



BRING HOME THE BUTTERFLIES

VOLUME II

Raise **MORE** Monarchs with **LESS** Effort
and **AT LEAST** a 90% Survival Rate

Tony Gomez

Bring Home The Butterflies Volume II

Raise More Monarchs with Less Effort
and At Least a 90% Survival Rate

by Tony Gomez

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FOREWORD

The Wonder Years



Starting Small

When I was 8, our summer school teacher took us for a nature walk to a nearby pond.

As we arrived, she pointed out some tall green plants growing in a large patch. "Milkweed!" she exclaimed. What she showed us next would ignite a passion that still burns deep inside today.

Mrs. Baker carefully pointed out the smallest white dots that occupied the bottom of some of the milkweed leaves. "These are monarch butterfly eggs."

She carefully pulled off the egg-upied leaves and marched us back to the classroom. Our raising adventure had begun!

Over the next few weeks we watched as the eggs transformed into colorful caterpillars, emerald green chrysalides, and then, finally...magnificent monarch butterflies!

From that summer forward, I have been inexplicably drawn to monarchs, and in awe of their amazing transformation.

I have even continued raising them over the past 35 years. During those first years, I was often disappointed, as monarchs would die in my care.

But each time I failed, I learned valuable lessons that would increase my average survival rate to over 95%...less than 5% survive outdoors.

Today, my goal is to help others support monarchs by teaching them how to raise healthy monarchs and create butterfly gardens that will attract them. To accomplish that goal I've written this guide, and these other helpful resources:

If you aren't receiving my free Butterfly Garden Tips, [sign up here](#) and let me help take your garden to the next level.

Our [Facebook community](#) has over 37k fans and it's a great place for interesting discussions about gardening *and* raising monarchs. If you're more of a visual learner, I also post helpful photos on [Pinterest](#) and [Instagram](#).

For your convenience, I have a blog to share gardening ideas that require more explanation:

<https://monarchbutterflygarden.net> is filled with gardening and raising articles and helpful resources.

Have you read the first book in this series?

[Butterfly Gardening To Attract Monarchs](#)

Bring Home The Butterflies *Volume I* will teach you how to attract more monarchs to your butterfly garden, *and* keep them around for days!

By taking action steps presented in this book (and the other listed resources) you are sure to bring home more butterflies soon.

Thank you for your support and for trusting me to help make your homes and gardens come alive with the magic of monarchs.

If you have any questions about the contents of this eBook please post them at the bottom of [this page](#) or join our [closed facebook group](#).

Are you ready to raise more monarchs with less effort? Let's get started...

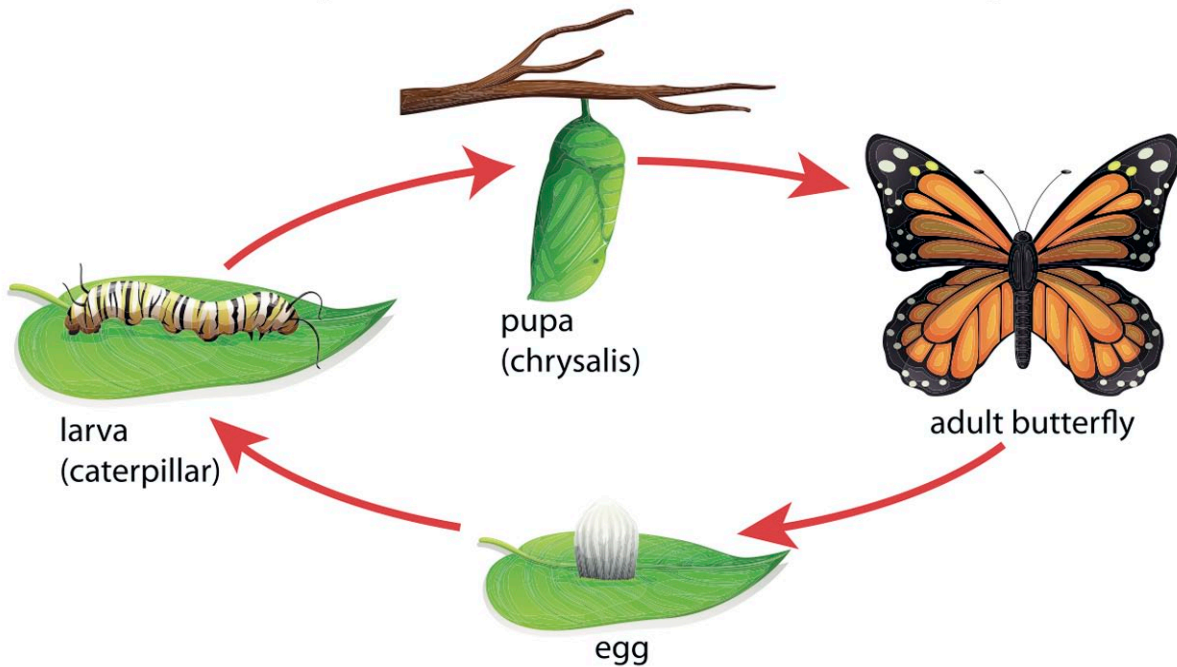


INTRODUCTION

Raising Monarchs

Monarch metamorphosis is an amazing process when you consider all the exciting changes that take place in just 30 days!

Life Cycle of a Monarch Butterfly



Could YOU imagine making this amazing transformation in just 30 days?

Morphing from egg, to caterpillar, to chrysalis, to butterfly, each phase of transformation is spectacular in its own way.

When I first started raising butterflies, it was more of a labor-intensive activity. However, as a child with more time on my hands, I preferred it that way.

As I've continued raising monarchs, I've adopted timesaving techniques that have allowed me to experience the joy of raising with less work.

These are some reasons you might want to consider raising monarch butterflies...



5 BENEFITS OF RAISING MONARCHS

- ◆ Save the monarchs for future generations to enjoy...the monarch numbers have plummeted to record lows over the past decade and raising butterflies can have a positive impact on their population.
- ◆ Add joy to your butterfly garden by releasing monarchs into it.
- ◆ Fun and educational activity for children and a great idea for conquering summertime boredom.
- ◆ Help raise the monarch migration generation. Some of these butterflies will travel thousands of miles to the mountains of Mexico and coastal California. Many will return to the US the following spring to start a new season of monarch magic.
- ◆ Witness an amazing transformation that could inspire you to make changes in your own life.

This book is a collection of the monarch raising techniques that have given me the best results over the past 35 years.

There are many pitfalls to avoid for raising healthy monarch butterflies, and the techniques here should help increase your survival rate immediately. Mine is now *consistently over 95%*.

Each fall, migrating monarchs pass through our suburban butterfly garden on their way to Mexico. In 2011, we had more than 100 monarchs roosting in our lilac bushes that early September...in the suburbs!

It is my belief that once the monarchs find you, the map to your garden is in the genetic code of future generations.

By raising them, you'll increase your chances of becoming a part of one of the most amazing wildlife migrations on planet earth.

Even if migrating monarchs don't journey through your garden, raising them still gives you the opportunity to release migration butterflies...and maybe even host a *butterfly release party* in your garden!

So, are you ready to begin? If not, you will be after the next chapter...



FIND YOUR SUPPLIES

Everything You'll Need for Raising Success



Do you have the right tools for raising success?

Before you begin this amazing journey, you'll need to have a few supplies on-hand. However, before getting those supplies you'll need to answer an important question...

HOW MANY MONARCHS WILL YOU RAISE?

You can raise between 1 and 30 at a time (per cage) with the techniques outlined in this book. However, if you're just getting started I would suggest 10 monarchs maximum so you can get a feel for the raising process without getting overwhelmed.

An important factor for determining how many to raise should be milkweed availability. 1-2 caterpillars can devour an **entire milkweed plant** over the course of two weeks so plant accordingly.

The more monarchs you raise at one time, the more difficult it will be to keep their habitat clean. A dirty, crowded cage is the catalyst for spreading disease, and only hurts the precious monarchs you are trying to help.

I am not a commercial butterfly breeder, so I don't test for monarch diseases. That being said, I haven't raised a noticeably sick batch of monarchs since I was 10 years old.

I believe my raising process has helped to avoid serious health issues for both caterpillars and butterflies, and it can do the same for you...

How many monarchs will *you* raise?

CATERPILLAR CAGE RECOMMENDATIONS

I only recommend using a couple types of cages, but you'll still find several size options to fit your particular needs.

FOOD STORAGE CONTAINERS

We use sealed food storage containers for monarch egg hatcheries. Here's what I like about them:

- ◆ Create a mini greenhouse affect perfect for hatching monarch eggs while keeping milkweed fresh
- ◆ Super portable and **stackable** if you purchase a set
- ◆ Make sure your containers have enough room to spread out leaf pieces with eggs...ours are roughly 9" x 9" x 3" (min. 6" x 6" x 2")
- ◆ Spread out up to 20 eggs in a 9" container

While these are great starter cages, they don't provide enough air flow for larger caterpillars and keeping them in close quarters could quickly spread disease. You can find food storage containers at most local stores or get the 9" rubbermaid option we use here:

[Food Storage Containers for Hatching Eggs and Baby Caterpillars](#)

Once the little larvae are a few days old, they can be moved to their permanent caterpillar homes...

POP UP MESH CAGES

Over the past 30 years I have seen and tried many cage options but pop up mesh cages have blown away the competition.

In fact, we like them so much, we recently had our own pop-up cubes designed for raising monarchs. I believe you will like these pop-ups for several compelling reasons...

CUBE CAGES

BABY CUBE



- ◆ Slightly larger than a traditional small cube: 15in x 15in x 15in
- ◆ high quality materials and construction for indoor raising
- ◆ door flap hangs **down** to allow easier cage access
- ◆ **two** zippers on door
- ◆ folds up flat for easy storage
- ◆ one side is *clear* plastic for easy viewing
- ◆ *the baby cube* can hold stem cuttings or individual milkweed leaves
- ◆ light weight and portable
- ◆ carrying handles that can also be used to hang the cage
- ◆ easier to clean than a large *stationary* cage
- ◆ raise up to 15 caterpillars at a time in one enclosure

[Purchase a Baby Cube Butterfly Cage](#)- a 15" cube for raising monarchs on stem cuttings or individual leaves. Raise up to 15 caterpillars at one time.

[Poo Poo Platter Cage Insert](#)- for Easier Cage Cleaning

BIG CUBE CAGE



- ◆ 4x more floor/ceiling space than a traditional cube: 24in x 24in x 24in
- ◆ door flap hangs **down** to allow easier cage access
- ◆ high quality materials and construction for indoor raising
- ◆ folds up flat for easy storage
- ◆ one side is *clear* plastic for easy viewing
- ◆ *the big cube* can hold large cuttings or small potted plants

- ◆ light weight and portable
- ◆ carrying handles that can also be used to hang the cage
- ◆ easier to clean than a large *stationary* cage
- ◆ raise 30 caterpillars at a time in one enclosure (40 max)

[Purchase a BIG Cube Butterfly Cage](#)- 2 foot cage for raising on stem cuttings and small potted plants. Raise up to 30 caterpillars at one time.

TALL CAGES

TALL BABY



- ◆ small, but tall: 15in x 15in x 24in
- ◆ high quality materials and construction for indoor raising

- ◆ **two** zippers on door
- ◆ folds up flat for easy storage
- ◆ one side is *clear* plastic for easy viewing
- ◆ *Tall baby* can hold large stem cuttings or small potted plants
- ◆ light weight and portable
- ◆ carrying handles that can also be used to hang the cage
- ◆ easier to clean than a large *stationary* cage
- ◆ raise 15 caterpillars at a time in one enclosure

[Purchase a Tall Baby Butterfly Cage](#)- two feet tall for raising monarchs on large stem cuttings or small potted plants. Raise up to 15 caterpillars at one time.

[Poo Poo Platter Cage Insert](#)- for Easier Cage Cleaning

MONARCH TOWER



- ◆ 4x more floor/ceiling space than a traditional cube: 24in x 24in x 36in
- ◆ Additional height (36 in) allows you to raise on potted milkweed plants
- ◆ high quality materials and construction for indoor raising
- ◆ folds up flat for easy storage
- ◆ one side is *clear* plastic for easy viewing
- ◆ *Monarch Tower* can hold large cuttings or potted plants
- ◆ light weight and portable
- ◆ carrying handles that can also be used to hang the cage
- ◆ easier to clean than a large *stationary* cage
- ◆ raise 30 caterpillars at a time in one enclosure (40 max)

[Purchase a Monarch Tower Butterfly Cage](#)- 3 foot cage for raising on stem cuttings and potted milkweed plants. Raise up to 30 caterpillars at one time.

WARNING: please resist the urge to go *ROGUE DIY* and build your own caterpillar enclosure. Many DIY enclosures will have issues with escapes, predator invasions, and monarch diseases because they're harder to clean.

WARNING 2: the holes in most pop up mesh **laundry hampers** are too large to keep in baby caterpillars and keep out small predators...too many raisers find this out the hard way.

BUTTERFLY CAGE RECOMMENDATIONS

What? You need a cage for the butterflies too?! Not necessarily, but it's a good idea for a couple reasons:

- ◆ Release butterflies outside in a mesh cage so they can sun dry without getting attacked by opportunistic predators.
- ◆ Butterflies can hatch with disease spores on their bodies and wings. Where do you think these spores go if they're hanging above your caterpillars? These disease spores will be ingested when caterpillars eat the milkweed.
- ◆ You may need to keep butterflies overnight if they hatch in the late afternoon *or* if there is inclement weather.
- ◆ If you opt for one cage, don't raise more monarchs until your last butterfly (from your current batch) hatches. Then you can clean out your cage and start raising new eggs and small caterpillars. If all the monarchs inside your cage are born within a week of each other, you'll never have to worry about butterflies hatching over caterpillars.

- ◆ The pop-up mesh cages work well for releasing adult butterflies

[Pop Up Mesh Butterfly Cages](#)

MILKWEED PLANTS



Dinner is Served

Milkweed is the lifeblood of monarchs and you must have a generous supply on hand to *successfully* raise them.

Since one caterpillar can devour an entire milkweed plant, I suggest planting several patches of (at least) 6-10 plants or having reliable access to pesticide-free wild milkweed.

There are several options for feeding fresh milkweed to your hungry troops:

- ◆ *leaf plucking daily*- some prefer this method (for the experience) even though it's more labor intensive. A good option for every-day gardeners or kids looking for a fun summer activity.
- ◆ *leaf plucking weekly*- gather milkweed leaves in mass, rinse them, shake dry, then store them in the refrigerator inside a plastic baggie.
- ◆ *raise on cuttings*- take stalks (stem cuttings) of mature milkweed and place them in water to keep them fresh for days.
- ◆ *raise on potted plants*- get your caterpillars through their first week of life without ever having to handle them and risk hurting/losing them. There are **issues** with this method I'll discuss later...

Which milkweed varieties work best for raising caterpillars?

ASCLEPIAS CURASSAVICA (TROPICAL MILKWEED)



Blooms All Summer

- ◆ thrives in pots because it doesn't have a long tap root system
- ◆ grows back quickly after being devoured
- ◆ top milkweed species for egg laying
- ◆ works well for stem cuttings
- ◆ leaves stay viable throughout the season

[Buy Tropical Milkweed Seeds](#)

[Buy Tropical Milkweed Plants](#)

ASCLEPIAS INCARNATA (SWAMP MILKWEED)



Swamp Brings Summertime Gladness

- ◆ thrives in pots without a long tap root
- ◆ top milkweed for stem cuttings
- ◆ Single leaves work well in floral tubes
- ◆ popular milkweed species for egg laying

[Buy Swamp Milkweed Seeds](#)

[Buy Swamp Milkweed Plants](#)

GOMPHOCARPUS PHYSOCARPUS (BALLOON PLANT)



The Goose with the Golden Egg

- ◆ works well for stem cuttings

- ◆ grows back quickly after being devoured
- ◆ leaves stay viable throughout the season
- ◆ [Swan milkweed](#) (*Gomphocarpus fruticosus*) is a similar milkweed variety with a bushier growth habit

[Balloon Plant Seeds on eBay](#)

[Balloon Plant Seeds on Amazon](#)

[Swan Milkweed on eBay](#)

[Swan Milkweed on Amazon](#)

ASCLEPIAS SYRIACA (COMMON MILKWEED)



Spring Sustenance

- ◆ big, thick leaves satisfy more hungry caterpillars

- ◆ individual leaves stay fresh longer
- ◆ stem cuttings work well if you nick the sides of the submerged stem to allow more water to enter...otherwise, they will wilt
- ◆ single leaves work well in floral tubes

[Buy Common Milkweed Seeds](#)

CALOTROPIS GIGANTEA (GIANT MILKWEED)



Tall, Thick, and Tropical

- ◆ big, thick leaves satisfy more hungry caterpillars
- ◆ individual leaves stay fresh longer
- ◆ works well for leaf cuttings
- ◆ grows well in large pots

- ◆ grows back quickly after being devoured
- ◆ try single leaves in floral tubes
- ◆ surprisingly vigorous growth as an annual
- ◆ a better option for those in warm regions like Florida

[Buy Giant Milkweed on eBay](#)

[Buy Giant Milkweed on Amazon](#)

MILKWEED RESOURCES

You can also try other varieties of milkweed to raise monarchs and most will work if you use individual leaves or cuttings.

- ◆ [25+ Milkweed Species Plants and Seeds](#)
- ◆ [Everwilde Farms](#)
Everwilde sells a wide variety of milkweed seeds, and also sells in bulk if you're looking to grow milkweed over a large area. The farm is family-owned and located in NW Wisconsin.
- ◆ [Georgia Vines](#)
This nursery probably has the largest variety of milkweed species I've come across, including several species of milkweed vines! If you're looking to try something "new", they're likely selling milkweed seeds that you don't have.
- ◆ [The Joyful Butterfly](#)
This passionate butterfly gardener offers a variety of milkweed seeds and plants that will bring home a bounty of butterflies.

- ◆ [Lupine Gardens](#)
Chemical-free milkweed plants and seeds from Wisconsin.
- ◆ [Smart Seeds](#)
This vendor has a good mix of native and non-native milkweed seeds and thousands of 5-star reviews by their happy customers.
- ◆ [Rose Franklin's Perennials](#)
Sells fast growing tropical milkweed as well as native varieties.
- ◆ [Shady Oak Butterfly Farm](#)
This family-owned nursery in Florida has various types of native and non-native milkweed.
- ◆ [eBay Milkweed](#)
eBay is an excellent resource for both milkweed seeds and plants. Please check a seller's feedback rating before purchasing. If a seller has a feedback rating below 97% I look for other options.
- ◆ [Amazon Milkweed](#)
Amazon is also becoming an excellent resource for both milkweed seeds and plants. Please research reviews to make sure you are buying from a vendor that specializes in seeds/plants and has great customer feedback.
- ◆ [Milkweed on Etsy](#)
Another large online retailer with a growing selection of milkweed varieties through home-grown vendors.

I will be discussing how to prepare milkweed for monarchs in another chapter.

OTHER SUPPLIES

PRUNING SHEARS

A good pruner is necessary for taking stem cuttings. You can also use a hand pruner to take off individual milkweed leaves.

[Buy a hand pruning shears](#)

FRASS CONTROL

If you're raising more than a few monarchs, cleaning up caterpillar frass (poop) can get a bit tedious. A portable handheld vacuum with **low suction** sucks up frass in seconds. A high powered vacuum will suck up the cage floor, so this is the exact model we use:

[Small Handheld Vacuum for Sucking up Frass](#)

[Similar Handheld Vacuums on Amazon](#)

PAPER TOWELS

You will use these to wipe down and dry the cage floor after the frass has been removed. *Reusing rags to wipe down cages could spread disease.*

FOOD STORAGE CONTAINERS

4oz food storage containers (and larger) are suitable for holding individual stem cuttings.

[Plastic Food Storage Cups/Containers with Lids](#) (my favorite are the GladWare round containers which can also be found in stores.)

Plastic water bottles, vases, or glass mason jars are *alternative* solutions for holding larger stem cuttings. Wider trumps taller for stability.

DUCT TAPE

I use small strips of duct tape to cover potential gaps that would allow caterpillars to drown in cutting containers. I haven't lost one yet!

FLORAL TUBES

These work well for hydrating large common milkweed stem cuttings for caterpillars, and even individual leaves for baby caterpillars.

[Floral Tubes and Picks](#)

[Floral Tube Rack Holder](#) (a secure way to keep floral tubes/picks elevated and secure.)

VASE FILLERS or MARBLES

These work well for keeping food storage containers steady, securing cuttings inside the container, and securing floral tube picks.

[Vase Fillers](#)

[Marbles](#)

(an alternative to marbles is sticking the floral picks in Styrofoam or floral foam.)

SCISSORS

You will use a scissors to cut milkweed leaves (indoors), and if you're using duct tape on cuttings containers.

COTTON BALLS

These can be used to soak up honey water, gatorade, etc. to feed adult butterflies.

DISINFECTING BLEACH

At the end of the season, I disinfect the cage with diluted bleach before **thoroughly** hosing it out with water.

If you have disease issues with monarchs during the season, you should disinfect with bleach immediately.

You will learn more about this in the cage cleaning section.

[Regular Liquid Bleach to Disinfect Cages and other Raising Supplies](#)

[Bleach Wipes to Disinfect Cages and Raising Equipment during the Season](#)

These tools have helped boost my monarch survival rate to over 95% and they make raising monarch butterflies a smoother, more enjoyable process.

Once you've got your supply list covered, it's time to talk about the caterpillars' favorite meal.

BEFORE MOVING FORWARD

The sap from milkweed is toxic and can cause corneal damaged if rubbed into your eyes. **Always wash your hands after handling milkweed and consult a physician immediately if sap gets in your eye...**



PREPARE YOUR MILKWEED

Getting Milkweed Ready for Hosting Eggs and Caterpillars

Before you can expect to receive prized monarch eggs, it's important to prepare the milkweed plants before the guests of honor arrive.

POTTED MILKWEED PLANTS



Eggs-actly Where You Want Them

For the past few seasons, we have placed tropical and swamp milkweed containers on our raised beds, in garden carts, and other various places in hopes of attracting gravid (mated) monarch females...it works!

In fact, it worked a little *too well* in late summer 2012 when we got 53 eggs on just two potted milkweed plants...in one weekend!



Pot Layin' Monarch | Photo by Angie Luebben

Simply put your pot(s) out for mama monarch to find. I suggest putting them in a place that gets partial sun and *away* from other patches of milkweed.

WHY PARTIAL SUN?

Partial sun will keep leaves fresh longer, and prevent eggs/cats from getting cooked by the hot summer sun.

WHY AWAY FROM THE MAIN PATCH?

There tends to be a higher concentration of milkweed predators inside a patch. Lone milkweed plants usually get less attention from pesky monarch-munching predators.

Keep an eye on your plants while you're waiting for eggs. If you find ants, stink bugs, spiders, tussock moth caterpillars, or foreign eggs remove them. These should remain *monarch-only* milkweed plants while waiting for eggs.

POTENTIAL PROBLEMS WITH RAISING ON POTTED MILKWEED

- Predators and pests can be hiding in the plant or on the container
- Heavy containers can accidentally wound or kill monarchs
- Soil can become moldy, collect frass (poop), or have disease spores
- Difficult to effectively clean/rinse an entire plant
- Plants put out/maintain healthier growth outdoors

POTENTIAL SOLUTIONS TO POTTED MILKWEED PROBLEMS

- Leave potted milkweed outside
- Collect stem cuttings with eggs off potted milkweed to bring inside
- Collect individual leaves with eggs off potted milkweed to bring in
- If raising on container plants, regularly check for predators

MILKWEED CUTTINGS



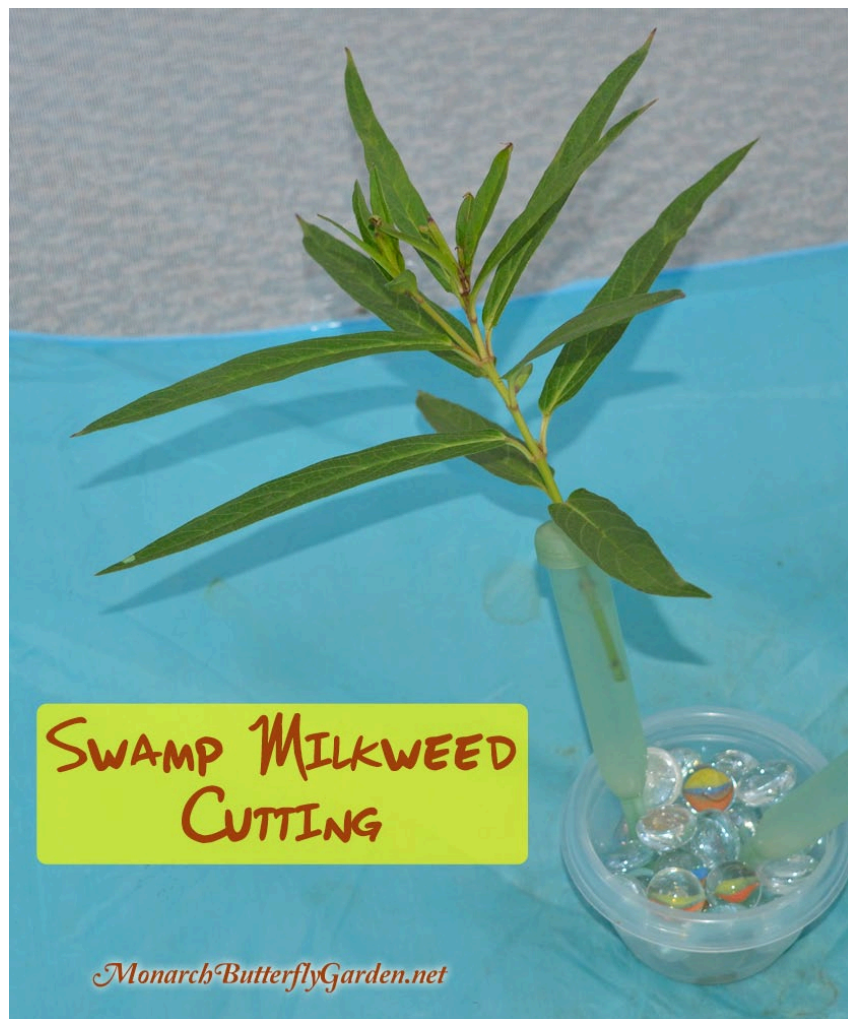
Fresh Enough To Fool Mother Nature

Stem cuttings are, in my opinion, the best way to raise healthy monarchs because the milkweed stays fresh longer *and* cuttings keep the caterpillars from crawling around in potentially disease-causing frass. (poop)

Since these will come from your garden plants (or another outdoor area) make sure your milkweed looks healthy and isn't being overrun by predators or pests. Otherwise, you're unlikely to collect a monarch deposit.

The easiest way to have 'clean' milkweed is by diversifying your milkweed species and having several patches around your yard and garden. Predators and pests won't be able to find them all!

Stem Cuttings can range in length to just a few inches to 2 foot stalks, and the size you take will depend on the height of your cage and cutting containers:



Small Swamp Cutting in Floral Tube

You can either take stem cuttings in advance, or cut them after eggs have been deposited on the plants.

You can also take individual leaf pieces w/eggs and place them on cuttings.

During spring months, I use [Asclepias syriaca](#) (common milkweed) cuttings.

In the summer and fall months, I switch to [Asclepias incarnata](#) (swamp milkweed), [Asclepias curassavica](#) (tropical milkweed), [Gomphocarpus physocarpus](#) (balloon plant), & [Gomphocarpus fruticosus](#) (swan plant).

What you will use, will depend what's available in your region and when...

Note: I realize many of these options aren't native, but most native milkweed looks pretty scraggly by season's end. Tropical milkweed and balloon plant are our last milkweed plants to have viable leaves for the caterpillars *and* the late summer favorites for egg laying.

Native milkweeds get more eggs earlier in the season. We typically feed our caterpillars common milkweed through the end of July in Minnesota.

INDIVIDUAL MILKWEED LEAVES

I had started moving away from using single leaves because I thought it was too much work. Then, last summer I tried a new technique that blew my mind. I was able to raise a monarch from egg to 8-day old caterpillar on a **single** milkweed leaf. More on this method coming up...

WHAT IF THE ELFS (EGG LAYING FEMALES) DON'T COOPERATE?

Unfortunately, the decline in the monarch population means monarchs are no longer a sure thing in North American butterfly gardens. I still believe that if you put the time into improving your butterfly garden, they *will* eventually come...but that doesn't mean a predator won't find the eggs/caterpillars before you do.

BUYING EGGS AND CATERPILLARS

For those of you who want to *insure* you'll be raising monarchs, there are a few options for buying monarchs. 3 of 4 options are only good for those who live east of the Continental divide. These vendors aren't allowed to ship further west due to USDA regulations.

MONARCH EGG, CATERPILLAR, & CHRYSALIS RESOURCES

- ◆ [Rose Franklin's Perennials](#)
- ◆ [Monarch Watch](#)
- ◆ [Shady Oak Butterfly Farm](#)
- ◆ [Farfalla Butterfly Company](#) (western resource for CA, WA, OR, AZ, UT, NM & CO)

And now comes the hard part...waiting for your eggs to arrive by air, or by airmail!



WANTED



HUNT, GATHER, PROTECT YOUR EGGS

Bringing Monarch Eggs Indoors for Safe Keeping

If you're ready for this next step, it means you've secured (or are about to secure) your monarch eggs...congratulations! After the eggs are secured, you'll put them in a safe place for hatching...

HUNTING FOR MONARCH TREASURE

Monarch females typically lay their eggs on the undersides of milkweed leaves. Less common drop-offs occur on milkweed stalks, buds, and pods.

Here are some places to look for monarch eggs in your garden or local milkweed patch:

- Small milkweed seedlings just a couple inches high
- Lone milkweed plants located away from predator-filled patches
- Milkweed with fresh, healthy leaves
- Milkweed in partial shade typically has fewer predators and the plants stay fresh longer with breaks from the summer sun
- On/Inside flower buds
- Seed Pods
- Potted Milkweed Plants



Monarch Egg on Swamp Milkweed Pod

Now that you know some of the monarchs' favorite hiding places, let's hope *your* eggs are a little easier to find...

Below are some close-up monarch egg photos if you're not 100% sure what to look for. Notice that close-up monarch eggs have distinct ridges:



WANTED



Easy to Find on Red Buds... Thanks Mama!

Keep in mind, monarchs lay their eggs singly, so if you come across a mass of eggs deposited close together they're another type of insect egg:



A Stinky Surprise | Newly Hatched Stink Bugs

or oleander aphids:



Not the Monarch Egg Jackpot | Oleander Aphids

GATHER YOUR EGGS

INSPECT YOUR MILKWEED

Inspect each cutting/leaf thoroughly and remove any bugs or foreign eggs. Do this a couple different times in case you miss something.

Makes sure to closely examine container milkweed plants, containers, buds/flowers on stem cuttings, because they are favorite hiding place for baby spiders and other tiny predators.

Unfortunately, even baby spiders can be lethal to monarch caterpillars.

If you have poor eyesight, collect cuttings without buds/flowers or use individual leaves.

MONARCHS BY MAIL?

If you ordered monarch eggs from an egg vendor, the starting process is a bit easier. Last season, I had eggs sent by Rose Franklin on a tropical milkweed plant. I simply removed the plastic covering from the plant, misted the leaves/eggs with water and placed the small pot in my mesh cage:



Mail Order Monarchs

STEM CUTTINGS

STEM CUTTINGS I

Use small (a few inches) to mid size (up to 2 feet) cuttings in floral tubes or picks. We use large floral tubes that need less refilling and this is my **preferred** way of feeding caterpillars:

- ◆ Fill the floral tubes with water and put the caps on
- ◆ Rinse off the cuttings thoroughly
- ◆ Nick the sides of what will be the submerged stem (in 2-3 places) with a scissors or hand pruner to increase water entry and prevent wilting
- ◆ Stick the cutting through the hole in the lid of your tubes
- ◆ Space out the floral tubes/picks in a floral tube rack (or find another way to keep them upright and secure)



Rack 'em up!

STEM CUTTINGS II

Use cuttings inside food containers. The ceiling of your cage is the limit:

- ◆ Use food storage containers at least 4 oz (use larger/wider containers for less refilling)
- ◆ Poke a hole in the middle of the lid
- ◆ Stick a phillips head screw driver through the hole to make it wide enough to fit a cutting
- ◆ Fill container with small rocks, marbles, or vase fillers to keep cuttings steady
- ◆ Fill with water and put on lid
- ◆ Rinse off your cuttings thoroughly
- ◆ Nick the sides of what will be the submerged stem with a scissors or hand pruner (in 2-3 places) to increase water entry and prevent wilting
- ◆ Stick the cutting through the hole
- ◆ Cut small strips of duct tape to cover any holes



The Swimming Pool is CLOSED for the Season



Cuttings Success!

Again, if your cuttings look wilted after a few hours, recut them with a hand pruner or sharp knife to help them take up more water...or add more water entry points to the stems!

Alternative cuttings containers include mason jars, vases, small bottles, etc. Wider trumps taller for container stability.

Whatever you use to house your cuttings, make sure any openings leading into the water are *completely* covered to prevent drowning accidents.

However, if a caterpillar accidentally drowns, [try this](#)

INDIVIDUAL LEAVES I

You can also bring in butterfly eggs on individual leaves:

1. Use a bowl, bucket, basket, etc. to place any eggs you collect
2. If you find an egg on a leaf, gently pull down where the leaf petiole attaches to the milkweed stalk to remove the entire leaf.
3. If the egg is on the stalk or flower bud, use your pruning snips to cut off a small piece of the plant
4. Put a **dry** paper towel in the bottom of a food container (too much moisture can cause monarch-killing mold)
5. Use snips or a scissors to cut off a leaf piece that contains the egg
6. Take each leaf piece, and spray both sides with water using a spray bottle, then place egg-side up on the paper towel
7. Space out the eggs across the paper towel so that no baby caterpillar will accidentally eat its unhatched neighbor. In the 6" x 6" x 2" containers below, we put about 6-10 eggs per container. We've recently upsized to containers that measure 9" x 9" x 3" which can hold up to 20 wee cats.

note: while some poke small air holes in the lid, this is not necessary. There will be more than enough oxygen in the container from your daily checks. No holes will also prevent any baby caterpillar escapes.

Warning A: don't ever leave a sealed food container sitting in direct sun...it won't end well for your eggs and/or caterpillars.

Warning B: don't leave the **window side** of a mesh cage facing direct sun...it can heat things up, and not in a good way!



As soon as a baby caterpillar hatches, move it (on its leaf piece) to a new food container with freshly washed milkweed leaves. This will keep them from wandering toward unhatched eggs for their next meal.

INDIVIDUAL LEAVES II

Use milkweed leaf cuttings of swamp/common/tropical/giant in floral tubes. Leaf petioles are short so the tubes will need to be refilled daily to prevent the leaf from drying out, unless...



Leaf Cutting Tip: Cut leaf away from both sides of the [midrib](#) to submerge the leaf further inside the tube for less refilling.

This method will allow you to raise a monarch on a single leaf from egg through its first week as a caterpillar...you will be amazed!

MONARCHS IN THE MIST

Mist the milkweed leaves daily while you wait for your eggs to hatch. Just a couple quick sprays of water each morning will keep the eggs hydrated and can also wash away potential disease spores.

WHERE TO KEEP EGGS and CATERPILLARS?

I keep our cages in a 3-season porch, where the windows are left open most of the summer so it doesn't get too hot.

This exposes the developing monarchs to natural levels of summer heat and humidity, without exposing them to extreme conditions like wind and soaking rains.

They get adequate light, but I don't place them in direct sun...you don't want to *scramble* these eggs! If the overnight low is below 50° F I will bring the cage inside.

Cold temperatures slow down metamorphosis. This can be a serious issue around the fall migration because butterflies need to leave before it gets too cold to take flight.

Do *not* put your eggs in a cage where there are already butterflies or chrysalises about to hatch. Adult butterflies can spread disease spores on to the milkweed below, and your baby caterpillars will ingest them. This can potentially disfigure them or even cause death.

[More Info on OE Infection](#)

In continuous growing regions where monarch diseases are prevalent, some choose to take extra precautions bleach by bleaching milkweed and monarch eggs. This information is not part of my process or something I discuss in this book.

For more info on preventative bleaching check out this facebook group:

[The Beautiful Monarch](#)

GOING ON VACATION?

If you are going on a long weekend vacation, no need to worry. The eggs/small caterpillars will be just fine without you.

One summer, I had two eggs that hadn't hatched before a 4-day trip to Chicago. The only way they would survive is if they could easily find fresh milkweed when they did.



Secured by Buds

I took each small leaf piece the eggs were on and lodged it in flower buds on top of a milkweed cutting. When I came back, both dried-out leaf pieces were still in place, but the baby caterpillars had crawled away to find fresh leaves. (Don't try this with other caterpillars in the same area because they may dislodge the leaf or eat the eggs.)

If using thick-leaved common milkweed stem cuttings, you can just set the egg-upied leaf piece right on the center of a common leaf

THAT'S IT!

You are now ready to host monarch caterpillars...

Now that you've *prepared* to raise monarchs, these next steps take less time and allow you to sit back and enjoy this magical transformation as a curious spectator.

6 WAYS TO (ACCIDENTALLY) SCRAMBLE YOUR EGGS

1. Letting the egg leaf dry out before your caterpillar hatches (this should not be an issue with potted plants or cuttings)
2. Crushing it with your fingers (eggs can be hard to see...especially right before hatching)
3. Exposing the egg to extreme sun (if you ever see an egg laid on **top** of a leaf, bring it indoors right away)



4. Exposing the egg to extreme heat- don't ever leave a portable cage with monarchs inside your car!
5. Leaving the egg in standing water (after spraying)
6. Leaving the egg in a place where caterpillars could eat it



PROTECT YOUR BABIES

Keeping Small Caterpillars Safe from Harm

Just before your eggs hatch, the top of each egg will turn dark. This is actually the caterpillar's head about to make its grand entrance into the world, unless...

PROBLEM EGGS

If the egg turns completely dark, your caterpillar didn't survive. This macro photography of a monarch egg shows an egg that has been parasitized by trichogramma wasps. The dark-spotted egg signifies the monarch embryo has been destroyed:



Trichogramma Troubles

To the naked eye, this will appear as a completely dark egg.

If you have a dark egg, give it 48 hours to make sure it's not a viable caterpillar. Then fold the egg inside the leaf and smash it with your fingers. Otherwise, in about 10 days a bunch of tiny wasps could emerge, mate, and start parasitizing more monarch eggs!

Another common issue that happens toward the end of each monarch season is when a female lays unfertilized eggs. These eggs start to *thin out* before caving in.

But, if an egg is fertilized and not parasitized...

HEALTHY EGGS



Impending Birth

A monarch caterpillar will finally emerge by eating out of its tasty, nutrition-laced shell.



Black Head

BABY CATERPILLARS

Upon hatching, your baby caterpillars will be less than 1/10 of an inch.



First Meal

If they hatch inside food containers:

- ◆ Try to move hatchlings (on leaf pieces) into a separate food storage container to keep them away from unhatched eggs...but spacing them out is usually good enough to prevent unneighborly egg munching
- ◆ Make sure the transfer containers are prepared with **dry** paper towels and freshly rinsed milkweed leaves

It doesn't matter how you spray milkweed leaves before your caterpillars hatch, but after hatching is a different story. Using the wrong spray technique can kill your caterpillars by launching them off the milkweed to places only seen by superheroes with x-ray vision...

To avoid this tragedy:

1. Spray the plants/containers while they are sitting on a tray so you can easily see if any caterpillars fall.

2. Mist the plant, cuttings, or food storage containers from *above* so water rains down on them. Spray upward, letting the water gently fall down on to the occupied milkweed.

There is still a slight chance they could fall but they will fall straight down instead of blasting sideways off your plant. They will usually be hanging from a self-spun silk thread if they fall straight down, and can climb back up it....like mini marvel spider-men!

It's a good idea to have single milkweed leaves on the mesh cage floor in case caterpillars fall during spraying or wander from the plant. Keep the leaves slightly away from the cuttings/plants so they don't collect falling frass.

Whether or not you spray daily, individual leaves and cuttings should be thoroughly rinsed with water *before* serving to caterpillars to prevent disease.

CAGE YOUR MILKWEED

To insure baby caterpillars don't escape, always keep cuttings containers and leaves inside your pop-up mesh cage.



No Escape Set Up

DO I NEED TO CHANGE THE CUTTINGS?

There's no need to change stem cuttings until they've devoured all the leaves and flowers. I recommend having another cuttings container prepared in advance so you can transfer them over right away. Put the new cuttings container inside the cage right next to the old one. They will crawl over when they get hungry.



Cuttings for Days!

INDIVIDUAL LEAVES



Remember if you cut the leaf away from the midrib, you can submerge the midrib deeper into the floral tube for less refilling.

Single leaves also stay fresh inside the sealed food containers because humidity is trapped inside.

Lightly mist with water above the container when it looks dry inside (typically every 1-2 days). Too much water can cause mold issues. I only keep caterpillars inside food containers for 2-3 days before moving them to their permanent mesh pop-up cage.

CAGE CLEANING

Here are some simple tips for keeping your caterpillar habitat clean:

SIDE-OPENING MESH CAGES

- ◆ Wash your hands with water and thoroughly dry before handling monarchs or raising supplies
- ◆ Remove any caterpillars from the floor of the cage by scooping them up with milkweed leaves, a soft detail paintbrush, or gently picking them up between your thumb and forefinger
- ◆ Blow or use fingers to push down leaves so frass/poop that's sitting on them falls to cage floor
- ◆ Place cuttings containers and leaves (with monarch caterpillars) on a tray while cleaning...we use boot trays
- ◆ Vacuum your cage with a portable hand-held vacuum **or**
- ◆ Remove the poo poo platter cage insert from your baby cube/tall baby cage and toss the frass
- ◆ Toss the frass out in your **garbage**. Do not use as garden fertilizer in case bacteria and disease are present
- ◆ Wipe down the cage with a disposable **wet** paper towel or rinse out your platter
- ◆ Dry the cage/platter with a disposable **dry** paper towel
- ◆ Place the poo poo platter back in cage
- ◆ Refill cutting containers or floral tubes with water if necessary

- ◆ Spray the cuttings/plants lightly with water (to hydrate your caterpillars) while sitting on the tray
- ◆ Put all cuttings/containers/leaves with caterpillars back in cage
- ◆ *Between monarch batches*, rinse the cage out with a hose, zip it up, and let it sun dry hanging on a hook/clothes line, or on the ground...secure the drying cage with rocks so it won't blow away!
- ◆ At the end of the season, I disinfect the cage with diluted bleach before **thoroughly** hosing it out with water, and drying.

Some universities and butterfly breeders use a 5%-10% bleach solution mixed with water. You could either mix it in a spray bottle or soak the cages in a tub.

I would suggest starting with the 5% solution (1 part bleach to 19 parts water) before trying a stronger concentration.

Bleach is corrosive and can irritate eyes and skin so use with caution...

- ◆ If you experience a disease outbreak, clean the cage with 5-10% bleach solution. Then rinse and dry the cage thoroughly before placing new eggs/caterpillars inside.
- ◆ Some raisers regularly disinfect with Clorox wipes throughout the season. Rinse with water, and let cage dry thoroughly.

FOOD STORAGE CONTAINER CLEANING

When dealing with baby caterpillars, there's not much need for clean up. This is the most you would need to do:

- ◆ Prepare a second food container with a new paper towel

- ◆ Lift out the caterpillar-occupied leaves from the first container, and place them in their new home.
- ◆ Lightly mist the new container with water from above
- ◆ Seal the container
- ◆ Rinse and dry the first container for future use
- ◆ If you experience a disease outbreak, clean the container with 5-10% bleach solution. Then rinse and dry the cage thoroughly before placing new eggs/caterpillars inside.
- ◆ Some raisers regularly disinfect cages/accessories with Clorox wipes throughout the season. Rinse with water and dry.

TRANSFERRING BABY CATERPILLARS

CUT & PASTE TRANSFERRING

This is the easiest and safest way to move baby caterpillars. Just cut out a small piece of milkweed that the caterpillar is on, and then place it on the new cutting or individual leaf:



Cut & Paste

LEAF TRANSFERRING BABY CATERPILLARS

If a caterpillar is on the wall of mesh cage while you're cleaning, I would just leave it, as it's probably about to molt (shed its skin).

When you place the cuttings/plant back inside the cage, place one by the wall so the shedding cat can crawl on when it's finished.

BRUSH TRANSFERRING BABY CATERPILLARS

This is where the paint detail brush (with soft bristles!) comes in. Many people report having great success transferring caterpillars safely using these.

HAND TRANSFERRING BABY CATERPILLARS

Welcome to Advanced Raising 101. Let me start by saying this short class is optional and not a good idea for those with poor eyesight or shaky hands.

I've been asked many times about transferring caterpillars to new plants and cuttings. After some careful thought, I've come to the conclusion that the best course of action for most is *not* to hand transfer them.

That being said, I've seen no evidence in the past 35 years that **careful** handling harms them.

If you must hand transfer for an **emergency situation**, follow these simple steps that have worked well for me:

1. Wash your hands.
2. Pick up the caterpillar gently between your thumb and forefinger.
3. If the caterpillar is secured to the cage/plant by silk, pull it off with several gentle pulls, **not** one hard pull...**never pull down** a large caterpillar about to form its chrysalis!
4. Set it on the new leaf. Many times they will be curled up in a defensive position...this is normal.
5. Once you get accustomed to doing this, you can handle caterpillars 3 days old and up.

If not an emergency, place their new cuttings, plant, or leaves close to their current location and let them crawl.



CARE FOR LARGER CATERPILLARS

Watching Out for the Big Cats

Your caterpillars will grow in size roughly 2000% from the day they hatch until the time they form their chrysalides...from 2mm to almost 2 inches!

To accommodate this rapid growth, they need to shed their skin (molt) 5 times, with the final molt revealing their emerald green chrysalises.

Each of these molts grows the caterpillar to its next instar (period of development). [Photo of All 5 Instars](#)



MonarchButterflyGarden.net

Before they molt, your cats might crawl up the side of the cage. Don't be alarmed if they stay there for 24-48 hours.

This is normal behavior and they will molt (and return to the milkweed) without any assistance.

After a molt, they will feast on their shedded nutrition-laced skins, leaving behind just the face cap.

Here is what a molting caterpillar looks like in action:

[Monarch Caterpillar Molting Videos](#)

MILKWEED EMERGENCIES

Probably the most important thing to keep in mind about larger caterpillars (instar 3 to instar 5) is that they can eat you out of garden and home.

Instar 3 caterpillars measure up to a half-inch in length.

The first time I ran out of milkweed I was shocked at how much those little **pigerpillars** had scarfed down in just 12 short hours.

Many seasoned raisers remember what it's like running out of milkweed for the first time...the sheer panic that sets in when you're not sure where your caterpillars' next meal will come from...

Relax, take a deep breath, and consider these options:

1. Do you grow *other species* of milkweed? Caterpillars can easily switch between milkweed varieties. The only problems I've heard reported are when people try to switch caterpillars to *A. tuberosa* (butterfly weed).

We regularly switch between common, swamp and tropical.

2. Do your neighbors grow milkweed?
3. Is there a local park where milkweed grows wild?
4. Does a local nursery sell milkweed? (If yes, make sure no pesticides were used on the plant or it will kill your caterpillars!)
5. Call a local university with an entomology program for guidance.
6. Post in a [facebook group](#) to see if you can find someone in your area with spare milkweed.
7. Secret Stash? Milkweed leaves can be preserved for future use by storing them in plastic bags inside your refrigerator or freezer.
8. Check out the [suggested milkweed stores](#) section on our milkweed page.
9. Instar 4-5 caterpillars (over a half-inch long) have been reported to eat pieces of **butternut squash**, **delicata squash**, pumpkin, crunchy cucumber, and watermelon slices. I have seen/heard people have the most success with the squash varieties.

Keep in mind, feeding caterpillars with alternative foods could have unknown consequences for their development, and should be used as a last resort.

If your milkweed supply isn't an issue, having more inside the cage is always better.

As long as you keep large cats fed and their habitat clean, things usually turn out fine.

However, this is the period when diseases can start to rear their ugly heads, so keep a close eye on your caterpillar cage guests...



KEEP YOUR BABIES HEALTHY

How to Prevent Disease from Killing your Caterpillars

Cleaning caterpillar cages isn't probably what drew you to raising monarchs, but it's not *so* bad if you think about it.

First off, the frass (poop) doesn't smell since your caterpillars are strict milkwetarians. It also won't take up too much time if you're raising a reasonable amount of caterpillars...let's say under 20.

But sometimes, life throws us a curveball and the monarchs get put on the back burner. This is when the conditions inside your cage could become a catalyst for spreading disease.

I have not had a disease outbreak with monarchs since I was probably 10 years old. I am not a scientist, but I do have theories to why our monarchs have been so healthy:

- ◆ *Water*- our milkweed is always rinsed before serving, and I mist the leaves daily to keep the *cats* hydrated
- ◆ *Cleanliness*- our cages are cleaned and wiped down daily
- ◆ *Eggs*- there are less disease/parasite issues when you start raising monarchs from eggs

It sounds so simple, but water/cleanliness are two major traps raisers seem to have issues with. Sure, there are times when you can get away with a messy cage. But sooner or later it *will* come back to haunt you.

The link below shows some of the health issues that can affect monarch butterflies. The purpose of this guide is not to teach you about all the diseases, but how to **prevent** them with good raising practices!

Monarch Diseases

*It bears repeating, **OE disease** is spread when caterpillars ingest protozoan spores, which multiply inside the caterpillars. This is why you should never have hatching butterflies (with potential spores on their wings) hanging over caterpillars.*

BRINGING CATERPILLARS INDOORS

If you raise butterflies from eggs, you're less likely to have issues with parasites. But, if you bring in caterpillars that hatched outdoors, there are more potential problems.

Tachinid flies lay eggs inside caterpillars (usually instar 3 and larger). The tachinid fly larvae will eat the monarch caterpillar from the inside out.



Beware of a Suspicious looking Fly asking you to Hold her Babies!

You can tell this is happening because your caterpillar will mysteriously start to grow smaller and skinnier.

Typically, the monarch dies when it's hanging upside down to form its chrysalis, or soon after it makes the transformation.



Poor Skinny Minnie

After they've finished their monarch meal, white tachinid maggots and/or dark red pupae will fall out on the cage floor, leaving behind long, white threads that hang from the caterpillar/chrysalis.



...a red Tachinid Fly Pupa fell from the Caterpillar Hanging Above

The maggots and pupae won't harm your other caterpillars. Dispose of them when you clean your cage.

There are also bacteria and viruses that can be transmitted between caterpillars, but as long as your habitat is kept clean and has good air circulation, these typically aren't an issue.

If you find caterpillars outdoors, it's ok to bring them in. Best-case scenario, you could put them in a *spare* caterpillar cage. If you don't have one, put them in with your other caterpillars and keep an eye out for any issues.

If any of your caterpillars start turning black, deflating, or oozing dark fluid, remove them from the cage, dispose of them, and then thoroughly clean your cage with bleach and replace the milkweed supply.

7 WAYS TO (ACCIDENTALLY) KILL YOUR CATERPILLARS

1. Having a faulty cage that is hard to clean or allows them to escape. If a small caterpillar escapes it is likely lost forever.
2. Keeping them in direct heat. I had my cage in a car on a lukewarm 70's spring day. That was enough to fry them.
3. Drowning them in standing water. Caterpillars need water, but too much can be deadly. [Revive a Drowned Caterpillar](#)
4. Zipping them when you're opening or closing your cage. You can easily check inside the clear side of the mesh pop-ups before you zip, to insure no caterpillars are in harm's way.
5. Letting milkweed dry up or run out...this is especially crucial during their first few days of life.
6. Keeping a dirty cage...sooner or later it will spread disease.
7. Don't put large instar 4-5 caterpillars with small instar 1-2 caterpillars or the babies could end up becoming part of a milkweed meal.



HANG YOUR CATERPILLARS

Helping your Caterpillars find the Perfect Hangout

Once your caterpillars complete their 2000% growth spurt, they're ready to form their emerald green chrysalides.



MonarchButterflyGarden.net

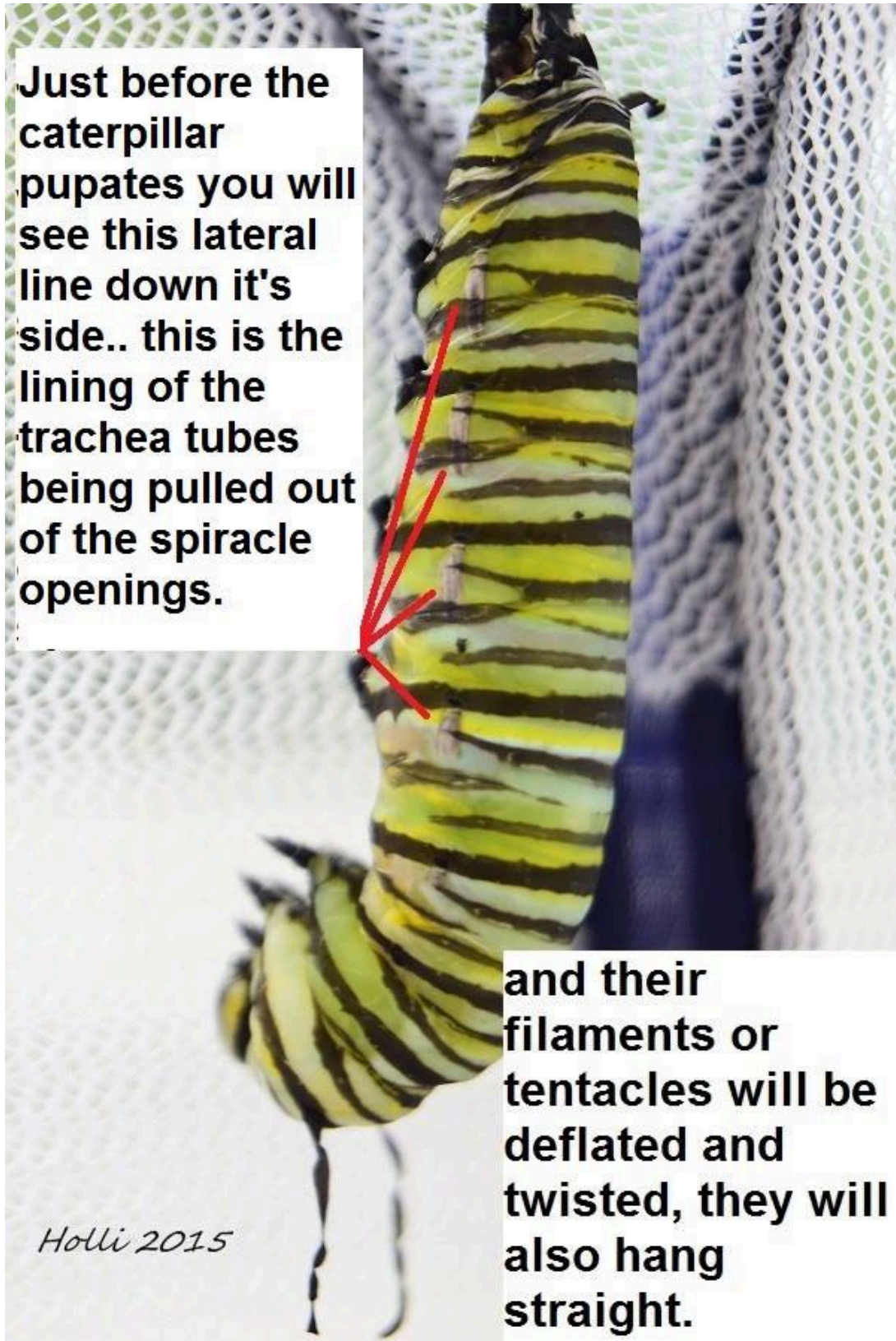
Spinning Class

When they're ready to make this change, they'll hang themselves by spinning a silk pad...hopefully on top of the mesh cage like these two.



A Big Change is Coming

So how can you tell when the big moment is about to occur? Look for these telltale signs:



Courtesy of [The Beautiful Monarch](#)

After hanging for about 24 hours, the caterpillar's skin will split open revealing its 'hulkish' interior. Don't be alarmed when a freshly made chrysalis looks deformed. After lots of wiggling around, it should harden to perfection.



Did You Know? The plural of chrysalis is chrysalises or chrysalides

This should be the simplest part of raising monarchs, but unexpected issues can arise...

This is how pupation occurs if all goes well:

[Caterpillar Forming Chrysalis Videos](#)

MESH BUTTERFLY CAGES

- ◆ Caterpillars are quite cooperative with forming their chrysalides on the mesh roof of their side-opening cage. (In other mesh hampers, they often pupate on side overhangs or the *roof entrance*, making cage cleaning difficult.)
- ◆ The **side entrance** makes it easy for you to clean your cage and access other caterpillars without bothering the chrysalides.



Safety in Numbers or Too Close for Comfort?

You will find that the caterpillars like to congregate in cage corners when making chrysalises...sometimes, ominously close to one another.

I have tried moving them to a different corner before they've formed their silk hanging pad, but many times they crawl right back. Perhaps, some sort of "safety in numbers" instinct is at work?

You don't have to move/rehang chrysalides unless they are touching **and** there's a chance neighboring butterflies could emerge on the same day.

CUTTINGS OR PLANTS

Sometimes we make plans...and caterpillars laugh! Some will pupate underneath plant leaves. This is fine if there aren't other caterpillars in your cage, or if you can move the 'J'ing caterpillar's container to an isolated corner of the cage.

However, if other caterpillars are still eating the milkweed, your poor caterpillar/chrysalis could soon come crashing to the cage floor.

Simply, take the leaf the caterpillar/chrysalis is on, and tape it up with scotch tape (or duct tape if needed). I use our kitchen overhang and underneath kitchen cupboards:



Out of Harm's Reach

You can also remove chrysalises and **rehang** them...

ADVANCED RAISING TECHNIQUE

Chrysalis rehousing is optional, but I do it for a few reasons:

1. to prevent overcrowding and chrysalis tampering from other caterpillars.
2. to prevent hatching butterflies from spreading potential disease to feeding caterpillars below
3. I enjoy watching monarchs eclose from the breakfast table...a fascinating experience!

Moving chrysalises isn't difficult, but it definitely takes **practice**. Over the past few seasons I have been introduced to some new ideas for safely accomplishing this nerve-wracking task with minimal risk to the monarch chrysalis and future butterfly.



What are your Options?

In the photo above, the cuttings container was on the cage floor, which the caterpillar was almost touching. The emerging butterfly would not have had room to dry its wings properly.

You could either place the container on an object (I used the bottom of a flat bowl) to increase hanging height, or try this...

REMOVING AND REHANGING CHRYSALIDES

- Let chrysalides dry at least 24 hours before transferring
- Carefully turn the cage or cage lid upside down so the chrysalis is laying on the floor and can't be accidentally dropped.
- Use a needle-nose tweezers, pin, or a toothpick to gently loosen the thread attached to the top of the cage. If you can't loosen the silk, spray it with water and try again.
- Pull up the silk/chrysalis together and set down in a safe place (eg: a towel on a table)
- Choose one of the next 4 options:

OPTION 1

- Leave a bit of silk (as shown below) and press it to the ceiling of the mesh cage
- Put the pin through the top of the cage and into the silk and back out through the mesh



Photo and Tip from [The Beautiful Monarch](#)

OPTION 2

- Tie waxed dental floss around the silk above the cremaster (black part of chrysalis) **or** the cremaster itself

- Rehang the chrysalis- I usually tape ours under a kitchen cupboard with a soft towel underneath...just in case!



Don't Forget to Floss Your Chrysalis!

OPTION 3

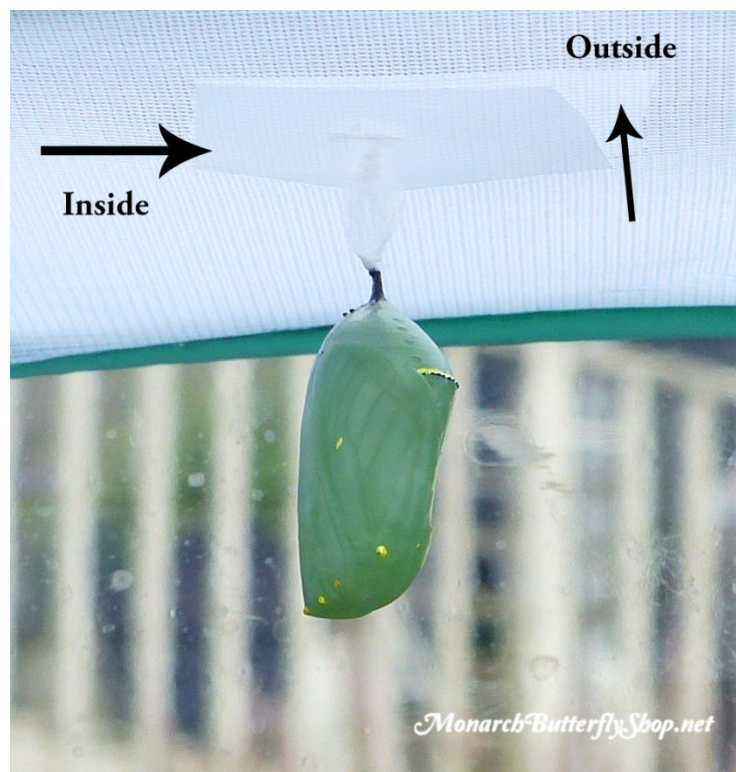
- Stick the top half of the white silk on to a piece of scotch tape
- Rehang the chrysalis- I usually tape ours under a kitchen cupboard with a soft towel underneath...just in case!



Kitchen View

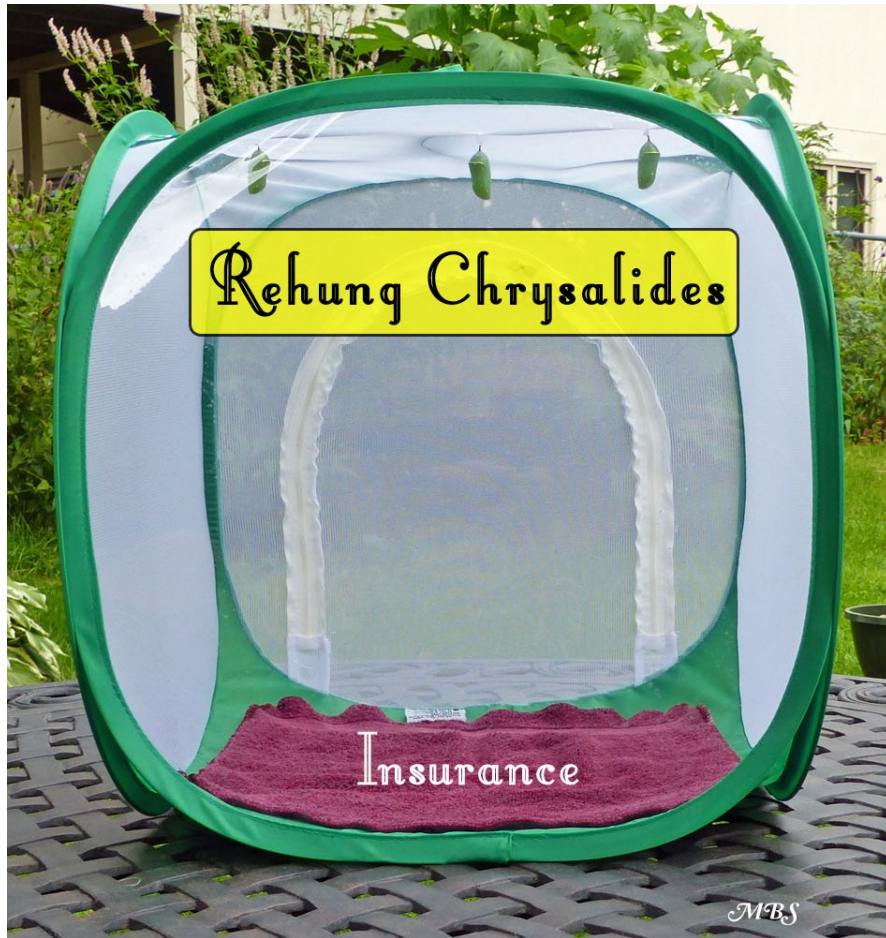
OPTION 4

- Tape the silk to the roof of your cage
- Use tape on the inside **and** outside of your cage
- Press the inside/outside tape pieces together for more sticking power



Cage View

Regardless of where you rehang your chrysalides, place a towel or another *soft place to land* alternative in case of a fall:



A Soft Place to Land

If you're not comfortable relocating chrysalides, you'll be happy to hear it's usually not necessary. However, it's a useful raising skill to have...

MORE CHRYSALIS PROBLEMS?

HANGING BY A THREAD

I've had caterpillars hanging by a single strand of silk. I thought for sure the strand would break and they would fall. Miraculously, one strand is often enough to get the job done...a testament to how incredibly strong their spun silk is.

If a chrysalis is hanging by a thread, simply place a towel beneath it to prevent damage from a fall.

Or, cut the thread and try this...

ALTERNATIVE OPTION

- ◆ Put a chrysalis on the floor of your cage near a mesh wall. When it emerges, a *healthy* butterfly can climb up the mesh and hang itself to dry...



Ready to Climb

SOFT CHRYSALIS DOWN!

If a newly formed chrysalis keeps oozing and deflating after a fall, it's probably not going to survive. But if the chrysalis looks ok...

While the soft chrysalis is wiggling about, see if you can get the black part on top (the cremaster) to attach to a cotton swab or a cotton ball. Then hang up the swab/cotton with tape, a pin, clothes pin, etc...

If you can't get the chrysalis to attach to a cotton swab, don't panic...

A CHRYSALIS STORY

Last summer, I accidentally knocked a hanging 'J' caterpillar from the mesh cage roof. I set the caterpillar on a paper towel on the cage floor...



Changing Overnight

The next morning, I awoke to find a newly formed chrysalis. The chrysalis was slightly flattened on the bottom, but appeared normal otherwise.



Slightly Off

I tied dental floss around the cremaster (black stem above chrysalis) and rehung. Ten days later...a **healthy** monarch male emerged!

CHRYSALIS COOKIES?

Some raisers have been horrified to find a chrysalis munched on by a cage mate. In 35 years, this is something that I have **never** encountered raising caterpillars. I have a theory as to why this happens to some...

If you're raising on cuttings/individual leaves that are not submerged in water, the milkweed dries out quickly. The caterpillars will wander to find fresh milkweed, which leads them to the top of the cage where they'll find milkweed *chrysalis cookies* instead.

If you have issues with this, consider switching to water submerged cuttings or potted plants to see if fresh milkweed stops this disturbing behavior...

MY CHRYSALIS LOOKS FUNNY



The Tachinid Fly Blues

Sometimes caterpillar issues won't become obvious until this next phase of transformation. If you believe your chrysalis might be compromised, isolate and keep a close eye on it.

If your chrysalis turns dark for **several** days or looks visibly diseased, you will need to dispose of it to prevent further disease.

[Diseased Chrysalides Photo](#)

Euthanize by placing the chrysalis inside a paper towel and squeezing *or* putting it inside a plastic baggie to put in the freezer.

So, are you scared yet? Don't be. These situations should *rarely* happen if you are using the raising tips outlined in this guide.

Soon my friend, it will be time to witness the final stage of this amazing metamorphosis.

5 WAYS TO (ACCIDENTALLY) CROSS OUT A CHRYSALIS

1. Dropping the chrysalis while moving it to a new location.
2. Keeping it in direct sun (magnified by the clear plastic of the butterfly terrarium). Make sure a mesh side of the cage takes any direct sunlight...this is easy since there are 3.
3. Not feeding your remaining caterpillars. If they're hungry enough, some have been reported to eat chrysalides!
4. Not reattaching the chrysalis securely if you move it.
5. Leaving the chrysalis exposed to predators including lizards, mice, wasps, and birds.



MONARCH METAMORPHOSIS FINALE

A Monarch Butterfly Emerges from its Chrysalis

10-14 days after your monarch forms a chrysalis it will become transparent, revealing the magnificent butterfly inside.

Watching monarchs come out of their chrysalides is an amazing spectacle to behold, but it happens very quickly. You typically have a window between 6:30-10:30 am to witness adult hatchings, but only a minute to see the actual event.

Once it's completely transparent, you know it will emerge that day. The most common question I get at this point is: How can I tell when the butterfly is about to come out?

The answer? Go to the bathroom for 5 minutes, and come back to a newly emerged butterfly. That's the way it seems to go for many...

However, there is a way to indicate that you should hold off on that quick trip to the bathroom...

Look at the top of the chrysalis where the butterfly abdomen is located. When the chrysalis pleats start to expand and separate like an old [slinky](#), the butterfly is about to **eclose** (emerge) from the chrysalis.

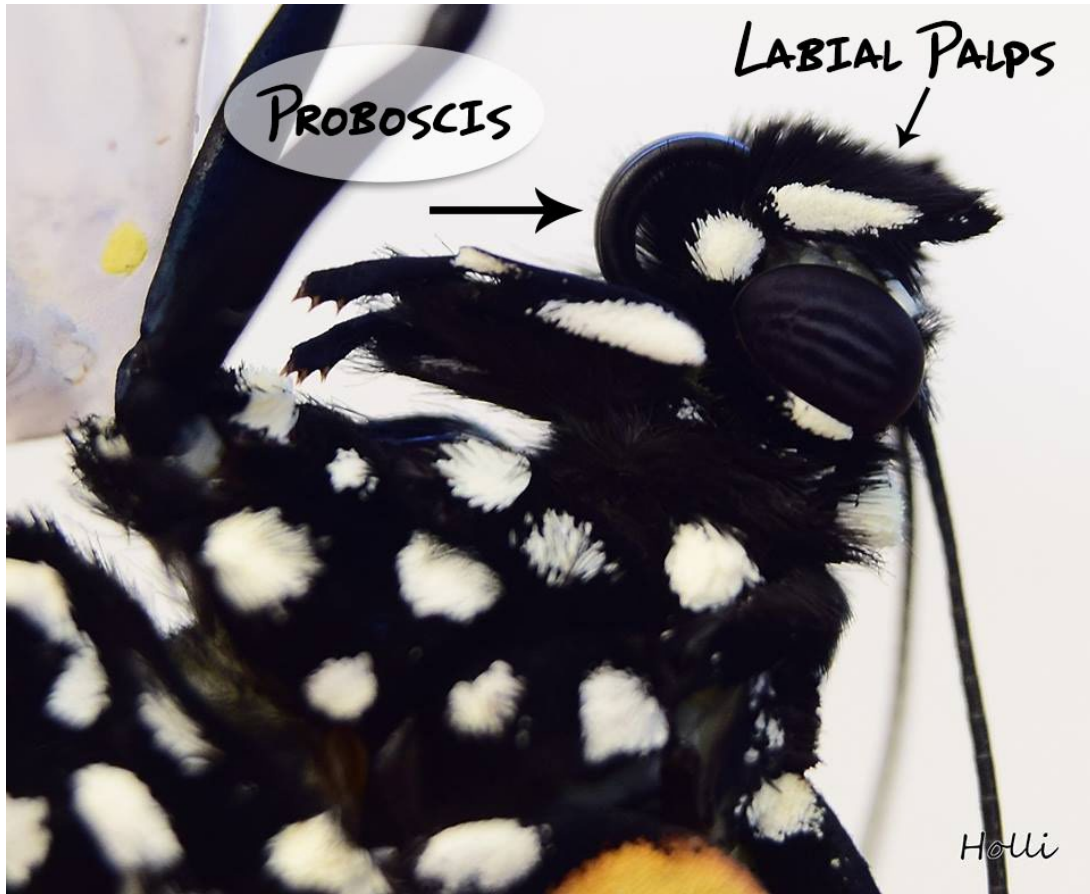


Photo by [Karen Wiles](#)

Did You Know? If you raise monarchs in cool temperatures **or** in a dark room, they'll probably hatch later in the day...and days later!

Seconds after the butterfly emerges it will look nothing like the majestic monarchs you've seen fluttering through your garden. Its wings will be small and crumpled, and its abdomen will be plump and filled with fluids.

At this time, the butterfly uses mouthparts called labial palps to fuse together the proboscis (straw-like appendage used to take in nectar) from two thin pieces into one super straw. The butterfly will unroll its proboscis and pat it together between the two palps:



Courtesy of [The Beautiful Monarch](#)

Over the course of the next minutes, hemolymph from the abdomen will be pumped through the wings, until your butterfly starts looking more monarchesque:

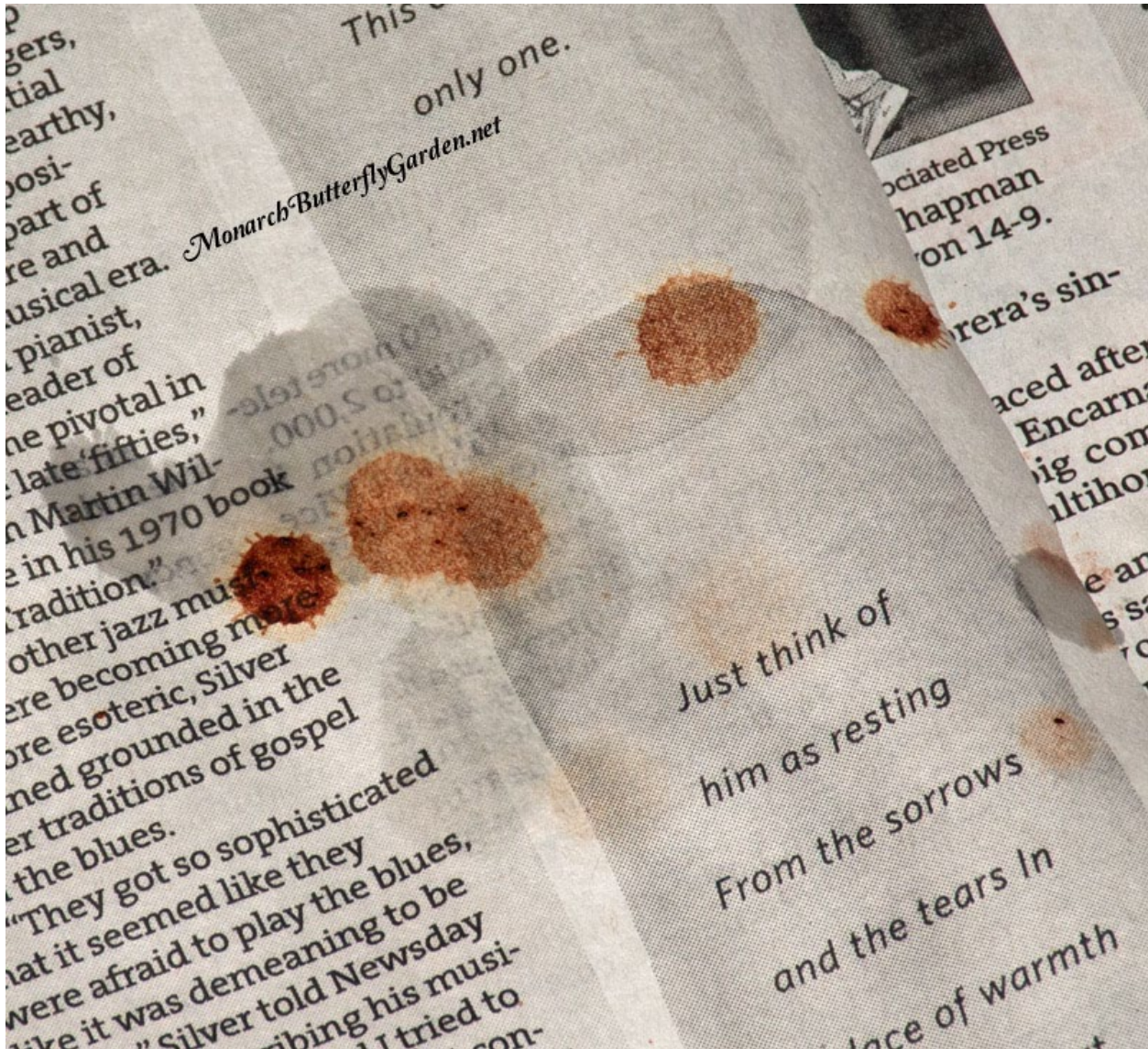


A Wrinkled Start



From Wrinkly to Smooth

About half an hour after a monarch ecloses, it will expel a reddish fluid (through its anal opening) called meconium. This is metabolic waste built up while inside the chrysalis and is **completely normal**.



No Need to Worry

Although meconium release is a normal part of monarch metamorphosis, these other occurrences are not...

BUTTERFLY DISEASES

It's sad to lose your monarchs at this point in the process, but it happens.

Sometimes monarchs with heavy OE infection get stuck in their chrysalides, or come out noticeably deformed. They could also be too weak to hold on to their chrysalides. At this point, your best option is to euthanize. Place the butterfly inside a paper towel and squeeze or place the butterfly inside a plastic baggie and put in your freezer for 24 hours.

Some people have a hard time euthanizing monarchs, but if you release heavily diseased butterflies on to your garden plants, you are spreading disease to future monarchs.

By following the raising process in this book, you will greatly reduce your chances of having to deal with diseased butterflies.

OTHER POTENTIAL ISSUES?

Newly emerged butterflies must be able to hang down so their wings can expand and dry properly. If they don't have room to do this, wrinkled and deformed wings will keep them grounded for life.

If a butterfly falls from its chrysalis and is not immediately placed back up to hang down, its wings will be deformed and it will never fly.

If a butterfly is permanently unable to fly (but healthy otherwise) it can be kept as a pet, euthanized, or left outside to support the ecosystem.

(If you choose to keep a flightless butterfly, there is info coming up on feeding adult butterflies.)



RELEASE YOUR BUTTERFLIES

*Giving Life Back to your Butterfly Garden... and to
Future Monarch Generations*



Ready to Go

Releasing your hand-raised monarchs is one of the greatest joys of raising. Think about it, the monarchs you release could be making an incredible

journey that takes them thousands of miles from your butterfly garden to wintering grounds in Mexico or Coastal California.

Without you, their journey would have likely ended before it began...

Before you say goodbye, would you like to know if you're bidding adieu to Harry...or Helen?

SEXING YOUR MONARCHS

It's not so easy to tell the sex of a flying monarch butterfly, but you can easily spot the difference on your newly hatched monarchs. Females have thicker wing veins and males have a small black spot on each hind wing.



Boy or Girl?

If you've got a good eye, you can even tell the difference when their wings are closed.

[More Male VS Female Photos](#)



The Male's Black Dot Bleeds Through

If you've made it to this point and your butterflies appear healthy, it's time to give back to nature by starting the next monarch generation...unless the situation calls for a delay?

KEEPING BUTTERFLIES OVERNIGHT

I suggest keeping butterflies overnight for the following reasons:

- ◆ High temp is below 65° F (18° C) and windy, or 60° F (16° C) and calm. 50's are ok for release if that's your only option.
- ◆ Moderate to Heavy Rains
- ◆ Butterfly emerges in late afternoon so it can't get energized from basking in the sun
- ◆ Cold spell is imminent (this is more likely in late summer when it starts to get cooler)

They can easily hang from their mesh cage roof overnight. Don't worry about feeding them unless you have to keep them a second night.

What food can you offer adult butterflies?



Breakfast Butter

- ◆ Nectar flowers (in a pot or stem cuttings)
- ◆ Orange or Watermelon slices
- ◆ Place cotton balls/cotton swabs soaked in Gatorade, juicy juice, [hummingbird nectar](#), honey water (9 parts water to 1 part honey) or sugar water (9 parts water to 1 part sugar) on the mesh cage roof so butterflies can feed from inside **OR**
- ◆ Fill an empty syringe with nectar and let the butterfly sip from it holding the syringe upside down so the nectar is coming out of the top- the butterfly can hang from the top of the syringe and feed from the top opening as you push up the nectar (good option for flightless butterflies)

If you take them out of the cage to feed, be forewarned that they become strong fliers after a couple days. I have had to chase a couple around our house. They become surprisingly elusive with strong wings and a full stomach!

Whenever possible, it's always best to release your monarchs into the wild blue yonder...

RELEASE STEPS



Releasing monarchs isn't difficult, but there are a few helpful steps you can take to insure they get acclimated to their new outdoor living quarters. *You've made it this far, so don't lose them now!*

THE HARD WAY

1. Let your monarch's wings dry before moving it- before your release it outside to fend for itself, make sure the butterfly wings are dry so it can fly away from potential predators or other territorial monarch butterflies. *Minimum 2 hours dry time*



Hang in Safe Place for **AT LEAST 2 Hours**

2. When transporting your monarch outside, move your finger toward the butterfly's head so it can crawl on.
3. Once your monarch has climbed aboard the *finger express*, bring your hand in toward your body...pull *gently* to fully remove your butterfly from the chrysalis.
4. Hold its wings shut between two knuckles. Then carry the butterfly out by its wings. It's little feet may be kicking about, but this doesn't hurt the butterfly, and keeps it from flying into danger.

[Butterfly Pick-up Demonstration Video](#)

5. Bring the butterfly outside so that it can warm its wings *in the sunlight*. Wait to release your butterfly if it's raining, or if the forecast high temp is less than 60° Fahrenheit. They can hang from the top of a *butterfly-only* caterpillar cage, or a houseplant until the weather improves.

Whether releasing your monarch outside or holding it temporarily indoors, make sure its wings are hanging down so they finish drying properly.

6. Here are some potential places to hang your new butterfly, which should keep it safe until it takes flight:



Hang Your Butterflies Out to Dry * Photo by Angie Luebben

- ◆ a *rope* provides an easy surface for the caterpillar to attach its feet and is most likely free of any lurking predators
- ◆ *small tree branches*- just make sure there are no predators like spiders or ants in the immediate vicinity
- ◆ *garden or house plants* it can easily hang down from- again, check for predators



Hanging Out on Garden Plants

Your butterfly does not need to eat right after hatching, so don't worry about hanging it from a nectar flower.

The only time I use this release method, is when [photographing](#) the butterflies I'm releasing.

AN EASIER WAY

I started releasing them a **new way** a few seasons ago...this is your simplest and safest option for release. Simply bring the butterfly outdoors hanging inside a mesh enclosure. Place it in the sun on the ground or hang the cage handles on a shepherds hook or clothesline in **calm** conditions.



Drying Out on a Shepherds Hook

Stop the cage from blowing in the wind by placing rocks on the cage floor. Open the door after two hours have passed. They will do the rest...

The advantage to this method is that they can dry **safely** without being harassed by predators or territorial monarch males.

TIP: If you lay the cage on the ground, lay it with the side door facing up.

[Monarch Release Video](#)

RELEASING WHILE YOU'RE AWAY

If you raise monarchs long enough, you'll probably have unhatched chrysalises, when you have plans to be out of town. What if you can't bring them with you? What if you can't find a *chrysalis sitter*?

While this option isn't perfect from a 'predator' perspective, it's a pretty good way to solve this monarch emergency:



Emergency Release Container

- ◆ Remove the chrysalises from their enclosures (as discussed earlier)
- ◆ Pin them up (through the attached silk) in a Styrofoam cooler leaving enough room for an emerging butterfly to hang
- ◆ No silk? Place chrysalis on the cooler floor
- ◆ Put the cooler outside in a spot where it will get some morning sun
- ◆ Poke a couple holes in cooler bottom in case of rain
- ◆ Put rocks in the bottom of the cooler so it won't blow away

If a butterfly falls when eclosing, it will be able to crawl up the styrofoam walls. Yes, predators can access the cooler. But, if the chrysalides are only in there a short period, they have a good shot at going undetected.

BUTTERFLY RELEASE PARTY



A butterfly garden release party is a fantastic idea for several reasons:

- ◆ Unique get-together with family and friends
- ◆ Show off the beautiful garden you've worked so hard on over the summer
- ◆ Share the amazing story of the monarch migration and let others know how they can help save the monarchs for future generations
- ◆ Dedicate the release to a special person or event in your life
- ◆ Plan the party for a day right after the bulk of your butterflies will hatch. Keep butterflies that hatch in the few days before so you'll have some to release. An adult butterfly hatches 9-14 days after forming its chrysalis. The total transformation from egg to adult takes about 30 days. Plan accordingly.

TAKE YOUR PARTY ON THE ROAD

While releasing monarchs in your garden is a joyful experience, you can multiply your joy by sharing this amazing experience with others. Where else could you release your monarch butterflies?

- ◆ [Elementary school](#)
- ◆ Nursing home
- ◆ Local park
- ◆ Sunday school or church
- ◆ Local Wedding
- ◆ Local Funeral

OPTIONAL STEP BEFORE RELEASING

This step is only for those who are raising the final generations of Monarchs that are eclosing in late August, September, and October.

Monarch Watch is a non-profit organization that engages citizen scientists in large-scale research projects. Citizens who raise late-season monarchs have a unique opportunity to help Monarch Watch gather research on the eastern monarch migration to Mexico.

HOW?



You can order tracking tags to attach to your butterfly after its wings are dry. When the butterflies are retrieved, those who find them can call a number on the tag to report information about the butterfly.

Get more info about the Monarch Watch Tagging Program [here](#)

Get info about Tagging Western Monarchs [here](#)

5 WAYS TO (ACCIDENTALLY) MURDER A MONARCH

1. Hang them outside to dry, completely defenseless against predators.
2. Keeping them near standing water like a dishpan. When they begin to fly, they may end up “swimming with the dishes.”
3. Taking your eye off newly hatched butterflies. Sometimes monarchs fall down from their chrysalides. If you don’t put them back up quickly, their wings will dry deformed and they will never fly.
4. No Whiskers! No Fido! Need I say more?
5. Keeping them in a place where you forget about them. They can only survive so long without food.



RAISE THE MIGRATION

Raising Monarch Butterflies for the Great Fall Migration



In Autumn 2013, monarch enthusiasts throughout North America joined together to raise monarch butterflies for the great fall migration.

I called this event Amazing Raise 1, but soon realized 'Amazing Raise' was a popular marketing title for various *money raising* events. A change was needed...

Going forward, this annual online event has been called Raise The Migration and in August 2018 I will be hosting:

Raise The Migration 6

Everyone that's signed up to receive free Butterfly Garden & Raising Tips emails will receive *Raise The Migration* tips annually in August and September.

[Sign Up Here](#) if you'd like to help renew the declining monarch migration.



CONCLUSION

Final Words from Tony

I hope this guide has provided some valuable info that will help you raise more monarchs, with less effort, and a high survival rate.

Raising is a process, and the more efficient your process becomes, the more time you will have to enjoy this amazing experience.

My intention was to create a raising guide with clear instructions. If there's anything that remains cloudy, please post a question or comment on [this page](#) and I will reply, and also edit the book, if necessary.

If you enjoyed this book, you might also enjoy *Volume I*, which reveals how to create a butterfly garden that attracts more monarchs, and keeps them around for days! [Click the cover below for more info:](#)



For your convenience, the following pages list all of the *essential resources* I have discussed throughout this guide.

A LITTLE HELP?

More Resources for Raising Monarch Butterflies

MONARCH BUTTERFLY GARDEN

◆ **Blog Website:**

<https://monarchbutterflygarden.net> (butterfly garden articles + raising info and resources, butterfly gift ideas)

◆ **Monarch Butterfly Shop:**

<https://monarchbutterflyshop.net> (monarch raising supplies + butterfly gifts)

◆ **Raising Butterflies Tips:**

<https://www.facebook.com/MonarchButterflyGarden/app/137541772984354/> (Tried and true tips for raising healthy monarch butterflies...includes tips for **Raising Monarch Migration Butterflies** in late Summer/Fall)

◆ **Facebook Page:**

<https://www.facebook.com/MonarchButterflyGarden> (Join an Active Community of over 37k Monarch Enthusiasts)

◆ **Closed Facebook Group:**

[Raise MORE Monarchs LESS Effort](#) (Post questions, photos, and comments about raising monarch butterflies)

◆ **Pinterest:**

<https://pinterest.com/monarchgarden/> (visual ideas for your butterfly garden and raising monarchs)

◆ **Instagram:**

<https://instagram.com/monarchbutterfly.garden/> (amazing photos and video from the butterfly garden and inside raising butterflies)

◆ **Raising Monarchs Resources:**

<http://monarchbutterflygarden.net/raising-monarch-butterflies-resources/> (A growing list of raising resources and articles to help you along your raising journey.)

◆ **Email:**

<https://monarchbutterflygarden.net/contact-form/> (Unanswered Questions and Business Inquiries)

CATERPILLAR CAGES

◆ [Baby Cube Butterfly Cage](#)

Raise up to 15 caterpillars in a pop up cage that's slightly larger (15" by 15" by 15") than a traditional small cube cage.

◆ [Tall Baby Butterfly Cage](#)

Raise up to 30 caterpillars at one time in a large mesh pop-up cage (15" by 15" by 24H") that can hold milkweed cuttings or small potted plants.

◆ [Big Cube Butterfly Cage](#)

Raise up to 30 caterpillars at one time in a large mesh pop-up cage (24" by 24" by 24") that can hold milkweed cuttings or small potted plants.

◆ [Monarch Tower Butterfly Cage](#)

Raise up to 30 caterpillars at one time in a large mesh pop-up cage (24" by 24" by 36H") that can hold milkweed cuttings or larger potted plants.

◆ [Monarch Egg Hatcheries](#)

Food storage containers provide a humid environment that works well for an egg hatchery and keeps leaves from drying out too quickly. 9 cup size provides adequate space and they're stackable.

MILKWEED RESOURCES

◆ [25+ Milkweed Species Plants and Seeds](#)

◆ [Everwilde Farms](#)

Everwilde sells a wide variety of milkweed seeds, and also sells in bulk if you're looking to grow milkweed over a large area. The farm is family-owned and located in NW Wisconsin.

◆ [Georgia Vines](#)

This nursery probably has the largest variety of milkweed species I've come across, including several species of milkweed vines! If you're looking to try something "new", they're likely selling milkweed seeds that you don't have.

◆ [The Joyful Butterfly](#)

This passionate butterfly gardener offers a variety of milkweed seeds and plants that will bring home a bounty of butterflies.

◆ [Lupine Gardens](#)

Chemical-free milkweed plants and seeds from Wisconsin.

◆ [Smart Seeds](#)

This vendor has a good mix of native and non-native milkweed seeds and thousands of 5-star reviews from happy customers.

- ◆ [eBay Milkweed](#)
eBay is an excellent resource for both milkweed seeds and plants. Please check a seller's feedback rating before purchasing. If a seller has a feedback rating below 97% I look for other options.
- ◆ [Amazon Milkweed](#)
Amazon is also becoming an excellent resource for both milkweed seeds and plants. Please research reviews to make sure you are buying from a vendor that specializes in seeds/plants and has great customer feedback.
- ◆ [Milkweed on Etsy](#)
Another large online retailer with a growing selection of milkweed varieties from home-grown vendors.
- ◆ [Rose Franklin's Perennials](#)
Sells fast growing tropical milkweed as well as native varieties.
- ◆ [Shady Oak Butterfly Farm](#)
This family-owned nursery has various types of native and non-native milkweed.

MONARCH EGG, CATERPILLAR, & CHRYSALIS RESOURCES

- ◆ [Rose Franklin's Perennials](#)
- ◆ [Monarch Watch](#)
- ◆ [Shady Oak Butterfly Farm](#)
- ◆ [Farfalla Butterfly Company](#)
(western resource for CA, WA, OR, AZ, UT, NM & CO)

OTHER RAISING RESOURCES

- ◆ [Hand Pruning Shears](#)
Find a decent pruner for taking stem and leaf cuttings. Of course, you can also use it to prune (and deadhead) garden plants too.
- ◆ [Small Handheld Vacuum for Sucking up Frass](#)
Cleaning up frass/poop with a small, inexpensive, low-power vacuum (dedicated to cage cleaning) will save you time and make cleaning a breeze...this is the one we use.
- ◆ [Similar Handheld Vacuums on Amazon](#)
Cleaning up frass/poop with a small, inexpensive vacuum (dedicated to cage cleaning) will save you time and make cleaning a breeze...
- ◆ [Regular Disinfecting Bleach for Cage Cleaning](#)
Prevent monarch diseases by disinfecting at the end of each season and during, if necessary. Mix solution carefully as directed.
- ◆ [Bleach Wipes](#)
Some use wipes to disinfect cages and raising equipment during the season
- ◆ [Floral Tubes/Floral Picks, and Rack Holder](#)
These work great for holding large common milkweed leaves for baby caterpillars, and also stem cuttings. (easiest milkweed set up)
- ◆ [Plastic Food Storage Cups/Containers with Lids](#)
Use 4 oz cups (or larger) to hold stem cuttings. These can be found in local stores too.
- ◆ [Vase Fillers](#)
These work well for keeping food storage containers steady, securing cuttings inside the container, and securing floral tube picks.

◆ [Marbles](#)

An alternative to using vase fillers

◆ [Detail Brushes](#)

If you need to move small caterpillars, this is a good alternative to hand transferring.



RAISING GUIDE GLOSSARY

Don't Let these Raising Terms Fly Over your Head

GENERAL TERMS

DANAUS PLEXIPPUS

The scientific name for the monarch butterfly.

LIFE CYCLE

The four different stages butterflies and moths go through as they mature: egg, caterpillar, chrysalis, adult.

METAMORPHOSIS

The process all monarchs go through as they transform from egg to butterfly.

PARASITE

An organism that lives in/on another organism, deriving nutrients at the host's expense. Trichogramma wasps & tachinid flies are monarch parasites.

MONARCH EGG TERMS

OVIPOSIT

The act of laying eggs on milkweed plants by a monarch female.

MONARCH CATERPILLAR TERMS

CAT

An abbreviation for caterpillar.

FILAMENTS

The two sets of tentacles on the front/back of a monarch caterpillar. These serve as sense organs and are shed as the caterpillar forms its chrysalis.

FRASS

Caterpillar poop.

INSTAR

One of the five periods of development of a monarch caterpillar.

MOLT

When the caterpillar sheds its skin to grow for its next instar.

SPIRACLES

Small holes in the side of the caterpillar that open into the trachea. This allows the caterpillar to take in oxygen.

MONARCH CHRYSALIS TERMS

BUTTON

The caterpillar spins a silk button to hang from before it makes the transformation to chrysalis.

CHRYSALIDES

The plural of chrysalis...*Chrysalises* is also acceptable.

CREMASTER

Black stem above the chrysalis.

PUPA

An insect in the non-feeding state between caterpillar and adult.

MONARCH BUTTERFLY TERMS

ANTENNAE

The two antennae on the head of the butterfly act as a GPS, and are essential for guiding them to overwintering destinations in Mexico and the California coast. They also detect smells including nectar sources and pheromones to find mates.

ECLOSE

When a butterfly emerges from its chrysalis.

GRAVID

A female that has mated and can lay viable monarch eggs.

PROBOSCIS

The straw-like appendage that uncoils from the head of the monarch to drink nectar.



*For Questions, Comments,
or to Leave a Book Review*

[CLICK HERE](#)