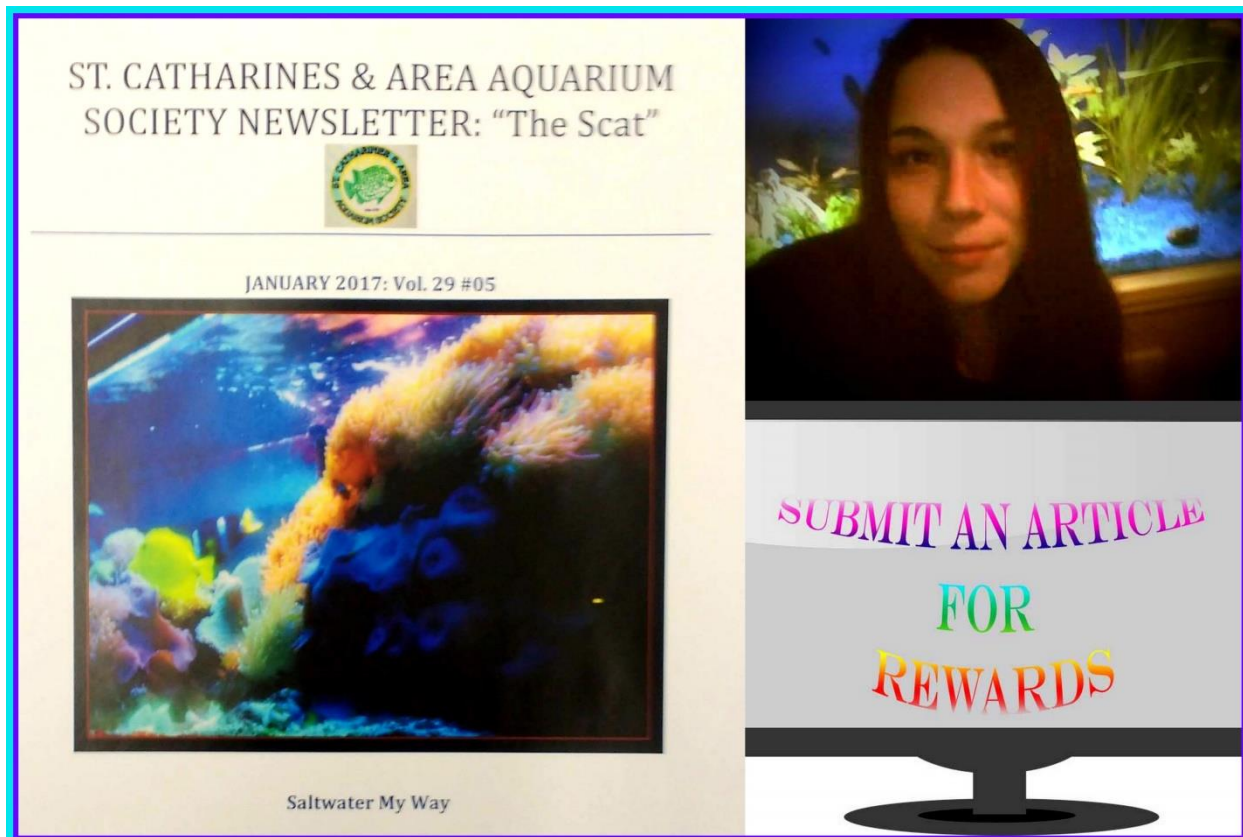
plant food. Through most of the season, I didn't feed the swords. They had quite the selection of larvae to eat. I noticed their striking bold colours ranging to very dark. I started to add some flake food, twice a week, in the middle of August. I had 3 "grow-out" tanks with sponge filters ready to go in anticipation of bringing the fish in when fall arrived. I started to transfer all the young ones gradually to the grow-out tanks. I made sure to use half of their pond water in their new tanks. What I did is dripped the aquarium water into their pond water for about an hour. I ran an airstone in the pail with a capful of "*Stability*". After the hour of dripping, I started to introduce the fish into the 15 gallon grow out tank.

If you are looking for a different fun fish to try in your pond this year, consider the Red Velvet Swordtail.

Article By: Mike Majer (HDAS)

Original Publication in the HDAS Bulletin, Sept of 2016

Editing: D. Holland

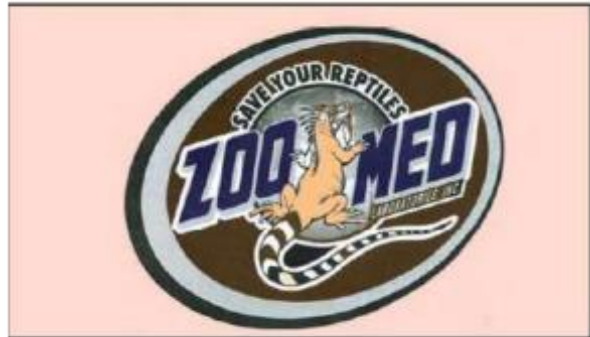
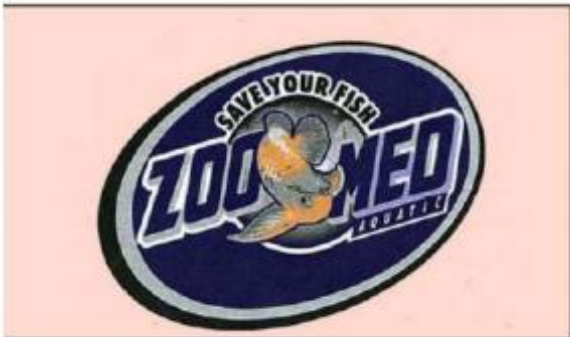


NEW! PARTICIPATE IN THE NEWSLETTER FOR A CHANCE TO WIN A REWARD THIS YEAR! Members may write articles about their tanks, and subjects relating to aquaria. Tell us about a wide range of your experiences from building your fish room to how you are planning to set up your shrimp tank. We haven't had any articles on shrimp yet and they are popular. Do you own a different fish? What are they like and what type of tank mates do you keep with them? What new creative ideas have you tried in your tank or pond for design? We'd like to hear about it. The Newsletter will accept articles from veteran members and new members of all levels and ages. Please don't worry too much about your writing style, grammar and spelling as the newsletter staff can edit. We request kindly that you include more information rather than less in writing your article as it is easier for editing purposes. To gauge article length, your article or report should be about 600 words long with one photo when submitted in order to qualify for the **Special Articles Rewards Programme**. Smaller articles, reports (**less** than 600 words) and Aquarium-side chat submissions will qualify for a **secondary reward**. Submissions by email are welcome or if you wish to submit a written article by hand in a meeting that is fine too – priority is given to SCAAS members and to topics that have not been recently covered. Not all submissions will be printed in the month they are submitted. The editor reserves the right to edit your submission for length, spelling, grammar, supplementary content and/or clarity. Images submitted by contributors and any extraneous copyright matters are the responsibility of the submitter and not SCAAS. **Please contact the editor if you have any questions or would like suggestions or feedback on possible article topics. Please submit your articles to me, Dave, at the email address below:**

scaaseditor@yahoo.com

SCAAS CROWD RELEASE NOTICE

One of the key things the St. Catharines and Area Aquarium Society (SCAAS) has a long history of doing is taking photographs and recording names at our meetings/events of award winners, members and guests. Society officers or Administrators may then use them in the Newsletter and/or post them on various internet and Facebook sites. As a result, the Society often receives appreciative remarks from regular members as well as those unable to attend. This practice also enables us to know and recognise one another better as a group. As such, SCAAS is now following the lead of other aquarium societies and similar clubs and has enacted a Crowd Release Notice. *“By entering and by your presence at any St. Catharines and Area Aquarium Society meetings or events, you consent to be photographed, filmed and/or otherwise recorded. Your entry constitutes your consent to such photography, filming and/or recording and to any use, in any and all media worldwide in perpetuity, of your appearance, voice and name for any purpose whatsoever in connection with the St. Catharines and Area Aquarium Society meetings and events without compensation. These terms will extend to photos submitted to the Newsletter for publication. While we are publicizing this notice in the Newsletter and online monthly, for the record, you are required to notify us in writing of any request to have your photo and/or name excluded from media and, in return, all SCAAS officers will endeavor to reasonably comply on the understanding that no absolute guarantees can be made. SCAAS officers take no responsibility for third party activity.”* Thank you for your co-operation in this matter.





Where and When We Meet

- The St. Catharines and Area Aquarium Society (S.C.A.A.S) meets the first Monday of the month at the Seafarers' and Teamsters' Union Hall, 70 St. David's Rd. E., Thorold, ON. If the 1st Monday falls on a holiday, we meet the following Monday (no meetings in July & August).
- The Society is a non-profit educational organization, dedicated to bringing hobbyists of tropical fish and aquatic plants together who are interested in breeding, raising, showing and/or learning more about aquaria, both at the beginner and more advanced levels. Members benefit from lectures, power point presentations, hands-on demonstrations, outings, shared advice, newsletters and monthly auctions. The club has a social aspect and visitors are welcome.
- S.C.A.A.S. is a charter member of the Canadian Association of Aquarium Clubs Inc. (C.A.O.A.C.; www.caoac.ca) and of the Federation of American Aquarium Societies, (F.A.A.S.; www.faas.info)
- S.C.A.A.S. does not endorse any products, services or guarantee items sold at auction.
- More news and information about S.C.A.A.S. can be found online at www.scaas.info



Our membership consists of adults, children and teens. Many are experienced and have been keeping fish for years, and others are just getting started. People of all ages and levels are always welcome. Meet and learn from those who share your interests! Participate in the auctions; find quality, affordable fish and plants. Qualify for store discounts. Speak to our Membership Chair about joining.



2016 SCAAS OFFICERS

Executive:

President	Paul Paradis	pparadis1@hotmail.com	905.941.9867
1 st Vice President	John Verhage		905.795.7776
2 nd Vice President	Pat Shriner	gpshriner@cogeco.ca	905.354.1367
Treasurer	Roman Haljkevic	romanhajkevic@gmail.com	905.227.7968
Secretary	Tina Paradis	pparadis1@hotmail.com	905.941.9867
Past President	Joe Krawchuk	drummers_secret@hotmail.com	

Committee Chairs:

Breeder/OAA Awards	Tom Bridges	tp.bridges@sympatico.ca	905.735.3352
Horticulture Awards	Ryan Koch	koch.ry@gmail.com	
Auction Co-ordinator	Tom Bridges	tp.bridges@sympatico.ca	905.735.3352
CAOAC Representative	Phil Barrett	pbarrett3@cogeco.ca	905.931.2044
Newsletter Editor	Dave Holland	scaaseditor@yahoo.com	
Jar Show Co-ordinator & Judge	Pat Shriner	gpshriner@cogeco.ca	905.354.1367
Membership	Pat Bridges	tp.bridges@sympatico.ca	905.735.3352
Refreshments	VACANCY		
Librarian	Position Filled		
Press/Publicity	Ken Brady	kbrady2@cogeco.ca	905.935.4716
Programmes/Events	Shane Eaton	aquaticguy85@gmail.com	
Ways & Means	Tom Hillier	tom.hillier@hotmail.com	
Photographer	Les Brady	lbrady129@gmail.com	
www.scaas.info/Admin	Ken Brady/Roman Haljkevic		
SCAAS Facebook Page	Dave Holland/Pat Shriner/Paul Paradis		



2016 CAOAC EXECUTIVE

President: Ron Bishop
1st Vice-President: Ken Boorman
2nd Vice-President: Ann Marie Towell
Treasurer: Barry Mckee
Recording Secretary: Ann Stevens
Corresponding Secretary: Lisa Boorman
Past President: Claudia Carthew

FLUVAL DID YOU KNOW?

Fluval Water Conditioner not only helps to neutralize tap water during a new tank set-up or regular water change, but can also be used to help calm fish during transport as well as heal minor wounds and abrasions.



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BAGS! BAGS! BAGS!

You've heard of Wiki leaks... this is about baggie leaks...

At some auctions, there are a lot of leaky bags. HERE ARE SOME SUGGESTIONS:

PLEASE KNOT YOUR BAGS, OR USE ELASTIC BANDS.

ABSOLUTELY NO ZIP LOCK BAGS OR METAL TIES OF ANY KIND, EVEN FOR PLANTS.

DOUBLE-BAG FISH THAT ARE PRONE TO PIERCING THE BAG.

DON'T USE STICKY TAPE TO CONNECT TWO BAGS (i.e. a pair of fish), TIE THEM TOGETHER AT THE TOP OR PUT THEM BOTH INTO A LARGER CLEAR BAG.

To prevent almost certain deaths because of a too small bag - USE A BAG THAT'S APPROPRIATE TO THE SIZE OF THE FISH, **ALWAYS WITH 1/3 water and 2/3 air space in each bag.**

*BAGS ARE FOR SALE REASONABLY AT THE SIGN-IN DESK AT EACH MEETING



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