



FISHKEEPING LEAFLET NO. 1

AUSTRALIA NEW GUINEA FISHES ASSOCIATION
South East Queensland Regional Group

Promoting the keeping and propagation of the
native fish species of Australia and New Guinea

Reverse-flow Undergravel Filters

How would you like to lengthen the time periods between servicing of your aquarium? Why not try a reverse-flow undergravel filter which has all the advantages of a normal undergravel filter but restricts the excessive build-up of mulm under the gravel.

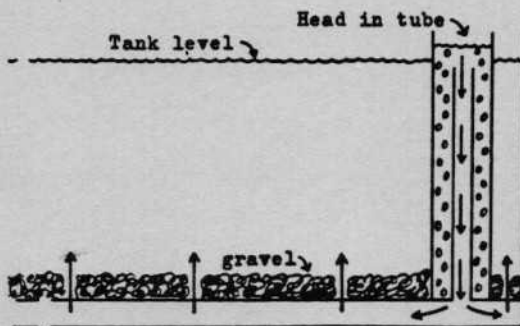
For top efficiency, you should utilise a power filter pump, larger gravel than normal, and a mechanical filter to remove solids.

All you need do is to modify your existing undergravel filter, and this can be done easily and cheaply, as the diagram shows:

The device features the following:

- 1-1½" PVC pipe glued to filter plate outside existing airlift.
- series of ¼" holes start approx. 2" above plate.
- air supply released in space between PVC pipe and airlift.
- head of pressure is produced in PVC pipe.
- water is forced down the previous airlift pipe, under the plate, and up through the gravel.

- Bruce Hansen





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White Worms

Having kept one strain of white worms for 15 years, with only about five changes of soil during that period, the success of my method speaks for itself.

Make at least two boxes from dressed pine, 300mm x 200mm x 75mm, with a close fitting lid of waterproof ply. Cut several 25mm holes in the lid and glue fly wire over these.

Use a potting mix which has a portion of peat, sand and soil in equal amounts, and add water till the mixture is just moist. Place 60mm of mix in each box and stir in a cup of shell grit, which acts as a buffer against a drop in pH and also helps to keep the mix open and aerated.

A matchboxful of worms starts the culture in each box. Place the worms in the centre and slightly buried. Keep in a cool place.

After 24 hours begin feeding by placing a small amount of food in the centre and

covering the mix with a sheet of glass approx. 150mm x 100mm.

Feed again only when all traces of food are gone. If the worms are not eating the food offered after 48 hours, remove it and

replace with another type of food.

After 2-3 weeks, you should notice an increase in the worm population and can start increasing slightly the amount of food given, placing it at different locations in the box and always covering it with glass. If the soil dries off a little, add a small sprinkle of water at the same temperature as the soil.

When the worms are thriving, after about 4-8 weeks, they should be eating all the food offered in 2-3 days, and can be harvested off the underside of the glass sheet twice a week. However, a culture that is regularly harvested will seldom build into a really good culture. Therefore, it is better to have several boxes and give each one a month's rest four times a year.

Foods for the worms include bread soaked in water or milk, rolled oats porridge, cheese, cooked green peas, mashed potatoes, dog and cat biscuits, raw egg, and scrambled egg.

If you find you have made the soil too wet, feed a dry food for a while to help soak up the moisture. Keep ants at bay - for they, like fish, thrive on white worms.

- Ray Leggett



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Net Construction

For collecting from the wild, the following net design is simple to build and suitable in most situations. The final dimensions are variable, being dependent mainly on the availability of space in your car.

Construction consists of three simple steps.

(a) Obtaining materials:

Most of this material can be purchased at any of the large hardware stores: PVC piping (4cm diameter), corner joints and glue, shading mesh, and fishing line.

(b) Frame construction:

The rectangular frame ideally should have a length to width ratio of 3:2. Saw piping to desired lengths; apply bonding glue; insert into corner joints.

(c) Securing shade mesh to frame:

The choice of mesh must be a

compromise between strength and durability and the drag created between the mesh and the water. When securing the mesh to the frame, a depth of between 30-50cm should be allowed. Lap the mesh over the frame and on to itself again. Secure with fishing line.

Finally, some helpful hints:

- Choose a mesh that cannot be pulled into threads. A solid mesh is available.
- Ensure that the mesh is long and wide enough so that additional pieces need not be added.
- Remember, the frame must be transported. Take account of this fact.
- Follow the instructions carefully when glueing.

- Robert Dougherty



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Daphnia

Daphnia is a small crustacean belonging to the same family as brine shrimp, prawns and crabs. It is one of the best live foods available to the aquarist.

The two species mainly cultivated by aquarists are *D.maphnia* and *D.pulex* which grow to 2mm. They are best cultured in 3-4 feet tanks or tubs such as fridgeliners.

Being filter feeders, they eat small one-cell animals such as protozoans. These are cultured by providing bacteria made from the breaking down of such vegetable matter as lettuce, straw, banana skins or powdered yeast, the latter being most widely used today.

After first setting up a tub, mix in powdered yeast and allow to age for two days before placing your acquired daphnia in the tub. By five days a large colony should be observed and selected harvesting can begin. Don't let them overproduce or they'll eat all the available food and they'll die off. A number of days will be needed before a population returns.

Two points to remember:

1. Overfeeding can pollute and kill off the culture.
2. A 10% dechlorinated water change is beneficial every 2-3 days to prevent ammonia and nitrate build up.

- Rod Campbell



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Side-drop Filters

After having read many lengthy and technical articles on filtration, I am convinced that this is one of the mysterious aspects of the fishkeeping hobby.

But here's one filtration method, an idea imported by one of our members from Victoria, which deserves special mention — the side drop filter.

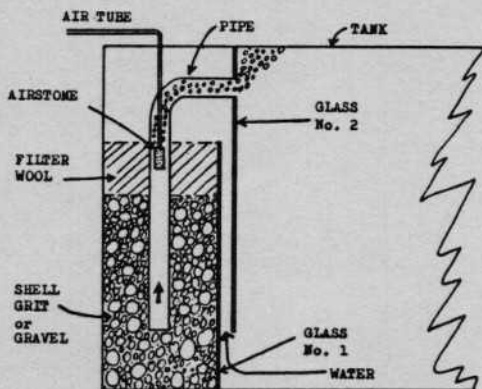
This filter is built into the aquarium either at the back or at the end of the tank. Two sheets of glass are required, one with a hole cut in it. This can be done with grinding paste and a piece of copper pipe with nicks cut in the end

and used in a drill. It's probably a lot easier to pay a glass cutter!

One sheet is placed from the bottom of the tank to 3 inches from the top (No.1 on drawing) and the other from the top to 1½ inches from the bottom (No.2). The second sheet has a hole cut into the top 1 inch down.

These two sheets are placed 3/16 inch apart. A pipe with an air stone in it is placed through the hole cut in the glass. Remember, the more air used, the more efficient the filter.

- Rod Campbell





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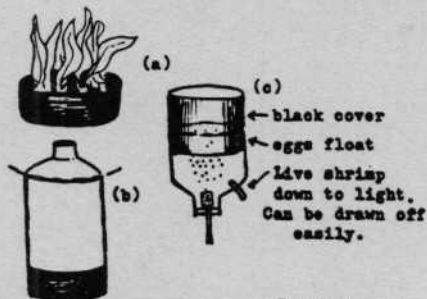
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Don't throw out those old bottles

Here's how to make use of those empty
plastic soft drink bottles:

- (a) Soak in hot water and remove the
black base which is very useful for
growing transportable aquarium plants.
- (b) Cut off the top of the bottle.
What's left can be used for hatching eggs,
or storing mops, or breeding infusoria.
- (c) Cut off the bottom of the bottle.
What's left can be used, when inverted and
supported, for hatching brine shrimp.



- Bruce Hansen

Washing Gravel

Take the labour out of cleaning gravel for
your aquarium - use an electric cement
mixer. The diagram explains:



- Bruce Hansen



FISHKEEPING LEAFLET NO. 7

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Frozen Fish Food

The object of making your own food is to end up with a high quality product that will form the basis of your fishes diet.

Always use ingredients that are as fresh and as pure as possible. Use no artificial colouring or flavouring. And always buy quality meat.

If at any time during blending the mix requires lubrication, don't add water — use an egg.

Don't overwork your blender. They have a tendency to overheat if you try to do too much too quickly.

Work out the quantities of ingredients you'll require by the capacity of your blender. Then you can make it by the handful or the bucketful.

You will require:

- 1 Blender.
- 1 packet small plastic sandwich bags.
- Raw eggs: 2 or 3 per mix.
- 1 Packet unflavoured gelatine — 5 sachet pack.
- Meat of your choice.
- Vegetables of your choice.

Meat: Use either heart, liver or kidney. Remove all fat, sinew or vein and slice into small cubes.

Vegetables: The choice is almost limitless. Either frozen or fresh, peas, spinach, carrot or potato — lightly boiled until soft. High quality baby vegetables from the supermarket shelf are excellent. Excess duckweed is another good choice.

Method:

Use blender to puree meat and vegetables separately and place in individual mixing bowls.

Break an egg into the blender and spoon in desired quantity and proportion of meat and vegetables — I use a 50/50 mix. Blend until well mixed.

If you wish at this point you may add a high quality flake food or one of the many frozen foods (tubifex, blood worms etc) that are available. If so, blend until well mixed.

In $\frac{1}{2}$ cup of hot water, dissolve a sachet of gelatine as per manufacturers instructions.

Pour dissolved gelatine mixture into blender and blend until well mixed. (When set the gelatine will bond all the ingredients together.) Spoon finished mixture into sandwich bags. Seal and lay flat in freezer until frozen.

Feeding

It's up to you how you feed it to your fish. I shave it off with a vegetable peeler into a bowl of water and squirt it into the tank using a small section of air hose. For fry you can easily squeeze it to a pulp between your fingers and swirl it through the water. For big fish, just chop it chunky.

The only disadvantage of home made food is you have to make it yourself. But as you can see it's really quite simple and the rewards are well worth the little effort required.

- Rowland Ford



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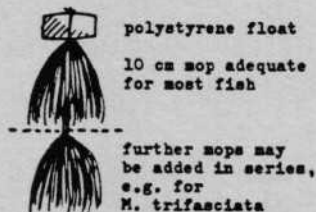
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Nylon Spawning Mops

You will need (a) polystyrene scraps for floats - approx 6cm x 3cm; (b) any cheap fine synthetic wool, preferably greens and browns although lighter colours are acceptable. At 20c a ball at Fossey's, some five mops can be made.

And here's how...

- Wind wool 30 to 40 times around hand.
- Cut one side.
- Tie at other side.
- Attach polystyrene float.



Mops have advantages over plants:

- easily sterilised by boiling or drying.
- no decay or contamination.
- not dependent on light.
- cheap and readily available.
- useful for refuge and spawning.
- readily accepted by most fish.
- easily made in a variety of forms - short single, short in series, long single, combinations, floating or bottom mops.

The value of floats is also apparent:

- enables mops to be added and removed without disturbing plants or fish.
- less contamination from food, debris, snails and other scavengers, and parasites.



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Reference Books: 1

Rainbow Fishes of Australia and Papua New Guinea, Allen G.R. and Cross N.J., Angus and Robertson, Sydney, 1982. 142pp. \$14.95.

This is the first book to review the family *Melanotaeniidae* and to update all available knowledge from the field and for the aquarium.

The book covers maintenance and spawning of all the genera; evolution, zoogeography and classification are explained; and habitat is discussed for the various species, with many good photographs of collecting sites and specimens.

While the keys are useful, I feel the diagnosis would be of more value for the serious aquarist if the number of specimens examined had been included.

The authors refer to a successful hybridization across generic boundaries but, disappointingly for the serious aquarist and student of the family, they go no further. Were the fry raised to maturity? Were they viable for further breeding? Were there deformities? Why no facts and figures?

In all, however, I like the book's layout and the photography is excellent. - Ray Leggett

Australian Freshwater Fishes

John S. Lake, Nelson, Melbourne, 1978, 160pp.

This was the first comprehensive work on Australian freshwater fish. Intended as an easy to use field guide, it isn't technical, and is quite brief.

Where the information was available, notes under the headings of distribution (by use of drainage divisions), breeding, food/feeding, and general comments (eg. good eating or angling, potential as aquarium display) are given. However, due to the lack of much information, some notes are missing for many species (breeding in particular).

Further taxonomic work on our freshwater fish, resulting in changes in nomenclature, since the book's publishing, and the discovery of many new species, make the book largely obsolete.

All species discussed are illustrated (most in colour photographs), and full cross-referencing is provided. A list of marine species which commonly enter freshwater, along with some freshwater species known from only a few specimens, is given. One annoying feature of the publication is that the photographs of fish described in the book appear elsewhere in the book - separated from the text.

Being superseded by more recent publications, the book is of little use as a means of identification, but some of the comments on life history and behaviour make interesting reading.

- Chris Marshall



FISHKEEPING LEAFLET NO. 10

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Vinegar Eels

The vinegar eel, *Anguillula acetic/turbatrix*, is a free living, non-parasitic roundworm that is adapted to living in a low pH [acidic] medium. It is an excellent live food for native fish fry.

Worms are readily cultured in large numbers, provided certain procedures are followed. The worms must be grown in natural cider vinegar that has not been chemically treated to inhibit growth of bacteria and yeast upon which the worms feed. Vinegar can be either diluted or pure, as the worm can live in either pure vinegar or pure water.

The culturing container should be either glass or plastic. The culturing medium should be made up of about one part cider vinegar to five parts aged water. Another ingredient of the culture is the periodic addition of a piece of apple. This seems to add something that causes a greater population but is not absolutely necessary.

The problem of harvesting the micro eel may test the patience of the hobbyist until a procedure has been established. The most common method is to pour or siphon the culture through a coffee filter-paper. The filter-paper is then rinsed into a small jar of clean aged water. The contents of the jar may then be poured into the fry tank. The worm will live quite a while in the tank but care should be exercised to prevent supplying too much at one time.

The advantage of micro eels over micro worms is that the eels live for a long time in water and also float near the surface. Micro worms live for only about 24 hours and will settle to the bottom of the tank, so it's necessary to use a bare bottom tank when feeding micro worms.

The only drawback with micro eels is the harvesting method required - but it's worth the effort.

- Adrian Tappin