

THE NEW ILLUSTRATED GUIDE TO FISH DISEASES
IN ORNAMENTAL TROPICAL AND POND FISH

BY
GERALD BASSLEER

The *new* illustrated guide to fish diseases

in ornamental tropical and pond fish

Observation

Recognition

Prevention

Treatment

with 1,000 photographs

by

Gerald Bassleer

Interior photos: Gerald Bassleer

Maarten Lammens (ill. 51, 106, 522, 523, 527, 548, 549, 550, 553, 554, 590, 593, 594, 595, 597, 598, 599, 600, 601, 602, 603, 614, 615, 644, 648, 648, 668, 985, 987, 988)

Wilfried Van der Elst (ill. 16, 79, 88, 143, 164, 396, 712, 960, 966, 968, 991)

Cover photos: Gerald Bassleer

Cover design: Lannoo Drukkerij

Drawings: Danny Janssens

Printed and bound by Lannoo Drukkerij

Explanation of cover photos (from left to right and from top to bottom)

Front: see ill. 493, 636, 521, 350, 569, 689

Back: see ill. 807, 704, 690

1st edition

Responsible publisher: Gerald Bassleer

Bassleer Biofish, Stationstraat 130, 2235 Westmeerbeek, Belgium

www.bassleer.com

This book is also available in French, German and Dutch

No part of this book may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without written permission of the publisher.

Contents

About the author	9
Acknowledgements	10
Introduction	11
1. How to use this book	13
2. QUESTIONNAIRE, CAUSES of fish disease and QUARANTINE: To spot or prevent diseases and problems.	15
A. Self-examination with questionnaire	16
B. Causes of fish disease	18
C. Quarantine	23
3. Diagnostic photo list and Behaviour: To recognise signs of disease with the help of 150 PHOTOGRAPHS	25
A. Fin and tail rot	26
B. Pale or white patches on the skin	27
C. Turbidity of the skin	29
D. Red or bloody patches on the skin and ulcers	31
E. Holes/pits/craters	34
F. Spots/dots/wart-like clumps	36
G. Cotton-like growth	39
H. Lice and worms on the fish	41
I. Eye problems	42
J. Swollen or emaciated fish	44
K. Discoloration of the fish	46
L. Deformities	48
M. Behaviour of sick fish	50
4. Microscopic examination: for specialists	53
5. THE MAJOR FISH SPECIES (families) WITH THEIR MOST COMMON DISEASES; with 400 PHOTOGRAPHS	61
A. Salmonids or Tetras (<i>Characiformes</i>)	62
B. Cypriniformes (<i>Cyprinidae</i>)	69
C. Gouramis/Labyrinthfishes (<i>Perciformes-Anabantoidei</i>)	73
D. Livebearers (<i>Poeciliidae-Goodeinae</i>)	79
E. Killies (<i>Aplocheilidae, ex-Cyprinodontidae</i>)	84
F. Rainbowfishes (<i>Atheriniformes</i>)	85
G. Catfishes (<i>Siluriformes</i>)	86
H. African Cichlids (<i>Cichlidae Africa</i>)	92
I. American Cichlids (<i>Cichlidae America</i>)	98
J. Various Fish Species	107
K. Goldfish/Koi (<i>Carassius/Cyprinus carpio</i>)	114

6. The most common diseases: examination, causes and treatments	135
A. Viral infections	136
B. Fungal infections	140
C. Bacterial infections	144
D. Unicellular parasites (<i>Protozoa</i>)	158
1. External parasites, free-swimming	158
2. Internal parasites, free-swimming	169
3. Encapsulated unicellular parasites	173
E. Multicellular parasites (<i>Metazoa</i>)	184
1. External worm infections	184
2. Internal worm infections	189
3. Fish lice and parasitic crustaceans (<i>Crustacea</i>)	197
F. Hole-in-the-head disease, Discus Disease/Angelfish Disease, Deformities and other abnormalities	201
7. Medicines with advice on their use	213
A. FAQ – Frequently asked questions	213
B. Medicines	215
1. Anti-fungal medicines	215
2. Anti-bacterial medicines	215
3. Anti-parasitic medicines	218
4. Some tips for combinations of medicines	223
8. RECOMMENDED LITERATURE:	225
REGISTER	
A. Fish species	227
B. General	230



1 • Young fishergirl in Cameroon.



A lake rich of fish in Cameroon

About the author

Dr. Gerald Bassleer, born in 1954 in Sint Niklaas, Belgium, has been active for over 25 years in the international ornamental fish trade. As a biologist, he specialised in fish diseases (ichthyopathology) while studying at various universities: Antwerp, Belgium; Maracay, Venezuela; Athens, Georgia, USA; Stirling, Scotland and Höhenheim, Stuttgart, Germany.

From 1977 to 1995 Dr. Bassleer worked for major wholesalers in Belgium, the United States, the Netherlands and Germany.

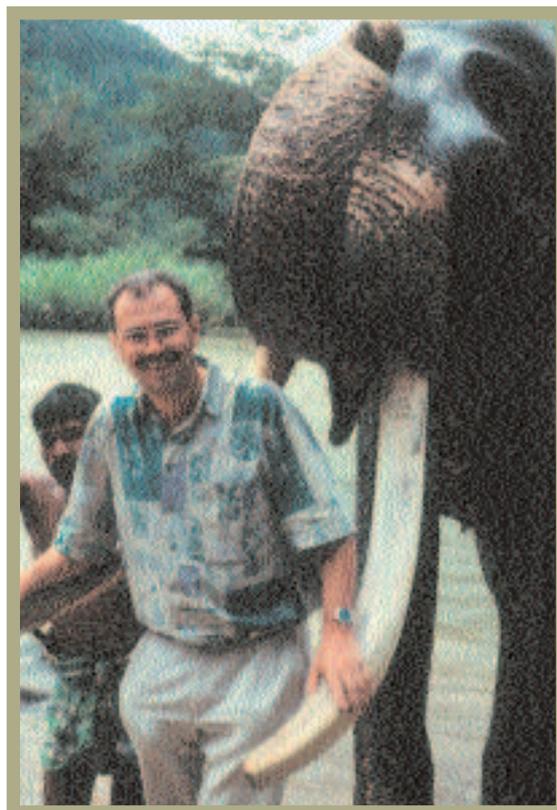
In 1995 he set up his own import/export business in ornamental fish, together with his wife, Angélique Gillhaus: BASSLEER BIOFISH in Westmeerbeek/Belgium.

In his 25 years of daily experience and research of diseased ornamental fishes, combined with his many travels, lectures and publications, Dr. Gerald Bassleer has gathered an enormous stock of material and know-how. In 1982 he published his first book 'Colorguide of Freshwater Fish Diseases', of which more than 50,000 copies have been sold (three editions in four languages).

He has also written the book 'Diseases in Marine Aquarium Fish' (two editions in four languages). He is an active member and adviser of the largest international association of ornamental fish traders, OFI (Ornamental Fish International), which promotes ethical trade standards focused on the welfare of fish and nature. For further information see www.ornamental-fish-int.org He is a consultant to various breeders and export firms as well as a regular contributor to trade and fishkeeping magazines.

Dr. Gerald Bassleer has developed a high-quality fish food to make fish stronger, naturally coloured and healthier: *Dr. Bassleer's Biofish Food*. There is also the special food that makes fish more resistant to infections: *Dr. Bassleer's Biofish Food Forte*.

For further information visit the website www.bassleer.com



2 • The author G.Bassleer in Sri Lanka.

Thanks!

- *to my wife, Angélique Gillhaus, for all her support and free time going into the successful completion of this book;*
- *to the entire staff of Bassleer Biofish for their help in spotting and collecting the sick fish;*
- *to Wilfried Van der Elst (fish expert) and Dr. Maarten Lammens (fish doctor) for supplying the professional illustrations;*
- *to Anna Robinson for her assistance with proofreading and translation of the English text.*
- *to the staff of Lannoo Drukkerij for their professional finish, which further enhances the book's readability;*
- *to all those too numerous to mention (suppliers, breeders, customers, fish specialists, etc.), who have helped me in word and deed over the past 25 years.*

The author cannot be held liable
for any damage to aquarium animals and/or
equipment resulting from the use of this book.



Introduction

This book is the continuation of and supplements the 'old' *Colorguide of fish diseases*, which was published three times in four languages between 1983 and 1998.

In the 25 years of Dr. Gerald Bassleer's daily examination and treatment of fish in the international ornamental fish trade, the quantity of knowledge and information has only increased.

At the same time, digital photography has enabled us to collect more and better photographic material.

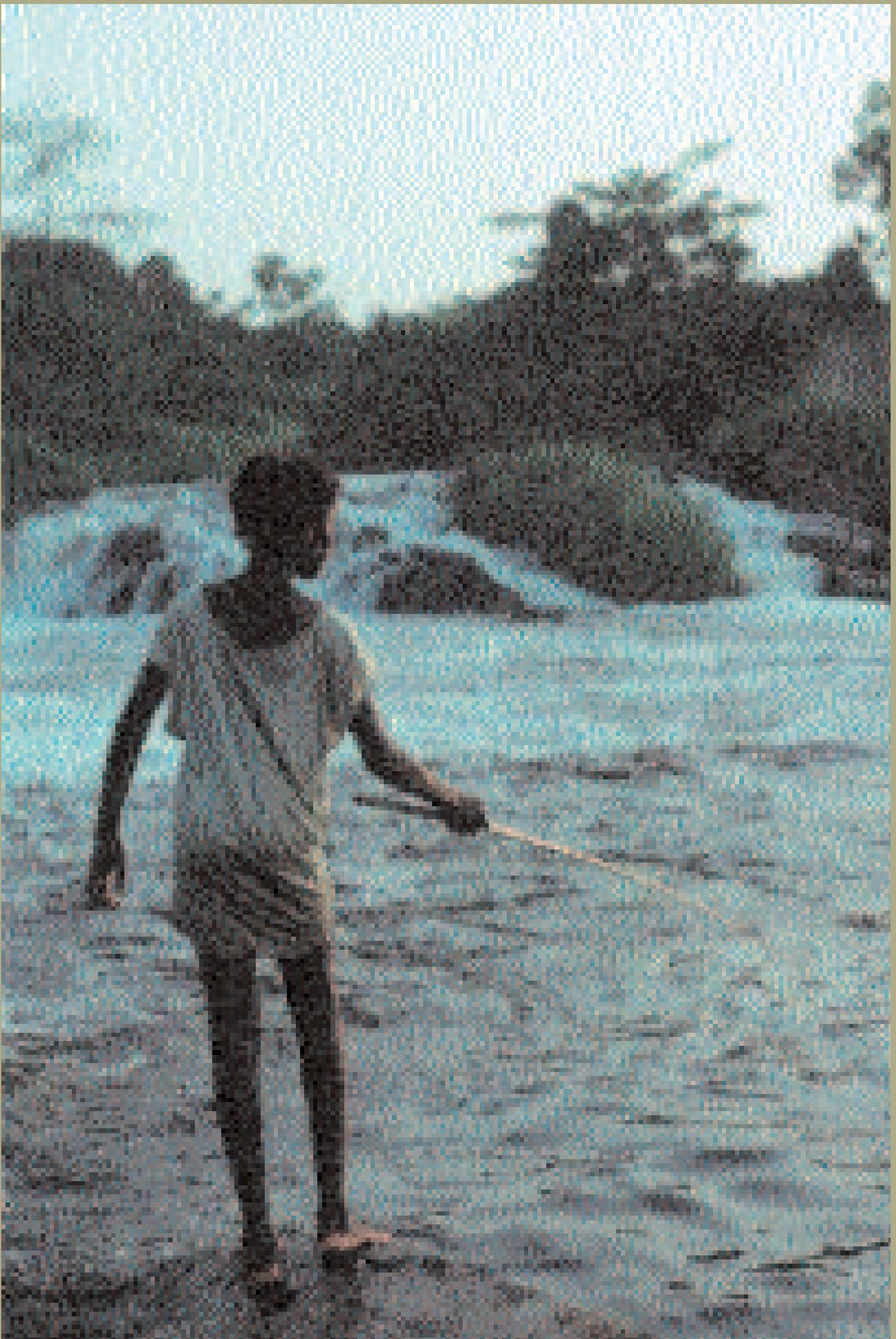
From a selection of over 12,000 photographs, all taken through the eyes of a fish doctor, the most representative ones have been bundled, resulting in this highly practice-oriented book. The illustrations of the sick fish speak for themselves and guide the reader through the difficult and rather complex subject matter of fish diseases. However, not all but only the major fish diseases encountered in ornamental fish aquariums have been described. This

time, special attention has been paid not only to diseases typical of specific families of tropical ornamental fish (Tetras, Gouramis, Cichlids, etc.) but also to diseases in Goldfish and Koi.

Scientific and difficult text has been avoided as *The New Illustrated Guide to Fish Diseases* is meant for traders and amateurs of (aquarium and pond) ornamental fish and for fish doctors and veterinarians who have to deal with sick fish in their practices.

We cannot fail to notice that a number of fish diseases are still being named incorrectly with the (right) drugs being used at the wrong time (e.g., False Neon Disease or False Fungal Infection).

For all of the above reasons, we believe that *The New Illustrated Guide to Fish Diseases* is long overdue as an instrument aimed at giving our aquarium or pond fish a better and healthier life.



3 • Young fisherman catching *Pelvicachromis* in Cameroon.

1. How to use this book



Tip: 90% of solutions for sick fish are based upon examination of the water quality, behaviour of the fish, and microscopic examination of the skin (skin scraping, piece of fin), the gills and the faeces.

The examination must, however, be carried out on FRESH (still living) FISH as parasites tend to disappear from the fish as fast as rats leave a sinking ship!

It is also recommended to find a solution as quickly as possible as generally there is no time to lose when the first signs become apparent. This applies in particular to tropically warm tanks or ponds heated in summer!

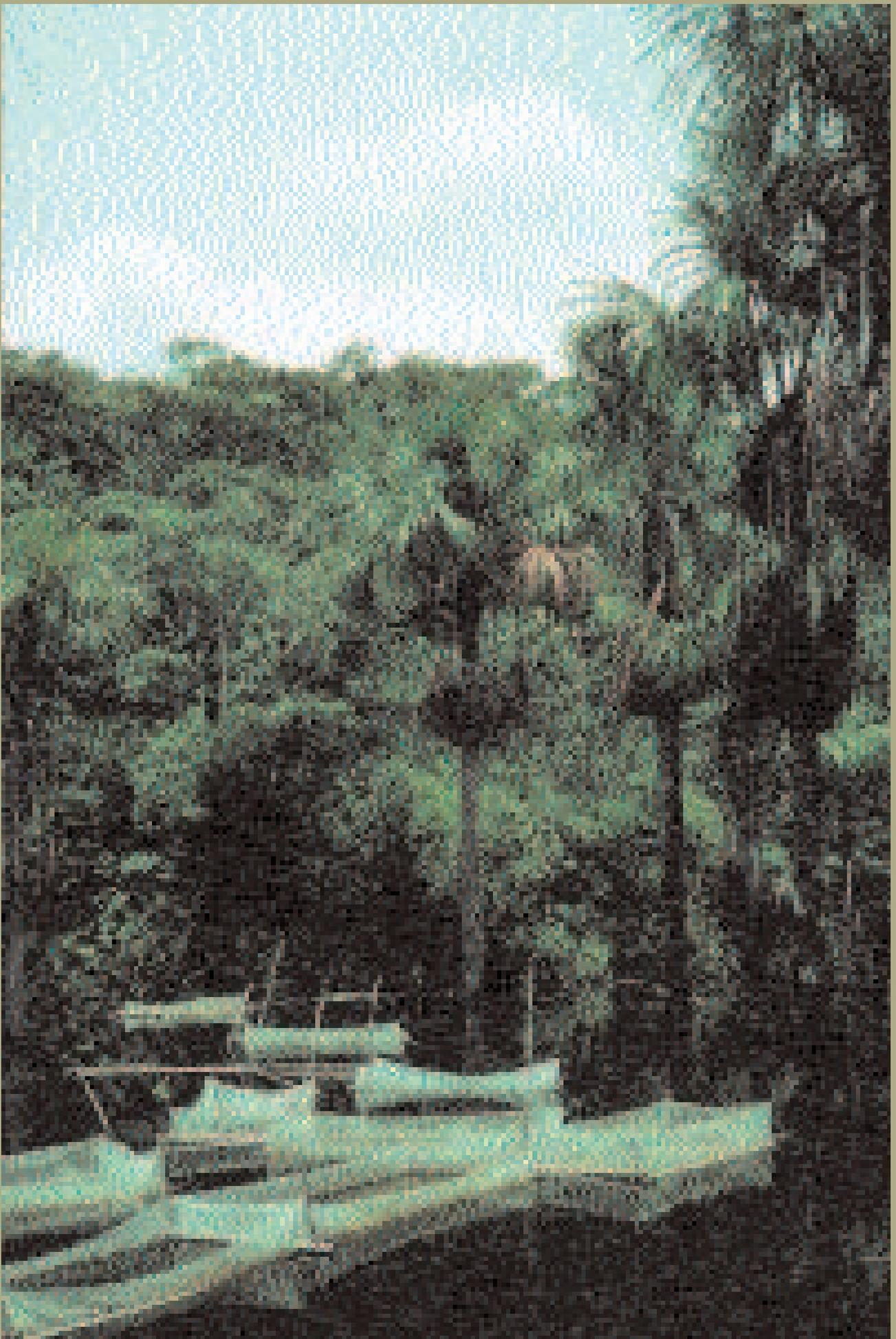
When we have a disease in our tank we proceed as follows:

1. We take at least 5 to 10 minutes to observe all fish (both healthy and sick). The best time to do this is during and after feeding. Thoroughly examine your aquarium, filter, etc.
2. Consult the 'Questionnaire and Causes' (Chapter 2) to spot or prevent problems.
3. Proceed to Chapter 3 'Diagnostic Photo List and Behaviour', which provides you with the means to define the problem.
Your aquarium or pond retailer can help you with this.
4. A 'Microscopic Examination' (Chapter 4) will in many cases be necessary to allow for an accurate diagnosis to be made.
Here, the help of a fish doctor may prove indispensable.

5. At the same time, you can compare the sick fish species with its congeners in Chapter 5 'The Major Fish Species with their most common Diseases' in order to recognise the disease or problem with congeners and deal with it as quickly as possible.
6. If the fish have a specific disease or if you want to learn more about the disease and its treatment, go to Chapter 6 'The most common Fish Diseases'.
Exception: The diseases in Goldfish and Koi are discussed in Chapter 5 with further details being given in Chapter 6.
7. You should now be able to solve your problem; if you want to use specific medicines, you can look them up in Chapter 7 'Medicines with advice on their use'.
8. If you are still unable to solve the problem, ask your aquarium or pond retailer for advice or consult your fish doctor or veterinarian.
9. There is no simple remedy for a number of problems. As the author of this book, I speak from experience: some problems cannot be analysed because we only have limited resources and... because, sadly, we cannot talk with our fish.
Change the water, rinse carefully the filter with tap water of similar quality as the aquarium water. Optimise the water conditions for the fish, give them appropriate food and wait... after a few days the problem may have solved itself or the symptoms may become more clearly visible!



Tip: Also read the **Tips** as they may provide you with useful indications!



4 • Rivernets with *Paracheirodon axelrodi* in the Amazon at Manaus.

2. QUESTIONNAIRE, CAUSES AND QUARANTINE

Before we compare our sick fish with the photographs and in order to avoid any rash conclusions being drawn, we first have to ask ourselves a number of questions related to the water quality, the food and other factors that may have caused our fish to get sick.

A. Self-examination with Questionnaire (and Diagnostic Photo List)

B. CAUSES... usually Stress

1. Water analysis
2. Food problem
3. Other problems
4. DMS (Delayed Mortality Syndrome)

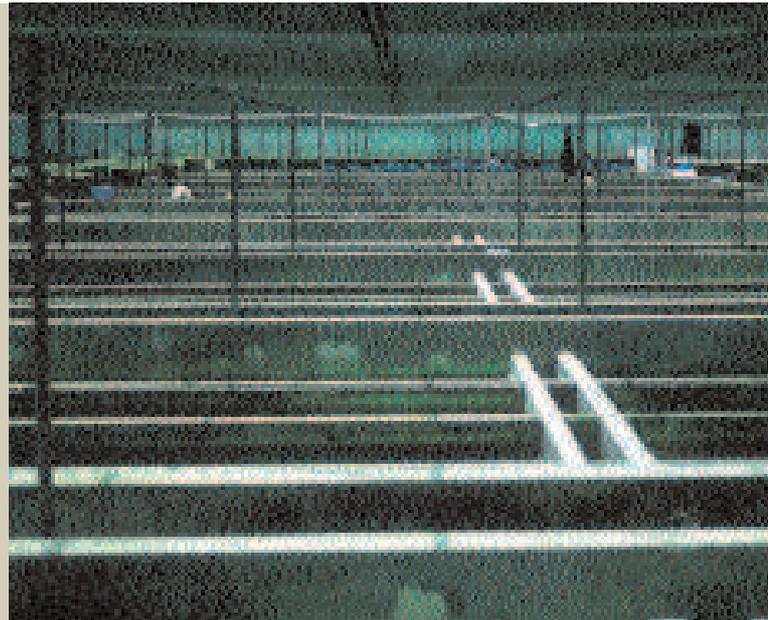
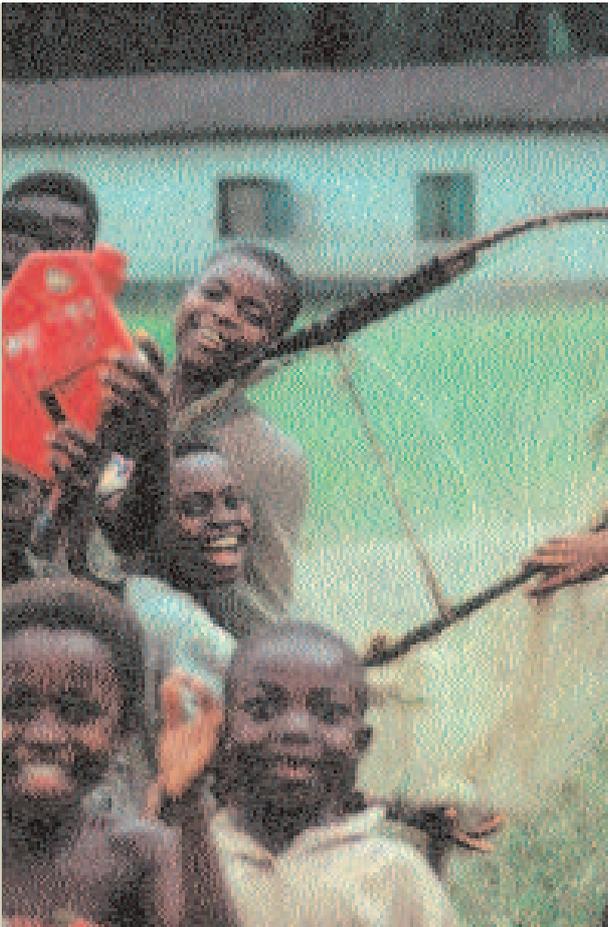
C. Quarantine



Tip: ALWAYS first analyse the aquarium water (especially pH, Ammonia, Nitrite, Nitrate, Hardness and sometimes also Oxygen content).

A. Self-examination with 11 Important questions

that we have to ask ourselves. With the answers to these questions we can consult our aquarium specialist or fish doctor who will then most certainly be able to give you better advice!



▲ 6 • Fish farm in Sri Lanka.

◀ 5 • A village with fisher girls at the river Molve in Cameroon.

QUESTIONNAIRE:

1. Description of the disease, behaviour and symptoms of the fish.

(See Chapter 3 'Diagnostic Photo List and Behaviour' p. 25):

2. Which fish exhibit this disease (symptoms) and which fish have already died?

Compare the problems of the fish species with the photographs in Chapter 5 'Fish Species and Diseases' p. 61:

3. When and How did these symptoms start?

4. How old are the sick fish?

5. Have new fish been added to the tank? If so, when and which fish were they?

And where did they come from?

6. Has anything special occurred recently? Big water change? Power failure?

Another disease or problem that has been treated? New decoration or plants? Etc.

7. What is the water quality?

pH = ...

Hardness DH = ...

Ammonia NH₃ = ...

Nitrite NO₂ = ...

Nitrate NO₃ = ...

Oxygen content = ...

Metals (i.e., Copper = ... , Lead = ...)

(this can be tested easily and quickly ... ask the shop for advice)

8. Describe the aquarium and its contents:

Age = ...

Size in litres = ...

Filter size or capacity = ...

Which fish species are still in the aquarium = ...

9. When was the water last changed and the filter cleaned?

10. Which products/chemicals have been used recently? Has anything special occurred in the room where the aquarium is installed in the past few weeks? (See also Water Examination, p. 18)

11. Which fish food has been used for the past month?

...

Ask the shop owner to check whether this food is suited to your fish!

You have the author's permission to copy this page!!! (free of copyright©)





7 • The selection of fish at a fish farm in Singapore



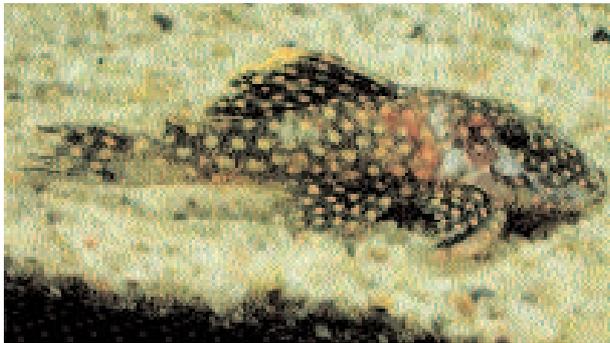
8 • Bags with fish in transit in Singapore

B. Cause of fish disease

is usually *STRESS*

Stress has several causes: water quality, nutrition, aggression, general care of the fish and of their water environment (from the breeder or catcher down to the hobbyist, via airplane and trade).

A number of factors are discussed in detail below. Fish have the natural ability to defend themselves against infections (through their immune system). Stress, however, slows down the immune system, so they can easily



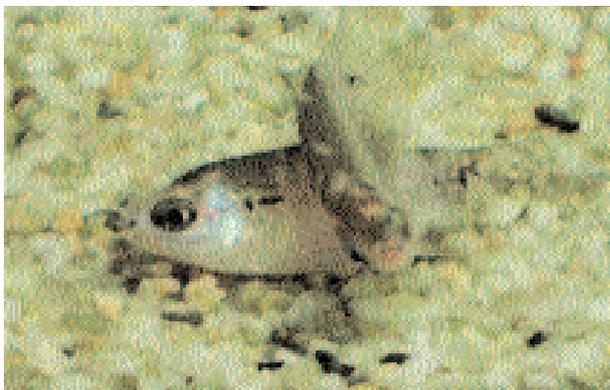
9 • *L-18 Baryancistrus* 'golden nugget'

Bacterial infection: Patches on skin caused by bacterial infection after stress during transport.



10 • *Eutropiellus vandeweyeri*

Infection or Whitespot: After a situation or stress, the fish can develop a Whitespot infection.



11 • *Trichogaster leeri*

Viral infection: Through weakening and exhaustion many diseases can break out.

become infected with bacteria, fungi, viruses or parasites (which are usually present in the water and fish but do not always infect the fish). (Ill. 9-11).

Old fish grow weaker, have a weaker immune system, are less resistant and therefore more prone to disease.



Tip: *Stress is the primary cause of weakening of the fish,*

whereby the immune system of the fish is affected, whereby the fish grows weak, whereby the fish can no longer defend itself against pathogens, so that eventually the fish may become sick.

What factors cause stress and should therefore deserve our special attention?

There are *distinct factors* that can cause stress and therefore also disease: ammonia, nitrite or nitrate poisoning, too high or too low a water temperature, lack of oxygen, toxic substances in the water or environment, etc.

We can examine and analyse all these factors ourselves.

There are also *indistinct factors*: bad transport, poor packaging, overcrowding, poor biological filtering, inadequate nutrition or overfeeding, etc. These factors cannot be analysed with measuring instruments.

1. First examine the water:

Fish can neither swim away from bad water nor can they talk... through their behaviour and disease symptoms, however, they can actually alert us to their poor health... so we are responsible for their proper care. (Ill. 14)

(see Chapter 3. Photo list and Behaviour, p. 25)

To analyse your tank water, there are easy-to-use test kits available at your aquarium shop (e.g., Aquavital Multistick, Tetrastest, eSHA, etc.). Most aquarium or pond shops can also perform an efficient analysis for you!

Many problems are caused by excess ammonia, nitrite or nitrate, too high or too low a pH or too little oxygen (lack of oxygen is generally a critical factor in ponds in the summertime).

The cause of these problems can generally be traced to:

- not enough water changes; a golden rule: each month remove 20% of the tank water and replace it with suitable and chlorine-free water with more or less the same temperature as the water in the tank (this also applies to densely populated ponds)
- poor biological filtering (filter too small, contaminated or defective),
- overcrowding, or
- overfeeding



Tip: A biological filter is the most important and most essential fish care component in the aquarium. This filter can only work efficiently if it has sufficient capacity.

Inefficient biological filtering results in:

- poor breakdown of waste products
- excess ammonia and/or nitrite
- leading to ammonia and or nitrite poisoning
- fish hang at the surface and gasp for air, they are nervous or jumpy, they contract all kinds of diseases and die. (Ill. 12+13)

This is the case:

- with a new aquarium whose biological filter has not been run in properly (at least 15 to 21 days);
- with too small a filter having too small a capacity;
- with overcrowding;
- with too little oxygen;
- with overfeeding;
- with a filter that is not cleaned (monthly) = rinsing out the filter material using regular tap water with similar quality as the aquarium water.

(attention: cleaning does not destroy the good bacteria that are essential for proper operation of the filter)

Treatment: change the water and clean the filter, possibly adding an extra amount of good filter bacteria.

Attention: the biological filter bacteria that are available in shops vary widely in quality.



12 • *Carassius auratus* 'Goldfish'

Dying Goldfish: Bad biological filtration may cause the fish to become sick and eventually die.



Tip: Sometimes fish newly introduced into an existing aquarium die within a matter of hours, whereas the other fish already in the aquarium do not seem to have any problems. This is usually caused by 'bad' water (see below).

Poor water conditions:

Too acid or too alkaline, too many nitrates, too much contamination, etc., makes the water 'old' and toxic, which may cause the old fish to die slowly and the newly introduced fish to die IMMEDIATELY (i.e., within a few hours). The old fish population has already slowly acclimated to the water and does not (yet) exhibit any signs of poisoning. (Ill. 12+13)

Treatment: Test AND change the water at regular intervals, i.e., each month remove 20% of the water and replace it. Also siphon off the bottom and clean the filter. The cause of the problems must also be examined and this is best done with the help of your aquarium shop.

If other components need to be examined, you can have the water analysed in a specific laboratory!

There are many 'hidden poisons' that may kill your fish for seemingly inexplicable reasons, such as

- tap water, rainwater or well water that contains 'incorrect' substances (as a result of contamination);
- pesticides on decoration material taken from the garden or the wild;
- insecticides;
- varnish and special paint in spray cans (lacquer in particular);
- aerosol spray;
- excess smoke = nicotine;
- lead poisoning caused by old water pipes;
- copper poisoning caused by copper pipes or hot water cylinders;
- toxic stones from nature: may contain arsenic;



13 • *Carassius* 'Oranda Pearlscal'

Bleeding and damaged skin: Poor biological filtration can cause health problems.



14 • *Carassius 'Oranda Redcap'*

S.O.S.: We = the fishkeeper are responsible for the care of the water AND the fish.

- soaps or detergents used for washing material or hands;
- aflatoxin (toxic mould) is produced by rancid fish food (that has not been stored properly);
- fish medicines.



Tip: The aquarium water is influenced by the environment in which it is stored... this factor should therefore ALWAYS be taken into account!

For more details on specific poisons, see the Table in: Noga E.J. (2000); Fish Diseases, Diagnosis and Treatment, Iowa State University Press, Ames, USA



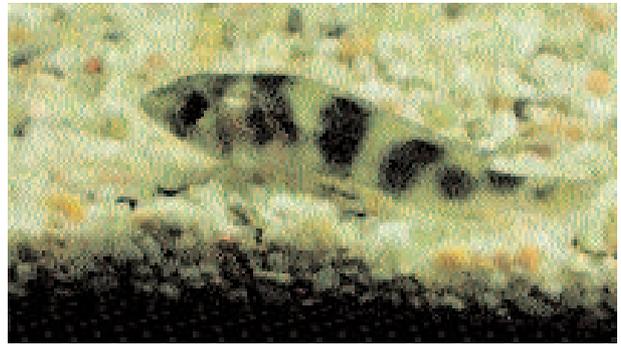
Tip: Many fish diseases are caused by over-feeding or by using poor quality fish food.

2. PROBLEMS CAUSED BY NUTRITION

This is another common problem that cannot be unambiguously linked to a pathogen!

It is usually caused by poor quality fish food or by 'cheap' fish food that contains fewer good/healthy ingredients (Ill. 15+16+17+18).

Deformed skeleton, extreme emaciation, fading of



15 • *Haplochromis obliquidens*

FishMB: Poor nutrition can cause infections or FishMycobacterium in fish.



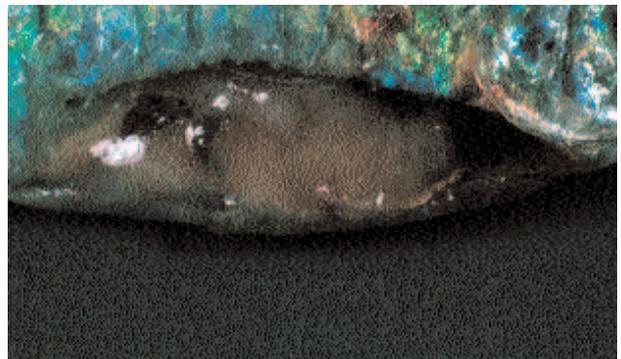
16 • *Haplochromis lanisticola*

Malawi Bloat: Swollen abdomen + protruding anus caused by bad nutrition + Bacterial infection. (Photo W. Van der Elst)



17 • *Phenacogrammus interruptus*

Bacterial infection: A small red patch caused by Bacterial infection after weakening through bad nutrition.



18 • *Phenacogrammus interruptus*

Fatty degeneration of organs: Unbalanced nutrition can cause fatty degeneration, poor fish health and eventually disease.