

Select Aquatics of Erie, CO.

Live Foods

Originally written to accompany a talk at the American Livebearer Convention in 2009, it has been revised and linked back to supporting pages within the Select Aquatics website.

This is not your father's Live Foods Guide. The information below is based on years of searching for easy, cheap, productive ways to raise live foods that don't bite, smell, fly, get loose or spread disease (to the fish or yourself!), are nutritious and can be raised in large quantities. The secret is that contrary to what most books have to say, you need to get around the obstacles that keep us from maintaining live foods with any confidence. There are clean, easy ways to raise some live foods, though the only way to find those methods is to try them, fail a lot, and experiment. This essay is information based strictly from the experience of raising each of these live foods in my own fishroom.

Each of these foods is commonly raised by many fishkeepers, and depending which works best for the type of fish you are keeping, the ease of maintenance for you, or what you are willing to do will determine which foods are best for you. I know people that swear by mosquito larvae, for example, but the few brief experiences I have had with using them as food causes me to itch from the memory of the bites I received, not to mention the comments from other members of my family, so, at least for me, mosquito larvae are no longer an option. What works for you may be different, and there are other live foods not mentioned here (tubifex, mysis shrimp, etc.) that may be worth trying for you. In this fishroom, quality, quantity, convenience and consistency have been the the priorities strived for.

I will cover [brine shrimp](#), [earthworms](#), [blackworms](#), [vinegar eels](#) and [daphnia](#) in some depth, also addressing white, grindal and microworms, wingless fruit flies, parameciums, mealworms and [beefheart](#).

First off, you do not need to keep 10 different kinds of live foods. Depending on the fish you keep (and I keep and breed mostly livebearers and barbs) 2 or 3 available live foods serve 3 functions:

1. General supplement to the regular diet. The live food should be high in protein and is not high in fats or roughage. I prefer a food that is not implicated in the spread of disease, is readily eaten by the fish and won't routinely cloud or foul the water. Mealworms, for example, would appear to be the perfect food to raise. They are easy to propagate, the beetles don't fly, they are not messy when compared to most other live foods (all you need is wheat flour, bran and some potato). But they are high in fat, and not nutritious enough for most fish.
2. As a food that can live in the tank and be grazed upon for special, weak, or sick fish, and fry of important fish or fish that are picky eaters.
3. As a food for small fry.

Brine Shrimp: This is the staple live food for many fishkeepers, and many (most?) feed no other type of live food.

Pros: The eggs (which are really cysts) are readily available (purchase 80% hatch or above, unless you are considering decapsulating the eggs- a process I have never done and will not go into here. I have purchased 65% hatch eggs that did not hatch at all, making for a messy experience). The frozen adult form is also widely available, and I question those who criticize the frozen varieties for their nutritional value. My experience has been that even the frozen forms are far superior than dry food.

Each batch of Baby Brine Shrimp (hatching the cysts) are made from scratch, then the container is cleaned and you go to the next batch. There is no long term maintenance of any animals, and each batch is a fresh start. Each batch is done in 24-36 hours, and you start over. There is no smell, and all that is hatched is fed immediately. Lastly, the BBS hatch can be frozen in ice cube trays for future use with negligible loss of nutritional value when frozen immediately.

Cons: The first thing going against brine shrimp is expense. Purchasing frozen flats of frozen adult shrimp can become prohibitive when you are feeding more than a few tanks. Cysts are affordable and run about \$40 for a pound can, but

unfortunately, because most fishkeepers don't routinely hatch baby brine shrimp, and those who do generally buy the pound cans, smaller amounts available at local fish stores are often wildly overpriced at \$10 or more for a 2 oz. vial of cysts, making it appear as if hatching your own BBS is dramatically cost-prohibitive. It is not. When kept refrigerated or frozen, a pound can of brine shrimp eggs (cysts) will last a while.

Because expense can be an issue, even when buying the 1lb. cans, many of us will hatch less than we need less often than we need to. Building a hatcher that will produce larger quantities can be seen as wasteful.

The solution is to choose a feeding schedule- say you wish to feed smaller amounts, but daily, and are keeping 3 or 4 tanks of smaller fish. From determining what you need you can then choose one of three hatching methods.

Hatching Methods:

1. The most common, and the one that would work given the above situation. Make a hatcher from two 2 liter plastic bottles (pics on photo page- full sequence can be seen at selectaquatics.com). With two going, each started a day later than the other, you will have a daily supply hatched from one of the 2 liter bottles daily. Hatch at 75-80 degrees with just enough air to keep the cysts in motion, too much air will break down the hatched BBS. Place a light over the bottles, and they will hatch in 24-36 hours. The warmer they are, the quicker they will hatch. Do not hatch at higher than 85 degrees. Some people will set the bottles in a container surrounded by water, which then has its own heater to keep the water at 80 degrees. Doing so comes down to how much complexity you wish to deal with. Disconnect air after hatching, let sit 5 minutes for shells to float and shrimp to sink. Shrimp are attracted to light, so light shining at the bottom or one side will concentrate them for easier siphoning, but the live shrimp will generally all collect at the bottom anyway. You want to keep from feeding the shells to the fish, especially small fry. Feed within 24 hours or freeze immediately for feeding later.
2. This is not so common, but the ultimate no-trouble means to hatch shrimp that does not require an air stream or even a closed container to hatch them in. I have used this exclusively for years when my main concern was simply producing enough BBS to daily feed 2-3 groups of new fry. Place a plastic shoebox container in a spot where it gets direct light, no movement or disturbance, and where you can siphon from the top without bumping or moving it. In this container put 4 cups of clean aquarium water, and two tablespoons of salt. Stir around to dissolve it. Let sit until the water surface is still. Sprinkle BBS cysts over surface, just enough to cover surface, do not cause cysts to sink. (1/2 teaspoon?) In 24-36 hours, the bright red shrimp, with no shells, will collect along the bottom rim of the container. Gently siphon shrimp out and feed. Clean and reset up. If you are not feeding much you can revisit container 12 hours later and siphon more that had continued to hatch- shrimp that would normally be thrown away. Keep two going one day apart for daily feeding. I consider this to be the most efficient hatching method when it comes to getting the greatest hatch from your eggs.
3. Build your own larger hatcher. With experimentation I have found that with 2 plant pots (where one fits within the other), an auto oil funnel, a 7/8" rubber screw bumper and some rigid tubing I was able to make a hatcher that holds about 2 gallons. Seen on photo page.

Yes, you can raise BBS to adulthood. I have done it, and though it was entertaining (especially when a friend brought his 4 year old daughter over who had "sea monkeys" (which are just brine shrimp)- each she had lovingly named- watch me swoop up netfuls that I fed to the fish. Other than that, they only produce cysts in response to environmental changes. You take good care of them and they reproduce sexually, not producing enough cysts to be worth the considerable effort and mess of having bubbling salt water containers going. I used two 10 gallon tall sterilite trash containers, but would have needed 6 or 7 to feed the 8 or 10 tanks I had going at the time, feeding 2-3 days a week.

Earthworms: The animal known as the earthworm can be of many different species. The best for feeding to tropical fish, because they are relatively small (topping out at 4-5 inches), are the "red worms" sold at bait shops, hardware and gardening stores, Petsmart (The ones in Colorado sell them for local fishermen, but you have to ask for them. I have found that locally grown worms will do best. Inexpensive when bought online (about \$25 per 1000- 1 lb.), they can be more expensive locally.

Pros: Routinely cited as being one of the most nutritional foods that you can feed aquarium fish, some feel that fish can actually be raised exclusively on earthworms, they are so complete nutritionally. They can be raised in large quantities, (one vendor advertises they will double in number every 90 days) and do not require any care other than being fed. They can go months without being fed if need be. They can be fed to the fish in many different sizes, from 1/2 inch to 5 inches. And with my means of feeding them, they can be kept easily and relatively cleanly without any smell, at almost no cost.

Cons: Most books on raising earthworms advocate their use in digesting compost, advising the feeding of leftover food, breads, etc. It is often assumed they need large containers of soil, and because of the smell cannot be kept indoors. All of those are false.

To feed livebearers and smaller fish they will need to be chopped or ground up so they can be eaten by the fish. I find that unpleasant, and will explain alternatives that ease that process.

Setup: The worms will thrive and reproduce in a 5 to 10 gallon container at least 8 inches deep. The worms generally stay within the top 12 inches of the soil, so the soil does not need to be any deeper. Provide moistened Canadian peat, of about the consistency of moist cake dough. Keep container covered, as they will sometimes climb out, with small holes drilled for air exchange (worms can and will suffocate). A warmer location- such as at room temperature as opposed to being colder will increase their appetite and reproduction. (I use reptile heat pads under my earthworm tubs in the wintertime.) Check soil monthly to see if water needs to be added. I have found the worms do best when the soil is not disturbed except when necessary.

Feeding: This is the aspect that made keeping earthworms simple, easy and cheap for me. I grind up crumble-style chicken feed in a food processor, the sifted flour-like product being what gets fed daily to the worms. They eat it eagerly and it does not mold as kitchen scraps do. There is no smell, and chicken feed is very inexpensive. I will sprinkle it across the top of the soil, then feed again when it is gone. Feed aware of the load of worms in the container. My containers are heavily loaded, and I feed what amounts to a 1/16th inch layer across the entire surface and they will have cleaned it up in 12-16 hours.

There are two types of chicken feed that the earthworms seem to do best on- Egg laying mix and the flock grow-out mix. These are high in protein and seem to produce active, vigorous worms that reproduce well. Smaller than 50 lb. quantities are often available at feed stores that will sell it by the pound. Always call first that they will do so- many don't. Often, feed sold by the pound will vary, depending on torn bags that arrive, etc. The feed lasts about 90 days at room temperature, longer if refrigerated or frozen, and generally costs under \$2.00 for 5-10 lbs. A bag of 50 lbs. costs \$11-\$13.

Grind the food up in a food processor. Be aware that the chicken feed contains a hard grit-like substance to aid the chicken's digestion. The particles are too small to affect the food processor in any way, but they are too large for the worms. So after grinding down the food to a fine powder, sift it through a regular wire colander before putting into a final container. This grit will ultimately account for 1/3-1/2 the volume of the initial mix.

Keep the final flour-like feed refrigerated, and feed daily. At first, as the worms begin to populate the container and all of the food is not consumed in 24 hours, it may mold slightly. I simply brush the old feed into the soil, and re-feed.

Worms are easily harvested by pulling them from the soil. I put them into a small plastic container and rinse off any soil, then dry them off with a paper towel. I have a cutting board and razor and simply cut them up and feed immediately to the fish. Yeah, yeah, I know. I don't like it either. All that squirming and cutting. Some people will put them, after being rinsed and dried, into the freezer, then thaw them and cut them up when they are to be fed. There are also devices sold where worms can be put into a hand held device and then ground up manually, out of sight. Lastly, they can be put into a food processor, ground up, and then frozen into flats or mixed with a gel that can be frozen in flats. and most fish over 4-5 inches will eat them whole.

Blackworms: Often sold at fish stores, they can also be obtained by the pound at a number of places that aquaculture them. Eagerly eaten by fish, they are considered essential by many as a conditioner for spawning and contributor to overall robust health.

Pros: They are eagerly eaten by the fish, and some breeders insist that they are the best food there is for conditioning fish. They can be accessible if you have a business near you that sells them, and arriving near the time of shipment guarantees a solid, nutritious live food. When I get them home, I will rinse them thoroughly, feed them (see below) and carefully with a small net remove any flukes and other creatures that might cause harm.

Cons: It is believed by many that they don't reproduce, and must be fed quickly as they can't be fed and will only live a short time. Those are false. However, to keep more than a small amount they should be refrigerated. They must be bought at the local fish store, and they often will come in with gill flukes and other wildlife that may be harmful to the fish. Depending on when they arrived at the retailer they may be in poor condition, particularly as they are never fed after they arrive and are either sold or die, to then be thrown out. Keeping the cultures requires daily attention, as their containers, when kept refrigerated, will dry out quickly. Some people also can be allergic to substances the blackworms produce, and suffer reactions when handling them. They can be expensive, depending on the shop where they are bought, generally running around \$4.00 an ounce.

During a period of keeping killifish I became a regular customer of blackworms at a local fish store. According to a wholesaler that raises them in ponds in California, their generation time is approximately 6 weeks, and they normally do not need to be kept refrigerated. A quarter pound of worms kept in a gallon shoebox does need to be refrigerated, however, or they will die and foul quickly. But I have kept them going for months in an aquarium, culturing them to feed fry or more temperamental fish that will always respond to a high quality, healthy live food.

To keep them going for long periods I half filled small 8-12 oz. plastic round butter containers with gravel. I placed these in tanks with fry or fish I wanted to have "graze" on them 24/7. Then I seed the top of the gravel in the container with a small dollup of worms. They will anchor into the gravel, and will stay inside the plastic container. Obviously, I only put in fish that will not quickly consume the worms. On a daily basis I will finely crush a little flake food, mix it with water and gently spray

it over the worms in the container. The walls of the container keeps the cloud of food over the worms. They reproduce slowly, but the survival of a number of finicky or vulnerable fish has been due to their being able to graze on live food as they chose. With the proper choice of fish you can keep a container going that is self sustaining in that it reproduces as quickly as they are eaten. I will often dedicate a 10 gallon tank to allowing overgrazed containers to repopulate, where there are no fish, and rotate the containers between tanks.

Feeding: I keep larger quantities refrigerated in 1 gallon plastic shoeboxes, the worms no deeper than about 3/8th of an inch. Water level should be even with top of worms, so that the top of the worms breaks the surface of the water. Each day take each container out, cover them in clean aquarium water, then gently shake the container and worms to free up any detritus and waste material. Using aquarium water will bring worms up to room temperature. Being careful not to lose any worms, pour off dirty water, and keep doing so until water is clear (2 times usually does it). After last time, do not put water back in over the worms. Grind up a high protein flake food (any commercial tropical fish food should work) to a fine powder and sprinkle over the worms. You will see them eating up the flake food. Sprinkle until the food is no longer being eaten as quickly. Then rinse them off again, pouring off any excess food. Put water back in to barely cover them, and put back into refrigerator. You will notice within 2-3 days they will be much more vigorous, wiry and healthy. When you sprinkle the food over them they will erupt in motion and activity.

I have not seen the potential to breed them in large enough quantities to feed my fishroom, as it seems their reproduction rate would require a far larger commitment of space and time than I am willing to devote. But you can get as much out of the worms you buy through feeding them regularly and taking care of them until they are fed to your fish.

*Since this article was originally written, a blackworm culture box has been developed and more information on this can be found at [Fishkeeping Tips 13 - Culturing Blackworms](#) at selectaquatics.com.

Daphnia: Considered an ideal food for tropical fish, they are fairly common in local ponds and still bodies of water. Some people seem to keep them without any trouble, but most of us have experiences of crashes of the population, rarely raising them in large enough quantities to do what we want them to do for our fish. Gradually many of us are getting better at it, with hardier strains of daphnia and better food regimens.

Pros: They are an ideal food for fish that live in fresh water, not bothering the fish until they are eaten. They don't transmit disease, and reproduce prolifically, releasing tiny young that are an ideal food for the smallest fry, who won't bother the adult daphnia that are swimming with them. When kept outdoors and conditions are right they will go dormant in the winter and come back in the spring.

Most fishkeepers formed their opinion of daphnia from previous experience, and for most of us, it isn't good. There are many ways to keep a variety of forms of daphnia, and we expect it to thrive in a variety of settings. Here is the combination that has worked best for me.

Locate a strain of daphnia that is being kept by another fishkeeper or business that has had success with that population. The Giant Russian Red daphnia is one of the best, and that is what I now keep. The daphnia I keep is now in its 5th year in outdoor tubs.

1-3 weeks before obtaining the daphnia, set up a 100 gallon trough or tub outdoors when temperatures are warm, in partial sun. Fill with aquarium water, add some manure to seed a strong green water bloom. (Poultry manure is best). When all nice and green, add daphnia and wait. In a week or so the water will clear up, and the daphnia will fill the tub. Toward the middle of that week introduce the daphnia food/ yeast feeding schedule (see below). Harvest with a net with large enough holes to catch the adults, leaving the young behind to grow out.

I do not use aeration on my outside daphnia tubs, and they do well. When kept indoors I always use aeration. In the tubs I will do approximately monthly water changes of 20-30%, indoors I will change water more frequently. I have found that about mid-summer I will often need to clean up the bottom of the tubs, indoors I siphon off uneaten food daily.

Daphnia can be brought indoors to experiment with ways they will thrive. If they die, grab more from outside. The first few years I kept cultures going indoors over the winter in case the culture outside did not come back, but rarely produced enough to feed them with any regularity.

They thrive in a partially sunny location, and I have explored the effect of strong light when kept indoors, having heard that a secret to keeping them indoors was an intense enough light. In fact, I did not find that light made much difference and others I have spoken to that have raised daphnia for universities say that the quality of light is not that important. In the 100 gallon tubs with the food and husbandry I mention here I can feed golf ball sized lumps of solid daphnia about every other day.

Cons: Populations will crash, and finding a food that doesn't foul the water and is truly eaten by the daphnia seems tough. Though they can be kept in an aquarium for long periods with some success, raising them in large enough quantities to feed the fish as we'd like never seems possible.

Feeding: There are 3 substances that seem to be most commonly used by aquarists to feed daphnia. Yeast is the most common. Some say it is not nutritionally complete, and needs to be supplemented, if used at all. Others see it as fully adequate. The second is green water, often cultured by aquarists separately and fed as the sole source of food. This is considered the ideal food, but can be very difficult to keep going in needed quantities. The third is a soy flour, regular flour, and paprika mix, used by some that have had substantial success at keeping colonies going for many years.

A poor use of the food results in overfeeding or foul water and a crash of the daphnia. Overfeeding is likely the greatest source of problems when keeping daphnia. How can the strengths of each be used to complement one another? Additionally, the particle size is crucial to the food being accessed and digested by the daphnia. A very fine particle size ensures not only that the food can be accessed by the daphnia, but more importantly that it will stay suspended within the water column to break down and circulate near the daphnia, keeping it consistently available.

Daphnia Food Mix:

1 part Soy Flour

1 part Regular Bleached Wheat Flour

1/3 part Paprika

Approximately 2 parts enriched vegetable (spirulina) flake food, Finely ground to a flour consistency.

-Mix flours, paprika. Should be a light pink color. Set aside.

Finely grind down flake food to a flour consistency (I use a mortar and pestle)

-Slowly mix together until a consistent, decidedly green color is achieved.

To Feed: Mix 2 tablespoons of food mix to 12 ounces of warm water in a sealable container. Shake thoroughly.

Feed with turkey baster. It should act like ink when squirted into the water. Refrigerate unused portion, continuing to shake thoroughly each feeding to break down particle size. Feed every other day, alternating with yeast, feeding it on alternate days. Feed an active dry yeast, putting small amount into warm water. Wait 5 minutes (until yeast "blooms"), stir and feed to daphnia.

Vinegar Eels: I was not convinced of the nutritional value of vinegar eels until I began breeding barbs. Now the barb fry are raised with vinegar eels as the sole live food until they are ready for baby brine shrimp. They are eaten eagerly and the young grow quickly. A very small nematode, they are easily raised with almost no care required for months at a time.

Pros: A culture can sit undisturbed for months at a time and be ready to be fed from. They are a perfect food for young egg layers that have grown too large to continue feeding on infusoria, 3 or 4 days after hatching. They can be raised and harvested in relatively large quantities.

Cons: They are very small and generally only fed to young fry. Because of their "odd" feeding schedule many wonder how nutritious they could possibly be.

Setup: Cultures can be obtained from other hobbyists or purchased at conventions, fish meetings, etc. (or from selectaquatics.com). Fill a 2 gallon bottle ½ full of apple cider vinegar, and ½ water. Using distilled water may make for a cleaner culture. Then, cut up an apple into slices that are then put into the container, about 1/3-1/2 of the apple into that 2 gallon container. Add vinegar eel culture. Cover lightly to allow for air exchange but covering surface as it will attract flies when left open. As the container populates over a period of weeks it will become cloudy with eels.

Harvest by filtering through a coffee filter, shaking filter into clean water and then feeding to fish. As the apple breaks down, it will need to be replaced or a new culture started which generally happens after 5-6 months. If feeding from the culture regularly I will add fresh apple occasionally.

These next live foods I have used and no longer culture:

White worms, Grindal worms, Welter worms: These can be kept very easily and will thrive on the ground-up chicken feed mentioned earlier for earthworms when kept in a moist soil medium. I found harvesting to be imprecise, and explored a number of different ways, trying to find a way to keep soil out of the aquarium. Eventually I would take a patch of worms, attached to the soil, and dissolve it into water, then siphon off the worms as they settled. It worked well, but a fair amount of soil still was put into the tank. Of course, I generally used the method most people do, swiping them off the sides of the container above the soil line with your finger. Ultimately, I was not convinced that I could raise and harvest them in sufficient quantities to function as a live food that suited my needs.

Fruit Flies: These are great, particularly the wingless variety. *Alfaro cultratus* loves them as they are very close to their natural diet of flies and insects they catch at the surface. When released into a tank, the "escapees" did not seem to live long away from their food medium. I found that having to order food medium that did not smell and was most convenient to use to be the issue, particularly when many fish species paid little attention to them, and did not feed on them, resulting in their getting loose.

Microworms: When raising truly small fry, such as those from most livebearers, you need to either raise microworms, vinegar eels or paramecium. When raising fry in larger numbers, these smaller foods need to be as maintenance free and convenient as possible. The dry powdered egg layer foods can be used as a supplement, but you may find that they can be difficult to feed- with overfeeding being the norm, leading to cloudy water and ammonia blooms, constant water changes, etc. Something that is the correct particle size, will live in the water for a period of time and that can be provided routinely on a moment's notice is the goal.

Microworms are probably used by hobbyists most commonly, and can be raised easily in plastic shoebox type containers. A variety of mediums can be used that will work for the microworms, and most are slightly messy. These include a water/ yeast mix, certain baby foods, dry potato mix with water etc. The mixes will last a couple weeks, and then need to be changed and restarted. Here, we had issues with fruit flies and, since I used the yeast mix, there was a smell to contend with, particularly as the containers became older and needed to be changed. Allowing a container to dry out will kill the worms, so when it needs to be done you could lose the culture if it isn't done in time. Many breeders swear by microworms, and I have found vinegar eels to be every bit as nutritious, easier to maintain, and they can be left for months without harming the culture when they are not being used, so we no longer use microworms here. But they are an excellent food, and definitely worth the trouble, but there are alternatives.

Paramecium: I have seen cultures sold at conventions, etc., and am more intrigued by the concept of raising pure cultures. They have a lot of interest for me, I find the idea fascinating, but to raise them in large enough quantities, with the added effort they require when compared to the alternatives, I'll pass and stick with what works.

Mealworms: Raising these had always been more interesting than any benefit they provided as a food source for the fish. A covered shoebox with a 50/50 mix of bran and flour with potatoe slices will cultivate them- the mealworms you get in the pet store will pupate, they hatch into flightless beetles that will lay eggs and produce more worms. I am told they are a good food for larger cichlids, etc., but are generally too fatty and messy to cut up for smaller fish. Perfect to raise for reptiles, etc., but for fish I have not found them to be a food worth pursuing.

Beefheart: Some might not consider this a live food similar to the other foods mentioned here, but as a perfectly fresh, live meat it can be used for aquarium fish with excellent results- and can be used as any other live food. Long used by Discus and angelfish keepers, beefheart is eagerly eaten by all fish, who will show an immediate increase in health, and eventual improvement in coloration, overall size and breeding vigor. However, as a richer live food alternative, we do not feed beefheart more than 3x per week. Beefheart is also very inexpensive. (About \$5-\$6 for a whole heart).

How to prepare beefheart to be fed to aquarium fish is described at [Fishkeeping Tips 12](#). Essentially the whole or half cut beefheart (available at many grocers, and easily ordered through any grocery store) is trimmed of all fat and thick outer covering. Hard or fibrous material us carefully cut away. The beefheart is then cut into 1" cubes, where it is ground to a thick paste in a food processor. Stringy or harder pieces are removed, and the beefheart paste is then rinsed thoroughly through a net and set aside. Once the entire mix has been rinsed, begin again as red will continue to settle out of the meat, which may cloud the water. Then put pinches into ice cube trays, add water and freeze. The beefheart is fed simply by dropping one or two of the ice cubes into the tank.

An argument could be made that by including beefheart, many will also grind up raw frozen shrimp, scallops and mackeral or other inexpensive types of fish or seafood for use in their aquarium. Cooked egg yolk is an excellent food for small egg layer fry. I have not heard that any of these compare to the results achieved with beefheart, but all are well worth trying.

Collecting Live Foods

The older texts will often refer to "going out and collecting" live foods for your fish, and I still hear today of hobbyists that collect wild daphnia, bloodworms, tubifex worms, rotifers, as well as many other types of seasonally occurring natural live foods. Collecting mosquito larvae, earthworms and other types of non-aquatic foods can work very well. However, caution must used when putting aquatic fauna from a wild pond or local body of water directly into your tank. Many hobbyists, such as myself, would never consider it, from the knowledge and experience with accidentally introduced unwanted animals, such as dragonfly larvae, hydra, parasites, etc., or diseases and situations that would never had occurred had I not introduced foreign animals from unknown water into my tanks. There was a chicken farm near where I lived in Sacramento, that had a runoff ditch that local fish hobbyists knew was filled with Tubifex worms. However, the water in that runoff was so polluted with chemicals and organic waste that to put anything from there into your tank was simply foolish, but many did. Eventually, the farm restricted access to the area out of health concerns for those doing the collecting.

There is no question that live foods produce the biggest, healthiest fish. In my opinion, it is no longer necessary to feed only live foods to provide the best nutrition for your fish. Some hobbyists take pride in using no dry foods at all. This is a mistake. A diet of strictly brine shrimp or blackworms (or whatever live food is available to you) is not only not necessary, but may harm your fish through the lack of vegetable material and other naturally occurring foods they also require. Dry foods today are of excellent quality, and a number of specialty retailers and manufacturers now offer a wide variety of dry foods that when used in combination with live food are excellent.

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