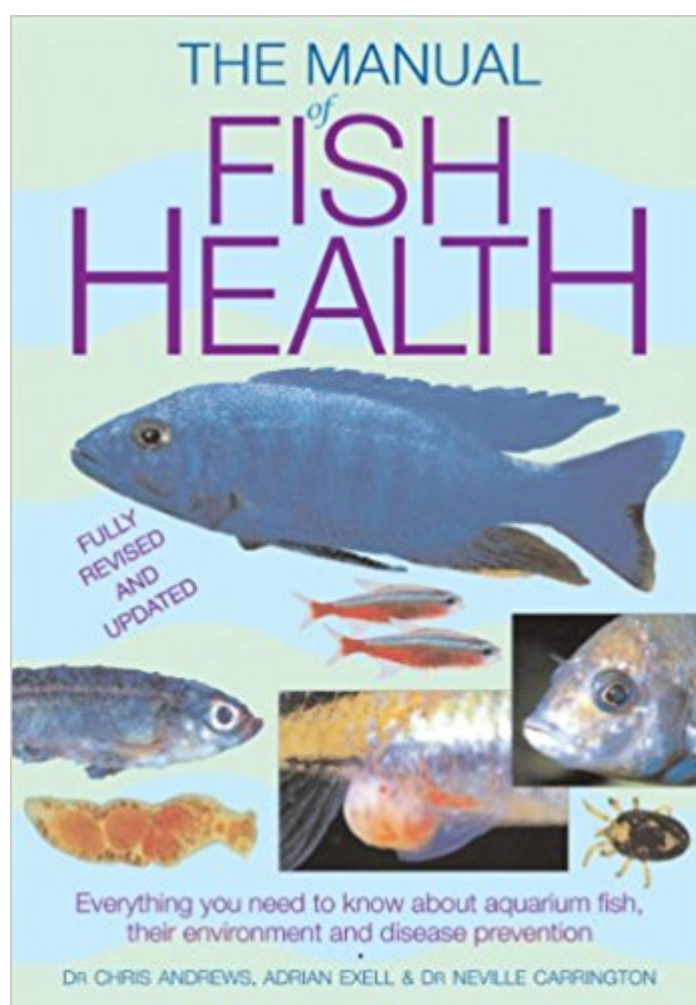


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# Manual Of Fish Health: Everything You Need To Know About Aquarium Fish, Their Environment And Disease Prevention



## Synopsis

A comprehensive guide to keeping fish healthy for the serious hobbyist. A healthy environment is crucial for any aquarium. Fish need more than a tank of water and a daily sprinkle of food to stay healthy, and the fish-keeper is regularly challenged to understand irregularities that can cause trouble. *Manual of Fish Health* is a fully illustrated and highly informative reference that concentrates on: Maintaining a healthy aquatic environment Recognizing and coping with pests, diseases, parasites and bacteria Balancing water chemistry so the fish's environment is always healthy The book also includes an A to Z directory of common pests and diseases and a practical guide to their control and treatments. The expert authors explore the vital aspects of health care for all types of fish, including freshwater and saltwater, tropical and temperate, and pond and aquarium. The clear and concise text is abundantly illustrated with underwater photography, charts and diagrams.

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## Customer Reviews

Chris Andrews, PhD, specializes in fish diseases and works at the South Carolina Aquarium. Adrian Exell is developments manager for a major aquarium products company. Dr. Neville Carrington specializes in fish diseases and water chemistry.

Chapter 1: The Balance of Health As a fishkeeper, you must accept a basic obligation to the totally dependent creatures in your care. Your first priority must be to provide the best possible conditions to safeguard their health and to promote their well-being. Accepting and discharging this

responsibility to the full yields three fundamental benefits. First, it will minimize stress on the fish, which is unavoidable in their unnatural captive environment. Secondly, it will lead to relatively trouble-free fishkeeping. And thirdly, well-cared-for fishes will reward you by displaying their best colors and their most natural behavior for you to enjoy. In this opening section, we look briefly at the relationship between fish, their environment and the pathogens (i.e. the disease-causing organisms) that potentially threaten their health and survival. Fish, pathogens and the environment Since fish consist of 80 percent of the raw material that makes up the environment in which they live -- namely water -- and only a simple membrane separates the two, it is not surprising that fish are uniquely influenced by any alterations in the environment and that any fluctuations have a significant impact on their health. Many potential fish pathogens are a constant and natural part of the environment, usually without causing disease problems and mortality. For example, fish usually carry small populations of protozoan parasites that feed mainly off surplus tissue and are kept under control by the fish's immune system. After all, it is not usually in a parasite's interest to kill its host. (There are some exceptions, however, where the parasite's life cycle involves killing the fish so that it is eaten by the next scavenging stage in the cycle.) This unique relationship between fish, their pathogens and the total environment in which they live means that under normal environmental circumstances there is a balance between the fish and the pathogens. In this case, the fish's immune system keeps any problems under control. However, if there is an alteration in one or more of the environmental characteristics then there may be a shift in the balance to the benefit or detriment of either the fish or the pathogen. An example of an environmental change that runs counter to a pathogen is a fall in temperature that reduces the virulence of that pathogen, by slowing down its rate of multiplication or even halting its life cycle. If the environmental shift is against the fish, then -- in addition to any direct physiological impact -- the fish usually becomes stressed, its immune system is suppressed and it becomes more susceptible to disease. In this situation a disease outbreak may occur, particularly if the environmental shift also favors the pathogen. As an example *Flexibacter* bacteria are commonly present in fish-holding water, but the fish's immune system keeps them at bay. However, when excess food rots in the environment the bacterial population rises and, as the bacteria break the food down, they produce excess amounts of ammonia. Ammonia is a toxin that irritates the fish's gills, causing them to overproduce a layer of cells on the delicate gill surface. Since these cells are more prone to bacterial infection, the combined effect of these circumstances is an episode of bacterial gill disease in the fish. Another relevant disease-causing factor is the introduction of disease organisms into the environment on fish, plants or decorations. This can result in the introduction of some types of pathogen that, as a consequence

of their action, inevitably kill the fish host. The introduction of different types or strains of pathogens will also upset the natural immunobiological balance of a community of fishes. The indigenous fishes will have developed a degree of immunity to most of the disease organisms in their environment but may not have encountered the new strains of pathogen being brought in. On the other hand, the newly introduced fishes will also have to develop an immunity to the population of pathogens in their new environment. Therefore, introducing new fishes greatly increases the chances of a disease outbreak occurring. This underlines the importance of careful quarantining, a simple precaution that reduces the likelihood of disease when you are building up a fish population from different sources. (For guidance on quarantine, see pages 70-73.)

### Stress and disease

Stress is a vital factor in fish health. The varied forms it takes and its effects on fish have been investigated by biologists and fisheries scientists in both wild and captive fish populations. Here, we draw some simple conclusions from what is a highly complex story. Factors that have a negative impact on fishes, such as handling, overcrowding, poor environmental conditions and unsuitable or aggressive tankmates, are called 'stressors'. The stress response these stressors cause is defined as the sum of the physiological responses the fish makes to maintain or regain its normal balance. Some stress responses are common to all stressors; others are specific to one particular type. The most basic stress response is to escape from imposed danger, which may take the form of a natural predator or, in captivity, the fishkeeper attempting to catch the fish in a net for closer examination or transfer it to another tank or pond. The first part of this response is the preparation of the body for escape, which, in biological terms, involves the release of hormones that channel all the fish's energy to power the locomotory muscles. Unfortunately, this alarm response has long-term detrimental effects. For example, one of the hormones released is adrenaline, which apart from 'quickening' the body for instant action also disturbs the osmoregulation (i.e. control of the salt/water balance) within the fish. Another hormone involved, cortisol, affects the white blood cells and reduces their effectiveness in the immune system. The second part of the response involves the recovery of the fish's equilibrium. Thus, the alarm response is clearly a compromise between the short-term need to reach immediate safety and the longer term side-effects of the physiological changes involved. It can be an uneven compromise; a fish that undergoes an alarm response as a result of stress applied for even a short period of time can take hours or even days to recover its equilibrium. The stress response in fish is generally considered to be less well suited to reacting to chronic environmental stressors. This is because fish have evolved in a relatively stable natural environment and have not, therefore, developed an effective system to deal with environmental changes or chronic stressors. In the case of a negative environmental change, a fish's first

response is also an alarm stage, in which it attempts to get away from the problem. If escape is not possible, then it is followed by an adaptive stage during which the fish's body attempts to react to the environmental change. Initially the fish's physiological compensation tends to over-react. Then, over a longer term, it returns to a new equilibrium in which the fish reaches optimum adaptation, both physiologically and behaviorally, to survive the new environmental conditions. During the adaptive stage of the stress response, the fish channels much of its resources into dealing with the stressor. As a result, its immune system functions less effectively and hence the fish is more prone to disease problems. Although a fish may successfully adapt to new conditions, its performance in terms of growth, breeding and disease immunity may be reduced. This adaptive stage may last from four to six weeks. If a fish is constantly exposed to stressors such as a steady deterioration of environmental conditions or continual bullying by tank-mates the adaptive stress response is likely to be so extended, and the fish's normal functions so disturbed, that its chances of survival are significantly reduced. If the environmental change is so great that the fish cannot compensate -- then the fish's stress response finally reaches a fatal exhaustion stage. Although stressors and the fish's stress response can result in the fish succumbing to disease because of the immune system's reduced effectiveness, the diseases themselves can also be considered as stressors in their own right. In this case, the fish's adaptive response is an attempt to counter the disease effects. Even from this simple introduction it is clear that minimizing stress is an extremely important part of good fishkeeping. How to reduce it at every possible stage is a recurring theme in all the fishkeeping advice given throughout this book. Without doubt, careful forethought and planning, and effective management of water quality and fish populations, are the key elements in successful trouble-free fishkeeping. As with many health-related endeavors, the old adage is consistently true: prevention is far better than a cure. --This text refers to an out of print or unavailable edition of this title.

I was and am still very pleased with this book and all the methods the authors used to present their information in a meaningful, thorough and understandable manner. I have seen books costing close to \$100 with a 'gazillion' pages full of unintelligible giberish, that one would normally need to purchase to obtain the same information you get in this book (at a substantial savings). This book helps to quickly get the reader to a clear understanding using diagrams, graphs, flow charts and photos along with the text written in laymans terms. For example how a tank cycles and what developments occur at what stages, or how to recognize and treat different fish ailments with out having a 'Phd in Fishies'. Higly recommended.

I found this book way to technical. Every disease was broken down with Latin names, autopsy findings... If you have a five thousand dollar microscope and want to cut your fish up then this is the book for you. If you just want to identify why your Angelfish has a white spot on its mouth for example then don't buy this book. I did and I returned it.

Good coverage of the topic. The book starts with basic but important aspects. Then the book continues with common diseases (preventions, cure etc.) that anyone in this hobby would face with. Paper quality and organizing of the outline satisfy expectations.

I like that this book is more focused at experienced aquarist who want to further their understanding rather than people who are completely new to the hobby. I also like that it is a heavy read relative to other aquarium books, In some places I felt like I was reading a microbiology textbook. Its all around aquarium health info but it has a big section on fish health. It has a lot of detailed pictures for identifying fish sicknesses, and is actually kind of gross, but I have never seen a book with so much info on the topic and I think that is its strongest point. The weakest point is there isn't much on plants which to me is just as important as the fish, I guess that's a different book.

While it's true you can find a ton of information on fish illnesses online, much of that info is vague, conflicting, or just incorrect. The authors of this book know their stuff, and large photos make identifying health problems easy (though, warning, they can be gross). I love the charts on the life cycles of parasites. The treatment section is not as helpful for me, but once you've identified the problem it's much easier to search for a solution elsewhere.

I am very glad I got this book. It is old, and I had to buy it from a third party vendor on , but I received a book that looked like it was brand new. The book is loaded with lots of photos and drawing to help the reader identify medical problems on fish. The book also shows very clearly the physiology of fish without getting into overly scientific language. This book is a valuable addition to my 'fish' library.

I purchased this book for my partner who is new the tropical fish keeping. I found the book to be very informative, but I don't feel the book may be 100% appropriate for the layman. My partner who doesn't have a strong background in biology/environmental science found it to be academic and a chore to read. The language may be a bit thick for some audience members. I also have 15+ years

experience with the hobby and a strong background in biology/environmental science. I really enjoy this type of book - its very detailed, good descriptions, great pics and diagrams - plus the information on the environment was a pleasure to read. I found it really completes the book. I won't be surprised if the book ends up on my bookshelf from his. I have a strong background in science, research and reviewing scientific literature so I really enjoy the document. Actually, it really makes me wish I had taken some ichthyology courses!!

Nice book with a lot more information then expected wish it had more details on treatments.

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