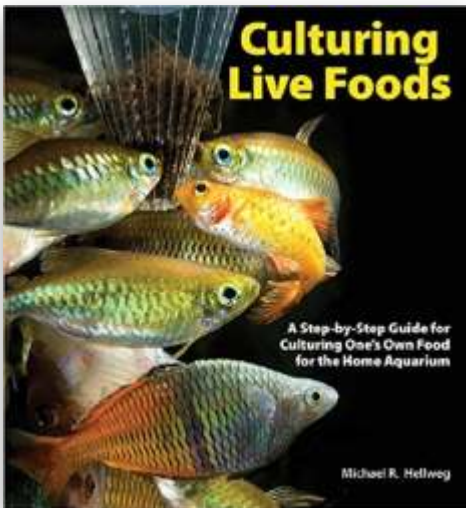


Special Meeting
Edition

The Darter

MASI General Meeting - Thurs, Feb 21st!!

Culturing Live Foods



Mike Hellweg

Mike's talk on Culturing Live Foods will cover the most popular live foods for home aquaria, review their benefits, and give step-by-step instructions on how to culture and harvest them. In addition to freshwater fish, many cultures are suitable for saltwater aquaria and use by amphibian and reptile hobbyists.



Fascinated by fishes since he could barely reach the top of the goldfish bowl Mike has spawned over 425 species from 32 families in his small fish room- the all time top breeder for MASI.

Mike credits his success in great part to culturing and feeding an assortment of live foods daily to his breeding stock and growing fry.

Over 325 talks to classes, clubs, groups and conventions in the USA and Canada and over 300 articles published in hobby publications around the world as well as two books on live foods published by TFH Publications have documented many of his fish spawning successes.

The latest TFH book is already out of print and demands a price as high as \$500 on Amazon!!

Mike's talk is a one-stop source of culturing information that includes a review of old and new accounts in the light of extensive personal experience.

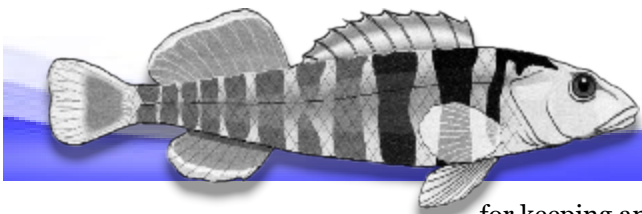
**LEARN WHY AND HOW TO RAISE THEM AT THE MEETING!
A LIMITED NUMBER OF STARTER CULTURES WILL BE AVAILABLE ON SITE**



The usual Mini-Auction and Door Prize Raffles will be held

**7:30 PM Dorsett Village Church
2240 Bennington Place, Maryland Heights, MO**





The Darter

Minifins

-

The Secret is Out!!

-

It's Live Foods!

**Mike Hellweg, CFN
(Certifiable Fish Nut)**

AS AN AQUARIST advances in the hobby they will often seek new challenges to test their fishkeeping skills. Some freshwater hobbyists move on to marine aquaria and eventually reef tanks, others start working with either indoor or outdoor aquatic gardens, some move on to keeping monster fish, some work with developing champion show fish, and yet others seek the challenge of breeding tropical fish.

For many of these various advanced hobbyists, they find that while commercial foods are excellent for maintaining a community tank or even



for keeping and breeding the more common community tank fish, their animals need something more in order to thrive, grow into prize show specimens, or to spawn.

Many folks read my breeding articles and ask how I'm really able to get this or that species to spawn when they've had trouble even keeping them alive. Sometimes it takes a couple weeks of live food just to get new wild caught fish to settle in, and then you can start moving them over to commercial foods until they are mature and ready to spawn. Sometimes it is just a week or two of conditioning the breeders on live foods and they're

Some Advantages of Live Foods:

Movement triggers feeding

Provide symbiotic enzymes

Provide missing nutrients

Obtain Show or Breeding conditioning

Need for a chase

ready to spawn. After spawning, they can go back to their commercial diet until the next time you're ready for them to spawn. Many of the easier or "bread and butter" fish are exactly that because they can thrive from birth to old age with nothing but commercial foods. But others need something more.

Don't get me wrong! The major food manufacturer's put millions of dollars, yen, and euros into research and development of fish foods, and today's commercial foods provide many fish with solid quality diets from birth to death. They make it easy for the average aquarist to keep many fish that a few decades ago were considered difficult. Flakes, pellets, frozen and freeze-dried foods are all excellent and will provide even many finicky eaters

with an excellent staple diet. I've found wild caught fish like many Anabantoids and even wild caught Pencilfish will often go after some of the modern flake and micro pellet foods as soon as they hit the water. Yet even today, with all of the modern science and research that these excellent commercial diets have backing them up, there are still some things that cannot be replicated.



These are most easy to see with larval fish. With most commonly bred species, the hobbyist can start a batch of fry on a commercial larval fish diet as soon as they are free swimming and they will do just fine. With larvae of more "challenging" species, though, the fry will die of starvation literally surrounded by what the well-meaning hobbyist believes is food! There is something lacking. Sometimes this can be movement. In many larval fish the eye is not quite fully developed for some time after they become free swimming. They can detect certain kinds of movement or certain shapes that would be of their natural diet at this point in their life. Without this movement or shape to trigger their feeding response, they quickly starve to death.

For other types of larvae that will take commercial diets from the start, fry seem to wither away and die off suddenly after a few days or weeks. Recent research is showing that they may need to obtain certain digestive enzymes from their food to help them until their own digestive system is functioning fully. Just as with humans who have a diversity of symbiotic fauna

living in their digestive system to aid in the digestion of some foods, many fish have their own symbiotic fauna in their digestive system. This needs to come from somewhere. It appears they obtain at least some of this fauna from certain animals that they eat while growing. Perhaps they only need certain digestive enzymes which they cannot manufacture for themselves. We're only beginning to understand this incredibly complex subject and I'm sure future research will continue to

Live Foods: Buy Them Collect Them Culture Them



Flour Beetle Culture

shed light for decades to come.

What we do know is that as fish grow, their dietary needs change. While young fish need a certain balance of proteins, lipids, minerals, vitamins, enzymes, etc. in their diets, as they grow juvenile and later adult fish need a different balance of these same items. In the wild they switch diets. In aquaria we often just give them larger sizes of the same food items. For some species this might be sufficient. For others it is not. Young fish are concentrating on converting their entire food intake into growing and staying alive. This mission changes as fish reach maturity and they need to concentrate instead on finding a mate and producing the next generation. Staying alive is still important, but reproduction is often paramount. Often adult fish need to take in copious amounts of certain food

animals to trigger the production of their reproductive products or to bring out certain colors that are used to attract mates.

Some species even time their spawning to the seasonal fluctuation in insects such as ants or termites that are suddenly washed into the water during rainy season floods. Some need the sudden influx of protein from a sudden season bloom of mayflies or a bloom in crustacean populations like copepods, young crayfish, or krill. When these dietary triggers are absent, otherwise well fed fish may never reproduce.

Bringing show fish into color and condition for showing requires giving them special care. Many hobbyists have noted that fish moved outside for the summer have grown considerably and are much more vibrant and colorful when they are brought in for the fall and winter. This is largely because they have been enjoying a much more natural environment, including the addition of many live food animals that are missing indoors. You can replicate this improved diet by giving your show fish a balanced diet of various live foods throughout the year. Try it! You'll be amazed at the difference in vibrance and color intensity, growth, and demeanor compared with fish fed just a commercial diet.

Finally, in some predatory fish there is the need for the stimulation of the chase or even the need to stalk their prey. Non-living food is completely ignored. I'm not talking just about large predatory species, but also about tiny micro predators (e.g. Badids, Syngnathids, and Eleotriids), most of which will ignore commercial foods. Some of these like certain species of seahorses can be trained to take non-living foods, but even trained fish will



Newly Hatched Baby Brine Shrimp (BBS)



Green Water

out of preference choose to chase a living prey item instead of picking a dead one from a feeding station. Encouraging this predatory behavior in captivity is often referred to as "behavioral enrichment" and might even be necessary for the long term successful maintenance of some predatory species.

While some hobbyists try and fail to breed certain fish, others seem to be able to coax just about any species they choose to spawn. The former hobbyists often wonder what they are doing wrong. The latter hobbyists already know the secret. They condition their breeders on live foods, and raise the fry on live foods. Sometimes this is as simple as feeding the intended parents with the proper diet of the right types of live foods for a week or two before setting them up for spawning. For others it merely requires increasing their food intake and adding a new food item for this period of time. And for yet others, it is the addition of a good quantity of a certain prey species into the diet that stimulates spawning. It might involve raising two or three different micro food animals to feed the growing fry as well.

Then there is the desire to provide safe foods for our beloved pet fish. With the recent pet food contamination scares, many fish hobbyists are looking for ways of providing their fish with a more natural diet. Nothing could be more natural than feeding them what they consume in the wild, or a reasonable facsimile thereof. Since the hobbyist can grow their own food under controlled conditions, they have complete control of the food from beginning to end, eliminating the worry of contamination.

Newer hobbyists may balk at the initial cost of purchasing cultures of live foods. What they often don't

realize is that this initial purchase is the only one they need to make. Once you have the starter culture, you can produce your own live foods indefinitely. The cost drops, and all you have invested in it is your time and a small amount for culture media. Culture containers can be recycled from other uses, so there is little cost involved in setting up even dozens of cultures. This may sound intimidating at first, but once you look at it and break it down step-by-step it becomes easy. After a few weeks, you'll wonder why you waited so long.

There are more than 50 species of critters that are regularly cultured by hobbyists as food for their fish. It can be confusing to choose from all of the different types of live foods available, so you'll have to do some research on your own fish, what foods are available, and what you feel you can successfully work with. What works for feeding one type of fish will sometimes not work for others. The best thing is that there is no need to culture many different types of live foods. Choose a couple that suit your fish AND you best and stick with these.

Give your cultures good care and they will reward you with many years



Flightless Fruit Flies

You can buy or culture your own:

- White/Grindal/ micro worms**
- Vinegar eels**
- Daphnia**
- Paramecia**
- Mealworms**
- Earthworms**
- Cherry shrimp**
- Gammarus**
- Green water**
- Baby Brine Shrimp**
- Etc...**

of healthy, nutritious food for your fish. Be prepared to spend time maintaining your cultures just as you do your fish. If you don't, they will soon crash. It's also a good idea to keep more than one culture going at a time, too, just in case of a crash. If you only have one culture and it crashes, you'll have to go out and buy a new starter and start from the beginning. While this is fine if you are only occasionally breeding fish, if you have fish that require live foods you will have to have food ready for them on a regular basis, not just when you can get around to it.



White/Grindal Worms

When considering your choices, pick food animals that are easy for you to culture and that create few problems with your family as well. For example, even if your fish enjoys crickets, the sounds generated from culturing crickets may not be a winner with the rest of your family. You might choose to culture mealworms or other insects instead. The same goes for other culture animals, such as shrimp. Your fish may like ghost shrimp, but cherry shrimp might be easier for you to raise so you might be more successful producing these in useful quantities instead. For those with smaller fish that enjoy live adult brine shrimp, live Daphnia are just as nutritious, and for most hobbyists are easier to culture.

With all of these things in mind, why not give culturing your own live foods a try? Your fish will appreciate it, and you'll be surprised at the results - long-lived, healthy, colorful fish that often reproduce for you. **What more could a tropical fish hobbyist ask for?**



Support our Local Fish Shops - They Support MASI

These Local Fish Shops (LFS) help introduce hundreds of people to the Aquatic Hobby every day. They also help the Missouri Aquarium Society reach those hobbyists and keep them engaged by promoting our programs. **Support their programs too!**

Happy Fish Shopping!
The Missouri Aquarium Society

Supporting LFS'	Pet Connection
Saltwater Paradise	Sailfin Pet Shop
Lualyn Aquatic Gems	Aqua World - 2 Locs
Midwest Tropical Fish	Tropical World Pets
Petco on N Lindbergh	Corals & More
PetsWay - 2 Locs	Malawi Aquatics