









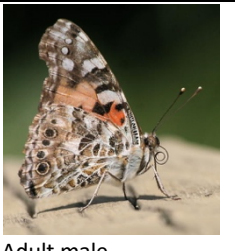
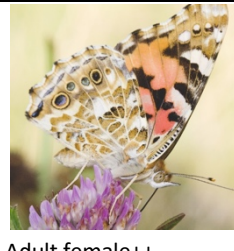
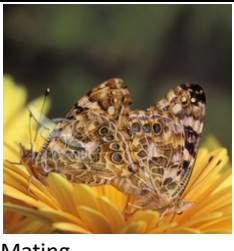
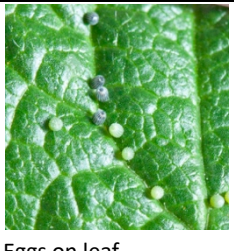
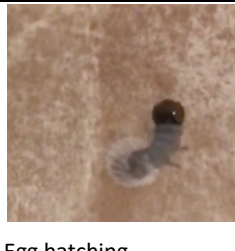


Painted lady butterfly (*Vanessa cardui*) instar identification and life history with head capsule photo, larval and pupal length by Vera Krischik, June 2020.

Even though they are often thought of as the thistle butterflies and a majority of their eggs are laid on thistles, the larvae feed, and can be reared, on a huge and varied number of plants, and plant types, in several different families.

Painted ladies overwinter in the deserts along the Mexican border, where they breed and lay their eggs on annual plants that grow quickly after the winter rains start. The adults then move northward in a migration that varies greatly from year to year; in heavy rainfall years hundreds of millions of adults fly. In 2019 a large migration occurs as did in 2005, when an estimated one billion individual painted ladies migrated north. These butterflies emerge from the pupa with a yellow fat reserve that allows them to fly from dawn to dusk without stopping to feed. As their fat reserve dwindles, they stop migrating, begin to feed, and become sexually active. A reverse, but much more casual migration, occurs in late summer, when the butterflies head south again, feeding and breeding along the way (homegroundhabitats.org/painted-lady-butterflies).

				
Second instar 5-7 mm	Third instar 5-12 mm	Fourth instar 13-16 mm	Fifth instar 20-36 mm	Chrysalis 48-60 mm
				
				Chrysalis black death+
				
Adult male	Adult female++	Mating	Eggs on leaf	Egg hatching
Adult males have a slender abdomen compared to females; in males the front legs are reduced with short brush-like hairs; wingspan 50-56mm	Adult females have a wider abdomen compared to males; in females the front legs are reduced with spines used to drum and find maters; wingspan 50-56mm			

Photos: instars, chrysalis, eggs (Krischik lab), adult male (Wikimedia), adult female (Mary Legg, Bugwood.org).

+What Causes Black Death in Butterflies? Butterfly larva and pupa turn black and die and it is called black death. In most cases, black death has two causes: a bacterium in the genus *Pseudomonas* and the nuclear polyhedrosis virus. *Pseudomonas* bacteria prefer moist environments and are pretty much ubiquitous. *Pseudomonas* is an opportunistic bacteria that typically infects caterpillars that are already weakened by other diseases or conditions. The nuclear polyhedrosis virus resides inside the caterpillar's cells, forming polyhedra (sometimes described as crystals, although this is not entirely accurate). The polyhedra grow within the cell, eventually causing it to burst open. This is the reason infected caterpillars or pupa seem to dissolve as the virus ruptures the cells and destroys the structure of the insect. Fortunately, the nuclear polyhedrosis virus does not reproduce in humans.

++In painted ladies, sex was determined by inspection of the forelegs; as female forelegs have spines that are used in drumming during oviposition, while male forelegs are brush-like (Ackery PR, Jong RD, Vane-Wright RI. The butterflies: Hedyloidea, Hesperioidea and Papilionoidea, In Kristensen NP, editor. Lepidoptera, moths and butterflies: Vol. 1, Evolution, systematics and biogeography, New York, Berlin: de Gruyter, 1998. pp. 263–300). The Nymphalidae are the largest [family](#) of [butterflies](#) with more than 6,000 species distributed throughout most of the world, belonging to the superfamily [Papilionoidea](#). These are usually medium sized to large butterflies. Most species have a reduced pair of forelegs and many hold their wings flat when resting. They are also called brush-footed butterflies or four-footed butterflies, because they are known to stand on only four legs while the other two are curled up; in some species, these forelegs have a brush-like set of hairs, which gives this family its other common name (wikipedia.org/wiki/Nymphalidae).