

## HOW TO RAISE A MONARCH BUTTERFLY FROM EGG OR CATERPILLAR

In the wild, only about 2 to 8 butterflies will survive from 100 eggs (a Monarch female butterfly can lay up to 400 eggs). There are many predators (insects, rodents) and dangers (weather, people, habitat loss), and by raising Monarch butterflies you are helping the butterfly population. You will also learn a lot and be rewarded with joy as you witness this miracle of nature.

Raising a caterpillar to butterfly is not difficult, and takes just a little care. Here are some methods and hints that I have developed over a number of years of raising Monarchs, and they will help insure success. If you have any questions about raising Monarchs or other butterflies, please call me and I will be most happy to help you. My name is Madeline Champagne, and my phone number is (508) 543-3380 (Foxboro).

**When you are raising the caterpillars, treat them with consideration and respect, and think of how they would live in the wild. Raising caterpillars into butterflies is an exciting experience, but it is your responsibility to raise them carefully.**

**When to find them:** You will start noticing Monarch butterflies in June (although there are sometimes sightings in New England as early as May). These are not the butterflies that spent the winter in Mexico. As Monarchs leave Mexico, they will fly northeast and mate. In 4 to 5 weeks their eggs will have progressed through another life cycle (egg to caterpillar to chrysalis to butterfly), and the second generation of butterflies will mate and fly northeast. The butterflies we see in New England in June/July will be 3 to 4 generations from the ones that were in Mexico.

**Where to find them:** As soon as you see Monarch butterflies, you can look for eggs or caterpillars on milkweed plants. Milkweed grows in vacant fields and on the side of the road and in vacant lots. Or you can plant some in your garden. The egg is about the size of a celery seed, is pale yellow (almost white), and shaped like a football. Monarch eggs are usually laid on the underside of the leaf, and usually only one on a leaf (note the word *usually*, I find them on the top of leaves, and sometimes more than one on a leaf). When you first start looking for eggs, bring a magnifying glass, because there are other white dots that look like eggs. Sometimes the milkweed leaf gets pricked, and the small drop of milk will harden into a little ball. There also might be other insect eggs. Remember that Monarch eggs are not round. If you find an egg, bring the leaf home, cut the stem with a sharp knife, and put the leaf in a shallow glass with just a little bit of water to keep it from drying up, and put some cotton on the bottom so that the caterpillar won't drown if it falls in. Watch carefully, the teeny caterpillar comes out in about 3 days.

If you find eggs, be sure that the leaves don't dry up, as the developing caterpillar may dry up too. If the egg is laid too close to the base of the leaf to put the leaf in water, or if the leaf is too small to be put in water, put the leaves in a shallow dish (I use glass baking dishes) and cover with plastic wrap. The plastic wrap will keep it airtight and the leaf won't dry out. However, you will need to open the plastic wrap at least once a day, so that it doesn't get too moist. After a couple of days when the caterpillar has come out, you can move the caterpillar to a leaf on a stalk. It is OK to keep the caterpillar in the airtight container for a few of days, just be sure to let the fresh air in at least once a day and make sure the leaves look tasty.

**Hints for finding Monarch eggs:** As the season progresses, the milkweed plants that came up in the spring are getting larger and tougher. Female Monarchs will lay more eggs on smaller fresher plants. Later on in the season I look for places like fields that have been cut in mid- to late July, or landscaped areas where milkweed has been pulled up but then sprouts up again. If you have milkweed in your yard in an open area, it is a good idea to cut it after the flowers bloom to encourage new growth.

**When the caterpillar first comes out:** When the Monarch caterpillar comes out of the egg, it usually eats the egg case (a very nutritious first meal!). When it first eats the leaf, it often doesn't cut all the way through, and often keeps its back end in one place and makes a little circle where it chews. If you're looking for eggs and caterpillars outside, look for these little circles, and you may see a teeny caterpillars inside the circle or nearby.

**Milkweed stalk:** The sap from milkweed get sticky, so it is a good idea to bring a plastic bag or paper towel to put the stalk in. When you are raising a Monarch from the egg and you have the egg on a leaf in a cup, cut a stalk after the leaf starts looking not too fresh. When you cut milkweed, cut only what you need and try to cut milkweed from where there is a lot of it. If there aren't many plants, look for some more, to insure places for females to lay their eggs. When you cut stalks, the fresh green ones look great but the new stalks will wilt quicker than the older ones (*see moving a caterpillar*)

**Make a rearing container:** Make a safe container for your caterpillar(s). I use empty computer paper boxes, 8.5" x 11" x 16". I cut out the sides and top to put in screening. It is important to keep caterpillars in a container (when they get big they might wander off). The container should be well ventilated to make sure that no mold forms (from their poops). A paper towel in the bottom helps with that. Aquariums with screen tops are good too. You can keep the rearing container in your home, or on an enclosed porch, or in a sheltered place outside where it won't get rained on. The container must be big enough for the butterfly to hang its wings when it emerges (*see butterfly emerging*). Covering a tomato cage with screening works well, do a google on "homemade rearing/eclosing cage".

**Where to keep the rearing container:** The caterpillars grow faster when it is warmer. In the summer, they will grow faster if kept somewhere like outside in a screened porch or sunroom, although it is OK if they are inside with air conditioning and grow slower. September caterpillars will be better off inside, where it is warmer, so they can grow faster and get going quicker.

**Please note for light conditions:** Experiments have been done on Monarchs emerging from chrysalises and on newly emerged Monarch flight directions. Daylight conditions appear to be factors, although there is still a lot to learn. The September Monarchs fly southwest towards Mexico – if released a distance from where they emerged, in a week or so they re-orient their flight. But since there is still a lot to learn, it is best to raise caterpillars and to keep chrysalises in as natural a lighting environment as possible.

Once the chrysalises form, don't keep them in the sun. When the butterflies emerge, the box/cage/container should not be left in the sun. (*see Letting the butterfly go*).

**Keep the rearing container safe:** Make sure that younger brothers or sisters, or pets like cats won't bother your caterpillar (cats probably won't go after the caterpillar, but may be curious about the container – I had an 18-pound cat who liked to sit on things so I had to put a board on top of my rearing boxes). Someone told me once how their cat knocked the box off the kitchen table (and played with the caterpillars ☺).

**Fresh milkweed:** What caterpillars want to do is eat, and you will have to provide fresh milkweed for your caterpillar. When the caterpillars are small they don't eat much, so cut small stalks, but as they get larger you may have to get fresh milkweed after 3 or 4 days. Don't let the milkweed dry up. Keep the stalk in water, but cover the water container, since the caterpillar might fall in and drown. I use a film container, and cut a hole in the cover big enough for a milkweed stalk. I take a piece of styrofoam and cut a hole to fit the film case in to make a base so the film case won't fall over. Be sure to check water level in container daily, especially if you have a small container like a film case, to keep the milkweed stalk fresh. Be careful when you collect milkweed that it hasn't been sprayed (like if near someone's garden, or maybe even a farm where the vegetables get sprayed), and don't collect near an active railroad track where chemicals from the trains might be on it.

**Caterpillar mortality:** Occasionally a caterpillar will die. This doesn't happen often. If it is a caterpillar that you have found, it might have been parasitized (for example, wasps will lay eggs in caterpillars). If all your caterpillars die, you might suspect something wrong with the milkweed that you collected. It might have been sprayed, or might be in a place like next to a railroad track where chemicals might have gotten to it.

**Vacation:** If you are going to be away, like on vacation or for a long weekend, make sure someone else can watch your caterpillar. If you can keep the rearing container safe and find milkweed where you are going, you might take the caterpillar with you if it wouldn't cause too much trouble. Don't ever leave the rearing container in a closed hot car.

**Caterpillar frass:** Since caterpillars eat a lot, they poop a lot. Frass is the scientific word for it. At first the frass will be little dots like pepper, but as they get bigger their frass will get bigger too. The paper towel on the bottom should be changed every few days when the caterpillars are larger to prevent mold on the frass.

**Washing milkweed:** When you get milkweed for your caterpillars, first check for Monarch eggs, then check it to make sure that there are no other insects on the plant. It might be easiest to wash it after you check for eggs - sometimes little spiders are hard to see. You also might want to make sure that aphids are washed off so that they won't spread to your houseplants.

**Taking the lid off the box:** Sometimes people tell me that a caterpillar or two has "disappeared". I suspect that the caterpillars may have been up on the lid of the box, and when the lid is taken off, they have crawled away. So when you take the lid off the box, look at it from the inside and make sure that if there are caterpillars up there, that they don't wander off.

**Shedding skins:** Caterpillars shed their skins about 4 times. Sometimes you will see a caterpillar near the skin that it just shed. Often the caterpillars eat their shed skin. You may also see the shed skins on the bottom of the container. The caterpillar prepares for shedding its skin for a day or two and rests afterwards - so do not be worried if your caterpillar is quiet for 1 or 2 days. Caterpillars often go off the plant to shed the skin - if your caterpillar is on the side of the box just leave it there.

**Moving a caterpillar:** If you have to move a caterpillar off a leaf (when you supply fresh milkweed), the best way is to cut the leaf out around the little caterpillar (I use manicure scissors), and use a tiny piece of tape to tape this section of leaf onto a new leaf - this avoids handling the caterpillar. Or, if the caterpillar isn't on a leaf, instead of picking it up with your fingers, tear off a little piece of paper and slide the edge under the caterpillar. Sometimes the caterpillar will have made some silk to stick on with, so do this gently. When caterpillars are really little, it is a good idea to do this over a big piece of white paper, in case the caterpillar falls off. Or you can very carefully use a little artist brush. Caterpillars (especially when they are little) are delicate, so should not be handled a lot. If a caterpillar has crawled onto the inside of

the box, do not worry and it is probably best not to move it back to the plant - it is probably resting, and will find its way back by itself.

**Caterpillar to chrysalis:** In the hot summer, it will only take about 10 to 14 days before the caterpillars form their chrysalis. If you keep the caterpillars in the house where it is generally cooler than outside, it will take longer, and it will take longer in the fall.

**Caterpillars in the classroom:** Having Monarch caterpillars in a classroom is a wonderful opportunity for students (and teachers) to learn the life cycle of the butterfly, and in the fall to learn about the migration to Mexico. Other programs, such as Writing For Science, can revolve around this project. But along with learning about the life cycle, it is a wonderful opportunity to demonstrate respect for nature. In the spring and in the fall, classrooms tend to get warm and the air may be dry – so attention to fresh milkweed is important. ***The caterpillars should not be left in the classroom over the weekend.***

**"J" and chrysalis stage:** When the caterpillar gets to be about two inches long, it will probably crawl up to the top of the container and spin a web and a button of white silk. Sometimes it uses the underside of a milkweed leaf, or a stick that you put in. At this time it is very important not to disturb the caterpillar - you will have to be very careful taking off the top of the box, and it would not be a good time for the caterpillar to travel anywhere. It will then hang from this silk button, and curl up a little bit. This is called the "J" stage. In a day or two, the caterpillar will shed its skin for the last time and the chrysalis will form. This doesn't take very long, but you may be lucky enough to see it happen. The chrysalis starts off lumpy and greenish-yellow, then as it hardens it becomes pale green with gold dots and a gold band. If there is a caterpillar in the "J" stage on the top of your rearing box, and you have to open the box, lift the top off very carefully.

**Butterfly emerging:** After about 10 to 14 days (or longer in the fall), you will notice the chrysalis turn very dark. It is not dying. Soon after you will be able to see the orange and black through the shell of the chrysalis, and the butterfly is just about ready to emerge. It takes only seconds for the butterfly to emerge, so you will be lucky if you see it happen. When he/she first comes out, the butterfly has damp, crumpled wings. He/she will hold onto the chrysalis, or to the top of the container, and let the wings hang down, as he/she pumps a fluid through the wings to stiffen them out. The container must be large enough for the butterfly to hang its wings down.

**Letting the butterfly go:** The newly emerged butterfly should not be disturbed for a few hours. If the wings don't dry straight, it won't be able to fly correctly. After the wings are dry, you should let your butterfly go. If the temperature is cool (as in the evening) or you are in the shade, the butterfly may walk around before it flies away. You can usually have the butterfly walk on your finger. This is a wonderful opportunity to see him/her up close, especially the eyes and proboscis (straw-like tongue) and antennae. You will be able to see the little hooks on the ends of the legs that help it hold on (that is also where they have taste organs). You might be able to see if it is a **male or female** - the male has a spot along the lower black vein on both back wings, looking from the upperside. The bulge in the vein is a scent gland, that makes the male attractive to the female. The butterfly may not want to fly off your finger, so you can coax he/she on to a leaf on a bush or a tree. If you let the butterfly go in the evening, he/she may stay there until the next morning. If it is raining, find a good sheltered place to leave your butterfly. Please note: If the chrysalis has turned black, so you think that the butterfly will emerge soon, and you will be away for the day, keep it in a cool shady place, so that the butterfly will keep quiet when he/she emerges (do not leave in a warm sunny spot). At night, or if it is raining, you can wait until morning to release it, as butterflies just find shelter and hang around in the dark and in the rain.

**Chrysalis & Butterfly in the classroom:** If there is any possibility that the butterfly might emerge over the weekend, the chrysalis should not be left in the classroom over the weekend. It is very important to release the butterfly when it is ready to fly. If the butterfly emerges on Friday afternoon after school or on Saturday or Sunday, especially in a hot classroom, the butterfly will damage its wings and use up a lot of energy if contained. The students need to understand that it is more important for the butterfly to be released when it is ready than for them to see the butterfly. It is also much better for the butterfly to release it when it is ready rather than to wait for some others to emerge and have more to release at one time. **Butterflies don't belong in boxes or aquariums or net enclosures!!**

**Saying farewell:** When you release your Monarch in July or August, he/she will fly off to look for flowers and for a mate. If you release your butterfly in September, be sure to give an "adios" as he/she flies away. Your Monarch will be joining thousands of other New England Monarchs as they find their way to Mexico for the winter.

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\*\* Check out the Massachusetts Butterfly Club website [www.massbutterflies.org](http://www.massbutterflies.org) for butterfly information, pictures of Massachusetts butterflies for help with identification, field trip schedule (free and open to everyone), etc. Another excellent website is [www.butterfliesofmassachusetts.net](http://www.butterfliesofmassachusetts.net) which has in-depth information about Massachusetts species

\*\* Jeffrey Glassberg's Butterflies through Binoculars is an excellent butterfly identification book.

\*\* Donald and Lillian Stokes The Butterfly Book is a good book for butterfly life stages and behavior, pictures of 60+ common North American species, and planting for butterflies

\*\* If you want to see butterflies in the wild, close-focusing binoculars will be very helpful. Pentax Papilio binoculars are excellent, lightweight, and not too expensive.

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