A GUIDE FROM THE FARM

Yechiel's Fishery Farm

Aquarium Basics

For Curious Readers Ages 7–10

Eight things every fish wishes you already knew.

Explained by the residents of the farm themselves.

(Because Yechiel has been trying to explain them for fifty years and feels it is time somebody else had a go.)

A note before we begin

Fish are living creatures. The aquarium is their entire world.

Everything that happens to that world — the temperature, the cleanliness, the oxygen, the food — happens to them. There is no going outside for a walk. There is no opening a window. There is no popping to the kitchen for a glass of water.

The water is the kitchen. The water is the garden. The water is the air.

Yechiel has been keeping fish for forty-nine years. He has eight rules. He asked the residents of his farm to explain them, because — as he put it — "perhaps hearing it from the fish themselves will finally make it stick."

> *"I've been doing this for fifty years. I know what's going on." — Yechiel Kuperman, Marine Biologist, standing by the tank with his tea*

The fish agreed to help. Some of them were more enthusiastic than others.

George, for example, had a great deal to say and none of it was polite.

We have included it anyway. It is also correct.

01. Oxygen and Water Movement

Told by: Ozzie the Oxygen Bubble

> *"Breathe, sparkle, repeat! That is the whole job! That is the entire schedule! Oxygen in, waste out, bubbles rising, life continuing! It really is not complicated!" — Ozzie, arriving at maximum enthusiasm from the air stone*

Fish breathe oxygen — but not from the air. They breathe oxygen that is dissolved in the water, collected through their gills as water flows past.

The tricky part is this: water can look perfectly clean and still be dangerously low in oxygen.

A crowded tank, a warm tank, a dirty tank, or a tank with no water movement will run out of dissolved oxygen faster than you might expect. And when that happens, the fish — as Ozzie will tell you at considerable length — cannot breathe.

Good oxygen levels need good water movement. A working filter, an air pump, a spray bar that ripples the surface — anything that keeps the water turning over and exchanging gas with the air above.

⚠ Without enough oxygen and water movement, fish can suffocate even when the tank looks perfectly fine from the outside.

Yechiel's Rule: Moving water = oxygen. Still water = trouble. Keep things flowing.

02. Temperature

Told by: Empress Matilda, Dor 70

> *"I have lived through three pump failures, two droughts, one flood, and a summer when somebody thought it would be helpful to put ice cubes in my lake. It was not helpful. Every change passes — but some changes pass considerably more slowly when they are the wrong temperature."*
> *— Empress Matilda, from the Old Lake, speaking from considerable experience*

Every fish has a temperature range that suits them. Tropical fish — like the residents of the Greenhouse — need warm, stable water, usually between 24°C and 28°C. Cold-water fish like koi and goldfish prefer cooler conditions and would find that temperature most uncomfortable.

Temperature that is wrong weakens a fish gradually. Their immune system slows down. They become more vulnerable to disease. They stop eating well. They seem fine at first — and then, suddenly, they are not.

A sudden change in temperature is even more dangerous than the wrong temperature itself. Moving a fish quickly from cold water to warm water (or the other way) can cause temperature shock — which is exactly as unpleasant as it sounds.

⚠ Never move fish directly between tanks with very different temperatures. Float the bag first, add new water gradually, let them adjust slowly.

Yechiel's Rule: Know the temperature your fish needs before you buy it. Then keep it steady.

03. Waste and Ammonia

Told by: George the Cranky Guppy

> *"This water has opinions. And the opinions it has when somebody does not manage the ammonia are opinions that are entirely unsuitable for a fish of my sensibilities. Ammonia attacks the gills. Ammonia makes breathing difficult. Ammonia, in short, is a personal insult." — George, from the Brackish Bog, gills flaring*

Fish live in their water. They also — there is no delicate way to put this — produce waste in their water. Waste from fish bodies, waste from uneaten food, waste from dead plant matter. All of it breaks down into ammonia.

Ammonia is toxic. Even small amounts damage the gills, making it harder for fish to breathe. Higher amounts can kill a fish surprisingly quickly. And the worst part is that you cannot see ammonia. The water can look completely clear and still be full of it.

This is why clear water is not the same as safe water. The only way to know what is really in the water is to test it — or to make sure the biological system that removes ammonia is working properly (more on that in Section 4).

⚠ Clear water is NOT the same as clean water. When fish seem unwell, the first question is always: what are the water conditions?

Yechiel's Rule: When something seems wrong with the fish, always check the water first.

04. The Filter — a System of Life

Told by: Professor Nitra

> *"The filter is not 'for making the water look nice'. The filter is the most important biological system in the entire building and I am deeply — DEEPLY — tired of being taken for granted. I convert toxic ammonia into nitrite. My colleagues convert nitrite into nitrate. We do this every minute of every day. We have been doing it for four years and six months. Nobody has ever said thank you." — Professor Nitra, from inside the filter housing, with feeling*

A filter does three jobs. First, it moves water. Second, it traps physical waste. Third — and most importantly — it is home to colonies of beneficial bacteria that break down the toxic ammonia that fish produce.

Without those bacteria, ammonia builds up fast. With them, ammonia is converted step by step into much less dangerous compounds. This is called the nitrogen cycle, and it is the invisible engine that keeps a tank alive.

The bacteria live in the sponge and filter media. They need water flowing through them to survive, and they need time to grow. A new tank has no bacteria yet — they take weeks to establish. A tank whose filter has been switched off, or badly cleaned, may have crashed its bacterial colony without anyone realising.

This is why filter cleaning must be done carefully. Never wash filter sponges under tap water — the chlorine kills the bacteria instantly. Rinse them gently in old tank water instead. Remove some of the dirt, but keep the biology alive.

⚠ Never rinse filter sponges under tap water. The chlorine kills the good bacteria. Use old water from the tank instead.

Yechiel's Rule: The filter keeps the fish alive. Keep the filter alive. Treat the bacteria well.

05. Feeding — Less Than You Think

Told by: Plecy the Glutton Plecostomus

> *"A little mess is a little lunch. This I have always believed. However — and I say this as a fish who has eaten more surfaces than anyone in this building — I have learned that there are limits. Uneaten food sinks. It rots. It produces ammonia. It lowers the oxygen. It creates, in short, the conditions I now understand are bad for everyone, including me." — Plecy, pressing his sucker-mouth thoughtfully to the glass*

Overfeeding is one of the most common mistakes in fishkeeping. And it is easy to understand why — it feels kind. The fish come to the surface. They look interested. It seems like giving them more food is giving them more happiness.

It is not.

Uneaten food sinks to the bottom. It decomposes. As it decomposes, it releases ammonia, consumes oxygen, and makes the water progressively worse for the very fish you were trying to feed.

The rule is simple: feed a small amount, watch the fish eat it, and stop before there is food left floating around. Most fish can go a day without food without any harm at all. Overfeeding can cause real damage in hours.

⚠ Leftover food rots fast and pollutes the water. A little less food is almost always safer than a little more.

Yechiel's Rule: Feed only what disappears in a few minutes. If food is settling on the bottom, you fed too much.

06. How Many Fish?

Told by: Turbo the Zebra Danio

> *"I already checked! The maths is simple! More fish means more breathing, more waste, more ammonia, more load on the filter, faster oxygen drop, and a shorter window before everything goes wrong! I checked this! I checked it twice! I checked it before anyone asked!" — Turbo, who had genuinely already checked*

More fish means more of everything: more oxygen consumed, more waste produced, more demand on the filter. A tank that is too crowded will cycle through trouble faster than any filter can keep up with.

There is no single rule for exactly how many fish fit in a tank — it depends on the species, their size, how active they are, how good the filtration is, and how carefully the tank is managed. Small, calm fish in a well-filtered tank can be kept at higher density than large, active fish in a basic setup.

The key question is: does the system support the load? A filter that is big enough, aeration that is strong enough, and water changes that happen regularly enough.

When in doubt, fewer fish and better conditions will always produce healthier, happier fish than more fish and struggling water.

⚠ A crowded tank is not just uncomfortable for the fish — it is dangerous. More fish = more waste = faster water quality problems.

Yechiel's Rule: When the tank looks full, it probably is. A healthy few fish always beats an overcrowded many.

07. New Fish and Acclimation

Told by: Madame Molly — the Peacekeeper

> *"Fresh, salty, in-between — breathe first. That is the advice I give to everyone who arrives in a new body of water. The water in your bag is not the water in this tank. The temperature is different. The chemistry is different. The bacteria are different. You cannot simply be poured in. No one can simply be poured in. We adjust. We adapt. But we do it slowly."*
> *— Madame Molly, Brackish Bog, speaking with great patience*

The water in a transport bag is not the same as the water in the tank. Even if they are both labelled "freshwater," the temperature, pH, hardness, and mineral content may all be different. Pouring a fish directly from one to the other is a shock to its entire system.

The right process is slow and patient. Float the bag in the tank for fifteen minutes to equalise temperature. Then, gradually, add small amounts of tank water to the bag over another fifteen to twenty minutes. This gives the fish time to adjust gently. Then — carefully — transfer the fish into the tank.

Drip acclimation (letting water drip slowly from the tank into the bag via a small tube) is even gentler and is especially important for delicate species.

⚠ Never just pour a fish from the bag into the tank. Temperature shock and water shock can harm a fish that arrived completely healthy.

Yechiel's Rule: Slow is kind. Float first, add water gradually, then transfer. The fish will thank you by surviving.

08. Warning Signs

Told by: Captain Cory — Cleanup Sergeant

> *"No pellet left behind — and no warning sign, either. A fish that is unwell will tell you. You simply have to know how to look. And I have been looking at the bottom of this bog for a very long time, and I can tell you: when something is wrong in the water, the fish know before anyone does." — Captain Cory, from the gravel, barbels sweeping*

Fish cannot tell you in words when something is wrong. But they show it — clearly, if you know what to look for.

Here are the signs that mean something needs your attention:

◆ **Gasping at the surface:** Fish crowding the top and opening and closing their mouths rapidly. This usually means low oxygen — check the filter and aeration first.

◆ **Fins held close to the body:** Healthy fish hold their fins open. Clamped fins are a sign of stress or that something in the water is not right.

◆ **Hiding more than usual:** Some fish are naturally shy, but a fish that has stopped coming out at all may not be feeling well.

◆ **Not eating:** A fish that refuses food for more than a day or two is telling you something is wrong. Check the water.

◆ **Rubbing against objects:** A fish that keeps scratching itself against rocks or decorations is uncomfortable. The water conditions are usually the first thing to check.

◆ **Sudden colour change:** Fish that pale, darken, or look dull are usually responding to stress. Happy fish have bright, steady colours.

◆ **Spots or unusual patches on the body:** If a fish has patches or markings that were not there before, ask a grown-up who knows fish to take a look. Do not try to fix it yourself.

◆ **Listing or swimming sideways:** A fish that cannot swim normally needs help quickly. Tell a knowledgeable adult straight away.

◆ **Multiple fish looking unwell at once:** When several fish in the same tank seem off at the same time, the most likely cause is something in the water. Check the water first.

⚠ When fish seem unwell: check the water first. Always. If the water is fine and the fish still seems unhappy, ask a knowledgeable grown-up for help.

Yechiel's Rule: The fish are telling you something. Start with the water. The water is almost always the answer.

The Eight Golden Rules

From Yechiel's notebook, in his own words:

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01 **Good water, stable water.** Everything else depends on this. Clean, well-filtered, right temperature, and moving.

02 **Enough oxygen.** Moving water brings oxygen. Still water loses it. Keep the filter and aeration running.

03 **The right temperature — and keep it steady.** Know what your fish needs. Then give it that, consistently, without sudden changes.

04 **A working filter — and treat it gently.** The bacteria in there are doing the most important work in the tank. Don't kill them by accident.

05 **Feed carefully. Less than you think.** Uneaten food is pollution. Feed what disappears quickly, and stop.

06 **Don't overcrowd.** More fish, more problems. Give them space and a filter that can keep up.

07 **Acclimate slowly.** Every new fish deserves a gentle welcome. Float, drip, adjust. Never just pour.

08 **Pay attention.** The fish will show you when something is wrong. Look at them every day. Learn their normal, so you can see their not-normal.

One last word.

"An aquarium is not a decoration. It is not a piece of furniture with fins. It is a small living world, and you are responsible for every molecule of water in it. That is not a burden — that is the most interesting job in the room." — Yechiel Kuperman, Marine Biologist Written in the small wet notebook, some time on a Tuesday

"This water has opinions. I suggest you listen to them." — George

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From the Yechiel's Fishery Farm book series.
By Yechiel Kuperman, Marine Biologist.
Forty-nine years of real fish stories.