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PAINTED LADY BUTTERFLY REARING KIT

BUTTERFLY WINGS N' WISHES LTD
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Your Larvae Kit Includes:

- Painted Lady Butterfly Larvae
- Specially formulated caterpillar diet for them to eat
- Rearing containers for the larvae
- An accessory kit with a feeding vial (it has an X in the lid) for the adults, paintbrush(s)

You will need (not provided in the kit)

- A small spoon (if you have the kit #3 or #4) such as a ½ teaspoon
- A misting bottle with water, for spraying the chrysalis and the adults
- Sewing or safety pins
- A flight cage for the adults
- Food for when your adults emerge (sugar water, orange/watermelon slices)



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THE PAINTED LADY BUTTERFLY

The Painted Lady (*Vanessa cardui*) is one of the most widespread butterfly species in the world. They are a migrant (like the Monarch), but travel irregularly, and don't have a set destination. A female can lay around 500 tiny bright blue eggs during her adult life. She will lay only on host plants specific to her species: stinging nettle, thistle, and mallows/malvas, including hollyhock. Painted lady butterflies complete a four-part life cycle (egg, larvae, pupae, adult).

Your caterpillars are eating a nutrient-rich mix of toasted soy flour, plant matter, vitamins and minerals (no peanuts or other nuts).

Your caterpillar project will take a total of 3-4 weeks.

Though we do our best with these instructions, we acknowledge that they can never be perfect. If you still can't find what you need, give us a call and one of our staff will be happy to help you out.

WHEN YOU GET YOUR KIT

Check the containers for breaks, cracks, or damage. Ensure you have everything you ordered.

The caterpillars aren't very active when they are young: however, they should be upright on their feet. Some may be clinging to the walls.

Keep your caterpillars upright, indoors, and out of direct sunlight. Somewhere quiet is best.

Depending on the kit you purchased, your caterpillars may need to be rehoused.

WHAT TO DO WITH YOUR KIT

REARING KIT #2 (3-5 larvae): This kit is ready to go! The caterpillars will live communally in the cup, and hang upside down on the paper towel barrier to form a chrysalis inside.

- They have enough food to sustain them for their entire caterpillar stage
- This small amount of caterpillars will tolerate living communally, and will build webs to feel secure
- You have extra paper towel in the accessory kit. Sometimes they chew through the paper towel, and you may need to replace it if you see holes or discoloration.
- Otherwise, you can leave this kit as is.

LIFE CYCLE KIT #3,

CLASSROOM STUDY KIT #4: Due to the volume of caterpillars in these kits, you **rehouse** them (split them up). It is best to do this within 5 days of receiving them.

Why? In the wild, these larvae are mostly solitary, and would be a nest-builder (making small messy nests out of leaves). With these kits, you have supplies to make each larvae it's own little house. This mimics what they would make for themselves in the wild. For

these kits, you have been provided with **a cup full of caterpillars, a cup full of food, and accessories** (cups, paintbrushes). Please note that the lids do indeed have a pinhole for breathing.

To separate the larvae:

1. Wash your hands with soap & water: then, make a clean workspace. The food gets contaminated easily.
2. Get a clean spoon, and scoop approximated 1/2 a teaspoon of food into each little vial. You can be a bit generous. Loose chunks are fine.
3. Once your food is divided, use the paintbrush to GENTLY transfer a single caterpillar into each little cup. Brush the caterpillars gently from below or near their feet.
4. Some people add a paper towel barrier under the lid: it won't hurt them, but it is not necessary in the tiny cups.
5. Any extra caterpillars can remain in the shipping cup with the extra food.
6. You may have leftover food, unless you divided it evenly: this can be refrigerated. It will keep for 2 weeks.

Leave the lids on the containers as the caterpillars grow, to preserve the food and protect the animals. Do not handle the caterpillars: the less you disturb them, the better.

INSECT SAFETY:

Insects are very susceptible to air quality and contaminants. **Keep them away from** disinfectants/strong cleaners, non-stick pans & surfaces, cooking areas, essential oils, fragrances, cedar, heat vents, and both organic and inorganic repellents and pesticides/herbicides (including byspray from outdoors).

FOOD SAFETY:

The caterpillar food is non-toxic for pets and people, and it contains a proprietary blend of many vitamins and minerals, carried on a base of soy flour and agar agar. There are no nuts.

CARING FOR CATERPILLARS

Keep the lids on. Exposed food will pick up environmental contaminants and will dry out. Exposed caterpillars will stress.

Temperature: 18-22°C is ideal.

Cleaning: Caterpillar poop is called frass. It should be the same color as their food, and round in shape: you will see it accumulate. *Your kit does not need to be cleaned unless something is wrong.* At the lab, we don't clean them at all.

- Good examples of something going wrong is if there are dead caterpillars, the food changes color a lot (for instance becoming dark brown or black), or if you see a lot of condensation from temperature fluctuations.
- If you must clean, only do it when absolutely necessary! Do not disturb the caterpillars. Do not disturb the webbing. Tilt the container over a paper towel, and use the provided paintbrush or a spoon to brush out the frass, contaminants, and/or any dead caterpillars gently.
- Clean all the tools you used afterwards with soap and water.

Shed skins: look like little black poops. Each caterpillar goes through 5 molts or instars.

They will be fully grown in about 7-10 days, at which point they will stop eating. Here are indicators they are about to transform, and you should not disturb them for about 3-4 days:

- They will be big! 3-4 CM.
- They will move up to the lid and lay still, upside down, for about a day.
- You may see a pieces of large red frass (meconium) – this is normal at this stage.
- They will hang upside down in a "J" shape to form a chrysalis, which also lasts about a day
- They will molt one last time, and the skin of the chrysalis will be revealed.

Try not to jostle them while they are in pre-pupa and are newly-formed pupae. It is the most vulnerable time in their lives.

THE CHRYSALIS

Leave the chrysalis in the cups for 2-3 days before transferring them. The outside of the chrysalis will be greyish-brown, or taupe, sometimes with gold or white spots.

- The discarded final skin of the caterpillar may be stuck to the chrysalis, or nearby. It may look like a severed caterpillar head – this is normal.
- Butterflies need room to emerge and spread their wings, so do not leave the chrysalis in the little vials for more than 5 days.
- There should not be any splits or holes, or goo.

HANGING THE CHRYSALIS:

Set up your flight cage first, so it's ready.

Make a little workspace. Laying a large piece of paper towel on the work surface may help cushion any falling chrysalis.

For the Kit #2

1. Take the lid off and peel the paper towel away, the chrysalis will be attached to the paper towel.
2. Transfer the paper into your flight cage, and hold it so that the chrysalis face inwards. The chrysalis will pivot as you move the paper around.
3. Using a sewing or a safety pin, gently pin the paper towel to one of the flight cage walls with the chrysalis facing in. Pass the pin through the top of the paper towel, do not pin through the chrysalis.

For the Kit #3 and #4

1. The plastic lids are hard to pin to the cage. Instead, put a piece of paper towel down on the workspace. Then, place a generous spot of white glue on the back (top) of the plastic lid, the side without the chrysalis.
2. Place the lid glue-side down on the paper and leave until it's dry and your lids are secured to the piece of paper.
3. You can now easily pin that paper onto the wall of your cage (see previous section for details).

FALLEN CHRYSALIS: If any of your chrysalis did not attach itself to the lid or fell off during this process, just rest those gently on the bottom of your flight cage and the butterfly should emerge as usual, then crawl to a wall to climb up and fill their wings.

MIST THE CHRYSALIS: This needs to be done daily with water, as often as possible. Humidity is critical: a dry chrysalis will become deformed.

FLIGHT CAGE: Keep this in a warm area with plenty of indirect sunlight. Flight cages can be a variety of structures, as long as the walls and floor are grippy: *do not allow your butterflies to emerge in a container made of bare plastic or glass.*

Adults will emerge within 7-10 days, shorter if it's very warm and humid.

Please note that it is important to leave chrysalis intact. Fallen chrysalis should still survive if they have not been injured. Do not pull or tear chrysalis yourself, and do not stick them with pins, squish them, or otherwise harm them. The chrysalis is the animal's body.

THE ADULT BUTTERFLY

THE EMERGENCE:

Although this is easily the most amazing step in the process, it happens quickly and is easy to miss! What to look for:

- The chrysalis will begin to darken as they become ready.
- On the day of, orange wing patterns will be visible through the now-translucent skin of the chrysalis.
- They usually emerge during morning or early afternoon

NEWLY HATCHED ADULTS: shed red liquid. This is

meconium: not blood. They start with soft and crumpled wings. They will use gravity to pump fluid from their body into their wings and harden up. They will find something to hang on, while they do this. If they emerged on the ground, they will climb until they find a suitable spot. Over a day, their wings will become firm enough to fly.

FEEDING THE ADULTS: Mist the adult butterflies daily with water for hydration.

A feeding vial for your adult butterflies has been enclosed in your accessory baggie. It has a lid with an x-shaped cut in it. To make a feeding station:

- Cut a piece of paper towel about the size of a post-it note and push it through the lid hole; about 3-5 cm should protrude from each side.
- Into the cup, add a solution of **water mixed with 5% sugar.** Gatorade is also popular (they like red).
- When you put the lid back on the now full cup, you create a "wick:" the paper towel sucks the liquid up so your adult butterflies can land and drink.
- The slight sugar content of the liquid will ensure your butterflies are happy and healthy. Use only table sugar, which does not crystallize in the body of the animal later.
- Do not use honey.

They also love fresh fruit such as watermelon or oranges!

RELEASING THE BUTTERFLIES/HOUSING THEM LONGER

Plan your release for a few days after emergence, it can be flexible if you must wait for good weather. They may not all emerge on the same day: just like humans, maturity happens at different times. It is fun to observe them as you wait.

You will need to continue feeding them. Provide fresh food (sugar water) every day or 2. You may not see them feeding, and you may not see the liquid level change.

Once 4 days old, they begin to find mates, and you may see them "pairing." A few days after that, females will begin searching for appropriate host plants to begin laying eggs. Time to let them go if you haven't yet!

Plan your release for a hot and sunny day, with the best weather possible: butterflies are creatures of sunlight and heat and releasing them on a nice day is important for their transition into the wild. It needs to be at least 18°C for them to fly.

Be careful when releasing them! They have a tendency to land on the ground which is a stepping hazard. Your butterflies will fly great distances to locate the right plants! Chances of them remaining near your release location will be increased if both host and nectar plants are in the area. Try to find a release site without too many birds.

Project Ideas & Scientific Inquiry:

- Start a calendar to monitor your animals. Each day, note what you observe: temperature in the room, size, molting, deaths, color, any changes. Note when metamorphosis occurs, and compare how long each life stage takes.
- Can you count how many times they shed? Larvae naturally go through 5 molts, but they sometimes eat their molted skins!
- Was the temperature always the same? Were some colder or hotter, if they were in different locations? Did that affect their growth?
- Did they grow more quickly during the day - or when it was cold at night?
- What did the butterflies do when you released them?
- What was the temperature outside for release? Did this effect their behavior?
- Why do some butterflies survive, and some do not? In nature, what reason would there be to have both strong and weak animals?



FREQUENTLY ASKED QUESTIONS

I am missing supplies or they arrived broken.

Contact us right away (24 hours of delivery). We can reship!

Do they have enough air?

Yes. The containers are not airtight. There are also holes in the lids.

My caterpillars aren't moving?

This is normal. Movement can actually be a sign of stress, especially if it is incessant or repetitive, or if they are having to seek resources or shelter. In the wild this species would make a small leaf nest with their webbing and try to stay in a secure, safe location for the whole larvae stage. Helping them feel safe should result in a comfortably loafing caterpillar that just eats and poops all the time. That being said, you should observe rapid growth (every day they will be bigger), and they should be upright, gripping with their feet, their heads should be moving as they eat. Frass will accumulate.

What is the webbing?

This is a form of protection the caterpillars make, and is completely natural. In fact, it's an indicator of healthy caterpillars!

I think I have/am worried I will run out of food.

We package extra food for what caterpillars will naturally and normally eat, and the average kit usually ends up with surplus. However, there are variables that can affect this and cause food shortages:

- Leaving the containers open
- A stressful or disruptive environment
- Adjusting the consistency of the food
- Food contaminants
- Sick caterpillars

Never adjust the consistency of the food by adding water or anything else.

We do sell extra food if you need it: call our office to inquire.

What is this food made of?

It is a proprietary diet made by a cool laboratory in the USA who just make insect diets. It has dozens of minerals, vitamins and plant matter on a soy and agar carrier in specific quantities. It forms a gel due to agar, which is also why it's so susceptible to contaminants: it's like a petri dish!

It is non toxic, unless you are allergic to soy.

The paper barrier is molding or they are chewing it.

Replace it: this can occur anytime you use a paper barrier, and it's why we add the extra paper towel in your accessories. Some caterpillars just really seem to really enjoy doing it.

If some have begun to pupate, leave them on the paper towel and move it **as gently as you can** to a flight cage. Try not to jostle them much. Then, replace with new paper towel.

If you ever need additional paper towel: we use clean Bounty paper towel, available at any grocery store.

The chrysalis fell!

This would happen in the wild, with animal passage or windstorm. It can contribute to a lower survival rate, but if the animal is uninjured, they will emerge on the ground and then climb up the walls to harden their wings. Assist them by misting well.

The cremaster (the "butt hook") can actually be re-hooked back into the webbing they make on the lids, but this requires careful handling. You are welcome to call us if you want to try, we can help walk you through it!

I think I need to clean the cup.

Probably not. Normal, healthy mess is good for them: they wouldn't have someone cleaning them in the wild. Caterpillars are happiest when messy; that is their natural state: they would not be moving out of their own little rolled up web nest if they don't need to. However, there are special circumstances where cleaning becomes necessary, such as sick or dead caterpillars. Give us a call if you think something is wrong, and re-read the "Caring for Caterpillars" section on page 2, and:

One or more of my caterpillars have died or might be sick.

Nature is not perfect; even when you do everything correctly, it is normal to lose around 20% in a kit. Watch for these warning signs:

- Red caterpillars
- No size change from day to day
- If the larvae appear to be melting
- Black or green fluid coming out of the larvae

In the wild, survival rates are low: only around 1-5% live to reproduce. These animals are not high in a food web, and they have to contend with a lot of potential threats outside of predation (pesticides, fractured habitat, parasites, viruses, disease, pollution, and car windshields). Your survival rate is still probably better than nature! We aim for 70%. We also always include a few extra larvae in every order to help you out.

What to do if you think they are sick/dead:

- **Take pictures and contact us for advice.** We have a team of experts who can help you out.
- Dead caterpillars is a good reason to clean. Remove dead ones, with a spoon/the paintbrush.
- Incorporate the mortality statistic into your lessons; it is a valuable demonstration of the role insects play in an ecosystem. Nature treasures the dead too.
- See the below warranty policy for unusually high mortality.

The kids want to name their caterpillars/I want to give out individual caterpillars.

If you do this, know that with the natural mortality rate, some participants will end up with dead larvae. We do not warranty

partial kits or individual larvae. We suggest observing insects as a population, by keeping them in group(s), and utilize the outcome in your lessons to describe the role insects play in an ecosystem.

Crumpled wings?

Crumpled wings that won't straighten? This is most often caused by lack of humidity or interference in the form of a disease.

Deformities in adults are, unfortunately, as common as any other problem. The metamorphosis is not always perfect; sometimes there is something wrong and you just cannot do anything about it. Butterflies with deformities may not survive.

There is red stuff. Is it bleeding?

No. As the adult emerges from the chrysalis, a small amount of fluid, called **meconium**, falls from their body. This is not blood.

SANITATION AND REUSING CUPS

We suggest housing the caterpillars in the provided supplies: caterpillars placed into alternative housing cannot be warranted. Adult butterfly habitats are exempt from this rule.

We cannot be held responsible for larvae losses due to being provided with the wrong information in shipping, improper equipment, inappropriate housing, or excessive handling. Follow our instructions as closely as you can, try not to introduce too many variables during your project.

Starting in 2023: we are encouraging re-use of the individual vials, paintbrushes, and feeding cups moving into next year (2024), at which point we will be offering kits without vial sets, so that you can begin reusing the vials. **You will need to sanitize all your supplies thoroughly:** caterpillars cannot be placed into non-sanitary containers. Here is what to do:

1. Scrub your supplies with soap and water. Be extremely thorough: you want to remove all residue, restoring all parts to a **like-new** condition.
2. Once they have been cleaned mechanically, sanitize them in a bleach solution (10% bleach in cold water, soak for 10 minutes).
3. Place on a paper towel on a clean surface and do not disturb until dry.
4. Using clean hands, transfer the supplies into a clean baggie and seal it to store until next year.

CATERPILLAR KIT WARRANTY

Remember: you are dealing with living creatures. Nature is not perfect; in the wild, survival rates would be very low, with only around 1-5% of butterflies surviving. We cannot assume all larvae will survive, but in proper conditions, you should expect survival rate of around 70%. If over 40% of your larvae have died, contact us immediately: you may be eligible for a free replacement within the same caterpillar season or a credit for the following year.

Please note that we cannot offer replacements for losses due to environmental calamity such as forest fire (or smoke in heavily smoky areas), flood, power outages, evacuations, or other events outside of human or laboratory control.

We do not offer refunds.

Applying for a warranty replacement:

1. We have a shipping guarantee: please visit our "shipping info" page linked in your email communications for details. Shipping issues **must be reported** within 24hrs of receipt.
2. Ensure that your losses are not due to sanitation issues, improper housing, or environmental calamity. These include but are not limited to inappropriate containers, freeroaming caterpillars, playing with/handling them, cleaning excessively, toxin exposure as listed on page 1, or mechanical injury such as being eaten by a dog or exposed to something dangerous to bugs.
3. **Provide us with photos of the dead larvae inside the kit, or where they perished.** Warranties will not be offered without photos.
4. We will investigate: you will need to provide a description of your rearing conditions and what you observed. The more detail, the better: if it's disease, it is imperative we trace it.
5. We replace kits in-season: very often the same week your kit is reported failed, or the following one. If you are out of time, we will provide you with a credit for next year.
6. Warranty is only valid based on percentage losses of complete kits, not individual caterpillars or portions of kits.
7. Losses must be reported within 30 days of delivery for warranty fulfilment.

If you have bought your larvae through a retail store, please contact your retailer directly.

If your purchase was made directly through us, we can be reached at:

780-462-1839

bugs@butterflyab.com

butterflyab.ca

Please ensure you have your invoice number ready.

Nature is not perfect, but we strive to provide you with as good an experience as possible.

Do not hesitate to contact us if you feel this has not been the case.

All of your caterpillars are produced in our Edmonton lab, a small biosafety facility staffed by a team of passionate nerds who just love bugs. We are a family-founded, conservation and education-focused business, and we believe every creature - great and small - deserves to be appreciated. We thank you for your contribution to pollinator populations and for supporting a better future!

We would also like to thank our many amazing retailers across Canada, who provide local access to these projects and others like them. For more information, please visit us online.

The more you understand your world, the more interesting it becomes.

Butterfly Wings N' Wishes respectfully acknowledges that we operate on Treaty 6 territory, a traditional gathering place for diverse Indigenous peoples whose histories, languages, and cultures continue to influence our business, our way of life, and our community.

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