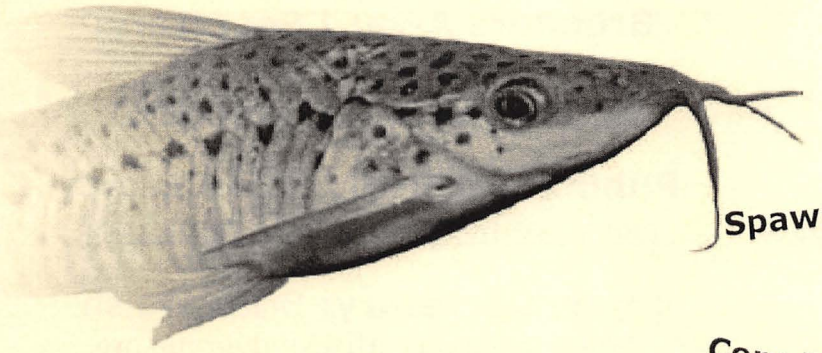
CAT CHAT

The Journal of the Catfish Study Group

Spawning Ancistrus species 3 (BAP)

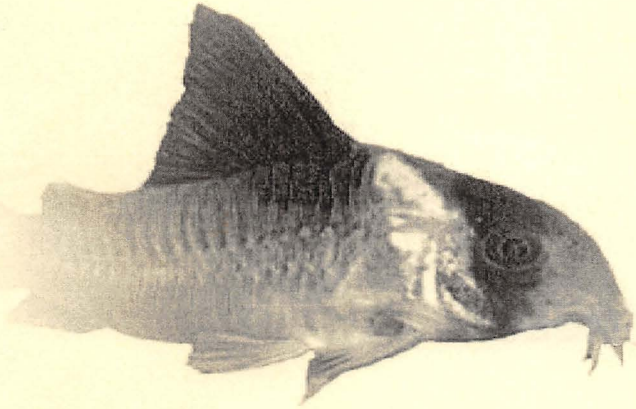


Spawning Corydoras CW021 (BAP)

Corydoras diphtyes: a cool cory

Synodontis ornata and similar species

2009 Convention information



Reproduction regulation in catfishes

Volume 9 Issue Number 3
September 2008

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Catfish Study Group

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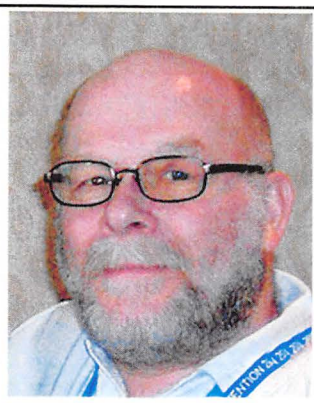
Where We Meet:

The Group normally meets at the Highfield Working Men's Club, 1 Ratcliffe Street, Darwen, Lancs, BB3 2BZ on the third Sunday of each month from 1pm. The exception is the annual Convention, held in the Spring at the Britannia Hotel, Almond Brook Road, Standish, Wigan.

Contents

From the Chair

Ian Fuller



Welcome to this the third issue of the 2008 volume of Cat Chat and first of all I would like to apologise to you all for the long delay with the publication of the second issue. We have had a number of technical problems with our equipment, which we are hopeful is now resolved. Also the fact that we are a little behind in producing information sheets is primarily down to me. I have recently taken on full employment, which has effectively removed much of that luxurious spare time that I had, a lot of which was used to great effect in producing the drawings for the information sheets. I am endeavouring to catch up with these drawings and am confident that all twelve information sheets will be completed within the year.

With our 2009 convention approaching fast a lot of my time has been devoted to getting everything in place and I can now confirm that our speakers will be; Mark Sabaj Perez. (Philadelphia, USA), Kamphol Udomritthiruj (Thailand), Hans-Georg Evers (Hamburg, Germany) Dave McAllister (British Livebearer Association), Danny Blundell (Catfish Study Group). There will also be changes to the way ticket places are booked, the first of these is that those guest wishing to book rooms at the convention hotel will now have to do so and pay for them at the same time as their tickets. I have also added the facility to order and pay for a convention commemorative polo or sweat shirt. All this can be done on one single booking form. Hopefully this will make life a little easier, well it will for me. You will also notice on the booking form there are choices of colour for the shirts, Grey (Standard) Blue, Red and Green. On the reverse you will also find a set of menu choices for the Friday and Saturday evening dinners, if you wish to attend one or both dinners please ensure you indicate you choices.

As you know the CSG's website has undergone some radical changes recently and now includes a new forum. Please take the time to register and introduce yourself. The forum will be the place where the latest CSG news will be posted and where you will find all the information about the groups activities.

At the same time as this issue is being published our Open Show will be taking place. We have also made a few changes to this event and I am certain it will ensure that the show is better than ever. We have more trade sponsors on board than ever before and the individual show class sponsorships have been a great success, with all 34 classes being covered. Each class sponsor's name will be published on the Class identifier as well as in the show page on the web site and here in Cat Chat. Don't worry if you have missed out on sponsoring a class at this years show, I don't mind taking pledges twelve months in advance!

Something else that I feel needs a little mention is the Breeders Award Programme. With a membership list around 200 I am a little disappointed in the number of members taking an active part in the scheme. When asked why he had not entered any of his breeding successes into the programme, a member recently said that he could not compete with the other prolific breeders that are already submitting breeding accounts. He seemed very surprised when I told him it was not a competition, but an individual challenge where he could set his own targets, whether it be Bronze, Silver or the ultimate Gold. One of the main benefits of the scheme to the CSG is the potential availability to its members of a vast amount of breeding and husbandry knowledge. So whatever you are breeding enter it into the programme, we would really like to know about it.

Well that's about all from me for this issue, I can now relax a little before I have to get all my show tanks ready and decide which fish to take to the show, which by the time you read this it will be all done and dusted. So next time I will tell you how well or badly I did.

Till next time happy Catfish keeping.

Editorial

Keith Jackson

Apologies to everyone for the unforgivably late arrival of the last issue. This was due to technical problems that we will work to prevent in future. While I'm apologising, I'd better also apologise to Steve Grant for an error that crept into his paper in the last issue. I managed to duplicate a sentence but, luckily, it did not affect the sense of the piece. I also managed to avoid updating the month of issue on the front cover so that's two slaps on the wrist for me. And counting....

As I walked through the door of the CSG Spring Auction, I was greeted by Ian with the news that he'd bought a pile of old magazines that I was going to extract bits from for Cat Chat. Expecting a few books, I was astounded to be presented with two larges boxes containing a considerable number! I'm still working out how best to use most of the material but there are a dozen Catfish Association of Great Britain magazines, for which there's no possible quibble about copyright so it's easier to extract useful stuff. I've reproduced an article from a 1984 issue, No. 42, about

scientific naming. It's a little on the long side but I found it a fascinating read, even if it was a pain to have to re-type it all. I hope you enjoy it as much as I did.

It's been quite interesting to browse through these magazines from twenty years ago. There's no comparison to what can be produced very simply today on an average computer and ink-jet or laser printer. Some have only line drawings, the first issue with monochrome photographs was given the star treatment - as it should have because it was neither cheap nor easy back then. Some issues only have text on one side of the pages and there's generally a lot less material per issue. What's really sad is a single, folded A4 sheet from my own archives, dated 1993. It's what I think was the last attempt by the CAGB to drum up material for the magazine and it says that the mag is now six issues late due to a lack of copy. Things always go in cycles but it's very sad to see how the CAGB mag declined in a decade.

Which is my way of pressing all the membership to get writing! If you want to keep receiving Cat Chat please write something (anything!) about you and your hobby. I don't need every submission to be pages long. Sometimes, a quarter of a page will do very nicely indeed to fill up a chunk of white space.

In my last Editorial I asked whether other members sometimes felt that the fish seem to laugh at us and I'm sure mine do. I hadn't had any eggs for quite a few weeks when, just as we were getting ready to go on holiday. I had spawns from four different species that I had to leave in the tanks. Doesn't this hobby sometimes make you want to bang your head on a wall?

One of the speakers at this year's Convention, Mike Hardman, has produced a summary of his talks that I've included in this issue. I found Mike's presentations to be absolutely fascinating so I'm delighted to be able to share some of the pleasure of the Convention with members who couldn't make it. I hope that this helps you see what a treat we get in the audience for the talks Ian arranges and will encourage you to make the effort for next year's Anniversary Convention. Check the details elsewhere in this issue because it's going to be an absolute cracker.

Mike Hardman's also keen to work with the CSG to record conditions that trigger spawnings. This is quite separate to and different from the BAP. The BAP encourages people to record their spawnings and fry development and it doesn't matter if, like me, your spawnings are more accidental than the result of systematic changes to the water conditions, etc. Mike's proposal is more inclined towards recording deliberate variations made to two out of three identical tank set-ups and their effects on the fishes' spawning behaviour. The proposal has been discussed by the Committee and, while details have not yet been settled, we're keen to see this happen.

Important Announcements

Adrian Taylor - Secretary CSG

Election of Officers

For personal reasons, Mr Paul Fox has decided to stand down from the position of Membership Secretary, and the Committee wishes to express their thanks to Paul for all his efforts. Mr John Toon is deputising.

As this position is now vacant, Mr A W Taylor proposes that Mr J Toon be elected to the committee as its new Membership Secretary at the forthcoming AGM in January 2009. Mr R Barton seconds this motion.

Any member who would like to nominate another member for the said position, please send the nomination, along with the details of a member seconding their proposal, in writing to the Group's Secretary by December 31st 2008 at either:

Mr A W Taylor, 103 The Uplands, Palacefields, Runcorn, Cheshire, WA7 2UB.

E-mail: secretary@catfishstudygroup.org.

CSG Constitution and Rules

The committee would like to point out that some members were mistakenly sent an invalid copy of the present Constitution and Rules. This was due in part to a computer malfunction. The committee would like to reassure fellow members that this has now been rectified and the copy of the Constitution and Rules that has been sent out with this edition of the Journal is the legally correct document.

Notification of Proposed Changes to the Constitution & Rules from the 2009 AGM

A) AMENDMENT TO SECTION 4 OF THE CONSTITUTION

Mr R Barnes proposes that Section 4 of the constitution, re: "The election of Honorary President is a 'life' position"; is removed entirely from the constitution.

Mr J Toon seconds this motion.

B) AMENDMENT TO SECTION 4 OF THE CONSTITUTION

Mr J Toon proposes that: sub-Sections h, i, j, and k of the constitution be removed, and replaced by "The elected committee may appoint lay members to the committee as and when required". Mr R Barnes is seconding this motion.

C) AMENDMENT TO SECTION 5 OF THE RULES

Mr J Toon proposes that Section 5 of the rules:

"The elected Committee shall be responsible for the management and the affairs of the CSG. Only with the full backing of the committee may any other member act on its behalf"

should be amended to read:

"The Committee shall be responsible for the management and affairs of the CSG. Only with the full backing of the committee may any other member act on its behalf."

Mr A Taylor is seconding this motion.

D) RIDER TO SECTION 15 OF THE RULES

Mr I Fuller proposes that the following rider be added to Section 15 of the rules.

Any named member will be held responsible for the conduct of any guest or guests, which they bring to any CSG meetings or event.

Mr R Barton is seconding this motion.

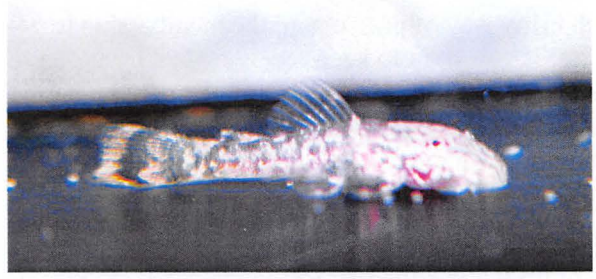
Spawning Ancistrus Species 3

Presented for the CSG BAP by A W Taylor

The origin of *Ancistrus* species "3" is a little difficult to pin down, not only because of the original collecting point is unknown but because there are in existence many, many congeners, making an exact identification of this bristlenose near on impossible. It is also the opinion of some that this is a hybridised species. However, it may be the case that by comparing fry patterns on other spawning reports on this species, we can gain an insight and acquire more information regarding the identity on this species.

I had had a small group of these for some time in what I call a 'dump' tank. This is an old 28 Imperial-gallon tank that is near to the floor in a corner of my fish house. I use it to keep various non-aggressive species of tropical fish that I have no room for elsewhere but which are of such good quality that I do not want to pass them on. I selected one female and one male from this group and transferred them to another tank that was already under going a "40% every third day" regime of water changes. I added an old home made slate cave system with the intention of getting them to spawn. However, although the male kept station in and around one of the cave openings, the opening that he had chosen just happened to be the one that faced away from the front of the aquarium, making it impossible to tell whether the pair had spawned. The adults were fed a diet of tablet food, cucumber and courgette that had been weighted down to make them sink and granular foods. The aquarium was filtered using a small external power filter and had a substrate of sand.

Two weeks passed and then, one morning, I noticed that there were twenty or so fry, around seven millimetres in length, grazing on a piece of cucumber in the tank. The water parameters were : pH6.5, 3°GH, 6°KH, TDS 170, and a temperature of 24°C.



Fry @ 10 days

Fry @ 1 month

To complement the diet that was already been fed to the adults I added every other day a small quantity of high protein catfish sinking pellets and a couple of small prawns. Because I was supplying them with a diet that had quite a bit of protein added to it, it was necessary to increase the frequency of water changes to every other day and it was at around two to three months later that the fry were of an acceptable size that I could offer them to other aquarists and hobbyists.

It was partly due to this that the bristle noses continued to spawn, since when I have introduced another couple of males, with the intention of seeing if the female would spawn with different males or with the male that she had originally spawned with. The outcome of this little experiment showed she was not a single-guy type of female as two of the males were observed 'guarding' eggs in their own caves.

Spawning Corydoras sp 'CW021'

Presented for the CSG BAP by Mark Walters

I purchased 4 adult specimens in 2005, from Tingley Tropicals near Leeds. The fish appeared to be similar to Corydoras axelrodi, but were obviously something a bit different. They were imported alongside C. loxozonas, indicating Columbian origin, possibly Rio Meta. The fish soon settled and spawned frequently in their 60cm species tank. For the purpose of the BAP report, I have recorded a spawning which took place on 5th March 2007.

This Corydoras species has been assigned a code of 'CW021', under the Corydoras World classification for undescribed species. It is believed to be closely related to C. axelrodi but has some obvious differences when the two are compared side-by-side. Adult CW021's exhibit up to 4 strong parallel bands along the flanks.

The fish were housed in a tank also containing some Scleromystax prionotus. Earlier spawnings of 'CW021'had been confused by spawnings of the S. prionotus which lay much smaller eggs. Typical tank parameters were a temperature of 74F and pH of <6. The tank was filtered by a 'Biofoam 200' air-driven filter and sparsely decorated with sand, java moss and bogwood. A spawning mop was included in one corner of the tank. The adult fish ranged from 4 – 4.5 cm and appeared to be a male and three females. The largest female has reached 5 cm at the time of writing.

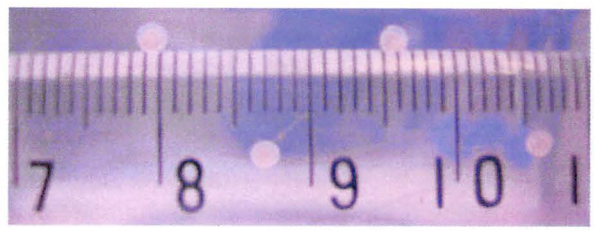
Two feeds were given each day including either Tetra Prima or soaked Aquarian flake in the morning and frozen bloodworm or chopped earthworms each evening. Occasional live daphnia or chironomid larvae was offered.

Courtship commenced 48 hrs after a water change (of half tap / half rainwater), which reduced the temperature by 6° F. Courtship was between a single pair which assumed more intense colouration. During spawning itself, the male actively pursued a single female before assuming a 'T' position for sperm transfer. The female produced up to 3 eggs between her pelvic fins and deposited the fertilised eggs high on the tank side, behind a spawning mop. A small number of eggs were deposited in the mop and amongst Anubias roots.

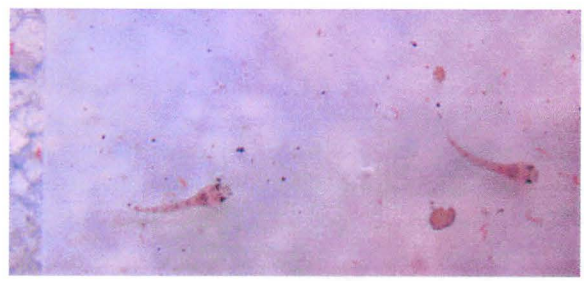
Previous spawnings have usually taken place weekly and number between 20 – 30 eggs. If left in the tank they are eaten by the parent fish. Eggs are quite large – up to 2mm and a cream colour. The eggs were removed and placed in a 1.2litre hatching tub with steady aeration. After 4 days the eggs hatched and a small piece of java moss and 2cm square of soaked and matured oak leaf was added to the tank to provide micorscopic first food. After 3 days, 20 of the 8mm fry were free-swimming, daily 90% water changes, using mature tank water, were carried out.

Adult pair of Corydoras sp. 'CW021'

Female CW021



CW021 eggs



CW021 Fry at 10 days

The first food offered was microworm and finely ground dry food given twice daily. After 10 days, the fry had reached 10mm. After a month, the 15mm fish were typical unpatterned Corydoras fry but started to colour up after 8 weeks measuring around 18mm. At this stage they were re-introduced to the adult tank to grow-out. After 3 months (25mm), the young had

developed their first complete longitudinal band and after 6 months were miniature adults around 30mm.

CW021 fry at 4 weeks

CW021 fry at 3 months

CW021 fry at 8 weeks, 18mm

What's New - September 2008

Mark Walters

Catfish Sightings:

Following on from the list of not-usual or new species available in the hobby, the following have been sighted: *Farlowella platyrynchus, Acestridium dichromum, Aspidoras pauciradiatus, Batasio cf. dayi, Dekyseria sp. 'L52', Panaque cochliodon, Corydoras tukano, Pseudobunocehalus amazonicus, Bunocephalus columbianus, Panaquolus maccus, Megalechis picta*

Selected Scientific Papers:

Ng, HH (2008) - A new species of Nanobagrus, a miniature bagrid catfish has been described from southern Borneo. Nanobagrus immaculatus is found in blackwater habitats in the Kahayan River drainage in southern Borneo. It can now be found in the aquarium trade. The paper also reassigns the species formerly known as Pseudomystus fuscus to the genus Nanobagrus.

Ribeiro, Frank Raynner V. e Lucena, Carlos Alberto S. (2006) – The authors describe a new pimelodid, Pimelodus tetramerus which differs from other species by its typical coloration, with four dark stripes on the sides of the body,

Yoshinoi, T. Kishimoto H. (2008) – A new species of marine eeltail catfish has been described. Plotosus japonicus, is described on the basis of specimens collected from Honshu Island to the Ryukyu Islands, Japan. This new species closely resembles P. lineatus, but is distinguished on a close examination of fin rays and gill rakers. Confirmed distribution of the new species extends from Iriomote Island northward to Honshu Island, Japan where it is very common.

Hardman, M. (2008) - A new species of catfish has been described from Lake Tanganyika . Chrysichthys acsiorum has been named after the All Catfish Species Inventory (ACSI, a research initiative to catalogue and describe the catfishes of the world). The new species is known only from the type locality, at a depth of approximately 30 metres in Lake Tanganyika, near the village of Kajaga in Burundi.

Ng HH (2006) – The author has described two new species of Sisorid catfish from Nepal and China Pseudecheneis stenura and P. edds were discovered during a study of Pseudecheneis sulcata, a species previously believed to be the most widely distributed member of the Glyptosterninae subfamily, with a reported distribution extending from the Ganges, Brahmaputra, Salween and Irrawaddy to the Mekong. What was previously believed to be a single fish, is actually a complex of several closely related Pseudecheneis species, with the real P. sulcata being restricted to the Brahmaputra drainage, where Ng says it appears to be the only species. The new species are members of the subfamily Glyptosterninae and have a special adhesive sucker on their undersides, just between the bases of the pectoral fins, to help them stick to rocks in fast-flowing water.

If you have any sightings you would like to share or would like to track down a paper featured, contact me for the full reference: mark.walters70@ntlworld.com.

Acknowledgement is made to Planet Catfish, Practical Fishkeeping and the All Catfish Species Inventory (ACSI) database for the original source of information on papers.

CSG Auction Rules

1. All items offered for sale to be for the fish-keeping hobby only.
2. All electrical goods MUST display the name and telephone number of the vendor and a statement of the condition of the item i.e. working; spares or repair only etc.
3. All plants and fish offered for auction should be in clear plastic bags, jars or buckets suitable for the size of fish/es being offered for sale.
4. Catfishes, Loaches and Cichlids, MUST be double bagged; failure to comply will result in the item being returned unsold to the vendor.
5. GM, Painted, Tattooed or colour injected fish WILL NOT be auctioned.
6. All fish offered for sale must be identified by their common or scientific name.
7. All fish should be presented in suitable boxes and, for health & safety reasons, each box should weigh no more than 17kg. Any boxes over 17kg will be returned to the vendor with contents unsold.
8. Any fish offered for auction requiring re-bagging WILL incur a re-bagging charge of 50p
9. A 15% commission charge will be levied on all sales. Settlement to vendors will be made at times suitable to the CSG's officiating teller before the close of the day's activities.
10. If in doubt, only bid for an item as seen. In the event of a problem, the vendor's name will be made available to the purchaser only on the day.

The CSG accepts no responsibility for the condition of items sold at any of its auctions and is in no position to exchange or make a refund for an item.

Breeders' Award Programme - Year 2, Quarter 1

Mark Walters

The second year of the Breeders Award Programme has started somewhat slowly, with only two regular breeders submitting new species reports.

However, points have increased for a number of members due to the change in scoring, reallocating the award of 20 points for a successful F1 spawning (now dropped) to the submission of an article to Catchat. It was perceived that the Group should not be encouraging the breeding of closely related stock, although this does not always result in weak offspring and can be allevaied in future generations by re-introducing unrelated breeding material.

The award of points for the submission (not the publication) of an article will, hopefully, encourage members to write up their successes more formally, and enjoy the reward of seeing their efforts in print.

The table below indicates the new submissions and points to date. 87 reports have now been submitted with a further 4 new species (67 in total) up to August, a quite incredible achievement by our members! Participants are encouraged to update their records with the latest photos of their offspring, and even partial reports will be awarded points when submitted to the magazine.

Please contact the BAP secretary for details of how to enter the programme, or for clarification of your reports and submissions to date. You can make use of the new CSG forum or contact directly.

MW18	23/06/2008	Scleromystax sp 'C112'	Mark Walters
AT11	25/06/2008	Aspidoras sp 'C125' Gold	Adrian Taylor
AT12	02/07/2008	Erithistes miniscula	Adrian Taylor
MW19	15/07/2008	Sturisoma aureum	Mark Walters
AT13	19/07/2008	Aspidoras fuscoguttatus	Adrian Taylor
AT14	21/07/2008	Corydoras sp 'C89'	Adrian Taylor
MW20	15/08/2008	Corydoras diphyes	Mark Walters

Points Awarded to May 2008

Ian Fuller	880
Mark Walters	1160
Dave Penney	260
Adrian Taylor	735
Eric Bodrock	80
Keith Jackson	120
Frank Falcone	20

Corydoras diphyes: A Cool Cory

Kim Mathiasen

This article is about Corydoras diphyes from Paraguay. The name "diphyes" comes from the very variable brown pattern of this species. According the the scientific paper, Corydoras diphyes lives along with Otocinclus mimulus in small, brown-water streams that run into Rio Monday in the Rio Paraná-system. The streams has some bank vegetation and some sunken brances and leaves on the bottom.

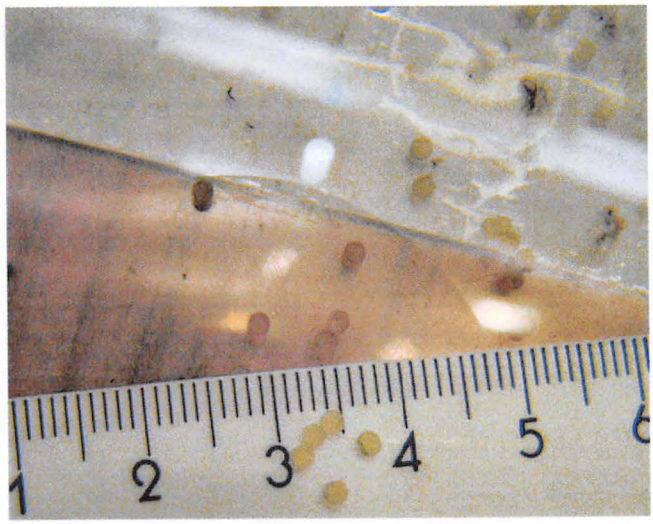
Corydoras diphyes

Corydoras diphyes is a fairly new species. It was described by Knaack in 2003 and, ever since I first saw a picture of it, I've tried to get hold of some specimens. A couple of times I've been close. Some wild-caught specimens ordered from Germany died before they reached my tanks and a trio went at an auction in Norway when I was out of money to buy them for. Finally, in February 2007, I was able to get 10 specimens from Hans Evers in Germany. They were semi-adult fish and, until September 2007, they shared a tank with some Corydoras albolineatus and Corydoras erhardti. All three species thrived in the same, cool, 20°-Celcius water.

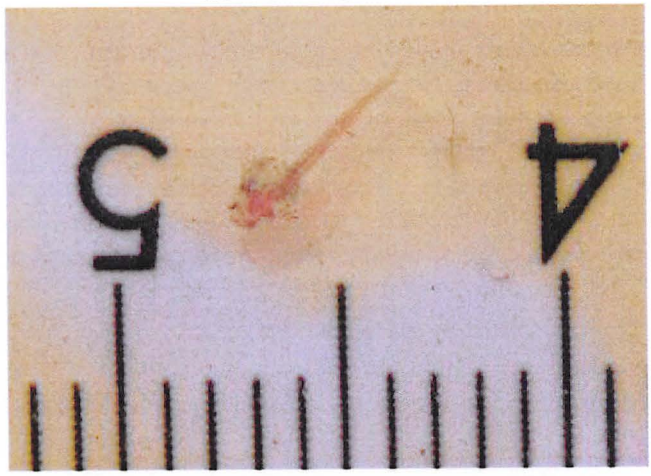
In September 2007 I was going to use the tank for spawning Scleromystax barbatus and, therefore, I netted out the the smaller fish. In the proces I noticed some 10-mm. Corys that darted in and out of the javamoss in the tank. The tank was heavily planted with moss and Java fern and had a lot of bogwood in it, so no wonder the eggs and fry would be well hidden. Anyway I hadn't looked for eggs as I didn't believe that the fish were big enough to spawn.

The three groups of young fish were placed in seperate smaller tanks, and I made a 50% cool waterchange the same day.It was a short wait; a few days later there were eggs in the C. diphyes tank. Approxinately 30 eggs were stuck onto the tank sides and into the moss. The eggs were placed in a small container and treated with alder-cone extract. Days went by and nothing happened. After 7 days I tried to break an egg and a dead fry fell out so the eggs were OK but the alder-cone extract might have hardened the shell too much. Lesson learned!

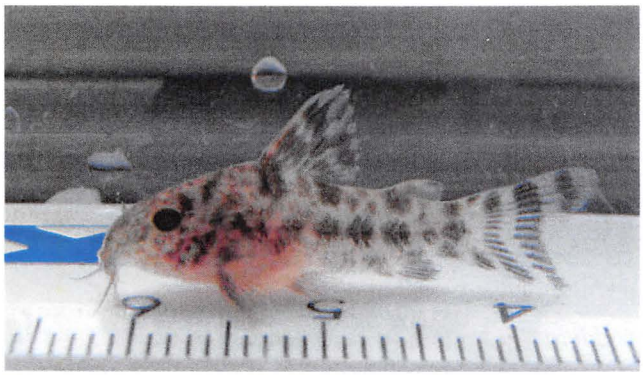
I did another water change and I got eggs again. Water parameters were 110 ms/cm, pH 5.7 and 22° Celcius. This time they laid just short of 40 eggs, which I placed in a container without any treatment. Five days later almost all the eggs had hatched, and the fry were transferred to a 45-litre tank with loads of moss and beech leaves. The fry proved to be easy to raise and managed the competition from the fry from other species in the tanks very well. In the space of 7 weeks they reached a TL of 30 mm.



Eggs 26 August 2007



Newly-hatched Fry 31 August 2007



Magical Mystery Meaning

Or

The Etymology of Scientific Names of Catfishes

Drs Isaac J H Isbrücker & Han Nijssen

(reproduced from the CAGB Magazine, Issue 43, 1984)

Introduction

Catfishes are discussed among aquarists and biologists more often then not under their scientific name. Very rarely are they known under a popular name. The reason for this situation is that the majority of catfish species are probably entirely unknown to most of us or, at best, they are just at the brink of becoming familar to us.

Some years ago we were visited in Amsterdam by Pat & Derek Lambourne and Doris & Terry Cruikshank. They then suggested that we prepare a list containing the (or an) explanation of the meaning of scientific names of the catfishes currently available as aquarium fish or those mentioned in aquarium literature. So far, so good: superficially it seemed to be an easy matter to work out. After all, most - although certainly not all - of such names are derived from classical or neo-classical Greek and/or Latin and we do possess some dictionaries to consult. However, whilst working on this list, it became clear that it is sometimes difficult or impossible to ascertain the originally-intended meaning of a name.

The first scientific names still in use were proposed already in 1758. Authors sometimes explained the meaning of the names they proposed or coined names which can be understood uncontroversially. Several names can be explained in more than one way. There exist names formed by an arbitrary combination of letters - and these form a euphonious word - which are validly used to denote some genus or species. Such words do not mean anything but 'a name.'

A scientific name also can be adopted from a vernacular name, like one used by the inhabitants of the same area as the animals or plants. Such a name is easily explained away as such, although few persons are able to preent a reliable translation. We are not familiar with all languages. Thus, of the examples listed below, many lack a translation.

The catfish known in Great Britain as the Sheatfish or Wels (the latetr is the German name for the same species), Silurus ganis, is named "le Silure glane" in French. This is only one of the numerous examples of a vernacular name which was adopted from the scientific name of an animal.

The names of catfishes appearing in *THE INDEX* of the compilation of Information Books 1-5 (*Catfish Assn. Great Britain, 1983: 1-138*), Volume I are listed here with an explanation of their meaning or their origin, as far as possible. Some of the names in that index are corrected below.

Genus and Species Names

Each generic name has a grammatical gender. It is either neuter, common, feminine or masculine. A specific name, if an adjective in the nominative singular, must agree in gender with the generic name with which it is at any time combined (cited in part from Article 30, International Code of Zoological Nomenclature). Words of Latin origin are preceded by *L*. Those of Greek origin by *Gr*.

Often different names contain words used in other names, such as the suffix (*Gr*) -icthys = fish. To avoid a lot of cross-references, these words are explained in each case where they appear. Many species and some generic names are given in honour of a person. If it concerns a man, an *-i* is added to his name. Sometimes the name is Latinised first by the addition of *-ius* and this produces *-ii*. Compare *Corydoras blochi*, named in honour of Mr Bloch and *Pimelodus blochii*, named in honour of Mr Blochius - both being the same person! A species name formed from a personal name of a woman usually ends in *-ae*. Titles, in a broad sense, and initials of persons after whom catfishes have been named are not indicated in our list.

Species named after a locality (like a country, state, city, river, creek, etc.) have a name containing that of the locality that is usually provided with *-ensis*, a Latin suffix denoting locality. The Latin suffixes *-alis* and *-atus* mean 'pertaining to, having the nature or quality of', while the later suffix usually means 'provided with.' Finally, the Latin suffixes *-iella*, *-iellus*, *-ella*, *-ellus* and others often indicate a diminutive.

In the following list the generic names are given in alphabetical order and the names of species assigned to these genera are given following the generic name, again in alphabetical order. For simplicity, only the component words are explained. Thus, no explanation is given of connecting vowels or consonants nor of the deletion of one or more letters. No comments at all are included on (improper) identification.

Fairly often we consulted the work in which a given name was originally proposed. In addition to standard dictionaries we consulted R W Brown's *"Composition of Scientific Words"* (revised edition 1956: 1-882, published by the author, Washington DC).

Acanthodoras: *Gr akantha* thorn; *Gr doras* cuirass

---- *cataphractus*: *Gr kataphractos* covered, mailed

Ageneiosus: *Gr ageneios* beardless

---- *brevifilis*: *L brevis* short; *L filum* thread

Agmus: Gr *agmos* fracture

---- *lyriformis*: *Gr lyra* lyre; *L forma* shape

---- *scabriceps*: *L scaber* scabby; *L -ceps* from *capus* head

Akysis: *Gr a-* without; *Gr kystis* bladder

Amblyceps: *Gr amblys* blunt; *L -ceps* from *capus* head

Amblydoras: *Gr amblys* blunt; *Gr doras* cuirass

---- *"hancocki"* should read *hancockii* in honour of Mr Hancock

Amphiliius: *Gr ame* water bucket; *Gr philia* friendly love

Anadoras: *Gr ana* back; *Gr doras* cuirass

---- *grypus*: *Gr grypos* hooknosed, curved

---- *weddellii*: in honour of Mr Weddell

Ancistrus: *Gr ankistron* fish-hook

Arius: from the vernacular name 'Ari gagora'

Aspidoras: *Gr aspidos* shield; *Gr doras* cuirass

---- *pauciradiatus*: *L paucus* few; *radiatus* rayed

Aspredo: *L aspredo, aspredinis* roughness

Astroblepus: *Gr astron* star; *blepos* look

Auchenipterus: *Gr auchon, auchenos* neck; *Gr pteron* wing

Auchenoglanis: *Gr auchon, auchenos* neck; *Gr glanis* catfish

---- *biscutatus*: *L bi-* two, double; *L scutatus* armed with a shield

---- *occidentalis*: *L occidentalis* western

Bagarius: from the vernacular name 'Vaghari'

Bagricthys: *Bagrus* (see below); *Gr icthys* fish

Bagrus: from the vernacular name 'Bagre' meaning catfish

---- *ubangensis*: from the River Ubangi

Belodonticthys: *Gr belos* arrow; *Gr odon, odontos* tooth; *Gr icthys* fish

Brachyrhamdia: *Gr brachys* short; *rhamdia* from the vernacular name 'Nhamdiá' or 'Jamdiá'

---- *imitator*: *L imitator* mimic

B*rochis*: *Gr brochos* noose, an allusion to the barbels. Previously (in this magazine) the Greek word *brochis*, meaning inkhorn, was erroneously given as the explanation by Isbrücker.

---- *multiradiatus*: *L multus* much; *L radiatus* rayed

---- *splendens*: *L splendens* shining

Bunocephalus: *Gr bounos* hill; *Gr kephale* head

---- *amaurus*: *Gr amauros* dark

Callicthys: *L callum* hard; *Gr icthys* fish

Cataphractus: *Gr kataphraktos* covered, mailed

---- *punctatus*: *L punctatus* spotted

Centromochlus: *L centrum* sting; *Gr mochlos* lever

Cetopsis: *L cetus* whale; *Gr opsis* having the appearance of

Chaca: from the vernacular name 'Chaca'

Channallabes: Gr channe sea-perch; *L al-* to; *L labes* stain

Chiloglanis: *Gr cheilos* lip; *Gr glanis* catfish

Chrysicthys: *Gr chrysos* gold; *Gr icthys* fish

Clarias: meaning not known, although there are - at least - two possibilities:

1) *L clarus* clear, distinct

2) *L callarias* a kind of cod

---- *"gariepinnis"* should read *gariepinus*: from the Ky-Gariep river

Colossoma: (not a catfish): *L colssus* a large statue; *Gr soma* body

Corydoras: *Gr korys* helmet; *Gr doras* cuirass

---- *acutus*: *L acutus* sharp

---- *aeneus*: *L aeneus* copper, bronze, brassy

---- *amapaensis*: from the State of Amapá

---- *arcuatus*: *L arcuatus* bent like a bow

---- *baderi*: in honour of Mr Bader

---- *barbatus*: *L barbatus* bearded

---- *bicolor*: *L bi-* two, double; *L color* hue, tint

---- *bifasciatus*: *L bi-* two, double; *L fasciatus* striped

---- *blochi*: in honour of Mr Bloch

---- *bondi*: in honour of Mr Bond

---- *brevirostris*: *L brevis* short; *L rostrum* snout

---- *cervinus*: *L cervinus* of deer, an allusion to the colour

---- *cochui*: in honour of Mr Cochu

---- *coppanamensis*: rom the River Coppername

---- *elegans*: *L elegans* tasteful, fine

---- *eques*: *L eques* horseman, rider

---- *evelynae*: in honour of Mrs Evelyn

---- *garbei*: in honour of Mr Garbe

---- *griseus*: Mediæval Latin *griseus* grey

---- *guianensis*: from the country of Guiana

---- *hastatus*: *L hastatus* spear-shaped

---- *melanistius*: *Gr melan* black; *Gr histion* sail, i.e. the dorsal fin

---- *metae*: from the River Meta

---- *nanus*: *L nanus* a dwarf

---- *narcissus*: after Narcissus, son of the Greek river-god Kephissus

---- *octocirrus*: *L octo* eight; *L cirrus* ringlet, i.e. barbel

---- *osteocarus*: *Gr osteon* bone; *Gr kara* head, top

---- *oxyrhynchus*: *Gr oxys* sharp; *rhynchos* nose, snout

---- *paleatus*: *L paleatus* chafed

---- *polystictus*: *Gr polys* many; *Gr stiktos* spotted

---- *potaroensis*: from the River Potaro

---- *punctatus*: *L punctatus* spotted

---- *pygmaeus*: *L pygmaeus* a dwarf

---- *reynoldsi*: in honour of Mr Reynolds

---- *saramaccensis*: from the River Saramacca

---- *schwartzi*: in honour of Mr Schwartz

---- *septentrionalis*: *L septentrionalis* northern

---- *surinamensis*: from the country of Surinam

---- *sychri*: in honour of Mt Sychr

---- *treitlii*: in honour of Mr Treitl

---- *undulatus*: *L undulatus* wavy

---- *vittatus*: *L vittatus* decorated with a ribbon, i.e. striped

---- *weitzmani*: in honour of Mr Weitzman

---- *zygatus*: *Gr zygados* team, pair

Dianema: *Gr dia* through; *Gr nema* thread. The gender of this name is neuter, not feminine as often thought.

---- *longibarbis*: *L longus* long; *L barba* beard

---- *"urostriata"* becomes *urostriatum*: *Gr oura* tail; *L striatus* striped

Dinotopterus: *Gr di-* two; *Gr notos* back; *Gr pteron* wing, fin

Diplomystes: *Gr diploos* double; *Gr mystax* moustache

Doras: *Gr doras* cuirass

Doumea: from the locality of Doumé

Eutropiellus: *Gr eutrophia* well-fed → genus *Eutropius;* Eutrop (-ius) + *L iellus* diminutive suffix: small *Eutropius*

---- *buffei*: in honour of Mr Buffe

---- *debauwi*: in honour of Mr De Bauw

Farlowella: in honour of Mr Farlow

---- *acus*: *L acus* a pin

---- *gladiolus*: *L gladiolus* a small sword

---- *gracilis*: *L gracilis* slender

"Glyptosternum" should read *Glyptosternon*: *Gr glyptos* carved; *Gr sternon* breast

Glyptothorax: *Gr glyptos* carved; *Gr thorax* breastplate

---- *platypogonoides*: *Gr platys* broad; *Gr pogon* beard; *Gr -oides* from *eidos* resembling

Helogenes: *Gr helos* marsh; *L -genes* born

---- *marmoratus*: *L marmoratus* marbled

Hemiodonticthys: *Gr hemi-* half; *Gr odon, odontos* tooth; *Gr icthys* fish

Hemisorubim: *Gr hemi-* half; 'Sorubim' a vernacular name

---- *platyrhynchos*: *Gr platys* broad; *Gr rhynchos* snout

Hemisynodontis: *Gr hemi-* half; *Gr syn-* together; *Gr odon, odontos* tooth

---- *membranaceus*: *L membranaceus* of skin

Heterobranchus: *Gr heteros* different; *Gr branchos* gill

---- *longifilis*: *L longus* long; *l filum* thread

Heteropneustes: *Gr heteros* different; *Gr pneustikos* of breathing

Homodiaetus: *Gr homos* same; *L diaeta* diet

---- *maculatus* spotted

Hoplosternum: *Gr hoplon* any tool, armour; *Gr sternon* breast

---- *littorale*: *L lit(t)oralis* of the seashore

---- *pectorale*: *L pectoralis* of the breast

---- *thoracatum*: *Gr thorakos* breastplate; *L -atus* provided with

Hypopthalmus: *Gr hypo-* beneath; *Gr opthalmos* eye

Hypoptopoma: *Gr hypo-* beneath; *Gr opter* pertaining to sight; *Gr poma* gill cover, operculum

Hypostomus: *Gr hypo-* beneath; *Gr stoma* mouth

---- *plecostomus*: *Gr pleko* twist; *Gr stoma* mouth

Ictalurus: *Gr icthys* fish; *Gr ailouros* cat

Kryptopterus: *Gr krypto* hide; *Gr pteron* wing, fin

---- *bicirrhis*: *L bi-* two, double; *L cirrus* ringlet, i.e. barbel

Leiarius: *Gr leios* smooth; *arius* (see above)

Leiocassis: Gr leios *smooth; L cassis* helmet. The gender of this name is feminine, not masculine as usually thought.

---- *"poecilopterus"* becomes *poecilioptera*: *Gr poekilos* varieagated; *Gr pteron* wing, fin

---- *siamensis*: from Siam

Leyvaicthys: in honour of Mr Leyva; *Gr icthys* fish

Lophiobagrus: *Gr lophia, lophos* mane, crest; *Bagrus* (see above)

---- *cyclurus*: *L cyclus* circle; *Gr oura* tail

Loricaria: *L lorica* harness

Loricariicthys: *L lorica* harness; *Gr icthys* fish

---- *anus*: *L anus* old woman, a translation of the vernacular name 'Vieja'

---- *typus*: *L typus* model

Malapterurus: *Gr malakos* soft; *Gr pteron* wind, fin; *Gr oura* tail

---- *electricus*: *L electricus* pertaining to electricity

Megaladoras: *Gr megale* large; *Gr doras* cuirass

---- *irwini*: in honour of Mr Irwin

Miroglanis: *Gr mikros* small; *Gr glanis catfish*

---- *iheringi*: in honour of Mr von Ihering

---- *parahybae*: from the River Parahyba

---- *poecilus*: *Gr poekilos* variegated

---- *secundus* : *L secundus* second

---- *zonatus*: *L zona* girdle; *L -atus* provided with

Mochokiella: *Mochok* (*-us*) + *L -iella* diminutive suffix: small *Mochokus*

Mochokus: meaning unknown. We could not consult the original diagnosis of this genus

Mystus: *Gr mystax* moustache

---- *gulio*: from the vernacular name 'Guli'

Olyra: *Gr olyra* a kind of grain

Ompok: from the vernacular name 'Ompok'

Opsodoras: *Gr ops* eye; *Gr doras* cuirass

---- *leporhinus*: *L leporis* hare; *Gr rhinos* snout, nose

Orinocodoras: from the River Orinoco; *Gr doras* cuirass

---- *eigenmanni*: in honour of Mr Eigenmann

Otocinclus: *Gr otos* ear; *Gr kinklis* any network

Oxydoras: *Gr oxys* sharp; *Gr doras* cuirass

---- *"kner"* should read *kneri*: in honour of Mr Kner

Pangasianodon: *Pangasius* (see below); *Gr an-* without; *Gr odon, odontos* tooth

Pangasius; derived from the vernacular name (not spelled out in the original diagnosis)

Paraloricaria: *Gr para* beside; *L lorica* harness → genus *Loricaria*

---- *vetula*: *L vetula* old woman, a translation of the vernacular name 'Vieja'

Pareutropius: *Gr para* beside; *Gr eutropia* well-fed → genus *Eutropius*

---- *mandevillei*: in honour of Mr Mandeville

Paulicea: from the State of São Paulo

Perrunicthys: after the vernacular name 'Bagre perruno'; *Gr icthys* fish

---- *perruno*: after 'the vernacular name Bagre perruno'

Phractocephalus: *Gr phraktos* fenced in; *Gr kephale* head

---- *"hemiliopterus"* should read *hemioliopterus*: *Gr hemiolios* one and a half; *Gr pteron* wing, fin. An allusion to the half-rayed adipose fin

Physopyxis: *Gr physa* bellows; *L & Gr pyxis* box

Pimelodella: *Gr pimelodes* fatty; *L -ella* diminutive suffix: small *Pimelodus*

Pimelodus: *Gr pimelodes* fatty

---- *albofasciatus*; *L albus* white; *L fasciatus* striped

---- *blochii*: in honour of Mr Bloch

---- *fowleri* in honour of Mr Fowler

---- *maculatus*: *L maculatus* spotted

---- *ornatus*: *L ornatus* decorated

Platydoras: *Gr platys* broad; *Gr doras* cuirass

---- *costatus*: *L costatus* ribbed

Platystacus: *Gr platys* broad; *L acus* needle

Plotosus: *Gr plotos* swimming

Pseudodoras: *Gr pseudos* fallacy; *Gr doras* cuirass

---- *niger*: *L niger* black

Pseudohemiodon: *Gr pseudos* fallacy; *Gr hemi-* half; *Gr odon, odontos* tooth

---- *laticeps*: *L latus* broad; *L -ceps* from *caput* head

Pseudoloricaria: *Gr pseudos* fallacy; *L lorica* harness → genus *Loricaria*

Pseudopimelodus: *Gr pseudos* fallacy; *Gr pimelodes* fatty

---- *nigricauda*: *L niger* black; *L cauda* tail

---- *raninus*: *L raninus* like a frog

---- *villosus*: *L villosus* hairy

---- **acanthochiroides*: *Gr akantha* thorn; *Gr cheir* hand; *Gr -oides* from *eidos* resembling (viz., *Pseudopimelodus acanthochir*)

---- **transmontanus*: *L trans* beyond; *L montanus*

---- *zungaro*: after the vernacular name 'Zungaro' meaning shark

---- **bufonius*: *L bufo, bufonis* toad

---- **mangurus*: after the vernacular name 'Manguruyu'

Pseudoplatystoma: *Gr pseudos* fallacy; *Gr platys* broad; *Gr stoma* mouth

---- *fasciatum*: *L fasciatus* striped

Pterogoplicthys: *Gr pterygos* wing; *Gr pleion* more; *Gr icthys* fish

---- *anisitsi*: in honour of Mr Anisits

Rineloricaria: *Gr rine* file; *L lorica* harness → genus *Loricaria*

---- *fallax*: *L fallax* false

---- *latirostris*: : *latus* broad; *L rostrum* snout

---- *parva*: *L parvus little*

Schilbe: after the vernacular name 'Schilbé'

"*Scoplex*" should read *Scoloplax*: *Gr skolos* thorn; *gr plax* plate

Silurus: *Gr silouros*, *L silurus* sheatfish, catfish. According to Lacepède (1803) this word indicates the rapidity with which *Silurus* can move its tail.

---- *glanis*: *Gr glanis* catfish

Sisor: meaning not known

-*Sorubim*: after the vernacular name 'Sorubim'

--- *lima*: *L lima* file

Sorubimicthys: *Sorubim* (see above); *Gr icthys* fish

---- *planiceps*: *L planus* flat; *L -ceps* from *caput* head

Sturisoma: Mediæval Latin *sturio* sturgeon; *Gr soma* body

---- *barbatus*; *L barbatus* bearded

---- *panamense:* from Panama

Synodontis: *Gr syn-* together; *Gr odon, odontos* tooth

---- *angelicus*: *Gr angelikos* of messengers, angels

---- *brichardi*: in honour of Mr Brichard

---- *clarias*: see generic name *Clarias*

---- *congicus*: from Congo

---- *decorus*: *L decorus* beautiful

---- *eupterus*: *Gr eu-* good; *Gr pteron* wing, fin

---- *flavitaeniatus*: *L flavus* yellow; *L taenius* striped

---- *multipunctatus*: *L multus* much; *L punctatus* spotted

---- *njassae*: from Lake Njassa

---- *notatus*: *L notatus* mark

---- *nummifer*; *L nummus* a coin; *L -fer* a suffix meaning bear

---- *pleurops*: *Gr pleura* side; *Gr ops* eye

---- *schall*: after the vernacular name 'Schall"

---- *schoutedeni*: in honour of Mr Schouteden

Tatia: in honour of Mr Tate Regan

---- *aulopygia*: *Gr aulos* flute; *Gr pyge* rump

---- *galaxias*: *Gr galaxias* galaxy

---- *schultzi*: in honour of Mr Schultz

Trachyglanis: *Gr trachys* rough; *Gr glanis* catfish

Trichomycterus: *Gr trichos* hair; *Gr mykteros* nose

Tympanopleura: *Gr tympon* drum; *Gr pleura* side

Uegitglanis: from the locality of Uegit; *Gr glanis* catfish

Wallago: after the vernacular name 'Wallagoo'

---- *"attu"* should read *athu*: after the vernacular name 'Attu culvu'

Rank and Uniform Group-name Terminations

Man uses several categories (named *taxa*, plural of *taxon*) to classify animals. Specimens are representative of *species* (singular and plural). Species may be sub-divided into *sub-species* (singular and plural). A species is always assigned to a *genus* (plural *genera*), a genus to a *family*, a family to an *order*, an order to a *class*, a class to a *phylum* and a phylum to a *regnum*. Each category represents a rank within the classification of animals.

In classifications intermediate categories are often

* in alphabetical order of sub-species: see 'Volume 1'

recognised, such as *sub-genus*, *sub-family*, *super-family*, *sub-order*, *super-order*, *sub-class* and so on. Genera may be assembled into a *tribe* and a tribe may be sub-divided into *sub-tribes*. There are many more - often obsolete - categories. Ideally, a classification of living organisms expresses man's conception of their relationships.

Many ranks above the genus-level have a fixed suffix denoting the rank of of that taxon. These names of higher taxa are based upon the *stem* of one included, generic name, which is termed the *type-genus*.

Previously, the catfishes were known collectively as the *Nematognathi* (*Gr nematos* thread; *Gr gnathos* jaw). Depending on the author's opinion, the catfishes are either considered to constitute an order, *Siluriforms*, or a sub-order, *Siluroidei*. In a similar way, many older names, like *Nematognathi* against *Siluriforms*, or *Siluroidei*, of animal groups have been modernised.

The suffixes indication the rank of a higher taxon are:

-ina	for a sub-tribe
-ini	for a tribe
-inae	for a sub-family
-idae	for a family
-oidea	for a super-family
-oidei	for a sub-order
-iforms	for an order

Family Names

The currently recognised families of catfishes are listed below, followed by the stem of their respective type-genus and the way they were formed to familial names:

Ageneiosidae:	*Ageneios* (*-us*) + *idae*
Akysidae:	*Akys* (*-is*) + *idae*
Amblycipitidae:	*Amblicipit* (*-is*; *-cipitis* for *-ceps*) + *idae*
Amphilidae:	*Amphili* (*-us*) + *idae*
Ariidae:	*Ari* (*-us*) + *idae*
Aspredinidae:	*Aspredin* (*-is* for *-o*) + *idae*
Astroblepidae:	*Astroblep* (*-us*) + *idae*
Auchenipteridae:	*Auchenipter* (*-us*) + *idae*
Bagridae:	*Bagr* (*-us*) + *idae*
Callicthyidae:	*Callicthy* (*-s*) + *idae*
Cetopsidae:	*Cetops* (*-is*) + *idae*
Chacidae:	*Chac* (*-a*) + *idae*
Clariidae:	*Clari* (*-as*) + *idae*
Diplomystidae:	*Diplomyst* (*-es*) + *idae*
Doradidae:	*Dorad* (*-d* for *-s*) + *idae*
Helogeneidae:	*Helogene* (*-s*) + *idae*
Heteropneustidae:	*Hetropneust* (*-us*) + *idae*
Hypophthalmidae:	*Hypophthalm* (*-us*) + *idae*
Ictaluridae:	*Ictalur* (*-us*) + *idae*
Loricariidae:	*Loricari* (*-a*) + *idae*
Malapteruridae:	*Malapterur* (*-us*) + *idae*
Mochokidae:	*Mochok* (*-us*) + *idae*
Olyridae:	*Olyr* (*-a*) + *idae*
Pangasiidae:	*Pangasi* (*-us*) + *idae*
Pimelodidae:	*Pimelod* (*-us*) + *idae*
Plotosidae:	*Plotos* (*-us*) + *idae*
Schilbeidae:	*Schilbe* + *idae*
Scoloplacidae:	*Scoloplac* (*-c* for *-x*) + *idae*
Siluridae:	*Silur* (*-us*) + *idae*
Sisoridae:	*Sisor* + *idae*
Trichomycteridae:	*Trichomycter* (*-us*) + *idae*

Catfish Show Class Sponsors

1	Aspidoras	Ian Fuller - Corydorasworld.com
2	Brochis	Ian Fuller - Corydorasworld.com
3	Corydoras A - up to 55 mm SL. (females)	Lee Fearnley - Corys4u.co.uk
4	Corydoras B - over 55 mm SL. (females)	Lee Fearnley - Corys4u.co.uk
5	Corydoras types C & CW numbers	Lee Fearnley - Corys4u.co.uk
6	Scleromystax.	Lee Fearnley - Corys4u.co.uk
7	AOV Callichthyidae Calichthys; Dianema; Hoplosternum; Megalechis; Lepthoplosternum.	Ian Fuller - Corydorasworld.com
8	Aspredinidae.	Richard Edge - Midland Waterlife
9	Auchenipteridae.	John Toon
10	Bagridae.	Mike Kirkham
11	Doradidae.	Richard Edge - Midland Waterlife
12	Loricariidae - Up to 130 mm SL.	Julian Dignall - Planet Catfish.com
13	Loricariidae - Over 130 mm SL.	Julian Dignall - Planet Catfish.com
14	Loricariidae - L & LDA numbers up to 130 mm SL. [I]	Julian Dignall - Planet Catfish.com
15	Loricariidae - L & LDA numbers over to 130 mm SL. [I]	Julian Dignall - Planet Catfish.com
16	Mockokidae Up to 130 mm SL.	Allan James - ScotCat.com
17	Mockokidae Over to 130 mm SL.	Allan James - ScotCat.com
18	Pimelodidae up to 130 mm SL.	Allan White - QSS
19	Pimelodidae over to 130 mm SL.	Allan White - QSS
20	AOV Cold Water Catfish	
21	AOV catfishes South Americam.	Bob Barnes
22	AOV catfishes African.	Audrey Ward
23	AOV catfishes Asian.	Adrian Taylor - Hillstreamcatfish.com
24	Pairs - Corydoradinae	Ian Fuller - Corydorasworld.com
25	Pairs - Loricariidae. Including L & LDA numbers	Brian Walsh
26	Pairs - AOV South American.	Bill Hurst
27	Pairs - AOV African.	Roy Barton
28	Pairs - Asian.	Mike Kirkham
29	Breeders - Corydoradinae	Lee Fearnley - Corys4u.co.uk
30	Breeders - Loricariidae. Including L & LDA numbers	Brian Walsh
31	Breeders - AOV South American.	Tony Pickett
32	Breeders - AOV African.	Brian Walsh
33	Breeders - AOV Asian.	Adrian Taylor - Hillstreamcatfish.com
34	Family class - Pair & Breeders	Stuart Brown
35	Breeders master class - 1 entry = 3 separate species of juvenile fish.	Stuart Brown

The member sponsorship of show classes has been a great success for which I thank you all very much. What it actually means for the CSG and its showing fraternity, is that all exhibitors can enter as many fish as they wish Free of Charge, it also means that we can enlist the services of the best Catfish judges in the country without having to worry about how much it will cost. Not only have you the member been generous with your help, so have a large number of manufacturers with donations of their products for us to give away as Show prizes, Exhibitor packs and Raffle prizes. I would like finish by asking you all to wherever possible support our sponsors, for without their support we would not be able to put on the events that we do.

Ian Fuller

(Chairman)

Synodontis ornata Pappenheim, 1914 with a discussion on some similar species (Siluriformes: Mochokidae)

Steven Grant

Whilst searching through the images in Morris & Sabaj (2006) I came across images of the type specimens of *Synodontis ornatus* Pappenheim, 1914. Since Boulenger (1916) Pappenheim's species has been classed as a junior synonym of *Synodontis nigrita* Valenciennes, 1840 but the images led me to consider whether this was correct.

Please note that Pappenheim's species should not be confused with *Synodontis ornatus* Boulenger 1920 from the Democratic Republic of Congo, which is a different species and was given the replacement name of *Synodontis ornatissimus* by Gosse in 1982 due to them sharing the same name (since Gosse gave it this replacement name it has been changed to *Synodontis ornatissima* Gosse, 1982 so as to agree with the gender of the genus - see Ferraris, 2007).

Synodontis ornata

As mentioned above *S. ornata* Pappenheim, 1914 (which also needs changing from '*ornatus*' so as to agree with the gender of the genus) has been classed as a junior synonym of *S. nigrita* since 1916, something which Poll (1971) and others have adhered to since. *S. nigrita* is a name that is usually readily attached to specimens that have (in life) a pale to dark grey base colour with small black spots or marks. However, in reality there are quite a few species that are at first glance quite similar, not only in colour and pattern but in the overall shape of (in adults):

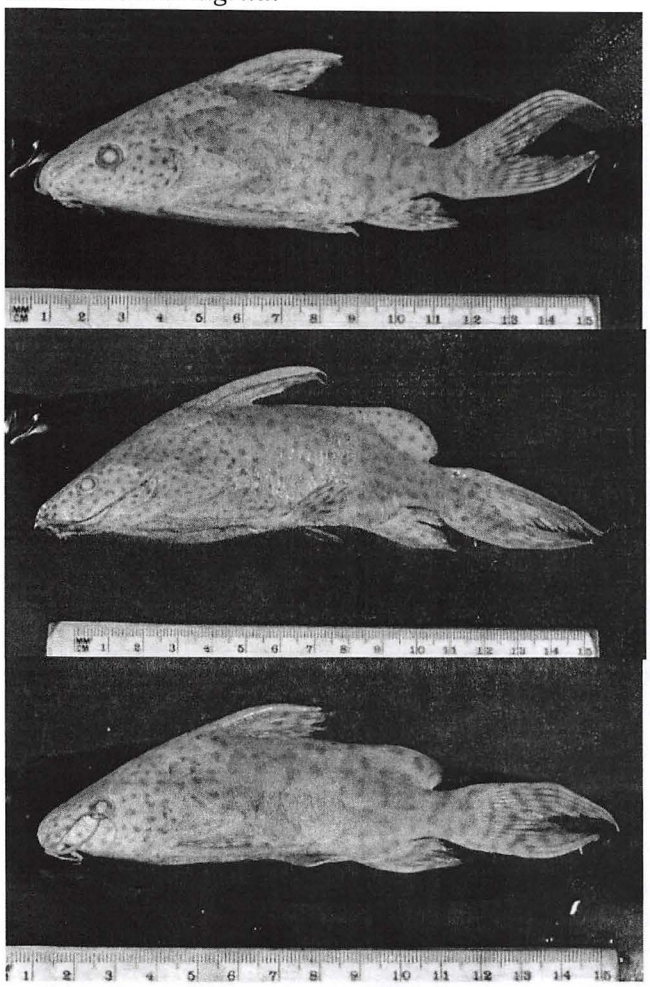
- Relatively medium to deep body depth
- Relatively narrow caudal peduncle
- Lack of large dark mark above the humeral process

These include species such as *S. obesus* Boulenger, 1898; *S. nigromaculata* Boulenger, 1905; *S. ansorgii* Boulenger, 1911; *S. fascipinna* Nichols & La Monte, 1953; *S. robbianus* Smith, 1875; *S. euptera* Boulenger, 1901.

Holotype of *Synodontis fascipinna*

S. fascipinna was thought by Poll to be a possible synonym of *S. nigrita* but in 1986 Gosse listed it as a valid species, as it only occurs in the headwaters of the Chari River basin (the holotype came from Birao, Central African Republic). This I would tentatively agree with when one looks at the fact that *S. nigrita* is from the Gambia River, Senegal River, Volta River, Geba River, Kolente River, Casamance River, Ogooué River, Cross River, Ntem River, and Niger River watersheds of western and western central Africa, and also appears to have a different snout, head, body and fin shape to *S. fascipinna* even in juveniles. One has to take into account the fact that the holotype of *S. fascipinna* is a juvenile (48mm SL), but if you compare it with Gambian, Gabonese and Cameroonian juvenile *S. nigrita* of a similar size you will see that the differences are still apparent (see live juvenile specimen in Glaser, 2000, and preserved MNHN specimens on FishBase). There also appears to be a difference in the shape of the supraclavicle bone (although this could be related to ontogeny, and I have found variations in this in the syntypes of *S. ornata*). More specimens from the Chari River basin need comparing to topotypical *S. nigrita*. I have noticed a difference in the angle of the humeral process in specimens of *S. nigrita* (see drawings in Fermon *et al* (2008) as an example). In *Synodontis* the humeral process is usually a good indicator to differentiate species as it is quite constant in adults (in the young and juveniles of some species it can be different to that of the adults). These apparent differences in adults of

S. nigrita need checking to see if they correspond with the different river basin populations; although I have found some slight variation in the syntypes of *S. ornata*. The apparent validity of *S. fascipinna* tends to lend more weight to *S. ornata* also being possibly distinct from *S. nigrita*.



Synodontis ornata : (from top) specimens 2, 3 & 6

S. ornata was described using 8 specimens from Lake Albert, "some on the southwest bank". This would probably mean that they were caught on the Ugandan side of the lake, or if higher up on the south-western bank it could have been the Congo side. Regardless of which country's border of the lake they were from, the fact that they were caught in the lake means that the specimens are from the 'White Nile' part of the Nile system. This means that it comes from a currently unconnected system from that of the widely dispersed but mainly western and western central African *S. nigrita*. It also comes from a different system to that of *S. fascipinna*. If one looks at the images of the syntypes (ZMB 19097) it appears that although they have similar patterns and colours they are slightly different to topotypical *S. nigrita*. The main differences appear to be that the adipose fin in *S. ornata* extends slightly further anteriorly towards the insertion of the ventral fins; the nuchal plate is more curved anteriorly; and the head/body profile in adults is deeper. In fact at first glance *S. ornata* appears more like *S. obesus*. However that species has different cranial plate morphology to both species; including the numerous and distinct granulations over the plates in the former. These differences may not be enough to warrant a separate species but my view is that if *S. fascipinna* is valid, so is *S. ornata*. Although I do not have the hard scientific data to back up my view I think that there is enough information to at least doubt the synonymy and class *S. ornata* as only a tentative junior synonym of *S. nigrita*. Hopefully scientists will look more closely at the relationships between *S. nigrita*, *S. obesus*, *S. fascipinna* and *S. ornata* and provide a definite answer.

Acknowledgements

Thanks to Mark Allen and Melanie Stiassny for permission to use their excellent images of type specimens. Copyright of the images belongs to the photographer.

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What Regulates Reproduction in Catfishes and How Can the Cues Be Mimicked in Captivity?

Michael Hardman

Given that you're reading this, like me, you'd like to know more about catfishes. The reasons why we want to know more are varied. Some of us want to know more about how catfishes reproduce so that we can increase our own stock, trade with friends, pay the electric bill, or to secure some bragging rights before the next convention. I want to know more about reproduction in catfishes because, for over 20 years now, I've suffered from a rather stubborn compulsion to understand why there are so many kinds of catfishes, how they differ from eachother and what role, if any, reproduction has played in their evolution.

To summarize what we know already, I added information from books and technical articles published by ecologists and fisheries biologists to the comprehensive accounts for catfishes in the classic *Modes of Reproduction in Fishes* by Charles Breder and Donn Rosen. I only included information if it concerned catfishes in their natural habitat so as to avoid any problems that might arise from unnatural behaviours stemming from life in captivity.

Catfish Reproduction

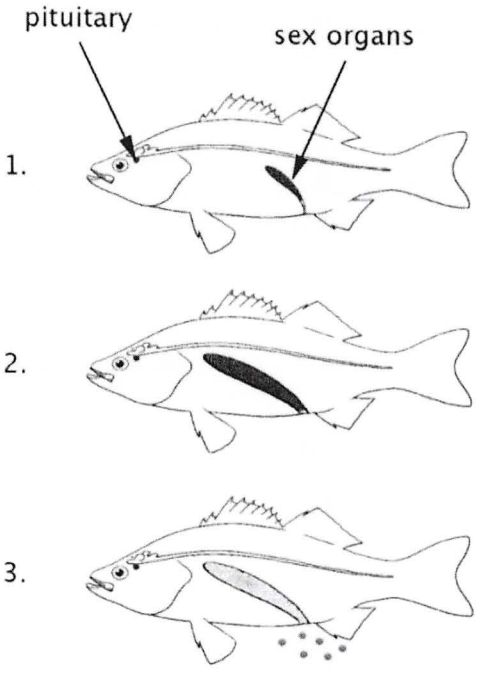
While North American catfishes are relatively well studied, most catfish families are poorly known. Several are completely unknown. For those we know about, most catfishes place their eggs in a cavity and protect them until they hatch. Fertilization is usually external, but auchenipterids form spawning embraces in which the male uses a modified anal fin to inseminate the female with a packet of sperm that she stores until releasing her eggs. Scoloplacids and diplomystids have advanced sperm morphology similar to auchenipterids, and *Astroblepus* has a similarly elongated genital papilla, but these three families have yet to be confirmed as internal fertilizers.

Secondary sexual dimorphism (everything other than the gonads) occurs in many families scattered throughout the family tree of catfishes, with some being obvious (e.g., *Pseudancistrus barbatus*) but others are subtle and only briefly shown during the spawning period (e.g., *Trichomycterus corduvense*). Several catfish families have similar sexes and are known to broadcast their eggs over a substrate (e.g., Heptapteridae) or into the water column (e.g., Pimelodidae, Schilbeidae) and provide no parental care at all. Bizarrely, *Corydoras* catfishes are believed to swallow sperm and pass it through their gut before releasing it a few seconds later onto the unfertilized eggs held between the cupped pelvic fins.

Several catfish families have species that transport their eggs or juveniles inside their mouths (e.g., Ariidae, Claroteidae), on expanded lower lips (e.g., *Loricaria*) or attached to special modifications of the skin covering the belly through which nutrients and oxygen may be supplied to the developing embryo (e.g., Aspredinidae: *Platystacus cotylephorus*, Bagridae: *Hemibagrus gulio*). *Bagrus meridionalis* (Bagridae) releases unfertilized eggs, stirs up small invertebrates and fosters the young cichlids in order to provide a perimeter of prey items for the would-be predators of its own offspring. Both parents of *Ameiurus natalis* (Ictaluridae) shepherd a revolving mass of juveniles around the shallows of streams and lakes of North America to feed on invertebrates.

At least for the families we know about, maximum size, natural habitat, diet and phylogenetic relationships do not correspond with reproductive strategy. This means that for the families we'd like to know more about, these easily measured characteristics provide few clues as to how they might reproduce. Catfishes, however, like most other animals and plants must obey the general rules of life in seasonal environments and synchronize their reproduction with the most

Summary of reproduction in fishes



The priming cue is applied, stimulating the pituitary to release gonadotropins and stimulate the development of the ovaries or testes.

Once developed, the sex organs release corticosteroids which cause the expression of secondary sexual characteristics and depress pituitary activity.

The trigger cue is applied, causing the release of eggs into the oviduct (ovulation) and consequent spawning. Males maintain a ready-state and release sperm whenever females signal their ovulation.

favourable time of year to do so. Furthermore, we might find a pattern among the various environmental changes that catfishes use as clocks to cue their spawning rather than among correlated characteristics of their phenotype and habitat.

The brain-pituitary-gonad axis

All vertebrates use a common and ancient mechanism of coupling environmental cues to their reproductive system. A region of the hindbrain called the hypothalamus is closely associated with the pituitary, which is the main factory for hormones that govern growth, activity and reproduction. The hypothalamus is triggered by, for example, a change in temperature or the number of hours of daylight in a 24-hour period, and it stimulates the pituitary to release the reproductive hormones or *gonadotropins*. The gonadotropins travel in the bloodstream to the sex organs (testes and ovaries) and stimulate the growth and maturity of the sex cells (sperm and eggs).

Once the gonads begin to develop, they begin to release the sex hormones or *corticosteroids* that regulate the secretory activity of the pituitary and cause other organs or tissues in the body to form the secondary sexual characteristics such as swollen muscles, elongated fin spines or a flush of odontodes. These changes signify reproductive readiness and are important to note if you're trying to encourage your catfishes to spawn in aquaria.

Primers and triggers

One way to think about the hormonal control of reproduction is loading and firing a gun. The initial cue, or *primer*, causes the pituitary to release gonadotropins that stimulate the gonads to develop; the gun is loaded. As the gonads develop and the eggs or sperm mature, the release of corticosteroids depresses pituitary activity but stimulates the expression of features that signify reproductive readiness. In most cases, a second environmental cue is needed to trigger ovulation and fire the gun. Many aquarists describe their fishes as being "egg-bound" and this is because the primer cue has been provided, perhaps in the form of a partial water change, but not the trigger. Similarly, if the trigger cue is provided to fishes that do not have mature gonads, no spawning will take place.

So, it's important to realise the two-stage process of reproduction and that cues must be provided in the correct sequence and with an appropriate amount of time between them for eggs to mature. This system is in place because seasonal events are approximately clocklike in nature and reproduction has evolved to coincide with the best time of year to do so. However, because seasonal events fluctuate from year to year and throughout the natural distribution of a species, systems are often flexible. Species that have flexible systems are more easily spawned in aquaria and typically have broader geographic distributions. Species only rarely spawned in captivity (or not at all) are narrowly distributed in nature and have systems that are more strictly tied to specific environmental cues. If they are not provided will not mature and/or spawn.

Cues: environmental

Of the environmental changes that have been studied so far, the amount of daylight in 24 hours (*photoperiod*) and temperature have been identified as the main factors that prime and trigger reproductive systems in fishes. Most temperate fishes begin their reproductive cycles in the spring when daylength and

temperature are both increasing, i.e., during the Spring and early Summer.

A photoperiodic response has been found in ariids, amblycipitids, silurids, pimelodids, amphiliids and ictalurids. In most of these cases the species showing the response are found at temperate latitudes where there is greater variation in daylength during the year. However, tropical species may exhibit the response if maintained at higher latitudes, e.g., in aquaria in the UK. When fishes held in lightproof laboratories are exposed to longer photoperiods they can be brought into reproductive condition outside of the normal spawning season. It is important that no natural daylight or other light sources enter the room when artificial photoperiods are being applied, as it can cancel out their effect.

In contrast to the widely held belief among catfish enthusiasts that a drop in temperature is necessary to stimulate the spawning of many species, in all cases where temperature has been identified as the important variable, it has been an *increase* rather than a decrease that has triggered spawning. Species of Ariidae, Amblycipitidae, Amphiliidae, Astroblepidae, Auchenipteridae, Callichthyidae, Clariidae, Ictaluridae, Loricariidae, Pimelodidae, Plotosidae and Siluridae are known to reproduce following a rise in temperature. To date, no catfishes have reproductive periods that coincide with or following a drop in temperature, suggesting that this response is a general one among catfishes and that attempts to trigger a captive spawning should include a temperature increase.

Though much less frequently, the moon and atmospheric pressure have also been studied as potential cues triggering reproduction in catfishes. In Lake Tanganyika, *Auchenoglanis occidentalis* (Auchenoglanididae) spawns during the 3rd quarter of the lunar cycle, building large saucer-shaped nests of shell fragments that are desilted by the guarding males. Changes in atmospheric pressure, though commonly considered important by many aquarists, have yet to be implicated as the critical cue for any catfish species.

Cues: physical

In addition to general environmental changes such as temperature and daylength, several physical variables are known to be important as reproductive cues. Most of these appear to be the effects of increased rainfall. Flow rate, turbulence, turbidity and substrate availability (due to flooding) all increase during the rainy season when many tropical catfishes reproduce (e.g., Ariidae, Amphiliidae, Astroblepidae, Auchenipteridae, Bagridae, Doradidae, Clariidae, Claroteidae, Loricariidae, Pimelodidae, Schilbeidae and Trichomycteridae). It is difficult to say which of these coincidental variables (or combination) provides the specific cue, but most studies of wild and captive fishes implicate flow rate as being critical.

Many fishes require a specific substrate to trigger ovulation and spawning. While most catfishes spawn in cavities that are either excavated or found naturally in aquatic environments, silurids spawn among submerged vegetation and clariids spawn in flooded fields when seasonal rains cause tropical streams to swell and overflow their banks. Studies have shown that the presence of aquatic plants caused 95% of goldfish to ovulate and spawn whereas when plants were absent, only 20% spawned. The importance of aquatic macrophytes as stimulants of ovulation and as a spawning substrate is obvious in goldfish, but similar cues may be as critical to many catfishes, e.g., cavity dimensions for many hypostomine loricariids.

Cues: nutritional

Most books on breeding aquarium fishes emphasize the importance of providing a varied diet rich in protein and plenty of live foods. Providing a suitable diet is essential to the long-term health of fishes and, in combination with gonadotropins, ensures that ovaries and testes develop and ripen. However, while adequate food plays a role in the maturation of eggs and sperm, diet and stomach fullness are not known to trigger ovulation and spawning.

Cues: chemical

The chemical environment of freshwater habitats is generally determined by local geology and soils. Abrupt chemical changes in natural waterbodies are rare but during periods of abundant rainfall (when many catfishes reproduce) conductivity can decrease, pH can increase and dissolved oxygen can reach saturated levels. Heavy rains can increase the amount of organic material and minerals in suspension or solution. These factors, along with physical changes in the environment, all coincide with the onset of the rainy season so it is difficult to gauge if any of these factors (or their combination) are directly responsible for the cue. As yet, no chemical change has been implicated in the maturation or spawning of catfishes although they are heavily reliant on smell and taste in their interaction with the environment, so it would not be surprising if several were found.

Cues: social

In addition to environmental factors, the massive influx of water into aquatic systems during tropical rains imposes biological changes such as a decrease in the population density and a lessened risk of predation. *Bagrus meridionalis* (Bagridae) times its reproduction to coincide with that of the cichlids of Lake Malawi, as it fosters juvenile cichlids to protect its own family. *Tandanus tandanus* (Plotosidae) has a complex courtship behaviour and many other catfishes are known to produce sounds during spawning (e.g., *Corydoras*). So we know that social factors can be important, but they are the most difficult to observe and measure.

Filling the void

As much as we know about the reproductive biology of catfishes, very few of the several thousand species that

exist are known in any detail. Typically, knowledge concerning each family is restricted to a few details about a single species. In my search, I managed to find something for 29 of 39 catfish lineages. I found nothing for Akysidae, *Ancharius*, Austroglanididae, Cetopsidae, Chacidae, Cranoglanididae, Erethistidae, Lacantuniidae, Nematogenyidae or Pangasiidae. Of these lineages, five are frequently available in the aquarium trade and aquarists may be able to provide information concerning their reproductive biology. Indeed, CSG member Adrian Taylor has reported on the spawning of several species of *Hara* (Erethistidae), so hopefully this information will make it into the technical literature soon.

While some information is known about 29 of 39 lineages, only 3 lineages are known with any level of completeness; Callichthyidae, Ictaluridae and Loricariidae. Most of what we know about the remarkable reproductive biology of *Corydoras* has been obtained through observations of captive fishes. Ictalurids are a well-known component of the North American ichthyofauna and several professional ichthyologists have studied the systematics and biology of the group thoroughly. Loricariids have been studied in Panama by the ecologist Mary Power and the relative ease by which this group adjust to life in captivity has enabled the spawning behaviour and parental care to be observed by many aquarists.

A call to arms

So, given that we know very little but what we do know suggests a great diversity of strategies, I wonder how much of the surface we've actually scratched. Unfortunately, research labs are unlikely to focus their efforts on these questions given the time, skill, investment and resources required by reproductive studies. Similarly, the logistics and expense of fieldwork mean that natural observations of spawning catfishes will remain rare. However, the diversity of live catfishes, aquaria and husbandry skills of CSG members collectively represent an incredible resource that could be organized to generate a potentially rich source of new information.

The hormone system that regulates reproduction in catfishes is conserved and standard. Each of the two stages (priming and triggering) may require a single or multiple cues which may be the same or different and which tie the species to seasonal changes in its environment. Many of the cues can be simulated in the aquarium. Identifying these cues is a relatively straightforward exercise from a scientific standpoint but one that will require a methodical approach, patience and long-term commitment of three identical aquaria. Many of you reading this have at least two of these three things, so I believe that with a small amount of organisation the CSG can make more technical contributions to our knowledge of catfish reproduction and move toward a greater potential.

The list of possible cues is daunting. We know that daylength and temperature are important in providing the priming cue, and that spawning often takes place during or shortly after heavy rains. Most aquarists (myself included) attempt to induce spawning rather haphazardly with water changes, powerheads and temperature drops. A more structured approach might help to spawn the "difficult" groups, minimize repeated failures and distil the actual cues that catfishes use from the things we expose them to that have no effect.

Experimental approach

One way to provide structure to an investigation such as this is to use the scientific method, which tests *hypotheses* or predictive statements that the species will spawn when some treatment (or cue) is provided. Using the scientific method also means adopting an experimental approach where three identical aquaria are maintained with the same number of individuals, of the same species and in the same ratio of males to females. Each aquarium should have the same equipment and similar contents, e.g., sand, branches, etc. and unable to see the other two.

Using this 3-tank setup, for each experiment one aquarium is specified as the *control* and left alone. The other two are the test tanks and each receives the same treatment, e.g., a 50% fresh water change. The result (fishes spawn or do not spawn) is recorded and the treatment is ideally repeated several times each time randomly selecting the control aquarium. We need the control tank to show that the treatment is having the effect on the test tanks rather than some other factor that is changing at the same time, e.g., local weather. If only the test tanks spawn, you know the treatment is having the intended effect. If the control tank spawns as well, you should check for something else.

Possible treatments

The list of treatments is as long as your imagination and can seem impossible to sort through. However, a little homework can help whittle down the list. Bearing in mind that daylength, temperature and periods of increased rainfall are known to play important roles in the reproduction of most fishes, these three are a great place to start. Knowing where your catfishes originate from is tremendously important as the corresponding climate and annual variation in daylength and average temperature can provide the environmental template to be copied in the aquarium. Information on climate and seasonality can be obtained from any decent World Atlas and there is a great deal of information on the worldwide web.

One thing I'd like to mention is that while daylength at the equator remains close to 12-hours dark/12-hours light, many of the tropical fishes I keep here in Helsinki (minimum daylength of 6 hours in December and a maximum of 19 hours in June) resume reproduction in the springtime after a pause of several months. It is tempting to interpret this as a typical photoperiodic response, but it seems strange that a

tropical species would do so. Perhaps the response is so conserved in *all* fishes that it can still be triggered in species that, today, experience relatively little variation in daylength in their natural habitat. Also, the present distribution of a species does not imply that it has remained constant through time and the landmasses on which they live have been in constant slow motion with respect to the equator during their evolution.

What to record

In running trials such as those I've described above, recording the results appropriately and accurately is crucial. I've included an example (see sample data sheet). While any number of variables could be measured and recorded, the most important are the conditions before and after the treatment. Much of the local weather can be obtained from online sources (e.g., www.metoffice.gov.uk), but if you do not have access to that information, just record the date and these can be added later. Remember that unless the test aquaria are maintained in a room without windows, natural light will cancel the effects of photoperiods applied through the use of timers and lamps. If you have the equipment, spawning behaviours can be recorded with cameras and hydrophones.

You'll each have to decide how long to run each trial for, i.e., how long to wait for a response after the treatment is applied. I think it should be a minimum of 24 hours and a maximum of 2 weeks. This will come down to your patience, but remember that ovulation (spawning) will only happen if the females contain mature eggs, which is dependent on you providing the priming cue.

By standardizing the experiments and how the results are recorded, the overall effort of CSG members can be analyzed more rigorously and many of the factors that trigger reproduction in catfishes can be revealed. Such information can only be good news for aquarists, ichthyologists, conservationists, environmental managers and policy makers.

summary

Most catfishes are sexually dimorphic, external fertilizers that protect the developing eggs until they hatch, usually in a cavity.

Phenotype and habitat do not covary with reproductive strategy in catfishes and, as such, offer few clues as to how to spawn the unknown species.

Catfishes, like most other vertebrates, depend on the *brain-pituitary-gonad* axis that connects environmental signals to the reproductive system in order to synchronize their spawning with the best time of year to do so..

Reproduction in fishes is typically a two-stage system: the first environmental change cues the maturity of the sex organs and expression of secondary sexual characteristics; the second cue triggers ovulation and spawning.

Of the environmental changes that are involved in regulating fish reproduction, photoperiod and temperature are the most important and in both cases increasing values provide the stimulus.

Many tropical catfishes spawn shortly after the start of the rainy season, when many factors change in the environment including flow rate, water depth, turbidity, conductivity and dissolved oxygen.

The triggers provided by many environmental events can be simulated in the aquarium.

Mike can be contacted at m.hardman@mac.com

Mike has provided a specimen record sheet for anyone interested in joining in the breeding research programme. I have placed it as the back of the magazine so that it can be easily removed without damaging the rest of this issue.

30th Anniversary Convention

1978 - 2008

The date

20th - 21st - 22nd March 2009

The Venue

The Britannia Hotel
Almond Brook Road,
Standish, Wigan,
Lanc's. UK. WN6 0SR

The speakers

Danny Blundell
Dave McAllister
Hans-Georg Evers
Kamphol Udomritthiruj
Mark Henry Sabaj Perez.

For details contact chairman@catfishstudygroup

Sample data sheet: *Genus species*

Control tank: **Date:**

Weather

Pressure: .....

Trend: .....

Temperature: .....

Rainfall: .....

Photoperiod

Hours light:: .....

Hours dark: .....

Lunar phase: .....

Aquarium conditions

Before treatment

pH: .....

Temperature: .....

Conductivity: .....

Nitrate: .....

Phosphate: .....

Flowrate: .....

After treatment

pH: .....

Temperature: .....

Conductivity: .....

Nitrate: .....

Phosphate: .....

Flowrate: .....

Treatment:

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Response and time elapsed since treatment:

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Dates for Your Diary

October 19th	Plants for the Catfish aquarium
November 16th	Autumn Auction (Pre booking Roy Barton 01942 248130)
December 14th	Christmas meeting - not to be missed :-)

2009

January 18th	Annual General Meeting
February 15th	Feeding Catfish
March 15th	Spring Auction
March 20/21/22nd	30th Anniversary Convention, Britannia Hotel, Almond Brook Road, Wigan, Lancashire
April 19th	BAP Reports and Discussion
May 17th	Catfish Health
June 21st	Catfish Habitats
July 19th	Migration in Catfish
August 16th	Setting Up a Catfish Aquarium
September 20th	Annual Show and Auction
October 18th	Plants for the Catfish Aquarium
November 15th	Autumn Auction (Pre booking Roy Barton 01942 248130)
December 13th	Christmas meeting - not to be missed :-)

Magazine Closing Dates

Normally the 1st of the Month of Publication

Please note: When submitting articles, if you supply all the images as separate files it makes them much easier to import into the software so that they display to their best advantage in Cat Chat.

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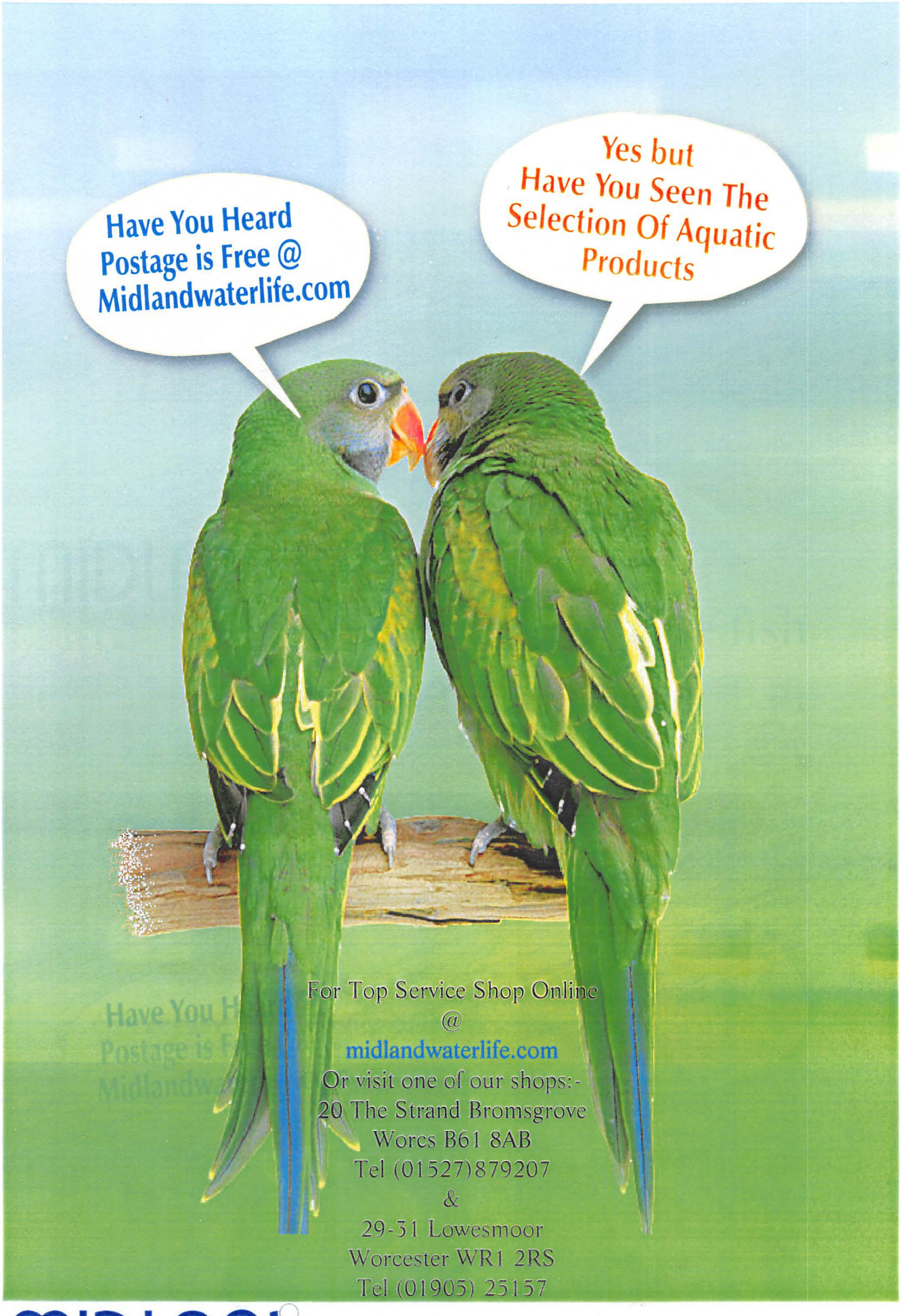

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