

THE JOURNAL OF THE CATFISH STUDY GROUP

Furthering the study of catfish



CSG Open Show

Otocinclus

Spawning *Spectracanthicus*

Hatching *Pseudacanthicus* eggs

On the identity of *Corydoras arcuatus*

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Forthcoming Diary Dates - 2014

Date	Meeting	Venue
November 16 th	Autumn auction	Derwent Hall
December 14 th	Christmas meeting	Derwent Hall
January 18 th	AGM	Derwent Hall
February 15 th	Spring auction	Derwent Hall

Monthly meetings are held on the third Sunday of each month except, where stated.
 Meetings start at 1.00 pm:

Auctions, Open Show and Spring and Summer Lectures

All Meeting are held at:

Derwent Hall, George Street, Darwen, BB3 0DQ.

The Annual Convention is held at

The Kilhey Court Hotel, Chorley Road, Standish, Wigan, WN1 2XN.

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Front cover – *Anadoras grypupus* – 2014 CSG Best in Show Owned by Mike Kirkham,
image by Steve Grant

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Editorial



Panaqolus sp L397 at 8 days

The final Journal of the year brings the results and a report from the latest CSG Annual open show. The well-attended show had the usual high quality of fish on the bench; however the auction audience was thin on the ground and the number of lots low in comparison to other auctions. If auction lots from regular breeders go unsold it can deter the people who put a lot of effort and resource to bring home grown fish to the sale in the future.

There needs to be a much increased effort on all members and attendees, to promote the events through the ever growing social media and other forums. Other members also need to consider bringing lots to sell, even if it's just a few fish, to swell the variety on offer.

Auctions, lectures and shows are the public face of the CSG and need to attract support to justify their running. It is not sustainable for members to just continue to turn up and enjoy these events if there is no reciprocation to promote and support.

The committee is addressing the issue with a revised constitution and proposals for new committee members. Please play your part and have your say through a vote on the constitution and support for the group at the AGM in January.

In the latest Journal, we welcome Michael Hardman with an article on the diminutive sucker mouth catfish – *Otocinclus*. They often play second fiddle to their larger (and usually more attractive) Loricariid cousins, but are well worth a place in any fish house.

Michael's table of the described species is an excellent reference when trying to pin down which species is swimming in your tank.

Steven Grant sheds light on the true identity of *Corydoras arcuatus*, an aquarium staple, but has it been mis-identified over the years? Steve's comprehensive article introduces all the usual suspects in the group and the distinction between them.

Back to my fish house and I have just cleared an outbreak of whitespot which killed a few of my groups of *Panaqolus*. The disease proved resistant to proprietary remedies and led to the loss of some of my most valuable breeding groups. Events like this test the resolve of the most hardened aquarists and can seriously set you back with future plans.

One significant success has been my first spawn from L397, a species of *Panaqolus* with stunning red stripes, coincidentally, a number of other aquarists reported success with this species at the same time! Indeed, other aquarist friends have reported spawning a number of firsts, with the opal plec 'L080' and blue phantom 'L128', amongst them.

Finally, I've produced a short article on an experiment to improve my success in artificially hatching *Pseudacanthicus* eggs following some on-line advice.

Mark



From the Chair



On Sunday 16th November we ran our most successful Auction yet, with a record attendance of 209, the increase being attributed to the advertising on Facebook by Jackie Lloyd our latest committee member. Everybody appeared to enjoy the event, we had a great selection of fish for sale at very reasonable prices, and a mega raffle. My thanks go out to Brian, Janet and Angela for their sterling work in the canteen providing us all with hot food, freshly made sandwiches and drinks. Following the event we had many nice comments on Facebook, complementing us on a very friendly and relaxed auction.

For the Committee the days downside was the resignation of Bob Barnes our Chairman, for personnel reasons. His knowledge, enthusiasm, and energy will be sorely missed by us all. I hope that he will be able to attend our forthcoming events, and that our friendship will continue into the future.

As for the Clubs future, I hope to see the majority of you at the A.G.M. but maybe at the February Auction, and of course the March Convention with some of the best Lecturers in the world.

I wish you all a very merry Christmas, and a prosperous Catfish new year.

Regards
Danny Blundell
[Acting Chairman]

Notices

The annual general meeting of the CSG is held on 18th January. A revised constitution and other notices have been circulated with the Journal, for members to approve or otherwise. Committee positions will be discussed and filled as necessary. Further details can be found on the CSG website and Facebook forums.

Treasurer Report – Danny Blundell

Over the past few years the quality of the content and printing of our magazine has steadily improved to its present high standard. We have changed printing companies several times to reduce costs, but also to maintain this high quality.

Unfortunately the one cost we have no control over is postage, which increases continuously. A proposal has been made that in future the cost of membership of the CSG will be reduced, and that members may purchase the magazine in one of two ways.

Firstly electronically for £6.00 for four issues in a PDF format. Secondly a paper copy, delivered by post, requiring the member to pay the printing cost of the magazine plus postage and packing. With our present three tier system we are just breaking even with our UK members, but are now losing £4.80 per European member, and £7.00 per Rest of the World member.

In conclusion, we are a non profit making organisation, run for the benefit of our members. I have been the Treasurer for the past eleven years and watched the evolution of the CSG. We are now entering a new electronic era and I hope to see a continuation in the popularity of our hobby and the growth of our Group.

A word from the Auction Manager Dave Barton

The year got off to a great start with the early auction bringing in a large number of people through the doors both buying and selling.

Then we went on to the summer lecture and sales meet where again the number of people attending the lectures increased, along with an increase in turn over for the vendors, for the second year running.

Then we got to the show and auction. This is where things went wrong, for whatever reason we simply do not get the numbers through the door like the other two auctions. And the people that were at the event didn't seem to want to spend any money. Although there was a few new faces this year and

hopefully we can remedy this for next year. We are currently looking into different ways of improving the auction "experience" for everyone attending our future events.

Membership Secretary Report – Mike O'Sullivan

Current membership numbers are continuing to grow with a 50% increase from last year. Of the 39 new members 26 have chosen e-membership, so the exercise has proven to be a success and hope we can continue to offer e-membership and build on this in the future. It would be good to see membership numbers growing more next year, and we are always open to suggestions on how we can achieve this.

Show Secretary Report Brian Walsh

Once again this years Open Show proved to be a great success. Although the entries over the last few years have remained constant around the 130 mark, the standard of the exhibits has continued to improve, making the judges task not only a difficult one, but also in there own words, a most enjoyable one, being able to look and examine at close quarters top quality exhibits.

The kitchen was extremely busy, stocks having to be replenished twice during the afternoon. Profits from the kitchen were the best ever from a CSG Open Show, taking on the raffle were also well up on previous years.

Breeders Award Programme Secretary Report, USA Brian Walsh

Over the last twelve months the BAP has just been ticking over with very few entries from our members.

In October Ian and I attended the Potomac Valley Aquarium Society's All Aquarium Catfish Convention, in Hernden, Virginia, USA. There we met up with a number of serious aquarists and prolific Catfish breeders who have expressed a very keen interest in joining the CSG's BAP. Between four of these interested members they have now registered over ten entries with the promise of more to follow. Just the shot in the arm the BAP needed. I am sure that these successes from our American members will generate more interest in the scheme from other members here in the UK as well as overseas.

Notice outlining the proposal to Amend the CSG Constitution

Introduction

We propose a new constitution for the Catfish Study Group. Almost all of the current constitution is preserved, albeit rewritten to improve its clarity, limits and enforcement.

Long-term discussion with senior committee members has highlighted the need for a modernization of the CSG in order to remain current and better serve its members. In response to this, we have rewritten the constitution to safeguard the CSG and its members, improve the ability of committee members to meet through teleconferencing, develop key policy issues, clarify the tasks and responsibilities of committee members, and set in place a firm foundation on which to build a more modern CSG.

We have summarized the key differences between the current and proposed constitutions below, and outlined the reasons we believe such an extensive amendment is necessary.

We suggest a simple yes/no vote for total replacement rather than seeking approval for each new clause. Concerns regarding particular policies can be explained in a letter or email addressed to the CSG Secretary, and will be read at the 2015 AGM prior to any discussion of the proposal.

Rather than focusing on the ways in which the proposed and current constitutions differ, we suggest you ask yourself if the proposed constitution strikes you as a better way to run the CSG than that we have at the moment.

Votes can be cast in person at the AGM, by completing and mailing the attached ballot to the CSG Secretary or downloading and emailing the completed ballot to the Secretary and Chair by January 07 2015. Mailed ballots will be opened and counted at the AGM.

Emails will be printed and presented at the AGM for counting.

We hope you will join us in helping the CSG move forward into a bright future.

Reasons for amendment

- Expand CSG membership and reach
- Modernize CSG communication and administration
- Streamline and reduce committee work
- Improve the benefits and experience of being a CSG member

Key differences to the current constitution

- Membership is free (access to CSG paper and electronic journal remain subscription-based)
 - Committee positions are clearly defined and of set duration
 - New committee positions:
 - Sales Secretary** (merchandise);
 - Press Secretary** (promotion of all CSG events, products and related matters);
 - IT Secretary** (CSG website, digital and social media);
 - Archivist** (information storage and retrieval, science liaison);
 - Catering Manager** (CSG events catering).
- Elections are based on votes made in-person as well as through printed and electronic messages.

The proposals have been presented by Michael Hardman, Mark Walters and Julian Dignall

MH is the main author. MW wrote the Code of Conduct. MW and JD edited the proposed constitution.

Editor note: The proposals are under review by the CSG Committee and original authors, prior to issue with the Journal, the recommendations listed above may be amended in the final proposal. Full details on the constitution and voting methods will be issued with the Journal.





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10 Minutes From Junction 16 –

Meet the Member

Matthew Schauer



Born and raised in Central Wisconsin. When I was a child my parents had a pet store focusing primarily on freshwater tropical fish and exotic birds. They had 72 tanks in the store and another half-dozen at home. They left the business when I was 8 but some of the knowledge stuck with me. In 2006 I was given my first tank, a 75 gallon, by a friend whose former roommate had left it behind.

At the age of 26 my passion began. The intent was a nice looking planted community tank. Within a few months of its setup the breeding of *Badis badis*, *Corydoras paleatus* and *Nomorhamphus liemi*, quickly had it cluttered with fry boxes and breeder baskets. It wasn't long before a few more tanks were added. I tapered off at 5 tanks until I moved from Wisconsin to Northern Illinois in 2008.

In a new town with few friends I had little better to do than sit online shopping for new tanks and fish to play with. In 2011 with the help of Frank Falcone I acquired quite the collection of species and launched a website. I'm currently running over 100 tanks with my main focus being Catfish.

My love for Siluriforms started early during my fish keeping when I saw my first Royal Whiptail for sale at a local shop. Before that I had never seen anything but common plecos and corys with the occasional *Synodontis* or other basic species.

This peaked my curiosity and I began scouring the internet astounded at all the species that existed. In 2010, when I had a catfish collection of around 10 species, I attended my first All Aquarium Catfish Convention. I had loads of fun, learned a lot, and met some great people.

I started collecting many species but due to space constraints I focused on the Callichthyidae and the Loricariidae types that remain small. Even then I would have never thought, just two short years later I would attend the next Catcon with a healthy supply of tank raised fish to sell and trade. Currently I am keeping 38 species of Corydoradinae and another 20 species of suckermouth, and I've successfully convinced 34 of them to spawn between the two types.

Catfish Study Group 36th Annual Convention

 <p>The Venue</p> <p>Kilhey Court Hotel Chorley Road, Standish, Wigan, Lanc's WN1 2XN. United Kingdom</p>		<p>The Speakers</p> <p>Leandro de Sousa Nathan Lujan Ingo Seidel Steve Grant Alex Carslaw Brian Walsh & Ian Fuller</p> 
<p>20th-21st-22nd March 2015</p> <p>Contact conventionmanager@catfishstudygroup.org for full details</p>		

Otocinclus – ‘The Dwarf Suckers’

Michael Hardman



Otocinclus mimulus – Image by Mark Walters

Whether you call them ‘Cascudinhos’, ‘ottos’, ‘Ohrgitterwelse’, ‘algae scrapers’ or ‘Goblin plecs’, catfishes of the genus *Otocinclus* are familiar to aquarists the world over. Most never reach more than an inch or two (5–6 cm) and retail for only a few pounds each. Delicate mouths and an appetite for soft algae mean that these little beauties are most often installed as cleaner teams in planted aquaria.

But has their reputation as aquarium gardeners kept them out of the parlour and in the servants’ quarters? I hope not, because we all know that good things come in small packages...

Where do they live?

Otocinclus are mainly found in small to medium-sized streams with moderate flow. They are typically caught among marginal vegetation, especially in grasses and aquatic macrophytes with lots of small leaves. They’re also taken in more open water, swimming in shoals of many thousands over sandy areas with submerged structure such as a snag of branches or a leaf pack.

They occur from Colombia to northern Argentina, and have only ever been collected east of the Andes. Some species have restricted ranges in Peru, Brazil and Paraguay whereas others occur throughout the headwater tributaries of the Amazon and Orinoco basins!

Morphology

Their skeletons have special ridges, flanges and shelves that tell us they have all descended from a common ancestor. *Otocinclus* also have a special air-filled sac that balloons off their oesophagus that helps them ride high in the water column (most



Typical lotic environment

armoured catfishes sink because they are so bony), hear better and can also be used as a primitive “lung” when oxygen levels are low.

Today, we know of 17 species of *Otocinclus*, or 16 if, according to some ichthyologists, *O. affinis* is placed in *Macrotocinclus*. Telling them apart is difficult in the aquarium, but you can get a long way by looking at the eye and the tail. Eyes in *Otocinclus* come in two kinds; with and without an iris diverticulum.

An iris diverticulum is a small flap that expands or contracts to regulate the amount of light let through

the iris and is what gives most suckermouth plecs their crescent-shaped eyes. Most of the *Otocinclus* from southern and eastern Brazil, Paraguay and Argentina (*O. affinis*, *O. flexilis*, *O. mimulus* and *O. xakriaba*) and species from the ríos Tocantins (*O. hasemani*) and Araguaia (*O. tapirape*) have iris flaps.

Tell-tail signs

Tail patterns are also helpful when it comes to telling *Otocinclus* apart. Two species from Peru and Colombia (*O. batmani* and *O. cocama*) have a thick and solid W-shaped blotch on the back half of the tail. The zebra otocinclus (*O. cocama*) is the most beautiful - and most expensive - in the group, but its care and behaviour is typical.

At one time or another, most *Otocinclus* have been imported for the aquarium trade, but two species in particular dominate the flow and are most likely available at your local fish shop. *Otocinclus vittatus* has the widest distribution of any *Otocinclus* and is the main species exported from Brazil. *Otocinclus macrospilus* is an Amazonian species and a mainstay of Peruvian shipments.

If you don't know where they are from, look at their tails and caudal peduncles. In *O. vittatus*, the thick dark stripe running along the middle of the body bulges at the start of the tail and then narrows quite abruptly. In *O. macrospilus*, the same stripe stops or becomes pale before the tail blotch, which can look like a fat spindle or a diamond as it crosses into the tail proper.

In the 1980s and 1990s, two of the southern species (*O. affinis* and *O. flexilis*) were imported into the UK. These two species can easily be identified on the basis of their iris flaps (both have them) and *O. affinis* is lightly pigmented with a thin stripe running along the back two-thirds.

Otocinclus flexilis is more boldly patterned with green-gold blotches on a tan background. Although most *Otocinclus* are sold or mis-identified as *O. affinis*, this species is now very rarely seen, possibly due to habitat loss and land-use changes in its native southeastern Brazil.

Needful things

Regardless of which species you have, all *Otocinclus* require the same care. Partly because they are so small, *Otocinclus* suffer in dirty water. This is one of the reasons why they thrive in planted aquaria that typically have very low stocking densities and immaculate water quality.

You will need powerful and mature filters capable of processing the aquarium volume at least three times an hour.

You will need powerful and mature filters capable of processing the aquarium volume at least three times an hour. Aim for no measurable ammonia or nitrite and low to no (0–20 ppm) nitrate. Weekly 25–30% water changes will help to refresh the system and keep them happy. Chemistry is not critical, and provided the water is kept clean and fresh, temperatures between 22 and 28 °C are fine and a neutral to slightly acidic pH and soft water will make them feel at home.

Oto-culture

Otocinclus naturally occur in large shoals and are quite sociable animals, so if you want to try them, go for at least 6 – more if you have the space and algal growth. Healthy *Otocinclus* are active during the day and diligently crop soft algae, diatoms and aufwuchs from submerged surfaces in the aquarium. Be sure to provide some pre-soaked branches or bogwood, rounded stones and vigorous aquatic plants.

Their small teeth are not really capable of breaking through tough plant tissues, so if they exhaust the supply of fresh algae they will need feeding. The stomachs of preserved, wild-caught specimens are typically filled with algae and fine organic matter. In captivity, I've found *Otocinclus* will have a go at most prepared and frozen foods. They enjoy tablets, algae wafers, blanched spinach and courgette.

A cautionary word

Unfortunately, *Otocinclus* that enter the aquarium trade do not receive the care they deserve on their journey to your local shop, and tens of thousands of them die shortly after arrival. I've been unable to find a solid explanation for why they die, but I suspect that their size, price and natural abundance means that they are held and shipped in very high densities.

Keeping *Otocinclus* in such densities, even temporarily, likely creates a pollution problem that doesn't kill these small fishes outright, but does lasting damage to delicate tissues such as the gills and liver. This means that secondary bacterial infections are more likely and, without appropriate treatment, they will quickly succumb. Even with correct diagnosis of the pathogen and the help of a veterinarian, it's very difficult to treat small animals successfully.

So resist the urge to impulse buy. Talk to the shop owner or manager about their history and the losses they've had. If they've been in stock for at least two weeks and losses are less than 25%, select 6–10 that are actively browsing aquarium surfaces, brightly coloured and with their fins held out. Naturally, if you have the facilities you should quarantine them for two weeks to make sure they are clean.

Medicated flake foods and proprietary fluke treatments can give you some extra assurance.

The ideal *Otocinclus* set up is a planted aquarium, and the lucky few that are bought by aquarium gardeners are living in Shangri-La. For those of you that are keeping fish rather than plants, *Otocinclus* do well in Amazonian biotope aquaria populated by slow-moving cichlids such as Angelfish and Discus. While other fishes typically ignore them, any predator large enough will treat them as a snack.

Stars in their eyes

In South America, *Otocinclus* are usually found in low diversity streams in which characins such as *Astyanax* cruise the open water and *Crenicichla* lurk in the shadows. Four of the southern species are often found among or near to similarly patterned corydoradine catfishes, and several scientists suspect they are involved in mimetic relationships.

Otocinclus affinis is paired with *Corydoras nattereri* and *Scleromystax prionotus*, *O. flexilis* with *C. paleatus*, *O. mimulus* with *C. diphyses* and *O. xakriaba* with juvenile *C. garbei*.

The idea is that by having similar body patterns to a distasteful or poisonous model, the mimic lowers its vulnerability to predation. In this case, the predator learns to avoid attacking the model (*Corydoras*) because they have sharp fin spines tipped with a toxin, and the mimic (*Otocinclus*) copies the pattern to fool the predator into thinking it's a painful prey item.

Those of you looking to add more authenticity to an aquarium biotope could add one of these mimetic pairs and watch how they interact, if at all, when a potential predator comes by.

Reproductive biology

Similarities to *Corydoras* are more than skin deep. *Otocinclus* are spawned in captivity and accounts typically describe how multiple males chase females around the aquarium and eventually embrace. The female lays 1–2 eggs in a pelvic fin basket and places them individually on plant leaves, branches, glass panes, filter intake pipes, etc. and provides no further care – just like *Corydoras*!

Spawning usually takes place after a water change and the fry take newly hatched brine shrimp and blanched spinach. Any resulting fry stand a good chance of survival in a planted aquarium or one dedicated to a shoal of *Otocinclus*, but otherwise they will likely become a tasty tidbit for an *Apistogramma*. *Otocinclus* are sexually dimorphic and females are larger and broader when their ovaries are ripe.

Males have a genital papilla and a patch of modified skin teeth (odontodes). This patch of odontodes is

on the lower half of the caudal peduncle (where the body meets the tail) and swirls in a characteristic fashion. The function of the patch has yet to be confirmed, but specialists suspect it may be involved in adhering or positioning the male during the spawning embrace, when he curls his body around the females' head.

Slime suckers?

Some aquarists have reported seeing their *Otocinclus* feeding on the skin mucus of other fishes. I've kept several species of *Otocinclus* and have never witnessed this parasitic behaviour. Conceivably it could happen, if the host was in poor health and the *Otocinclus* was particularly hungry, but I don't think it's something to worry about in a healthy and well-fed aquarium.

So, if you like plants but not algae, have a lightly stocked and well-filtered aquarium, and appreciate a bargain, you could do a lot worse than a shoal of *Otocinclus*. Just be sure you get healthy stock and these cheeky monkeys will keep you entertained for hours.

Notes

I've collected *Otocinclus* in Peru (Rio Itaya, Amazon drainage) and Venezuela (Rio Apure and Portuguesa, Orinoco drainage), but never abundantly. We do not specifically target them, but they show up from time to time when sampling submerged vegetation in flowing water. They can also be found attached to branches where they become snagged, for example, in the crook of a tree that has fallen in the stream.

Most folks that have collected them emphasize their preference for aquatic and emergent plants along the shoreline. These areas are the most accessible and easily sampled aquatic habitats in large streams, so I don't know if they are using deepwater habitats too. That said, given their preferred diet (algae) and built-in floatation aids (the esophageal gas bladder), I would not expect to find them below 50 cm.

By living in the shallows, they also avoid predation from other fishes, and by hiding in the vegetation they avoid detection by fish-eating birds. So this environment is something of a safe haven, provided you can stay small enough. Interestingly, *Ancistrus* occupy the shallows as juveniles (where algal growth is the highest) and as they grow they move deeper to avoid kingfishers and herons but enter the dangerous realm of *Hoplias* and *Pseudopimelodus*.

A preference for marginal habitats might also explain the large distribution of, for example, *Otocinclus vittatus*. At the streams' edge, flow rate dramatically decreases and large cataracts and rapids then become navigable if you are small enough to access the shallow margins.

Otocinclus are small catfishes (ca. 60–70 mm) as adults, so perhaps they never really leave their childhood behind – or the benefits of small size.

Simulate the natural habitat of *Otocinclus* by providing dense planting of fine-leaved aquatic plants and installing some clean, pre-soaked branchwood.

A sandy substrate keeps feces on the surface until they can be drawn into the filter, provides a good rooting medium for the plants and is a clean look.

A mature filter with a moderate to high turnover will keep water clean and well oxygenated. Suitable tankmates include slow moving cichlids, peaceful characins, pencilfish and *Corydoras*.

Otocinclus Species Information

	Species	Distribution	Notes
	<i>Otocinclus affinis</i> Steindachner, 1877	Vicinity of Rio de Janeiro, Brazil.	
	<i>Otocinclus batmani</i> Lehmann A., 2006	Rio Puré in Colombia, and two creeks emptying into the Rio Amazonas near Iquitos, Peru.	
	<i>Otocinclus bororo</i> Schaefer, 1997	Upper Paraguay River basin.	
	<i>Otocinclus caxarari</i> Schaefer, 1997	Upper Madeira River basin.	
	<i>Otocinclus cocama</i> Reis, 2004	Peru.	
	<i>Otocinclus flexilis</i> Cope, 1894	Middle and lower Paraná/Paraguay, Uruguay and La Plata basins and Atlantic coastal streams of southeastern Brazil.	
	<i>Otocinclus hasemani</i> Steindachner, 1915	Tocantins and Parnaíba River basins.	
	<i>Otocinclus hoppei</i> Miranda Ribeiro, 1939	Amazon River basin.	
	<i>Otocinclus huaorani</i> Schaefer, 1997	Western upper Amazon and Orinoco River basins.	
	<i>Otocinclus macrospilus</i> Eigenmann & Allen, 1942	Amazon River basin.	
	<i>Otocinclus mariae</i> Fowler, 1940	Upper Madeira and lower Amazon River basins.	
	<i>Otocinclus mimulus</i> Axenrot & Kullander, 2003	Tributaries of río Monday, a right bank tributary of the río Paraná in Paraguay.	Lateral line confined to front third of body.
	<i>Otocinclus mura</i> Schaefer, 1997	Upper Amazon River basin.	3 subapterotic plates and >25 lateral plates
	<i>Otocinclus tapirape</i> Britto & Moreira, 2002	Upper and middle Araguaia River in Brazil.	Lateral line confined to front third of body. Iris diverticulum.
	<i>Otocinclus vestitus</i> Cope, 1872	Amazon and lower Paraná River basins.	Lateral line confined to front third of body.
	<i>Otocinclus vittatus</i> Regan, 1904	Amazon, Orinoco, Paraná/Paraguay, Xingu and Tocantins River basins.	Lateral line in two series, separated in middle third of body.
	<i>Otocinclus xakriaba</i> Schaefer, 1997	São Francisco River basin.	

Convention Sponsors

The Catfish Study Group would like to thank the following sponsors for their continued and most valued support.



CSG OPEN SHOW 2014

Mark Walters

There was an increase in the number of exhibitors at the event bringing some new fish to the bench, which is always welcome. The overall standard remained very high. Congratulations go to Michael Kirkham who prevailed with his Best in Show, *Anadoras grypus*.

I was up at 0530 hrs on the Sunday morning preparing show 16 tanks of show fish and was rewarded for my efforts with 8 first places including special awards for the best Corydoradinae and best breeders team. I was best pleased with a clean sweep across the breeders classes with firsts in Corydoradinae, Loricariidae and AOV South American (*Centromochlus perugiae*). I also achieved my 5th Master breeder award in the last 7 years, with breeders teams of *Scleromystax* CW038, *Peckoltia* L038 and *Pseudacanthicus* L114. Other notable winners were Roy Blackburn with 7 firsts and second Best in Show and Mike Kirkham with 4 first places to add to the Best in Show.

I was also busy catching fish for the auction, but few of the fish met their low reserves and remained unsold. My fish weren't alone and many quality catfish were returned to their boxes. Examples were *Hemiancistrus subviridis* (L200 green phantoms) unsold at £15, *Leporacanthicus triactis* (L091 three beacon plec) unsold at £17, *Pseudacanthicus* L114 (leopard cactus plec) unsold at £18, *Hypancistrus contradens* (L201) unsold at £8, *Scleromystax* CW038 unsold at £5, breeding group of *Corydoras carlae* unsold for £30, *Corydoras pastazensis* unsold for £10, *Amblydoras nauticus* unsold for £4.

RESULTS

1	ASPIDORAS		ENTRIES 4	
1	John Benbow	Preston	<i>Aspidoras rochai</i>	82.5
2	John Etherington	CSG	<i>Aspidoras fuscoguttatus</i>	81
3	Jamie Horne	SVAS	<i>Aspidoras spilotus</i>	77
Sponsor: Mike Kirkham - CSG Member				

2	BROCHIS		ENTRIES 4	
1	Steve Wain	AAGB	<i>Brochis splendens</i>	80.5
2	Steve Wain	AAGB	<i>Brochis splendens</i>	76
3	Dave Barton	CSG	<i>Brochis splendens</i>	75.5
Sponsor: Aqua One				

3	CORYDORAS "A" up to 55mm SL[F]		ENTRIES 9	
1	Mark Walters	CSG	<i>Corydoras gryphus</i>	90
2	John Dean	Preston	<i>Corydoras habrosus</i>	89
3	Mike Kirkham	CSG	<i>Corydoras gracilis</i>	87
Sponsor: Ian Fuller – Corydorasworld.com				

4	CORYDORAS "B" over 55mm SL		ENTRIES 15	
1	Liz Carney	Preston	<i>Corydoras concolor</i>	87
2	Jamie Horne	SVAS	<i>Corydoras leopardus</i>	86.5
3	Bob Barnes	CSG	<i>Corydoras concolor</i>	86
Sponsor: Ian Fuller – Corydorasworld.com				

5	CORYDORAS TYPES C & CW Nos/Unid.		ENTRIES 8	
1	Ian Fuller	CSG	CW045	87
2	Jamie Horne	SVAS	CW010	86
3	Liz Carney	Preston	C133	85
Sponsor: Ian Fuller – Corydorasworld.com				

6	SCLEROMYSTAX		ENTRIES 3	
1	Mark Walters	CSG	<i>Scleromystax kronei</i>	81.5
2	John Etherington	CSG	<i>Scleromystax lacerdai</i>	77.5
3	David Johnson	Preston	<i>Scleromystax kronei</i>	69.5
Sponsor: Ian Fuller – Corydorasworld.com				

7	AOV CALLICHTHYIDAE		ENTRIES 2	
1	Mike Kirkham	CSG	<i>Hoplosternum littorale</i>	79
2	Mike Kirkham	CSG	<i>Dianema urostriatum</i>	77
Sponsor: Mike Kirkham - CSG Member				

8	ASPREDINIDAE		ENTRIES 3	
1	Jamie Horne	SVAS	<i>Bunocephalus larai</i>	84
2	Roy Barton	CSG	<i>Bunocephalus coracoides</i>	81
3	Steve Grant	CSG	<i>Bunocephalus coracoides</i>	80
Sponsor: Midland Waterlife				

9	AUCHENIPTERIDAE		ENTRIES 7	
1	Roy Blackburn	Castleford	<i>Auchenipterichthys punctatus</i>	84.5
2	Ian Wallbridge	Bradford	<i>Centromochlus altae</i>	84
3	Ian Wallbridge	Bradford	<i>Tatia gyrina</i>	81.5
Sponsor: In Memory of Terry Ward				

10	BAGRIDAE		ENTRIES 3	
1	Roy Blackburn	Castleford	<i>Leiocassis hosii</i>	90
2	Mike Kirkham	CSG	<i>Pseudomystus siamensis</i>	88
3	Danny Blundell	CSG	<i>Mystus pulcher</i>	81
Sponsor: In Memory of J T Morris & Family				

11	DORADIDAE		ENTRIES 3	
1	Mike Kirkham	CSG	<i>Anadoras grypus</i>	86.5
2	Roy Blackburn	Castleford	<i>Agamyxis pectinifrons</i>	86
3	Mike Kirkham	CSG	<i>Trachydoras paraguayensis</i>	84.5
Sponsor: Brian Walsh – g.b.w@live.co.uk				

12	LORICARIIDAE up to 130mm		ENTRIES 4	
1	Mark Walters	CSG	<i>Peckoltia braueri</i>	85
2	Mike Kirkham	CSG	<i>O. arnoldi</i>	84.5
3	D & L Speed	CSG	<i>Peckoltia oligospila</i>	83
Sponsor: Barlows Aquatic Trading				

13	LORICARIIDAE over 130mm		ENTRIES 1	
1	D & L Speed	CSG	<i>Hemiancistrus sabaji</i>	84
Sponsor: Barlows Aquatic Trading				

14	LORICARIIDAE L&LDA Nos up to 130mm		ENTRIES 5	
1	Ian Wallbridge	Bradford	<i>Ancistrus</i> sp. L213	86
2	D & L Speed	CSG	<i>Hypancistrus</i> sp. L066	84
3	Karl Bray	Preston	<i>Hypancistrus</i> sp. L066	83
Sponsor: Danny Blundell, CSG Treasurer				

15	LORICARIIDAE L&LDA Nos over 130mm		ENTRIES 3	
1	Mark Walters	CSG	<i>Leporacanthicus</i> sp. L240	77.5
2	D & L Speed	CSG	<i>Leporacanthicus</i> sp. L240	77
3	D & L Speed	CSG	<i>Pseudacanthicus</i> sp. L024	75.5
Sponsor: Aquarian Mars Fishcare				
16	MOCHOKIDAE up to 130mm		ENTRIES 5	
1	Michael Metcalfe	Bradford	<i>Microsynodontis</i> sp.2	84
2	Jamie Horne	SVAS	<i>Synodontis batesii</i>	83
3	Mike Kirkham	CSG	<i>Synodontis nigriventris</i>	82
Sponsor: Allan James – scotcat.com				
17	MOCHOKIDAE over 130mm		ENTRIES 1	
1	David Johnson	Preston	<i>Synodontis ornatipinnis</i>	80
Sponsor: Allan James – scotcat.com				
18	PIMELODIDAE up to 100mm		ENTRIES 10	
1	Roy Blackburn	Castleford	<i>Microglanis iheringi</i>	86
2	Colin Eveson	CSG	<i>Brachyrhamdia imitator</i>	85
3	Jamie Horne	SVAS	<i>Brachyrhamdia meesi</i>	84
Sponsor: Roy Barton – CSG Asst Auction Manager				
19	PIMELODIDAE over 100mm		ENTRIES 1	
1	Mike Kirkham	CSG	<i>Batrochoglanis butcheri</i>	80
Sponsor: Dave Barton – CSG Auction Manager				
20	COLDWATER CATFISH		ENTRIES 0	
21	AOV CATFISH – S AMERICAN		ENTRIES 1	
1	Roy Blackburn	Castleford	<i>Ituglanis metae</i>	83
Sponsor: Mike O'Sullivan, CSG Membership Secretary				
22	AOV CATFISH – AFRICAN		ENTRIES 1	
1	Mike Kirkham	CSG	<i>Phyllonemus tyous</i>	83
Sponsor: Aquadistri Fish are Fun				
23	AOV CATFISH – ASIAN		ENTRIES 1	
1	Roy Blackburn	Castleford	<i>Akysis prashadi</i>	84
Sponsor: Tetra				
24	PAIRS – CORYDORADINAE		ENTRIES 13	
1	Jamie Horne	SVAS	<i>Aspidoras pauciradiatus</i>	86
2	Colin Eveson	CSG	<i>Corydoras panda</i>	85
3	John Etherington	CSG	<i>Corydoras diphyes</i>	84
Sponsor: New Era				
25	PAIRS – LORICARIIDAE inc L&LDA Nos		ENTRIES 2	
1	Roy Blackburn	Castleford	<i>Peckoltia brevis</i>	82
2	Mark Walters	CSG	<i>Peckoltia</i> sp. L038	81

26	PAIRS – AOV S AMERICAN		ENTRIES 4	
1	Steve Grant	CSG	<i>Bunocephalus larai</i>	84
2	Ian Wallbridge	Bradford	<i>Centromochlus perugiae</i>	79
3	Mark Walters	CSG	<i>Centromochlus perugiae</i>	78
Sponsor: Brian Walsh – g.b.w@live.co.uk				
27	PAIRS – AOV AFRICAN		ENTRIES 2	
1	Danny Blundell	CSG	<i>Microsynodontis polli</i>	85
2	Roy Blackburn	Castleford	<i>Mochokiella paynei</i>	84
28	PAIRS – AOV ASIAN		ENTRIES 1	
1	Roy Blackburn	Castleford	<i>Erethistes pusillus</i>	82
29	BREEDERS–CORYDORADINAE		ENTRIES 9	
1	Mark Walters	CSG	<i>Scleromystax</i> sp CW038	91.5
2	Colin Eveson	CSG	<i>Corydoras panda</i>	89.5
3	Ian Fuller	CSG	<i>Corydoras</i> sp CW009	89
30	BREEDERS–LORICARIIDAE Inc L&LDA		ENTRIES 4	
1	Mark Walters	CSG	<i>Pseudacanthicus</i> sp. L114	87
2	Mark Walters	CSG	<i>Peckoltia</i> sp. L038	85.5
3	Ian Fuller	CSG	<i>Hisonotus aky</i>	85
31	BREEDERS – AOV S AMERICAN		ENTRIES 2	
1	Mark Walters	CSG	<i>Centromochlus perugiae</i>	91
2	Ray Blackburn	Castleford	<i>Hoplosternum pectorale</i>	73
32	BREEDERS – AOV AFRICAN		ENTRIES 0	
33	BREEDERS – AOV ASIAN		ENTRIES 0	
34	FAMILY CLASS – Pair & Breeders Team		ENTRIES 8	
1	Colin Eveson	CSG	<i>Corydoras panda</i> [white]	174.5
2	Ian Fuller	CSG	<i>Corydoras</i> sp CW009	171
3	Mark Walters	CSG	<i>Centromochlus perugiae</i>	169
35	BREEDERS – MASTER CLASS		ENTRIES 4	
1	Mark Walters	CSG		264
2	Colin Eveson	CSG		260.5
3	Ian Fuller	CSG		250
Ted Derrick Memorial Trophy				



SPECIAL WINNERS 2014

Best Fish in the Show – Sam Trophy

Mike Kirkham CSG *Anadoras grypus* Class 11

Best Corydoradinae - Yvonne Cank Memorial Trophy

Mark Walters CSG *Corydoras gryphus* Class 3

Best from Classes 7-11 – Masterstaff Cup

Roy Blackburn Castleford *Leiocassis hosii* Class 10

Best Loricariidae – Masterstaff Trophy

Ian Wallbridge Bradford *Ancistrus* sp. L213 Class 14

Best Synodontis – L.M.B. Aquatics Shield

Michael Metcalfe Bradford *Microsynodontis* sp.2 Class 16

Best Pimelodidae – S & P S Cup

Roy Blackburn Castleford *Microglanis iheringi* Class 18

Best AOV Catfish – A.O.V. Catfish Cup

Roy Blackburn Castleford *Akysis prashadi* Class 23

Best Pair – Clint Cup

Jamie Horne SVAS *Aspidoras pauciradiatus* Class 24

Best Breeders Team – Kings Carpets Trophy

Mark Walters CSG *Scleromystax* sp CW038 Class 29

Gallery of Show Fish Images by Steven Grant



Corydoras ornatus



Corydoras delphax



Hypancistrus L066



Corydoras cf *imitator*



Scleromystax lacerdai



Corydoras ourastigma male



Agamyxis pectinifrons



Corydoras ourastigma female



Corydoras panda 'White'



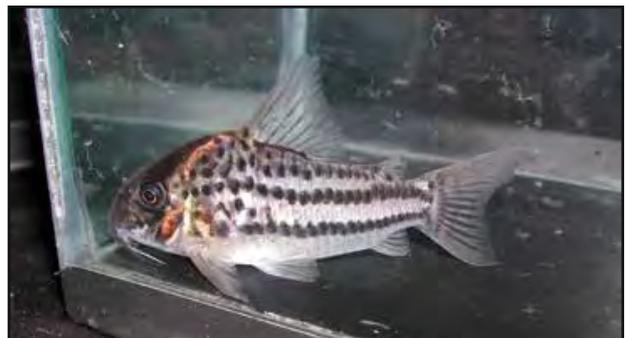
Corydoras carlae



Corydoras orphnopterus



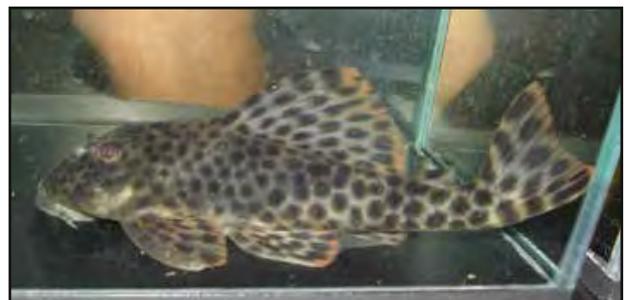
Corydoras sp CW030



Corydoras sp C133



Hypancistrus L066



Hemiancistrus oligospila



Trachydoras paraguensis



Peckoltia L038



Trachelyichthys exilis



Leiocassis hosii



Dianema urostriata

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Spawning *Spectracanthicus murinus*

Matthew Schauer



A personal milestone

It seems my fish know the most inconvenient times to spawn and *Spectracanthicus murinus* was no different. My first spawning occurred the day I was packing to leave for the MASI Spring Fling event in St. Louis. Regardless of the poor timing, I was ecstatic. In my 5 years as an active hobbyist I've spawned over 40 different species, a majority of which have been Loricariidae and Corydoradinae, but the *Spectracanthicus* was different, special. I've bred many hobby favorite catfish such as *Hypancistrus Zebra*, *Peckoltia Compta*, many *Ancistrus* species, all of the "Laser" and most of the pygmy Corys. A wealth of knowledge is available on conditioning, tank setups and breeding experiences for many of these fish. However, spawning murinus has been a personal highlight. *Spectracanthicus* is a name few recognize whose genus is made up of only five described species; *murinus*, *punctatissimus*, *immaculatus*, *tocantinensis*, and *zuanoni*; with the latter three all described in 2014.

Seventeen or so L/LDA's also exist that are yet to be described, most of which are fairly recent discoveries. I am uncertain if the three new fish are descriptions of existing L's or totally new discoveries. The information available online for any of these species is very limited and basically consists of a couple of websites reposting the same generic data. The two *Spectracanthicus* most commonly available are *Spectracanthicus punctatissimus* and *Spectracanthicus* sp L030 but, both are often traded under the synonym *Oligancistrus*. Unfortunately, L030 and the common name "Peppermint Pleco" are used interchangeably for both species by importers, wholesalers and stores. Don't let that dissuade you from picking up a group of those when available.

Both *Spectracanthicus punctatissimus* and *S.* sp L030 are classified as "vulnerable" by the C.A.R.E.S. Preservation Program. You will just have to put in some work when attempting to get a proper identification when you get them home.

Spectracanthicus murinus is a 4.5 inch; modestly colored fish that can change its base color from very light grayish yellow to almost jet black, depending on tank lighting and mood. When well-conditioned, the fish will have a base color that is mouse gray which is the epithet of "*murinus*". It sports fine white spots and seams of the same color on the edges of the dorsal and tail fins. The dorsal membrane extends to the first adipose ray like the true L200 *Baryancistrus demantoides*, a trait shared by all the *Spectracanthicus* species.

I got my first murinus in 2011 when I was occasionally getting fish in through a trans-shipper. I ordered a box of them because it was a fish I was not familiar with and thought they may be fun to work with. Those fish came in in fantastic health and quickly adjusted to aquarium life. A few months after their arrival, I had a customer make an offer for the entire lot which, I reluctantly accepted with the assumption I could order more. This was not as easy as it sounded. This fish was rarely on the lists I was privy to and the few times they did appear, other things were a priority.

In April 2013 I finally had a chance to bring in another box. These fish were in very rough shape and severely emaciated. Upon arrival I struggled to get them to accept any foods. One by one I lost all but two, and with no real visual sexual dimorphism, I figured I was stuck with a single sex. The remaining two fish were housed in a 20 gallon long (12"x12"x20"/30cm x 30cm x 50cm) along with a trio and some juvenile

Ancistrus sp L180. The tank contained a white sand substrate, three different styled caves and a piece of bogwood. The tank is positioned lengthwise in the rack, the caves and wood stacked into a single structure in the center on the tank with a vertical sponge filter located behind it. An internal heater kept the tank hovering at 84F (29C) and bi-weekly water changes of 30-50% would drop the temp to around 77F (25C). My water supply is from the Great Lakes and has a PH of 7.2- 7.7, a GH that hovers around 160, a KH around 125, and the TDS generally reads around 160 as well. Though technically these are not ideal parameters for most South American fish, my methods focusing on a healthy diet, good filtration rates, and lots of fresh water has allowed me to be successful with no modification to the tap water. I feed all my fish a wide variety of foods ranging from meat and veggie based pellets, frozen and live foods as well as fresh fruits and vegetables. *Spectracanthicus murinus* was not picky and once conditioned, accepted all foods offered but preferred foods of high protein.

The First spawning

In early March 2014 my L180 had begun to spawn and I had two batches of fry going in a single cave. It also appeared the *Spectracanthicus* were fighting for cave space. I initially thought the fish had fully matured and were indeed two males. However, it seemed strange because one of the caves in the tank was unoccupied. I was offering a large burrito styled cave with a flattened end, this was home to the male L180 and fry. So this left *S. murinus* the options of a square cave with square end, and a tapered bell style cave. The battle was for the bell and I thought perhaps they prefer this style over others. I added an additional bell on the opposite end of the tank with hopes to end the territory dispute which had become increasingly violent. The two fish would spend most days trying to force each other out of the cave. Once one was evicted it would remain at the mouth of the cave, subjecting itself to tail slaps from the tenant. After a period of time the cave inhabitant would become annoyed with the other fish and would exit the cave. This resulted in a short burst of chasing and head butting until one fish made it to the cave entrance, and the cycle would begin again. I considered at this point separating the two fish but the behavior was not affecting the L180 who was still guarding fry and thought tampering in the tank would be more disruptive.

After a week or so of conflict between the *S. murinus*, I noticed a change in the behavior. Both fish were now occupying the cave with the male on top doing what I call "the sexy shiver" a behavior witnessed with most pleco species. The "sexy shiver" occurs when the male has the females trapped in the cave and he rapidly flutters his pectoral and anal fins against the female while using his body to force her

against the back of the cave. The male kept her trapped for 4 days in this position.

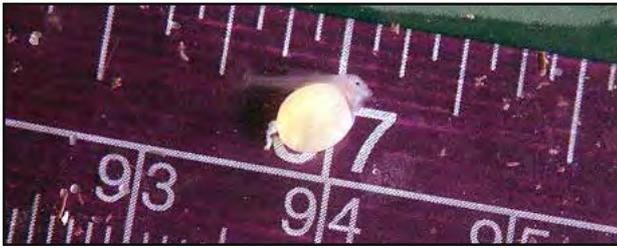
Finally on April 2nd while preparing to leave for St Louis the female exited the cave briefly and quickly backed into position to deposit her eggs. By the next morning, approximately 35 eggs about 3/32" (2.8mm) in diameter could be seen if the male moved just right within the cave. The eggs were a pale yellow to transparent white. The egg mass was a single solid ball which was loosely placed in the back of the cave. The only time the eggs could be seen was when the male was rotating the cluster. I was gone during most of the egg development. But with the style cave, I'm unsure if it would have been possible to observe or photograph much without excessive disruption.

The eggs hatched 5 days later, upon my return. The male was positioned in a fashion that left any observation near impossible. The day after the eggs hatched a young fry escaped the cave; The *Spectracanthicus* fry are very small and undeveloped. A literal egg with a tail, the eyes and mouth are barely discernable and the young have yet to develop any pigmentation. On April 10th to my surprise, I returned from work to find the male L180 had released his fry and evicted the male *Spectracanthicus* from his cave. It appeared he was rearing the fry, but too much dismay, the next morning the cave was vacated by both adult fish and was completely empty.

A second chance

A few weeks later I was already witnessing the courtship ritual occurring again amongst the *murinus* pair. This time the behavior lasted much longer. I'm uncertain if this is because of the incident with the L180 or the addition of the second bell shaped cave. But unfortunately, an open tank was unavailable, so for the time being the *S. murinus* would have to cope with the neighbors. On several occasions over the next month I would witness the female backed into the cave with the male doing the "Sexy shiver." Each time this occurred it was in a different cave, and each time, the mornings brought an empty cave.

On May 19th I was doing my typical evening cave snooping and was delighted to find my second batch of *murinus* eggs had been deposited in the same bell the first batch had been placed. This spawning took place quite rapidly considering the four days of trapping that occurred on the original spawning. This time I wasn't taking any chances. I gently lifted the cave containing the male and eggs and placed it in a large recirculating hang-on breeding box. I was already seeing the benefits of the fish being located in there, as observations would be much easier. But even then, I was never able to be in the right place at the right time to photograph the male with the eggs.

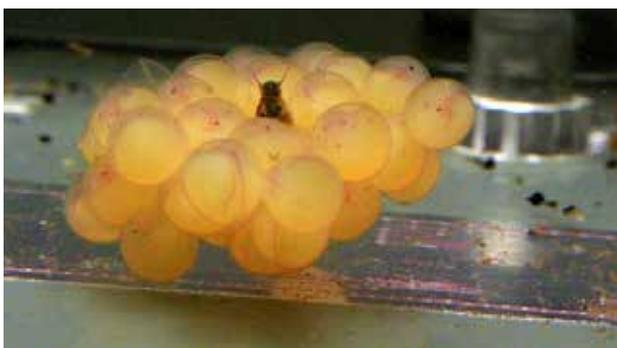


Stillborn Spectracanthicus murinus fry

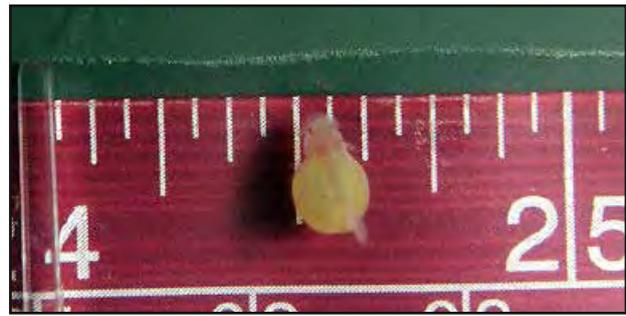
On May 23rd I found 4 stillborn fry and the remnants of hatched eggs just outside the cave entrance. Among the dead was one small fry that appeared to have a small hemorrhage in yolk sac but was still wiggling. I had hopes he would remain alive for further observation of the fish development. Unfortunately over the next 24 hours that fry perished. The next evening the male had vacated the cave after eating the balance of the fry. I'm uncertain what instigated this, in my experiences, an excessively disturbed male will generally eat the eggs, rather than waiting for them to hatch first. Frustrated at my second failure with this species, I returned the male to the tank and contemplated what my next trick would be as I tried to open up an extra tank. June was a busy month. Most of my livebearers and a few other projects were moved outside for the summer, but for every tank I made available, I quickly filled with another project fish. I was regularly getting in Corys from a fellow breeder that was shutting down his fish room and a home for those became the priority.

Third times the charm?

On June 24th I was given another opportunity with the murinus. The male was again found in the same bell with 35 more eggs, which was surprising because courtship went completely unnoticed. This time I spent several days debating on what approach I would try. It was too late to try and relocate the Ancistrus and my attempt at removing the male with the eggs also failed. I had little option left; the business definition of insanity is doing the same thing expecting different results. So, I reluctantly decided to pull the eggs with hopes of hatching them under a gentletumble. A rearing method I'm generally not very successful



Eggs three days after discovery, A few MTS Snailies were used to assist in egg cleaning.

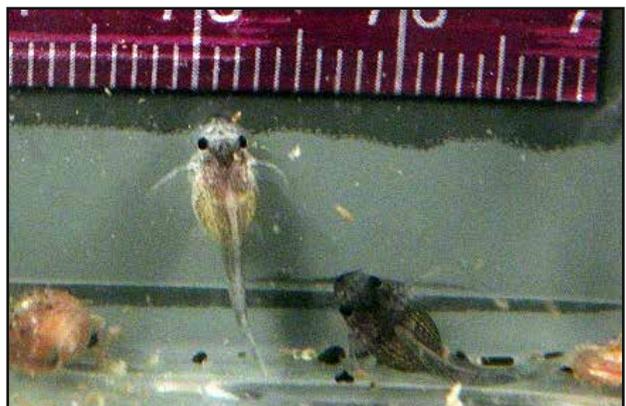


Newly hatched Spectracanthicus murinus fry.

The eggs were pulled three days after they were discovered, it was clear the spawn was viable and the fry were developing nicely. Between day four and five the eggs hatched on the 28th and 29th of June. Eight stillborn were removed but, a great majority of the spawn appeared in very good condition. As mentioned earlier, the fry are extremely undeveloped, just a yolk sac with a tail and two tiny black eyes. Once hatched, the air stone was removed and light recirculation was turned on in the breeding box. This was done to prevent the fry from burning excess energy attempting to fight the current so it could be used in development. By the second day slight pigmentation could start to be seen on the top of the head but, judging by the proportion of body to yolk sac I was far from the safe zone with these delicate little guys. A hardwood leaf was placed in the container. This provided cover for the young fry and would provide grazing of the infusoria created by the decomposing leaf when they begin feeding.



By the second day slight pigmentation can be seen on the top of the head.



The fry are 7 days old; the fish on the left is roughly 24 hours younger.

Ten fry were lost during the first seven days for reasons unknown. At this point the fry were 8mm (5/8") total length and were getting the gray color of their parents. A huge difference could be seen in the fry that hatched on the second day. It was clear that a large amount of yolk sac was still remaining and it would be awhile before the fry would be getting their first meal.

By day fourteen the ten remaining fish had full pigmentation and were quite adorable. Mouse grey fry were scooting around the container, but the fry were still quite plump and there was still some time before first foods needed to be offered. On the 21st day, the fry had grown considerably and were now being offered a mix of dried pellet foods.

At the one month mark the fry were approaching 15mm (1/2") and had begun to develop the white spots and seams found in the adults. The spots developed randomly and were quite large in proportion to the body. It was at this point the fry were removed from the container into a "Forty Breeder" (12"x18"x36"/30cm x 45cm x 122cm) tank with several other species of similar size.



The fry at 30 days.

The grow-out tank contained just enough sand to cover the glass bottom, several caves and was littered with driftwood and hardwood leaves, providing lots of places for the assorted fry to hide.

Two verticle sponge filters were set up in opposite corners of the aquarium and water changes of 50% were done once to twice weekly. Observation became increasingly difficult as the fry were quite shy. Once a week I would turn the hardscapes just to check their growth and condition.

Growth slowed to a crawl after the first month. 45 days later the fry had grown slightly in mass but very little in length reminding me of the development rates of *Hypancistrus zebra*. I've also found the *S. murinus* fry development is extremely sensitive. I was traveling a lot in July and in turn tank maintenance was neglected. Once things returned to normal and I went to photograph them, I noticed the fry had begun to develop an up-curl and twist in the pectoral fins. In my experiences this deformity; typically seen in *Ancistrus*, is more likely a result poor water quality and not necessarily genetics. Because these are F1 fish I have no doubt this is the case. I've doubled my water change frequency. I've had luck correcting this problem in other species when identified early and hope the increased fresh water will again be successful.

I've thoroughly enjoyed my experiences with *Spectracanthicus murinus*, and look forward to perfecting the spawning and raising of fry. Additionally I plan to try my hand at other *Spectracanthicus* species. I would encourage everyone to spend a little time with the genus *Spectracanthicus*, an interesting little fish which deserves to be the topic of more discussions.



On the identity of *Corydoras arcuatus* Elwin, 1938 and some similarly patterned species (Siluriformes: Callichthyidae)

Steven Grant



Corydoras C020 – the fish known in the hobby and scientific publications as *C. arcuatus*

The name *Corydoras arcuatus* has been given to aquarium fish for many years now. However, the actual true identity of the species described by Elwin in 1938 is not as clear as one may think.



Fig. 2 – CW036

The code number C020 was given to a specimen from Rondônia, Brazil; CW036 was designated for the so called 'Super Arcuatus' from Rio Madeira, Brazil; and Britto et al (2009) described *Corydoras urucu* from the Rio Urucu basin, Rio Solimões system, Brazil. Also, C019 (Brazil), C098 (Brazil), C100 (Rio Negro, Brazil), *C. evelynae* Rössel, 1963 (Upper Rio Solimões, Amazonas, Brazil), CW006 (Peru), and *C. narcissus* Nijssen & Isbrücker, 1980 (Rio Purus system, Brazil) all share the similar arched band pattern, although in some the pattern is discontinuous.



Fig. 3 – Holotype of *C. urucu* – image by Wolmar Wosiacki



Fig. 4 – C019



Fig. 5 – C098 – image by Hans Georg Evers



Fig. 6 – C100 – image by Ian Fuller



Fig. 7 – *C. evelynae*



Fig. 8 – CW006



Fig. 9 – *C. narcissus*

There is also a species that has not been assigned a code number yet that has shown up in two shipments from Manaus, Brazil (Fig. 10).

Based on work by Alexandrou et al (2011) and Alexandrou & Taylor (2011) it is clear that not all the above species / code numbers are congeneric. Alexandrou & Taylor (2011) group them as follows:

Corydoras sensu stricto: *C. narcissus*
C. sp. Manaus (inserted by the author)

Lineage 8, sub-clade 4 – undescribed genus: C098, CW006. Lineage 9 – *Hoplisoma* (as *Hoplosoma*): *C. arcuatus*, *C. evelynae*, *C. urucu*, C019, C098, C100, CW036



Fig. 10 – *Corydoras* sp imported from Manaus, Brazil.

The identity of *Corydoras arcuatus* Elwin, 1938

Out of the species / code numbers above this article focuses on the identity of the three species placed in *Corydoras* (*Hoplisoma*) by Alexandrou & Taylor (2011) that exhibit an unbroken arched band from the eye to the caudal fin: *C. arcuatus*, *C. urucu* and CW036.

Since observing an image of the holotype of *C. arcuatus* (Fig. 11) years ago, I have queried whether the fish depicted in scientific papers (e.g. Nijssen & Isbrücker, 1986:Fig. 29; Castro, 1987:Pl. 2, Fig. 1; Britto et al, 2009:fig. 2B) and in aquarium publications (e.g. Glaser et al, 1996:67, 68 (upper); Fuller and Evers, 2005:67, 68 (upper)) are the true *C. arcuatus*.



Fig. 11 – Holotype of *C. arcuatus* – Trustees of Natural History Museum, London

The first step to trying to resolve this issue is to clarify the issue around the type specimens in the original description. Elwin clearly based the description on two specimens. One, the holotype, was said to be an aquarium specimen that had no locality data. The other, a paratype, was another aquarium specimen from a different import and was said to be from “Teffe, Amazon”. Tefé is situated on a lake formed by the Tefé River, which is a right bank tributary of the Rio Solimões; the next main tributary being the Urucu River.

At the time of the description it is clear that one specimen (the holotype) had been deposited in the Natural History Museum in London; as per Elwin: "The following description is based on a specimen, the type, which I have deposited in the British Museum (Natural History)".

The only traceable deposit by Elwin is BMNH 1939.3.3.1 (Nijssen & Isbrücker, 1986 and Maclaine, personal communication) so appears that the paratype was not deposited, and therefore must be assumed as lost.

The accession entry for BMNH 1939.3.3.1 states "*Corydoras arcuatus* (type), presented by Miss M. Elwin" (Maclaine, personal communication). The reason it is important to clarify that BMNH 1939.3.3.1 (fig11) is the holotype is that I consider that the paratype is not conspecific with the holotype.

In the original description a photograph is provided on Plate III and is labelled on the plate and on page 128 as "type". Where there are multiple type specimens then the use of the word 'type' usually denotes the holotype, and in fact Elwin refers to what was the holotype as "the type" (pg. 128) (and as mentioned above states that was the one deposited in BMNH).

However, I do not consider that specimen shown on the plate is the holotype; I consider that it is the paratype. Having observed thousands of live Corydoradinae over the last twenty five years and some preserved specimens it is quite obvious to me that the specimen in the photograph has a rounded snout whereas the holotype has a snout that is not rounded.

A discussion and description of the snout shape and structure, and why this is important, is provided further on. The holotype is the name bearing specimen for the species. This confusion on identification has led, in my opinion, to *C. arcuatus* being misidentified for the last 75 years.

Nijssen & Isbrücker (1986) noted some differences in meristics and morphometrics between their Peruvian and Ecuadorian specimens and the holotype, but did not make any further observations or comments on this.

Britto et al (2009) described *C. urucu* and compared it to the holotype of *C. arcuatus* and to further specimens identified as *C. arcuatus*. They discuss the records of *C. arcuatus* from several tributary river basins of the Rio Solimões system (e.g., Rio Caquetá, Rio Napo, Rio Purus, Rio Tefé, Rio Ucayali, Rio Yavari; Nijssen and Isbrücker, 1980, 1986; Castro, 1987; Britto, 2007) but state that none have been found in the Rio Urucu or Lago Coari.

Differences given between *C. urucu* and *C. arcuatus*

are that in the former the arc-like stripe terminates posterior to the orbit (vs. extending onto snout), by having fewer free vertebrae (21 vs. 27); the lateral profile of the snout distinctly rounded (vs. nearly straight); a greater preadipose distance (84.0–86.7% SL, vs. 82.9–83.8% SL); and the posterior limit of the cleithrum at a vertical through the dorsal-fin spinelet (vs. between the third and fourth dorsal-fin rays).

Britto et al (2009) recognise that the type locality of *C. urucu* is within the distributional range given for *C. arcuatus*, and that "there is some resemblance between the new taxon and juveniles of the latter species at first inspection. Small specimens of *Corydoras arcuatus* within the size range of *C. urucu* (20.0–27.0 mm) superficially resemble adults of the latter, but differ nonetheless in the characters listed in the diagnosis.

Furthermore, juveniles of *C. arcuatus* that are shorter than this size range do not show the snout portion of the arc stripe, and the body stripe is broken into several irregular, dark blotches (Fuller, 2001:38–39).

Also, specimens of *Corydoras arcuatus* that are up to this size range show dorsolateral body plates not touching their counterparts, leaving a median groove between the last dorsal-fin ray and the first pre-adipose platelet (vs. dorsolateral body plates touching their counterparts in *C. urucu*).

There is a potential problem with some of these comparisons in that there does not appear to be a recognition that the holotype of *C. arcuatus* does not appear to be the same species (or even congeneric) with some (possibly all, barring the holotype) of the specimens they referred to as *C. arcuatus* e.g. the specimen they show in Fig 2B of the description of *C. urucu*. This is where CW036 comes into play.

CW036 is known from the Rio Madeira, in the Humaita region, Brazil (Fuller & Evers, 2011) but has also been imported from the Rio Purus, Brazil. As mentioned earlier, CW036 was designated a code number by Ian Fuller in recognition that the fish known in the trade as 'Super Arcuatus' appears morphologically distinct from the specimens referred to in scientific publications and in the hobby as *C. arcuatus*. The main visual difference noted by Ian and by other aquarists is that CW036 gets to a much larger size than '*C. arcuatus*' (75-80 mm SL vs. 50-55 mm SL) and that the profile of the snout in CW036 seems straighter. Having observed live specimens and photographs of CW036 it is my view that CW036 matches the holotype of *C. arcuatus*, as discussed below.

Snout, orbital and opercular structures

The holotype of *C. arcuatus* has a head and snout

profile that appears straighter and more extended, giving the snout a longer look (Figs. 12 and 13).



Fig. 12 – Head profile of holotype of *C. arcuatus* – Trustees of Natural History Museum, London

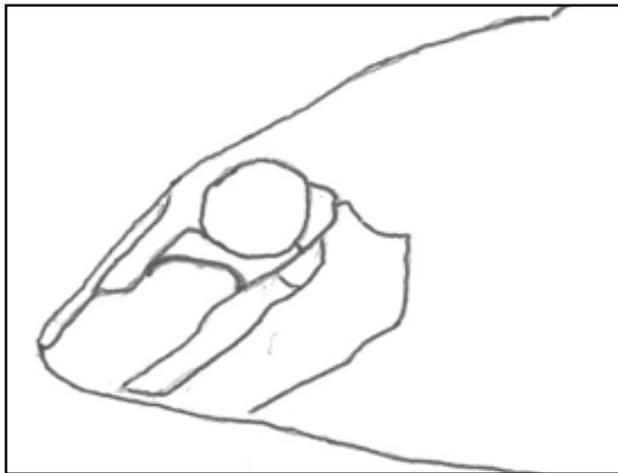


Fig. 13 – Schematic of head of holotype of *C. arcuatus*

This is because of the shape/angle and length of the anterior portion of the mesethmoid. The infraorbital 1¹ is relatively narrow, granulated and possibly has odontodes on its anterior expansion.

The ventral outline of the anterior expansion of infraorbital 1 has a concave margin. The lateral ethmoid is narrow and extends far down the snout. The preopercle appears relatively long and wide. The area between the anterior portions of the mesethmoid and lateral ethmoid (on the anterior portion of the snout), the anterior expansion of infraorbital 1 on the dorsal portion, and the preopercle on the posterior portion is not a bony structure and has no supporting bones underneath, but is composed of thickened skin.

This area is referred to as the 'lateral margin of the snout' by Tencatt et al (2013). On the 'long', 'intermediate' or 'saddle' snouted species this is what

gives the snout a pinched look, as it often looks concave. Because of the relatively long anterior portion of the mesethmoid, and the narrow infraorbital 1, the lateral portion of the snout appears large. CW036 has the exact same shape and morphology of these structures.

In the specimens usually captioned as *C. arcuatus* (including the specimen on the plate of the original description, which I consider to be the paratype) the head and snout has a more rounded or curved angle than the holotype of *C. arcuatus* and CW036, giving the snout a shorter look (Figs. 14 and 15).



Fig. 14 – Head profile of BMNH 1958.6.9.1 (C020) – Trustees of Natural History Museum, London



Fig. 15 – Schematic of head of BMNH 1958.6.9.1 (C020)

¹ This is labelled as lacrymal-antorbital in Huysentruyt & Adriaens (2005), but Britto (2003), Britto & Lima (2003) and Tencatt et al (2013) refer to it as infraorbital 1. Based on the last three aforementioned works I will also refer to it as infraorbital 1.

This is because of the shape/angle and length of the anterior portion of the mesethmoid. The anterior expansion of infraorbital 1 is relatively deep and is thickened, with its ventral margin being straighter than the holotype of *C. arcuatus*/CW036. The expansion of the lateral ethmoid is relatively narrow but does not extend far down the snout. The preopercle appears relatively short and narrow. Because of the relatively short and more curved anterior portion of the mesethmoid, and the deep infraorbital 1, the lateral portion of the snout appears smaller and not as concave as true *C. arcuatus*/CW036.

In the holotype of *C. urucu* the head and snout has an even more rounded or curved angle than holotype of *C. arcuatus* and the specimens usually captioned as *C. arcuatus* (Figs. 16 and 17).



Fig. 16 – Head profile of holotype of *C. urucu* – image by Wolmar Wosiacki

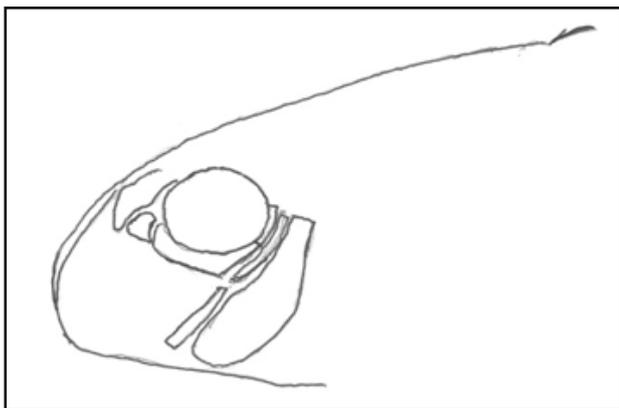


Fig. 17 – Schematic of head of holotype of *C. urucu*

This is because of the shape/angle and length of the anterior portion of the mesethmoid. However, any visible difference could be due to the smaller size of the holotype of *C. urucu*.

The anterior expansion of infraorbital 1 is relatively narrow and not thickened, with its ventral margin being straighter than the holotype of *C. arcuatus*/CW036, and it appears fragmented, but this could

be due to skin coverage. The lateral ethmoid is hard to delineate but appears relatively small.

The preopercle appears relatively short and narrow. Because of the relatively short and more curved anterior portion of the mesethmoid, the lateral portion of the snout appears not as concave as true *C. arcuatus*/CW036 or of the specimens usually captioned as *C. arcuatus* (although the latter could be due to the relatively larger eye size, which is possibly due to the smaller specimen size of *C. urucu* when compared with the specimens usually captioned as *C. arcuatus*).

There are other differences between *C. arcuatus*/CW036 and the fish normally known as *C. arcuatus* in additions to those above e.g. in the former the intercoracoid and ventral area is covered in small odontodes, whereas in the latter there are relatively large platelets of varying sizes. Based on the snout structures that I have observed it is also possible that *C. arcuatus*/CW036 may not actually fall into the genus/subgenus *Hoplisoma*, but into Lineage 8, sub-clade 4 (undescribed genus).

To summarise, based on the osteology of the head of the holotype of *C. arcuatus* it is my opinion that CW036 is the true *C. arcuatus*.

Also, that the paratype of *C. arcuatus* matches the fish known in the hobby as *C. arcuatus*, which in my opinion should be referred to as C020 for the foreseeable future, so that the confusion is not perpetuated.

Notwithstanding the differences given by Britto et al (2009) it is possible that *C. urucu* are smaller specimens of C020. However For the time being they should be classed as distinct from each other.

A specimen was imported along with *C. evelynae* by Pier Aquatics (Wigan) which could represent an adult *C. urucu* (Fig. 18), and this did appear somewhat different to C020 from Peru.



Fig. 18 – Possible adult *C. urucu*

Further comparisons of *C. urucu* specimens with definite C020 specimens from the various localities listed previously would be useful.

Acknowledgements

Thanks to James Maclaine of the Natural History Museum (BMNH), London for the images of preserved specimens (the trustees of the Natural History Museum, London retain copyright of them) and information on the holotype; to Wolmar Wosiacki, Museu Goeldi (MPEG), Brazil for the images of the holotype of *C. urucu* (MPEG retain copyright of them) and information on the holotype; Ian Fuller and Hans Georg Evers for use of their photographs; and to Luiz Tencatt for clarification on nomenclature of snout osteology of *Corydoras*.

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Experiments on Artificially Hatching *Pseudacanthicus* eggs

Mark Walters



Pseudacanthicus L114 juvenile – Image by Steven Grant

As reported in the last CSG Journal, I have had varying success with spawnings of *Pseudacanthicus* L114 and the hatching of eggs through natural and artificial means. I noted an article presented on Planet catfish by a German aquarist (Sandor), describing the artificial raising of *Pseudacanthicus* eggs using fresh water rather than tank water. Freshwater in this case being treated tap water, brought up to the same temperature as the normal tank water. The reported success was quite convincing and I was interested to try the technique for myself.

During October 2014, my pair of *Pseudacanthicus* L114 had been trapping for a few days and after the male moved caves I thought they'd given up. He had actually kicked his clump of eggs out of the cave and after a quick look around I discovered them nestling on the tank bottom.



L114 spawn

I reviewed the Planet Catfish article again, and decided to split the clump in two. I placed half in tank water with a drop of methylene blue and the other half in treated tapwater up to tank temperature. I had plenty of aged tapwater in the fish house, used in routine water changes when rainwater supplies are low. The wisdom is that the tap water will have reduced bacteria and microbes levels (compared to the tank water and Biological Oxygen Demand (BOD) as a consequence.

The eggs in the tank water were used as a control, although I could have split the eggs three ways and had another batch with no meth blue. I figured that all the eggs could turn to mush, but nothing ventured nothing gained



Hatching tub

The eggs were suspended in a new net, with constant aeration. During the 7 days hatching period, the water was changed in both tubs after 4 days, with another drop of methylene blue. The water in the tank water tub needed changing up to three times on each subsequent day, as the water quality deteriorated.

Previously I had tried hatching the eggs after the male had ejected them after about 3 or 4 days. This time the eggs were a day old. In total I had a batch of around 160 eggs, roughly split across the trial. I maintained a daily log of development and posted progress on a Facebook forum, which generated a great degree of interest from other aquarists, keen to see the results of the experiment.

The following images record the progress over the 7 days of egg development, up to the point of hatching. I didn't monitor water quality parameters in the main tank or hatching tubs, although temperature was a steady 32C, rather higher than normal but not detrimental to egg development.



Day 3 Development



Day 4 Development

Development of eggs was normal up to day 4 for both batches of eggs. After day 5, a number of the eggs in the tank water tub had ruptured egg membranes. Any eggs that were seen to be damaged or with leaking contents were removed and the tank water replaced. The comparative image below, indicates a number of the tank water eggs which have ruptured egg sacs.



Close up of Day 5 egg development



Day 5 comparison – Fresh water on left, Tank water on right



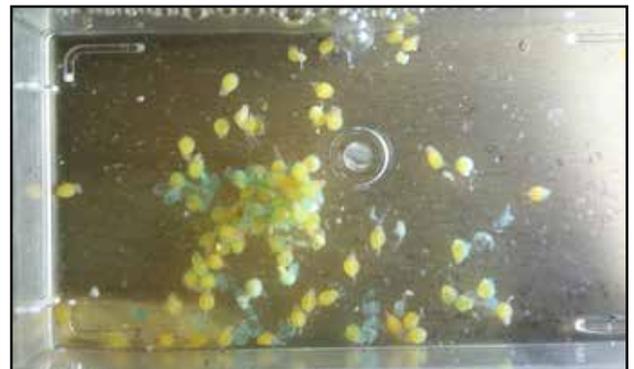
Day 6 – Fresh water eggs showing normal development

After day 6, numerous eggs held in the tank water had started to hatch and plenty more had damaged egg sacs.

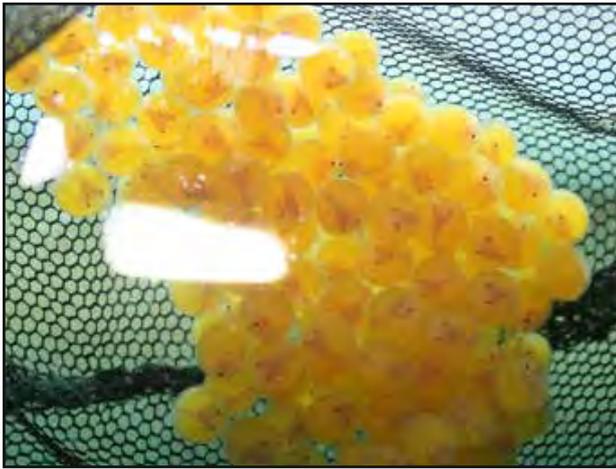


Day 6 – Tank water eggs prematurely hatching

On day 7, the remaining eggs held in tank water had hatched. The eggs held in fresh water were in much better condition and by this time none of these eggs had suffered from damaged egg membranes. Shortly after inspection on day 7, all of the fresh water eggs hatched, within an hour of each other, resulting in healthy fry.



Day 7 – Tank water eggs hatching with numerous damaged eggs



Day 7 – Fresh water eggs minutes prior to hatching



Day 7 – Fresh water eggs hatching



Day 7 – Fresh water fry, all hatched successfully

All healthy fry were placed in a single tub a few days after hatching. After the egg sacs were fully absorbed, all fry were transferred to a raising tub with through flow and plenty of bogwood for cover.



Raising tub with through-flow



Close-up of raising tub



L114 fry after 17 days

In summary, for the eggs hatched in tank water I experienced a 30% success in hatch-rate. For the fresh water hatched eggs, I experienced a 100% hatch rate. As has been stated by sandor, in his Planet Catfish thread, the technique has only been tried successfully with *Pseudacanthicus* eggs, it has been tried with inconclusive results with other Loricariids.

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Facebook forum 'Catfishes of the World'



20th 21st & 22nd March 2015

BREEDERS AWARD PROGRAMME DISPLAY TANKS

As in previous Conventions, there will be **ten** B.A.P. tanks available for B.A.P. registered fish to be displayed along with details of the fish, maintenance and breeding conditions required. These tanks will be set up prior to the Convention, with heated, filtered HMA water, which may be replaced by the exhibitor. All tanks will be filtered by fully matured sponge filters. The fish may be sold from these tanks at the end of the Convention, the catching, bagging and sales are the exhibitors' responsibility.

There is no charge for these tanks, but it is the responsibility of the exhibitor to empty their tank at the end of the Convention.

Allocation of tank space is via Mark Walters, prior to the Convention, details can be found on the Catfish Study Group Web Site.

SALE OF FISH AT THE CONVENTION

The CSG has purchased two 48x18x15h ins aquariums as per the B.A.P. Design, each divided into four separate tanks of approximately 12x15x12h ins. These will be set up prior to the Convention as the B.A.P. tanks.

Each tank may be hired for the weekend at a cost of £10.00 - priority will be given to residential delegates staying for the duration as there are only **eight** available. The vendors will be responsible for the selling, catching, and bagging of their fish.

Fish may be advertised free of charge on the Catfish Study Group's Website, or on Facebook.

It is the responsibility of the exhibitor to empty their tank at the end of the Convention.

Allocation of tank space is also via Mark Walters prior to the Convention.

www.catfishstudygroup.org

Power-driven Hamburg Matten Filter (HMF)

Mark Walters



HMF Tank after a month with catfish guarding eggs and shrimp grazing on the sponge

Ian Fuller presented a DIY step-by step guide to making your own internal filter, providing far more biological capability than any other conventional internal sponge filter. Ian reported the benefits from the approach with tank water quality stability, reduced maintenance and improved visual appearance of the tank.

Ian uses air driven uplifts in his design and there are numerous variations on this. One option is to use a power head or small internal filter, concealed behind the sponge mat.



Foam cut to size



Equipment needed for DIY filter

The advantages of utilising an internal power filter in this way are similar to Ian's reported benefits, including that the internal filter will require very little maintenance due to the extensive pre-filtering from the mat.

The internal filter will also enable more directional flow through the tank, benefitting some flow-loving catfish species.

I picked up a sheet of suitable filter mat at a recent fish auction and reduced it to 6 equal sized pieces (roughly 14"x16"), with a pair of scissors. Each piece was cut to be fitted to the rear of a 24"x15"x12" tank. My tanks of this size are positioned on their stand end-on, meaning that the HMF can be positioned to the rear of the tank.



Side-view of filter 'attached' to mat

Assembly couldn't be simpler, I found a piece of aquarium hose to attach to the filter outlet and cut a hole in the mat at a suitable height to enable the filter to sit on the tank bottom when in position.

The pieces of mat were deliberately over-sized, to allow the HMF to fit snugly in the tank corners, curving outwards to provide a cavity behind to house the power filter.



Rear –view of filter assembly

Before adding to the existing tank, I needed to remove all décor, substrate and fish, to prevent anything ending up behind the filter.



Foam sheet curved against tank sides

Once in place, the tank was reassembled and the filter switched on. To ensure the tank remained stable, I left a conventional matured sponge filter running in each tank for a month, after which time the HMF had become established.



HMF in situ, additional sponge filter left for a few weeks

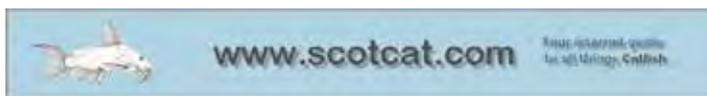
After a few days of operation, the change in water clarity was obvious, and over the period the filters have been established, there has been no drop in power filter output, a usual symptom of filter sponges becoming overloaded. The result with the fish has been apparent, with breeding success in all 6 tanks which have had a HMF make-over. The sponges also make a great substrate for shrimps and young fish to graze.

Suitable matting and air driven power lifters can be purchased online. For example Fishphilosophy.co.uk sell sheets of filter mat and 'jet-lifters' which maximise the efficiency of the air delivery. Although I have used small internal filters, small powerheads could be used equally well.

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Usefull Catfish websites





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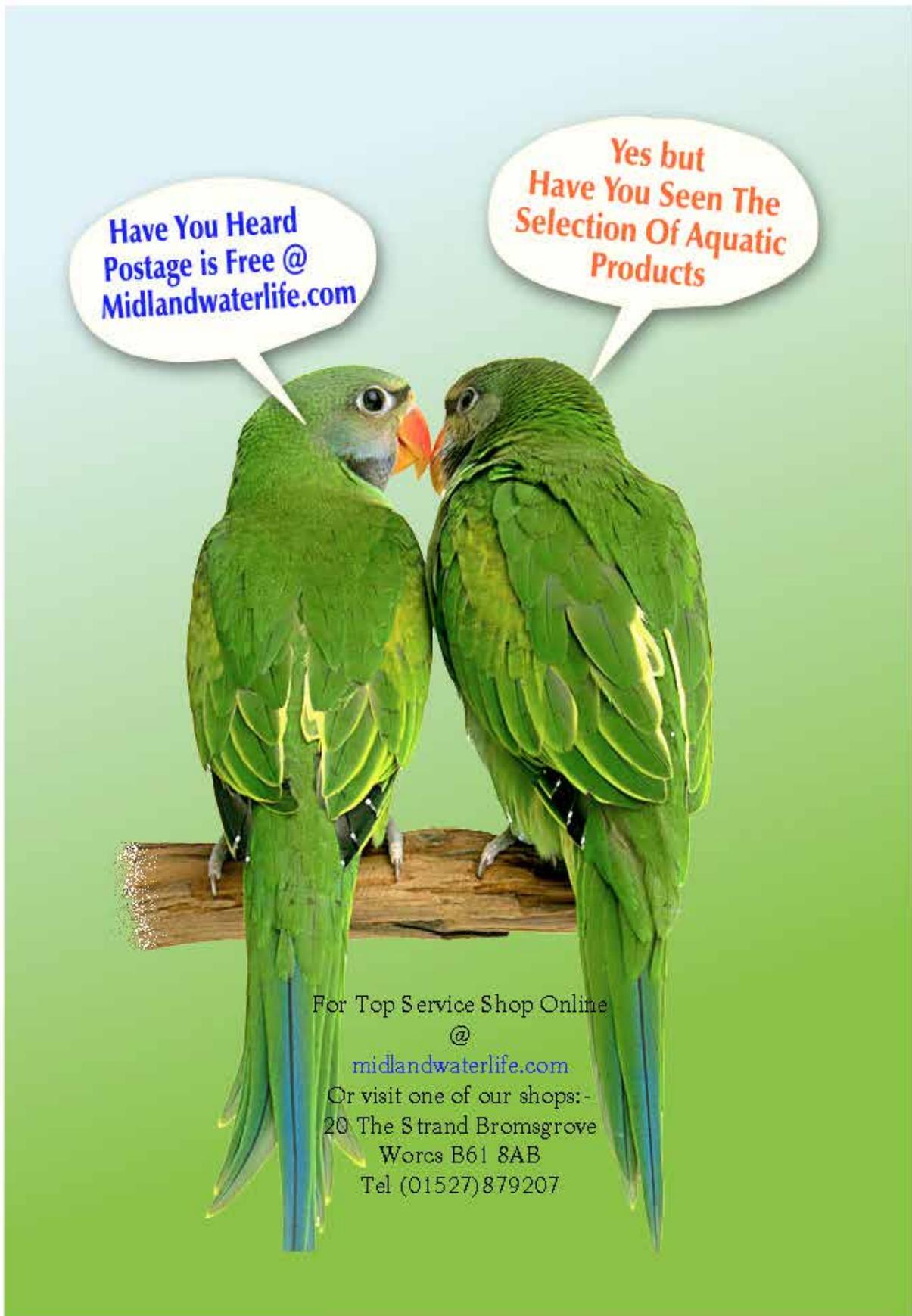
If you've ever thought you had something to say about your fishkeeping experiences, or an achievement you were proud of, or some research you've done on a fish-shop find, share it with the rest of the Catfish Study Group through the pages of Catchat.

Any information or experience you have could be of real value to another aquarist looking for the correct food, spawning trigger or conditions to suit a certain species. It doesn't matter if you don't have good images to share; we have an extensive catalogue of photos at our disposal to illustrate an article.

Breeding reports are especially interesting and can be supported by photos of mating behaviour, egg deposition, egg development, fry growth – in addition to the wealth of information you could share on maintaining the breeding fish, spawning triggers, feeding regimes and the tricky stages of egg hatching and raising youngsters.

Sharing information will raise your profile in the catfish community and encourage more people to share their experiences and help you further with your efforts. In addition, you can use the material to support a Breeders Award Programme submission and enter into the annual award for the best breeding report published in the journal.

You will see from the range of articles routinely published there is a wide breadth of subjects to base an article around including: Breeding reports; Meet the member articles; New discoveries; Product reviews; Book reviews; Equipment articles, Fish house construction; Show reports; Fish-shop finds; Expedition write-ups; or for that matter, anything relating to furthering the study of catfish. Send your submissions to the editor@catfishstudygroup.org and enjoy the reward of seeing your efforts featured in future editions.



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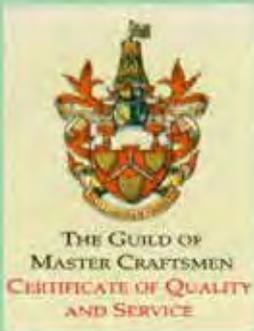
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