

Feeding Aquarium and Terrarium Animals

Classroom projects, which have the two-fold ability to sustain student interest while simultaneously teaching practical biology throughout the year, are more valuable than those in which interests lag or are short-lived. For this purpose, the maintenance of an aquarium or terrarium properly balanced with plants and animals will fill both goals. Either of these requires considerable attention and offers many possibilities for experimentation in the care and feeding of animals and plants.

One of the first steps to follow in keeping living specimens in the classroom is to acquire a thorough knowledge of the animals' natural requirements, such as temperature, moisture, light and food, and to try to reproduce these conditions in the classroom environment.

An important point to be remembered in feeding animals in the classroom is that they sometimes must be trained to eat. Gentle handling, much coaxing, time and patience are required at first to acquaint the animals with their caretaker and food offered them. It is well to assign the animals care to only one individual until they have become accustomed to their classroom environment.

Naturally, food, which is the animals' normal diet in the wild, should be the first choice if available. If not, try any possible substitute; here is where students may learn new facts. Remember that most cold-blooded animals, (fish, frogs, turtles, salamanders, etc) can live without food for long periods of time without harm. Animals of this type will not starve to death quickly; but warm-blooded animals usually require daily feedings.

It is important that fishes and terrarium animals not be overfed. It is better to feed small quantities at frequent intervals than excessive amounts. Uneaten portions of food should be removed promptly, lest they decay and foul the aquarium tank or terrarium.

Snails

Snails are hearty eaters and feed upon the algae that may be growing upon the aquarium plants or on the glass sides. They are also valuable in an aquarium as scavengers to consume excess fish food. If there is insufficient food in the aquarium, the snails will eat the tender leafed aquarium plants. However, this situation may be overcome by feeding lettuce or spinach once a week. They may also be fed shredded shrimp and other fish food. Occasionally, snails in an aquarium develop white spots on the shell, which is an indication that the water is too acid and that erosion of the shell is taking place. The addition of a small chunk of plaster of Paris or cuttle bone to the tank will remedy this condition quickly.

Land snails such as *Helix* and *Polygyra* may be kept in a moist and well-planted woodland terrarium. Regular feedings of lettuce will save the natural vegetation in the tank, and some species thrive on a diet of ten parts of dry rolled oats to one part of calcium carbonate, and with an occasional feeding of celery tops, lettuce, spinach and other soft vegetation.

Fishes, Native Species

A good rule to follow when caring for fishes is never to overfeed them because leftover food fouls the water, promotes growth of algae, and finally, may cause the death of the fishes. Feed the fish small amounts, which they can consume in three to five minutes and feed them daily. There is no need to feed fish unusually large quantities on Friday, so that they will have food over the weekend. There is sufficient food in a balanced aquarium to keep fish healthy even though not fed for a day or more.

Different species require different foods. The best type of diet for most fishes is one alternating living with prepared foods. It is sometimes difficult to obtain a supply of live food at all seasons of the year, especially in the winter; but a culture of *Enchytraea* (White worms) can be kept for that purpose.

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Some of the dried foods that fishes enjoy are bread crumbs, shredded shrimp, oatmeal, egg yolk, and prepared fish foods such as natural fish food, dried Daphnia, earthworms, Enchytrae, Tubifex, mosquito larvae, young snails, baby fishes and brine shrimp larvae are common live fish foods. Other foods, which may be used to vary the diet, are chopped oysters, clams, shredded beef, canned lobster or shrimp.

Fishes, Warm-Water Species (Tropical)

The live-bearing species of warm-water fishes are predominantly omnivorous and their diet should consist of both plant and animal foods, such as Daphnia, chopped earthworms, shredded shrimp, brine shrimp larvae, and crushed spinach and lettuce leaves. The egg-laying species of warm-water fishes prefer live foods to prepared foods.

The success in raising fish from egg to adult depends upon the care of the young. The young of live-bearing species are of a good size when born and are easily reared if fed on finely powdered fish food larvae of the brine shrimp, and sifted Daphnia. Overcrowding of young in a small tank slows up the growth of the entire group. The first few days after hatching, the young of egg-laying fishes are sustained by the remaining food in the yolk sac. After this is absorbed, the young are still so small that they will starve if fed the ordinary prepared or live foods. To overcome this, feeding of Infusoria such as Paramecium and Euglena are offered until they can take larger live and prepared foods.

Salamanders

Salamanders adapt themselves quickly to the aquarium or terrarium in which they are kept. They show real friendliness to their caretaker and soon acquire the habit of begging for their food. The common aquatic phase of the red-spotted newt is the one most generally seen in the school classroom. It will eat Enchytrae; young snails chopped earthworms, ground lean beef and liver. Feedings can be placed in the aquarium; but contamination of the tank is avoided if the animal is removed to a shallow pan containing the food. After feeding, the specimen may be returned to its regular habitat. Other aquatic forms are: the axolotl of *Ambystoma*, which always shows a good appetite, eating snails, earthworms, small crayfish, lean beef, even its own kind; *Necturus* and *Cryptobranchus*, two species which live best in cool running water, and eat crayfish, minnows, water bugs, earthworms and liver; *Amphiuma*, which thrives on the same diet as *Necturus*, but lives better in an aquarium; and the red bellied salamander, *Triturus pyrrhogaster*, which may be fed on the same diet as the newt.

The terrestrial species of salamanders may be kept in a moist woodland terrarium. The land phase of the red-spotted newt, adult *Ambystoma*, large Pacific newt, *Tritus torosus* and *Plethodon* will take feedings of *Drosophila* (fruit fly), roaches, blowflies, mealworms, earthworms, lean beef and liver cut in small pieces and offered to them on the end of a toothpick or forceps.

Toads

The common toads adapt themselves readily to the school terrarium, although their burrowing habits may cause some damage to the plants. When hungry (which is much of the time), toads will take a variety of food such as mealworms, flies, roaches, earthworms, ants, and spiders and lean beef given to them on the end of a toothpick or forceps. They will eat everyday if food is offered them; but feeding twice a week is sufficient for their well being. A shallow dish of water should be kept in the terrarium for drinking.

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Frogs

A semi-aquatic or moist woodland terrarium is the best classroom habitat for the common leopard frog, *Rana pipiens*. The specimens will live best if the terrarium is kept in a cool place. Their natural food is living insects; feedings of June bugs, roaches, flies, grasshoppers, caterpillars, mealworms, earthworms should be offered them; but, when these are not available, they may be trained to eat lean beef and liver. Bullfrogs and aquatic frogs may be kept under conditions similar to that of the leopard frog; but their large size requires large tanks. They will eat the same food as leopard frogs; but crayfish, young leopard frogs and minnows may be added to their diet.

The tadpoles of all species of frogs may be kept in a balanced aquarium. Their food consists of algae, dead vegetation, dried fish food, chopped lean meat, cornmeal, cooked oatmeal, and spinach. Their rate of growth will depend on the amount of food that is available.

Tree Frogs

Tree frogs should be kept in a semi-aquatic or moist woodland terrarium, where the moisture can be controlled. The terrarium should be provided with growing plants with stems strong enough to support the tree frogs. Sprinkle the plants daily, as the tree frogs lap the drops for drinking water. Live food should be available and need only to be released in the terrarium; the frogs will catch them. *Drosophila*, blowflies, roaches, and small mealworms and other insects are readily accepted.

Lizards

The woodland terrarium planted with growing ferns and a few tall plants sturdy enough for lizards to climb upon is a suitable habitat for chameleons, fence lizards and blue tailed skinks. Collared lizards, horned toads and other desert species will be at home in the desert terrarium. The lizard cage should be kept warm (70° to 80° F.) since the animals will not feed readily when the temperature is cold. In winter, it may be necessary to keep the terrarium near the radiator to encourage eating. Water should be given daily; in the woodland terrarium this is best done by sprinkling the plants since the lizards drink the drops of water from the plant leaves; this is very important, as chameleons (*Anolis*) will die from dehydration in 24 hours if water is not provided. In the desert terrarium, a shallow dish of water should be provided. Feed the lizards all kinds of living insects. Mealworms are relished by all species, as are roaches, blowflies, ants, *Drosophila*, small grasshoppers.

Snakes

A large and airy terrarium should be provided for snakes, and the conditions in it should correspond as closely as possible to the natural habitat of the specimens to be kept there. Overcrowding of the terrarium with too many specimens is to be avoided and the size of the reptiles should be uniform, large and small should be separated. Snakes love warmth (65° to 80° F.) and sunlight, but temperature extremes are harmful. Plenty of drinking water should be provided; some specimens, drink from a dish, others get their water from drops on plants and glass.

A few pointers on handling snakes can be reviewed here, which might help the caretaker in his work. Most snakes emit an offensive odor when first handled but drop this habit when they become accustomed to their confined surroundings and to the individual who takes care of them. When handling snakes, avoid quick actions. Deliberate, unhurried movements are less likely to startle them. They seem to sense a feeling of fear and indecision on the part of the caretaker. Usually a snake can be picked up by holding it in mid body; but if it is temperamental, pick it up just behind the head with the right hand, while holding the body with the left hand to overcome any thrashing about.

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Handling snakes after feeding or when they are shedding their skins is a poor policy because at these times, they may be irritable. Snakes will eat a variety of small living animals such as frogs, mice, rats, lizards, fish, tadpoles, earthworms and insects. Some species will eat eggs and many can be trained to eat dead rats and mice and pieces of raw meat. Garter snakes eat quite regularly and, therefore, are easily kept in healthy condition. Other species may be more difficult to feed in captivity and force-feeding is sometimes necessary. Force-feed only as a last resort because often damage is done to a specimen so treated. Snakes feed best after shedding, and plenty of food should be provided at that time.

Turtles

Aquatic turtles are at home in a semi-aquatic terrarium. They may also be kept in an aquarium if a float is provided for them; but they will cause considerable damage by uprooting the aquarium plants and eating the snails. The food problem is not difficult since turtles will take a large variety of food offered to them. They eat under water, and should be fed daily. Their diet consists of ground meat, fresh fish, tadpoles, aquatic insects, mealworms, dried ant eggs, earthworms, canned salmon and shrimp, and some vegetable matter. The addition of powdered cuttle bone with the ground meat will keep their shells in a healthy condition. After each feeding, the cage should be cleaned to prevent foul water and offensive odors from developing.

Terrestrial turtles live well in a school terrarium. The common box turtle prefers a moist woodland type and the gopher tortoise a dry desert type. They eat earthworms, snails, slugs, insects, apple, banana and lettuce.

Aquatic and terrestrial turtles sometimes go on long hunger strikes and refuse to eat. Force-feeding is sometimes more harmful than beneficial and, at these times, it is better to give them a chance to hibernate in a cool place.