

Painted Lady Butterflies

- 2nd Grade - Insects and Plants
- 5th Grade - Living Systems



Painted Lady butterfly – *Vanessa cardui*

What to do when they arrive. Butterfly larvae are shipped with their own food in the shipping container. Warmer temperatures will encourage larvae to grow more quickly. Maintain container out of direct sunlight. No further care is necessary, as they will pupate within 7 to 10 days.

Background. Painted lady butterflies can be purchased from a biological supply house as small fuzzy larvae—maybe as small as 1 cm (1/2") long. They arrive in a plastic container with a centimeter or two of green goop that looks like guacamole. You might notice that the food has gelled at a slant in the jar. This is designed to maximize the available surface area for the larvae. The ventilated lid holds a piece of filter paper over the top of the container. Keep the lid and paper on the container at all times. The painted ladies will spend all of their larval days, perhaps 7-10 days or a little more, in the container eating the food layer, molting, and growing to a length of 4 cm (1-1/2") or a little more. They require no special attention other than to keep them in a well-lighted area, but out of direct sun and safe from temperature extremes. After the larvae are about 2 cm (3/4") long, it is all right for students to remove the larvae from the containers from time to time for close observation of structures and behaviors.

Life cycle. In due course the larva receives a biological message to climb to the top of the container, spin a little knob of silk onto the filter paper, and attach its rear end firmly to the knob. The larva hangs head down and assumes a characteristic J shape, indicating that pupation is only a few hours away. If you are vigilant, you might be able to observe the final molt as the fuzzy outer skin splits near the head to reveal the smooth, curiously molded, slightly iridescent pupa ensconced in its chrysalis. As the pupa writhes around, the skin is pushed up and off the body until it is a crunchy little nub pressed up against the paper. The painted lady lapses into a period of relative quietude, hanging motionless except for brief fits of wriggling, especially when disturbed. At this time the pupae attached to the paper should be moved to a larger cage.

For a week or 10 days the pupa undergoes dramatic physical and biochemical transformations. The chrysalis gradually darkens until it is dark gray-brown, and the orange color of the wings starts to show through. This is when you can expect the adult to emerge, which happens quickly. The chrysalis shell splits near the bottom (head end), and the butterfly reaches out with its legs and grasps the outside of the chrysalis. The head comes out, and then the abdomen and wings are pulled free of the chrysalis shell. The emergence takes a minute or less.

The fresh new butterfly clings to the chrysalis shell with its soft, crumpled wings hanging down. Over the next hour or two the abdomen pulses as it pumps fluid into the veins of the wings, expanding them to their fully extended shape. During this time the butterfly ejects a splat of red liquid. Students may be

alarmed, thinking it is blood, but it is a waste fluid that the butterfly unloads as it prepares for its new life. In 3 or 4 hours the butterfly takes wing as a flying insect.

Maintenance. Painted lady butterflies don't require much as adults. They will drink dilute sugar solution and fly around looking for mates. Place the cage where sunshine will fall on it for a few hours each day. If mallow, a common weed in many parts of the country, is available, you can place a small bouquet of leaves in a vial of water. After the butterflies mate, they will lay eggs on the mallow leaves. If you want to raise a second generation of painted lady butterflies, provide mallow leaves for the larvae to eat. After a month the adults will die, not because of any ill effects caused by captivity, but because that is their normal life span. Even though it is never advisable to release study organisms into the environment, if a painted lady butterfly "escapes," it will not be an environmental disaster—painted ladies are already well established throughout the country.

Prepare a feeding station. A butterfly feeding station can be made from a standard insect water fountain. Use a hole punch to make a hole in the center of the cap of a vial. Roll up an 8-cm (3") square of paper towel and push it through the hole in the cap. Push the vial into the plastic vial holder to prevent the fountain from tipping over.

Butterflies feed by sipping nectar through their long coiled proboscis. A substitute nectar can be made with sugar and water. Put 1/4 teaspoon of sugar in a vial and fill it with water. Attach the wick cap to the vial. Cut a crude flower from a piece of red or orange paper, make several criss-cross cuts in the center, and push the vial through. The flower will attract the butterflies and give them a place to land.

Provide mallow leaves (optional). When adults emerge, provide a bouquet of fresh mallow leaves in the cage. Use the hole punch to punch a few holes in a plastic cup lid. Fill the cup with water and snap on the lid. Stick leaves and small branches of mallow through the holes. Females will lay eggs on the mallow leaves.

Watch for egg hatching. The eggs hatch in a week or so, and it is possible to start the whole process over again. Larvae will thrive if you transfer them to fresh mallow leaves. They must be kept in a covered container because they are very mobile. A supply of mallow leaves can be kept in the refrigerator. If you do not want to let the eggs hatch, put them in the freezer for a few days to end the life cycle.

Eggs, larva and adults should not be released into the wild as it can disrupt the local ecosystem.

Discuss death. Butterflies don't live long. After 3 weeks they will be tattered and tired. With luck they will have fulfilled their destiny by producing eggs. Discuss the inevitability of the death of the butterflies and that it is not caused by captivity or the result of any failing on the part of the caregivers. Butterflies just don't live very long.