

I'm going to go through the steps that worked for us, when it came time to raise the caterpillars. We had several reference books and one I would suggest is "Monarch Magic" by Lynn M. Rosenblatt. It's written for children and schools, but it's easy and informative and hey, there's a kid in all of us.

#### SEARCHING FOR EGGS:

I was transplanting some small milkweed plants into a pot when I accidentally spotted the first eggs. Under magnification they appear dome shaped with vertical ridges. The eggs are nearly always on the underside of the leaf, and nearly always one egg per plant. But we do find the odd top-surface egg, and occasionally two eggs on a plant, or even on a single leaf. They are soft and white at first, then turn yellow-white and will soon harden, turning gray and dark as the black head of the baby caterpillar develops inside. As soon as we found eggs, we cut that portion of the plant and put it in a small water bottle. That in turn was placed inside a gallon-size jar. If you don't remove them from the elements, ants, earwigs and other natural predators will eat the eggs or larvae. Only 5% of the caterpillars born in the wild survive. If you choose to leave the larvae out in the elements I have some suggestions as to controlling aphids, ants, slugs and earwigs. Email me at [savethemonarch@efn.org](mailto:savethemonarch@efn.org) and I will forward them to you. We tried several of the suggestions with no success, and after losing many eggs and larvae to predators, we chose to shelter the eggs within glass jars.

#### THE HOLDING TANKS:

We used a small 2 oz or 4 oz medicine bottle filled with water to hold the plant cuttings, and placed it inside a one gallon glass jar. A rolled piece of masking tape on the bottom of the medicine bottle helps keep it secure.

Two things to keep in mind here. First, everything that comes in contact with the caterpillars needs to be sanitized with a 10% Clorox solution. Second, water or any moisture mixed with caterpillar frass creates a poisonous soup that will kill the caterpillar. So make sure the mouth of the water container is small enough that no frass, and certainly no caterpillar, will fall into it. If you ever find condensation on the inside of the jar, you'll want to take measures to correct it.

Over the mouth of the gallon jar we placed a coffee filter secured by a rubber band. When designing your caterpillars' safe haven, remember that your hand is going to have to fit into the jar for cleaning and adding more milkweed. We advise against putting several caterpillars into one big fish tank because of cross-contamination of a nasty parasite that the female butterfly can carry on her wings. I'll get to more on this later. When resources are strained we will put two guys to a jar, but we try never to exceed that.

So, you have your jars, you've procured the eggs... now what? You wait. In about 3-6 days a tiny caterpillar about 1/16" long chews its way out through the egg membrane, then turns around and consumes the rest of it. Yum. It takes about 6 hours after its birth

to develop its colorful black, yellow and white rings. From then on, it just eats and eats and eats.

Because you cut the entire branch (or small plant) that the egg was on, the larva should have enough food for awhile. The top leaves of the plant are most tender, so are the best food while the insects are this small. Caterpillars will eat and shed their skin 4 times before their final shedding, which turns them into a chrysalis. So, please note: when a caterpillar stops eating and becomes motionless, don't panic. It's not sick. It is preparing to shed its skin, and it is **IMPERATIVE** that you do not disturb it at this time. No matter what the situation.

#### AND THEN THERE IS THE FEEDING...

As the caterpillar grows, so does its appetite. You'll be startled at how fast a large one can consume a leaf. I have found that having sufficient food cleaned and air-dried ahead of time can greatly reduce stress and panic.

Make sure your milkweed plants are well watered before you start clipping branches or stems, and then clip off one stem of milkweed per larva. As the larva grows you may find yourself cutting often. It is important to place the cut stems into water immediately so you do not lose the white milk which keeps the larva poisonous to predators. I bring a water container with me to the garden. Because the female butterfly can carry a parasite that gets left on the milkweed plant, it is really important that you wash all the milkweed leaves and stems with a 10% Clorox solution. One part bleach, ten parts water. I dunk the plants in the bleach and then rinse them really well in two other pure water dunking bowls. I then set them outside to dry but not in the direct sun, as they may wilt. It is imperative that the plants be dry before feeding them to the caterpillars, or they will develop diarrhea (droppings would be light green).

#### ...AND THE CLEANING...

Every so often, usually when we added more milkweed, I cleaned out the jars. You are going to be amazed at the amount and size of caterpillar poop. Gently, without spilling, pull out the medicine bottle that holds the milkweed and the caterpillar. Set it aside and clean out the one gallon jar. Since the jar is dry inside, all you really need to do is shake the contents out. Replace the masking tape if needed. Make sure you put the same caterpillar back in the clean jar. If you have to change jars for some reason, clean them well with the 10% Clorox solution.

#### POSSIBLE HEALTH PROBLEMS (Gathered from other sources)

##### **Symptoms:**

Larva becomes lethargic

Yellow and white stripes begin to fade

Gradually, the larva turns brown

Finally, the entire body becomes black  
Skin ruptures easily, secreting foul, inky fluid

Cause:

This is caused by Polyhedrosis

Solution:

Discard all items that made contact with the larva. Brushes, containers, food plants must be disinfected with 10% Clorox solution.

**Symptoms:**

Larva appear to have white powder or spores covering them

Cause:

This is due to prolonged cool dampness, Muscardine Fungal Infection.

Solution:

Provide dry environment, they may or may not pull through

**Symptoms:**

Larva develops diarrhea

Droppings become light green

Droppings seem to be connected by threads of mucus

Causes:

These are signs that the food is too wet. The larva is coming in contact with and ingesting wet droppings.

Solution:

Keep the food dryer as well as clean the droppings often.

**Symptoms:**

Larva becomes distended

Appears to be changing skin but collapses

Decomposing body emits a sweet smell

Causes:

This is caused by Bacillus Thuringiensis

Solution:

Dispose of larva quickly and decontaminate containers.

**Symptoms:**

Pupa develops dark gray patches

Butterfly can not completely emerge from pupa

Causes:

This is caused by *Ophrycystis elektroscirrha*

Solution:

Since this is very contagious to all other larvae, eggs, adults and/or food plants, remove all items that have made contact with the individual. Destroy or disinfect with Clorox.

## STAGE TWO ( “J” )

So, they're huge. The monarch caterpillar grows to the size of your pinky finger. Those last couple of days you will find yourself adding food on a regular basis. Remember to check the water level in the medicine bottle frequently. Generally they spend 3-6 days as an egg, about 2 weeks as a caterpillar and about 2 weeks as a chrysalis. So one day you'll be doing your daily inspection and you will find that one has “J'd” (pronounced jayed). It's hanging upside down, curled at the end like the letter J. What has happened is that the fully grown caterpillar finished feeding, wandered around a bit, and selected a spot for its metamorphosis—most likely the coffee filter covering the mouth of the jar, but occasionally one will choose the glass “ceiling” at the shoulder of the jar. There it weaves a silk “button” that connects its rear end to the surface it will hang from. Then it rests awhile.

If you want to witness the next act in the drama you'll have to be very patient, but it's worth it. At some point, while suspended upside down, the caterpillar will begin twitching and wiggling. Then it violently sheds its striped skin for the last time, exposing a bright green pupa. It's a very risky maneuver, so do not touch the jar while it's happening. Even without interference, one of our caterpillars lost its grip on the silk button and fell to the bottom of the jar, dying immediately. They must be very fragile at this stage. The other fifty guys and gals performed to perfection.

## CHRYsalIS

The next two weeks will be quiet as the pupa goes through metamorphosis. This is the time for you to prepare for the butterfly's emergence. A jar isn't the best place for this to happen, but if you aren't up to designing and building a netted enclosure, the jar will work. Remove the coffee filter and put it aside, keeping the chrysalis suspended on it undisturbed. Remove the medicine bottle, along with any milkweed remnant. Be very careful not to spill the water in the jar. The emerging butterfly will be challenged enough, without having to deal with a puddle. Also make sure the masking tape comes out with the water bottle. Shake out any frass and the discarded skin.

Into the cleaned jar place a stick, propped diagonally inside next to the chrysalis but not touching. This gives the newly emerged butterfly something to hold onto while pumping

and drying its wings. Don't overdo the décor; keep it minimal so she'll have room to stretch. After placing the stick, return the filter and its occupant to the mouth of the jar.

We chose to build a small enclosure out of netting and wooden hoops, and transferred the chrysalises to that. But the few who had attached themselves to the glass were left in the jars and handled as described above, and it worked fine.

Now you wait.

## BUTTERFLY

When the time is near, the chrysalis will have changed from green to black with color patterns visible through the membrane. Just an hour or so before emergence, a milkiness appears as the butterfly separates itself from the inside of the membrane. Then the Monarch shows its most remarkable trait: the uncanny ability to slip out of its chrysalis during the exact moment that you are blinking or otherwise distracted. We've camped out for hours at a time, camera at the ready, only to miss the moment. But when you do manage to catch it, you'll be glad you did.

Shortly after emergence the butterfly pumps a creamy red fluid from its abdomen into its wings. The wings grow in size and strength as the abdomen shrinks. In the process some fluid will dribble; this is natural. In our experience, you'll know the right time to release her from the jar, based on her appearance and increased activity.

Don't force the issue. It may be that she will remain on the stick and you can simply lift it out. If not, place your finger under her abdomen and she will step on board. Some will fly off immediately once exposed to the sun. Others will need to be placed on a sunny flower where they can perch until their wings are completely dried.

I was foolish enough to name each one of my brood as I set them free. This year, it's numbers.

The beauty, in each phase, was unbelievably magical and moving. My hope for you is that you experience the same. On behalf of myself and monarchs everywhere, Thank you.

Namaste'  
Linnea