

# Live Food

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Feeding live insects sometimes presents difficulties. Insects and spiders, decapitated or cut-up mealworms, white worms (*Enchytraeus*), water fleas, and dew worms (gathered from chemical-free grounds) are all rather popular. Many insect varieties can be collected by passing a fine-meshed net against weeds and putting the resultant catch in a box. Shake the box vigorously so that the insects are stunned and can be eaten by the birds before they have a chance to escape. Never give bees to your birds! Naturally, in lieu of collecting insects in the wild, you could start breeding live insects, especially since various insects are a "must" during the breeding season: not only for insect-eaters but also for most finches, which feed their offspring almost exclusively on insects and spiders!

There are various foods for insect-eaters and the like commercially available. These foods have dried insects already mixed in these soft- or universal foods, as they are usually called. There are also other foods available, such as foods designed for birds with delicately built beaks and for those with sturdier bills, such as thrushes, myna birds (there are also pellets for these birds), etc.

Apart from such prepared foods, it is also absolutely essential to provide birds with live food. We will concern ourselves with the breeding of some of the most important "feeding-insects."

## Small Fruit Flies

These insects can be found in great numbers, especially on warm summer days on fermenting fruit. They have been bred in laboratories for many years for genetic purposes. In general it is best to work with vestigial-winged fruit flies (*Drosophila*). However, it is not always easy to acquire these short-winged fruit flies, but they can be bought as starter cultures from several dealers in live foods that advertise regularly in the major magazines for aquarium fanciers. They are also sold by laboratory supply houses specializing in biological supplies (check for addresses near you at your local college biology department).

Work as follows: thoroughly wash two wide 3/4-liter pots with hot water and dry them. Mash a medium-sized banana until it is reduced to a soft mush and add just a knife-point of Nigapin (or a similar chemical) to it; this is to retard spoilage.

Nigapin is available in any pharmacy. Thoroughly blend the Nigapin through the banana mixture, making sure

no lumps remain. Now mash three medium-size cooked potatoes and blend them with the banana mixture, adding a tablespoon of calcium supplement available in any pet specialty store.

The mixture, which should not be too dry, but definitely not too moist, is carefully transferred to the pots using a spoon but not touching the sides. With the use of a yogurt scraper we press the mixture evenly against the bottom so that it is not likely to come loose when we shake out the flies. The thickness of the food base should work out to be about 2 cm (0.8 in).

To avoid excessive forming of condensation, which affects the flies' legs and in turn can lead to paralysis, we press a small firm roll of toilet tissue in the center of the pot, down to the bottom. If preferred, one can substitute a piece of cardboard folded like a harmonica.

Next we place the breeding samples of no more than 40 specimens per pot into the containers and close them with a double piece of nylon, cut from pantyhose, holding this in place with a rubber band.

Place the pots where a temperature of about 22°C. (72°F.) can be maintained while avoiding placing them in the sun. During the summer we will have to watch for too much drying out because the maggots and flies will no longer be able to consume the food. In addition, the maggots will generally hatch sooner, which leads to smaller and weaker flies. In such a case we will have to add a few drops of water. The flies will now lay eggs in enormous quantities on the edges of the paper or cardboard. After four days they will hatch, after which the white larvae will take advantage of the food base.

When they are fully grown they will crawl up the sides of the cardboard to pupate and emerge as flies. The larval stage takes about seven days, after which a new generation of flies will see the light of day. To achieve a continuity in the breeding of these insects, it is best to set up two new broods within five days, but now using young flies



from the first generation. To set up the new broods, do not use flies that are older than five days, since this can cause a weakening or degeneration in the strain.

Toward the end of the third week the food base will be depleted while the flies are becoming smaller and smaller, so continuing to breed with them is not recommended. It is possible, however, to use the same healthy breeding material again for a new brood after you have discovered the first small larvae. You just shake the flies into a different pot after having first provided the new pot with a new food base. When handled in this manner, you can successfully breed your *drosophilas* for years without bringing in "fresh blood."

### Mealworms

Mealworms should be available to your birds throughout the year, but especially during the breeding period. It is certainly not possible for everyone to breed them, however. In order to breed mealworms, we must have a few beetles. In a crate that measures, as an example, 50x25x25 cm (19<sup>1</sup>/<sub>2</sub> x 9.8 x 9.8 in), we drill three holes in each side, each hole having a diameter of about 4 cm (1.6 in.). The inside of these holes is covered with screen to prevent escape. The holes should be drilled at a level of 4 cm (1.6 in) from the bottom. The crate itself should be lined with sturdy plastic or zinc to prevent rotting (of course not covering the ventilation holes that have been drilled in the sides). A properly fitted lid is made for it to halt overly ambitious "travelers" and to lessen the smell a little. The lid should also be fitted with some holes to allow good ventilation, and these can be a little larger, for example 5 cm (2 in) in diameter. It goes without saying, that they, too, will need to be covered on the inside with screen and the rest covered with plastic or zinc.

When the crate is ready, fill it with a 5 cm-layer (2 in.) of chopped straw. This should then be covered with an old hand towel, on which we place a layer of bran, about 4 cm (1.6 in.) thick. On top of this layer we also place an old hand towel, on which goes another layer of bran, and so on and so forth until we reach a level of 4 cm (1.6 in.) from the top of the crate. All of this is now covered with a cloth, which should not be so thick that the lid does not close properly, and on this cloth we place a small plank of firm strawboard. It is on this plank that we place the food, consisting of soaked white bread, pieces of fruit, and greens. Once a week we can find the mealworms in the immediate vicinity of the little plank, "ready to serve." All we need do is rinse them under the faucet for some twenty minutes and then give them to our birds.

Keep in mind that some birds should not have too many of them, as they will become quite fat, with the result that they are not very suitable for breeding any more or perhaps no longer suitable at all. During the time that your birds have young, and also if you have small birds in your

aviary, it is advisable to cut the head off the worm, since it occasionally happens that a live mealworm, swallowed whole, chews through the wall of the crop, with all of the very unpleasant results of that. Many true insect eaters will first crush the head with their bite, after which they swallow the worm, while others draw the worm rapidly through the beak, consuming the contents in this way, while discarding the "shell" of the mealworm. The total life span of an adult beetle (*Tenebrio molitor*) is approximately five months; it can be shortened by increasing the temperature or lengthened by lowering the temperature.

### Whiteworms

Breeding pairs of whiteworms (*Enchytraeus*) can be found under rotting wood and piles of leaves. They are small (about 1.2 cm [0.5 in]), thin, translucent whitish worms. In a crate with dimensions of 35 x 35 x 25 cm (13<sup>3</sup>/<sub>4</sub> x 13<sup>3</sup>/<sub>4</sub> x 9.8 in.), as an example, they can be readily bred. We fill this crate up with leaf mold and good humus. This should not be too firm, but rather loose, and definitely not dry. Using a trowel, dig a hole with a diameter of about 15 cm (6 in.) in the center of the crate. On the bottom of this, place a slice of soaked white bread and a bunch of worms. The crate should now be closed with a well-fitted plate of glass upon which you place old newspapers, mak-

## The Evolution of Aviculture

Make your plans for the AFA's upcoming 2004 Convention to take place in San Francisco, California, from August 3-7, 2004, to celebrate the 30th Annual Convention of the American Federation of Aviculture (AFA). The theme of the convention is "The Evolution of Aviculture." The venue and the speakers are guaranteed to be top notch. Be there!

ing the breeding area dark. You should regularly check to see that the soil is not too dry and that there is still sufficient food (which should be replaced daily as it quickly becomes rancid) for the white worms. After some four weeks you can virtually "pick" the worms; just rinse them for ten minutes and your birds will have one of the best foods they could possibly want, particularly during the breeding and chick-rearing periods. Good breeding conditions require a temperature of about 21° C. (70°F). Keep in mind, that when it is up to most bird species, they do like meal- and waxworms better. Nevertheless, whiteworms are essential in practically every breeding program and not only softbilled birds but most seedeaters, like finches, will eagerly forage on whiteworms.

### Maggots

It is no surprise that the breeding of maggots does not attract very many bird fanciers! We must admit that it is not particularly pleasant, and the danger that they might bring botulism to our birds doesn't appeal to us either (any decaying protein is a potential source of *Clostridium botulinum*). If you have a large yard, you can hang a piece of meat somewhere out of the way, and allow the flies to lay their eggs on it. After a few days remove the meat and place it in a tin container; make sure that it is one that closes very well! In another few days you will be able to gather as many maggots as you please! However, they cannot be offered to your birds immediately because they will first need to be rinsed absolutely clean under a moderately forceful stream of water for at least twenty minutes. That will cleanse and largely empty their intestines as well. Place them for 3-4 days in a box or tray with a layer of powdered chicken meal until they become completely white, thus clean (unclean maggots still show the ingested meat through their skin); only then can they be given to the birds. Less involved, and a great deal less vile, is the breeding of maggots in a hatching bottle. Fill the bottle with boiled potatoes and sour milk and place it outside without a lid for a few days. Then close the lid. A few days later you will be able to find maggots in the bottle; these should also be given a "cold shower" and a "chicken meal" treatment before being "served."

### Ant Eggs

This extremely nourishing food should not be lacking in the menu planned by any true bird fancier. The ant pupae (because that is really what the "eggs" are!) can be collected not only at the common anthills found in the woods (or your yard), but also under stones, behind the bark of tree trunks (sunny side), in the lawn, etc. The grass ant (e.g., *Tetramonium caespitum*) keeps its egg stores so close to the surface that they can literally be scooped right up. However, these are always only small supplies that are only enough for one feeding for a small number of birds.

For quantities that are really worthwhile, we must find the nest of, for example, the red forest ant (e.g., *Formica rufa*) or other species of similar size which has large ant pupae and lots of them! If handled well, we can reap the benefits of such a giant nest for many years. After a little observation we can generally determine the location of such a nest. Then with gloves on and sleeves well closed, perhaps best done by tying something around them at the wrists, we carefully remove the little twigs, pine needles, etc., until we come to a "supply room." And then it should happen! Spread out next to the nest a large cloth, perhaps an old sheet. The four corners of the sheet are then turned in toward the center, leaving some space in the center where we will deposit the larvae (eggs) that we scoop out of the nest. It is under these four corners that the pupae will eventually end up, which is why we should place a few twigs under the corners so that the ants will have enough room to easily carry the larvae under the corners. Yes, you read it correctly — the ants carry the pupae. What exactly happens? The larvae will soon die if they are

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exposed to the sun. The ants, who “know” this, hurry to carry to the nearest shady spot the pupae that we have scooped up and placed in the center of the sheet, and they find shade under the corners of our sheet. It must be sunny weather, of course, for this to work.

While the ants are working for us, we can confidently go off for half an hour or so, depending upon how much work we have given them, to enjoy nature’s surroundings. When, after a little time has elapsed, the pupae have been neatly sorted out and placed under the corners of the sheet, leaving only the nesting material in the center, our “catch” is really completed. The few ants that are trapped when we pick up our sheet are of little consequence. When you slightly open the lid of the tin into which everything has been transferred, these ants will crawl out to immediately fall victim to the birds, who really like them. The remaining pupae are best kept in a refrigerator after having given our birds a small meal of them first.

At this point, however, we want to say a few words about tidying the ant nest. This is necessary! Don’t ever be tempted to deplete a rich nest of its entire contents.

The ant pupae will become too stale anyway, with the contents being reduced in nutritional value, besides which, you may drive that particular tribe of ants away or destroy them altogether. The nest material on our sheet should be redeposited in the cavity that was made when we scooped out the ant nest. In about three or four days there will be no more evidence of the damage and all will be neat again, with in-going and out-going roads once again intact. In this way the ants can maintain their existence and their nest, with one nest being able to supply us with this fine bird food for many years.

### **Earthworms**

These should only be caught on soil which has not been treated with any chemicals, pesticides, fungicides, etc. Earthworms have quite a lot of soil in their bodies and, when a bird eats a worm, it would also take in this poison, which is often deadly.

The best way to catch earthworms is to stick a spade in the ground and then knock against the handle. The earthworms will come to the surface and we can simply pick them up. They are, however, also sold commercially in small containers with peat moss. Be sure that the earthworms have been in this peat moss for at least four days, so they can “clean their guts” of the potentially harmful decaying vegetation on which they foraged. After that time the earthworms can be refrigerated for approximately three weeks.

Since earthworms collected from “the wild” often act as hosts for the parasitic windpipe worms, we personally are not very much in favor of serving them to our birds, and rely on commercially available ones.

### **Crickets**

Crickets (Gryllidae), of which the House Cricket (*Acheta domestica*) can indeed be extremely annoying when trapped in your bedroom or den, are commercially (mail-order; pet stores) available according to size: very small and still soft (hatchlings); and increasing in size to 1/8 in., 1/4 in., 1/2 in. and 1 in. Crickets can be kept in an old aquarium with a properly closing mesh lid, and foraged with fresh grass, slices of potatoes, cereals, and (advisable) primate pellets. Fresh drinking water should be available at all times and can be offered in a shallow dish.

Due to the many cricket droppings, the aquarium and drinking vessel should be cleaned regularly. If you don’t have the time for all this, freezing the crickets is obviously much easier and quicker, especially when ordering is done by mail order: the whole box can then be placed in the refrigerator on arrival, and the crickets offered when required.

Since crickets are very inexpensive (they usually come in boxes of 1000) it doesn’t pay to propagate them at home.

### **Wax Moths**

The larvae of the Waxmoth (*Achroia melonella*) are relished by most insect-eating birds. Due to the larvae’s soft and thin skin, they are an important part of an adequate rearing food, although they are more fattening than mealworms, and should therefore be offered in moderation.

Wax Moths have a life cycle of approximately two months and can best be propagated in the same manner as mealworms. Commercially produced larvae are (or should be) irradiated so they are unable to spin their cocoons. You will need some 200 larvae for a colony. Place them in a well-ventilated, dry container similar to a mealworm’s breeding box, and forage them with a mixture of equal parts of wheatmeal and oatmeal; the mix should be lightly moistened with honey and water (one can use glycerol instead of water, if one wishes). A shallow dish with drinking water is required. Place several rolls of thick paper or clean egg trays (the ones you find in the grocery store) in the breeding box to stop the larvae from grouping together.

In the wild, wax moths lay their eggs on both combs in bee hives and on combs that have been removed for storage. The emerging larvae, which feed on wax, destroy the combs. A wax moth infestation can easily be recognized by the fine gray webs with which the larvae have lined the paths they have eaten through the comb. In strong colonies, the bees keep the wax moths under control by killing the emerging larvae and carrying them out of the hive.

Hence, if you have bee hives or live near an apiary, prevent the escape of wax moths by working with breeding boxes that are properly constructed and can be closed adequately thus eliminating the possibilities for escape. ❖