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SIZE DOES MATTER



by Dan Radebaugh

Before you ask—no, the title wasn't inspired by Dr. Ruth. I stole it from this season's opener of **The Ultimate Fighter**. In the aquarium hobby one of the questions that never seems to go away is some variation of "How big a tank do I need?" The answer of course comes in the form of another question, and boils down to some variation of "What are your goals?" For example, what kinds of fish do you wish to keep? Are you primarily interested in breeding, in setting up a beautiful presentation, or in just keeping your pets in an optimal environment that meets both their needs and yours? Many of us combine these goals to a greater or lesser extent, and so our answers to what seems to be a simple question are often not so simple.

Most of us are limited in our choice of tank size by where we have chosen to live. Do we live on the ground floor? If not, is there an elevator? How large are your rooms? Are you going to devote a room to fish only, or spread your tanks around? How strong are your floors? Do you have enough electrical outlets? How are you going to do water changes? All of these things affect the number and size of the tanks we keep, and therefore the number and size of our fish.

You come across some odd things in this hobby, not the least of which are a couple of "rules of thumb" that seem to be magically known to almost everyone who has ever even thought about keeping fish, but which are nevertheless quite simply not true. The first is that a fish will only grow proportionally to the size of the tank. The second is that the correct formula for determining how many fish to put in aquarium is to figure one inch of fish length per gallon of water. Adherence to these two "rules" are probably responsible for more sick and dead fish, and for more failed aquarists than anything else that I can think of, with the possible exception of ignorance of the nitrogen cycle.

The proportional growth myth isn't even worth talking about, other than comparing it to news stories of children who were discovered to have been kept locked in closets for most of their lives, and whose growth and development were thereby severely retarded. So perhaps you could, by stunting, keep the fish from achieving its normal size. I seriously

doubt that this "bonsai" method is a viable strategy for growing healthy fish. The "inch-per-gallon" rule might perhaps be a useful tool if you're only going to be keeping guppies or other small minnow types (not that there's anything wrong with that), but once you start keeping heavier bodied fishes, such as goldfish or cichlids, it's totally useless, and almost guarantees producing unhealthy or dead fish.

Some newer rules of thumb have been suggested for the heavier-bodied fishes, such as five or six gallons of water per inch of fish, but they still mostly don't work if taken too literally. For example, consider all those cute little Oscars you see in fish shops (some of the chain stores *require* their managers to maintain at least a tank of these). Using the 6-gallons-per-inch rule, when that little Oscar gets to six inches long, a thirty-gallon tank should be fine, right? Well, not so much. At that size, your Oscar is coming into his "terrible teens." He's eating like there's no tomorrow, putting on bulk, and (in a small aquarium) becoming increasingly intolerant of tankmates. All that eating—he's a growing boy (or girl) after all—means he's producing a lot of waste, and unless you have extraordinary filtration and do frequent and significant water changes, you're going to start having water quality problems, putting your fish at risk for (among other things) HLLE, or Head and Lateral Line Erosion, also called HITH, or Hole-in-the-Head disease. We don't know everything about this condition yet, but poor water quality (such as high nitrates) seems to be the prime contributor, along with stress, which can also be brought about by poor water quality, or by things like cramped quarters. Further, that six-inch Oscar will nearly double in length and increase even more than that in body mass within the next six months, so you'd better be planning for more space right away!

There is another size-related water-quality issue that isn't discussed as much, which is that water quality maintenance is easier in large tanks than in small ones. Because of the concentrations of chemicals, if your water quality starts to go south in a small tank, you have a lot less time to react and save the situation (and your fish) than you do in a large tank, where water chemistry changes tend to happen more slowly. Large tanks typically have more filters in use, as well as more

substrate, glass, and decorations to provide home to beneficial bacteria than do smaller tanks, and 200 gallons takes a lot longer to fatally contaminate than ten gallons does. I have experienced “mini-cycles” with my larger tanks, but they were *way* easier to deal with than when they’ve happened in the smaller tanks. You also have more flexibility in your water change regimen, again because of the greater volume of water.

In addition to water quality issues, there are also “quality of life” issues. Fish are not just live “screen-savers.” Like ourselves, they are social animals with their own cultural, mental, and emotional needs. Going back to the Oscar example, mental stimulation (part of what zookeepers now call “enrichment”) should definitely be a part of keeping these fish. Different fishes have different needs in this area, and learning what those needs are is an important part of keeping them happy and healthy. Having enough space to live in is certainly in part a quality-of-life issue.

How much space does your fish want? I certainly don’t know the needs of every fish in the hobby. Neither, I suspect, does anyone else. So read. Go online and search. Come to club meetings and learn. But in addition to all this, pay attention to your fish, as they’re probably trying to tell you. They try to tell us things all the time; we just don’t always listen. Sometimes that’s because it would cost us money, but more often we’re just not connecting the dots because what they’re telling us doesn’t match what we think we already know.

Watch your fish. If your fish is too long to comfortably be parallel to the short side of the aquarium, or has trouble turning around, it needs to be in a bigger tank, or at least one with dimensions more suitable to its length. If your fish acts as though it’s feeling anxious, and is being overly cautious about moving swiftly and naturally, you might need to consider upgrading its accommodations. If you move a fish to a smaller tank than it has been living in, and its color goes “off,” and doesn’t return to normal within a week or so, it might need to go back to the “big house.”

Social circumstances are important. You can’t really claim to know a fish’s behavior until you’ve seen it in varying situations. Some species are renowned in the hobby for their aggressiveness. Red devils come to mind. However, these are in fact rather gregarious fish given spacious enough quarters. I saw a very large group of them in (as I recall) a six thousand gallon non-display tank at the Tennessee Aquarium, and they were practically schooling! Most of us in the hobby just can’t provide enough space to ever see that side of their behavior. Staying with the Central American cichlids for a moment, my experience with *Herichthys carpintis* and *Paratheraps synspilus* has been that, unless in spawning mode, they will live quite peacefully in a six-foot community tank, and in that environment

the female is pretty safe from aggressive onslaughts by the male. When spawning, however, all bets are off for the rest of the community. Perhaps in a still larger space it’d be less risky for the neighbors, but they seem to require dominance of the entire six-foot tank to be secure about their young. Keeping a pair of either of these species once they’re fully grown in a four-foot tank definitely calls for a divider to provide the female a safe retreat. Interestingly, both these species, while relaxed and confident in the larger tanks, become quite shy and easily spooked in the smaller, four-foot tanks, and will spend much of their time hiding in caves or whatever, which they totally ignore in the larger tanks. I am told by those with more experience that *P. synspilus* is best kept in small colonies, and my own experience with *H. carpintis* is that the younger fish are quite gregarious once everyone has an established hideout. But they do need their space.

Adequate space though, isn’t just for “tankbusters.” All species need to feel that they have enough space to safely go about their normal business, whether normal means singly or in aggregations. To many species, feeling safe means being in a group, so for them your aquarium needs to be large enough to house a satisfactory group. Tiger barbs, for instance, like to live in groups, and often play rather roughly within their group, but the rough-necking is spread out enough that no real harm is done. If you don’t have enough space for an adequately sized group, some of that energy might be directed at other residents of your tank in the form of fin-nipping. So if you want to keep tiger barbs in a community aquarium, a ten-gallon aquarium is probably inadequate to contain a large enough group (six to eight) of the barbs *and* other, less robust residents.

So, when planning an aquarium purchase, don’t trust facile formulas. Think about what fish you’d like to put in the tank, and figure out before you buy it whether it will suffice. Likewise, when considering a fish purchase, it’s a good idea to know whether your present setup will be adequate for the life of the fish being considered, or if you’ll need to upgrade, and if so, how soon.

The one formula I *will* endorse when planning an aquarium purchase is to buy the largest aquarium you can afford that will fit into your available space. Whether discussing fishkeeping or ultimate fighting, skill matters a lot, but there is no substitute for size.

