

Parasite and Host

Scientific Background

A *parasite* lives inside the body of a host organism. Some parasites live inside the caterpillar of a moth or butterfly. A *parasitoid* is an insect that lives during its larva stage either on or inside another insect species.

A tachinid fly is a parasitoid. Life cycles of tachinid flies vary by species. Some species lay their eggs on leaves. The eggs can then be ingested by a host caterpillar while it eats the leaves. In other tachinid fly species, the females insert their eggs directly into the hosts' body. The tachinid flies that parasitize Monarch butterfly larvae glue their eggs to the caterpillar's body. The hatching tachinid fly larvae tunnel inside the Monarch caterpillar. Once inside the body of the host, one or more tachinid fly larvae develop through several stages, or instars. After 4-14 days, the tachinid fly larvae emerge from the Monarch caterpillar to form pupae. The host Monarch caterpillar does not survive. Adult tachinid flies emerge from their pupae 1-2 weeks later.

Tachinid flies are free living in their adult stage. This means that they are not parasites or parasitoids as adults. Adult tachinid flies have sucking mouthparts. Nectar is their primary food source. Tachinid flies are not harmful to people, and some species help control harmful insects such as the Gypsy moth.

Vocabulary

- host
- larva
- mouthparts
- parasite
- pupa
- instar
- maggot
- nectar
- parasitoid
- tachinid

*Vocabulary definitions can be found in the **Backyard Bugs** Glossary.*

Thinking Question

What do you think would happen if there were no Monarch caterpillars for the female tachinid fly to lay her eggs on?

Exploratory and Extension Activities

Additional Exploratory and Extension activities are available in the *Backyard Bugs* Teacher's Guide.

Earthkeeper Careers

Have students read selections from *Earthkeepers: Observers and Protectors of Nature* (Oxford Profiles) (Ann T. Keene, Oxford University Press, 1994. ISBN: 0195078675). Have students discuss occupations such as scientists, preservationists, conservationists, ecologists, and/or environmentalists. Students can investigate occupations that may benefit the Monarch or Viceroy butterflies and their habitats.

A Day in the Life of a *Backyard Bug*










Have students write about a day in the life of one of the *Backyard Bugs*. Tell students to imagine that they are that insect and have the ability to keep a journal about their lives and experiences. Students should write about what a day in the life of their bug is like.

Prompt students to write about the life of the insect and include topics such as what they eat, where they live, whether or not other insects live with you, and what time of year it is

Name: _____





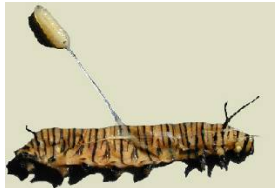
Parasite and Host

Complete the chart.
Label the pictures and write about the relationships between the tachinid fly and the Monarch butterfly during different stages of their life cycles.

Life Cycle of Tachinid Fly		Life Cycle of Monarch
		
		
		
		
		
		

Answer Key

Parasite and Host

Complete the chart.		
Label the pictures and write about the relationships between the tachinid fly and the Monarch butterfly during different stages of their life cycles.		
Life Cycle of Tachinid Fly		Life Cycle of Monarch
 <p>Tachinid Fly lays eggs on Monarch caterpillar.</p>	<p><i>The tachinid fly and the Monarch butterfly each go through complete metamorphosis.</i></p> <p><i>This type of tachinid fly lays its eggs and glues them to a Monarch caterpillar.</i></p>	 <p>A healthy Monarch caterpillar eating on a milkweed leaf.</p>
 <p>Monarch caterpillar infected with tachinid fly larvae.</p>	<p><i>While the Monarch caterpillar is growing, the tachinid fly eggs that are glued to it hatch on the outside of the caterpillar. Tachinid fly larvae, called maggots, enter the Monarch caterpillar's body.</i></p>	
 <p>Tachinid fly maggot or larva emerging from Monarch caterpillar.</p>	<p><i>A tachinid fly is a parasitoid. A parasitoid lives in the body of a host when it is a larva.</i></p>	
 <p>A tachinid fly larva has eaten and killed the host Monarch caterpillar's organs.</p>	<p><i>A tachinid fly larva, or maggot, has used this Monarch caterpillar as a host. It has eaten the Monarch caterpillar's organs and killed it. Tachinid fly maggots can also live inside Monarch butterfly chrysalids.</i></p>	



A dead Monarch caterpillar host with tachinid fly pupae.

A Monarch caterpillar does not survive when a tachinid fly maggot uses it as a host. The picture shows two tachinid fly pupae next to the dead Monarch caterpillar.



A free-living adult tachinid fly.

Adult tachinid flies are free living, which means they do not need a host to survive. They eat other types of food, such as flower nectar.

Adult Monarch butterflies are also free living. Monarch butterflies sip nectar from flowers through their proboscis.



A healthy Monarch butterfly sipping nectar.