

WHAT YOU FEED IS IMPORTANT

by Deborah Ralph

Most fishes eat a variety of foods but in general, they prefer live foods. Dried foods are merely a substitute. If you want your fish to be at their best and have their brightest colours, then live foods are the way to go. Breeding aquarium fishes is greatly helped by provision of live foods as part of the conditioning process. Many fish however can live for a long time entirely on dried foods, provided their diet is varied. Therefore, keep a supply of different kinds and vary the offering from day to day.

In nature, fish generally feed on a wide range of organisms, including algae, worms, crustaceans and other fish. This helps to ensure that any nutritional imbalance from an excess of one particular food or more likely, lack of another, is avoided. Therefore fish in the wild are generally assured of a complete and balanced diet and each species is able to exploit its choices from a full range of available foods. However, substitution of a natural diet for an artificial one is usually inevitable in an aquarium.

Until the 1950's, most aquarium fish were fed mainly on whatever could be caught by their owners: tubifex, mosquito larvae, worms, daphnia and other aquatic crustaceans, or on potential foods found in the home. There was no such thing as prepared flake or any of the other freeze-dried fish foods available today.

Most commercial fish foods are coloured and packed to attract the customer; those with indications of the ingredients and approximate proportions of proteins, fat, etc., provide the best guides to a balanced diet. Flake foods usually contain a good mix of varied components but it is still wise to supplement your fishes' diet with other kinds. Moreover, continual use of flake foods makes no allowance for the individual needs of the different species, which may require more or less vegetable matter or other things. Indeed, some fishes are entirely vegetarian; others are carnivores but luckily, most are not fussy and like a bit of everything; they are the omnivores.

The essential components of all foods are carbohydrates, fats, proteins, minerals and vitamins. Carbohydrates comprise sugars and starches but the latter are most likely to be given to fish. Plants store most of their carbohydrates in the form of starch, as in cereal grains. Carbohydrates are fuel foods and are less critical for fish than are fats and proteins but some starch is certainly needed. Fats are an even richer store of energy than are starches and are essential elements in the diets of most animals. However, fish cannot digest animal fats as we can and some species are unable to deal with fats at all. Fish oils are usually highly unsaturated and these are the kinds that other fish can handle.

Proteins form an important part of all living tissues, whether plant or animal, but are much more concentrated in the latter; they are essential items of diet, for they help to build new body tissues, such as muscles, skin, blood cells, nerves and glands, and to keep them in repair. All young fish need more protein than do adults as they are continuously growing. With an inadequate diet, protein will be used by the body as fuel, at the expense of growth. Suitable sources of protein for fish include beef heart, liver, shrimp, fish and egg yolk.

Certain minerals are necessary for the growth and development of bones and tissues. Iron is essential for the formation of haemoglobin, part of red blood cells. If insufficient iron is obtained from the diet, then a loss of energy will result. Important sources of minerals include shrimp, fish meal, beef heart, algae, spinach, oats and most live foods.

Vitamins are essential for health and growth and are chemical substances found in very small amounts in food. The best sources of them include egg yolk, liver, spinach, carrots, whole grain cereals, beef heart and fish. The safest way to prevent vitamin deficiencies is to offer your fish a wide variety of foods.

Water is present to some extent at least in all foods and is absorbed by the fish. This, in some cases, aids digestion. Lettuce contains about 95% of water and daphnia about the same; indeed, all fresh or live foods contain a high proportion. Daphnia also provide a source of roughage to keep the fishes' digestive systems regular.

How to feed your fish: as a basic rule, tropical aquarium fish should be fed 2-3 times a day with small amounts so that they will consume most within just a few minutes. Cold

water fish, such as Goldfish, need be fed only once a day. With dry foods it should be remembered that they swell appreciably in contact with water. Do not over-feed with any one food. Excessive feeding of beef heart is inadvisable as meats in general can cause intestinal troubles when over provided.

What to feed: there is a wide variety of foods available: flake, pellets, tablets, powder, freeze-dried whole, frozen, liquid, canned, dry, preserved, live, or worms, etc., from your garden.

Foods for fry and juveniles: virtually anything that adults will take, provided it is small enough. In the early stages, particle size is the limiting factor, but the following should prove suitable and varied: infusoria (green water), euglena, liquid fry-food, hard-boiled egg yolk, squeezed through cloth, Sera micron, vinegar eels, micro-worms, newly hatched brine shrimp, small cyclops and daphnia, small mosquito larvae, baby tubifex and white-worms, finely powdered fish foods and finely ground freeze-dried fish foods. As soon as possible upgrade the size of food. Brine shrimp is one of the best foods for fry, as it increases in size from hatchling to adult but if persisted with for too long it can lead to habituation, with the fish becoming reluctant to change to anything else. Unfortunately, it is quite possible to starve fry, through providing foods that are either too large or too small, so it is always best to give variety as soon as possible.

For sub-adult and adult fish the list of potential foods is almost endless and, apart from the live kinds already mentioned, may be

added insects, meal worms and unwanted fish fry. Foods from the home include minced beef heart (sans fat), crushed pumpkin, zucchini, carrots, prawns and tuna canned in brine (if you feel extravagant), chopped of course, sugar-free breakfast cereals, wholemeal bread crumbs, canned dog food, wheat crackers, etc. The frozen range includes ground beef heart, brine shrimp, tubifex, daphnia, chopped spinach, peas, beans, etc. Fish can distinguish various tastes and like us have their favourites. However, fish may be reticent in trying new foods for the first time. If necessary, remove uneaten items after one hour, but try another couple of times before giving up.

Conclusion: diet affects the growth, vitality, breeding and coloration of fish and can also help in combatting diseases, if appropriately chosen. Correct diet and nutrition are important in the maintenance of healthy fish. Offering a variety of good foods to your fish is not really difficult and can be most rewarding.

Important things to remember: 1. many fish feed at all levels in the aquarium but the top feeders require the food to be on the surface; others will take food only in the middle of the water and some are strictly bottom feeders. This must be taken into consideration when feeding your fish. 2. foods should be of appropriate size, neither too large nor too small for the fish being fed. 3. different fish have different diet requirements. 4. all fish need a balanced diet. 5. do not over feed. 6. young fish need more protein and more regular feedings. 7. monitor the progress of your fish carefully. 8. provide a variety of foods.