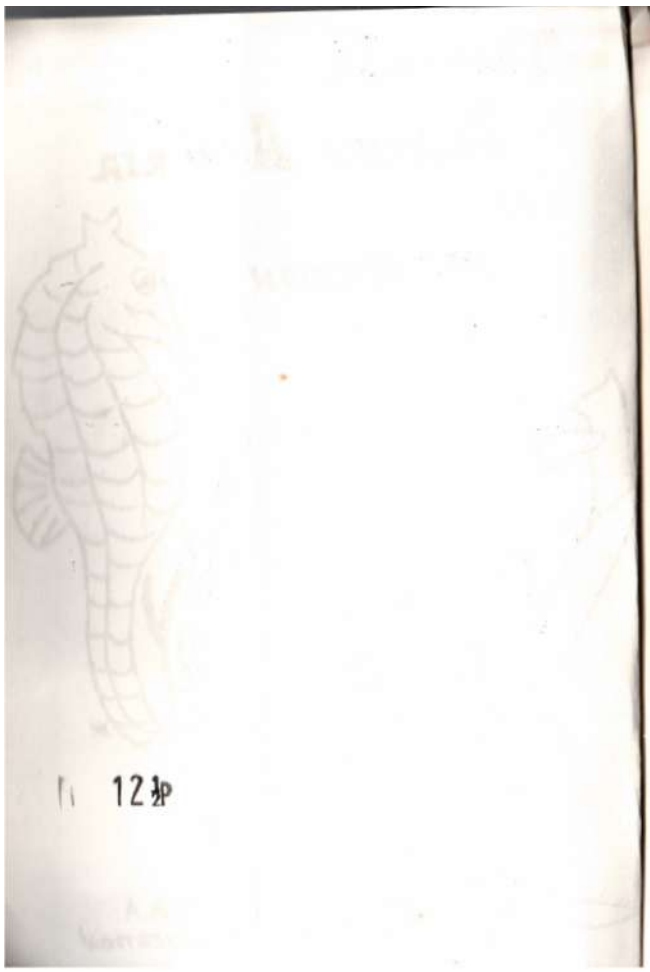
TROPICAL MARINE AQUARIA

-AN INTRODUCTION

A B.M.A.A. PUBLICATION



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Tropical Marine Aquaria

Written by : The London and South-Eastern Group.

Published by : The British Marine Aquarists Association.

Contents.

Forward.

This booklet has been prepared to help those who are thinking of starting tropical marine aquaria keeping, and is therefore presented as simply as possible.

Not all of the answers are here, but it is hoped that you may find this a useful introduction to a wonderfully interesting hobby.

The British Marine Aquarists Association caters for both the novice and advanced marine fishkeeper, and in fact any person interested in the study of all forms of marine life, both tropical and native.

A monthly magazine keeps all members well informed on the art of maintaining marine aquaria through contacts with organisations and individuals, both at home and overseas, besides providing a forum where views can be aired or advice obtained.

The Association is composed of a number of Regional Groups which offer regular meetings, other projects for members keen on taking a serious interest in the hobby.

SECTION ONE

Tanks and Types of Covers.

The first requirement in setting up a marine aquaria is for a tank that is suitable for marine life to live and thrive in a small environment.

This tank must be free from any tendency to corrode, and strong enough to withstand the corrosive effects of saltwater.

This effectively rules out the usual angle-iron tanks, which will begin to corrode and look unsightly within a short space of time unless very careful measures are taken to seal all surfaces. This leaves us with three readily available alternatives; namely, the all glass tank which has no metal frame, but which is extremely strong due to the adhesive effect of silicon sealant used in it's construction. This type of tank is ideal for saltwater use and will last for many years without problems, provided normal care is taken. Size is of no problem with such tanks provided that the gauge of the glass is increased in relation to the height of the

tank, e.g. up to 36 x 18 x 15 ¼" plate glass will suffice. Tanks of a larger capacity may need ⅜" or ½" glass depending on length and depth.

The second alternative is the plastic type which is usually restricted in size and which becomes extremely expensive in tanks of over 15 or 20 gallon capacity. The last alternative is the nylon coated tank which can prove very expensive and weigh more because of the metal frame. Several other materials can be used, amongst them asbestos, fibre-glass, and all wooden tanks, although these may prove to be far from ideal depending on the particular qualities or previous uses to which they may have been subjected.

If you intend to start on a small scale, say 20 gallons (Important: It is not practical to use tanks with less than 20 gallons capacity as the water changes and other maintenance will need to be more frequent) then a plastic type will do, but it has been found that it is far wiser to buy as large a tank as can be afforded. This will save on costs later, leave room for added crops, and also

help to create a more stable environment due to the longer periods required between water changes etc. The best combination would be a large all-glass tank together with a smaller plastic, or nylon coated tank for mixing synthetic salts, and for use when treating sick fish or isolating or quarantining new additions to your collection.

The aquarium hood should preferably be constructed of wood. Ensure that a cover glass can be fitted between the lid and the water surface. This will cut down the evaporation rate of the salts and protect light fittings. Untreated metal hoods will corrode, and rust will, in time, fall into the tanks causing metal poisoning. Should a metal hood be used, it is a wise policy to give the inside surfaces and edging at least two coats of polyeurethane or silthane paint. Any light colour will do, although white paint will improve the reflective light directed into the tank. Clear polyeurethane can be used on hoods that are already silvered.

SECTION TWO.

Filters.

The second need is for an efficient filter. The types best suited to marine aquaria are either undergravel (sometimes termed biological due to the chemical reactions they assist), or external power filters.

First we will deal with the undergravel type which has proven itself over many years, which is of extremely simple construction, and which may be made up quickly at small expense. This type of filter consists essentially of the following components: A sheet of corrugated PVC which will not bow under the weight of gravel it supports. The sheet should be cut to fit the inside dimensions of your tank leaving no gaps round the edges. 1" slots are then cut in the valleys of the sheeting, about 1½" apart straight across the sheet.

The second component is a length of PVC conduit pipe with which to form the uplift tubes. The length of pipe should be twice the height of the tank in order that two

uplifts can be cut later to reach just below the water surface. Two plastic connectors and two plastic elbow joints will also be needed, the former to tightly couple the lift tubes to the filter sheet, the latter to direct the uplifted air/water mixture evenly over the water surface. The uplift tube itself should be not less than 1" or 1½" diameter. Smaller bore tubes will not be able to provide the necessary high turnover rate required and will also tend to clog up and lose efficiency over several months. Once the components have been assembled, drill holes in the filter sheet to take the uplift tubes and connect the two items by means of the connecting rings. The best place for the uplift tubes is approximately 2" from the end of the filter sheet and 1" from the back edge. This will allow for adequate circulation over the whole area and prevent "dead spots" where toxic waste can build up.

The filter is soaked in a strong solution of water and table salt. This should neutralise any toxic materials in the sheeting. (Better safe than sorry).

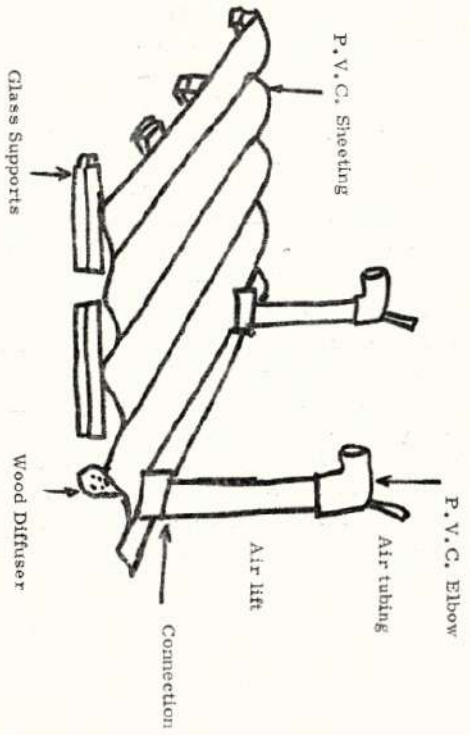
not perform the same comprehensive breakdown of waste products as the undergravel type. Of course, with the simultaneous use of both filters, a very good filtration system can be created. Only power filters designed for salt-water use should be used. Power filters with high turnover rate e.g. 60 gallons per hour or above are emminently suitable. These items are not cheap but are an excellent investment. Various filter media can be fitted to these types of filter, amongst them, purlon wadding or filter floss (not glass wool), graded sand and gravel layers, activated charcoal, crushed coral etc. Each will perform different types of filtration or functions aimed at maintaining the correct water chemistry balance. Filtration of marine aquaria is a subject in itself, so it is suggested that the reader consults the books recommended in the Bibliography.

Air powered external filters.

This type of filter works much in the same way as the powered type, although at a much slower rate. In most cases it consists of a perspex box hung on the outside of the tank frame. A siphon tube draws water into the box, which is fitted with the same types of filter media as the powered filter. Cleaned water is returned

to the tank through an overflow pipe. The lift necessary to raise the water up the siphon tube and into the filter box is provided by an air pump. The filter itself is quickly cleaned and, having no moving parts, will last indefinitely. The degree of water turnover will depend on the size of the box and the type of air pump used. If a power filter is not required or considered too expensive, a filter along these lines will provide a suitable alternative, provided the tank to be filtered is not too large or excessively overcrowded.

Should either this type of filter or an external powered one be used on their own i.e. without an undergravel - no food should be left to collect in the tank as pollution will quickly arise. In any event marine tanks should be carefully maintained and cleaned whatever filter system is employed as such tanks are delicately balanced, particularly if fully stocked with fish or invertebrates.



SECTION THREE

Air pump.

A good quality air pump with a high air output is essential for the undergravel filter mentioned earlier. The better the pump, the better will be the turnover of water through the filter and aeration of the water. A fast turnover is required by marine fish who will soon react to any deficiency in this area. There are many makes of air pump, most of them fitted with a rubber or plastic diaphragm. The cheaper type tend to lose efficiency after several months. Spares should always be on hand as diaphragms do not last long under the constant service required when used with marine aquaria.

Marine creatures are especially susceptible to oxygen deficiency and should not be left without adequate aeration for more than a few hours.

Diaphragm pumps and rotary piston pumps, although more expensive, have a very high air output and just one will suffice to run all the tanks you are ever likely to need.

They are extremely reliable. Once again, a sound initial investment may save headaches later. Do not use air tubing with ultra fine bores as they are likely to clog up, besides restricting the flow of air. As previously stated, do not use air stones which are liable to decompose. Wooden air diffusers are available or easily made. Such types will provide a fine stream of bubbles and are quite suitable for marine aquaria. They will swell in time, and then need to be replaced. Avoid using metal valves, clamps etc. on the air tubing. In this case plastic valves and clamps are safer and cheaper. Rubber tubing should also be avoided for supplying air or for any other use in the aquaria.

SECTION FOUR.

Aquaria heating.

The next items to obtain are a good quality heater, thermostat and thermometer. Most of these instruments are fitted with a soft rubber cap which will quickly rot in salt water. Cover the cap with a skin of silicone sealant to guard against this. Saltwater will conduct electricity very easily so be very careful when wiring up any electrical equipment, and ensure that power is disconnected at the mains when carrying out any maintenance on your tank.

The heater should be set to maintain a temperature of around 75°F (25°C), the same as for freshwater tropical fish aquaria.

An easily read thermometer is next on the list, and one that is properly calibrated - it is no good if you cannot get an accurate reading.

Place the thermometer in the tank at the opposite end to the heater so that an average reading can be obtained. Provided a good circulation is maintained in the water you will have few problems with differing temperature layers that tend to occur in still freshwater tanks.

SECTION FIVE.

Lighting the aquaria.

Fluorescent or incandescent lighting can be used in the marine aquaria, although some amount of natural lighting is beneficial. All lighting should be directed into the water from above so try to situate your tank accordingly. "Grolux" fluorescent lighting will show the colours of your fish to the best effect. Such lighting should be placed at the front of the tank so that the light travels towards the back, creating a more natural appearance. Do not place your tank in direct sunlight as this will cause the growth of microscopic green algae and turn your tank green spoiling it's appearance.

SECTION SIX.

Synthetic saltwater.

A correctly balanced saltwater is the most important ingedient for a successful marine aquarium. If it is deficient in certain minerals or other elements, or of the wrong density, fish and invertebrates will not survive. A good quality hydrometer suitable for saltwater use will enable you to check the density and make adjustments. It is extremely expensive to measure the particular components of saltwater, and this can only be accomplished using laboratory techniques. To overcome this problem several synthetic seawater salts have come on to the market over the last few years which contain all the necessary trace elements and buffering agents necessary to keep your seawater in good condition. The advantages of using synthetic seawater is that it can be made up as required at short notice and is safe to use, being free from bacteria or other undesirable elements commonly experienced when using natural seawater. If you are able to collect the natural type be sure that it is collected

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from well out at sea, clear of shipping lanes. That collected from the coast is not desirable. All natural seawater must be stored for long periods and well filtered before use.

A mixing tank or tub should be used to make up your saltwater from synthetic salts. Follow the instructions supplied with the salt mixtures as there are several different ways in which the elements are supplied, each requiring slightly different mixing techniques.

All mixing instruments and utensils should of cause be non-toxic, e.g. plastic, glass etc.

If your water supply comes through new copper pipes, such water must first be filtered through activated charcoal before use.

All prepared saltwater mixes should be aerated overnight before being added to the marine aquaria and brought up to a temperature of 75°F. At this temperature the hydrometer should read between 1.023 and 1.025. You will get a false reading if the water is not at the correct temperature.

Do not leave the hydrometer floating in the aquarium as it will soon be broken. As

stated previously, a glass cover over the water surface will cut down the rate of evaporation of the water. Such evaporation will occur in time and then you will need to add fresh water, preferably distilled. This will have to be heated to the same temperature as the marine aquaria before adding. Avoid sudden bulk additions of freshwater or newly made up saltwater as the fish will not stand this treatment.

Such shock will be reflected in their refusal of food and other behavioural changes. To avoid this, slowly add small amounts only at one time.

Provided such regular maintenance is carried out there should be no danger to the marine aquaria on this front. One final point of advice -- never change your aquarium water completely unless an extreme emergency arises. This is safe procedure in some freshwater tropical tanks but would not be tolerated by the majority of saltwater fish or invertebrates. Remember that such creatures will only survive in a settled, "matured" system.

SECTION SEVEN.

Tank decoration.

Coral of different kinds, and sea fans can be used as decoration and cover for the fish at night. Stones and rockwork may also be used but must have no metal base or content. If unsure do not use it.

Westmoreland rock and sandstone are quite suitable for building up rockwork. Coral and shells must be thoroughly cleaned in a strong solution of bleach for 24 hours. Even though they may be purchased as "ready for use". Such items must then be soaked in several changes of clean freshwater for at least three days. You will be surprised at the amount of waste material that collects in the cleaning container. Add to the aquarium only when there is no detectable odour of bleach. Sea fans can be cleaned in the same manner. These should be bleached until the outer coating is leached off revealing the skeleton, which is of a brown colour, underneath. The final rinsing and washing can then be done. Sea fans look most effective when placed at the back of the tank as they give height to the setting. Try to place the stones and rock-

work in a natural way, but keep it to the back as much as possible.

The fish must be able to hide during the day if they have been disturbed in any way, and have suitable night refuges where they can retreat with a feeling of safety. Unless suitable hiding places are provided constant bickering and fighting can be expected. Most coral fishes are highly territorial and will not tolerate the lack of coral crannies, ledges, caves, shells etc. which give them the protection they require. It is pointless introducing a trigger fish, for instance, unless a suitable cave is provided which it can retreat at night. Such a cave must be large enough to take the fish, but not so large that it cannot lock itself in by means of spines it carries for this purpose. The detailed requirements of each fish should be studied before or after purchase to avoid sudden upheavels in the aquarium. All new fish create a good deal of shock and excitement for the existing inhabitants, so such new introductions should be carried out with forethought and discrimination.

SECTION EIGHT.

Species of fish suitable to start with.

It is unwise to start with fish that are too expensive, and with marine fish, these are usually those that require expert handling and care. Such exotics should only be introduced to a well matured aquarium.

Before any fish are added to a newly set up marine aquaria, it has been found through experience, that the tank should be operating normally for one to three weeks. This gives time for the water to become conditioned. The most popular family group to start with is Pomacentridae (Damsels). These are coral dwelling fishes, quite hardy, not too large and also very colourful.

The family includes such fish as the Sergeant Major (Abudefduf sexatailis), Humbug damsels (Dascyllus aruanus), Domino damsels (Dasyllus trimaculatus), Saffron blue damselfish (Pomacentrus melanochir) and the Electric blue damselfish (Pomacentrus coeruleus). All these fish are suitable for the newly set up marine aquarium, and will help to establish the biological sequences necessary before more demanding fish can be introduced.

Such fish are highly territorial and it would be unwise to introduce just two fish of any particular species within this group. Three fish of the same grouping are unlikely to squabble so fiercely.

Provided the systems described in this booklet are followed all these fish will thrive in capacity.

Once your own system is established it is recommended that you consult some more specialised books available before expanding your collection or adding more demanding species. The following short list is recommended for general reading.

One last point: Marine fishkeeping is, as yet, not an exact art. Many different views exist concerning all it's aspects, and this is reflected in most published material. Do not adhere strictly to any one system but use common sense and a little careful experimentation to obtain the best results with your own particular system.

SECTION NINE.

Book list for further reading.

The following is a representative cross section of current books on tropical marine aquaria, which both the beginner and advanced marine aquarist should find of value:

BARKER C.S. : Starting a marine aquarium.
TFH Publications.

BRAKER W.P. : Know how to keep saltwater fishes.
Pet Library.

COX G.F. : Tropical marine aquaria.
Hamlyn.

COX G.F. : The new seaquarium system.

O'CONNELL R.F. : The marine aquarium for the home aquarist.
John Gifford.

RAVENSDALE T. : Coral fishes - their care and maintenance.
John Gifford.

STRAUGHAN R.P.L. : The salt water aquarium in the home.
Thomas Yoseloff.

VORDWINKLER W. : The marine aquarium.

AXELROD H.R. & VORDWINKLER W. : Salt water aquarium fish.

SECTION TEN.

B.M.A.A. Membership.

If you would like to join us in our venture into marine fish keeping and would like to have further information about the British Marine Aquarist's Association just drop a line to the following address:-

The Secretary,
B.M.A.A.
J.H. Vickery,
26 Rosalind Avenue,
Bramford Estate,
Woodsetton,
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Worcs. DY1 4JW.

A S.A.E. would be appreciated.

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