

Contents

Editorial and Notices	2
From the Chair – Adrian Taylor.....	3
Identity of <i>Corydoras armatus</i> – Steven Grant.....	4
Cave dwelling Corydoradinae – Ian Watson.....	8
Focus on <i>Panaqolus</i> – Mark Walters.....	10
Redescription of some <i>Mystus</i> – Steven Grant.....	14
Breeding <i>Centromochlus romani</i> – Mark Walters.....	18
In memory of Trevor Morris – Bill Hurst.....	23
Whats New – Mark Walters.....	24
Spawning habits of <i>Corydoras orcesi</i> – Ian Fuller.....	26

Front cover – *Panaqolus* sp L397. Image by Steven Grant

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Editorial



Peckoltia sp L211 – Image by Mark Walters

This edition marks the start of my fourth year of editing CatChat. The last few years have seen some significant changes in the presentation, layout and finishing of the journal, improving its standing as a well respected publication. I am sure this has helped attract new articles and features, reducing the lack of copy and the need to reprint old material. In the last year, we have been utilising the services of an external print company. This was in response to rising publication costs and compromises in print quality we had to make to reduce the use of raw materials. To make even more improvements, Ian Fuller has identified a new print company who will publish the journal in the future, starting with this edition.

A great benefit has been the proof reading of the journal by our President, prior to going for printing. Although I produce the first proof in Microsoft Word, the final version needs a pdf conversion. Ian Fuller has taken on this conversion role and takes the time to offer a sanity check before final issue. Although there have been a few niggles with typesetting slipping through the net, the overall benefit outweighs any minor typos.

In addition to the usual reports on regular CSG events, we have been the first to publish articles on new descriptions, first-time spawnings, observations on catfish behaviour and maintenance and summaries of specific catfish families. This makes the journal an essential resource for all enthusiasts.

In 2012, I edited 31 original articles to include in the journal. The usual message needs to be reiterated. The journal is composed of many articles from a few contributors. I encourage more members to submit their experiences and would be happy to help with images and editing as needed. Whilst we look forward to the next convention in March, we can look back on another successful year for the CSG.

The feature-lectures in Spring and Summer were particularly well received and usual auctions and show extremely well attended, with stunning catfish on offer and exhibited. The 2012 Convention built on the improvements of previous years and was professionally delivered.

In this edition, Ian Watson has written a fascinating article about a cave dwelling Corydoradinae. I've pulled together my observations on the *Panaqolus* genus of loricariid catfish. Steven Grant helps to unravel some confusion around the identity of a *Corydoras* species. Steve has also written an article on the redescription of some *Mystus* species. Finally, I've included a breeders report on the dwarf woodcat, *Centromochlus romani*. Ian Fuller has produced an excellent spawning report on the rare Corydoradinae *Corydoras orcesi*.

Panaqolus are probably more closely related to *Peckoltia* than their gargantuan *Panaque* relatives and I managed to have success with another *Peckoltia* species when my L211's bred just before Christmas. The picture above shows the proud (or rather disgruntled!) hairy Dad with his eggs.



From The Chair.



With this the first edition of CatChat for 2013, and the start of my first year in the Chair, I would like to wish all our members a Happy New Year.

I would like to say a big thank you to Bill Hurst, not just for holding the position of Chairman over the last three years but for his all round contribution to the CSG and its predecessors over more than thirty years.

Bill has held most positions available on the committee, sometimes returning to these positions on more than one occasion. The pleasing thing is that Bill although retiring from actively helping the group has agreed to stay on the committee as a floor member and will no doubt continue to offer his valuable services to the club. I for one value his council.

I would also like to thank Bob Barnes who has decided to leave the committee, for all his efforts over the years; and a welcome to Mike O'Sullivan who was welcomed as the new Membership Secretary. Mike's experience and knowledge can only be of benefit to the group.

I will endeavour to be worthy of the trust and faith people have put in me, both by their nominations, support and in electing me as the group Chairman.

In addition to the committee pulling out all the stops for the Convention in March, they are also working towards other initiatives that will increase the membership and improve the administration process. To assist the new Secretary, we will be digitally recording committee minutes, ensuring transparency and improved accuracy.

The new club venues are proving to be popular and offer light and spacious surroundings for shows, auctions, lectures and other club meetings.

The April meeting at the Darwen Valley Community Centre presents the group President and renowned Cory Cat enthusiast Ian Fuller give a presentation on the identification of Corydoradinae Catfishes.

Ian's talks are always well attended and have proven popular over the years. For those who have not experienced one of Ian's lectures will be treated to a hugely informative event. Please encourage some of your aquatic colleagues to attend - non-members are very welcome. All of our normal group presentations, lectures, auctions, and shows are absolutely free to attend.

You can keep up to date, find the latest news and contribute to the Group's forum throughout the year by visiting: www.catfishstudygroup.org

I hope to see many of you at Kilhey Court in March for our annual Convention.

Adrian W Taylor
CSG Chairman



www.catfishstudygroup.org

On the identity of *Corydoras armatus* (Günther, 1868)

Steven Grant

This is short note discussing the identity in the hobby of the true *Corydoras armatus* (Günther, 1868). There has been some confusion in most aquatic literature about the identity of *C. armatus*. It appears that there are 4 or more forms of *Corydoras* that are sometimes labelled as *C. armatus*. I use the word 'forms' rather than species because it is not yet certain if all of them are actually species or if some represent phenotypes of species.

Rather than rely on existing aquarium literature I have over the years checked descriptions of all *Corydoras* species said to exist or have been described from the countries covered here. All bar one are readily known and identified (albeit not necessarily correctly viewed as valid or not). The enigmatic *Corydoras amphibelus* Cope, 1872 was described from tributaries of the Río Ambyiacu, near Pebas, about 3°10'S, 71°50'W, Peru. It is the only species not readily assignable to fish we see in the hobby. However, the pattern as described by Cope and the body depth, dorsal fin spine length and serrations ascertained from the holotype, do not match the description and type specimens of *C. armatus*.

The true *Corydoras armatus* (Günther, 1868)

C. armatus was described on specimens from Xeberos [Jeberos] and the Río Huallaga in Peru. Nijssen & Isbrücker (1980) selected one of the the Río Huallaga specimens as the Lectotype. The Río Huallaga is a tributary to the Río Marañón which joins with the Río Ucayali, which then joins the Amazon River.

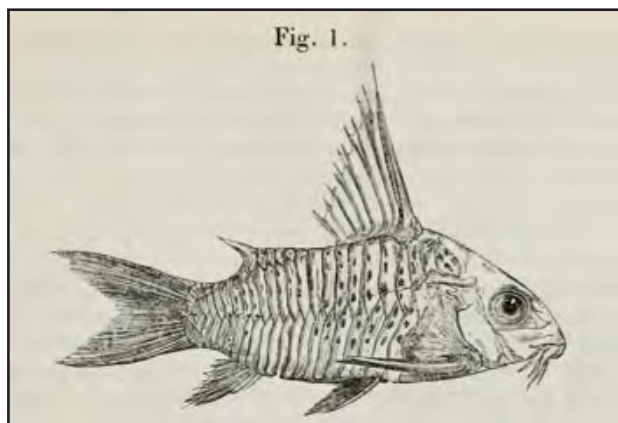


Fig. 1 A drawing of one of the type specimens from Günther (1868b).

The original description (Günther, 1868a) was quite short and did not provide a drawing of one of the specimens. The colour and pattern were described as "Olive-coloured (in spirits), the nine or ten anterior

scutes with a vertical series of small blackish spots." The species was also covered in Günther (1868b) and a drawing was provided (see Fig. 1). Fig. 2 shows a photograph of the Lectotype.



Fig. 2 Lectotype of *C. armatus* – image Mark Allen and BMNH

The description, drawing and photograph clearly show a *Corydoras* with:

- A deep head and body profile
- A long dorsal fin spine.
- The pattern on the body consists of small dark markings on the scutes. The markings are fairly regular in size and distribution.

The combination of above factors assists in the identification of the true *C. armatus*. In 2005 Aquarium Glaser imported some specimens which were said to be from Colombia. It is not clear whether they were actually from Colombian waters or caught in Peruvian waters and shipped to Leticia. The image of a preserved specimen from the Río Javary in

Burgess (1989 p686) appears to be the true *C. armatus*. The first two specimens pictured (from Peru) in Fuller & Evers (2005) are the true *C. armatus*, with the other pictured specimen being the one below. The specimens in Figs 3 and 4 are owned by Mick Price.



Fig. 3 Male *C. armatus* – image Steve Grant

Hans Georg Evers had originally identified them as the one listed below but has since confirmed my view that they are the true *C. armatus*.



Fig. 4 Female *C. armatus* – image Steve Grant

***Corydoras* cf. *armatus* 'Green Cana' / 'Ogawae'**

This fish is caught in the Rio Abuna; a river that borders Bolivia and north-western Brazil. In 2008 Pier Aquatics in Wigan imported some specimens in (Figs. 5 and 6).



Fig. 5 *C. cf. armatus* 'Green Cana' – image Steve Grant

The main visual differences between this fish and the true *C. armatus* are that in this species:

- The base colour is cream rather than the grey to green colour of the true *C. armatus*
- The markings on the scutes (particularly those on the upper parts of the dorsolateral ones) tend to be larger, less numerous, and more irregularly placed



Fig. 6 *C. cf. armatus* 'Green Cana' freshly imported – image Neil Woodward

Apart from those mentioned under *C. armatus*, most recent photographs labelled as *C. armatus*, show this fish. Hans Georg Evers has informed me that he has seen photographs of specimens caught further in Bolivia that looked like they were different again to this species and *C. armatus*.

It is not clear to me if this fish is the same as the one that is traded sometimes as *Corydoras* 'Dorsalis'. Burgess (1989 p693) shows a specimen that is supposed to have been caught in the lower Xingu River, Brazil. This locality is surprising in that it is some distance from the others but it is not impossible. However, based on the emerging evidence that some Xingu fishes are different species to similar congeners, this fish could eventually be deemed a different species in the future (if it is actually found in the Xingu River). Camargo *et al* (2004) did not find it there.

In terms of the Rio Abuna / 'Green Cana' form being a different species to *C. armatus*, phylogenetic evidence in Alexandrou *et al* (2011) based on Mitochondrial DNA analyses appears to show that it could be. They found that *C. armatus* appeared more closely related to *C. atropersonatus* Weitzman & Nijssen, 1970 (Fig. 7), than it did to 'Green Cana'.

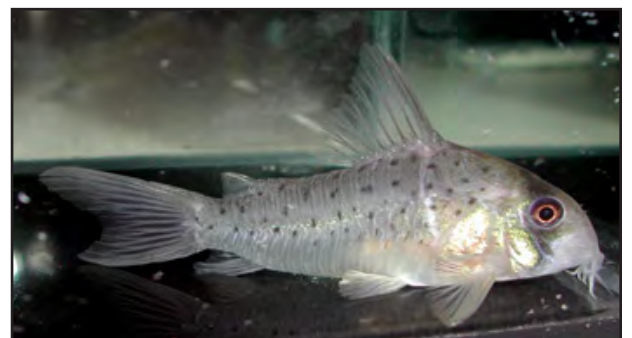


Fig. 7 *C. atropersonatus* – image Steve Grant

The fact that we know:

- The locality of this fish
- That it is visually and genetically different to *C. armatus*
- That it is being confused with *C. armatus*
- That it does not match the description of any known *Corydoras* species

should (in my opinion) mean that we should give it a code number (C or CW number) instead of referring to it with various trade names. Giving it a code number will allow a more unified way of referring to it in the hobby and will hopefully cut down on misidentifications and its implications.

***Corydoras* C096**



Fig. 8 *C. sp.* C096 'spotted' – image Colin Eveson

This fish from the Rio Nanay in Peru was given the code number C096. There are two forms, which could turn out to be phenotypes rather than different species. The first one (which was the form given the C number originally) has dots on the scutes which form horizontal lines (Fig. 8), the second one (exact origin unknown but thought to be Peru) has dark vertical lines on the scutes (Fig. 9). Perhaps another Code number is appropriate for the striped form in order to differentiate the two forms?



Fig. 9 *C. sp.* C096 'striped' – image Kim Kastberg

These differ from *C. armatus* and *Corydoras cf. armatus* 'Green Cana' as those two fish have a proportionately much deeper head and longer dorsal fin spine. C096 also has a much more distinct eye band and has a diffuse vertical black bar on the 3 or 4 scutes underneath the dorsal fin insertion.

***Corydoras loretoensis* Nijssen & Isbrücker, 1986**

I have not seen the description of this species and I wanted to ensure that the fish in the hobby that we caption as *C. loretoensis* is actually that. Thankfully the holotype is pictured in Burgess (1989 p686) and one of the photos used in description is reproduced in Sands (1987). The fish known in the hobby as *C. loretoensis* do match the specimens mentioned and their locality does too (Rio Nanay, Maynas Province, Loreto Region, Peru).



Fig. 10 *C. loretoensis* male – image Steve Grant

Because of the long dorsal fin spine (especially on males – Fig. 10) and flecked pattern this is still confused with *C. armatus* even now. The easiest way to tell them apart is that *C. armatus* has a much deeper body and the caudal is always devoid of dark markings. In some *C. loretoensis* there are indistinct vertical bars at the base of the caudal fin rays.



Fig. 11 *C. loretoensis* female – image Steve Grant

According to Alexandrou et al (2011) this species is not as closely related to *C. armatus* as you would think.

Acknowledgements

Thanks to Hans Georg Evers and Michael Hardman for clarifying some issues for me. Neil Woodward, Colin Eveson, Mark Allen and Kim Kastberg for allowing the use of their photographs. Michael Price, Mike Kirkham and Roy Blackburn for allowing me to photograph their fish.

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Catfish Study Group 33rd Annual Convention

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Discovery of a Cave Dwelling Corydoradinae

Review by Ian Watson



Image of cave dwelling *Aspidoras albater* exhibiting degenerative eyes by Alexandre Lopes Camargo. Hosted by Corydorasworld.com

A word of explanation is in order about the terminology used. You will find cave-dwelling fish referred to by a number of terms including hypogean, troglodytic, troglotic and stygibitic. Fishes which live above ground are usually just referred to as epigeal. There, that should help with the crossword.

Aspidoras albater Nijssen and Isbrücker 1976 is known in the hobby and features in a number of publications. It is an unremarkable small cory. However, it has a remarkable cousin which had taken to living underground, the first such callichthyid catfish to be found doing so.

A number of catfish families have been discovered with underground populations, some of which are completely new species, some of which are simply an overground species which has undergone some degree of adaptation to living in the dark.

In South America, previous discoveries of underground catfishes have been made of trichomyterids, astroblepids, loricariids and heptapterids. This new discovery appears to be in a halfway house, having not quite broken away from the above ground population sufficiently to be classified as a separate species.

The hypogean population of *A albater* has been found in a number of cave systems in the São Domingo karst system in Goiás State, Brazil. The normal, above ground form is also found in streams in this area.



'Regular' *Aspidoras albater* – Image Hans Georg Evers

Specimens of the underground *A albater* were collected from three limestone caves in the area (it may well occur in other caves).

The fact that the species occurs in a karst system indicates that it is very likely that it lives in hard, probably alkaline water. One of the cave systems was clearly linked to an overground stream (which could therefore have provided the founder population) but the other two, while linked to each other, appeared to have no connection to an above ground water course.

It may be that the source of the underground stream has just not been discovered or it may be that the connection no longer exists, or possibly only exists under certain conditions (e.g. floods). Given the morphological adaptations of the underground populations, it is a good bet that they have been genetically isolated for a good length of time.

Morphologically, the cave specimens were found to be very similar to conventional *A albater* and could not be differentiated on most features, hence the authors conclude that the cave populations are the same species. However, the adaptations did pose some problems in taking certain measurements; how do you measure eye socket dimensions or interorbital width if there are no eyes?

There is a picture of a live specimen which shows only the slightest trace of an eye socket and there is a series of pictures of preserved specimens which show a gradation from a clearly identifiable eye to no trace of an eye at all. Apart from that, the live specimen just looks like a very pale and washed out *A albater*.

Even more interesting is that the authors report that the behaviour of the underground population is different from that of 'normal' cory-type behaviour with the fish being much less "busy" than usual and usually being more or less stationary unless disturbed.

By contrast, the live specimens maintained in the laboratory were much 'busier' even though kept mainly in the dark, not only swimming more actively but also swimming more in mid-water, something which was not seen in nature.

The cave population seems to be no more difficult to keep than other *Aspidoras* and was bred in the laboratory. Interestingly, the offspring showed the same range of adaptations with any spawning resulting in fishes which had everything from fully formed eyes to no trace of an eye socket.



Female *A. albater* – Image Ian Fuller

The authors suggested that more work needs to be done to determine the taxonomic position of *A albater* and other *Aspidoras* from the same region. Hopefully, this would include an examination of the genetics of the various species and of the above and below ground populations of *A. albater* to try and work out where they came from.

Reference

Sandro Secutti, Roberto E. Reis and Eleonora Trajano (2011) Differentiating cave *Aspidoras* catfish from a karst area of Central Brazil, upper rio Tocantins basin (Siluriformes Callichthyidae). *Neotropical Ichthyology*, 9(4): 689-695.

This paper can be downloaded in full free of charge from;

http://www.scielo.br/scielo.php?script=sci_issuetoc&pid=1679-622520110004&lng=en&nrm=iso

BREEDERS AWARD PROGRAMME DISPLAY TANKS AT THE CONVENTION

As in previous Conventions, there will be ten B.A.P. tanks available for B.A.P. registered fish to be displayed along with details of the fish, maintenance and breeding conditions required. These will be set up prior to the Convention, with heated, filtered HMA water, which may be replaced by the exhibitor.

Allocation of tank space is via Brian Walsh, B.A.P. Administrator, prior to 6 March 2013.

SALE OF FISH AT THE CONVENTION

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

Each tank may be hired for the weekend at a cost of £5.00 - priority will be given to residential delegates staying for the duration as there are only eight available. The vendors will be responsible for the selling, catching, and bagging of their fish.

Allocation of tank space is via the BAP Secretary Brian Walsh prior to 6 March 2013.
bapsecretary@catfishstudygroup.org

The Dwarf Loricariids of the genus *Panaqolus* (Isbrücker et al, 2003)

Mark Walters



Juvenile specimen of *Panaqolus* LDA01 – Image Steve Grant

When *Panaque* are talked about, most aquarists think of gargantuan wood munching catfish, reminiscent of submarine tanks, requiring enormous aquaria and even bigger power filters. It is true that there are many commonly available *Panaque* species which grow in excess of 30cm and will happily devour bogwood and other vegetarian offerings, seemingly without pause.

The resultant detritus produced from the constant digestion creates a significant filtration challenge and relatively high maintenance for the keeper. There are however, a hardened few who endeavour to provide the necessary conditions and put in the effort to maintain these fascinating catfish in as optimum an environment as is possible. There is a much larger number of less-informed fish keepers who will purchase a *Panaque* and leave it to fend for itself without any real consideration for its specialist care. The result is that these beautiful fish rarely look their best and can waste away in a typical 'community' aquarium.

For most aquarists there is however, a more suitable alternative to lignivorous monsters, the group of much smaller 'dwarf panaques' or *Panaqolus* species. There has been some debate as to the validity of this genus name, adopted by some but not all (see Planet Catfish discussions referenced) although things appear to have settled with common acceptance of the genus around 2011.

There is less doubt, however, that there is a clear distinction between the monsters mentioned above and a large group of much smaller species ranging from 7cm to 25cm maximum size. include the 'clown plec' – *Panaqolus maccus* and the 'flash panaque' – undescribed but with the code L204. There is also a host of other L numbers, described species and

undescribed species which have become more readily available in recent years.

Both genera are easily identified based on their spoon shaped teeth, and jaws which are arranged in acute angles.



Typical *Panaqolus* dentition – Image by Steven Grant

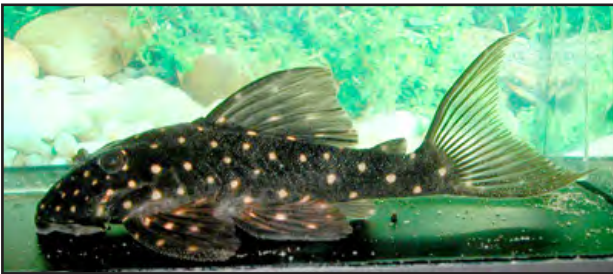
Panaque and *Panaqolus* are also identified by their unique head shape. Particularly the larger *Panaque* exhibit elongate heads, where the forehead steadily rises to the dorsal fin in an acute angle. The eyes are comparatively far at the back end of the skull. The feature is less pronounced in *Panaqolus*, making them look very similar to *Peckoltia*. Another trait shared with their *Peckoltia* cousins is heavy odontode growth in mature males. The hairy caudal region is not so pronounced in the larger *Panaque*. Almost all mature *Panaqolus* males have extremely pronounced hairy tails.



Male *Panaqolus maccus*, showing odontodal growth – Image Mark Walters

Panaqolus have a wide distribution across Amazonian South America and most river systems have their representatives. Often a variation on a gold/black, orange/brown, or red brown banding pattern, but also includes species with reticulations, vermiculations, spots, stripes and everything in-between!

Since acquiring a group of *Panaqolus maccus* around 5 years ago, I have maintained 9 species purchased from other breeders and aquatic retailers as follows – *P. maccus*, *P. sp.* L002, L204, L206, L397, LDA01, sp. 'Mazan', sp. 'red fin lyretail' and sp. 'orange fin'. Others I have seen available include *P. changae* (L226), *P. albomaculatus* and the spectacular *P. sp.* 'Arabesque'.



Panaqolus albomaculatus – Image Steven Grant



Panaqolus changae – Image Steven Grant

Planet catfish lists 32 *Panaqolus* 'species' (including L and LDA numbers), although some of the species with common names described above, are not included. The full list is included in the appendix.



Panaqolus sp. L453 – Image Steven Grant

My first groups of fish were maintained in mixed loricariid communities with power filtration from an external filter. I experienced moderate success although the effort required to keep filters unclogged detracted from the enjoyment of keeping the fish. The amount of detritus produced by *Panaqolus* needs to be experienced to be believed, confirming the value of providing a constant supply of woody material, green vegetable foods and specialised algae and wood wafers.

They will also consume more proteinaceous foods including frozen or live bloodworm and other insect larvae. No doubt they thrive in the wild on quite an omnivorous diet. The role of wood in their diet has been debated for a long time, although recent studies have confirmed they digest the flora which extract nutrients from wood material'.

The following extract (from German, Bittong 2009) provides a useful description of how these fish derive nutrition from a seemingly useless food source:

'So, just to summarize what I think these fish are doing... the wood-eating catfishes dig into decaying wood and efficiently digest wood degradation products that environmental microbes are making available as they degrade wood. The fish also have elevated digestive enzyme activities (e.g., N-acetyl-b-D-glucosaminidase) suggestive that they digest fungi within the wood matrix. Thus, they likely get 'energy' from the degraded wood. The stable isotopic signatures (carbon and nitrogen) of wild-caught wood-eating catfishes certainly suggest that they get their protein from fungi and amorphous detritus, and we find periphyton and amorphous detritus in their guts (in addition to the wood; see the 'inside the guts' paper where I do a detailed gut content analysis of wild-caught fish).'

Basically, the fish have to get their nitrogen from somewhere other than the wood detritus (there isn't much N in wood anyway). The fish certainly ingest wood, they just don't use the same "pathway" to obtain energy from it as a termite. Rather than harbouring an endosymbiotic community, they let the microbes in the environment do the work for them. This may be a function of living in an aquatic environment'

In an effort to manage the amount of detritus produced, I have housed my ever increasing collection of dwarf panaque in centralised systems with top-of-the-tank overflow facilities. Wood is still consumed at a lively rate but the detritus can now be siphoned from the tank bottom more readily than stripping down power filters. The centralised arrangement of tanks also means I can undertake water changes for multiple tanks in a single action, reducing maintenance effort.

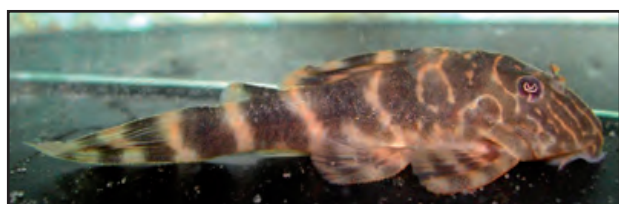
I have been fortunate to breed *Panaqolus* 'LDA01', on numerous occasions and hope for similar success with my other groups of fish.

Available Species

The following lists the species I currently keep, with some brief descriptions

Panaqolus maccus

One of the smallest members of the genus, reaching up to 10 cm, although most specimens rarely exceed 8cm (SL). There appear to be two forms in the hobby (with differing L numbers), distinguished by the patterns of spots and/or vermiculations on the head. The forms are so similar, I suspect they are regional variations of the same species. This is probably the most frequently encountered species, known as the clown plec in the hobby.



Panaqolus maccus – Image by Steven Grant

***Panaqolus* sp LDA01**

The 'Tiger Plec' is also known in the hobby as 'L169' and appears to be frequently bred by hobbyists, although not so commonly imported in its wild form. The species reaches 12cm in length. Juveniles exhibit attractive red and brown bands (as shown in the title photograph above).



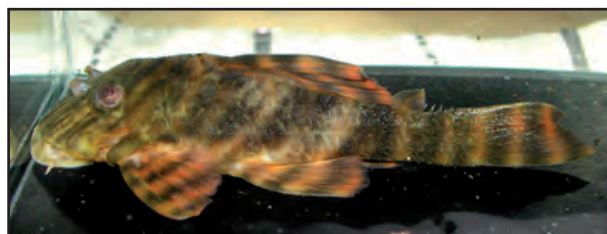
Panaqolus LDA01 – Image Steven Grant

***Panaqolus* sp L002**

Appearing very similar to L169, L002 is also commonly available, and occasionally bred in the hobby. Ingo Seidel suggests L002 has finer nose stripes and isn't as attractively coloured as L169.



Similarity between L002 (top) and LDA01 (bottom) – Image Mark Walters



Panaqolus L002 – Image by Steven Grant

***Panaqolus* sp L204**

One of the most well-known and attractive members of the genus, the 'Flash Panaque' is often seen available in specialist retailers. These are real wood eating machines which require good mechanical filtration and regular water changes. Under the right conditions, they will develop long filaments on the caudal and dorsal fins. They have been bred, but only rarely. They appear similar to the 'King Arabesque' *Panaqolus* – L453, but available at a tenth of the cost! They are reputed to originate from alkaline waters, but do well in typical Amazonian set-ups with a pH ranging from 6-7.5.



Panaqolus L204 – Image by Steven Grant

Flash Panaques are one of the larger *Panaqolus* species, up to 15cm in length. They exhibit varying degrees of spots and fine lines over a dark base pigment, which make them highly variable and very attractive.

***Panaqolus* L397**

The red-finned *Panaqolus* has to be one of the most desirable of the genus. The intensity of the red colouration is particularly attractive and the relative small size (up to 12cm) of the adults makes it an ideal aquarium fish. The head pattern exhibits a very fine pattern of stripes. Rarely available in the U.K., but bred frequently in Germany and the Netherlands. It is also widely available in Australia.



Panaqolus L397 – Image Steven Grant

L397 is currently top of my list of species I'd like to spawn and distribute further within the hobby.

***Panaqolus* 'red-fin' L206?**

Pier Aquatics in Wigan, U.K. has been a happy hunting ground for uncommon *Panaqolus* species in recent years. The following three species were all sourced from the retailer in the last 18 months. The first 'red-finned' species actually looks close to L206 and may turn out to be so. The species has grown only to 6cm SL after 12 months since import and looks like a dwarf species. A distinguishing feature is the blotches in the tail, rather than the caudal bars typical in most other species



Panaqolus 'red-fin' – Image by Mark Walters



Panaqolus L206 – Image Steven Grant

***Panaqolus* 'Orange Fin Lyre-tail'**

Another stunning species, which has evaded accurate description. This larger species (12cm at present) could grow into L306, but for now has retained an intense colouration unlike images for adult L306. Distinct sexual dimorphism with much more colourful males adorned with caudal odontodes (like all species)



Panaqolus Orange Fin Lyre-tail – Image Steven Grant

***Panaqolus* 'Mazan'**

This undescribed species carried a hefty price tag but with such an unusual pattern was too good to resist. The banding decreases in width towards the head which is covered in fine vermiculations. The fish have developed into robust species at around 10cm.



Panaqolus 'Mazan' – Image by Mark Walters

It is not known if some of these species will reach our shores again and it's a privileged opportunity to own and potentially breed some of these fish. Who knows what new *Panaqolus* might turn up in the future. I'd recommend this group of fish, considering their unusual habits, intense colouration and patterning and the good chance they can be bred in captivity.

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**Appendix 1: List of *Panaqolus* species described or known in the hobby (from Planet Catfish 'Catalog')
Described species:**

Described species: *albomaculatus*, *bathyphilus*, *changae*, *dentex*, *gnomus*, *koko*, *maccus*, *nocturnus*, *purusiensis*

Undescribed: P. sp. 1, P. sp. 2.

Designated L numbers: 002, 105, 169, 204, 206, 271, 296, 306, 329, 341, 351, 374, 395, 397, 398, 403, 425, 426, 453

Designated LDA numbers: 001, 029, 068

On the redescrptions of some Indian species of *Mystus* (Scopoli, 1777)

Steven Grant



Fig 1 *Mystus carcio* – Image Steven Grant

There has been a couple of the striped Indian *Mystus* species redescrbed recently and this may be of some interest to aquarists who are into their Indian catfish.

There has long been confusion over the identity of the multi-striped *Mystus* catfishes from India. In an old edition of the CSG Journal (Grant 2006) I went against contemporary and longstanding scientific opinion and said that *Mystus carcio* (Hamilton, 1822) was valid and that *Mystus tengara* (Hamilton, 1822) was a questionable synonym of *Mystus vittatus* (Bloch, 1794). I provided morphological differences between all three species, as well as *Mystus bleekeri* (Day, 1877), i.e. the differing fontanels.

M. carcio was redescrbed and confirmed as valid (Darshan, Anganthoibi & Vishwanath 2010). Similarly *M. tengara* has been redescrbed, again pointing out the differences in the fontanel between it and *M. vittatus* (Darshan *et al* 2013).



Fig 2 *Mystus tengara* juvenile – Image Steven Grant



Fig 3 *Mystus tengara* adult – collected from Calcutta

As a result, a key to differentiate the four species is available that should be of use to aquarists (adapted from Darshan *et al* 2013). Please note however that while the use of the name *Mystus bleekeri* has been restricted to specimens from the Yamuna River in northern India (see Ng & Kottelat 2009), photographs of specimens from Mizoram and Nepal all look to have differences in morphology, which could lead to different species being described in the future.



Fig 4 *Mystus vittatus* collected from Tranquebar (type locality) – image Balaji Vijayakrishnan

A fifth striped species, *Mystus keletius* (Valenciennes, 1840), is currently something of an enigma (see Grant 2011).

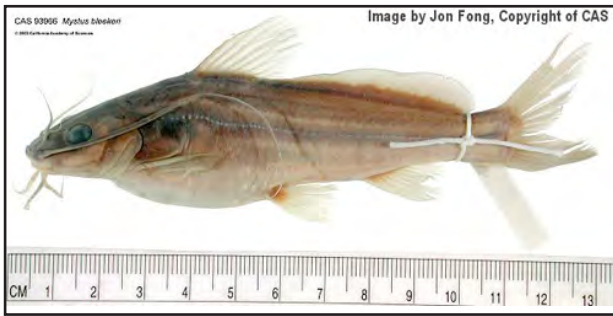


Fig 5 *Mystus bleekeri* collected from Matamohuri Basin , Bangladesh

Key

- 1a. Adipose fin origin in contact with the base of last dorsal fin ray *M. bleekeri*
- 1b. Adipose fin origin not in contact with the base of last dorsal fin ray2
- 2a. Adipose fin base length equal to or shorter than that of the dorsal fin base length, coracoid shield present,..... *M. carcio*
- 2b. Adipose fin base length 2 to 2.5 times longer than that of the dorsal fin base, coracoid shield absent3
- 3a. Posterior fontanel long, extended into the supraoccipital region reaching up to the middle of supraoccipital bone (in mature specimens)*M. tengara*
- 3b. Posterior fontanel short, ending at the anterior tip of the supraoccipital bone (in mature specimens)*M. vittatus*

The “coracoid shield” is an area of exposed bone on the body that can be seen underneath the fish, just to the side of the base of the pectoral fins (and I assume is a ventral surface of the posterior processes of the coracoid). The fontanel is the long groove/gap in the top of the skull when viewed from above; the half that is nearest the dorsal fin insertion is called the posterior fontanel (the halves are usually separated by an indentation or bar). The supraoccipital bone is a large bone on top of the head, nearest the dorsal fin insertion. See Fig. 6 for supraoccipital bone and posterior fontanel

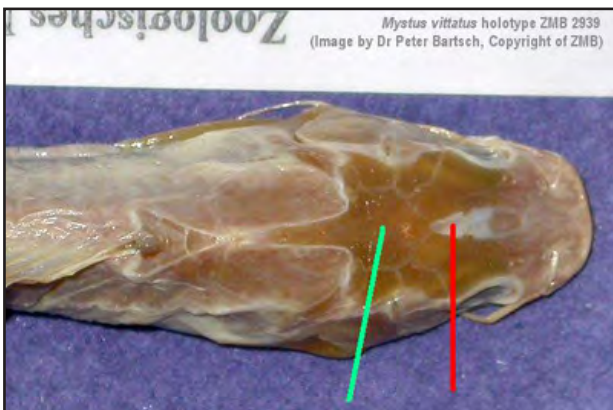


Figure 6 Posterior fontanel (red line) and supraoccipital bone (green line)

Acknowledgements

Thanks to Balaji Vijayakrishnan and Jon Fong/ California Academy of Sciences for allowing the use of their photographs. Thanks also to Dr Peter Bartsch of the Institut fuer Systematische Zoologie, Museum fuer Naturkunde der Humboldt-Universitaet zu Berlin for use of the photograph.

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<http://www.scotcat.com/thedarkone/thedarkone.htm>



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Breeding the Brown Dwarf Wood Cat *Centromochlus romani* (Mees, 1988) Breeders Award Programme - Mark Walters



Male *Centromochlus romani*, eating whiteworm. The modified anal fin can be seen in this specimen

This report documents the successful breeding of a rarely encountered dwarf woodcat, *Centromochlus romani*, and also represents the tenth genera spawned by the editor contributing to the Breeders Award Programme, introduced in 2007.

In order to promote the scheme, I have submitted the breeding account in the format of the Stage 1,2,3 template which can be found on the CSG website at <http://www.catfishstudygroup.org/cpre/bap.htm>.

Any CSG members can submit their breeding reports to the BAP Secretary and accumulate points leading to the award of bronze, silver and gold awards.

Since the start of the scheme, I have submitted registrations for 36 species, from 11 genera of catfish, accumulating over 2000 points along the way. The benefit to the CSG, is the publication of many breeding reports to help fill the pages of the Catchat journal and share experiences with other hobbyists.

The Catfish Study Group (CSG) Breeders Award Programme (BAP) has been initiated to continue the study of Siluriforms, sharing information with the membership to increase our knowledge of the breeding behaviours of our fishes.

The CSG BAP offers the Member Breeder three levels of excellence to aspire to Bronze, Silver and Gold these 'medals' can be earned by breeding and reporting your successes to the CSG BAP Secretary at the earliest opportunity. Breeding success reports earn points towards your goal.

The points awarded will be regularly reported in the journal of the Catfish Study Group, to show the members progress. BAP reports will also be included in the Journal to distribute and share the knowledge amongst the membership.

All you have to do is

- As soon as you have been successful with your breeding project and your fish have spawned, register your success with the CSG BAP secretary. By email or letter. Stating Species and date of Spawning.
- Complete the breeding report form:
As soon as you have a breeding project planned start gathering the data required to complete the breeding report
- Send completed Spawning log to the CSG BAP Secretary:
This needs to be completed to the point at which you are registering your achievement. Don't forget photo's will increase the points earned and will add value to the published report.
- Send updated Spawning log to the CSG BAP Secretary:
As your fry progress towards maturity and you reach the next milestone in the programme, add to the spawning log completing the next stage, sending the updated copy (and photo's) to the CSG BAP Secretary.

The CSG BAP secretary will acknowledge your achievement and advise you of your point total for this spawning and your total points to date.

Your spawning log and associated photo's will be used in the CSG Journal and any publicity the committee decide (always acknowledging your achievement).

The Awards

In recognition of your success the CSG have commissioned special 'medals' Bronze, Silver and Gold, in the metals of that name, for the latter two. These 'medals' will be awarded in person, where ever possible, for the members achieving:-

For BRONZE award a total of 500 CSG BAP points must be gained and species bred must be from at least three Catfish Genera.

For SILVER award a total of 1000 CSG BAP points must be gained and species bred must be from at least six Catfish Genera.

For GOLD award a total of 2000 CSG BAP points must be gained and species bred must be from at least ten Catfish Genera.

All points are accumulative and carry forward to the next award level.

The following Report includes the details expected to be submitted. If certain parameters weren't recorded, these can be left blank.

Report 1-2

Date of spawning	4/04/2012	BAP Reference				
Species name:	<i>Centromochlus romani</i>					
Source	Mixed group from Ferrybridge Aquatics and other aquarists					
No of Adults	Males	3	Females	1		
Age (If known)	4 years	Size males	35mm	Size females	35mm	
Water parameters:	Temp	22C		pH	5.5	
(At the time of spawning)	Oxygen			µS cm		
	KH			dGH		
Aquarium size in cm	Length	60	Width	30	Height	45

Substrate

A thin layer of washed playpit sand covered the tank base up to 5mm deep.

Filtration

Air driven double sponge filter, regular 30% water changes (every fortnight at least) using rain water or mixed rain water and treated tapwater.

Furnishings

Bogwood, java moss, coconut shells, 21mm diameter pipes – used as potential spawning sites and cover. A 'spawning mop' made of wool and suspended using a cork was added prior to spawning.

The tank was established for the dwarf woodcats and no other inhabitants were present.

Foods given

These dwarf woodcats avidly eat bloodworm, whiteworm and baby brine shrimp (offered daily). They also eat Tetra Prima, pellets and flake food. Even food tablets are taken by the adult fish.

Feeding frequency

Twice daily feeds of live (or frozen) food and dry food.

Breeding details

No of fish involved: Males 1; size SL 35mm; Females 1; size SL 35mm

Courtship Behaviour

The male and female were observed resting together in the spawning mop, prior to egg deposition. The species is known to be ovoviviparous, i.e. lays fertilised eggs following internal insemination by the male. The male possesses a modified anal fin, similar to the gonopodium of livebearing toothcarps

Spawning Behaviour

After a few days in the spawning mop, the female deposited up to 20 eggs amongst the strands of wool. The eggs were unlike other catfish eggs in that they are encased in a jelly-like outer coat, similar to frog spawn. Eggs were laid individually, not in a mass

Eggs:	Number laid 20	Egg Size 5mm
	Egg colour opaque	Time to hatch 5 days
Fry:	Number hatched 12	Time to free swimming 10 days
	Size at free swimming 8mm	

Behaviour: *(of adults, fry, did you leave adults in with the eggs/fry or remove one or the other)*

For the purpose of the spawning report, records were taken from a spawning in the wool mop. Previous spawnings had taken place in the tank, and fry observed free swimming within the tank. It was assumed that the adults were depositing eggs in the pipe caves and the wool mop was only added to provide the fry with cover. It was a surprise to find the adults using the mop as a spawning site. It is assumed that in the wild, they might lay eggs amongst submerged grasses and aquatic plants. The mop was removed to a hatching tub to observe the development and enable some photographs to be taken.

There was no obvious predation of fry from previous spawnings, although the low number of young suggests the adults will opportunistically feed on their young if they find them. Copious plant cover would improve the chances of fry survival.

Report 3

First food - Baby brine shrimp Feeding pattern - Twice daily

Fry colour patterns (sketches or photos) and sizes (SL) at:

at 10 days - 10mm at 1 month - 15mm

at 2 months - 20mm at 3 months - 25mm

Behaviour: *(of adults, fry, did you leave adults in with the eggs/fry or remove one or the other)*

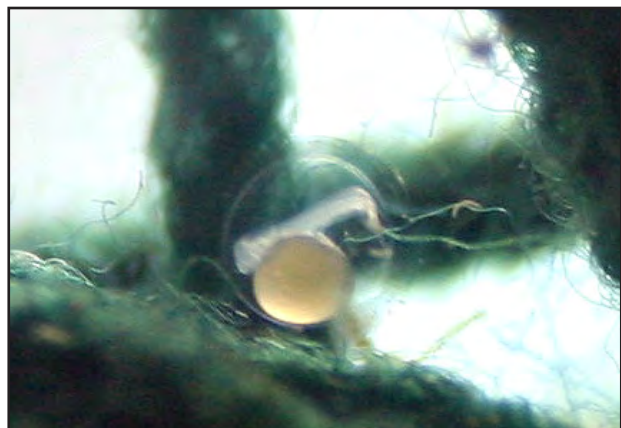
After the fry started feeding, the fry saver was switched to through-flow and twice daily feedings of baby brine shrimp were offered. The fry were returned to the main tank after 6 weeks and proceeded to join the community of adult woodcats.

Gallery of *Centromochlus romani* breeding images

An essential requirement for a verifiable spawning log is a set of images showing adult fish, eggs, larvae and fry development. The following images document the spawning event, egg development and fry growth over a 4 month period.



Adult *C.romani* resting



C. romani egg 3 days after deposition, clearly showing the outer jelly-like coating



Female *C. romani* depositing eggs in mop. Eggs can be seen in the wool strands



C. romani eggs shortly after deposition



C. romani fry after 7 days



C. romani fry after 21 days



C. romani after 60 days



Juvenile *C. romani* after 120 days



4 month-old *C. romani* feeding on artemia nauplii

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Send in your Articles!

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

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

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

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

You will see from the range of articles routinely published there is a wide breadth of subjects to base an article around including: Breeding reports; Meet the member articles; New discoveries; Product reviews; Book reviews; Equipment articles, Fish house construction; Show reports; Fish-shop finds; Expedition write-ups; or for that matter, anything relating to furthering the study of catfish.

Send submissions to editor@catfishstudygroup.org and enjoy the reward of seeing your efforts featured in future editions.

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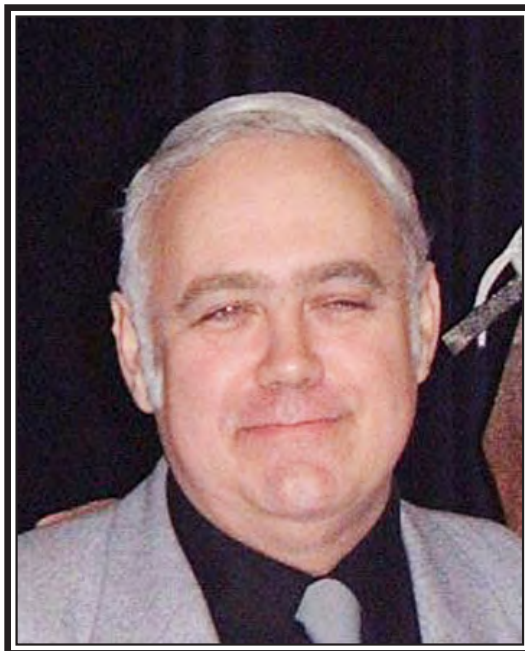
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OBITUARY

Trevor Morris (JT)



The first President of the Catfish Study Group

Trevor joined the Sandgrounder's Aquatic Society (Southport) in the early seventies when nearly every town in the Northwest of England had a fish club of some description. Around this time he also joined the Catfish Association of Great Britain (CAGB) and he was often seen at the Open Shows around the country when he took up the position of Public Relation Officer for the CAGB.

In 1979, he was instrumental in the formation of the Northern Area Group (NAG) of the CAGB along with a number of other like minded aquarists. The NAG, shortly after, changed to the Northern Area Catfish Group and remained with that name until the Catfish Study Group was formed in 2000. He became the first President of the newly formed Catfish Study Group (UK) in 2000.

This is from Trevor's opening article from Cat Chat Vol 1 No 1 in March 2000

'After the Catfish Association of Great Britain was formed some 20 odd years ago, it was decided that a local group was needed in the north of England. From this idea, the Northern Area Catfish Group was formed in 1979. I joined the Group right at the beginning and I have seen the membership rise and fall and bounce back again. I held various positions on the committee but for the past nine years I was the honorary Chairman. The CAGB folded in 1993 but the NACG remained and became the main catfish group in the country.'

Trevor had a vast knowledge of all things fishy and regularly toured the clubs giving talks on a variety of fish. He was well known throughout the aquatic hobby. He also had the honour of being a CAGB Convention speaker.

Latterly, Trevor suffered ill health and was forced to give up his position as President. He was the longest serving member from the CAGB through to the CSG and he was recently presented with a solid gold brooch for his service to the hobby.

Trevor sadly passed away on Friday 1st February His absence at meetings will always be missed. RIP. Our thoughts are with his family at this time.

What's New?

Mark Walters



In the 'Amazon Room' from left to right: Richard Smith, Kev Crompton, Steve Grant, Mark Walters, Michael Hardman, Colin Eveson, Mick Price, Neil Woodward

The latest fish-hunting road trip was instigated by a good friend Michael Hardman, a regular Catchat contributor, successful fish breeder and renowned ichthyologist, currently living in Finland. Michael came 'home' during the Christmas vacation and arranged to meet up at Pier Aquatics (Wigan, U.K.) to meet up with a motley crew of aquarists. Of course, the proprietor Neil Woodward made us all feel very welcome with cups of coffee and a gentle nudge in the direction of fish we might be interested in!

After much back-slapping and fishy conversation I picked up a shoal of *Corydoras reticulatus*, although the name sounds relatively common, they are not so regularly available and in my opinion are one of the most striking of Cory species.

Michael left with a bag of *Corydoras* C090, which made it back to Finland in one piece. I'm sure it won't be long before he breeds them and distributes them to his Scandinavian fishkeeping friends.



Corydoras C090 – Image Mark Walters

Much of the conversation was around speciation amongst *Corydoras* and the fish on view provided a lot of material for debate.

Species such as the C133 and CW028 show a significant amount of variation in pattern and colouration, within the group on view suggesting potential hybridisation, numerous species or even speciation in the making! The topic will be discussed in more depth over a few beers at the Convention – no doubt.



Corydoras adolfoi – Image Ian Fuller

Other fish which caught the eye included beautiful wild caught *Corydoras adolfoi* and *Corydoras weitzmani* plus a great selection of dwarf woodcats.

Description of the smallest known Loricariid

Nannoplecostomus eleonora, a new genus and species of a miniature sucker-mouth armored catfish, is described based on specimens collected from the karst region of Sao Domingos, upper Rio Tocantins basin, Goias State, central Brazil. The new genus and species can be diagnosed among loricariids by presenting a unique reductive pattern of lateral dermal plates, with most of the body covered by only three series of plates (viz., dorsal, mid-ventral, and ventral).

Achieving a maximum standard length of 22.2 mm SL, *Nannoplecostomus eleonora* is the smallest known loricariid catfish, and a list of the remaining smallest loricariids is provided.

Reference: Alexandre C. Ribeiro, Flavio C. T. Lima, and Edson H. L. Pereira. A New Genus and Species of a Minute Suckermouth Armored Catfish (Siluriformes: Loricariidae) from the Rio Tocantins Drainage, Central Brazil: The Smallest Known Loricariid Catfish. *Copeia*, No. 4: 637 - 647.

Description of a new *Peckoltia*

Peckoltia is one of the 26 genera that constitute the Ancistrini. Although *Peckoltia* has been reviewed recently, its taxonomic status is not fully resolved and not easily distinguished from *Hemiancistrus*. Neither *Peckoltia* nor *Hemiancistrus* have any recognized synapomorphies supporting their monophyly. In this paper the authors describe a new species of Ancistrini from Rio Xingu drainage, Pará State, Brazil, and assign it to *Peckoltia* based on its deep body, presence of large odontodes on the cheeks, and lack of carenate plates on the body.



Peckoltia L163 – Image Steven Grant

The new species can be easily distinguished from all its congeners by its dorsal-fin color pattern (presence of dark thin stripes in the interradiial membranes parallel to fin rays that fragment into small spots in larger specimens vs. bands, spots, dots, or membranes with a darker coloration in all other species). *Peckoltia feldbergae*, new species, differs from all its congeners except *P. bachi*, *P. oligospila*, and *P. sabaji* by having dark brown spots on the entire body (vs. presence of dark transversal bars on the body or a uniform color). *Peckoltia feldbergae*, new species, can be distinguished from *P. oligospila* and *P. sabaji* by a smaller postanal length (28.4–32.4% of SL vs. 34.3–38.8 and 35.7–41.0%, respectively).

The description of this species is part of an effort to improve our knowledge about the remarkable diversity of rapids-dwelling loricariid catfishes that are greatly threatened by the construction of several large hydroelectric dams in Brazilian Amazon, and to provide a scientific name for a species exploited by the international aquarium fish trade. *P. feldbergae* appears to be the species known in the hobby as 'L012' or 'L013', and is very similar to the species listed as L163 (shown in the image)

Reference: Renildo R. de Oliveira¹, Lucia Rapp Py-Daniel¹, Jansen Zuanon¹, and Marcelo S. Rocha². A New Species of the Ornamental Catfish Genus *Peckoltia* (Siluriformes: Loricariidae) from Rio Xingu Basin, Brazilian Amazon. *Copeia* 2012(3):547-553. 2012.

A new small *Hypostomus*

The small Loricariidae, *Hypostomus careopinnatus*, is described from the Rio Taquari drainage, upper Rio Paraguay basin, Mato Grosso, Brazil. The new species can be easily distinguished from all congeners, except *Hypostomus levis*, by the absence of adipose fin. *Hypostomus careopinnatus* is distinguished from *Hypostomus levis* mainly by the presence of slender bifid teeth, with mesial cusp large and rounded, and lateral cusp small and pointed (vs. spoon-shaped teeth). The new species described herein completely lacks the adipose fin and also lacks the median pre-adipose plates in almost all specimens examined. The absence of adipose fin is probably an independent acquisition for *Hypostomus careopinnatus* and *Hypostomus levis*.

Reference: Fernanda O. Martins¹, Manoela M. F. Marinho², Francisco Langeani¹, and Jane P. Serra. A New Species of *Hypostomus* (Siluriformes: Loricariidae) from the Upper Rio Paraguay Basin, Brazil. *Copeia* 2012(3):494-500. 2012

A new *Pareiorhaphis* Species

A new species of *Pareiorhaphis* is described from the Ribeirão Caraça, a tributary to the Rio Piracicaba, upper Rio Doce basin in the State of Minas Gerais, eastern Brazil. The new taxon is promptly diagnosed from all other species of *Pareiorhaphis* by having a unique color pattern in both sexes. The color pattern consists of conspicuous dark brown blotches irregularly scattered over a yellowish tan background on head, along the dorsal surface of body and flanks. In addition, the new species can be further distinguished from all congeners except *P. eurycephalus*, *P. nudulus*, and *P. vestigipinnis*, by the absence of an adipose fin. From those species it is distinguished by morphometric traits. The new species is further compared to *P. nasuta* and *P. scutula*, which also occur in the Rio Doce system.

Reference: Edson H. L. Pereira¹ and Marcelo R. Britto². A New Distinctively Colored Catfish of the Genus *Pareiorhaphis* (Siluriformes: Loricariidae) from the Rio Piracicaba, Upper Rio Doce Basin, Brazil. *Copeia* 2012(3):519-526. 2012

Spawning habits of *Corydoras orcesi* Weitzman & Nijssen, 1970

Ian Fuller



Corydoras orcesi – image Ian Fuller

I first came across live specimens of this long snouted species while on a visit to an aquatic event in Norway in 2007. They had been collected by a member who had recently returned from a fish collecting trip in Peru. The fish was formerly described as a subspecies of *Corydoras pastazensis* by Nijssen & Isbrücker in 1986, but in 2001 Isbrücker raised it to full species status in my first book 'Breeding Corydoradinae Catfishes'.

It was in the middle of 2010 before I finally acquired my first group of this fish. We knew the exact location in Peru where the species was to be found, but it took a lot of work and not too little persuasion by Neil Woodward owner of Pier Aquatics in Wigan UK, to get his people in Peru to go and collect specimens.

When they finally arrived I was eager to get a small group, but had to wait another agonising two week before the fish were through their quarantine period. At around £30.00 a fish not exactly the cheapest fish I have ever bought, but this was to be expected considering the effort that went into collecting, not to mention the shipping costs.

I finally had a group of six fish, two females and 4 males all settled into their own 24" x 18" x 15" fully matured tank, which had been furnished with a good layer of very fine smooth grained sand.

Normally for Cory species I only have a layer of around 10 millimetres. After watching the way many species feed, I have found that the longer, hook or saddle snouted species prefer much deeper substrate. They will often almost bury themselves when searching for food particles.



Corydoras orcesi female buried deep into the sand – image Ian Fuller



Corydoras orcesi female buried even deep into the sand – image Ian Fuller

To complete the set up, the tank was furnished with several pieces of soft bog wood with *Anubias* or Java fern growing on them. There was also a fairly large clump of Java moss growing in one corner. Filtration was with a Eheim Ecco Pro 300 and a large free standing Hydra-sponge filter in the back right hand corner.

Because the Fish House is space heated the temperature does fluctuate a little depending on the outside temperature, this particular tank was around 26°C. Other water parameters were; pH 6.8; Conductivity 285 ppm. However because of the very low KH in our water supply, the pH can and does drop dramatically if regular water changes are not done regularly, usually I do these at least once a week.

Initially the fish settled in very well and were given a variety of foods ranging from a staple diet of either Tetra 'Tabimin' or JBL 'Novo Tabs' These are supplemented with live foods when available, in the form of *Tubifex*, *Daphnia* and bold worm. It was not very long, only a matter of maybe two weeks, before I started to see aggression developing between the males. Although there was what I thought, adequate cover, very soon an 'Alpha male' emerged and was totally dominating the other males to the extent that two of them were actually killed. I removed the remaining male and put him in another stock tank with some round snouted species. There were also signs of aggression amongst the females, which resulted in the demise of the weaker one. This left me with just a pair, which seemed to be getting along very well.

It was in June 2012 that I realised that this pair had actually been spawning, for how long I did not know, but it was brought to my attention by the sight of several various-aged fry swimming in the filter canister.



Corydoras orcesi fry of about 3 weeks of age inside filter canister – image Ian Fuller

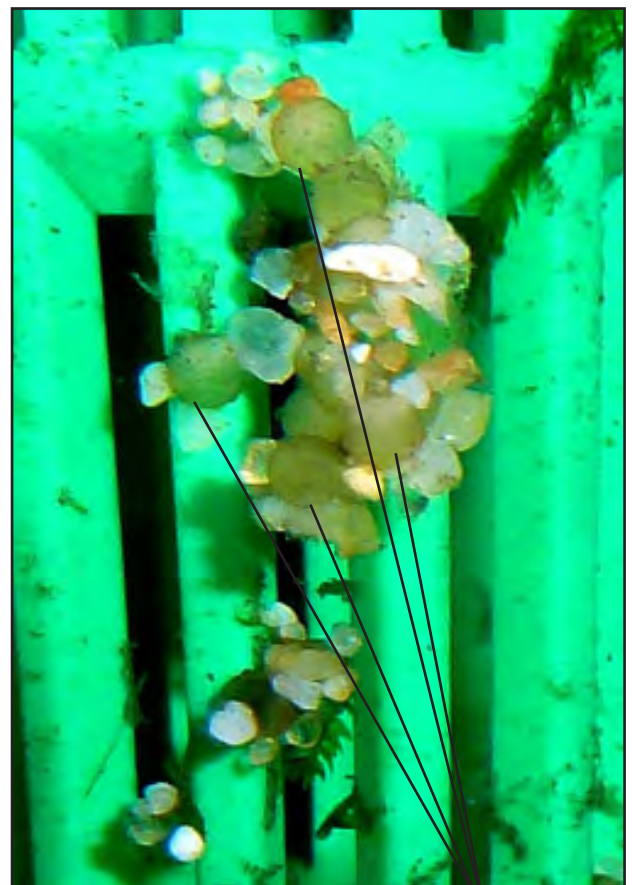
A small tank was filled with water from the main tank and a mature sponge filter added, then the fry were removed from the filter canister and put into the small tank.

It was difficult to determine exactly how old these fry were, but based on previous experience I estimated that the larger ones were about a month old.

I then started to think how so many fry had got into the filter in the first place and started to observe the adults far more closely. It was not very long before I could see exactly what they were doing. The action followed a day or so after a normal 30% water change and the introduction of some fresh *tubifex*, something they had not had for several weeks due to the excessive rain we had been having, making collecting impossible.

The pair were scurrying around the tank, with the male chasing the female in little bursts, taking short rests between each courting manoeuvre and when they came together in what is recognised as the typical Corydoradinae mating clinch it was very brief, only lasting for a second or two.

This is where it started to get very interesting in that each time they came together the female only released one or two eggs into her ventral pouch, but the action that followed was that she would move a little way across the bottom with her belly pressed onto the sand and then scoot off and deposit her egg/s.



Corydoras orcesi a cluster of sand covered eggs deposited on the filters inlet strainer – image Ian Fuller

There was no pattern to where she would deposit her eggs other than it looked like they were placed where there was more of a flow, and this is where I found out how the fry had found their way into the filter canister.

The female had placed several eggs onto the filters inlet strainer, making it easy for them to be sucked into the filter as soon as they emerged from the egg. Another big advantage for the fry ending up in the filter is that there would be more than enough food for them and they would be safe from predation from their parents.

Another interesting factor was that the eggs were all covered with grains of sand. Whether this is by design or accident is difficult to determine, but I would think it is an evolutionally trait that has developed as an anti predatory feature, making eggs covered in sand less palatable.

After watching many mating sequences, the action to cover her eggs with sand is definitely a deliberate action by the female. One thing that did come to mind is that in their natural environment there may not be very much in the way of natural vegetation and that they normally deposit their eggs in the sand, this is know to be the case with a few other Corydoradinae species.



Corydoras orcesi eggs with particles of sand attached – image Ian Fuller

Like many of the ‘saddle’ snouted species the eggs are very small compared to the straight or round snouted species, most no larger than 1 millimetre in diameter, in the case of *C. orcesi* their eggs measure 0.9 mm.



Corydoras orcesi eggs with particles of sand attached – image Ian Fuller

The fry emerge after four days and are free swimming a day or so later, it is at this time when I start to add a little food, which for the smaller fry is usually ‘Banana’ worm (*Panagrellus Nepenthicola*). This species of worm is about 50% smaller than the conventional Micro worm (*Panagrellus redivivus*) and is ideal as a first food for the smaller Corydoradinae fry.

As they grow the fry are introduced to a variety of other foods such as moistened powdered flake or tablets. *C. orcesi* fry grow very quickly for the first month or so and can easily reach 10 mm in body length (standard length (SL)).

The one thing that is very important to growing fry is clean water, all my young fry are first raised in small 2 or 3 litre containers for the first month to six weeks, these have the 90% water changes every day after which the fry are fed, and if time (The Day Job) permits, this is done twice daily.

This is not a difficult species to breed so I am hopeful that it will remain in the aquarium hobby for many years to come.

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Or there is our Face Book page at <http://www.facebook.com/groups/210148032410074/?fref=ts> where you can also communicate with other members to discuss your favourite fish and find out all the latest news.