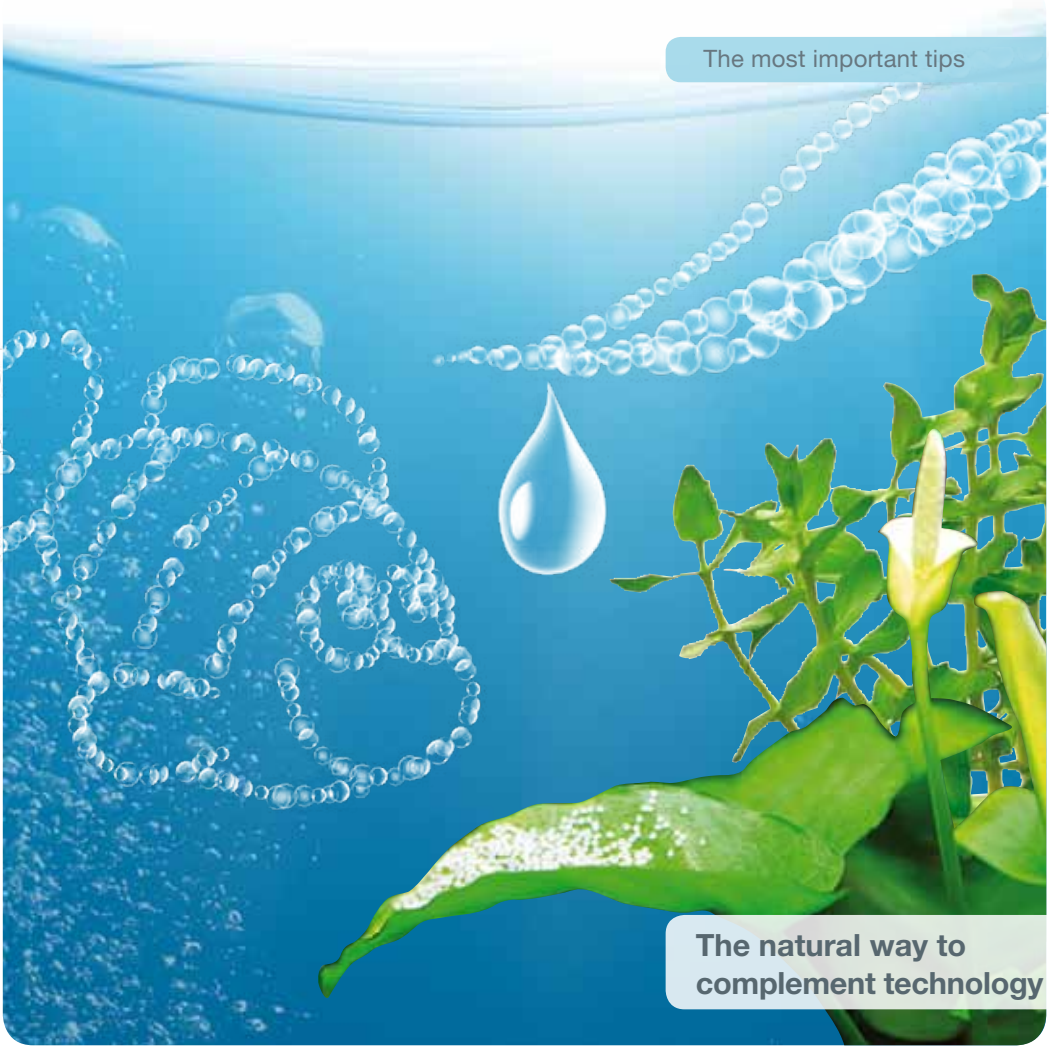
EHEIM

Guide
water and plant care

Tips for healthy life in your aquarium



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Dear reader,

For humans, air is the basic necessity for life – for fish, it is water. Since the engineer Gunther Eheim invented the aquarium suction filter fifty years ago, it has been possible to maintain this basic necessity in the aquarium to ensure exotic ornamental fish can not only survive, but thrive.

Clean, healthy and suitable water in the aquarium is largely dependent on the equipment. There are many biological and biochemical processes that play a part in the ecological cycle of an aquarium – including water care and plant care.

These processes, and their importance, are briefly summarised in this Guide.

Please take note of the advice and check out the additional apps that we have prepared for you. We wish you joy with your underwater paradise.

Your EHEIM aquarium team

Your underwater paradise needs love, care and attention

The soothing atmosphere, the fascinating colours of the underwater world, the special ambience it creates in your home – these are all reasons to set up an aquarium. It is trying to re-create the natural world, in your home, that makes an aquarium such a wonderful hobby but... your natural world will need love, care and attention.

All life in an aquarium is dependent on the quality of the water!

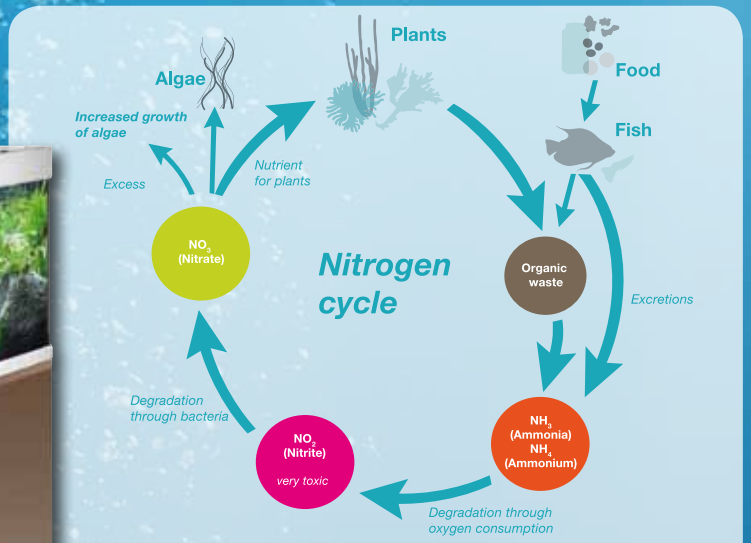
Currents, sediments, oxygen, temperature, light, plants, animals, micro-organisms…

These, and other factors, determine the quality of water in the real natural world and as long as man does not interfere, and no other disruptions arise, nature will maintain that biological balance.

Reproducing that natural environment for your fish requires some effort as the water must be more or less of the same quality in an aquarium, as it is in nature. In a small artificial habitat, this can only be achieved if the fish and vegetation are compatible, the equipment (filter, heating, light etc.) and micro-organisms interact in harmony and both the biochemical processes and the ecological cycle are functioning properly.

By practicing natural water and plant care, you can make a positive difference and ensure the life that inhabits your underwater paradise is healthy and thrives.

EHEIM proxima 250



What you should know about the water in your aquarium

EHEIM watercare

The water in a small biotope aquarium cannot regenerate itself as it would in nature and so, without assistance, your fish would be exposed to an unhealthy environment. Mains water, your inhabitants' metabolic waste and the ever blooming algae – all contribute to water pollution.

Tap water

Our mains water usually contains heavy metals such as copper, zinc and chlorine - even water from the rain barrel is usually full of pollutants. The relatively small quantities do not affect humans but they can be dangerous for ornamental fish.

While some chemicals can be filtered out using an EHEIM filter system and suitable filter materials (activated carbon), in order to bind heavy metals and chlorine quickly, you will need a water conditioner - especially during partial water changes.

Organic water pollution

Your water is constantly subject to pollution from fish waste, food residue and decaying plant parts. Nitrogen compounds (ammonium, nitrite and nitrate) accumulate and, at high levels of concentration, these become dangerous (see diagram on left).

By means of regular partial water changes, feeding sparingly with food that is easy to digest (EHEIM professionel food) and an efficient filter system, you can keep your water healthy. You can also help bacteria to break down pollutants by using specific water care products.

Fish population and plants

The more fish you have living in your aquarium, the higher the level of metabolism taking place as there will not only be more waste, but also greater consumption of food and oxygen. Do not over stock - 1 cm of adult fish to 2 litres of water is a general recommendation.

You can, however, have an abundance of plants because they release the oxygen your fish need to breathe. Plants, along with bacteria, serve to detoxify the water and deny algae their basic sources of nutrients. Regular applications of plant food are also important (see p. 11).

Algae

A large algae bloom in your aquarium can indicate that the ecological balance is wrong – algae in an aquarium usually shows that there are an excessive amount of nutrients in the water. Check water values, light conditions, plant growth, fish stock levels and the amount – and quality – of the food (see p. 5). Algae can be controlled using the correct technical equipment (EHEIM UV clarifier) and additives (EHEIM algicide).

Partial water changes

It is extremely important that you carry out partial water changes at regular intervals to prevent an increase in the concentration of pollutants in your water. You should change about 1/3 of the water in your aquarium every 3 or 4 weeks, using mains water of the same temperature as your aquarium. Water conditioner should be added to mains water to bind heavy metals and chlorine.

Equipment and filtration

The beating heart of every aquarium is its filtration system. Using the correct media (EHEIM Filter materials), the filter will – amongst other things – take care of the biological cleansing. Biological cleansing is of particular importance because the highly toxic pollutants from the nitrogen cycle can only be broken down using cleansing bacteria and, because these bacteria must first form colonies, this can be expedited by seeding the filter material with concentrated bacteria cultures.

1 – EHEIM reeflexUV 350
2 – EHEIM professionel3 600

Water values and water tests

The most important water values in an aquarium are the hardness (KH/GH) and the pH level, as these indicate whether the water is acidic or alkaline. There are also suitable tests for carbon dioxide (CO_2), oxygen, nitrogen etc. and you should be measuring these values frequently as a matter of course. If you need to adjust the values, you can add a pH/KH buffer to the water.

What will help if …?
Measure – assess – react! You can find out what to do in the case of harmful water values (which water care products to use and when to use them) from our **water care app**.

The most important water values

pH pH level (normal: 7.5 – 8.5)

The pH level indicates whether water is acidic (below 7) or alkaline (above 7) and, depending on their origins, different species of ornamental fish will come from either acidic or alkaline waters. Our mains water is usually slightly alkaline, so always keep an eye on the pH level – a pH of between 7.5 and 8.5 is usually recommended for aquariums, depending on the species of fish. Seek advice on the correct level for your own fish from your specialist retailer – or look at EHEIM's Fish world at **www.eheim.com**

GH General hardness (normal: 5 – 15 °d)

General Hardness is determined by dissolved calcium and magnesium ions. Many ornamental fish need soft water. If your mains water is very hard (over 15 °d GH), you should either choose suitable fish (such as species of East African tilapia) or soften the water.

KH Carbonate hardness (normal: 5 – 15 °d)

Unlike General Hardness, Carbonate Hardness is determined by dissolved carbonates and it is important that this does not fall below 5 °d KH. Changing part of the water regularly, maintains healthy levels of Carbonate Hardness!

CO_2 Carbon dioxide (normal: 10-20 mg/l)

Like all plants, aquatic plants need CO_2 and absorb it after the fish have released CO_2 into the water. The optimum level is between 10 and 20 mg per litre but more than 40 mg becomes dangerous for fish!

O_2 Oxygen

As with humans, oxygen is also essential to a fish's survival and is absorbed into the water through surface movement and plant metabolism. Cold water binds more oxygen than warm water.

N Nitrogen*

The main source of nitrogen is fish waste and food residue. These allow nitrogen compounds (ammonium, nitrite and nitrate) to accumulate in the water and, in strong concentrations, they will be harmful. A moderate stock of fish – sparingly fed, effective filtration and regular partial water changes will prevent this accumulation.

* Optimum levels: Ammonium < 0.5 mg/l; nitrite < 0.1 mg/l;

Which species of fish need which levels of pH and GH?
The same pH, GH and KH values do not apply to all species of fish. You will find the levels different species need in EHEIM's Fish World at **www.eheim.com**

EHEIM water care

**Gentle, naturally-based water care with no aggressive chemicals.
The logical extension to the EHEIM technical programme.**

Our water care products consist, primarily, of microbiological materials which occur naturally. They provide gentle but effective maintenance of the underwater environment and present no harmful threat to the ecological balance.

Tips on water care
How to keep your aquarium healthy – at low cost

Mains water

Our mains water is polluted, but also has insufficient vital elements – so you will need suitable care products:

- A **Water conditioner** will safely bind heavy metals and other pollutants when you are first setting up your aquarium or doing partial water changes.
- The **Health tonic for fish and plants** will counteract deficiencies in vitamins, minerals and trace elements.

Biological cleansing

Organic pollutants in your water can only be broken down biologically. The cleansing bacteria needed to do this are not present in new set ups – partial water changes will also reduce their numbers.

- The **Aquarium bacterium starter** will kick start the immediate biological breakdown of organic pollutants in your aquarium.
- **Filter bacteria starter** is used to seed the filter with cleansing bacteria that will colonise, ensuring the long term biological breakdown of organic pollutants.

EHEIM watercare

Controlling algae

Check your water values at regular intervals so that you can promptly take any action if required (EHEIM water care app). If the readings are outside of the recommended parameters, the formation of algae is one of the most common consequences.

- In serious cases you can intervene with an **Algae control**, but it is important that the source of the algae is eliminated.

Correct water values

In order to offer your fish and plants the correct living conditions for their species, you should identify the specific water values they require. (EHEIM Fish world or Plant world at www.eheim.com). Please ensure that only fish and plants that need the same water values, are kept in the same aquarium.

- The **pH/KH buffer** will initially create the basis for optimum water values and, as a result of buffering pH, KH and GH levels, pollution will have less impact on your fish.

EHEIM watercare:
1 – EHEIM Water conditioner
2 – EHEIM Health tonic for fish and plants
3 – EHEIM Aquarium bacteria starter
4 – EHEIM Filter bacteria starter fresh water
5 – EHEIM Algae control
6 – EHEIM pH/KH buffer

What you should know about the plants in your aquarium

What aquarium keeper's heart does not lift when there are colourful fish in amongst green and thriving plants? The plants in an aquarium are a marvellous backdrop but they are much more than that – they are vital in freshwater aquariums.

Plants provide habitats

Plants form part of the natural environment for your fish and the other occupants in your aquarium. They contribute to their well-being, form boundaries between territories and offer fish somewhere to hide as well as providing spawning grounds for some species.

Plants detoxify your water

Together with bacteria, plants will detoxify aquarium water and absorb the ammonium, nitrate and phosphates that are by-products of fish waste.

Plants reduce algae

Strong plant growth denies algae the basic nutrients it needs and the more plants you have in your aquarium the smaller the algae outbreak.

Plants provide oxygen

Using light, plants produce carbohydrates (glucose) for growth, by means of photosynthesis. They absorb the carbon dioxide (CO_2) that fish emit and, at the same time, they release the oxygen that your fish need to breathe.

Which plants can you put in?

Specialist plant suppliers offer roughly 100 – 150 types of plants for the aquarium. Of those, only 30 or so are "genuine" aquatic plants that thrive under water (submerged) – others are marshland plants that can live above and below the water.

The care requirements for plants differ: some species are specially recommended for beginners and can thrive without much attention if partial water changes are carried out at regular intervals. Others are more demanding and you should seek the advice of your specialist retailer.

Size, light requirements and water quality (pH and KH levels – see page 7) also differ. You will find more details at www.eheim.com (Plant world).

EHEIM plantcare

What your plants need

Strong and healthy plants help maintain the ecological system in an aquarium, but weak or decaying plants will pollute it. For this reason, good plant care is essential.

Your plants need light

Light gives your plants the energy for photosynthesis and growth, so you should provide effective lighting for your aquarium. The light should burn for approximately 8 – 10 hours every day – ideally at the same time of day (using a timer switch). Your plants need a light phase of at least 6 hours.

Your plants need to be fed with the

Essential nutrients

As well as light, aquarium plants need carbon, oxygen*, hydrogen, nitrogen, sulphur, phosphorus and potassium. Many of these nutrients will normally be present in an aquarium but others, such as potassium, will have to be added in the form of fertiliser as this is needed in large quantities.

Trace elements

Plants also need trace elements that are not usually present, or are not present in sufficient quantities, in aquarium water. This can only be provided in the form of plant food. Trace elements include calcium, magnesium, iron, manganese, cobalt, copper, zinc, boron, molybdenum, iodine etc.

* In particular plants need oxygen during the night and in darkness when photosynthesis is not taking place.

Water plants feed differently

In contrast to land plants, water plants do not only take up nutrients via the roots, but also via the leaves.
In addition to substrate fertilisation (delayed-release fertiliser) they therefore also require regular liquid fertilisation in order to be able to absorb the nutrients from the water.

Are your plants healthy?

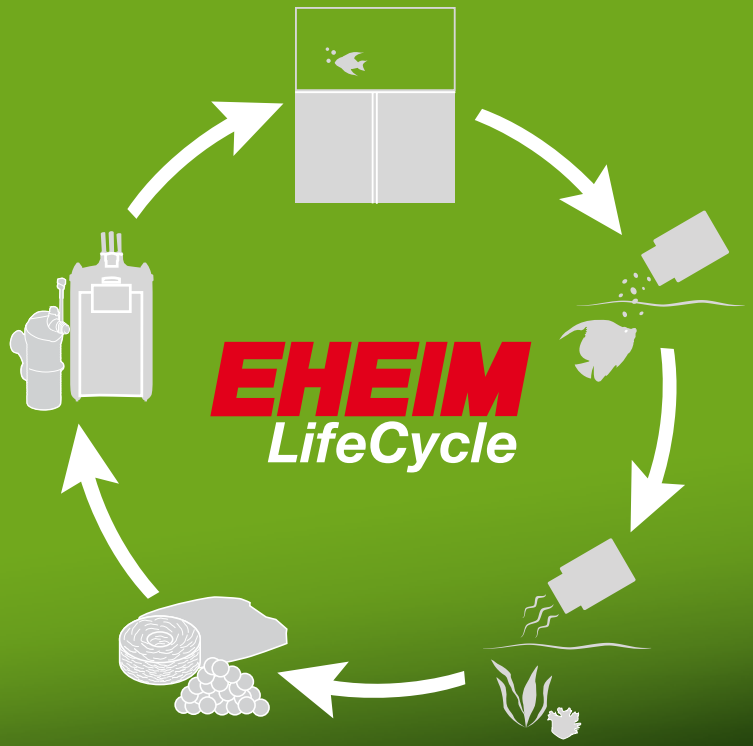
If not, this is probably due to a lack of nutrients. This will manifest itself in different ways, depending on the species, but usually the foliage will change colour. If, for example, you notice that foliage is yellowing rapidly – there is probably a shortage of nitrogen or sulphur. If the yellow discolouration starts at the tips of the leaves, this indicates a lack of iron – similarly if the leaves seem to be brittle. Yellow spots, on the other hand, are a sign of an iron, magnesium, phosphorous or potassium imbalance.

What to do – if …?
Discover what to do, which fertiliser to use and when – using our plant care App.

EHEIM plant care

Natural plant food with no unnecessary additives – complementing the EHEIM water care programme.

Our plant foods are a carefully blended mix of quality nutrients and natural trace elements. They do not contain any unnecessary additives or any phosphates or nitrates that might disturb the biological balance in the aquarium. All products contain pure and natural ingredients that will not harm your fish.



The EHEIM comfort programme for your fish: Water care, plant care and technology – in perfect harmony.

EHEIM plantcare

Complete plant food for regular use:

24 h fertilizer
Complete, highly effective daily nourishment for your plants

7 day slow release fertilizer
Complete weekly nourishment for your plants

autoFERTILIZER
Concentrated fertiliser for use with liquidosers (sold separately)

Supplementary plant food for demanding plants:

Ferrous fertilizer
For healthy growth and green foliage

EHEIM plant care:
1 – EHEIM 24 h fertilizer
2 – EHEIM 7 day slow release fertilizer
3 – EHEIM autoFERTILIZER
4 – EHEIM Ferrous fertilizer

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Do you need advice and help?

If you have questions, go and see your specialist aquatics retailer. Fishkeepers' clubs are also useful.

You can find a specialist aquatic retailer by visiting our website

www.eheim.com

You will also find there a lot more information about aquariums, technology, fish, plants etc.

Imprint

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Quality has a name.

EHEIM

Many biological and biochemical processes play a part in the ecological cycle of an aquarium, therefore water and plant care offer a logical extension to aquarium technology. In this guide, the aquarium pioneer EHEIM, explains the essential connections between the two and provides tips on correct water care and the promotion of plant growth in the aquarium. Ideal reading for anyone who would like to gain a quick, compact overview of the essential information required.

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