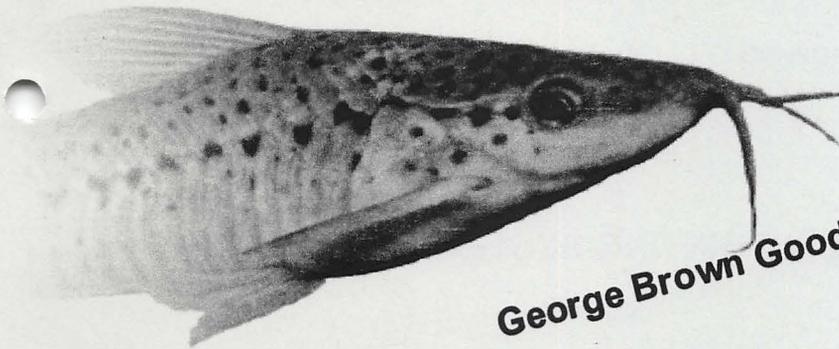


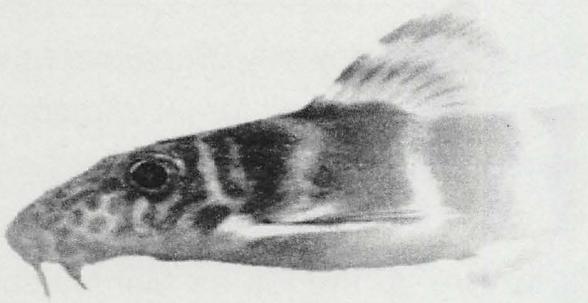
CAT CHAT

The Journal of the Catfish Study Group

THE FAMILY CALLICHTHYIDAE



George Brown Goode (1851-1896) An insight



Amazon River 'longer than Nile'

Spawning *Corydoras bilineatus*



BAP Spawning Records

Volume 8 Issue Number 2
June 2007

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The organisation of our Catfish Convention 2008 is well under way. Speakers have been organised and the venue is the Britannia Hotel again (Don't forget to mention the Catfish Convention when booking in order to get our special rates). Details in full will be in a future Cat Chat.

Due to his work load, Stuart Brown is having to give up the job as Membership Secretary. Fortunately, Paul Fox, the subject of last issue's 'Meet the member', has agreed to exchange his post with Stuart. Details of their contact is on the 'Committee page' in this Cat Chat.

Articles for publication in Cat Chat should be sent to:

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Or by e-mail to: editor@catfishstudygroup.org with the subject title **Cat Chat** so that I don't treat it as spam mail and delete it without opening it.

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CAT CHAT

The Committee of the CSG (UK) would like to thank the following companies

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From the Chair



All things change with time, they call it evolution and the CSG is no different to anything else. Sometimes the changes are for the good and sometimes not so good but we strive to improve what we give to the membership, which this brings me straight to the point. Our next major event, the Annual Open Show will soon be upon us and we have made a couple of changes. One to improve the quality of the exhibits, although I must say at this point that the entries we have been getting at the shows over the last few years have been excellent and two, to encourage more people to bring their fish. What we have done is make some alterations to the judging pointing system. The one area that has been dominant is the 20 points that are allocated for size, this has tended to give a full-grown average fish an advantage over a three-quarter grown fully mature pristine fish. The change being made will reduce the size points to 10, making a lesser differential between the full-grown and three-quarter grown fish. Then to keep the total possible points at the current 100 level, the 10 points removed from the size section will be awarded in a new section awarded for 'Presentation'. Basically this should encourage exhibitors to pay a little more attention to the way they present their fish and hopefully ensure that the container the fish is shown in is of an adequate size for the fish to be comfortable in and that it and the water it contains are in a clean condition, giving the judge every opportunity to view the exhibit to its best possible advantage.

By removing some of the emphasis on the size of a fish it is hoped that exhibitors will bring more of the not quite full sized fish to the show. This change has been made to all three areas of the show i.e. Single fish, Pairs of fish and breeders teams. A full breakdown is given in these pages, in the 2007 show schedule and on the web site.

I have also introduced a new show sponsorship program. We receive a tremendous amount of support from the aquatic trade and I thought it was time that members, or the smaller sections of the industry like your local shop can help to offset the cost of running the show. There are two areas here, the first is where your local shop, for a one off fee of £10 can have their name/banner in the show schedule, the other is where again a shop or individual can sponsor a class, or several if they wish, again at £10 per class. All individuals sponsoring classes will have their name displayed in the class heading in the results list, which will be published in the magazine and on the web site.

To start this off I have already put my name to two classes. If you wish to sponsor a class that has already got one sponsor, no worries we don't mind adding another name to that class, in fact the more the better.

Moving forward the arrangements for the 2008 convention are well under way. The venue is the same as last year, the Britannia Hotel Standish, where we have received excellent service since we moved the convention there three years ago. The list of speakers is almost complete and will include Dr Martin Taylor, Dr Michael Hardman and Brian Walsh; our non-cattfish speaker will be Dwarf Cichlid specialist Mark Breeze who will be talking about breeding Apistogramma. Further announcements and details will be made when the speaker list and programme have been completed.

Over the last three months the CSG has been well represented at several events around the country.

In May I, along with the Membership Secretary, Stuart Brown, attended the Corby & District Open Show, which was also attended by other CSG members and where I am pleased to report that the CSG dominated the Corydoras & Brochis classes, taking all four places in Corydoras, with local member Dave Bent taking first place with his superb C. sterbai female and yours truly taking first place in the Brochis class. We also had successes in the Livebearer, small Characins and Dwarf cichlid classes.

In early June we took ourselves south to Berkshire and the Bracknell show where Corydoras was one of the two FBAS (Federation of British Aquarist Societies) Championship classes. I am pleased to report that here again we had great success with my C. pulcher winning Corydoras and my B. splendens taking the honours in the Brochis class, Stuart cleaned up the 2nd, 3rd and 4th places in Corydoras and came a close second in the Brochis class. Again we did well in other classes.

Having prior engagements I have missed two of the last three group meetings but having said that the CSG has been well represented on both occasions. The first of these in May, was at the Cincinnati Aquarium Society in the USA where there were in excess of 80 club members present as well as a number of guests from other areas. 80 members at a club meeting is something I can only dream about. Back in the UK I went to the Isle of Wight along with show secretary Brian Walsh where we again displayed the CSG stand, which drew in a fair amount of attention.

George Brown Goode (1851-1896) An insight

by A.W. Taylor



G. Brown Goode was born in New Albany, Indiana, on 13 February 1851. After the death of his mother a few years later, his father re-married and the family moved to Amenia, New York. George's father decided that his son would receive a private education and instead of attending regular school, George was taught by tutors at home. In 1866 he went to the Middletown University in Connecticut and three years later a young George graduated, going on to study under Louis Agassiz at Harvard University. A year later Goode was asked to take charge of the New Natural History museum at his former University in Connecticut. Although most of Goode's time was spent in administrating the new museum, he managed to work with Spencer Baird on scientific matters and became one of Baird's trusted assistants.

In 1877 Goode left the University in Connecticut and joined the Smithsonian Institute, becoming in 1879 its Assistant Director.

It was during his time at the Smithsonian institute that Goode headed research which was sponsored by the US Fish Commission and as well as organising numerous displays at the Smithsonian Institute in Washington, he organised an exhibition that was held in Berlin (1880) and one that was held in London (1883).

After Baird's death in 1887, Goode was appointed to the post of Assistant Secretary at the Smithsonian, which gave him full control and responsibility of the museum. Even though his administrative duties took up much of his time, Goode still found time to study and publish his

own works pertaining to the Natural world. The first of which was a catalogue of fishes of the Bermudas in 1876, which he wrote after visiting the island.

Goode for a while teamed up with a colleague from the Smithsonian, Tarleton H Bean, producing nearly forty papers on Ichthyological matters, cumulating in the publication shortly after Goode's death of the renowned work on "Oceanic Ichthyology".

In late 1896 Goode (a noted heavy Smoker) suffered a bout of pneumonia and at a time where medications we use today were unheard of and failing to ward off the infection, he died at his home in Washington aged only 45 on the 6th of September 1896.

Although much of his life was spent in administration, Goode made no distinction between Academia and amateur enthusiasts and he was a great supporter of making knowledge and discoveries available to all.

Annual General Meeting 2008

The present three-year tenure of elected officers ends at the next AGM on 20 January 2008.

Position	Current holder
Chairman	Mr I Fuller
Secretary	Mr A W Taylor
Treasurer	Mr D Blundell
Show Secretary	Mr B Walsh
Editor	Mr B Hurst
Membership Secretary	Mr P Fox

Any member who would like to stand for any of these positions at the next AGM, is required to inform the CSG Secretary* of his/her intent, in writing, no later than 30th September 2007.

The application must be accompanied by the signature of a member who is willing to nominate the applicant together with a signature of a member who is willing to support that nomination.

If you haven't paid your subscription in time for the AGM, you are not a member and cannot vote or stand.

The present officers have all indicated that if their position is not taken, they will continue in the post.

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

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MEET THE MEMBER

Mark Breeze

A cabinet maker/bench joiner by trade I am a 42 year old single father of 4 who hails from Oswestry, Shropshire, right on the North Wales border.

I have been keeping freshwater tropicals now for the best part of 20 years and at the moment I run an 18ft by 11ft, 40 tank fish house dedicated to South American dwarfs and in particular Apistogramma, a species which I seem to have become obsessed with over the past 5 years. I have managed to breed 32 species/forms of Apisto including many hard to find species such as A cf diplotaenia "Orinoco" that are virtually unobtainable within the hobby. Other very rare SA dwarfs that I have successfully bred include the recently described Ivanacara adoketa and Biotocus opercularis.

Apart from the SA dwarf cichlids, Corydoras catfish also seem to be finding their way into my fish house in increasing numbers and it is my intention to put aside approximately 15 tanks for the maintenance and breeding of Cory's when I expand my fish house later in the year.

In Sept 05 I set up my own website "Micromania" dedicated to SA dwarfs and recently, in conjunction with Aquatic-Forums, I have set up the UK's only dedicated SA dwarf cichlid forum.

I had the privilege in Oct 06 to meet one of the worlds leading authorities on SA dwarfs, Dr Uwe Romer, who was in the UK to speak at a BCA convention. To my amazement Uwe took some of the fish from my breeding projects home with him to Germany and since that first meeting I have supplied Uwe with a few species of SA dwarf cichlid for both his and his students' scientific work at Bielefeld University, Germany. Whilst I was on a recent trip over to Holland in search of broodstock for my breeding projects, Uwe drove over from Germany and we met up to exchange fish which is a real privilege for a small time hobbyist and breeder such as myself.

Over recent years I have also taken a keen interest in live foods and I now regularly culture and supply many types of live food to hobbyists all over the UK. The workshop on live foods at the recent CSG convention was my first such venture and as a result of this

workshop, I have been asked to speak at a number of events/aquatic societies on the subject of live foods. Your Chairman, Ian, has very kindly been working hard on putting this presentation onto disc for me which is very much appreciated.

Apart from being a member of the CSG and the Corydoras World web based aquatic site, I am a member of the Telford and District AS, as well as being an active member of the British Cichlid Association. I was very pleased to have recently been presented with the BCA's first Blackshark Award by Ad Konings for my article Biotocus opercularis, "when opportunity arises...." which was voted to have been the best article published in Cichlidae for 2006.

I must confess that the world of catfishes is a part of the aquatic hobby that I am not very familiar with but my limited experience of keeping corydoras catfish, and in particular C121, C139, C habrosus, C caudimaculatus and the Czech bred C aeneus "Black", is something that I have enjoyed and wish to expand upon.

I think I am definitely in the right place to do this with help from the vast amount of experience and knowledge that is available from within the membership of the CSG.

For anybody who is interested in SA dwarf cichlids, my website can be found at <www.dwarf-cichlid.com> and the new Micromania SA dwarf cichlid forum is located at <www.aquatic-forums.com>

Everybody is welcome....





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THE FAMILY CALLICHTHYIDAE

by Chris Ralph

PART ONE

When the family Callichthyidae is mentioned most people associate it with one of the most popular groups of catfish the "*Corydoras*". For the purpose of this article I will describe some of the other members of this fascinating family of catfish (*Aspidoras* and *Brochis*), but will cover *Corydoras* and others in future articles. This family of catfish are often referred to as "Armoured Catfish" and are found throughout the river systems of South America including the Amazon and its many tributaries. Representatives of this family are also found within the rivers of Trinidad, due to the fact that as freshwater enters the Atlantic Ocean from Venezuela, it does not mix straight away with the saline water of the ocean itself, thus you have freshwater sitting on top of seawater. The catfish are therefore carried in the freshwater to the island of Trinidad. The bodies of these catfish are made up of rows of overlapping bony plates, hence the reference to armour plating. Within this family of catfish there is a diverse range of colours and colour patterning, which can make identification confusing at times. The genera consisting of *Aspidoras*, *Brochis* and *Corydoras* are part of the subfamily Corydoradinae.

As with all fish in order to keep them successfully, we the aquarist must first provide an environment in which our chosen fish feel safe in. What I mean by the term safe is an aquarium which is going to provide sufficient room for the catfish, with plenty of hiding places amongst bogwood and rocks, and perhaps most importantly good water quality and nutrition. Most of these catfish can be kept under the following conditions:

Temperature range 22 to 25°C or 71 to 77°F (although higher temperatures may also be tolerated by some species), with pH in the range of 6.5 to 7.2. A wide range of hardness is tolerated by most species of between 5 and 25°GH (general hardness). Most if not all species of the family Callichthyidae prefer a planted aquarium with plenty of hiding places amongst the chosen décor. The substrate chosen will depend upon individual taste, although personally I prefer to use good quality aquarium sand such as BD Aquarium Sand, instead of gravel. If you are using gravel ensure that it is fine smooth and rounded as any sharp gravel will potentially result in damage to these catfishes barbels. If damage does occur it usually results in the catfish suffering from a bacterial infection which in severe cases can be fatal.

With regard to feeding these fascinating catfish, they thrive on a mixed and varied diet which includes the following items:

Sinking granular foods (most of which are high in protein so feed sparingly to avoid polluting the aquarium water)

Good quality flake foods

Algae/Variety wafers (such as those manufactured by Tetra)

Catfish tablets (such as those produced by Aquarian and Tetra)

Frozen or live bloodworm

Frozen or live *Daphnia*

Frozen or live *Tubifex*

Whiteworm, Grindalworm or chopped earthworms

(N.B. care should be taken when feeding aquatic live foods as they can introduce disease and or unwanted parasites, which is why frozen foods are most readily used.)

***Aspidoras albater* - Nijssen & Isbrücker 1976**

False *Corydoras*

Callichthyidae from Brazil

Size – 40mm

Body – Slender body with *Corydoras* like shape. The head is longer than in *Corydoras*.

Colour – The base colour of the head and body is light brown /tan. Dorsal surface of the head with black pigment, the remainder of the head and body with black pigment forming blotches. The blotches forming bands from the dorsal region to the caudal peduncle.

Remarks – *Aspidoras albater* is often imported with *Corydoras macropterus* and *Corydoras paleatus* with which it shares its colour pattern. *Aspidoras* are referred to as the False *Corydoras* as their body shape is very distinguishable, being more slender with an elongated head. *Aspidoras albater* is said to be quite a delicate species which does not tolerate poor water quality.



Aspidoras pauciradiatus – Weitzman & Nijssen



False *Corydoras*
Callichthyidae from Brazil
Size – 35mm

Body – Slender body with *Corydoras* like shape. The head is longer than in *Corydoras*.

Colour – Base colour pale tan with small black spots on the head and body. The spots on the body tend to be in rows. The underside of the body is also pale tan in colour. There is a large black blotch at the base of the dorsal fin. The pectoral and ventral fins are clear, the adipose fin spine is black, the anal fin has a black band and the caudal fin has rows of narrow black bars.

Remarks – *Aspidoras pauciradiatus* is one of the more commonly imported of the *Aspidoras* species. Originally described as a *Corydoras* because of its body shape, it can be distinguished from *Corydoras* by its long head. *Aspidoras pauciradiatus* does not tolerate poor filtration or low pH levels. Males are more slender

than females. In their natural habitat *Aspidoras pauciradiatus* would feed on small invertebrates.

***Brochis britskii* – Nijssen & Isbrücker**



Giant *Brochis* or Britski's *Brochis*
Callichthyidae from Brazil
Size – 85mm

Body – Deep bodied with a typical triangular shape as in *Corydoras*. Short rounded snout. Dorsal fin with 15 - 18 rays (although usually 15). Head covered ventrally by a large shield reaching beyond the tip of the mental barbels. Two pairs of rectal barbels and one pair of mental barbels. Inner edge of pectoral fin spine weakly serrated.

Colour – Base colour of head and body pinkish tan. Dorsolateral body scutes with bluish or greenish metallic colouration. Ventrolateral body scutes pinkish tan. Dorsal, adipose and caudal fins with tan colouration, remaining fins without pigmentation except for the pectoral fin spines.

The table below compares the three species of *Brochis*

All sizes mentioned are in mm standard length (s.l.), which is a measurement of the fish from the tip of the snout to the base of the caudal peduncle.

<i>Brochis britskii</i>	<i>Brochis multiradiatus</i>	<i>Brochis splendens</i>
Size to 85mm	Size to 90mm	Size to 75mm
Dorsal fin with 15-18 branched rays (usually 15)	Dorsal fin with 15-18 branched rays (usually 17)	Dorsal fin with 10-12 branched rays
Head covered ventrally by a large shield reaching beyond the tip of the mental barbels	Head not, or incompletely covered ventrally by a large shield	Head not, or incompletely covered ventrally by a large shield
Snout short and rounded	Snout long and acute	Snout short and rounded
Deep bodied with typical triangular shape	Deep bodied with typical triangular shape	Deep bodied with typical triangular shape
Main part of the dorsolateral body scutes with a broad horizontal grey band, interrupted by an unpigmented (whitish) wedge shaped vertical marking below the dorsal fin	Main part of the dorsolateral body scutes with a broad horizontal grey band, interrupted by an unpigmented (whitish) wedge shaped vertical marking below the dorsal fin	Main part of the dorsolateral body scutes with a broad horizontal grey band, interrupted by an unpigmented (whitish) wedge shaped vertical marking below the dorsal fin

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Remarks – *Brochis britskii* was named in honour of Dr Britskii of Saõ Paulo Zoology Museum. *B. britskii* was first brought to the attention of catfish enthusiasts at the Catfish Association of Great Britain (no longer running as a society) convention by Dr Nijssen in November 1983.

***Brochis multiradiatus* – Orcés Villagomez 1960**



Hog-nosed *Brochis* or Long-finned *Brochis*

Callichthyidae from Equador

Size – 90mm

Body – The body of this fish is deep, with adults having a noticeably longer snout. Dorsal fin with 15-18 rays (although usually has 17 rays).

Colour – A good specimen will have a true emerald green colouration to the flanks and dorsal area, with a pinkish tinge to the ventral region. There can be a presence of colour in the fins of juveniles, but this disappears as the fish matures leaving perfectly clear fins in an adult.

Remarks - *Brochis multiradiatus* is not commonly available to the hobbyist.

***Brochis splendens* – Castlenau 1855**



Emerald Catfish or Common *Brochis*

Callichthyidae from Brazil, Equador and Peru

Size – 75mm

Body – Deep bodied with a typical triangular shape as in *Corydoras*. Dorsal fin with 12 rays.

Colour – Base colour of head and body can vary from dull brownish grey to bluish or greenish metallic. Lower half of the ventrolateral body scutes can be light yellow to light pink. Dorsal, adipose and caudal fins greyish, remaining fins without pigmentation except for the pectoral fin spines.

Remarks – Juvenile specimens of *Brochis splendens* can be confused with adult specimens, due to the presence of pigment in the dorsal fin. *Brochis splendens* has been successfully bred in aquaria, and is said to spawn in the same manner as *Corydoras*.

PART TWO

For the second part of this series of I will cover perhaps what can best be described as the more readily available members of the family Callichthyidae – the *Corydoras* catfish. As with *Aspidoras* and *Brochis*, *Corydoras* can be kept in community aquaria with other non aggressive species for companions. The beauty of these fascinating catfish is that they can be kept in small aquaria such as 24" x 15" x 12" or even smaller depending upon the species being kept. *Corydoras* range in size from 25mm for *Corydoras pygmaeus* and *Corydoras hastatus*, to around 80mm for *Corydoras barbatus*. Again these fish belong to the subfamily Corydoradinae. As with *Aspidoras* and *Brochis* it is important to keep *Corydoras* on a smooth substrate such as BD Aquarium Sand or rounded fine gravel, as this helps to prevent barbel damage occurring. There are currently somewhere in the region of 150 known species of *Corydoras*, with some having a reference number referred to as a "C" number. There are a number of representatives which share very similar colour patterns which can make identification interesting to say the least. You will quite often see *Corydoras* affectionately referred to as "Corys" which is the way in which most aquarists that I know talk about them. There are a number of groups which Corys can be said to belong to such as the Aeneus, Barbatus and Punctatus group to name but three. I will now cover some of my personal favourites amongst the world of *Corydoras*.



Body – Standard *Corydoras* body shape with rounded snout and head.

Colour – *Corydoras adolfoi* is undoubtedly an exceptional species, due to its attractive colour pattern. It has a creamy coloured base to the body, with two black bands, one of which goes across the eye, the second from the base of the dorsal to the base of the caudal fin. *Corydoras adolfoi* can be distinguished by the orange patch between the two black bands.

Remarks – *Corydoras adolfoi* belongs to the Aeneus group. In its natural habitat it lives alongside its mimic, *Corydoras imitator*, and feeds upon insect larvae, aquatic worms and most small crustaceans and invertebrates.

***Corydoras arcuatus* – Elwin 1939**



Skunk *Corydoras* or Arched *Corydoras*

Callichthyidae from Brazil and Peru.

Size – 55mm

Body – Standard *Corydoras* body shape with a rounded snout.

Colour – Pale cream to grey head and body, with the ventral region being lighter. *Corydoras arcuatus* has a black stripe arching from the snout, through the eye to the base of the caudal peduncle (base of the caudal fin or tail). This catfish has a yellow to gold coloured tinge on the operculum (cheek). The fins are clear.

Remarks – *Corydoras arcuatus* belongs to the Aeneus group of *Corydoras*. Arcuatus means arched which refers to the distinctive black stripe.



***Corydoras imitator* - Nijssen & Isbrücker 1983**

Imitator *Corydoras* or Imitator Cory

Callichthyidae from Brazil, Rio Negro and Rio Uaupes

Size – 65mm

Body – Standard *Corydoras* body shape with an elongated snout.

Colour – *Corydoras imitator* has a creamy coloured base to the body, with two black bands, one which goes across the eye, the second which goes from the base of the dorsal to the base of the caudal fin.

Remarks – *Corydoras imitator* belongs to the Aeneus group of *Corydoras*. In its natural habitat it mimics *Corydoras adolfoi* and feeds on insect larvae, and most small crustaceans and invertebrates. In imports of *Corydoras imitator* and *Corydoras adolfoi*, *Corydoras imitator* stands out as being larger and lacking the distinctive forehead blotch which *Corydoras adolfoi* has.

***Corydoras acutus* – Cope 1872**

Black Top *Corydoras*, Black Top Catfish or Blacktop Cory

Callichthyidae from Peru – Loreto, Rio Ucayali system, Rio Ampiyacu, Lake Yarinococha, Shansho Cano.

Size – 70mm

Body – Standard *Corydoras* body shape with a long head and pointed snout.

Colour - There would appear to be at least two distinct colour variations of this particular species of *Corydoras*. The first colour variation has a base colour of body and head light tan. There is a narrow line through the centre of the body, which has a zigzag pattern to it, with vertical bars coming from it. These vertical bars are more intense towards the front half of the body. Metallic blue colouration can be seen in the area below the eye. The caudal fin has between six and ten black vertical bars, which tend to be more apparent in the upper lobe of the fin. The adipose fin is clear with the exception of two dark marks on the spine. The pectoral and ventral fins are clear. The anal fin is clear with the exception of a small area of dark pigment in the centre. The dorsal fin is almost completely covered with a large black blotch, hence the common name of "Black Top Catfish". The second colour variation has a base colour of body and head light pink tan. The snout and top of the head (dorsum) slightly grey in colour. The head and sides are metallic green, which varies in intensity, often forming two irregular dark blotches; a large metallic green blotch under the dorsal fin and a small one below the adipose fin. All the fins are clear (hyaline).

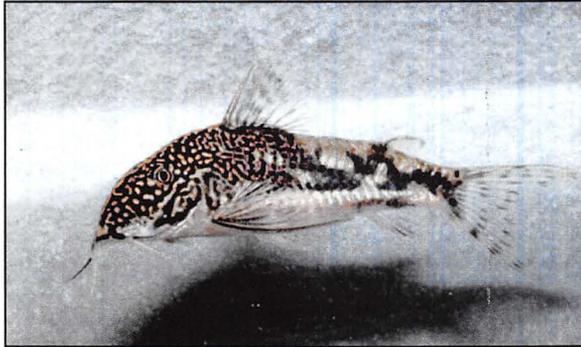
Remarks – *Corydoras acutus* belongs to the Acutus group of *Corydoras*. *Corydoras acutus* shares the colour variants of *Corydoras reticulatus* and can be

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found with or without the dorsal spot. *Corydoras acutus* has been spawned in the aquarium, but it is said to be a difficult species to attempt. This catfish is usually imported alongside the false julii – *Corydoras trilineatus*, amongst other Peruvian tropical fishes. Long snouted species of *Corydoras* are usually faster swimmers and tend to be generally more nervous in aquaria.

Scleromystax barbatus – Quoy and Gaimard 1824



Formerly *Corydoras barbatus*

Bearded *Corydoras* or Filigree Cory

Callichthyidae from Brazil; Rio de Janeiro and São Paulo

Size – 80mm

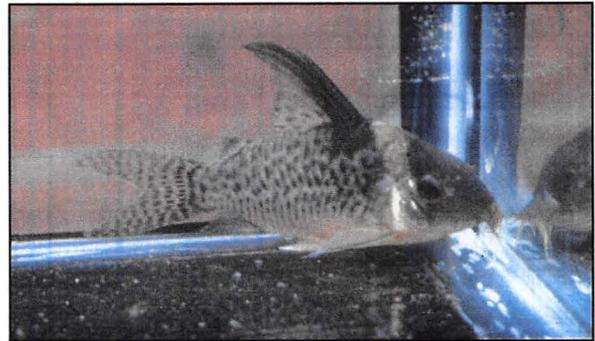
Body – Slender and elongate making it very distinctive when compared to *Corydoras*.

Colour – Base colour of the body is olive green to yellow with irregular brown blotches in the upper part of the body. The head is reticulated with brown blotches with the same olive green to yellow base colouration. The underside of the body is yellow to white in colour. The dorsal, caudal, ventral and anal fins have irregular bands, whilst the remaining fins having no markings on them.

Remarks – Males can be distinguished from the females as they have bristles in front of the preoperculum (the anterior bone of the opercular series, in the area which forms the border of the cheek), a sexual difference which is unique to *Scleromystax barbatus*, hence the common name of "Bearded *Corydoras*". Males also have longer pectoral fin spines and extended first and second soft dorsal fin rays when compared with females. Unlike other species of *Corydoras* this species prefers slightly cooler water temperatures around 21°C. There are slight variations in colour depending upon where these catfish originate from; those from São Paulo are more intensely coloured and are found in blackwater streams, whilst those from Rio de Janeiro are much paler and are found in whitewaters. There have been a number of

documented aquarium spawnings of *Corydoras barbatus*. This particular species belongs to the Barbatus group of *Corydoras*.

Corydoras delphax - Nijssen & Isbrücker 1983



Delphax Cory

Callichthyidae from Colombia; Rio Inrida and Rio Orinoco

Size – 75mm

Body – Typical *Corydoras* body shape with a pointed snout.

Colour – Base colour is tan. The dorsolateral scutes are slightly darker than the ventrolateral scutes. Dark pigment on the dorsum of the head across the eyes forming a mask. Body with dark squarish blotch on the dorsolateral body scutes, below the base of the dorsal fin spine and the three adjacent branched rays, including the fin membrane, extending on the fin through the distal tips of the spines and rays. Margins of the dorsolateral and ventrolateral body scutes with dark pigment forming irregular lines. Lighter part of dorsal and caudal fin with minute dark spots. Adipose fin tan coloured with the remaining fins without pigment.

Remarks – *Corydoras delphax* has been well known in the aquatic hobby for a number of years, and was originally misidentified as *Corydoras blochi blochi*. It is imported from Colombia as *Corydoras wotroi*, a synonym of *Corydoras melanistius brevirostris*. This catfish is a member of the Punctatus group of *Corydoras*.

Corydoras melanotaenia – Regan 1913



Green Gold *Corydoras* or Blackband Cory

Callichthyidae from Colombia

Size – 70mm

Body – Typical *Corydoras* body shape with a rounded snout.

Colour – Base colour yellow to brown to tan. The body has a yellow to green sheen over the dorsolateral body scutes. All fins are brown to tan in colour.

Remarks – *Corydoras melanotaenia* is often confused with *Corydoras aeneus*, although it is considered distinct enough by Nijssen & Isbrücker to remain at specific level. *Corydoras melanotaenia* is said to be less easily bred than *Corydoras aeneus*, although it has been bred under aquarium conditions. This catfish belongs to the Aeneus group of *Corydoras*.

PART THREE

For the third part of this series of articles on the family Callichthyidae I will concentrate on the larger members of the family commonly referred to as "Hoplos". Within this group of catfish there are a number of genera which have been the subject of reclassification in recent years. When I first started keeping these catfish (quite a number of years ago now!), there were three main genera classified; *Callichthys*, *Dianema* and *Hoplosternum*, the latter of which has now been reclassified and is represented by *Hoplosternum*, *Lepthoplosternum* and *Megalechis* just to add to the confusion! Unlike the other members of the family Callichthyidae these catfish can be described as being almost torpedo or cigar shaped. As with the other members of this family these catfish belong to the sub-family Callichthyinae. These catfish are also no different from the rest of the representatives of this family in that they will forage through the substrate in search of food items; hence the reason why I always use BD Aquarium Sand as my preferred substrate for these catfish. Quite a number of these catfish have been spawned in aquaria and are sometimes available at good aquatic retailers, and if people have been breeding them via specialist societies such as the Catfish Study Group (UK). I will cover the breeding aspects of the family Callichthyidae in a separate article.

***Lepthoplosternum pectorale* Boulenger, 1895.**



This species was formerly known as *Hoplosternum pectorale*.

Common name: Dwarf Hoplo

Origin: Argentina, Brazil and Paraguay

Size: 8.5cm/3½"

Body: Elongated body which is quite narrow giving the torpedo like appearance. There are 25-26 scutes (bony plates giving rise to the "Armoured" name commonly given to this group of catfish) in the upper lateral series and 22-23 in the lower lateral series. *Lepthoplosternum pectorale* posses two pairs of barbels, which are described as being well developed.

Colour: The body colouration is dark brown with some small blackish coloured spots. The fin rays in the caudal have black spots on them, whilst the remaining fin rays are dark brown. Some specimens exhibit lighter coloured bands on the head.

Note: *Lepthoplosternum pectorale* is not commonly available to the hobbyist, which is a pity as this is a fascinating catfish to keep. During the 1980's this catfish was readily offered for sale at auctions held by the now defunct Catfish Association of Great Britain. This particular species prefers a temperature in the range of 20-23°C or 67-73°F, with pH in the range of 6.0-7.0. The males can be identified as having a thicker leading ray or outer edge to the pectoral fins with the rest of the fin being a milky opaque colour whilst the pectoral fins of the female are clear. *L. pectorale* can be distinguished from *M. thoracata* and *H. littorale* by the shape of its caudal fin, it being slightly rounded while *M. thoracata* is truncate (square) and *H. littorale* is forked. In addition to *L. pectorale* there are three other described species of *Lepthoplosternum*, namely *L. altamazonicum* from the upper Rio Amazonas in Peru, *L. beni* from the middle Rio Madeira, and *L. tordilho* from southern Brazil.

***Hoplosternum littorale* Hancock, 1828**



Common name: Hassar or Cascarudo

Origin: Argentina, Bolivia, Brazil, French Guiana, Guyana, Paraguay, Peru, Surinam, Trinidad & Tobago, Uruguay and Venezuela.

Size: 20.5cm or 8"

Body: The body is deep and typically torpedo shaped. The caudal fin is best described as being slightly forked.

Colour: The base colour of the body and head is uniform grey to black. All the fins share the same colouration as the body of the fish. Juvenile specimens have barring along the body with some spotted markings.

Note: *Hoplosternum littorale* is the largest representative of the family Callichthyidae. Adult males have upturned ends to their pectoral fin spines, which are thickened as with the other representatives of this group of catfish. *Hoplosternum littorale* is ideally suited to aquarium conditions with pH in the range of 6.0-8.0, and temperature in the range of 18-26°C or 64-79°F

***Megalechis thoracata* Valenciennes, 1840**

This species was formerly known as *Hoplosternum thoracatum*.

Common name: Spotted Hoplo, Armoured Catfish or "Port Hoplo"

Origin: Brazil, Guyana, Peru, Paraguay and Venezuela

Size: 19.0cm. (7½ins)

Body: The body is deep and typically torpedo shaped. The dorsal fin has a total of nine rays (one hard spine with the others being soft), with the anal fin having a total of seven rays (one hard spine with the others being soft). There are a total of 25-26 bony scutes in the upper lateral series on the body, with 23-24 in the lower lateral series.

Colour: The base colour is dark olive-brown to grey-brown. The upper side is often blackish-olive, whilst the underside is pale brown to whitish. The whole body including the belly is covered with large and small black blotches which may occasionally turn into bands. The fins, especially the dorsal and caudal have dark spots. The caudal fin has a broad, pale transverse stripe at the base. The colour pattern is quite often described as being very variable.

Note: *Megalechis thoracata* is still referred to by many aquatic shops stocking these catfish as *Hoplosternum thoracatum*, and I guess by a good many aquarists who have kept these wonderful fish over the years. The ideal temperature range for this catfish is 18-28°C or 64-82°F, with a pH in the range of 6.0-8.0. The genus *Hoplosternum* was revised in 1996 by the Brazilian Ichthyologist, Roberto E.Reis, leaving only *Hoplosternum littorale* in the genus (described above), thus creating a new genus for *Megalechis thoracata* along with a second species, *Megalechis personata* (see notes below). Sexing this catfish is relatively easy as the males have a thickened pectoral fin spine, which in breeding condition turns a bright orangey red colour with some minute hairs also being present. The female (if looking at her body from underneath) has a much

broader gap between the thorax plates in order for her body to be able to swell when carrying eggs. The main differences between the two species lies in the colour pattern in the caudal fin; *Megalechis thoracata* has a band whilst *Megalechis personata* has spots (and is also more spotted on its body).

***Megalechis personata* Ranzani, 1841 (and Hoedeman, 1952)**

This species was formerly known as *Hoplosternum thoracatum surinamensis*.

Common name: Armoured Catfish or Hoplo

Origin: Brazil, Guyana, Martinique, Paraguay, Peru, Trinidad and Venezuela.

Size: 12.5cm or 5"

Body: The body is deep and takes on the typical elongated torpedo or cigar shaped appearance. The body and fins are spotted.

Colour: The base colour is very similar to that of *Megalechis thoracata* being dark olive brown to grey brown. The body and fins have dark almost black spots present.

Note: *Megalechis personata* lacks the vertical black bar and black edge to the caudal fin that *Megalechis thoracata* has. According to some information it is thought that what was originally described as *Hoplosternum thoracatum* is now known as *Megalechis personata*, (confusing to say the least!). The ideal temperature range for this catfish is 18-28°C or 64-82°F, with pH in the range of 5.5-8.2. As with the other species the male has a thickened pectoral fin spine which is orangey red in colour when in breeding condition.

***Dianema longibarbis* Cope, 1872**



Common name: Porthole Catfish

Origin: Amazon Basin, Peru, Brazil, Rio Ambyacu, Rio Itaya and Rio Xingu.

Size: 9cm or 3½"

Body: The body has the typical torpedo shape to it. The head is described as being depressed; the width of which is much less than the depth of the body.

Colour: The base colour of the head and body is grey to brown, with the ventral region being lighter in colour. The head and body has a scattering of black spots which are varied in both number and their intensity. All the fins are light tan in colour.

Note: *Dianema longibarbis* is best kept in aquarium conditions with pH in the range 6.0-7.5, and temperature in the range of 22-26°C or 71-79°F. Whilst on my fish collecting trip to Peru in July 2000 *Dianema longibarbis* were collected amongst a variety of other fish, and I have to say that the intensity of the colour on these wild fish was absolutely amazing, as there was an almost iridescent green hue over the body of the fish. In terms of body shape and colouration the only real difference between this catfish and its close relative *Dianema urostriatum* is the striped markings in the latter fish's caudal fin (see the description below). *Dianema longibarbis* is slightly deeper in the body than *Dianema urostriatum*, and the spots on the body are larger, and as mentioned earlier there is no pigment in the caudal fin. These catfish are not easy to sex, although the males tend to have slightly thicker pectoral fin spines when compared to the female. These catfish prefer to be kept in small groups of at least 4 specimens.

***Dianema urostriatum* Miranda Ribeiro, 1912**

Common name: Flagtail Catfish or Flagtail Porthole



Catfish

Origin: Amazon Basin, Brazil, Rio Negro near Manaus.

Size: 11.5cm or 4¾"

Body: The body has the typical torpedo shape to it. The head is described as being depressed; the width of which is much less than the depth of the body. The fontanel is elongate and the supraoccipital does not form a backward projection. The suborbital is very narrow and naked and the nuchal plates fuse along the midline between the supraoccipital and the dorsal. The abdomen between the pectoral fin bases is usually completely covered by the expansion of the coracoids. There is no zygous predorsal plate. The eyes are large and lateral in position. The lower lip has two to four pairs

of short barbel-like flaps in addition to the rictal barbels which extend to the pectoral fin origin or beyond. The dorsal fin has a spine and 7 or 8 soft rays, its base length contained 1 to 1½ times in its distance from the adipose fin. The caudal fin is described as being forked.

Colour: The base colour of the head and body is grey to brown. The upper half of body is covered with small black spots, which vary in number. The lower half of the body is silvery grey. The caudal fin is beautifully marked with black and white stripes, hence giving this fish its "Flagtail" name. All of the remaining fins are pale tan in colour.

Note: *Dianema urostriatum* is one of only two species in the genus *Dianema*, the other being *Dianema longibarbis* described above. This catfish is ideally suited to pH in the range of 6.0-7.0, with temperature in the range of 22-26°C or 72-79°F. These catfish fare best when kept in small groups of at least 4 specimens. As with the rest of these larger representatives of the family Callichthyidae the males tend to have thicker pectoral fin spines than the female, although it can be quite tricky to tell the sexes apart. You might also see this catfish referred to as *Dianema urostriata* although the current valid scientific name is *Dianema urostriatum* (according to Fishbase).

***Callichthys callichthys* Linnaeus, 1758 (and Hoedeman, 1952)**

Common name: Armoured Catfish or Cascarudo

Origin: Widely distributed throughout South America including Argentina, Bolivia, Brazil, Colombia, Ecuador, French Guiana, Guyana, Paraguay, Peru, Surinam, Trinidad & Tobago, Uruguay and Venezuela.

Size: 18.0cm (7")

Body: Elongated body which tapers in breadth towards the posterior end of the body, hence sometimes described as being torpedo or lozenge shaped. The head is described as being broad and flattened dorsally. There are 26-29 bony scutes in the upper lateral series and 25-28 in the lower series. The two rows of bony scutes on the flanks look almost like "roofing tiles" in the way in which they knit together. The caudal fin is rounded. The eyes are small and are sometimes referred to as being "pig-like". There are two pairs of maxillary barbels which extend to the pectoral fins when laid backwards. The caudal fin is rounded.

Colour: The base colour to the body is uniform dark olive-green to dark grey with a delicate blue or violet sheen on the flanks. The underside of the body is blue-grey to brownish. The fins in juvenile fish are grey with dark spots, whilst the leading edges of the pectoral fins of mature fish are orange to red in colour. The pectoral fin spine of the male fish is much thicker and bright orange in comparison to the female. When in

breeding condition both the males and females develop an orangey red underside, which also includes the pectoral fins as mentioned above.

Note: This catfish is not often available within the trade unfortunately, which is most likely due to the fact that more aquarists are interested in the more brightly coloured catfish such as *Corydoras* and the L-Numbers. Until a few years ago (1999) *Callichthys callichthys* was described as being monotypic (having only one species, such as a monotypic family of fishes). Since then two more species have been described; *Callichthys fabricioi* Roman-Valencia, Lehmann and Muñoz, 1999, from the upper Cauca River of the Magdalena River basin in Colombia and *Callichthys serralabium* Pablo Lehmann and Roberto E. Reis from the upper Orinoco River, near La Esmeralda, Venezuela and the headwaters of the Negro River tributary of the Amazon River, both in Brazil and Venezuela. *Callichthys serralabium* possess a serrated lower lip, 8–9 branched rays in the pectoral fin, an irregular colour pattern of dark, diffuse blotches on the flanks of adults, a longer anal fin spine, and absence of the prenasal central plate (more details can be found at www.practicalfishkeeping.co.uk). *Callichthys callichthys* are able to move from dried up streams to other bodies of water by crawling across the land using their ventral fins. This catfish takes its name *Callichthys*: from Callum meaning hard skin and *ichthys*

meaning fish i.e. hard skinned fish. The ideal pH for these catfish is in the range of 6.0-8.0, with temperature in the range of 20-27°C or 68-81°F.

Glossary of terms

Anterior: In front.

Coracoid: Middle and lower section of the pectoral girdle.
Depressed: Flattened from top to bottom.

Dorsolateral: Extending from the top to the side.

Fontanel: Gaps between the bones along the centre line of the skull. The brain in these areas being covered only by the skin.

Inferior: Visible only from beneath the head, usually referring to the eyes or the mouth.

Interorbital: The space between the orbits of the eyes.

Lateral: Side.

Medial: Middle or inner.

Monotypic: A genus with only one specimen; or a family with only one genus.

Nuchal: Area between the skull and the dorsal fin.

Predorsal plate: In front of the dorsal fin spine.

Posterior: Situated behind.

Rictal: The corner of the mouth e.g. the rectal barbels.

Scute: A bony plate.

Supraoccipital: Unpaired bone at the back of the skull, usually with a crest.

Truncate: Cut off, blunt.

Ventrolateral: Extending from below and to the side.

Amazon River 'longer than Nile'

By Gary Duffy BBC News, Sao Paulo

Researchers in Brazil are claiming to have established as a scientific fact that the Amazon is the longest river in the world.

The Amazon is recognised as the world's largest river by volume, but has generally been regarded as second in length to the River Nile.

The claim follows an expedition to Peru that is said to have established a new starting point further south.

It puts the Amazon at 6,800km (4,250 miles) compared to the Nile's 6,695km.

Mountain source The precise length of a river is not easy to calculate and depends on correctly identifying the source and the mouth.

The new claim in Brazil follows an expedition by scientists which is said to have discovered a new source for the Amazon in the south of Peru and not the north of the country as had been thought for many years.

While the exact location has yet to be confirmed from two choices, scientists say either would make the river the longest in the world.

Guido Gelli, director of science at the Brazilian Institute of Geography and Statistics, told the Brazilian network TV Globo that today it could already be considered as a fact that the Amazon was the longest river in the world.

The Amazon is now said to begin in an ice-covered mountain in southern Peru called Mismi.

Researchers travelled for 14 days, sometimes in freezing temperatures, to establish the location at an altitude of 5,000m.

The research was co-ordinated by the National Geographical Institute of Peru, with the help of their colleagues in Brazil.

There has been a healthy academic debate over the world's longest river for some years and the claim from Brazil may not go unchallenged.

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‘What’s New’ - June 2007

by Mark Walters

This article presents sightings and abstracts for four scientific papers for which further details are available.

Catfish sightings: Following on from the list of not-unusual or new species available in the hobby, the following have been sighted:

Farlowella vittata

Scleromystax ‘C113’

Hyalobagrus ornatus

Corydoras. Reynoldsi

Corydoras xinguensis

Corydoras cf. Arcuatus

Selected scientific papers:

Armbruster JW, Lujan NK and DC Taphorn (2007)

Four new *Hypancistrus* – *H. contradens*, *H. debilittera*, *H. furunculus* and *H. lunaorum* have been described from the upper Rio Orinoco in southern Venezuela. *H. contradens*, sold in the aquarium trade as L201, can be confused with *H. lunaorum* and *H. inspector*. *H. lunaorum* have been sold under the following L-numbers: L201 (*H. contradens*); L129 (*H. debilittera*); L199 (*H. furunculus*) and L339 (*H. lunaorum*).

Littmann MW (2007)

A review of the South American shovelnose catfish *Sorubim* has recognised five species, *S. lima*, *S. maniradii*, *S. trigonocephalus*, *S. elongatus* and *S. cuspidatus* as valid. Littman, redescribed *S. lima* and the rare *S. trigonocephalus* on the basis of the new material he studied.

Higuchi H, Birindelli JLO, Sousa LM, Britski HA (2007)

A newly discovered doradid catfish from Brazil has been placed in a genus of its own. *Merodoras nheco* is believed to be a close relative of *Amblyodoras*, with which it shares a number of morphological features. The authors also placed *M. nheco* in a newly erected subfamily called the *Astrodoradinae*, which includes *Amblyodoras*, *Anadoras*, *Astroadoras*, *Merodoras*, *Hypodoras*, *Physopyxis* and *Scorpiodoras*. The new species was discovered by Heraldo Britski during his studies of the Pantanal region of western Brazil, where it lives in the flooded Matogrossense area.

Lehmann, PA (2006)

has described a new species of hypoptopomatine, naming it after a comic book super-hero. *Otocinclus batmani* has been named after the caped crusader because of the bat-like shape of its caudal markings. The new species was discovered from the Rio Pure in Colombia and two creeks draining into the Rio Amazonas near Iquitos in Peru. Like other members of the genus, this species is small, with most of the type specimens collected measuring just under 4cm long.

If you have any sightings you would like to share or would like to track down a paper, 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.

GATFISH STUDY GROUP

Annual Convention

15 - 17 February 2008

The Britannia Hotel
Almond Brook Road
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Wigan
Lancashire
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Tel: 01257 499988

Speakers have been arranged and further details will be in the next Cat Chat.

Spawning *Corydoras bilineatus* Knnack, 2002

By Allan James

I brought back, from a trip to Hamburg, Germany in the summer of 2003, six youngsters kindly given to me by author and catfish expert, Hans-Georg Evers.

At the time, as I recall, they were only known by their common name of *Corydoras "San Juan"* and it was not until a year down the line that it was confirmed that the species that we had were indeed *C. bilineatus*, which was only named by German ichthyologist, Joachim Knaack, the year before, in 2002.

As an aside we (Ian Fuller and myself), met Joachim on this trip with Hans and we had a very enjoyable afternoon in his company with a barbecue and refreshments! laid on in our honour, in fact this trip could very well be documented in an article on its own, all crammed in to a very eventful weekend.

Anyway I digress, so back to this article in hand. This is a small species closely resembling *C. Nanus* and was erroneously named *C. latus* for some time. It belongs to the elegans group and it is found in Bolivia in Santiesteban Chane and Mineiros. It is also found in Santa Cruz, vicinity of Buena Vista and in the vicinity of Cochabamba, Chapare, Pto. San Francisco as well as Beni, Moxos and some other places in Santa Cruz.

The males in particular can be very striking in colouration especially when in breeding condition. *Bilineatus* of course means two stripes which when in good condition can be ochre to yellow. This applies to the males with the females having a more sedate attire.

These ochre/yellow stripes show of the chocolate bands that surround them and also the mottled pattern that runs over the head and top of the body.

I find that they can be quite timid and as such should have plenty of hiding places such as heavily planted java moss plants.

The Breeding

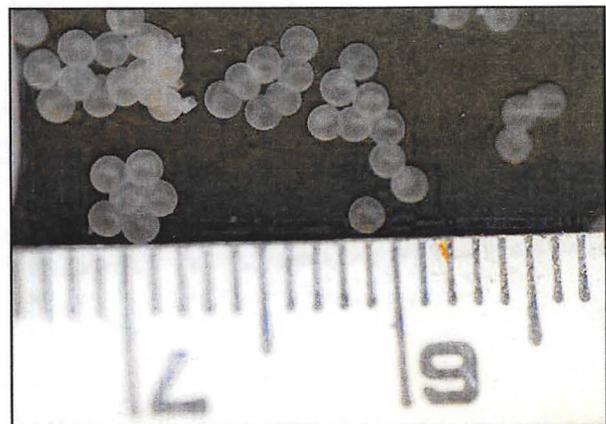
The weather now being so unpredictable around the world also effects us here in Scotland, and my free standing electric heater in my fishhouse had not been on in the early winter months until the end of November when there was a cold snap for a couple of days and the heater was switched on.



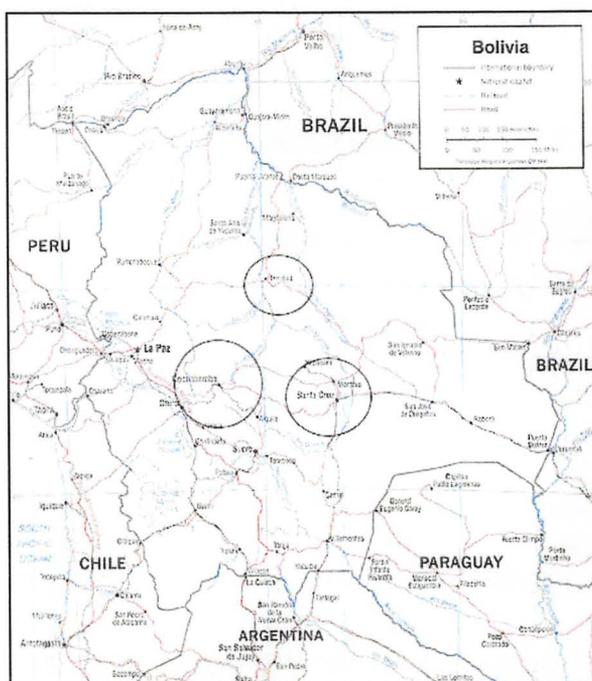
C. bilineatus trio - female to right. © Allan James & Scott Cat

My trio had been showing signs of spawning during the latter 2 months but nothing had come of it but on the 28th November when the heater was on they laid approximately 100 eggs all over the front and sides of the aquarium. There was a few on the java moss but in the main, the glass sides were the main acquisition for the eggs.

They are a small egg not unlike the eggs produced by the elegans group of *Corydoras*, *nanus*, *elegans* etc. around about 1.025 mm.



The surprise to me was the temperature of 80°F. (27°C) when the eggs were laid as I had been led to believe that they like the temperature more on the low side of



CAT CHAT

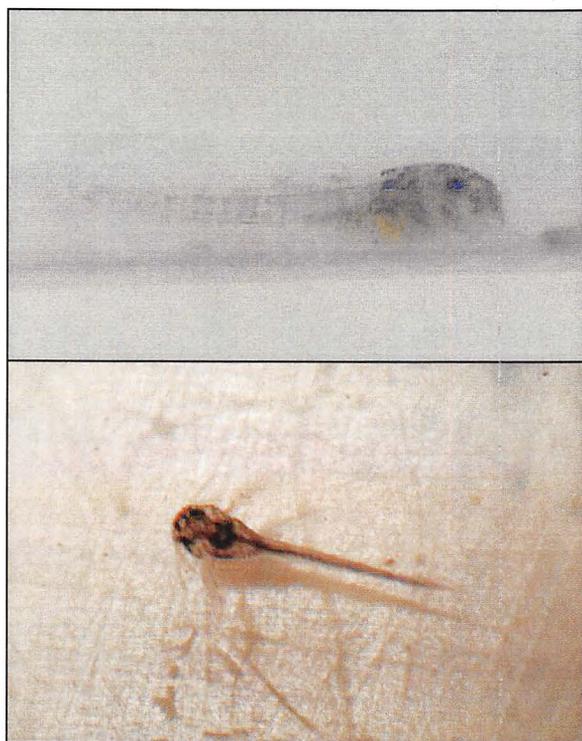
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the 70's Fahrenheit but I suppose that nobody told the parents that!

I took the eggs out of the main tank which was a 18" x 10" x 10" and into a small plastic container, they were quite adhesive and I had to roll them out of the top of the tank and into this container where I placed an airline with a slow trickle of air just to move the water about.

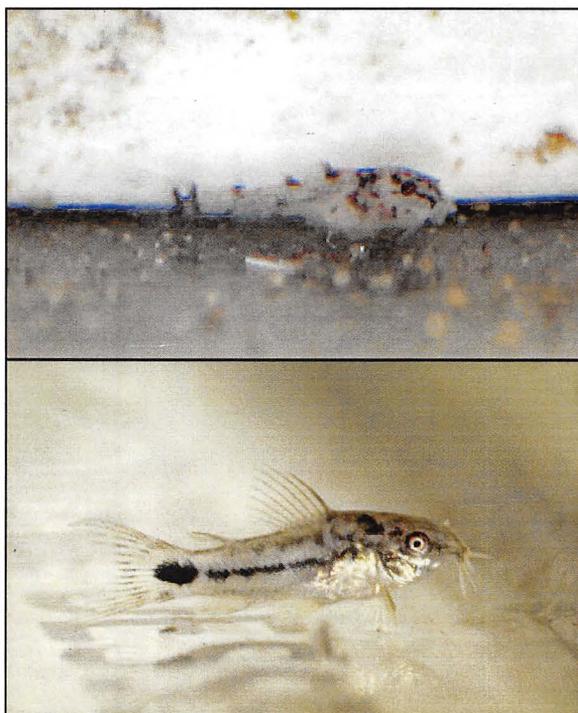
After a day they were quite a few fungused eggs and I had to siphon a few of them out so as to not to effect the good eggs. They hatched in 72 hours and were left to feed on their yolk sac for a couple of days. During this time I lost a few more fry and as I know from previous experience's that a first spawnings from a *Corydoras* species usually means that you lose a few due to fungused and unfertilised eggs until they get the hang of it!

In the next two images you can see the fry at two days old with their yolk sac still attached in the first picture.



I was not very lucky with the spawning as I ended up with 17 fry which started to die off one by one and they just looked like "runts" as they did not feed very well despite giving them microworm and egg layers fry food, but four survived and grew really well, and by a month old they were around the 1 cm size SL.

The following picture shows the fry at 11 days old and the typical markings that you get from most of this genus at this age. Below that is the same fish at 1 month old and shows the remarkable growth at 2 weeks later.



The parents spawned for me 3 months later in February 2007 with a much lower temperature value of 75°F (24°C) so probably proving that the temperature rise after a cool water change will do the trick and not the cooling down of the water after the change.

The interesting thing for me was the higher percentage of fry that have survived this spawning (around 40 at the last count) which maybe points to a better survival rate in cooler water or just a more healthier spawning after the initial first attempt.

The box below shows the records for the two spawnings.

November 2006

p.H. 6.8
Temperature 80°F.
G.H. 2.24

February 2007

p.H. 6.5
Temperature 75°F.
G.H. 2.24

The picture below shows the second spawning of *Corydoras bilineatus* feeding at about 4 weeks old and



CAT CHAT

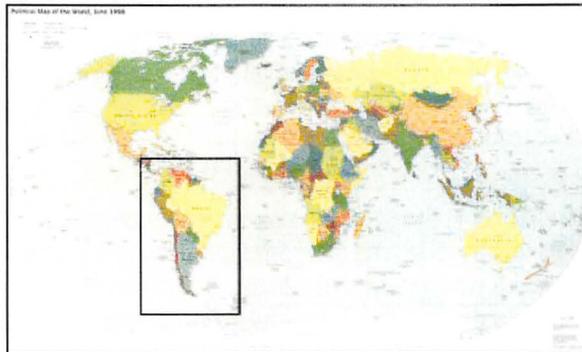
June 2007 Vol 8 No 2

the next picture showing one of the first spawning at 3 months of age.



This is a nice little *Corydoras* species that will do better in a set-up all on their own, or in a small community tank with inoffensive tank mates such as small tetras etc. As with most of this genus they will fare better kept in a small school of about six or above specimens.

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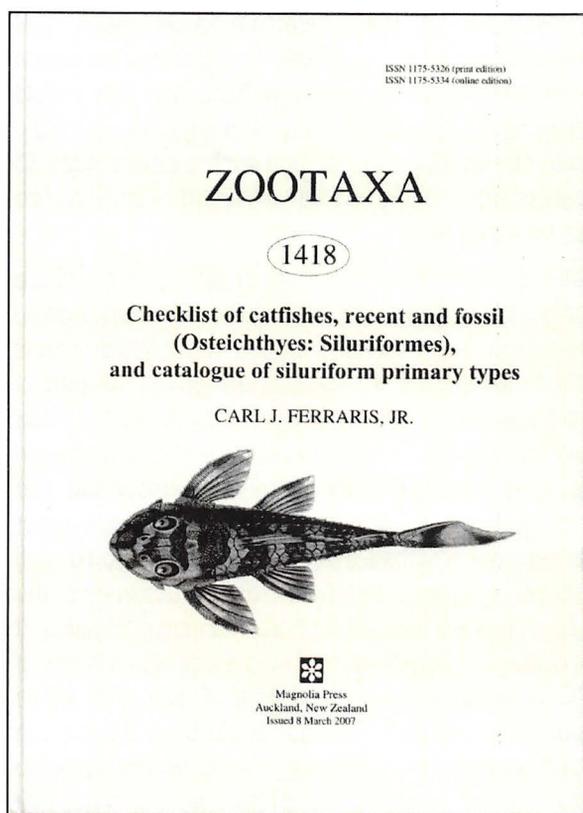
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Everything you need when it comes to Aquatics

A checklist of catfishes reviewed

David J. Price

This recent book produced by Carl Ferraris is a monumental scientific work which, as the name suggests, presents a checklist of catfishes summarising the taxonomic literature published through to the end of 2005. As such it will form a basis for future works which will include the results of ongoing research into catfish taxonomy.



From 4624 nominal species group names and 810 genus group names, Ferraris recognises 3093 species as valid from 478 genera and 36 families. The status of a further 228 species group names remain unresolved.

How is the book organised? The first 10 pages provide an introduction and describe the methods used. There then follows 400 pages which list all the taxa in detail. After each valid name, the author and year of publication is listed. Names have been corrected where necessary to conform to the International Code of Zoological Nomenclature. For each species, a statement of the geographical distribution is provided. Nomenclatural synonymies are listed also with original author and year. There are three appendices, one of which lists taxonomic publications on catfish issued in

2006. The list of references fills more than 100 pages. I have not counted them all, but there are approximately 25 per page, so you can do the maths. The book finishes with an index which I estimate contains about 14,000 entries! Usefully, all the valid taxonomic names are given in bold in the both the main body of the book and the index.

Which is the family of catfish with most species? You will not be surprised to learn that it is the Loricariidae with 716 valid species. But what comes second? How many of you said Trichomycteridae? Well, 207 trichomycterids are listed. Not far behind come the Callichthyidae (194), Bagridae (189), Heptapteridae (189), and Mochokidae (188). Several families contain fewer than 10 species (eg Anchariidae, Chacidae, Diplomystidae, Hypsidoridae, Nematogenyiidae, Scoloplacidae), but only one family, the Lacantuniidae from Mexico, is comprised of a single species (*Lacantunia enigmatica*).

The price of this book in the UK is approximately £120, and it is not one which you are likely to see in your local bookshop. However, if you live close to a university, it might be worth checking to see if they have a copy which you could examine. Alternatively, log onto the *All Catfish Species Inventory* website at <http://silurus.acnatsci.org/> where you can either consult or download a pdf version of the book. Click on the *What's New?* link and you will find it listed under 8 March 2007.

Reference

Ferraris, C. J. (2007) Checklist of catfishes, recent and fossil (Osteichthyes: Siluriformes), and catalogue of siluriform primary types. Auckland, New Zealand: Magnolia Press. 628pp. ISBN 978-1-86977-058-7.





Letters to the Editor

Dear Ed,

Re-reading my Cat Chat I spotted your comments on thermostats and thought I'd respond to your criticisms of bi-metal strips.

While it's true that the differing expansion rates of metals and the twisting that can be induced by fastening two strips together has been known for a long time, it doesn't necessarily make it an obsolete concept. The problems we aquarists encounter aren't usually the strip itself, though, but the contacts between the end of the strip and the supporting frame. So why keep the bi-metal strip? Cost and simplicity, I would have said.

Any given strip can only bend by the same amount for a given temperature change and when we adjust the thermostat we're doing nothing to the strip itself. We change the pressure that the heating strip must overcome before it can separate from the supporting frame. No problem there and if that were all there was to it the strip would continue to open and close pretty much *ad infinitum*. The problem is we want the strip to act as a switch for the heater and then the problems start. On the frame and on the strip are electrical contacts and, we all know, when they come together the circuit is made and current begins to flow. Similarly, when they separate it stops - except that's just not true. Like with the spark-plug in a petrol engine, the air will break down and a spark will develop just before the contacts meet and just after they've opened. Sparks are highly erosive - spark erosion and spark welding are common industrial techniques - and would rapidly damage the surface of the contacts if allowed to occur every time the contacts opened or closed. There are two ways of minimising the spark and thermostat manufacturers use both:

- a magnets at the end of the strip and on the frame force the strip to move to the frame very quickly once the strip comes close enough. Similarly, the magnets stop the strip lifting away until it's deformed far enough to jump quickly away from the frame. Both mean that the contact is made and broken more rapidly so any spark is short-lived.
- b a device to reduce the surge as contact is made and broken and stop the build up of electrical potential that causes the spark. In DC circuits this is a capacitor and in AC circuits is usually a small coil.

Between the two, sparking is reduced to a minimum and we should be able to look forward to many years of safe use so why does a thermostat stick on? The systems to reduce sparking have failed and the subsequent sparking has welded the contacts together. Once that happens, no bi-metal strip is ever going to have the power to break the circuit and we come home to boiled fish. I'm not sure how we can change this, though the development of the heater/stat does mean that manufacturers can properly design the protection system to match the heater wattage and that should significantly improve reliability. Although I've heard the scare stories, I've only had one such problem in my 35 years of fish-keeping and haven't heard of anything like this for a long time.

I take on board your comment about the temperature variations our fish would face in the wild compared to the narrow range systems we use in our tanks. This is, I think, feeding off a misapprehension on the part of many hobbyists that's been fostered by the hobby press over many years. When I started tropical fish-keeping in the early seventies I can vividly remember the dire warnings about making sure your change-water temperature matched that of your tank or you'd give your fish whitespot and the increasing accuracy of the thermostats we use comes from that kind of thinking. If an average hobbyist were offered a stat with a range of 1°C or another that had a range of, say, 6°C which would they choose? The cost would be practically the same because the technology would be the same so price wouldn't be an issue and I think we'd all guess that they'd go for the narrow-range item - it would appear to be better for the fish. For most people, I doubt if temperature variation ever appears on their radar. For those of us on the more scientific fringes of the hobby it may rear its head once in a while but we probably don't worry too much if the fish look OK. It would be an interesting experiment, nonetheless, to see whether it affects our fish and, as you suggest, could be easily simulated by the use of a timer. That said, it would also raise the question of what is a good range to use? We know that temperature change through water changes can induce spawning but if we use day/night variation as another variable does the variation change through the year? Is it greater in summer or winter? Does the range stay constant but the maximum change or do both vary? So many questions!

Keith Jackson, member 93.

Dear Bill,

Here are a few personal opinions on filtration, in response to your recent comment in Cat Chat. I hope it adds to the debate.

When trying to filter our aquaria, there are basically two things we try to achieve:

1. biologically convert fish excreta to nitrates and
2. mechanically strain solid matter from the water column.

The problem is that each requires different criteria to work efficiently and these are largely exclusive, in my opinion.

Sponge filters tend to have low flow rates to encourage bacteria colonisation but don't have much mechanical action as a consequence.

Internal power-filters tend to be less complex than their external counterparts and can be easily thought of as purely mechanical devices, having only sponge as the media.

External filters have sponges and bacterial media, of course. Internal and external filters tend to have a high flow-rate so that the whole tank will be agitated, with any solid matter being swept into the current and drawn to the filter where it can be captured. Therefore, if there is a lot of solids to be removed and the filter clogs easily then the filter's just full of fish poo, isn't it? Well, yes and no in my opinion, based on recent observations.

The first question to be answered is "What am I removing when I clean the sponges of a mechanical filter?" Logically, it should be the residue of the solid matter but is it? In my opinion, if the filter cannot handle both the solids and the bacterial film for the cycled aquarium on its sponge element(s) it will clog but I believe it's the bacteria that cause clogging in most cases, rather than the solids. What has led me to this conclusion is a happy accident. I'm in the middle of building my first fish house and wanted to have plenty of mature sponge-filters ready and waiting so that any new tanks would cycle rapidly. I've added these filters to a number of my existing tanks to mature in the meantime and seen a consistent improvement in all of them.

For instance, I have a 24" x 8" x 8" holding tank that's been filtered reasonably successfully by a Fluval 1Plus. It has had an occasional tendency to clog and there was always a thin mulm layer on the tank-furniture as well as on the sponge. Since I added a small Algarde, air-powered sponge-filter, the mulm has vanished and the sand looks pristine without the need for regular siphoning. The Fluval flow-rate now reduces much

more slowly and its sponge looks totally different. It never develops the bacterial film on its surface that it used to do and doesn't seem to be working particularly hard. Similar things have happened in all of my tanks filtered by power filters that now also have a sponge filter.

The most impressive is my 36" w X 24" h X 18" d tank that houses a number of loricatoridine and corydoradine species. It's run extremely stably, using a Fluval 405 external filter, for almost 18 months but, like the 24" x 8" x 8", it always seemed to have detritus on the substrate - even after a cleaning session. Since adding a large sponge filter, the substrate has become clearer than it's ever been and again, the loss of flow-rate through the 405 has slowed significantly. My belief is that there is the addition of the sponge means there is now an adequate surface for the balanced level of bacteria to colonise without the risk of clogging either filter.

I suspect that I've stumbled across a system that offers my fish the best of both worlds, using a power-filter to draw in and digest the solid matter and an air-powered sponge filter to handle the nitrogen cycle. That isn't to say that all filters don't try to do both but their designs can't help but be a compromise. By separating the two functions that's no longer the case. Each type can work to its best advantage and I suspect, develop different bacterial cultures. I've often thought that it was impossible to over-filter a tank but it now looks as if having the right kind of filtration system helps at least as much.

Keith Jackson Member No 93.



BAP Spawning Records, in order submitted

Reference	Date	Species	Reporter	First Record?
March 2007				
MW1	01/03/2007	Corydoras elegans 'gold-stripe'	Mark Walters	Y
MW2	02/03/2007	Corydoras panda	Mark Walters	Y
MW3	05/03/2007	Corydoras axelrodi - CW021	Mark Walters	Y
SB1	01/03/2007	Scleromystax barbatus	Stuart Brown	Y
SB2	01/03/2007	Corydoras caudimaculatus	Stuart Brown	Y
SB3	01/03/2007	Corydoras duplicareous	Stuart Brown	Y
SB4	06/03/2007	Aspidoras depinnai	Stuart Brown	Y
DP1	01/03/2007	Scleromystax barbatus	Dave Penney	N
DP2	04/03/2007	Corydoras davidsandsi	Dave Penney	Y
DP3	05/03/2007	Corydoras habrosus	Dave Penney	Y
AT1	07/03/2007	Corydoras paleatus	Adrian Taylor	Y
MW4	07/03/2007	Corydoras adolfoi	Mark Walters	Y
MW5	08/03/2007	Aspidoras C119	Mark Walters	Y
MW6	08/03/2007	Scleromystax barbatus	Mark Walters	N
MW7	08/03/2007	Scleromystax prionotus	Mark Walters	Y
IF1	11/03/2007	Corydoras C139	Ian Fuller	Y
IF2	11/03/2007	Corydoras C150	Ian Fuller	Y
DAB1	05/03/2007	L4	Danny & Ann Blundell	Y
DAB2	12/03/2007	Ancistrus temmincki	Danny & Ann Blundell	Y
DAB3	16/03/2007	Rineloricaria sp.	Danny & Ann Blundell	Y
DAB4	16/03/2007	Corydoras sterbai	Danny & Ann Blundell	Y
IF3	23/03/2007	Corydoras duplicareous	Ian Fuller	N
IF4	23/03/2007	Corydoras 'gold laser' CW010	Ian Fuller	Y
IF5	23/03/2007	Corydoras loxozonas	Ian Fuller	Y
AT2	28/03/2007	Corydoras C120	Adrian Taylor	Y
DP4	30/03/2007	Corydoras C121	Dave Penney	Y

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All plants and fish to be auctioned should be in clear plastic bags, or jars large enough for them. Large fish may be offered in plastic containers/buckets. Fish should be identified (Common or Latin names). 'Painted' fish will not be auctioned.

There is a 15% commission to the Catfish Study Group on all sales. Payments to vendors will be made at the interval or at the end of the Auction.

The CSG is in no position to accept responsibility for the condition of any item sold at the auction or to exchange any item purchased. If in doubt, bid for an item 'as seen'. The vendor's name will be available to the purchaser, in the event of a problem, on the day only.

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10	20	20	20	20	10	100

Pointing categories for multiple fish Pairs of fish (2 fish, 1 male 1 female) Breeders (4 fish, if sexable, both sexes should be present)						
Size & Matching	Body	Colour	Fins	Condition & Deportment	Presentation	Total
10	20	20	20	20	10	100



The tank

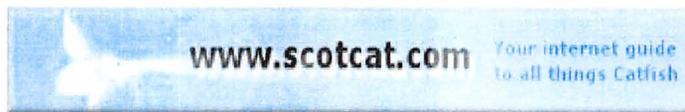
1. Should be large enough to allow the exhibit adequate space to move around.
2. Glass should be clean and free of blemishes, such as fingerprints or scratches.
3. Any tape (Black only) used to edge the tank or excess internal silicone should not hinder the viewable area.

The water

1. The condition of the water in the tank should be clean, clear and free of debris.
2. Where species require specific water conditions such as those from 'Black water' rivers and streams, it will be permitted to present these exhibits in clean water with a tinge of natural colour.

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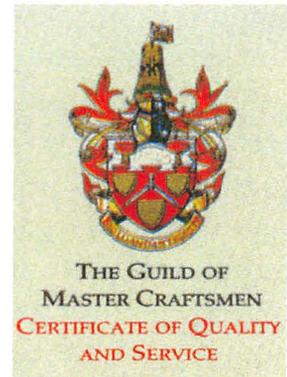
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