

FEEDING

Geckos require a basic diet of live insects and other small forms of life. Flies and moths are good staple items for most gecko species in captivity, while other prey can be provided when seasonally available, to provide variety to the diet. Geckos will, according to their size and individual preferences, accept spiders, slaters, katydids grasshoppers, crickets and caterpillars of various kinds, to name but a few. The gecko keeper will soon determine, by trial and error, the preferences of the animals.

Adult geckos can be overfed, which can result in obesity and in some cases causes breeding to become sporadic or cease altogether. Some species are more affected by overfeeding than others, and this can be checked by comparing their appearance with those in the wild, or if this is not possible, with those of other keepers.

As a general rule, geckos can be fed daily if food is accepted. If little interest is shown, feeding can be suspended for a day or two. As geckos are ectotherms, the amount of food consumed will vary according to temperature and climatic conditions. Also, in the wild, geckos may often be subject to 'feast or famine' conditions, and if well fed when food is plentiful, are quite able to withstand periods of several days without food.

In some species, the tail acts as a storage organ, building up a reserve of fat on which the animal can draw in times of food scarcity. This feature can be utilised as a guide to correct feeding - the base of the tail should be reasonably plump, without being grossly distended, at the end of the summer.

Drinking water should always be provided in some form. Geckos will readily drink from water vessels if they need to, but many species prefer to lick moisture from foliage, as they would from rain or dew in the wild. For this reason, many keepers mist spray the plants in their cages on a regular basis, particularly in summer. If fairly deep water vessels are provided, some keepers place stones in them so that a gecko falling in can easily climb out. In my experience this is not necessary for adult geckos, but may be advisable for juveniles up to a year old. The type of water dispenser used for cage birds should not be used, as some geckos will enter the tube of water and drown. Some keepers use water jars with wicks of nylon cord through their screw tops, from which the geckos can lick the moisture they require, a useful ploy to ensure the water remains uncontaminated, and is always available.

Fruit Flies

Baby geckos require quite small insects as live food, and fruit flies (*Drosophila*), also known as vinegar flies, are widely used for this purpose. They may be collected by placing decaying fruit in a jar in the open air, preferably near a compost heap. In order to ensure a continuous supply over the cooler months, it is quite easy to maintain cultures of these insects in captivity. There are several recipes available for artificial mixtures in which to breed fruit flies, but I prefer to use a natural fruit mixture which makes the end product more nutritious as gecko food. The following method has served me well for many years:-

Place a 5 cm layer of cereal in the bottom of a number of preserving jars. This can be crumbled stale bread, crumbled weetbix, rolled oats, bran, porridge oats or similar. On top of this, add a layer of pulped or sliced fruit at least 5 cm and up to 10 cm deep. Some particularly suitable ones are banana, apple, any citrus fruits, feijoas, but most fruits will work. The whole fruit including the skin should be used. Fermentation is started by mixing a teaspoon of dried yeast in half a cup of lukewarm water, and pouring this over the fruit in the jar. A few fruit flies are then added and the jar covered with a suitable piece of mesh secured with a rubber band. The flies are quite small so the mesh needs to be fairly fine. Pieces cut from old nylon stockings or panty hose work well, or you can use a fine muslin. A more permanent alternative is to use jars with plastic lids, and use a hole saw to cut as large a hole as possible in the lid, then glue in a disc of fine wire mesh (aluminium or stainless steel) using a silicone sealant.

Place the jars in a warm spot such as the hot water cupboard, or in an incubator. Fresh jars should be started fortnightly, or as required. If the mixture is not too wet, after removing the lids, the jars of hatching flies can be placed on their sides in the cages containing the baby geckos; this is much easier to do than trying to transfer fruit flies from jar to cage. After each use, wash the jars well and allow them to dry thoroughly before re-use to discourage spoilage of subsequent mixtures by mould.

A simpler method involves just placing sliced or crushed fruit in a jar, which is then just left in the open to wait for the fruit flies to arrive. This works if you are catering for only a small number of babies, but a drawback is that if you don't use yeast to get fermentation under way quickly, mould is likely to be a problem.

Although small, fruit flies will be taken by adult geckos of most species if other food is in short supply. The ease with which they can be cultured make them a useful standby.

Moths

Moths of all kinds are very acceptable as food items for most geckos, and are a preferred item for many of the nocturnal species. They are more plentiful in some areas than others, but it is well worth trying a moth trap, which reduces collecting effort to a minimum. Moth traps can be constructed in a variety of ways to capitalise on the tendency of moths to be attracted to light. Most efficient is an ultra-violet compact fluorescent lamp, which can be contained in either a bayonet or an edison screw fitting, and will usually attract moths in great numbers, as well as grass grub beetles and other night-flying insects. This type of lamp will require a mains power supply. LED lamps are becoming cheaper and available in a variety of types, including those that will operate on lower voltages, and can be used in areas away from mains power, operating from rechargeable batteries. Experimentation in this area could be useful in producing more efficient moth trap designs.



Moth traps can be as simple or as complex as you want them to be. This is an area where keepers can experiment with different trap designs and light sources to optimise the catch in their particular area. The availability of low voltage LED lights should allow for light traps to be lighter and more portable than earlier designs.



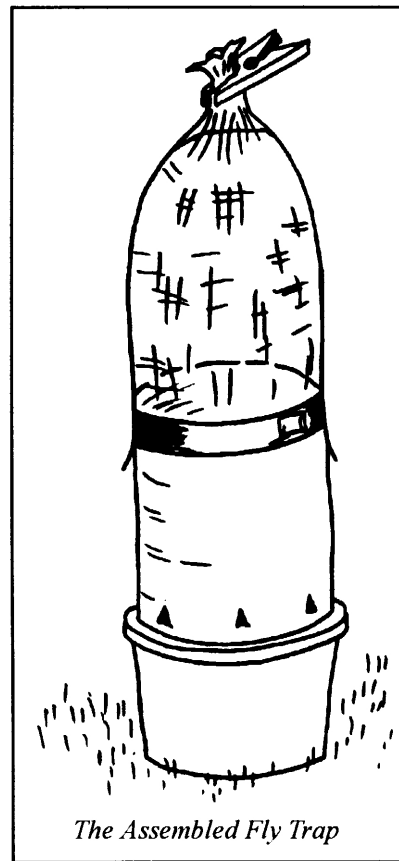
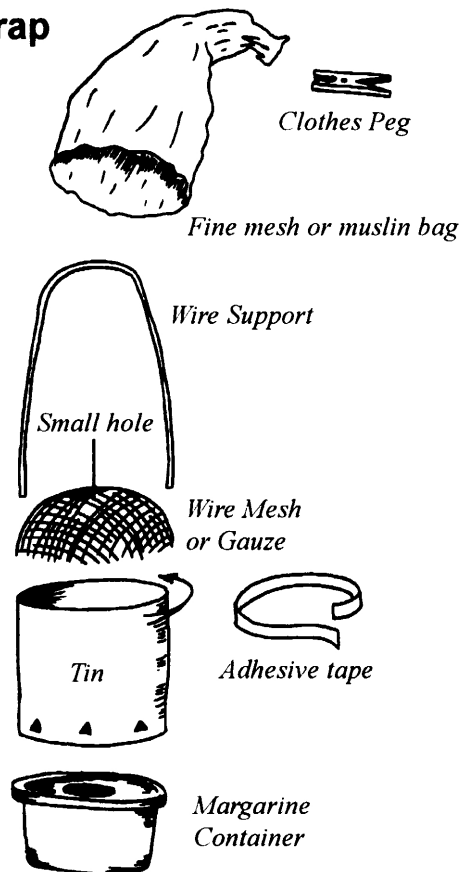
Flies

Flies are used as the staple food item by many gecko keepers. Flies are most easily obtained in quantity by the use of suitable traps, which can be constructed in a variety of ways, using scrap materials. A simple fly trap is shown, made from a large tin (an 850g fruit tin is ideal).

Construct as follows:-

1. Make four or six holes around the base of the tin. Use a can punch which makes a triangular hole, or drill round holes about 8 - 10 mm in diameter.
2. Cut the bottom out of the tin with a can opener. You now have a cylinder open at both ends, with holes around the lower rim.
3. Take a piece of wire mesh (aluminium fly screen is fine) and push it into a dome shape. Tape it securely to the top rim of the tin with plastic insulation tape.
4. Make a hole in the highest point of the mesh dome by forcing the point of a small screwdriver through it. Carefully stretch the mesh until you have a hole about 5 mm in diameter. See if you can do this by stretching the wire without actually breaking the strands; if they do break, tuck the broken ends under so the perimeter of the hole is smooth.
5. Attach a loop of stiff wire to the sides of the tin with insulation tape. This is to support the collecting bag.
6. Make a collecting bag out of muslin, mosquito netting or similar. Offcuts of net curtain material can often be purchased quite cheaply. Make the bag as an open tube, with elastic at one end to secure it to the top rim of the tin. The open end is then closed by folding it over and clipping it to the top of the wire loop with a spring-type clothes peg.

Fly Trap



In use, the trap is baited by placing meat, liver etc., in a suitable container so that the trap can be stood over it. The flies enter through the holes around the lower rim, then fly upwards towards the light, and emerge through the hole in the mesh, into the collecting bag. The trap can then be lifted, the peg unclipped, and the live flies shaken into the gecko cages as required. This kind of trap is extremely efficient, with huge catches being possible when conditions are suitable. The bait should be kept moist, and a dried-out bait can sometimes be given a new lease of life by the addition of a little water. The smell from such traps can be quite strong, but most gecko keepers seem to quickly develop a remarkable degree of tolerance! Please remember to consider your neighbours' noses when siting your fly traps!

The above trap is one of the old original versions which evolved during the 1960s-70s, and various improvements have been discovered in more recent years. For example, the design can be adapted using a piece of plastic pipe in place of the tin, giving a much longer working life due to the elimination of corrosion. Some more recent traps, based on the same principle, are illustrated below.



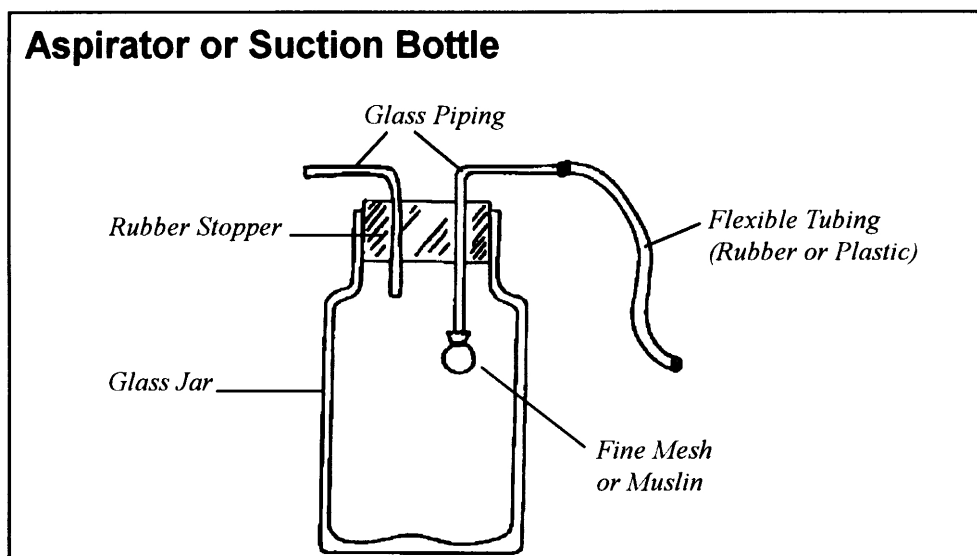
All-mesh traps such as the one on the left can be bought quite cheaply on the TradeMe website, whereas more sturdy and long lasting traps can be made from plastic jars and stainless steel mesh. Below right shows a trap in disassembled form.



Supplementary Live Food

An aspirator (sometimes called a suction bottle, or "pooter"), is a useful device for collecting small insects for use as food for geckos. Any small household jar is suitable, and rubber stoppers can be obtained from a hardware store or rubber goods shop. The glass tubing can be obtained from firms which stock scientific glassware supplies, and can easily be bent to shape by heating the tube in the area that the bend is required, using a gas flame or blowtorch. Bend gently and hold steady until the glass has hardened. Alternatively, metal or plastic tubing could be used. In use, the jar is held in the hand and the open end of the tube placed in close proximity to the insect to be collected. The flexible mouthpiece is then sucked, sweeping the hapless insect into the jar. The gauze on the suction tube prevents accidental inhalation of insects by the user, which is not a particularly pleasant experience! This device is excellent for collecting such insects as

aphids and leaf-hoppers, and for obvious reasons should not be used to collect flies associated with the spread of disease. Moths should also be avoided as the wing scales can cause respiratory irritation to some people.



For those who prefer a more high-tech approach, the small portable vacuum cleaners which run off a rechargeable battery can be used to good effect in collecting small insects. They are small enough to put inside a cage before opening the dust compartment and liberating the catch. Good hauls of the so-called "lacemoths" can be had in this way. A normal household vacuum cleaner can also be used to collect moths from around a porch light, by putting a nylon stocking down the inlet hose and securing it to the end of the tube with a rubber band. Collect the insects by sucking them up with the tube, then when you turn the machine off you can easily remove the stocking containing the catch.

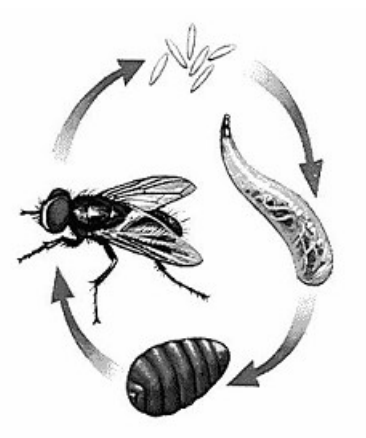
Variety in the diets of captive geckos can be provided by sweeping a large butterfly net through foliage or long grass. Invertebrates so collected will often include small beetles and spiders, as well as various kinds of flies not usually caught in fly traps. These are all useful food items. Caterpillars of various kinds are also accepted by many geckos. *H. duvaucelii* readily accept wetas and cicadas, and may take small snails and earthworms if other food is scarce. Leaf mould contains many invertebrate life forms and may be placed in cages regularly to provide variety in the diet. It is especially useful in indoor cages, where it is unlikely that there will be any of the naturally occurring invertebrates which tend to take up residence in outdoor cages.

Breeding your own live food

Some keepers find that breeding their own live food has advantages in providing continuity of supply. It is not intended to give detailed instructions here on the subject, and this

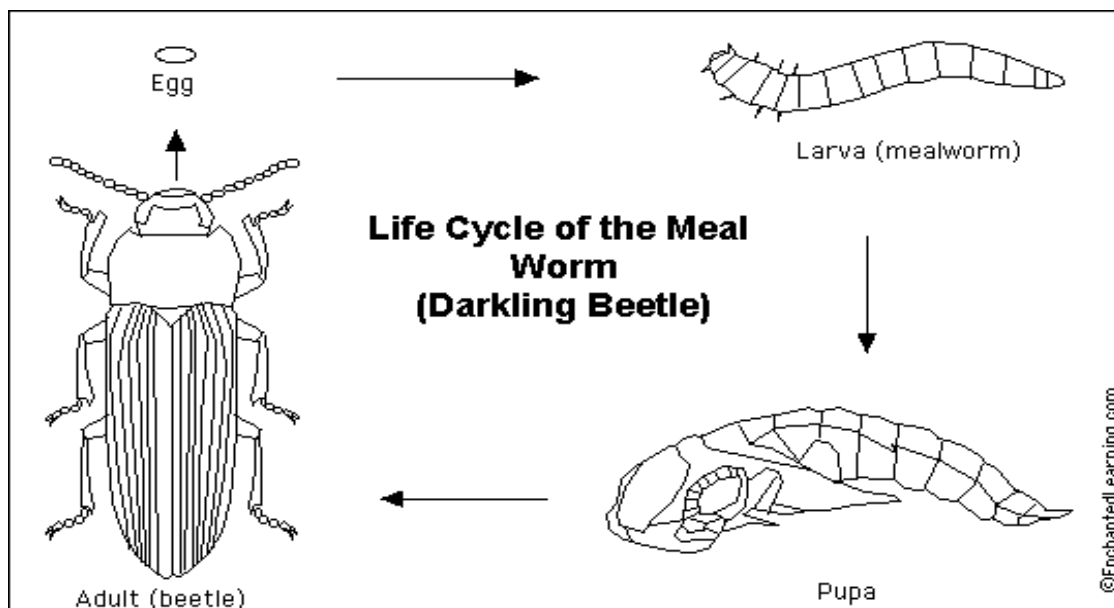
information can best be obtained from other sources, such as your local library. There are however several insect species which are easy for the average keeper to maintain, and which can very useful when wild-caught food is in short supply.

It is possible to utilise the maggots from the old baits in your fly traps, by retaining these until they develop into flies. Put the old bait complete with maggots into an ice cream container and cover with bran or untreated sawdust. Cut a fairly large (say 8 cm x 8 cm) hole on the lid and glue a piece of plastic or fibreglass mesh over it. Place the container in a sheltered spot and the flies will eventually hatch.



Flies can also be bred by placing a layer of canned dog food in an ice cream container and putting it outside in a warm spot until plenty of fly eggs are in evidence. Then put a lid on the container as above, and allow the maggots to develop. When they are approaching pupation, add bran or sawdust on top, and wait for the flies to hatch. The main advantage in using canned dog food is that there is less smell. With both methods, the bran or sawdust containing the pupae can easily be removed and placed in small containers in your cages, so the flies are available to the geckos as they emerge.

Mealworms can be easily maintained with very little attention. They will multiply readily in plastic ice cream containers of bran, with a few small slices of carrot or apple placed on top of the bran at regular intervals. Both the larvae and the adult beetles are eaten by geckos, but it is best not to feed too many, as the tough skins may cause problems with digestion.



Indian mealmoths are also useful as gecko food. This species can also be bred very easily on rolled oats in ice cream containers. The rolled oats soon become bound into a solid mass by a web-like material produced by the larvae. Both larvae and adult moths are eaten by geckos. The ventilation holes in the lids of the containers should be covered with

extremely fine mesh or cloth to exclude a tiny wasp about the size of a sandfly which parasitises this species. If you get an infestation of the wasp, start new colonies with adult moths only, and freeze the remainder to kill any wasp eggs or larvae. Otherwise you can start new colonies by putting a chunk of old rolled oats containing larvae into a new container and adding more oats to it. Be careful with these moths as they can get into your pantry and wreak havoc with anything from muesli and weetbix to flour, pasta and even chocolate! Dispose of unwanted cultures by freezing for at least 24 hours before throwing them out.

Various insect species can be purchased from an Auckland based commercial supplier (Biosuppliers). Those most readily taken by geckos include locusts, crickets and waxmoths. Locusts are particularly useful for the large species *H. duvaucelii* when other food is scarce, especially in early spring when the animals are hungry but cicadas and the like have not yet emerged. Biosuppliers can also supply wingless fruit flies, which some keepers find easier to manage than the normal winged variety.

Dietary Supplements

Sweetened liquids are readily accepted by most New Zealand geckos, and honey diluted with water is provided by many keepers. Diluted blackcurrant juice is relished by several species. Another possibility is a solution of raw sugar. The liking for this kind of food suggests that our geckos are likely to take nectar and honeydew in the wild. Soft fruit can also be provided on an occasional basis; banana, watermelon, tinned pineapple and stewed apple are all worth a try. Some keepers use fruit-based baby food, the most popular being pear-based varieties, available in cans, jars or sachets.

Supplementation of the diet with additional vitamins and minerals is not absolutely necessary for geckos kept outdoors and fed a reasonably varied diet. Nevertheless, some keepers do claim beneficial results from the use of supplements which come in powder form and contain calcium and a range of vitamins. Preparations formulated specifically for reptiles are preferable, and those containing vitamin D³ can be useful for geckos kept indoors. Powdered supplements can be mixed with sweetened liquids, or dusted on live insects which are then fed to the geckos. This is best achieved by shaking the insects and a quantity of the powder together in a plastic bag.