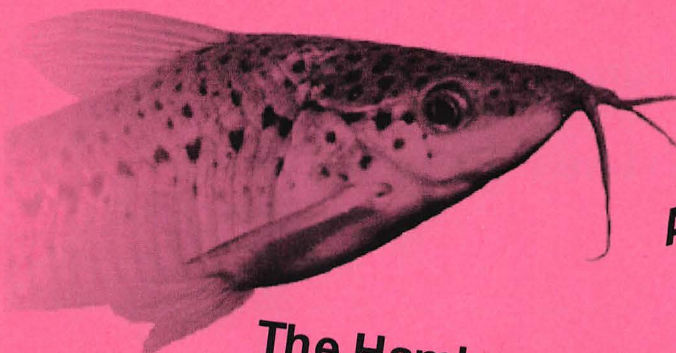
CAT CHAT

The Journal of the Catfish Study Group (UK)

In this issue



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Volume 5 Issue Number 3
September 2004

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From the Editor

As you will see, we now have a new colour laser printer. I hope that this 'new look' journal is worth the effort.

There is a Competition inside for members to offer to design a new front cover for Cat Chat. The winner will receive a free membership for 2005. Just deign a cover, it doesn't have to be by computer, it's the idea we want.

The article by Steve Grant 'The striped catfishes etc' in Vol 5 Issue 2 was pretty much spoiled by the printing qualities. If you want to see colour images of the fishes in question, they are now on <www.plantecatfish.com>.

I hope you enjoy the journal

Articles and pictures can be sent by e-mail direct to the editor
<bill@catfish.co.uk>
or by post to

Bill Hurst
18 Three Pools
Crossens
SOUTHPORT
PR9 8RA
(England)

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Front Cover: Original Design by Kathy Jinkins.

HONORARY COMMITTEE FOR THE CATFISH STUDY GROUP (UK) 2004

PRESIDENT
Trevor (JT) Morris

VICE PRESIDENT
Dr Peter Burgess
PJBurgess@compuserve.com

CHAIRMAN
Ian Fuller
ian@corycats.com

VICE CHAIRMAN
Danny Blundell
DANNY.BLUNDELL@care4free.net

SECRETARY
Temporarily Ian Fuller

TREASURER
Danny Blundell
DANNY.BLUNDELL@care4free.net

MEMBERSHIP SECRETARY
Julian Dignall
webmaster@planetcatfish.com

SHOW SECRETARY
Brian Walsh
g.b.w@brianwalsh1.freeserve.co.uk

ASSISTANT SHOW SECRETARY
Ann Blundell

AUCTION ORGANISERS
Roy & Dave Barton

FUNCTIONS MANAGER
Trevor Morris

SOCIAL SECRETARY
Terry Ward

WEB SITE MANAGER
Allan James allan@scotcat.com

COMMITTEE MEMBER
Peter Liptrot
bolnathist@gn.apc.org

SOUTHERN REP
Steve Pritchard
S.Pritchard@btinternet.com

CATERING DEPARTMENT
Mr & Mrs Morris and Mr & Mrs Ward

CAT CHAT EDITOR
Bill Hurst
bhurst@catfish.co.uk

DISTRIBUTION
Ann & Danny Blundell

SCIENTIFIC ADVISER
Isaäc Isbrücker

CAT CHAT
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From the Chair

Hi everyone, as I write, the final preparations are underway for this years' Open Show, Autumn Auction and next February's Convention. These events in our calendar are becoming more and more popular and I am quite confident that the trend will continue. (See the advertisements in this journal).

So what's been happening at the monthly meetings over the last three months? Well, we have made a change to the format of our meetings in that we have now schedule a catfish group for discussion at each meeting.

June: With the aid of a laptop computer and digital projector, three presentations were given, the first by yours truly showing a number of Loricariidae species which have all been allocated an 'L' number reference. Not being an expert in this area, I relied on other members present to point out the attributes and requirements for each of the species shown.

Danny Blundell gave two presentations on his experiences with keeping and breeding Sturisoma and Ansistrus. The new format was well received by all.

July: We dealt with the family Doradidae. Although a group of catfishes that do not seem to be as popular in the hobby as they were a couple of decades ago, the members were shown and consequently discussed quite a large variety of species that ranged in size from a four inch (10 cm) *Amblidoras hancockii* to a *Pseudodoras niger* that can grow to thirty inches or more (80 cm).

August: The subject matter was Asian Catfish. Danny and I compiled two selections of a variety of Asian species, some fairly common in the hobby and others quite rare. As always each species was discussed in depth.

We also had a first from Adrian Taylor who, up until that time, had never given a public talk. He gave us a very interesting and in-depth insight into the keeping and identifying of the small group of fish known as 'Moth cats', which was well received.

Convention 2005: We are moving up market to the Britannia Hotel, Standish, Nr Wigan (a map is published elsewhere in this journal). Here, we will not only be using the superb conference facilities for the convention on Sunday but also the hotel's excellent restaurant to hold our traditional convention dinner on the Saturday evening, where we entertain our guest speakers and generally have a good time.

All members are invited to join us for the Convention Dinner but a little nearer the time I will need to know the names of members wishing to attend so that adequate reservations can be made. Full menu details and prices will be made available in the December issue of Cat Chat and on the web site as soon as we have made the final arrangements.

Another major advantage in holding the event in a hotel is that members who travel a fair distance or those wishing to attend the Convention Dinner can take a room at a very reasonable price and make it a Convention weekend. Members and visitors wishing to book rooms should do so directly with the hotel making sure to indicate that they are there for the Catfish Study Group Convention.

Until next time, happy catfish keeping.

Ian Fuller

Just a little feedback on the food samples received. **Tetra** wafers: My C. paleatus, L177 and Ancistrus love them so much and even my rainbow fish try to get them. They keep their shape very well and don't foul the tank. Ancistrus has doubled in size in just six weeks (from 1-2in) and Corys are breeding on just the wafers (had to use bloodworm to get them to breed when I used Hikari wafers)

The **Aquarian** tablets: All the above fish loved them but as they make such a mess when they break up I only used them for a couple of days. I've continued to use the Tetra wafers which I now buy.

Richard

More success with the pellets, fed them to a group of *C.barbatus* that I brought last week, all pellets gone in the morning, fed a number of pellets to the other cats (and some c*****ds) and they all went the same way, will try some observed feeding behaviour this weekend.

Steve

I fed the **Aquarian** Catfish Pellets to 8 tanks today. Most of the fish went to the pellets right away. In a few tanks it took a little while for the fish to feed. I just checked all the tanks before shutting the lights and all food was eaten.

Mark

The Born again Fish House

By Ian Fuller

Back in the middle of March I came across a problem that would need sorting pretty soon. This was due to the fact that the bottom of most of the staging uprights were suffering from a severe case of wet rot and a collapse looked imminent. Drastic measures were needed. There was also a secondary problem in the form of ant infestation, which would mean removing some of the internal insulation.

A plan of attack was formulated which meant the work would be done in four sections, the first would be from the door, along the front wall and half way across the left hand end. The second section would be from the centre of the left hand end to a little way past the centre of the back wall, the third from the centre of the back wall to a third of the way along the right hand end and then the last section would be to complete the right hand end. It all sounded simple enough until I started.

The first task was to empty all the tanks on the front wall, but it soon became obvious that I did not have enough available tank space to house all the fish, which then meant I had to part with approximately 25% of my stock. With careful deliberation, stocks were sorted and re-housed in their temporary accommodation, the surplus to requirement fish were then sold on and the work started in earnest.

When the first section of staging was removed, the problems didn't look as bad as I first thought. Little did I know!

The staging along the right hand end was next in line for removal; this could only be done one half at a time, so again the tanks were emptied and the cross rails

cut so that the one section could be taken out. It was then that the real extent of the problem struck home. The rear staging uprights were not only suffering from 70% wet rot but they had also been perforated by ants.

To get to and remove all traces of the ants nest I had to remove the insulation, not a pleasant job, loft insulation is not the most friendliest material to work with. Once the insulation had been removed from the corner, it was obvious that the damp conditions were causing the same damage to the main structure as it had on the staging. It was at this point that I decided to systematically replace all of the insulation as I worked my way around the shed. The first thing was to cut out the worst of the rotten wood and graft in new sections, this was done, then with new insulation fitted and new plywood covering in place, I was ready to start fitting the new section of staging. It was then that I started thinking how long would it be before I would have to do the work all over again, the original had lasted for eight years and I did not fancy the idea of having to do it all again in another eight years or less. It was a visiting friend who came up with what I thought was the ideal solution; which was to put a covering of fibreglass over the whole of the inside, making it waterproof. Good idea I thought and then set about the task. The next thing I decided to do was treat the floor with a quality wood preservative and then fit sheets of 20 mm marine ply, that were two inches wider than the new staging, all around the shed fitted tight to the wall which would act as a small plinth and leave a shallow well in the centre of the shed for any water spillage to run into. At one end of this well a drainage hole was drilled and the sides sealed with resin to keep any water away from the underside of the floor.

The first section was duly completed with the fibreglass extending up to the eave of the shed; this was done to prevent the insulation and timber framework from being exposed to any water spillage from the top row of tanks. The first section of new staging was treated with preservative, installed and fitted with tanks, some of which were new. I had also decided to change the layout of the tanks, from tanks on all four sides, which was somewhat crowded, to two main banks one on each of the long sides of the shed. New tanks were custom made to fit the spaces available especially on the top row which were all made deeper and longer and are intended as stock tanks.

After three weeks of graft, sixty feet of 3" x 2" (75 x 50 mm) timber, 100 square feet of fibreglass matting, 10 gallons of fibreglass resin, 200 feet of fibre insulation and 8 sheets of 6 mm ply, the basic job was finished. The roof insulation was also replaced. For this I used a 50mm thick expanded poly foam sheet which I covered with 12 mm polystyrene tiles with 6 mm plywood sheeting over the top. All the edges, corners and joints were taped with an adhesive backed metallic sealing tape and to finish the job off, the whole surface was painted with white vinyl silk paint.

Once I started on the job there were a few other modifications that I decided to make to improve and in some cases automate the running of the fish house, these were: -

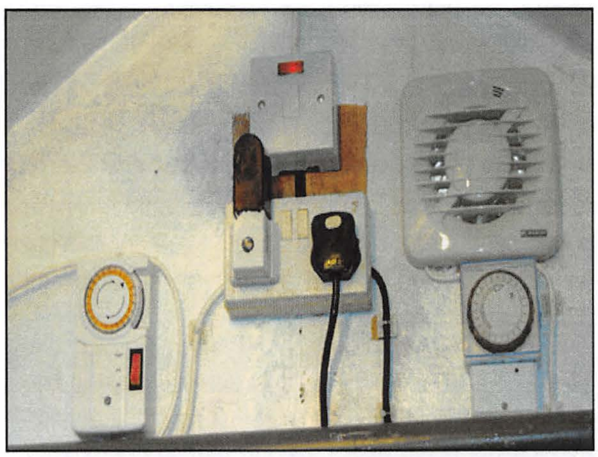
1) The air supply system replaced and the plastic adjusters changed for more reliable metal ones.

2) R/O and mains water storage vats were fitted with ball valves eliminating the need for hose pipes and covers.

3) The lighting system changed to a single economy bulb (florescent type) controlled by a timer and three 40w florescent tubes also controlled by a timer. The economy light comes on 20 minutes before and goes off 20 minutes after the main lights. The advantage of the eco light is that when it comes on it is quite dull and takes 5 minutes or so to attain its full brilliance making it less stressful to the fish.

4) A low wattage night-light has been fitted so that the fish house is never in total darkness.

5) A small extractor fan has been fitted in one end wall up near the apex of the roof and is turned on by a timer for 15 minutes in every hour; this helps reduce the relative humidity.



Whether or not all the changes help me to breed more fish remains to be seen, only time will tell.

Ian Fuller

CATFISH STUDY GROUP (UK)

Sunday 21 November 2004

Autumn Auction

Starts at 1300 hrs

at

St Elizabeth Parish Hall
Bolton Road
Aspull
Wigan

Booking in from 1030 hrs on the day
Pre-book by telephone on 01942 248130

Canteen

Tea, coffee, cold drinks, hot food sandwiches, cakes.

Rules:

Items for the fishkeeping hobby only.

All Electrical Goods must have a Name and Telephone number on them, together with the condition of the item i.e. Spares, Working Order, Faulty etc..

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.

Hamburg Mattenfilter

By Olaf Deters

Over the last few years, the use of the Hamburg Mattenfilter has spread widely in German speaking countries. Not in the least because of Olaf's site at http://www.deters-ing.de/. In this article I will explain the working of this filter technique, directions for construction will be given, and I will show calculations which can be used.

Use of aquarium filtration

First and foremost, filters are used for cleaning dirty water and to ensure proper parameters for our aquaria. The type of pollution and the amount of it will determine which filtration system is used. Because of limited space available in a typical aquarium setting, only a few types of filtration may actually be considered. All aquarium filters can be split into two groups:

1. Strict mechanical filtration

2. Biological filtration

Just to be correct, it should be noted that the actual filters we use are usually a mix of both groups. A mechanical filter will be home to biological filtration and a biological filter will clear the water because of the removing of particles. These groups can be divided into two more subcategories:

1. Internal filtration

2. External filtration

Over the past years, the aquarium world has accepted the conclusion that biological filtration is in fact superior to mechanical filtration. However, it must be noted that most of the filters currently in use are in fact more mechanical than biological units.

What's the difference?

A mechanical filter, with its powerful pump and dense filter medium, will remove particles from the water. These particles remain in the filter and this should be cleaned regularly to prevent clogging the medium. There is little or no biological filtration of the water because essential criteria for this are not met (more about this later). Especially the older models of the known canister filters belong to this category. I would therefore prefer to speak of mechanical filtration only, if frequent cleaning of the filter medium is necessary.

These filters contribute little to the establishment and stabilization of the biological environment in the tank, which is a disadvantage and I see it as a source of many problems in the aquarium.

A biological filter, on the other hand, is characterized by its relatively low throughput. It is true that these filters also remove particles from the water, but only those that are free floating in the water column which because of their low specific weight, can be caught and transported by the low suction of the filter. The effectiveness is based on bacterial activity in the mulm. But biological filters also perform the task of mechanical filter; they should be able to remove suspended particles from the water. Because of this limited suction of the biofilter, it is inevitable that part of the reduction should take place in the aquarium itself. These substances should be predigested, so to speak. Not that the biofilter is not capable of performing this task, it is just that these larger organic waste products (food leftovers, leaves) never get to the filter in the first place because of the low current involved.

Nitrogen cycle

A bit if theory is unavoidable, but I would like to keep it short. Biological filtration is based on bacterial activity. These bacteria change waste products into other substances during several processes. There is a type of bacterium for every step of the way. The required bacterial colonies will grow unaided and will - slowly - adapt to changing bioload in the aquarium environment. Which species actually grow differs from one tank to another. This chain of individual processes together is called the nitrogen cycle. Nitrates are produced at the end of the nitrogen cycle. There is insignificant further processing of nitrates in the aerobic (containing oxygen) biofilter and this nitrate should be removed by means of water changes.

Nitrogen oxidation is a so-called aerobic process, which means that these bacteria depend on the presence of oxygen. Primarily, the source materials for these bacteria are organic nitrogen compounds, urine and phosphate and ammonium. These originate, for example from fish food, plant material, dead snails and fish, fish waste and so on. In short, all biological waste products in the tank produce nitrogen compounds.

During this chemical change by several bacteria, ammonia (NH_3) and/or ammonium (NH_4) is released. This is oxidized into the dangerous nitrite (NO_2) and after another step this produces the relatively harmless nitrate (NO_3). Between these individual steps there are other substances in between. Another product is CO_2. Under anaerobic conditions, further reduction of nitrates is possible, resulting in nitrogen gas. The circumstances required for this process are generally highly undesirable in an aquarium and seldom occur.

So for the time being nitrate is the end product of the nitrogen cycle. This is measured in mg/l. Values between 10 and 50 mg/l are common in our tanks. These are values that usually aren't catastrophic but could be too much for certain species of plants and fish. (German law accepts a maximum value of 50 mg/l. Values higher than this could lead to damage with sensitive small children under certain circumstances, USA jurisdictions tend to accept 40 mg/l). It should be our goal to keep nitrate under 20 mg/l. This should ensure that nitrates will not be the cause of problems.

Seldom and usually undesirable: de-nitrification.

When oxygen values get low, certain bacterial species will switch from using oxygen to using nitrates. This leads to nitrate reduction. Nitrate would be reduced to nitrite again. This is a dangerous material for fish in any substantial quantity. This is done on purpose in large water processing plants, but it can be done because the water can be allowed to release its gasses prior to further treatment in the next stage. A bacterial reduction of nitrates can be done for your aquarium, using specific filtration equipment. This process needs water that is depleted of oxygen, which is only possible at the cost of very low throughput. This in turn means that it is not possible to use a nitrate filter as an "afterburner" in a conventional aerobic filter. After the occurrence of nitrates it is Game Over! Time for water changes.

The filter medium

The most important part of the filter is the medium. This is where the bacteria should do their work. That is why we need to provide them with a material they can colonize and which is in a permanent flow of the water that needs filtering. Large numbers of bacteria are required, which means that we need a large surface area in the filter medium. This can be achieved by selecting a material that has many holes and capillary pores. These will increase the total surface area for a given volume of filter material.

The size of these holes and pores should not be too small, because the bacteria would otherwise block them or even wouldn't fit in at all. These bacteria range in size from about 10 μ (1 micrometer = 10^-6 m) down to 200 nm (1 nanometer = 10^-9 m). Just to compare: if 1 mm were 1 m, then 10 μ would be 1 cm and 200 nm = 0.2 mm.

When holes and pores are so small that bacteria do not fit in anymore, only the outer surface remains to be colonized by them, even if the substances these bacteria require still fit in because they are essentially micro molecules.

The extra price for these smallest capillaries and enormous inner surface is money down the drain. According to some critics, this is the case with some filter media being sold in this country. The suggested enormous surface area is therefore nothing but a marketing trick, and evidence is still lacking in support of these claims.

What to do with high nitrates?

Before going into this, it should be made clear which values should be labeled "high". It is possible that a value of NO_3 = 5 mg/l is too low for plants like Eichhornia azurea or Chinersia. For other plants, like Cryptocoryne rosanervigae, this would be about right.

The NO_3 level is relatively unimportant, as long as it doesn't go into extremes. Values higher than 75 mg/l could damage eggs and fry because of influencing internal oxygen processes. I mean, a value of 15 mg/l on average can be seen as an acceptable amount of NO_3. If the nitrate value is too high, it should be determined if this is a permanent situation or just a temporary rise. After a particularly heavy feeding for example, or a dead fish in the tank, levels could rise for a while. More dangerous because it may go unnoticed, is a situation where suddenly all snails in the substrate die, for example after a water change with water that has too much copper in it. In any case of a temporary rise in nitrates, a partial water change is a good thing to do, while at the same time protecting your bacterial flora. So don't siphon out all of the mulm at once. It is exactly in this mulm where your bacteria are who convert the nitrogen surplus. If it is a more permanent situation, then the filter itself probably isn't functioning as it should. This could be caused by a number of reasons.

The meaning of flow rate

As discussed above, the nitrogen cycle is a bacterial process. Bacteria change one chemical substance into another. An important prerequisite for this is sufficient time for them to actually do it. It should be clear from this that the time needed for the water to pass through the filter medium is of critical importance. Ideally, the water would stay in the filter long enough for all processes to complete. But there is another very important factor: the velocity at which the water passes these bacteria. In water clarification plants, it is assumed that bacteria will hold their substrate up to a velocity of 30 cm/minute, or at least be allowed to perform their tasks unhindered. If this velocity increases to higher levels, so does the tendency of the bacteria to go look for a less stormy place. They will release from their substrate and settle elsewhere in the aquarium. It is true that most sessile bacteria live in a protective layer of slime, but its protection will not endure high water flow.

This is exactly the point where mechanical filters differ from biological ones. A biological filter cannot perform its task quickly because of this reason. It is simply impossible. In my experience lies the correct velocity between 5 and 10 cm/minute. These values should not be seen as holy gospel. It is not a disaster if calculations should produce a value of 3 cm/minute or 15 cm/minute. There are other factors that could influence the calculated values somewhat. It means that the values between 5 and 10 cm/minute are a nice target, lower being better. This value has shown to be an excellent level in practice. To be correct it should be mentioned that the actual water flow at bacterial level is somewhat higher because of the small capillaries involved. This is the same for power filters, however. This is why the 5-10 cm/minute level should be an acceptable one.

Sizing a Mattenfilter

There is a direct relation between water flow, pump capacity and filter surface. A direct result of this is the time it takes to make a single pass through the filter. This time is also related to the thickness of the filter medium. Increasing thickness means more time required. With the Mattenfilter, it can safely be assumed that the actual oxidation takes place in the first one or two centimeters.

With filtration there is a direct relationship between velocity of water flow (surface area of filter mat) and pump capacity per hour. When sizing a pump and/or a filter mat, the pump is defined first. Twice the tank capacity per hour is a good average. It doesn't matter whether it is calculated with or without substrate thickness. I always use the nominal volume. For a 200 litre aquarium, the pump capacity should be around 400 ltr/h. Calculation is done with maximum pump capacity because there is little or no head involved.

Now that we have a pump capacity available, a desired velocity will result in the surface that is needed for the Mattenfilter. This is around 1000 cm2. But because a 200ltr aquarium has a side surface of 40x50cm=2000 cm2, this means that the actual water flow will be around 3 cm/minute. So a pump one size bigger should be selected for the job, even if this means that the water will flow at a faster rate than two tanks per hour. This is how you determine the correct combination of pump capacity and size of the filter mat.

The other method uses the available surface for filtration. Usually one of the sides of the aquarium is used and this means a fixed surface. Using the desired water flow through the medium then produces the required pump capacity. This will result in a certain number of tank volumes per hour filtered.

Calculations

Here are some formula's to do your own calculations:

A = surface filter mat
V = flow rate
Q = amount of water filtered
n = number of tanks filtered per hour

Flow rate in the filter:

This one is used to calculate the throughput velocity in the filter.The factor thousand relates to the fact that 1 liter = 1000 cm3. This should be taken into account to remain constant in the formula.

By formulating it as follows:

$$V\,[\mathrm{cm/Min}] = \frac{Q\,[\mathrm{ltr/Min}] * 1000}{A\,[\mathrm{cm^2}]}$$

the result is the required pump capacity, relating to the available filter surface and the desired flow rate. Divide by 1000, to go from cm^3 to litres. Multiply by 60 to get from ltr/minute to ltr/h.

The dwell time is then calculated by dividing the thickness of the mat by the throughput:

$$Q\,[\mathrm{ltr/h}] = \frac{60 * A\,[\mathrm{cm^2}] * V\,[\mathrm{cm/Min}]}{1000}$$

The required surface for the filter is a result of:

$$T\ [Min] = \frac{d\ [cm]}{V\ [cm/Min]}$$

This formula enables you to calculate the size of the required mat with a given filter capacity and a desired flow rate.

Tanks per hour: 1-2 times the content of the aquarium should go through the filter. This value has proven to be a desirable one. When the flow goes below 1 tank per hour in an aerobic filter, a rise in ammonium is possible because bacterial reduction of waste is no longer 100%.

$$erf.\ A\ [cm^2] = \frac{n * Q\ [ltr/h] * 1000}{V\ [cm/Min] * 60}$$

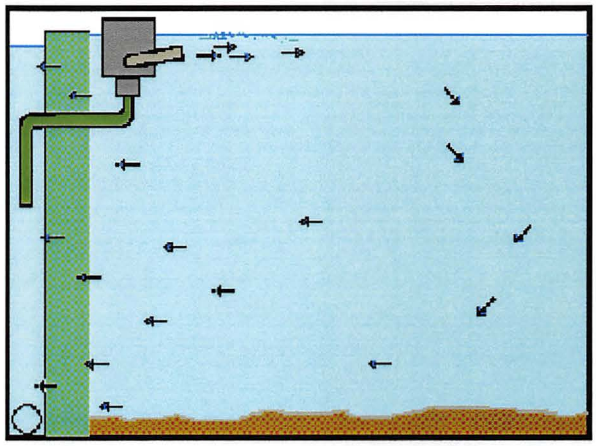
Flow rate: 5-10 cm/minute has shown to be an optimum throughput. It doesn't matter much if the actual value is 2 or 18 cm/minute. There are other parameters anyway that were not taken into account, causing a higher flow rate through the pores of the filter medium in reality. This is exactly the reason to keep the flow rate at a low level.

Construction of a Mattenfilter

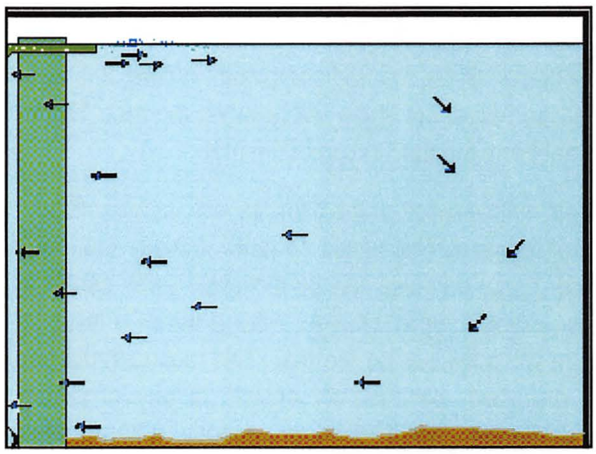
Having done the calculations for a tank, it should be clear that a larger filter surface is needed than available in conventional filters. A Hamburg Mattenfilter is made of a foam mat, inserted vertically in the tank, about 2 cm from the side wall. This distance can easily be realized by putting a piece of tubing between the foam and the glass, or any other suitable blocking.

Because of this distance, a water reservoir is created behind the mat. If the mat sits too close to the glass, the only water that would actually move, would be the water around the intake of the pump, and much too fast also. It is desirable to use the entire surface of the mat, with the exception of the water below substrate level. This can be left out.

Drawing 1 shows a construction of a Mattenfilter using a simple powerhead. The circle at the bottom is a piece of tubing, used to maintain a distance from the



side glass. The distance is about 2 cm. It should not go below 1 cm, to ensure proper water flow through the entire filter. In this case, the pump is connected to the back wall using suction cups. Some PVC tubing is used to pump the water from behind the mat and back into the tank again, just below the surface. The surface agitation can be regulated of course. The required hardware for this setup should be available in any serious aquarium shop. I particularly like products from the "Hobby" company. The hole in the foam can easily be made with a knife.

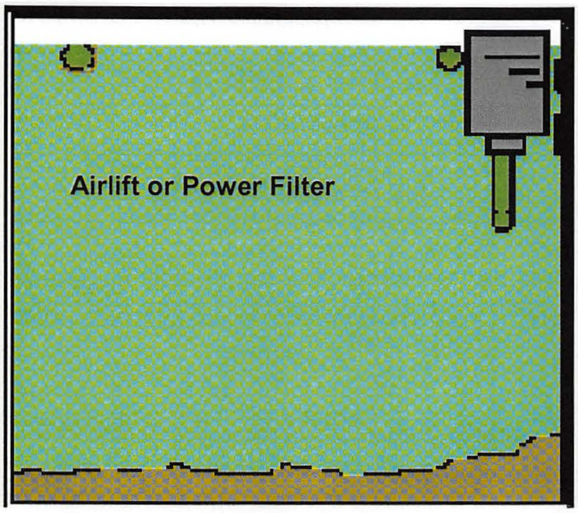


Drawing 2 shows a setup powered by an air pump. The air lift sits behind the mat. The exit tube sits in a carved out slit at the top of the mat and sticks out 5 cm to ensure that small fish will not crawl through. Some species seem to like this. These animals almost seem hypnotized by the current and are drawn into it.

It is very well possible to hide the heater and the thermometer behind the filter. Other hardware, for measuring pH or redox for example, may be installed here, also.

Here a frontal view of the filter. Both varieties are shown.

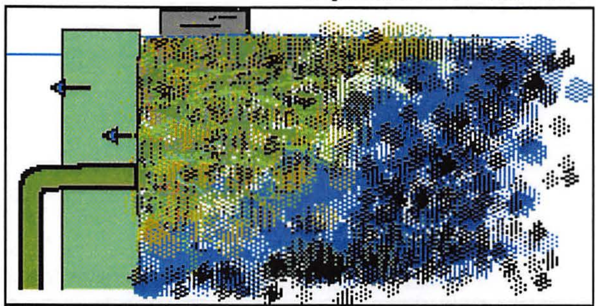
Usually, the new foam is blue. This bright blue



changes into a more calm brown/green with time. If this effect does not occur, it is safe to assume that the bacteria have not colonized the foam yet. These bacteria need a few weeks for that. Mats with a coarse structure seem to take a bit longer for the first bacterial colonization. After that there seems to be no difference with finer grade mats.

These mats can easily be planted with Java Moss. Just stick a bit of moss between the foam and the glass. The moss will grow well when left undisturbed. The pump will be covered completely in time. It is also possible that some algae will grow on the mat. These do not harm the functioning of the mat.

Direct maintenance of the filter, as with canister filters, is not required. This would do more damage than any good. Large particles can be siphoned away carefully when doing a water change. After a while, a layer of mulm will build behind the mat. This mulm should not be disturbed, because it consists largely of highly desirable bacteria. If cared for properly, a Mattenfilter should last many years. Only when the mat shows some serious signs of aging, recognizable by a huge difference in water level between the tank and the water behind the foam, can the foam be removed and washed. But reaching that stage should take some years.



Drawing of growth on a Mattenfilter.

Areas of use / performance limits

Type of aquarium and size:

The Mattenfilter can be used for fresh water tanks. It can be used for the smallest fry tanks up to aquaria containing over 1000 liters (~264 US gallons). The deciding factors remain 1-2 tank volumes per hour and 5-10 cm/minute flow rate. With large mats special care should be taken to ensure stability of the foam. The total pump capacity can be made up by multiple pumps and the return flow of the water can be setup to avoid dead zones in the aquarium.

Bio load:

When the bio load gets too high, a Mattenfilter won't be able to handle the situation and both NH_4 and NO_3 will be detectable. This is only known from tanks with an extreme bio load. On the other hand, a Mattenfilter needs a certain minimum load of organic compounds i.e. fish food and waste. If this is too low, the filter mulm mass will be reduced and the bacteria are too widely spaced, and a lot of water will pass through unfiltered. This too could lead to problems.

Because of a lack of time, some of my killi tanks (25 liters each) are running empty, and algae growth can be seen. In well stocked tanks with a proper feeding regime, this should be rare.

In my opinion, a stable aquatic environment depends on the available mulm. More mulm means more stability. Mulm is a result of some organic load. This means that a certain bio load is needed to build up and maintain this mulm. This is a deciding point in successful aquarium keeping. In an established filter there is such mulm, and that is the actual point of a Hamburg Mattenfilter.

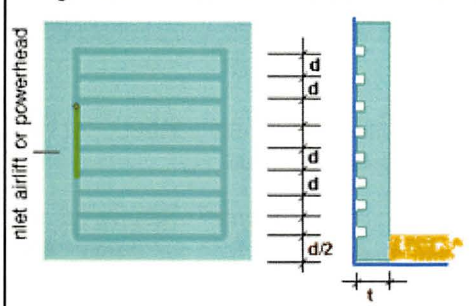
I think a certain amount of mulm in the aquarium on the substrate and among the plants should be there and be tolerated. In normal tanks this is usually the case. The reason being that coarse particles, like plant material and surplus food, first have to be predigested to be able to get to the filter in the first place. This predigestion is a result of the presence of bacteria and other micro-organisms, snails and bottom dwelling fish too. If this predigestion is absent, the best bio filter in the world is not going to work. It is therefore not some unique quality of the Mattenfilter.

Alternative construction

Many people who show interest in the Mattenfilter, are concerned by the idea of losing so much space in the aquarium. From my experience I can only say this is space well spent. If the aquarium is setup in a reasonable fashion, concerning fish load and feeding for example, the Mattenfilter will contribute to a biological stable environment. This should be worth something.

Space saver mat:

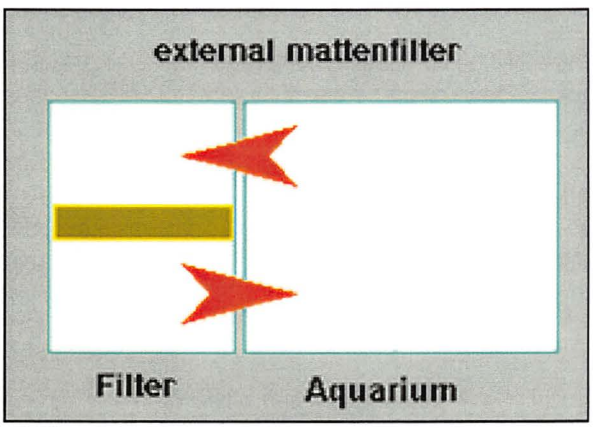
Space saver mat with channels carved out



Channel width between 0.5 and 0.75 inch. Near the inlet tube possibly a bit more. Distance between channels max. 1.5 times the thickness of the mat. Distance from sides max 0.75 times the thickness of the mat.

My smallest tanks are no bigger than 5 liters. These are photo tanks. I have used a construction there whereby the channels for transporting the water are carved out of the back of the foam, rather than leaving 2 cm between mat and glass.

External Mattenfilter:



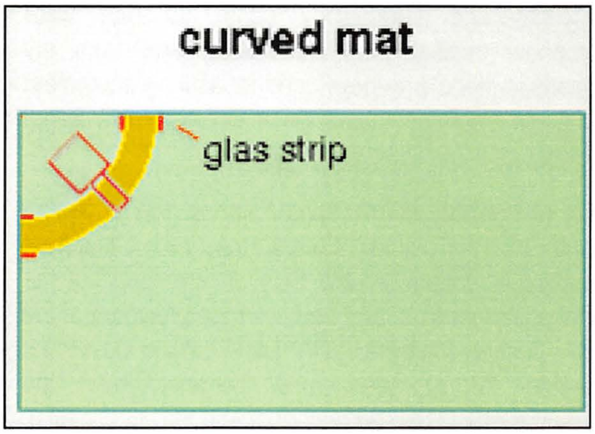
Other aquarists have moved the Mattenfilter out of the tank, into a second tank, i.e. a sump. If the balance between the size of the combined tanks, the flow rate and amount of water filtered is preserved, there really is no argument against this sort of setup. With some DIY it could even be possible to hide a sump setup underneath the tank.

Mats in a row:

A popular item for discussion, but guaranteed not to work, is a setup of several smaller mats behind each other in a row. It is true that this provides the correct surface, but the flow rate would be too high. It won't work. Another reason is the fact which I mentioned before that the biological reduction actually takes place in the first few centimeters of the medium. Any more than that won't do much. It's no use, the mat should have the appropriate flow surface.

Curved mat:

It is also possible to squeeze the mat into a curved position in a tank's corner, as a quarter or half circle setup. The mat is held in position by vertical glass strips. These 3 cm wide strips are siliconed to the glass walls in such a way that they hold the mat tight.



The radius should be calculated to have the required surface. The actual curve should not be too small, because the inside of the mat is compressed somewhat and will slow down the water flow a little. How far you can go depends on the actual type of foam used and its thickness.

History

The Mattenfilter itself is quite old. As far as I know, it was already in use with German breeders in the sixties. Most of them were in the area of Hamburg, where local breeders had spread the word around.

A presently well known aquarist then entered the aquaristic scene. Based on his scientific study and interest in deeper biochemical relations in the aquarium, he quickly recognized the working and efficiency of this filtration method. Over the years he has promoted this at many seminars, but opinions remained mixed. Some people got it. Others still trusted the high tech solutions. Concepts like Bio and Eco weren't exactly hot items in those days. And years went by...

One day, I came into contact with this particular aquarist. Being a student at the time, I was chronically short on money. The discovery of this filtration method was a gift for me. It was cheap and simple, "optimal" so to speak. I built these filters without having to install expensive canister filters and was able to increase the number of my tanks. This filtration method convinced me more and more. Others weren't convinced, however. They still relied on technical solutions and tried all sorts of magical media and constructions to outsmart Mother Nature. A lot of effort should obviously bring a lot of results. Many still see it that way today...

Years went by and someone gave me a diploma. Part of my study involved a closer look at sewage treatment plants. More accurate might be 'smelly bits'. Apart from lectures we also visited some plants. More and more concepts and terminology came up that were somehow familiar from aquaristics, and from my aquaristic friend who developed measuring equipment for these treatment plants as a chemist for a living. Slowly the whole thing came full circle.

The Mattenfilter hadn't spread far in the aquarium world by that time. Enters the next important meaningful person. At the time he was head of the local aquarium club, and presently the president of the VDA: Jochen Matthies (VDA: Der Verband Deutscher Vereine für Aquarien- und Terrarienkunde, the organization of German aquarium and terrarium clubs). He decided in his direct manner that yours truly was going to build a website. The VDA had to keep up with modern times and connect to the internet. That was 1997. I set out to create the desired pages. Some might even remember these first steps on the net. This building and writing became more and more fun for me to do and as a result of all this surfing and the aquaristic half, I wanted a homepage of my own. A site that would not just show pictures of tanks with a list of inhabitants, but would have some practical use for readers. What would be better than describing the Mattenfilter? An engineer sees things differently from chemists or biologists. I have therefore done some technical "research" an keeping in mind the biochemical aspects, this resulted in the texts and formulas we know today.

This means that the descriptions here are a direct result of two points of view, the biological and the technical points of view. From then on the Mattenfilter established itself and managed to crawl its way out of breeding rooms in the living room aquaria.

Some aquarists like to DIY and try to change the Mattenfilter and reduce its size. Usually as a result from the idea that it looks bad and takes up too much space. Myself, I cannot really quite follow this. A mat can be integrated into the tank visually and the advantages of an internal Mattenfilter are clear. No more tubes, fry food and leaf collections at the filter intake.

But all this is allowed and possible, as long as the main principle of accurate water flow throughout the mat is recognized. It doesn't matter whether the mat is constructed vertically or horizontally, whether it is dark or light, whether the pump is behind the mat or in front of it. Exactly this makes the Mattenfilter so brilliant. No matter how you mess around with it, you always return to this principle.

I wish to thank Olaf Deters for his permission to do this translation without even knowing us.

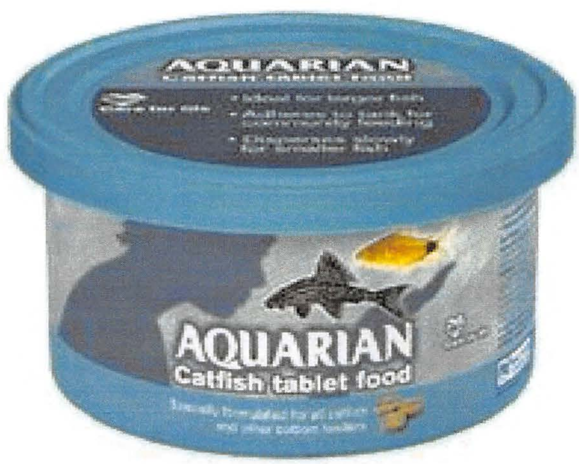
And above all I wish to thank Robert T. Ricketts for his review sessions. He deserves credit for turning this into a proper article. If there is anything you would like to know, any question or statement that you might have. Mail me.

Cheers,

Jan

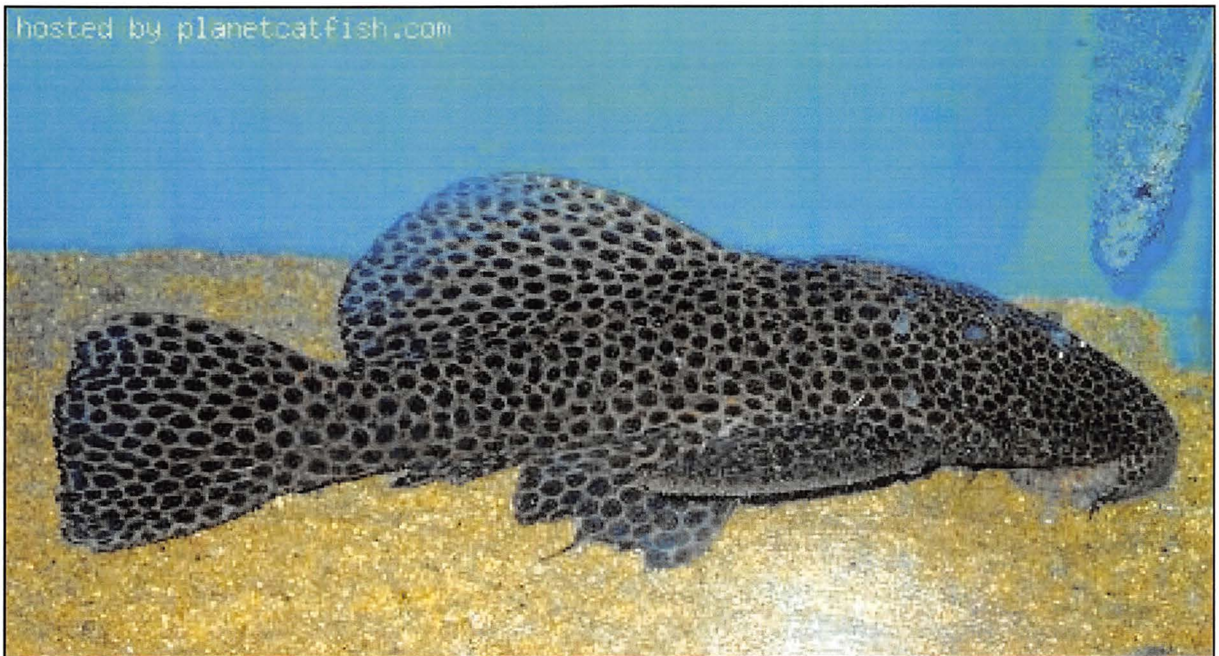
Written by Olaf Deters

Translation courtesy of Jan Rigter



Some notes on the natural diet of *Megalancistrus parananus* – Part 2

by Lee Finley



The Images in this article are courtesy of http://www.planetcatfish.com

In the March, 2004 (Vol. 5, No.1) issue of this magazine I presented an article dealing with the natural diet (predominately sponges) of *Megalancistrus parananus* in the Parana River of southern Brazil. [In regards to the species name usage herein, please refer to my original article]. The area in which the sponge feeding observations were made is considered a transition zone between the Parana River and the huge Itaipu Reservoir. Subsequent to submission of the initial article I came across an article dealing with the diet of *M. parananus* (as *M. aculeatus*) in the Itaipu Reservoir, and I would like to comment on the results herein.

The Itaipu Reservoir is by any set of standards a huge man-made body of water. It stretches for 150 kilometers and in all flooded over 1400 square kilometers of land. As you might imagine the changing of a river (and its many feeder rivers and streams) in this way can create a wide variety of impacts on the existing fish fauna. Many species may disappear rather quickly from the impoundment, while others may thrive. Others may just hang on for some time, their fate uncertain until long range studies are complete. The general trend in the Itaipu Reservoir (based on a study conducted from late 1983, a year after formation, to early 1989, Hahn, et. Al, 1998) showed an increase in the number of species of aquatic insectivores, but a decrease in herbivores and piscivores. But, species numbers do not tell the whole story. Biomass studies, or the numbers of fishes present, in the reservoir showed, for instance, that terrestrial insectivores and piscivores actually had a larger biomass in the reservoir than in closely associated rivers. Benthivores and detritivores also showed a decrease in biomass in the reservoir as opposed to related river areas. Part, but certainly not all, of this is related to a changing of diets by some species that were able to adapt to the impounded conditions. Unfortunately, there were very few studies done on the natural diets of the fishes in the affected section of the river prior to reservoir completion. So, no baseline is available for many fishes. [Note: Such before and after dietary studies are available for some tropical dam areas, and in a future article I will take a look at the effects that the Brazilian Tucurui Dam on the Tocantins River had on the diets of catfishes].

Megalancistrus parananus was one of the species classified as a "Detritivore" in the reservoir study. The given definition of a detritivore basically encompassed fishes that fed on large amounts of broken down plant

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,Q WKH VWXG\ P DMRU GHWULWDO WURSKLF FRP SRQHQWV ZHUH XVHG ,Q 0 SDUDQDQXV RQO IRXU RI WKHVH ZHUH IRXQG WR EH SUHVHQW) RU HDFK IRRG JURXS D VFRULQJ V\VWHP UDQJLQJ IURP]HUR DEVHQWWR WKUHH SOHQV P DMRU GHWULWDO LWHP ZDV XVHG 7KH UHVXOWV IRU0 SDUDQDQXV ZLWK VRP H FRP P HQWV DUH DV IROORZV

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Unicellular algae. Self e lanator . n river s ecimens this source as less than 1 of the diet.

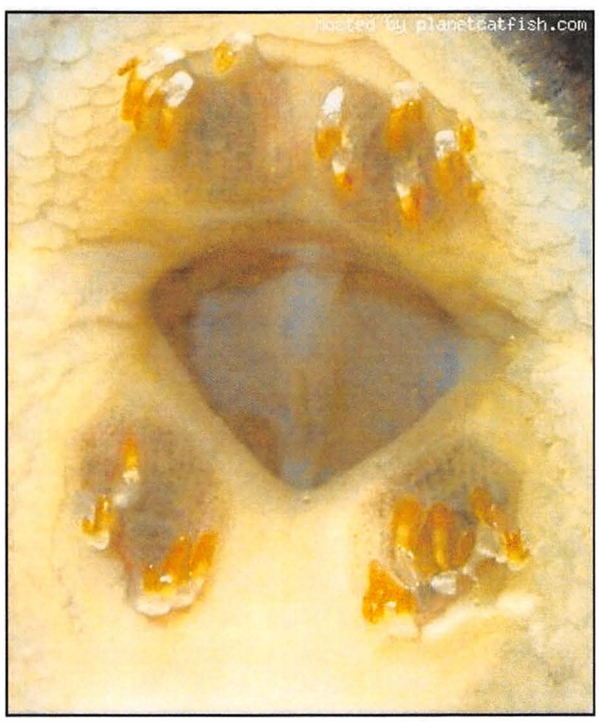
Other invertebrates. his as not further s ecified, but based on other categories used it ould most li el encom ass roto oa, nematodes and mollus s among other items. No microcrustaceans or insects a uatic or terrestrial ere observed in the diet of M. arananus. Less than 8 of the diet of river s ecimens consisted of such items Br o oa .

he fact relating to the decline of detritivores in the tai u Reservoir seems to fit ell for M. arananus. n the reviousl mentioned arana River stud it as sho n to be a highl selective carnivore feeding redominatel on s onges. he o ulation s that as left in the reservoir a ears to have been de rived of a rimar food source and has undergone a ma or dietar change becoming rimaril a detritivore hich encom asses a small amount of invertebrates . his ma not bode ell for the long range success of M. arananus in the reservoir habitat. t might eventuall com letel disa ear, or a small o ulation ma lim along ada ting to a different diet. Or ossibl , ne and better food items might be incor orated into its diet ma ing it better able to com ete and thrive under the ne conditions. ime ill tell.

n an case, for a uarists ishing to ee this s ecies, ee in mind the dietar information resented in the first art of the short series and concentrate on a higher rotein diet.

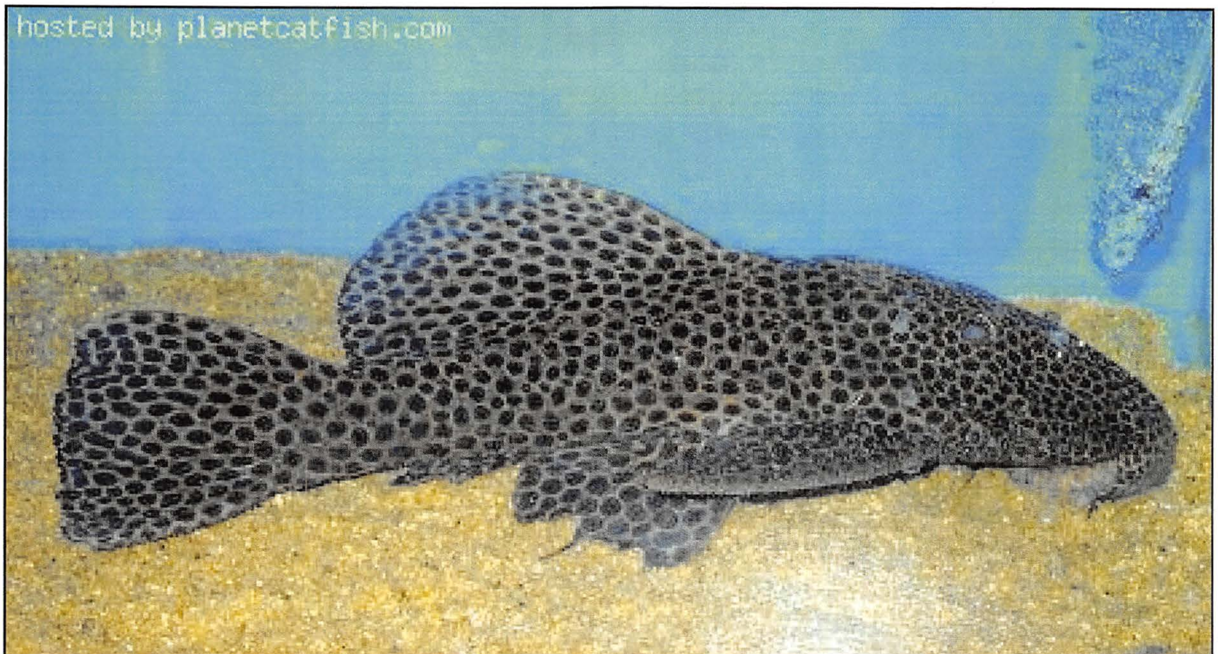
References and Suggested Reading

Hahn, N.S.; Agostinho, A.A.; Gomes, L.C. and Bini, L. M. 1998. strutura trofica da ictiofauna do Reservatorio de tai u arana Brasil nos rimeiros anos de sua formacao. nterciencia 99 .



Some notes on the natural diet of *Megalancistrus parananus* – Part 2

by Lee Finley



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In the March, 2004 (Vol. 5, No.1) issue of this magazine I presented an article dealing with the natural diet (predominately sponges) of *Megalancistrus parananus* in the Parana River of southern Brazil. [In regards to the species name usage herein, please refer to my original article]. The area in which the sponge feeding observations were made is considered a transition zone between the Parana River and the huge Itaipu Reservoir. Subsequent to submission of the initial article I came across an article dealing with the diet of *M. parananus* (as *M. aculeatus*) in the Itaipu Reservoir, and I would like to comment on the results herein.

The Itaipu Reservoir is by any set of standards a huge man-made body of water. It stretches for 150 kilometers and in all flooded over 1400 square kilometers of land. As you might imagine the changing of a river (and its many feeder rivers and streams) in this way can create a wide variety of impacts on the existing fish fauna. Many species may disappear rather quickly from the impoundment, while others may thrive. Others may just hang on for some time, their fate uncertain until long range studies are complete. The general trend in the Itaipu Reservoir (based on a study conducted from late 1983, a year after formation, to early 1989, Hahn, et. Al, 1998) showed an increase in the number of species of aquatic insectivores, but a decrease in herbivores and piscivores. But, species numbers do not tell the whole story. Biomass studies, or the numbers of fishes present, in the reservoir showed, for instance, that terrestrial insectivores and piscivores actually had a larger biomass in the reservoir than in closely associated rivers. Benthivores and detritivores also showed a decrease in biomass in the reservoir as opposed to related river areas. Part, but certainly not all, of this is related to a changing of diets by some species that were able to adapt to the impounded conditions. Unfortunately, there were very few studies done on the natural diets of the fishes in the affected section of the river prior to reservoir completion. So, no baseline is available for many fishes. [Note: Such before and after dietary studies are available for some tropical dam areas, and in a future article I will take a look at the effects that the Brazilian Tucurui Dam on the Tocantins River had on the diets of catfishes].

Megalancistrus parananus was one of the species classified as a "Detritivore" in the reservoir study. The given definition of a detritivore basically encompassed fishes that fed on large amounts of broken down plant based organic material and small amounts of various invertebrates. The number of *M. paranaus* used in the study was quite small consisting of only five individuals, which ranged in size from 14.3 to 44.5 cm S.L.. This small number is most likely a factor of the decrease in the reservoir biomass of detritivores as noted above.

In the study 10 major dietary (trophic) components were used. In *M. parananus* only four of these were found to be present. For each food group a scoring system ranging from zero (absent) to three plus (major dietary item) was used. The results for *M. parananus*, with some comments, are as follows:

1 **Sediment**. Sediment was not actually discussed specifically as a "food" item in the study, and its nutritional value must be open to question. Some parts of it may offer value to the fish ingesting it, but all in all, it is most likely not a satisfactory item on which to anchor a diet. In the study, which showed sponges as the primary food item, for instance, sediment made up only slightly over 10% of the diet of *M. parananus*.

2 **Detritus.** This is basically defined as broken down plant material mostly, but not necessarily, of terrestrial origin. In the river specimens noted in part one this item comprised a bit less than 18% of the diet.

3 **Unicellular algae.** Self-explanatory. In river specimens this source was less than 1% of the diet.

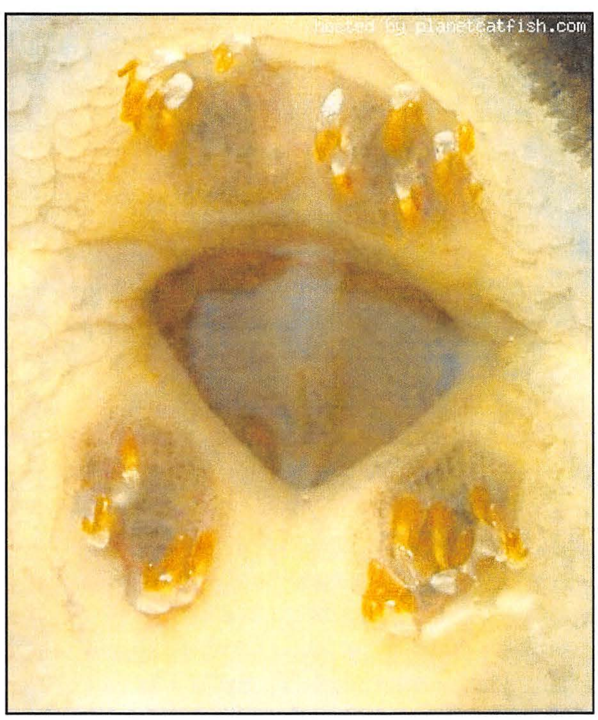
4 **Other invertebrates.** This was not further specified, but based on other categories used it would most likely encompass protozoa, nematodes and mollusks among other items. No microcrustaceans or insects (aquatic or terrestrial) were observed in the diet of *M. parananus.* Less than 8% of the diet of river specimens consisted of such items (Bryozoa).

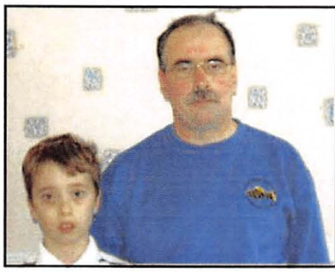
The fact relating to the decline of detritivores in the Itaipu Reservoir seems to fit well for *M. parananus*. In the previously mentioned Parana River study it was shown to be a highly selective carnivore feeding predominately on sponges. The population(s) that was left in the reservoir appears to have been deprived of a primary food source and has undergone a major dietary change becoming primarily a detritivore (which encompasses a small amount of invertebrates). This may not bode well for the long range success of *M. parananus* in the reservoir habitat. It might eventually completely disappear, or a small population may limp along adapting to a different diet. Or possibly, new and better food items might be incorporated into its diet making it better able to compete and thrive under the new conditions. Time will tell.

In any case, for aquarists wishing to keep this species, keep in mind the dietary information presented in the first part of the short series and concentrate on a higher protein diet.

References and Suggested Reading

Hahn, N.S.; Agostinho, A.A.; Gomes, L.C. and Bini, L. M. 1998. Estrutura trofica da ictiofauna do Reservatorio de Itaipu (Parana-Brasil) nos primeiros anos de sua formacao. Interciencia 23 (5): 299-305.





MEET THE MEMBERS

Adrian W. Taylor (Member 74) & son Francis

Adrian

As a child our family always had the odd gold fish or two, usually won on a fairground stall by my dad. Because my father had a thing about the parents ending up looking after their children's pets, I was always told not to ask for pets because he wouldn't allow it.

The junior school that I attended always had a tropical freshwater tank in the main lobby which, on rainy days, I could always be found looking at and although I wasn't a naughty child I wasn't the teachers pet either. No matter how many times I asked the teacher if I could help to look after them, the job went to her favourites, so I had to make do with knocking on a family friends house and asking to see their fish.

When I reached 16, my father asked what I would like for my birthday, I told him I didn't mind what he and mum got me. This went on for a couple of days, until dad asked me if there was anything I had always wanted for my birthday but had never asked for? This was my chance so I told him that I had always wanted tropical fish and still did. To my surprise he said "Well you had better have one then", and that's how I got my first tank.

It was 30inches x 12inches x 15inches, had separate heater and thermostat, a under gravel heater, the light was provided by two normal 40watt bulbs (which I wired in myself). A family friend gave me my first fish, which were guppies,

After a few weeks I added along the way some Mickey Mouse platys, a couple of bronze Cory's and a pair of Pearl Gouramis. I also joined a local society, but when I came of age (or just before), I discovered that beer was the best thing ever invented, and although I kept a couple of tanks, the biggest being 5ft by 2 by 2. I was still happiest at that time drinking beer and playing darts.

However, when adulthood sets in and one settles down I concentrated more on fish than the beer. The first catfish I ever spawned was Corydoras pygmaeus and since then I have bred other Corys and I am still trying to spawn a few more sorts of Cory and Aspidoras. The only other types I have bred are the Hoplo cats and in the last couple of years have bred some erthistidae,

These small Asian catfish first took my fancy about 5 years ago when I purchased what was then labelled hara hara and I have since bred two different types. At present I am trying to breed a couple more types and hopefully I can get some notes on them published in forthcoming Cat Chat journals. I had at one time 52 fish tanks and bred quite a few other species of tropical fish and passed the Federation of Northern Aquarists Diploma of Master Breeder which took around two years to achieve.

Due to me having major surgery about the time of my 41st birthday, my health dictated that I reduced the amount of aquaria I kept and I am now down to 34 tanks. (I have to confess though; I reduced the size of the tanks as well).

My son Francis is only ten years old and for without his help at times, I would find it hard to manage so many. So, a big thank you to you Francis.

Francis

My name is Francis Taylor and I am 10 years old; I first got into fish keeping when I was about 6 years old. The two catfish I like are Corydoras panda and the Bristlenose. I had a small tank with some catfish in it and I did my own water changes with a bucket.

Now I'm older I've got a bigger tank and a bigger bucket and I can now do water changes on my dad's big tank in the house. I have also won the Best Junior exhibitor trophy at the last Catfish Open Show.

Not had a chance to use the **Aquarian** tabs 'til recently but all my Cories love them. They were a bit reluctant at first (as usual with different food) but now scoff them with gusto!

I'm also feeding a batch of Sterbai fry with microworm and crushed tablets (they're much easier to powder than flake). The fry are showing excellent growth at 3 weeks old.

All in all a good product and I'll certainly buy some in future.

Mac

CSG Convention

20th February 2005
at
The Britannia Hotel
Almond Brook Road
Standish
Wigan
WN6 0SR
Tel: 01257 499988

This is a ticket only event therefore anyone wishing to attend must book and pay for their tickets in advance.

The price of the ticket is £9.00 for members & £11.50 for non-members, included in this price is an all day refreshment bar (Tea/Coffee), which will be situated in the main lecture hall.

For those of you who wish to take advantage of the hotel's excellent catering facility, we have arranged for them to provide a buffet lunch at a cost of £8.95 per person. To ensure the correct number of lunches are provided, please indicate your requirement and pay when ordering your Convention Ticket.

On Saturday evening we will he hosting a CSG Convention Dinner at the same hotel, the details of which will be announced in the December issue of Cat Chat.

For those of you who would like to make the Convention a weekend event, there are a couple of very good aquatic shops to visit on Saturday, BAS at Bolton and Pier Aquatics in Wigan, both are within easy reach and have large selections of Catfish.

The Britannia Hotel charges are from £60 a night B&B for a double room and anyone wishing to come to the dinner and stay over should book their rooms directly with the hotel, making sure to indicate that you are there for the Catfish Convention.

To purchase your tickets please send full payment to: -

Ian Fuller (CSG Secretary)
68 Canterbury Rd.
Kidderminster,
Worc's
DY11 6EU

Make cheques and postal orders payable to "The Catfish Study Group (UK)"

How long do Catfish Live?

Reply by Allan James: www.scotcat.com.

Replying to Steve Pritchards article in Cat Chat vol.5 issue no2 (June 2004) this subject has always intrigued me and, being on the same trip to Peru with Steve in 2000, I still have the wild caught *Corydoras elegans* 4 years on including *Amblydoras hancocki* and *Dianema longibarbus*.

Amblydoras hancocki

My own experiences over the last 22 years of catfish keeping is that members of the Mochokidae family seem to be the leaders in the art of longevity in the aquarium. Checking my records which involved discussions with fellow members of my club, and my memory bank, which seams to be getting weaker as the years progress!, the oldest *Synodontis* I have is a male *S. eupterus* which is approaching 20 years and is still the boss of my 6ft. community tank in my living room and looks to have many years ahead of him yet.

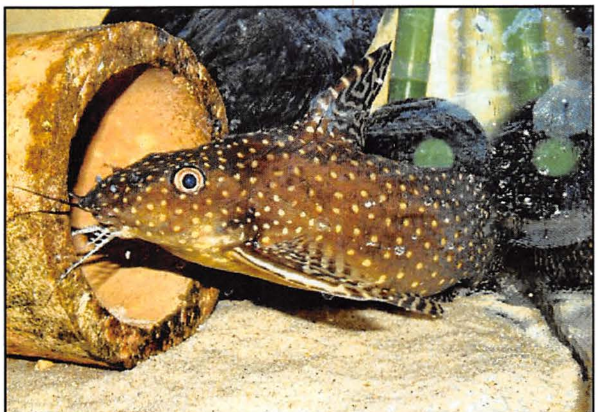
The next Syno on the list is a very rotund *S. schoutedeni* which I bought at a Catfish Study Group auction way back in 1989 when it was still the Northern Area Group of the Catfish Association of Great Britain,

Dianema longibarbus.

Synodontis eupterus

making its tenancy with me some 15 years. There is no way of course to ascertain what age it was when purchased but certainly a juvenile.

S. angelicus was given to me as an adult about 6 years ago so I would be guessing to be at least 10 years old.



Synodontis angelicus

S. afrofisheri, which itself tells a sorry tale, as it jumped out of its tank in July of this year and I did not find it until the next morning. This Syno was purchased almost 10 years ago from a shipment that had recently arrived in Edinburgh, Scotland and was a fully grown adult at 14cm SL. on its demise.

S. robbianus. Bought from Stapley Water Gardens in Cheshire, England around about the early 90s, so again about the 10-12 year mark.

Synodontis afrofisheri

Staying with this family I also have a *Mochkiella paynei* which is around the 8-10 year mark.

Mochokiella paynei

Synodontis robbianus

Corydoras species do not tend to last this long but there are some reports of individuals living for 20 years My best to date is a male *C. concolor* of about 8 years old but they do tend to look their age when they get to this stage. Cory's being a smaller species than the vast majority of *Synodontis* would tend to point out why they do not reach this grand old age.

All of this catfish logevity business of our aquarium specimans of course depends on the aquarist and his/her water regime over the many years of keeping all types of Tropical Fish, and is really the crux in the title of, "How Long Do Catfish Live". ■

COMPETITION

Win a free membership for **2005**

Design a new front cover for CAT CHAT

Computer generated designs are not necessary, a drawing will do - we want the idea!

The requirements are

1. That the cover should fit on an A4 sheet of paper (the same size as this page)
2. Preferably be in colour, show the title 'Cat Chat' and that it is the Journal of the CSG
3. Show Issue number and date
4. The cover should be generic for each journal thereafter, other than the date & number and perhaps the colour
5. Images, if used, should not be datable and the subject is to relate to the hobby

CONVENTION

2005

Shane Linder (USA)

"Four years of chasing fish in South America."

Two talks recounting highlights of catfish collecting in Venezuela, Colombia, Brazil, Ecuador and Peru. Exploring and explaining different environments and biotopes and discussing catfish species encountered throughout the Orinoco, Magdalena, and Amazon basins.

and

Julian Dignall (UK)

"Knee Deep in the Catfishes of North Eastern India"

One talk surrounding a recent collecting trip to the region, exploring the habitats of temperate and tropical catfish we see imported from time to time and a few that most will never have seen before. A little on the collection methods, flavours of the country, a few of it's other fishes and the local tropical fish industry will also be covered.

SUNDAY 15 February 2005

at the

Britannia Hotel

STANDISH

WIGAN

Doors Open At 1000 hrs

Entrance Fee

Members: £9.00 **Tickets Only** Non - Members: £11.50

(Included in the price are all-day refreshments)

Also:

Bring and Buy Stall

CATFISH STUDY GROUP (UK)

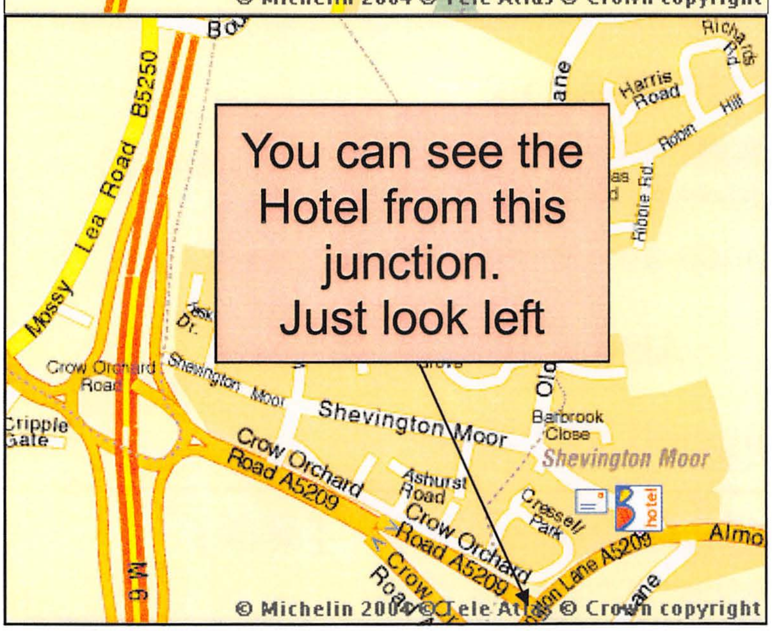
Formerly the Northern Area Catfish Group

Directions to the Convention 2005

If in doubt, visit the web site where you can get directions from your area

BRITANNIA WIGAN HOTEL
Almond Brook Road,
Standish,
Wigan
WN6 0SR
Tel: 01257 499988 Fax: 01257 427327
email: res723@britanniahotels.com

Junction 27 M6

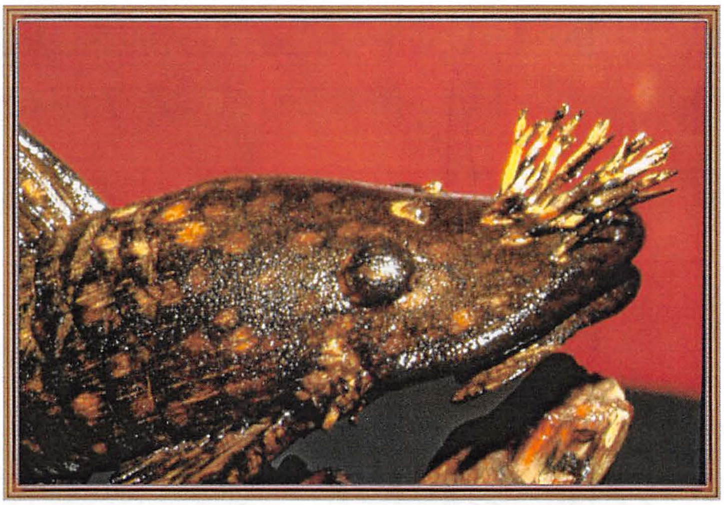


Why not come on Saturday and visit some of the local amenities including

Pier Aquatics
and
British Aquatic Superstore

Both have advertisements in this issue of Cat Chat and they have good selections of catfish.

Neither is too far away and you can stay the night at the hotel!



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