

Life history of monarch butterfly (*Danaus plexippus*) and instar identification by Vera Krischik, Laurie Schneider, June 2020.











Monarch butterflies travel between 1,200 and 2,800 miles or more from the United States and Canada to central Mexican forests. There the butterflies hibernate in the mountain forests, where a less extreme climate provides them a better chance to survive. Habitat loss and fragmentation has occurred throughout the monarch's range. Pesticide use can destroy the milkweed monarchs need to survive. A changing climate has intensified weather events which may impact monarch populations.

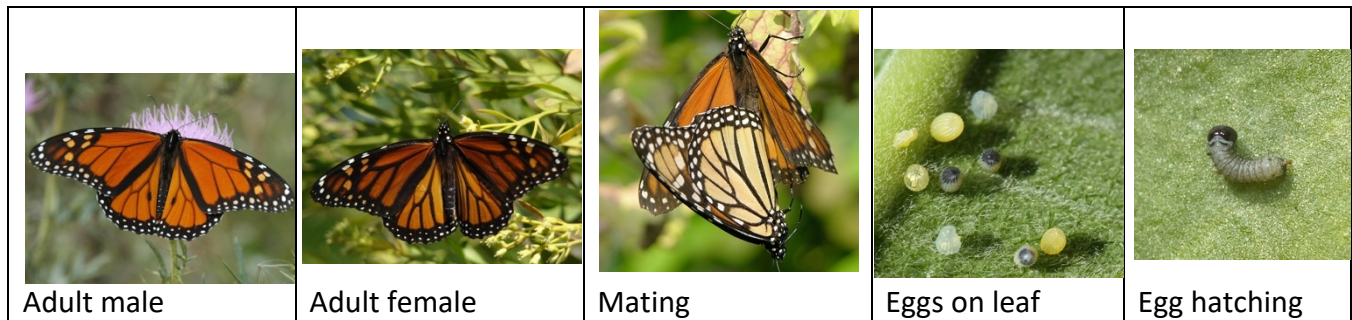
Numbers of monarchs have decreased significantly over the last 20 years, but together we can save the monarch. In the United States, there is a massive effort to provide habitat for monarch butterflies, imperiled bumble bees and other pollinators. There is no one group or agency responsible for providing habitat needed for monarch conservation. All organizations, agencies and individuals must work together to improve, restore and create grassland habitats to save monarchs.

Monarchs feed only on milkweed plants as larvae but monarch adults take nectar from many different plant species. Over 100 species of milkweed exist in North America, but only about one fourth are known to be important host plants for monarch butterflies.

fs.fed.us/wildflowers/pollinators/Monarch_Butterfly/habitat/index.shtml

monarchjointventure.org/monarch-biology/life-cycle/larva/guide-to-monarch-instars

				
				
First instar 2-6 mm	Second instar 6-9 mm	Third instar 10-14 mm	Fourth instar 13-25 mm	Fifth instar 25-45 mm
Body width 0.5 to 1.5 mm, front tentacles small bumps, back tentacles barely visible, head capsule 0.6 mm diam	Body length 6 to 9 mm, body width 1 to 2 mm, front tentacles 0.3 mm, back tentacles small knobs, head capsule 0.8 mm diam	Body width 2 to 3.5 mm, front tentacles 1.7 mm, back tentacles 0.9 mm, head capsule 1.5 mm diam	Body width 2.5 to 5 mm, front tentacles 5 mm, black tentacles 2 mm, head capsule 2.2 mm diam	Body width 5 to 8 mm, front tentacles 11 mm, back tentacles 4, head capsule 3.5 mm diam



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.

Photos: Instars, eggs on leaf (Krischik lab 2020), monarch adult male (William Ciesla bugwood.org), monarch adult female (Rebekah Wallace bugwood.org), monarchs mating (Derek Ramsey wikimedia), eggs hatching (wikimedia).